U. S.
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE

VOL. 909

APRIL

1973

MICRO PHOTO DIVISION

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BELL & HOWELL

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

April 3, 1973 Volume 909 Number 1

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of February 1973

Examiner affirmed	134
Examiner affirmed in part	16
Examiner reversed	29
Total	179

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office on the basis of 4 years or more service in the Examining Corps. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before April 27, 1973.

Michael, Edward J., 213 Sheridan St. NW., Washington, D.C. 20011
Moxon, George W. II, 1449A N. Van Dorn St., Alexandria, Va. 22304

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,544,246, G. H. Butterfield, CORNEAL CONTACT LENS, **filed** Sept. 2, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c1812, *George H. Butterfield, Sr.* v. *Oculus Contact Lens Company, Inc.* **Same, filed** Oct. 22, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c2184, *George H. Butterfield, Sr.* v. *Contact Lens Service, Inc.* **Same,** Doc. 69c2186, *George H. Butterfield, Sr.* v. *Custom Contact Lens Laboratories, Inc.* **Same, filed** Feb. 20, 1970, same, Doc. 70c412, *George H. Butterfield, Sr.* v. *Vogel Contact Lens Company.* **Same,** Doc. 70c414, *George H. Butterfield, Sr.* v. *Halcon, Inc.* **Same,** Doc. 70c415, *George H. Butterfield, Sr.* v. *B & M Optical Company.* **Same,** Doc. 70c416, *George H. Butterfield, Sr.* v. *The House of Vision, Inc.* **Same, filed** Dec. 22, 1969, D. C., W.D. Ky. (Louisville), Doc. 6376, Transferred to Northern District of Illinois on Feb. 12, 1970, Case 70c324, *George H. Butterfield, Sr.* v. *SCL Laboratories & Southern Optical Co.* **Same, filed** Oct. 28, 1969, Nebr. (Omaha), Doc. 03404, transferred to Northern District of Illinois, Doc. 70c329, *George H. Butterfield, Sr.* v. *Rite Style Optical Co., Inc.* **Same, filed** Sept. 12, 1969, D.C., N.D. Ga. (Atlanta), Doc. 13009, transferred to Northern District of Illinois (Chicago), Doc. 70c330, *George H. Butterfield, Sr.* v. *Quality Optics, Inc.* **Same, filed** Oct. 15, 1969, D.C., E.D. La. (New Orleans), Doc. 69–2346, transferred to Northern District of Illinois (Chicago), Doc. 70c339, *George H. Butterfield, Sr.* v. *Custom Contact Lens Lab.* **Same, filed** Oct. 24, 1969, D.C., W.D. Tex. (Waco), Doc. W69–CA–48, transferred to Northern District of Illinois (Chicago), Doc. 70c397, *George H. Butterfield, Sr.* v. *Contour Comfort Contact Lens, Inc.* **Same, filed** Feb. 11, 1970, D.C., District of Kansas, Doc. W–4315, transferred to Northern District of Illinois, Doc. 70c856, *George H. Butterfield, Sr.* v. *Dr. Doyle O. Burch, etc.* **Same, filed** Feb. 13, 1970, D.C. Mo. (Kansas City), Doc. 18100–4, transferred to Northern District of Illinois (Chicago), Doc. 70c857, *George H. Butterfield, Sr.* v. *B & R Enterprises, Inc. Central Labs.* **Same, filed** Feb. 17, 1970, D.C., W.D. Mich. (Detroit), Doc. 6274, transferred to Northern District of Illinois (Chicago), Doc. 70c858, *George H. Butterfield, Sr.* v. *Art Optical Contact Lens Div.* **Same, filed** Feb. 12, 1970, D.C., E.D. La. (New Orleans), Doc. 70–308, transferred to Northern District of Illinois, Doc. 70c859, *George H. Butterfield, Sr.* v. *Accurate Contact Lens Lab.* **Same, filed** Feb. 11, 1970, D.C., E.D. La. (New Orleans), Doc. 70–302, transferred to Northern District of Illinois (Chicago), Doc. 70c860, *George H. Butterfield, Sr.* v. *Gulf Coast Contact Lens, Inc.* **Same, filed** Feb. 25, 1970, D.C., N.D.N.Y., Doc. 70–CV–58, transferred to Northern District of Illinois (Chicago), Doc. 70c863, *George H. Butterfield, Sr.* v. *Onondaga Optical Co.* **Same, filed** Feb. 13, 1970, D.C., W.D. Tenn., Doc. 1963, transferred to Northern District of Illinois (Chicago), Doc. 70c864, *George H. Butterfield, Sr.* v. *Mullers Contact Lens Service, Inc.* **Same, filed** Feb. 24, 1970, D.C., N.D. Ohio (Cleveland), Doc. C–70–170, transferred to Northern District of Illinois (Chicago), Doc. 70c866, *George H. Butterfield, Sr.* v. *Reese Optical Co., Inc. and Bausch & Lomb Inc.* **Same, filed** Feb. 11, 1970, D.C., N.D. Ohio (Cleveland), Doc. C–70–128, transferred to Northern District of Illinois (Chicago), Doc. 70c867, *George H. Butterfield, Sr.* v. *Fred Rump Contact Lens Lab.* **Same, filed** Mar. 3, 1970, D.C., E.D. Wis., Doc. 70–C–119, transferred to Northern District of Illinois (Chicago), Doc. 10c868, *George H. Butterfield, Sr.* v. *Ray-Con Inc.* **Same, filed** Feb. 24, 1970; D.C., E.D. Wis., Doc. 70–C–101, transferred to Northern District of Illinois (Chicago), Doc. 70c870, *George H. Butterfield, Sr.* v. *Wisconsin Optical Service Inc.* **Same, filed** Feb. 12, 1970, D.C., District of Arizona, Doc. C–70–90 PHX, transferred to Northern District of Illinois (Chicago), Doc. 70c871, *George H. Butterfield, Sr.* v. *Guarantee Contact Lenses of Arizona.* **Same, filed** Feb. 17, 1970, D.C., S.D. Ohio (Columbus), Doc. 70–39, transferred to Northern District of Illinois (Chicago), Doc. 70c887, *George H. Butterfield, Sr.* v. *White-Haines Optical Co.* **Same, filed** Feb. 20, 1970, D.C., W.D.N.Y., Doc. C–1970–88, transferred to Northern District of Illinois (Chicago), Doc. 70c922, *George H. Butterfield, Sr.* v. *Gordon Contact Lenses, Inc.* **Same, filed** Feb. 27, 1970, D.C., District of Colorado, Doc. C–2110, transferred to Northern District of Illinois (Chicago), Doc. 70c928, *George H. Butterfield, Sr.* v. *Bell Optical Lab.* **Same, filed** Mar. 11, 1970, D.C., S.D. Tex. (Houston), Doc. 70–H–224, transferred to Northern District of Illinois (Chicago), Doc. 70c942, *George H. Butterfield, Sr.* v. *Contact Lens Lab. Inc.* **Same, filed** Mar. 9, 1970, D.C., E.D. Mo. (St. Louis), Doc. 70–C–105, transferred to Northern District of Illinois (Chicago), Doc. 70c966, *George H. Butterfield, Sr.* v. *Alvin Contact Lens Corp.* **Same, filed** Feb. 11, 1970, D.C., W.D. Tex. (El paso), Doc. EP 70–CA–22, transferred to Northern District of Illinois (Chicago), Doc. 70c994, *George H. Butterfield, Sr.* v. *Lone Star Contact Lens Labs, Inc.* **Same, filed** Mar. 25, 1970, D.C. E.D. Va. (Richmond), Doc. 173–70–R, transferred to Northern District of Illinois (Chicago), Doc. 70c1069, *George H. Butterfield, Sr.* v. *Corneal Lens Lab Inc.* **Same, filed** May 16, 1969, D.C., C.D. Calif. (Los Angeles), Doc. 69–958 FW, transferred to Northern District of Illinois (Chicago), Doc. 70c1072, *George H. Butterfield, Sr.* v. *Calcon Lab.* **Same, filed** Apr. 6, 1970, D.C., W.D. Tex. (El Paso), Doc. EP 70–CA–66, transferred to Northern District of Illinois (Chicago), Doc. 70c1230, *George H. Butterfield, Sr.* v. *Con-O-Lite, Inc.* **Same, filed** Apr. 24, 1970, D.C., E.D. Tenn., Doc. 2513, transferred to Northern District of Illinois (Chicago), Doc. 70c1231, *George H. Butterfield, Sr.* v. *Appalachian Optics, Inc.* **Same, filed** Apr. 13, 1970, D.C., N.D. Tex. (Amarillo), Doc. CA–2–847, transferred to Northern District of Illinois (Chicago), Doc. 70c1254, *George H. Butterfield, Sr.* v. *Opti-Lens, Co., Inc.* **Same, filed** Apr. 6, 1970, D.C., M.D. Fla. (Tampa), Doc. 70–130–C, transferred to Northern District of Illinois (Chicago), Doc. 70c1282, *George H. Butterfield, Sr.* v. *Obrio Lab., Inc.* **Same, filed** Apr. 15, 1970, D.C., W.D. Ill. (Rockford), Doc. 70–C–20, transferred to Northern District of Illinois (Chicago), Doc. 71c1289, *George H. Butterfield, Sr.* v. *Arlon Contact Lens Lab. Inc.* Patent invalid, Oct. 26, 1971.

Certificates of Correction for the Week of Apr. 3, 1973

D. 223,300
D. 224,409
3,006,468
3,388,305
3,426,916
3,532,332
3,562,307
3,562,308
3,576,661
3,580,946
3,603,807
3,610,968
3,613,484
3,615,027
3,634,062
3,635,342
3,635,918
3,637,678
3,642,693
3,642,730
3,642,821
3,643,302
3,647,696
3,647,841
3,647,855
3,651,962
3,652,281
3,652,341
3,655,334
3,655,729
3,657,451
3,659,026
3,659,752
3,662,307
3,664,118
3,665,618
3,668,309
3,669,143
3,671,121
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3,684,780
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3,686,135
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3,687,042
3,687,123
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3,687,557
3,687,790
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3,687,893
3,687,943
3,688,876
3,689,371
3,689,551
3,689,560
3,689,874
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3,690,607
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3,690,813
3,690,887
3,690,905
3,690,920
3,691,030
3,691,437
3,691,939
3,692,175
3,692,342
3,692,660
3,692,883
3,693,029
3,693,340
3,693,475
3,693,478
3,693,533
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3,693,792
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3,694,016
3,694,428
3,694,754
3,694,873
3,695,071
3,695,219
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3,695,863
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3,696,155
3,696,169
3,697,102
3,697,246
3,697,424
3,697,518
3,697,699
3,697,702
3,698,197
3,700,307
3,700,507
3,700,709
3,701,091
3,701,815
3,701,856
3,702,076
3,702,154
3,702,314
3,702,630
3,703,599
3,703,637
3,705,132
3,706,829

Patents Available for Licensing or Sale

D. 222,363. DECORATIVE HANGING INCLUDING SKELETAL FRAMEWORK. Clifton Bullard, 310 Prescott Place, Plainfield, N.J., 07063.

3,082,571. TOY. John E. Lewis, ASSN, San Francisco, Calif., 96307.

3,338,474. COLLAPSIBLE SPIRAL DISPENSING CONTAINER. Carl C. Olson, 3804 N. Janssen Ave., Chicago, Ill., 60613.

3,376,992. TAMPER-PROOF CONTAINER AND CAP CONSTRUCTION. Frank O. Klapp, Sr., 70 Warren St., Tiffin, Ohio, 44883.

3,465,373. HOSPITAL BED. Harriet A. Wilson, 115 Hilltop Road, Waverly, Pa., 18471.

3,524,659. MULTI-PURPOSE TRANSPORTATION APPARATUS. Katherine M. Filter, Rte. 3, Box 61–B, Crosby, Minn., 56441.

3,570,507. ICE FISHING NET. Morris Kashuba, 1563 Main St., Peckville, Pa., 18452.

3,572,816. VEHICLE SEAT. Robert L. Brown, 322 Davis Drive, Kingston, Tenn., 37763.

3,585,944. SUSPENDED SHELVING. Lewis R. Scheer. 1726 N. Lagoon Ave., Wilmington, Calif., 90744.

3,587,204. BAG CLOSING AND CLINCHING APPARATUS. Wallace W. George, 906 W. Crost St., Anderson, Ind., 46012.

3,596,757. MONEY CLIP. Patrick T. Cocchiaraley, 350 Wayland Road, Cherry Hill, N.J., 08034.

3,667,729. GATE CLOSURE APPARATUS. R. J. Hinkel. Correspondence to: Charles L. Rubow, 3170 N. Victoria St., St. Paul, Minn., 55112.

3,689,108. BODY TILTING MECHANISM. James A. Blonar, Rte. 2, Box 249A, Barrington, Ill., 60010.

3,641,805. SHEET METAL PULLER. Edward C. Reinke, 4823 Eaton, Denver, Colo., 80212.

3,697,046. COMBINED, JACK, AND CLAMP. SURE, CLAMP. Ferdinand F. Sur, R.R. 3, Effingham, Ill., 62401.

3,699,499. UNIVERSAL ELECTRIC CONNECTOR. Conan H. Spaderna, 54 Warner St., Springfield, Mass., 01108.

3,708,715. GOLF SWING PRACTICE DEVICE. Trentis E. Barney et al., 1719 Madrone Ave., West Sacramento, Calif., 95691.

3,710,413. ELECTRIC RAZOR CLEANER. Willis E. French, 7230 Raintree Drive, Citrus Heights, Calif., 95610.

3,713,690. VEHICLE BODY BOX EQUIPPED WITH AT LEAST ONE SLIDING DOOR. Lutz Knothe et al. Correspondence to: Werner W. Kleeman, Suite 212, Crystal Plaza 1, 2001 Jefferson Davis Highway, Arlington, Va., 22202.

3,715,881. DISPLAY CONTROL DEVICE FOR TIMEPIECES. Pierre Girard. Correspondence to: Stevens, Davis, et al., 1911 Jefferson Davis Highway, Suite 600, Crystal Mall 1, Arlington, Va., 22202.

The following 2 patents are offered by: Avery V. Deaver, 19 Calle 13–48 Zona 1, Guatemala City, Central America.

3,451,076. SUBMERGED CORK RECOVERY DEVICE.

3,542,278. BEVERAGE CONTAINER WITH STRAW.

The Laitram Corporation offers non-exclusive licenses under the following patent.

Inquiries should be directed to: The Laitram Corporation, P.O. Box 50699, New Orleans, La., 70150.

3,276,878. PROCESS FOR PEELING PRECOOKED SHRIMP.

National Starch and Chemical Corporation is prepared to grant licenses upon reasonable terms under the following patent.

Inquiries regarding the patent should be addressed to: Patents Department, National Starch & Chemical Corp., 1700 W. Front St., Plainfield, N.J., 07063.

3,322,656. METAL SURFACE OF IMPROVED BONDING QUALITY.

The General Tire & Rubber Company is prepared to grant non-exclusive licenses at reasonable royalty rates under the following patent.

Inquiries respecting licenses should be addressed to: General Tire & Rubber Co., 1 General St., Akron, Ohio, 44309.

3,574,149. FLAME RETARDANT FLEXIBLE POLYURETHANE FOAMS.

The Insurance Institute for Highway Safety is prepared to grant non-exclusive royalty-free licenses under the following patent restricted to use of the patented invention solely in the field of highway safety.

Inquiries respecting licenses should be addressed to: The Insurance Institute for Highway Safety, Watergate Six Hundred, Washington, D.C., 20037.

3,711,251. DETECTION OF ORGANIC VAPOR CONTAMINANTS IN AIR.

Spectral Data Corporation is prepared to grant non-exclusive licenses upon reasonable terms under the following patent.

Correspondence should be directed to the: President, Spectral Data Corporation, 6 Aerial Way, Syosset, N.Y., 11791.

3,715,962. SPECTRAL-ZONAL COLOR RECONNAISSANCE SYSTEM.

The General Electric Company is prepared to grant non-exclusive licenses under the following 2 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Francis K. Richwine, Patent Counsel, Ordnance Systems Department, General Electric Co., 100 Plastics Ave., Pittsfield, Mass., 01201.

3,648,636. ACOUSTIC GUIDANCE SYSTEM.

3,649,895. MOTOR CONTROL SYSTEM.

Erratum

In the OFFICIAL GAZETTE of February 13, 1973, the following patent was listed as being available for licensing or sale offered by: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of Americas, New York, N.Y., 10036, should read as follows:

3,706,889. MULTIPLE-PHASE LOGIC CIRCUITS.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 20, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-02-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-10-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-15-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	12-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	8-08-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy. Rocket Fuels; Radio-Active Material.	5-31-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-26-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-15-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-04-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	5-26-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-03-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-05-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-10-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-28-72

Expiration of patents: The patents within the range of numbers indicated below expire during April 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,740,117 to 2,743,441, inclusive
Plant Patents	Numbers 1,467 to 1,471, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED APRIL 3, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T909,001

HEAT STABLE MICROENCAPSULATED FIRE EXTINGUISHING AGENTS

Robert L. Combs and Willis C. Wooten, Jr., both of P.O. Box 511, Kingsport, Tenn. 37662

Continuation of abandoned application Ser. No. 37,303, May 14, 1970. This application Jan. 28, 1972, Ser. No. 221,839

Int. Cl. A62d *1/00*

U.S. Cl. 252—2

No Drawing. 17 Pages Specification

Heat stable microencapsulated fire extinguishing agents which, when dispersed in moldable or extrudable compositions, render such compositions and products produced therefrom self-extinguishing. These microencapsulated agents are particularly characterized in that the encapsulating wall is composed of a substance such as a silicate, a silicone, an epoxy resin, a fluorine-containing polymer, or the like which will not rupture and release the fire extinguishing agent at temperatures up to about 350° C. The microencapsulated fire extinguishing agents will not discolor, degrade, or form voids in the base polymer under normal processing conditions, and will not plug spinerette orifices when compositions containing them are employed in melt or solution spinning.

T909,002

IDENTIFICATION PRINTER FOR PLASTIC PARTS

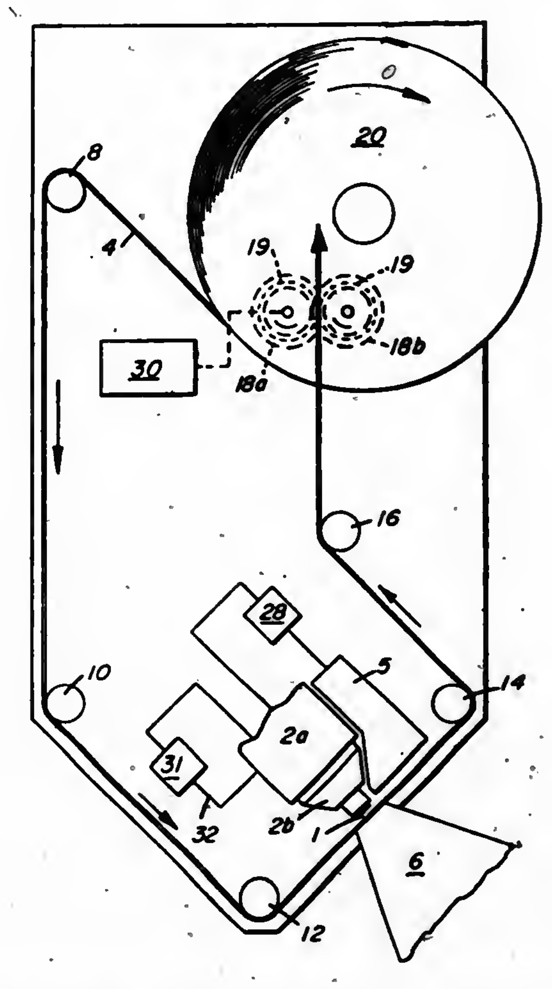
Neil S. White and Richard R. Mosman, both of 1669 Lake Ave., Rochester, N.Y. 14650

Filed Mar. 2, 1972, Ser. No. 231,213

Int. Cl. B44b *7/00*
U.S. Cl. 101—27

1 Sheet Drawing. 7 Pages Specification

An identification printer for embossing or imprinting a character such as a number into a plastic part wherein a heated die having a projecting character is moved by any suitable mechanism from a normal retracted position to an imprinting position, in which the die character penetrates and imprints a corresponding character into the part. A mechanism for controlling the depth of the imprint comprises a longitudinally adjustable probe movable with the die, a low pressure air supply for supplying a continuous stream of air through the probe, and a fluid pressure sensor for sensing the air pressure in the probe, and in response to a predetermined pressure, deactivating the die moving mechanism. The predetermined pressure is generated when the probe is moved to a preselected distance from any suitable surface corresponding to a desired depth of penetration of the die character into the part. The die moving mechanism, when deactivated, returns to its normal retracted position. To imprint colored characters into a plastic part, a colored printing tape in web form is pulled from a stockroll and is suitably guided between the heated die character and the part.



T909,003

PAN GRANULATION OF UREA

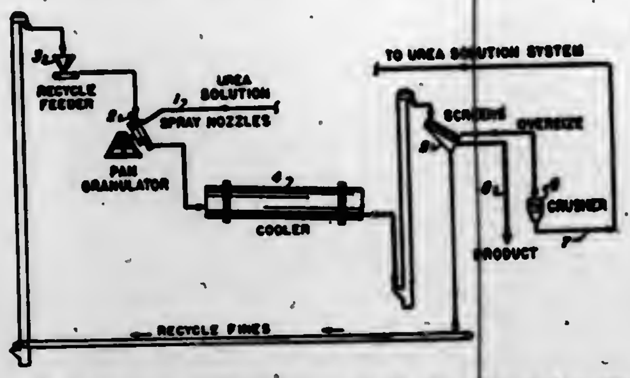
Gordon C. Hicks, 3307 19th Ave., and Melvin M. Norton, Virginia Shores, Rte. 1, both of Sheffield, Ala. 35660

Filed Mar. 22, 1972, Ser. No. 236,882

Int. Cl. C07c *127/00*
U.S. Cl. 260—555

1 Sheet Drawing. 9 Pages Specification

A process for producing in a pan granulated large and closely sized urea granules eminently suitable for sulfur overlay and the like, wherein a concentrated solution of about 98–99 percent concentration is sprayed into the pan granulator (as in McCamy et al., U.S. 3,165,395) but wherefrom the subsequent drying step and equipment is eliminated. Alternatively, more highly concentrated urea feed may be utilized (as in Thompson et al., U.S. 3,408,169) without the requirement of mechanical deflection inwardly of the solid particles across the face of the pan, and wherein the spray headers need not necessarily be located in the upper right hand quadrant thereof. The temperature in the pan is maintained from 200° F. upward to 250° F., but preferably from about 200° to 210° F. Abont 3 pounds of recycled undersize are required per pound of product.



FLOW DIAGRAM OF PILOT PLANT FOR PRODUCTION OF GRANULAR UREA

Novel techniques developed for producing the large, smooth, spherical urea granules include (1) use of large, closely sized urea granules as startup recycle and continuing to recycle only material slightly smaller than the desired product, (2) screening the product of a narrow size range, e.g., −5 +7 mesh, (3) dissolving dust from the dry dust collectors and from the oversize crusher in the urea solution, rather than returning it dry, (4) carefully regulating the urea spray pressure to the pan. With these techniques, successive thin layers of urea were built up on the surfaces of the recycled material. Control of granulation was so precise that only about 1 percent of the pan product was oversize.

T909,004

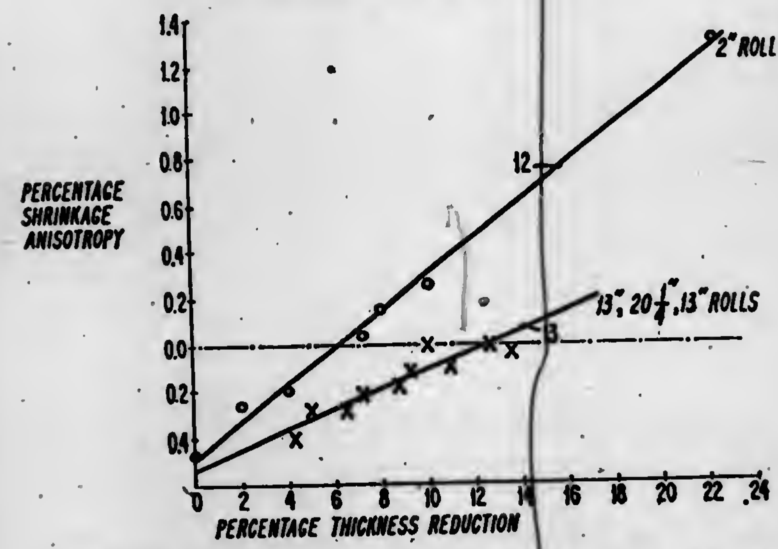
CALENDERING DOCTOR BLADE CAST CERAMIC SHEETS TO CONTROL ANISOTROPIC FIRING SHRINKAGE

Wilfried K. Neuffer, Baden, Wurttemberg, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 802,504, Feb. 26, 1969. This application Mar. 23, 1972, Ser. No. 237,567

Int. Cl. C04b *33/26, 35/10, 41/20*
U.S. Cl. 264—56

1 Sheet Drawing. 8 Pages Specification



A green ceramic sheet produced by doctor blade casting of a particulate slip containing, e.g., finely divided alumina, polyvinyl butyral, dibutyl phthalate, a wetting agent and a solvent for the polyvinyl butyral, is characterized by shrinkage anisotropy, i.e., the shrinkage of the sheet measured after firing is less in the casting direction than in the transverse direction. This anisotropy can be substantially eliminated by subjecting the green sheet to an experimentally determined thickness reduction achieved by passing the dried sheets through a series of pressurized rolls which also elongates and densifies the dried sheet. Factors that are significant to the effect of thickness reduction on the elimination of shrinkage anisotropy are temperature, roll diameter, roll pressure, roll speed, and the composition of the casting slip. Also, another application is mentioned wherein the shape of the doctor blade and the material used in its construction can be specially designed and selected to reduce shrinkage anisotropy.

T909,005

CONTINUOUS MANUFACTURE OF BREAD

Donald F. Meisner, Arlington Heights, and Raymond G. Robertson, Rolling Meadows, Ill., assignors to Kraftco Corporation, New York, N.Y.

Continuation of application Ser. No. 33,872, May 1, 1970. This application May 17, 1972, Ser. No. 254,329

Int. Cl. A21d *2/16*
U.S. Cl. 99—90 CB

No Drawing. 14 Pages Specification

Bread dough is continuously manufactured by a process wherein a yeast brew is provided in a first mixing chamber, a fat blend which may be substantially free of hard fat but which comprises a dough conditioning agent is prepared in a second mixing chamber. The fat blend and yeast brew are blended to provide a pre-mix. The pre-mix is then mixed with sufficient flour to provide a bread dough.

T909,006

SOLUTION POLYMERIZATION

Glen Alliger, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 55,868, July 17, 1970. This application May 22, 1972, Ser. No. 255,911

Int. Cl. C08d *7/02, 9/00*
U.S. Cl. 260—5

1 Sheet Drawing. 7 Pages Specification

The vulcanization of mixtures of polymer latices with solution-polymerized polymers such as (1) homopolymers and copolymers of conjugated dienes of 4 or 5 carbon atoms, (2) copolymers of such a conjugated diene and a vinyl monomer, and (3) blends thereof, is accelerated by 2-benzothiazyl-N,N-dialkyl thiocarbamyl sulfide in which the alkyl groups contain 1 to 20 carbon atoms, the mixture being compounded with ingredients including carbon black and sulfur, and then de-solventizing, dewatering and drying, and then vulcanizing.

T909,007

PREPARATION OF FILM VIA A TUBULAR PROCESS

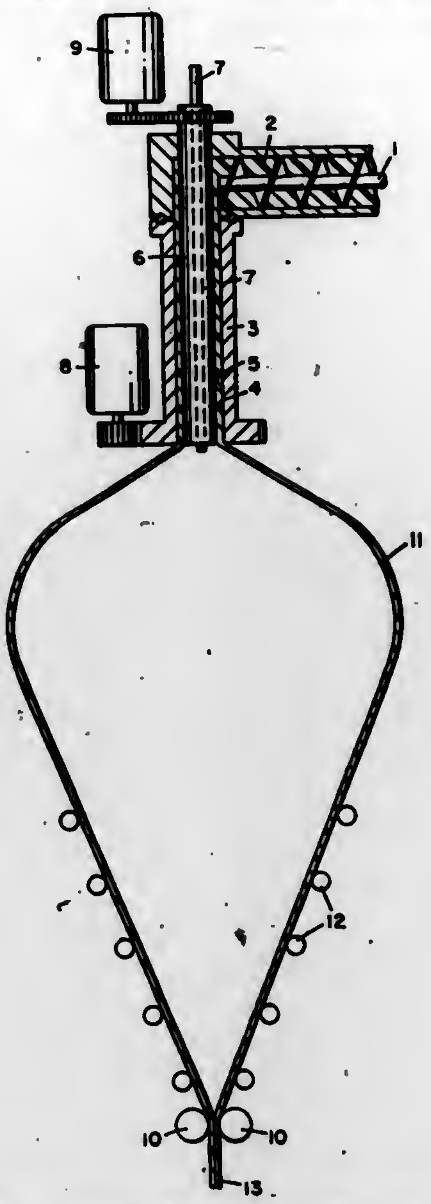
Paul E. Holloway, Jr., New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 6, 1972, Ser. No. 260,228

Int. Cl. B29c *5/05, 23/00;* **B29d** *7/22*
U.S. Cl. 264—95

1 Sheet Drawing. 6 Pages Specification

An improved method of preparing films of highly viscous hydroxypropyl cellulose to minimize the effect of friction-induced longitudinal orientation on later balancing of longitudinal and transverse orientation is disclosed. The technique comprises subjecting the film to a transverse frictional drag during extrusion by extruding the polymer thru a tubular die having rotatable forming surfaces, i.e. die body and mandrel. The rate of rotation can be varied to effect a substantially balanced degree of friction-induced orientation or a preponderance of orientation in the circumferential direction. An ancillary benefit is that the rotation substantially wipes out weld lines formed by the polymer flowing around the mandrel support.



T909,008

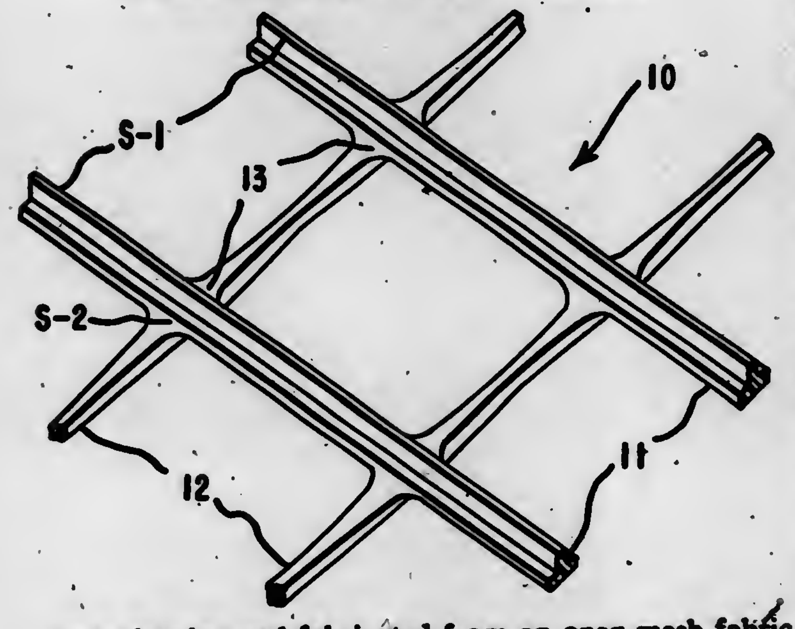
NETTING MEMBER

Vernon Paul Fruehauf, Williamsville, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 59,124, July 29, 1970. This application June 8, 1972, Ser. No. 260,824

Int. Cl. B32b *3/10*
U.S. Cl. 161—109

1 Sheet Drawing. 9 Pages Specification



In a cleaning pad fabricated from an open-mesh fabric material so that the fabric material forms at least a part of the external surface, the improved open-mesh fabric comprising:

- a thermoplastic netting member having two layers of parallel extruded strands that intersect with each other,
- said intersections of strands being integrally extruded joints which are complete unions of the crossing strands and
- at least one rib-like projection extending from each of the strands of one of the layers of parallel extruded strands with
- said rib-like projections extending through each of the integrally-extruded joints,

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T909,009

SUPERSENSITIZING DYE COMBINATION FOR ELECTROPHOTOGRAPHIC COMPOSITION AND ELEMENT

Jean Elmore Jones and William Edward Yoerger, both % Eastman Kodak Co., 1669 Lake Ave., Rochester, N.Y. 14650

Filed June 12, 1972, Ser. No. 261,881

Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6

No Drawing. 25 Pages Specification

This invention relates to supersensitizing dye combinations useful for organic photoconductive compositions comprising: at least one cyanine, merocyanine, rhodacyanine or styryl spectral sensitizing dye which

(1) has an anodic polarographic half-wave potential less than +1.0 volt;
(2) has an anodic polarographic half-wave potential and a cathodic polarographic half-wave potential which, when added together, give a sum more negative than −0.10 volt; and
(3) desensitizes negative silver bromide emulsions, containing 99.35 mole percent bromide, less than 0.4 log E at a radiation of 365 nm. wherein incorporated therein at a concentration of 0.2 millimole of dye per mole of silver halide; and at least one electron-accepting dye such as a pyrylium or thiapyrylium salt as the supersensitizer.

T909,010

SPATIAL FILTER

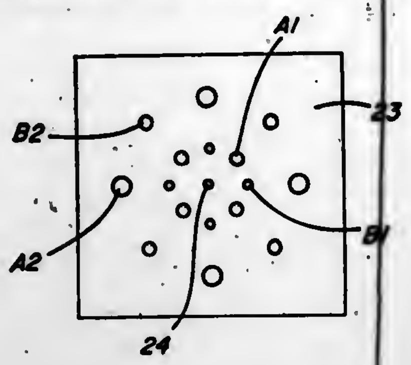
John R. Kelch, % Eastman Kodak Co., Kodak Park Division, Rochester, N.Y. 14650

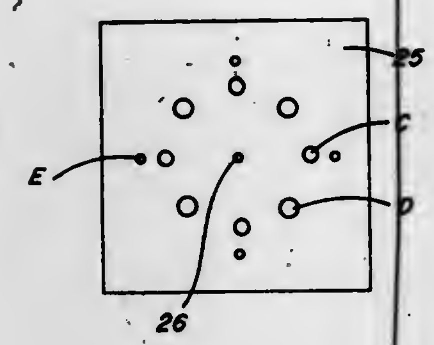
Filed July 13, 1972, Ser. No. 271,339

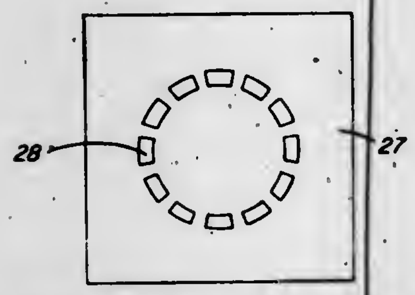
Int. Cl. G02b *5/20*
U.S. Cl. 350—162 SF

3 Sheets Drawing. 13 Pages Specification

An improved spatial filter for use in an optical system and with which the quality of the projected image is enhanced comprises a transparent support and filter areas arranged in a particular array on a surface of the support. The array is symmetrical with respect to the optical axis of the projection system, when the filter is positioned therein. The spatial filter is produced by exposing a photographic plate positioned in the Fourier transform plane of the optical system to a number of light sources, the beams of which are directed through a circularly symmetric array of apertures in a plate as shown in the drawings. The resulting filter after processing, is a corresponding array of areas whose density is an increasing function of radial distance from the optical axis. The filter is positioned in the Fourier transform plane of a transparency having a variable density image. When the transparency is arranged relative to the axis of the optical projection system, it is illuminated with a plurality of generally parallel light beams of uniform diameter and intensity which are produced by a plate having an array of holes arranged in the same manner as those in the plate used to form the spatial filter but in which the holes are of the same size or smaller than the corresponding holes in the plate used to form the spatial filter. This pattern of light is diffracted by the transparency and with the use of a spatial filter having light-absorbing areas, enhancement of the sharpness and quality of the projected image is achieved.







T909,011
DYEING PROCESS

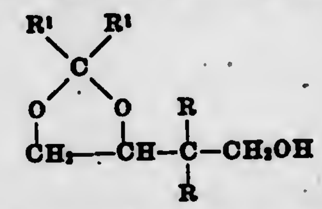
John R. Schwier, Rte. 6, Kingsport, Tenn. 37660
Filed July 18, 1972, Ser. No. 272,836
Int. Cl. D06p *5/00*
U.S. Cl. 8—168
No Drawing. 9 Pages Specification

Disclosed is a process comprising contacting, under dyeing conditions, in the presence of at least 30% O.W.F. sulfamic acid, an anionic dye and an anionic dyeable fiber of a blend of 96 to 93 weight percent, based on the weight of the blend, of a polyetherester and 4 to 7 weight percent, based on the weight of the blend, of a basic nitrogen containing polymer. Using the process of the invention, the anionic dyeable fiber is dyed to deep shades, preferably at the boil under atmospheric pressure. Preferably the blend comprises about 95 percent polyetherester, wherein the polyester portion of the polyetherester is poly(ethylene terephthalate), and about 5 percent of a copolymer of 2-vinylpyridine and styrene.

T909,012
NOVEL 2,2 - DISUBSTITUTED-4-(1,1-DIALKYL-2-ETHANOL)-1,3-DIOXOLANES AND PROCESS FOR THEIR PRODUCTION

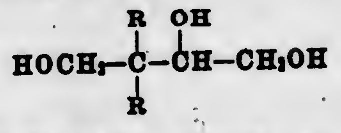
Anthony W. McCollum, 404 Hillmont,
Longview, Tex. 75601
Filed July 28, 1972, Ser. No. 275,998
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9
No Drawing. 12 Pages Specification

Water - insoluble 2,2-disubstituted-4-(1,1-dialkyl-2-ethanol)-1,3-dioxolane compounds having the formula



wherein each R is selected from the group consisting of hydrogen or a lower straight or branched chain alkyl of 1 to 4 carbons, and each R^1 is selected from the group consisting of straight or branched chain alkyl of 1 to 10 carbon atoms, substituted or unsubstituted phenyl, or $—CH=CH_2$;

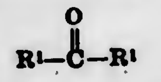
are prepared by the process which comprises reacting a triol compound having the formula



$$HOCH_2-\underset{R}{\overset{R}{C}}-\overset{OH}{CH}-CH_2OH$$

wherein each R is as defined hereinabove,

at a temperature of between about 40° C. and about 150° C. in the presence of an acid catalyst such as p-toluenesulfonic acid with at least an equal molar amount of a carbonyl compound having the formula



$$R^1-\overset{\overset{O}{\|}}{C}-R^1$$

wherein each R^1 is as defined hereinabove.

REISSUES

APRIL 3, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,606
ALUMINUM PLATING PROCESS

Donald L. Schmidt, 2412 St. Marys Drive, Midland, Mich. 48640, and Reinhold Hellmann, 30526 Bluehill, Roseville, Mich. 48066

No Drawing. Original No. 3,462,288, dated Aug. 19, 1969, Ser. No. 558,583, June 20, 1966. Application for reissue Aug. 16, 1971, Ser. No. 172,331

Int. Cl. C23c *3/00*
U.S. Cl. 117—37 **56 Claims**

Aluminum is plated on a substrate by contacting the substrate with aluminum hydride and a decomposition catalyst. The decomposition catalyst is a compound of a metal of Group IVb or Vb of the Periodic Table or mixtures thereof.

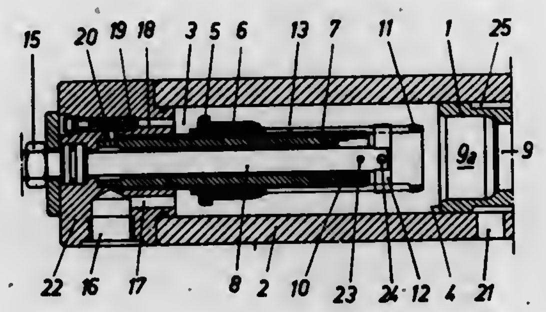
27,607
DEVICE FOR STROKE LIMITATION OF HYDRAULICALLY DISPLACED MOLD CARRIER UNITS ON INJECTION MOLDS

Heinz Karl Hofer, Langenholzhausen, and Friedrich Rehmsmeier, Vlotho, Germany, assignors to Stubbe Maschinenfabrik G.m.b.H., Kalletal-Kalldorf, near Vlotho, Germany

Original No. 3,571,855, dated Mar. 23, 1971, Ser. No. 742,384, July 3, 1968. Application for reissue July 27, 1971, Ser. No. 166,369

Claims priority, application Germany, July 5, 1967, P 15 83 703.3

Int. Cl. B29f *1/00*
U.S. Cl. 425—450 **8 Claims**



A device for limiting the stroke on hydraulically displaced mold-carrier units of injection molding machines, by means of an abutment element which is infinitely variably adjustable relative to a setting or adjusting device arranged in the axial direction of the actuating piston of the mold-carrying unit, and which by cooperation with the actuating piston, limits the stroke end position thereof.

27,608
PRODUCTION OF BORON NITRIDE

Eugenio Lubatti and Salvatore Pappalardo, Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Original No. 3,420,629, dated Jan. 7, 1969, Ser. No. 541,953, Apr. 12, 1966. Application for reissue Oct. 9, 1970, Ser. No. 79,633

Claims priority, application Italy, Apr. 13, 1965, 8,193/65; June 22, 1965, 13,949/65

Int. Cl. C01b *21/06*
U.S. Cl. 423—290 **8 Claims**

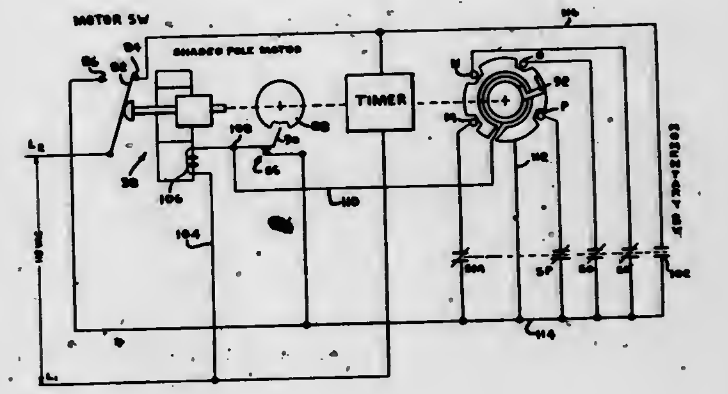
Described is a process for producing boron nitride. A boron-containing substance selected from the group consisting of boric acid, boric anhydride and hydrated borate is mixed with recycled boron nitride from a subsequent step. The mixture is heated to drive off water when using boric acid or hydrated borate. It is then finely ground when using boric acid or boric anhydride. Thereafter the mixture is nitrided by heating in a stream of ammonia to form boron nitride. The boron nitride produced is ground and part of the ground boron nitride is recycled to a previous step and the remainder is purified.

27,609
TIMER

Donald M. Strathearn, Arlington Heights, Ill., James M. Thornbery, Milwaukee, Wis., and Dale F. Wilcox, Aurora, Ill., assignors to Controls Company of America, Melrose Park, Ill.

Original No. 3,564,279, dated Feb. 16, 1971, Ser. No. 55,899, Sept. 14, 1960, which is a division of Ser. No. 799,780, Mar. 16, 1959. Application for reissue Nov. 1, 1971, Ser. No. 194,722

Int. Cl. H01h *43/12*
U.S. Cl. 307—141 **23 Claims**



The combination with a timer of the type having a motor for driving, a switch operating cam bank at timing speed through a transmission, of means for driving the cam bank to a preselected starting position comprising, a second motor for driving the cam bank through said transmission, means responsive to energization of the second motor to deenergize the first motor and responsive to deenergization of the second motor to energize the first motor, and clutch means operative upon deenergization of the second motor to disengage the second motor from the transmission to thereby remove the inertia of the second motor from the transmission.

27,610

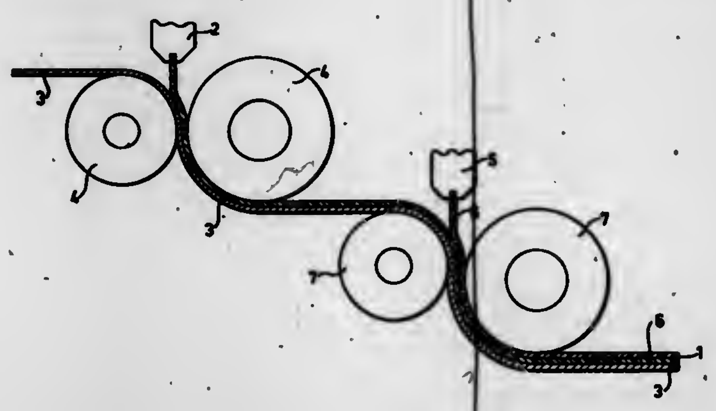
PACKAGING MATERIAL INCLUDING AT LEAST THREE LAMINATION LAYERS OF MATERIALS HAVING DIFFERENT VISCOSITIES, AND A PACKAGE PRODUCED THEREFROM

Hans Anders Rausing, Kraftstorg 8, and Thorsten Lennartsson Lindh, Ferievagen 10, both of Lund, Sweden

Original No. 3,553,073, dated Jan. 5, 1971, Ser. No. 526,471, Feb. 10, 1966. Application for reissue Oct. 6, 1971, Ser. No. 187,091

Int. Cl. B32b *7/02, 27/08, 27/10*

U.S. Cl. 161—166 **3 Claims**



A laminated packaging material is disclosed comprising an outer layer of paper, an inner heat sealable layer of polyethylene, and an intermediate layer of polypropylene.

27,611

EASILY OPENABLE SEALED PLASTIC CLOSURE AND METHOD

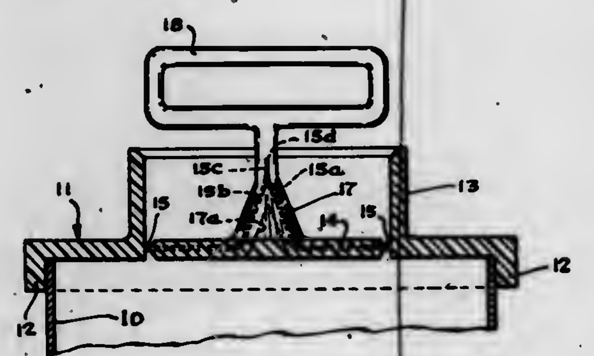
John S. Song, Addison, Ill.

(2 Williamsburg Circle, Evanston, Ill. 60203)

Original No. 3,567,061, dated Mar. 2, 1971, Ser. No. 839,973, July 8, 1969. Application for reissue Apr. 21, 1971, Ser. No. 136,133

Int. Cl. B65d *17/00*

U.S. Cl. 220—27 **9 Claims**



The "score" line in a plastic wall, provided to define a line of comparatively easy tearing, is brought to a point at one side of an abutment integral with said wall. A handle is provided on the plastic in the area within the score line and immediately adjacent the point. Pulling on the handle applies a force at the point at which a tear will commence and continue along the score line. Because the score line comes to a point outside the plane of the wall it will more readily tend to break at that point rather than merely stretch. This tendency is enhanced by a notching of the score line at the terminus of the point.

27,612

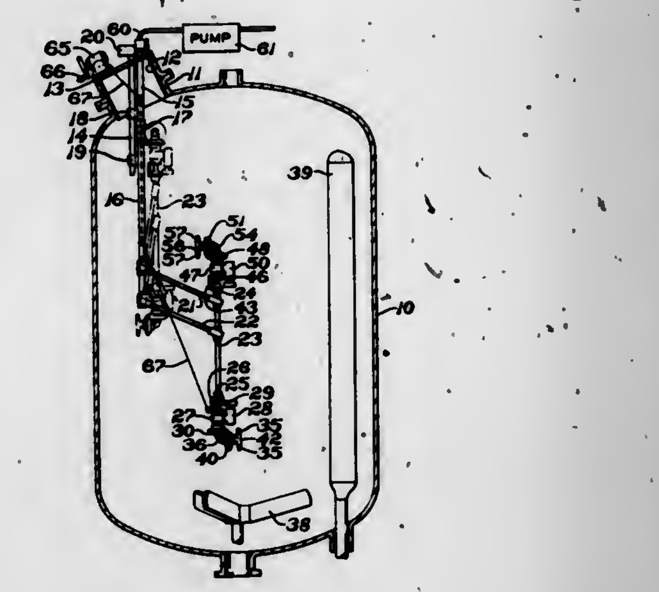
JET SPRAY TANK CLEANER

Donald B. Ruppel, Akron, and Norman E. Reinhart, Cuyahoga Falls, Ohio, and Lee F. Stalker, Louisville, Ky., assignors to The B. F. Goodrich Company, New York, N.Y.

Original No. 3,599,871, dated Aug. 17, 1971, Ser. No. 839,896, July 8, 1969. Application for reissue Dec. 9, 1971, Ser. No. 206,350

Int. Cl. B05b *3/10*

U.S. Cl. 239—227 **9 Claims**



A portable high pressure jet spray cleaning apparatus with collapsible features for use in cleaning the agitator blades and the interior surfaces of tanks and vessels utilizing a plurality of rotatable high-pressure spray nozzles which rotate in a changing geometrical pattern for directing a high pressure stream of fluid against the interior wall surfaces of tanks and vessels.

27,613

MASTER MAKING AND DUPLICATING MACHINE

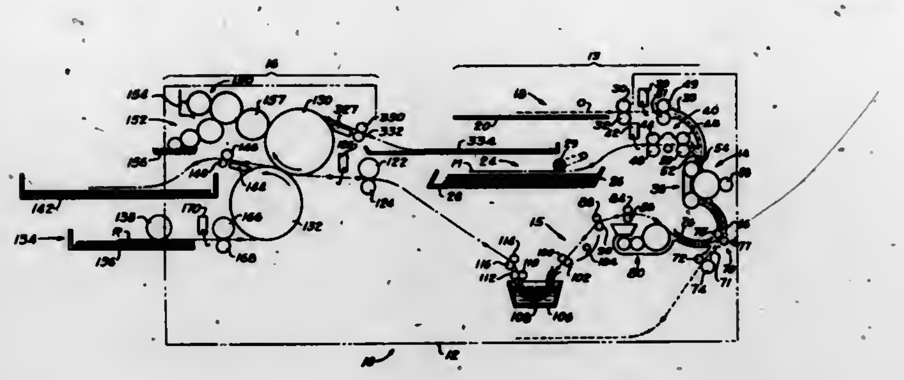
Albert E. Mignone, Shaker Heights, Ohio, deceased, by Addressograph-Multigraph Corp., assignee, Cleveland, Ohio

Original No. 3,451,336, dated June 24, 1969, Ser. No. 520,492, Jan. 13, 1966. Application for reissue June 23, 1971, Ser. No. 156,141

Int. Cl. B41l *11/08;* **B41m** *5/00*

U.S. Cl. 101—132.5 **4 Claims**

There is described an apparatus (and the method according to which it operates) for handling one or more original documents presented to the equipment, and rapidly producing from each original a desired number of printed duplicates. In particular the apparatus includes a master making portion which exposes a charged photoconductive sheet to a light and shadow image of the original to form a reverse reading latent electrostatic image thereon, develops the latent image thus formed on the sheet, and treats the sheet to convert the surface coating in the background areas to hydrophilic condition so that the sheet may perform as a lithographic master. The apparatus also includes an automated direct printing rotary lithographic duplicator which mechanically takes each master thus prepared, places it on the master cylinder, prints by direct contact between the master and receiving sheets, making the desired number of copies in accordance with a preset counter setting, discharges the master, and then triggers the master making section to accept and process another waiting original. Also described is a sequencing control which provides for overlapping of cycles so that whenever there is a series of originals awaiting processing, a second original may have its master prepared and brought to a position awaiting use while the master from a first original is printing copies, and a third original is at a ready location where it will be automatically picked up and fed into the master making section to have a master prepared therefrom at the instant the first master is discharged from the master cylinder of the duplicator section and the second master placed thereon.



27,614

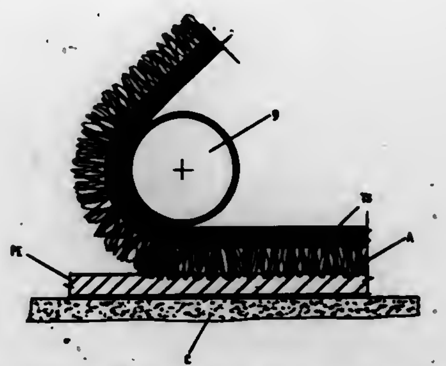
WATERPROOF FABRIC AND METHOD FOR FORMING THE SAME

Augusto J. Brunner, Vacallo, Switzerland, and Fulvio Costa, Turin, and Luigi Falcone, Como, Italy, assignors to FLEXA Industria Materie Plastiche S.p.A., Gallarate, Varese, Italy

Original No. 3,481,821, dated Dec. 2, 1969, Ser. No. 497,799, Oct. 19, 1965. Application for reissue Feb. 28, 1972, Ser. No. 230,051

Int. Cl. B32b *3/26, 3/06*

U.S. Cl. 161—53 **17 Claims**



A composite material useful for the manufacture of garments comprising a fabric base in the form of a runproof knitted fabric of natural, artificial and synthetic fibers, air cells obtained through loops defining a raised surface of the fabric and being an uninterrupted continuation of the fabric and a water-proof layer or film formed by an elastomeric material disposed upon the crest of the loops but spaced apart from the base fabric. Methods for making the composite material are described.

PATENTS

GRANTED APRIL 3, 1973

GENERAL AND MECHANICAL

3,723,992
SUBSTANTIALLY DOUBLE-SHELL HELMET

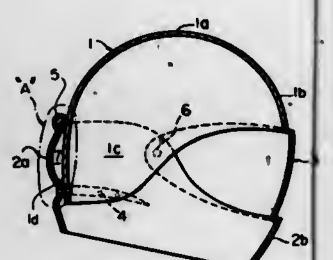
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kokoh Co., Ltd., Tokyo, Japan

Filed July 29, 1971, Ser. No. 1[illegible]7,123

Claims priority, application Japan, April 20, 1971, 46/30085

Int. Cl. A42b *3/00*

U.S. Cl. 2—3 R **4 Claims**



A protective helmet which comprises a substantially double-shell including a cap, a bumper ring, visor and a space defined by the cap and the ring, and which is capable of substantially protecting the driver or the racer of motorcycle, car, or motorboat against skull fracture when the helmet is subjected to impact.

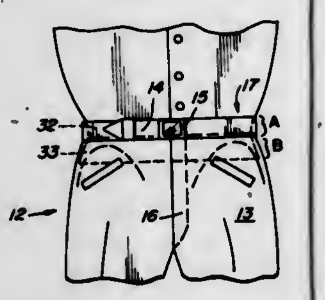
3,723,993
TROUSERS WAISTBAND STRUCTURE

Burton B. Ruby, Michigan City, Ind., assignor to Jaymor-Ruby, Inc., Michigan City, Mich.

Filed Dec. 2, 1971, Ser. No. 2[illegible]4,197

Int. Cl. A41d *1/06*

U.S. Cl. 2—237 **4 Claims**



A trousers-supporting elastic and fabric waistband comprising an elastic band divided into belt and skirt portions covered by an outer, extensible fabric web. The elastic band is stitched to the fabric web on two spaced, parallel lines, so that the fabric web cooperates with the elastic band to form a belt with physically limited extensibility. Concealment of both belt and skirt portions of the elastic band by the overlying extensible fabric web assures an attractive, wrinkle-free outer trousers surface.

3,723,994
REINFORCED TROUSER POCKET

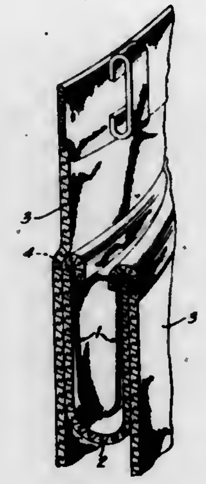
Cathern A. Tucker, 3150 16th St., N.W., Washington, D.C.

Filed May 1, 1972, Ser. No. 175,580

Int. Cl. A41d *27/2*

U.S. Cl. 2—248 **1 Claim**

A reinforced trouser pocket, wherein that portion of the interior free-swinging pocket directly adjacent to the exterior trouser material is covered with a second layer of fabric of the exact same design and composition as the exterior trouser material itself, so that, should any hole be found in the exterior trouser material as a result of extended pressure from any item(s) carried in the pocket, a fabric of the exact same design and composition would show through, rather than an odd color cloth on the interior free-swinging pocket as is commonly the case, at the same time assuring double wear and extra security at this pressure point, as compared to a single thickness of cloth in current ordinary pocket construction.



3,723,995
PROSTHETIC HIP ENARTHROSIS

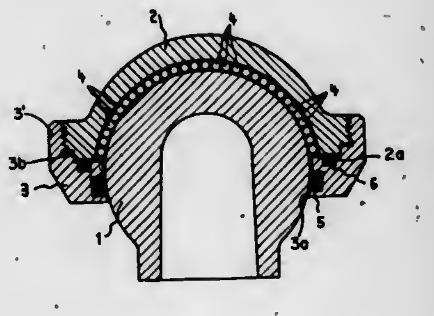
Friedrich Baumann, Neuburg an Der Danube, Germany, assignor to Osteo AG, Solothurn, Switzerland

Filed May 19, 1970, Ser. No. 38,680

Claims priority, application Switzerland, May 23, 1969, 7909/69

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **4 Claims**



A prosthetic hip enarthrosis has a plurality of freely moving bearing balls occupying substantially the entire space between a ball provided for attachment to the femur and the concavity of a socket that is adapted to be attached to the pelvis to serve as a prosthetic acetabulum. A long-lasting lubricant is sealed in that space around the bearing balls by an agent, compatible with body tissue, which is carried by a locking ring that secures the ball in the socket in an adjustable manner so as to control the degree of mobility of the ball-and-socket joint.

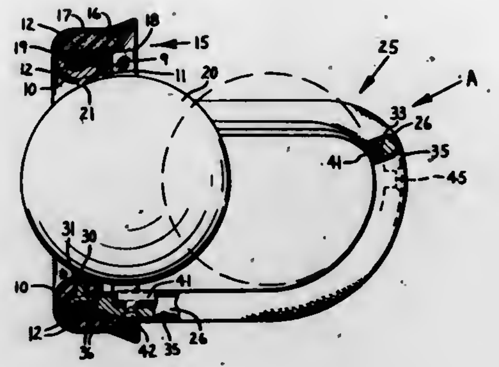
3,723,996
CLOTH COVERED HEART VALVE WITH PROTECTED CAGE LEGS

Donald A. Raible, Orange, and Will R. Pierie, Newport Beach, both of Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Dec. 7, 1971, Ser. No. 205,506

Int. Cl. A61f *1/22*

U.S. Cl. 3—1 **18 Claims**



A cloth covering on the cage is protected on the inside surfaces of the cage legs by continuous metal track bars extending from the orifice ring to the apex of the cage. The track bars hold the movable valve member out of contact with the cloth to prevent wear on the cloth. In two embodiments the track bars form an inner metal cage nested in grooves in the legs of the main structural cage with the cloth coverings on the latter lining the grooves between the inner and outer cages. In another embodiment the track bars are of plastic material molded into the cloth coverings on the cage legs. In this embodiment the track bars project on both the inside and the outside of the cloth coverings and are held seated in grooves in the cage legs by the cloth coverings.

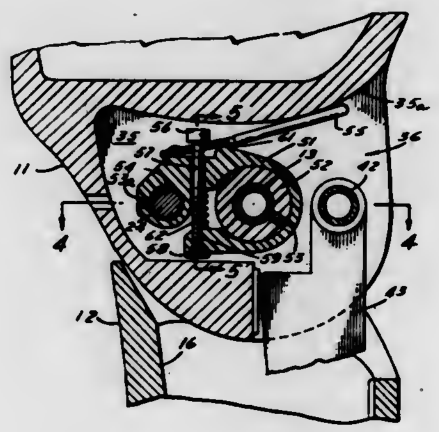
3,723,997
PROSTHETIC LEG WITH WEIGHT RESPONSIVE KNEE LOCK

John L. Kolman, Whittier, Calif., assignor to United States Manufacturing Company, Glendale, Calif.

Filed April 30, 1971, Ser. No. 134,262

Int. Cl. A61f *1/04, 1/08*

U.S. Cl. 3—27 **7 Claims**



A knee structure for a prosthetic limb, which allows the shin portion to pivot with respect to the thigh portion about an axle and has a brake band around the axle with novel means for causing the brake band to tighten around the axle, when the wearer places weight on the limb, to allow the knee to lock at any angular position. The brake automatically releases when the weight is lifted off the limb.

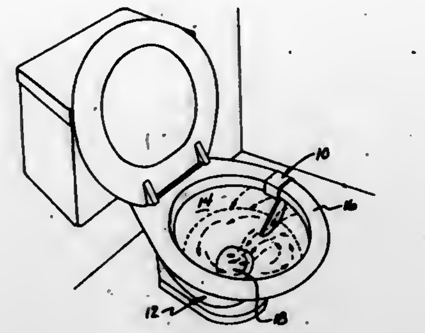
3,723,998
TOILET BOWL ATTACHMENT

Robert D. Wehr, 4705 Arcadia Road, Tarpon Springs, Fla.

Filed April 5, 1972, Ser. No. 241,147

Int. Cl. A47k *17/00*

U.S. Cl. 4—1 **6 Claims**



The attachment includes a flat deflector plate which extends downwardly from the peripheral rim to deflect water downwardly toward the outlet and thereby reduce the quantity of water required in a flushing operation. The plate has one edge shaped complementary to the toilet bowl and contiguous to it. The plate is mounted by an inverted U-shaped bracket which engages the rim.

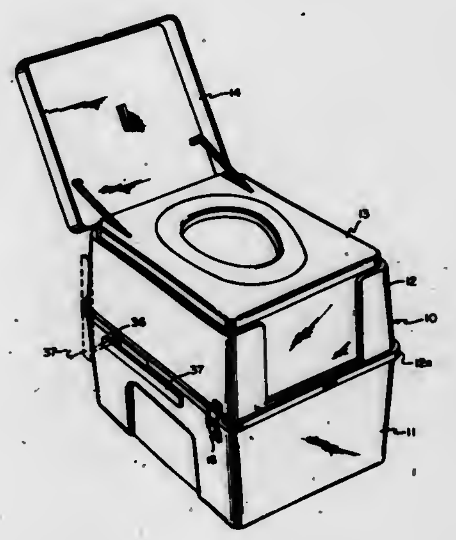
3,723,999
PORTABLE WASTE DISPOSAL UNIT

Marvin Miller, Teaneck, N.J., assignor to Mileahead Industries Incorporated, Greenwich, Conn.

Filed Oct. 22, 1971, Ser. No. 191,595

Int. Cl. A47k *11/02*

U.S. Cl. 4—142 **8 Claims**



There is disclosed a portable unit for the reception of human waste having interrelated self-synchronizing equilateral polygon cage means for the sequential sealing and disposition in the unit of increments of plastic tube material containing waste.

3,724,000
BATHTUB SHOWER SPLASH PLATE

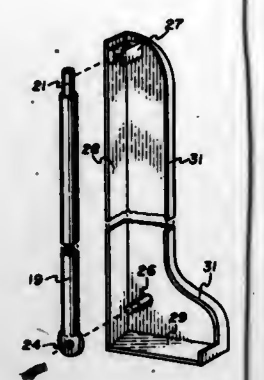
Clarence Eakman, 308 Ash Ave., Chula Vista, Calif.

Filed March 29, 1971, Ser. No. 128,958

Int. Cl. A47k *3/14*

U.S. Cl. 4—148 **2 Claims**

A bathtub shower splash plate which is a generally L-shaped piece of non-water-soluble material extending up from one outside corner of a bathtub edge and having a short leg extending along the bathtub side with a lip extending from an outside edge thereof to contain splashing water and a clamp



toward the top inside thereof for clamping a rod thereto which is rotatably attached to the splash plate at the bottom thereof for being rotated onto the edge of the bathtub and holding the shower curtain in place during use.

3,724,001
AUTOMATIC WATER-SUPPLY APPARATUS

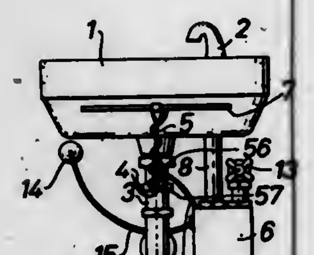
Masuo Ichimori, Mukomachi, and Hideyuki Suzaki, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Feb. 16, 1970, Ser. No. 11,540

Claims priority, application Japan, Feb. 14, 1969, 44/13216

Int. Cl. A47k *1/04*

U.S. Cl. 4—166 **13 Claims**



A proximity detecting electrode for an electrically controllable faucet valve device is located under the front bottom of the basin in order to detect the proximity of a man approaching the basin. On account of the above location of the electrode, the sensitivity of detection is improved, evading a disturbance by water drops sticking in or around the basin. And moreover, as a result of the above improvement of the sensitivity, tolerance for the position of the electrode can be widened, making the assembly of the automatic water-supply apparatus easier even for a person not so versed in electronics.

3,724,002
PERFUME OR DEODORIZER DISPENSER

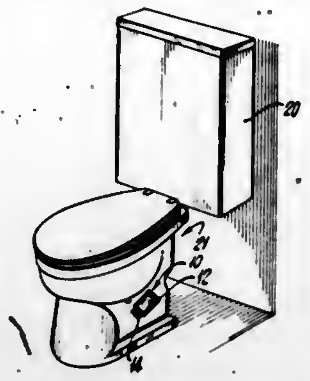
Fred H. Buck, Jr., Boonton Township, Morris County, N.J., assignor to Arrowhead Industries Inc., Denville, N.J.

Division of Ser. No. 830,708, June 5, 1969, Pat. No. 3,575,345. This application Oct. 19, 1970, Ser. No. 82,200

Int. Cl. A61l *3/00*

U.S. Cl. 4—222 **8 Claims**

A packet is provided having sealed therein paper or the like impregnated with oil and a perfume substance. The packet has attached thereto adhesive means for affixing the packet to the wall of a bathroom, car or other enclosure surface. When the



packet is opened perfume will slowly evaporate therefrom creating a pleasant odor in the surrounding air.

3,724,003
HYDRAULIC ADJUSTING APPARATUS FOR HOSPITAL BEDS OR THE LIKE

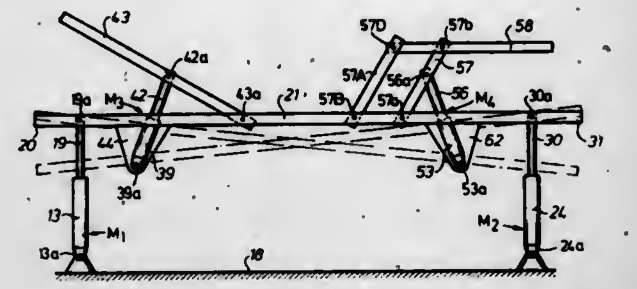
Hans Ellwanger, Stuttgart; August Kraisel, Bittenfeld; Walter Kraus, Moglingen, and Wilhelm Zirps, Hemmingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 3, 1972, Ser. No. 214,949

Claims priority, application Germany, July 8, 1971, P 21 34 061.4

Int. Cl. F01b *21/00, 21/08;* **A61g** *7/00*

U.S. Cl. 5—68 **15 Claims**



The head and foot ends of a mattress supporting frame or operating table are articulately connected with the piston rods of two hydraulic motors whose double-acting cylinders are articulately connected to a shiftable bottom frame. The lower chambers of the cylinders can be connected with a supply conduit for pressurized fluid by way of discrete working conduits and discrete solenoid operated directional control valves. The upper chambers of the two cylinders are connected to each other by a first control conduit and the first control conduit is connected with the working conduit for the cylinder at the head end by means of a second control conduit. The supply conduit receives pressurized fluid from a single pump and each valve is further connected with a return conduit for spent fluid. The valve members of the two valves are movable independently of each other between first or neutral positions in which they seal the supply conduit and the return conduit from the respective working conduits, second positions in which they connect the supply conduit with the respective working conduits, and third positions in which they connect the return conduit with the respective working conduits. A solenoid operated shutoff valve can be installed in the working conduit for the cylinder at the head end to seal the lower chamber of such cylinder from the supply and return conduits as well as from the respective working conduit and both control conduits when the foot end is to be raised or lowered without any changes in the level of the head end. The single pump can supply pressurized fluid to the motors for one or more additional frames or tables as well as to auxiliary cylinders which can move the head rest and/or the foot rest of a frame or table between different levels and/or different positions of inclination.

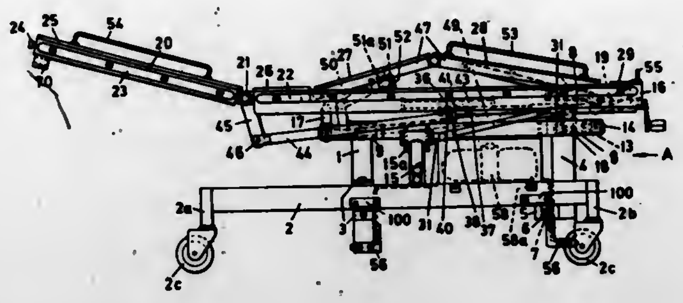
3,724,004
ADJUSTABLE BED

Gunter Behrens, Herford/Westphalia, Germany, assignor to Jon Stiegelmeyer & Co., GmBH, Herford/Westphalia, Germany

Filed June 1, 1971, Ser. No. 148,749

Int. Cl. A61g *7/00, 7/10*

U.S. Cl. 5—68 **4 Claims**



An adjustable bed comprising a chassis, a bed frame tiltable relative to the chassis, at least one linear actuator disposed on the chassis at each end of the bed, and means articulatedly connecting the linear actuators to the bed frame so that the bed frame may be moved to various elevated and longitudinally tilted positions, which means comprises an intermediate frame connected to the bed frame and the chassis, differential units connecting the intermediate frame to the linear actuators, said differential units being rigidly interconnected whereby the bed frame and intermediate frame are arranged to pivot about a longitudinal axis relative to the chassis, means arranged at the bed foot for ambilateral pivoting displacement of the bed frame and intermediate frame about the longitudinal axis, a split leg rest on the bed frame, a supportable back rest articulated in cantilever fashion in said bed frame, means for manipulating the back and leg rests, and at least one securing rail provided on said bed frame and adapted to support auxiliary appliances.

3,724,005
STRETCHER

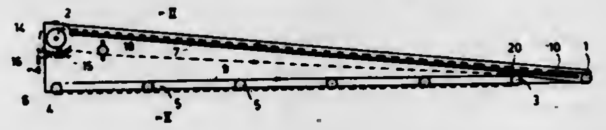
Simon Stevens, Den Helder, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 22, 1971, Ser. No. 155,561

Claims priority, application Netherlands, July 11, 1970, 7010300

Int. Cl. A47b *83/04*

U.S. Cl. 5—81 R **5 Claims**



A stretcher comprising a frame having at least two parallel upper guides, incorporated in said frame on the front and rear sides. A belt is movable over said guides and arranged to support a human body. The frame also carries at least two lower guides on the front and rear sides forming part of a moving mechanism. The belt portion has a length which is at least equal to the distance between the two upper guides and, in the initial position of the stretcher, extends between the front upper guide and the rear lower guide. Two parallel extending cables or chains are secured to one side of the belt portion and are guided over wheels which are secured to the rear upper guide, then over wheels which are secured to the front lower guide, and then over wheels which are secured to the rear lower guide, the cables or chains then being secured to the other side of the belt portion.

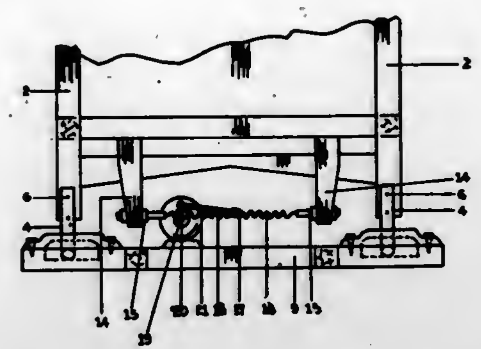
3,724,006
AUTOMATIC MOTORIZED BABY CRIB

Alejandro L. Malabanan, 36 Recto Avenue, Lipa City, and Antonio T. Acepcion, Nasugbu, both of Philippines

Filed June 25, 1971, Ser. No. 156,731

Int. Cl. A47d *9/02*

U.S. Cl. 5—109 **1 Claim**



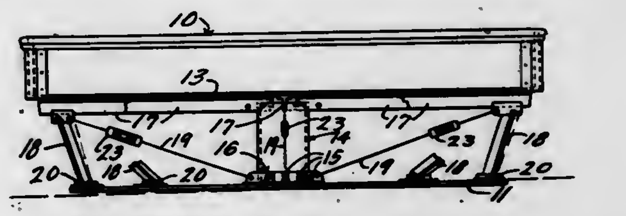
This invention relates to a motorized baby crib which includes a conventional crib proper with four downwardly extending corner posts, two at the transverse ends thereof. At the bottom end of each post is secured a corresponding roller. Rollers at one transverse end of the crib are positioned for lateral movement in corresponding grooves at the end portions of the transverse base members of the crib base. Transversely aligned at the middle of the crib proper are opposed downwardly extending supports. To the supports are secured the outer ends of a pair of opposed stretched coil springs, the inner ends of which are secured to one end of a push rod, the other end of which is in turn connected to an eccentric arm keyed to the shaft of a gear motor.

3,724,007
ADJUSTABLE SUPPORT FOR A WATER MATTRESS

Ralph L. Kuss, Findlay, Ohio, assignor to R. L. Kuss & Co., Inc., Findlay, Ohio

Int. Cl. A47c *27/08*

U.S. Cl. 5—236 **5 Claims**



The invention is an adjustable support for a water-filled mattress. The support comprises a box-shaped carrier for receiving and supporting a water-filled mattress. The box-shaped carrier is supported over a base member by a plurality of adjustable T-beams. The T-beams are hinged from a central post attached to the base member. Each of the T-beams extends radially from the central post to a corresponding vertically adjustable carrier arm hinged to the periphery of the base member. Adjustable cables extending from the central post to each of the carrier arms supporting the T-beams provide means for raising or lowering the carrier arms and, in turn, the beams resting on the carrier arms for leveling and supporting the box-shaped bed carrier above the base.

3,724,008
WATERBED BEDSTEAD

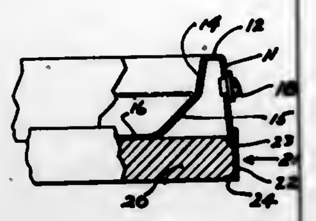
William Donald Golden, 6258 Ruthland Rd., Oakland, Calif.

Filed Aug. 26, 1971, Ser. No. 175,165

Int. Cl. A47c *27/08*

U.S. Cl. 5—348 WB **3 Claims**

The waterbed bedstead in its preferred form is essentially a containment tank to hold a plastic bag containing water, or water and other materials, to produce a water mattress. The containment tank section is formed of a thermoplastic material which is leak proof, should the water mattress be punctured, cut or for any other reason fail to contain the liquid. It also supplies a dead air space for thermal insulation. The containment tank section preferably rests on a base section containing a polystyrene foam member which not only supports the weight of the water mattress but distributes the weight over a large area. The base section also gives full peripheral support to the tank section.



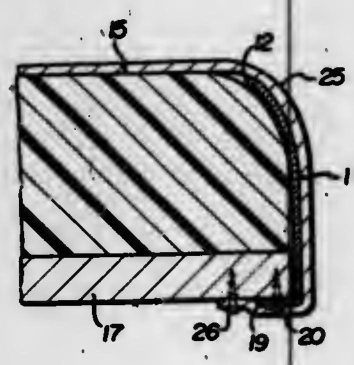
3,724,009
SEAT BUN PULL STRIPS

Jere B. Ambrose, Pontiac, Mich., assignor to Northern Fibre Products Company, Birmingham, Mich.

Filed May 18, 1971, Ser. No. 144,09

Int. Cl. A47c *27/22*

U.S. Cl. 5—360 2 Claims



A pull strip for rolling and curving the edge of a box-like shaped foamed rubber-like seat cushion bun and securing the bun to a support platform, the strip being formed of a uniform width, narrow, flexible, cloth-like sheet, having a narrow, permanently tacky adhesive stripe on one face and only along one edge thereof for adhering the striped portion to an upper surface of the bun with the remainder of the strip extending outwardly of and along the bun edge, for manually pulling the free edge of the strip around the bun edge and securing it to the platform.

3,724,010
CUTTING TOOL

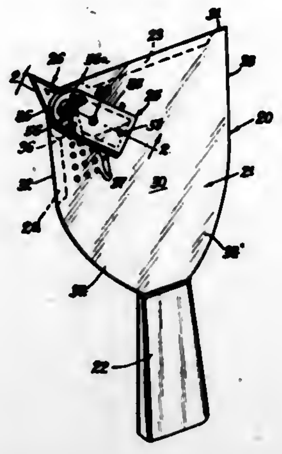
Albert S. Scholl, 2706 So. Kedvale, Chicago, Ill.

Filed Sept. 27, 1971, Ser. No. 184,072.

Int. Cl. B25f *1/02*; B26b *11/00*

U.S. Cl. 7—14.1 A 10 Claims

A hand operated tool for cutting and trimming mounted wall covering materials including paper, cloth, canvas, vinyl plastic, cork and the like. A large wiper blade for smoothing out the covering materials is provided with at least two marginal guide means which cooperate with an adjacent wall in guiding the tool for linear movement along the intersection of two walls. A knife blade is mounted in a holder fastened to the wiper blade in position to project beyond one corner of the wiper blade and guide means in accordance with the desired depth of cut, as dictated by the thickness of the covering material, and to dispose the cutting edge thereof at a proper angle for smoothly severing the covering material.



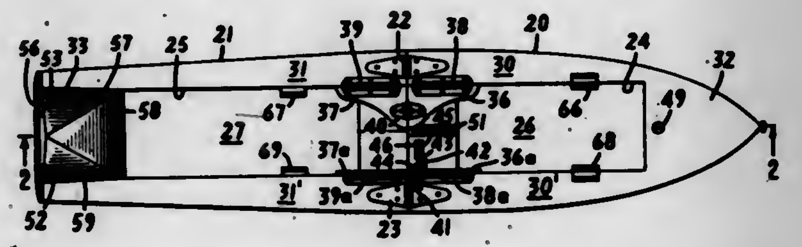
3,724,011
FOLDABLE BOAT

Roger A. Scholle, 8 White Birch Lane, Scarsdale, N.Y.

Filed May 7, 1971, Ser. No. 141,213

Int. Cl. B63b *7/00*

U.S. Cl. 9—2 F 12 Claims



A foldable boat is provided having stern and bow sections which can be unfolded and extended from a folded, collapsed and closely nested relationship to a rigid, unitary assemblage ready for use, said stern and bow sections being locked in the extended position by stiffening means which are hingeably associated with the assemblage. The foldable boat of the invention is of a size so that it can be readily transported from place to place on the roof of a car, rack of a station wagon or on the deck of a station wagon and is provided with means to be propelled by outboard motor, sail or oars.

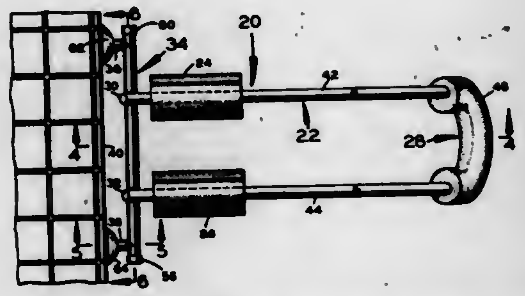
3,724,012
AQUATIC DEVICE

Paul E. Sanderson, 61 Compass Lane, Fort Lauderdale, Fla.

Filed April 8, 1971, Ser. No. 132,294

Int. Cl. B63c *9/04*

U.S. Cl. 9—311 9 Claims



An aquatic device capable of floating in the water at the side of a pool and having a head rest at a distal end providing floating support for the head of a person while he exercises or practices swimming with his head on the head rest and his body stretched out in the water. The device preferably includes an anchoring structure for attaching the device to the side of the pool, and float means pivotally connected to the anchoring structure allowing pivotal movement of the device while floating and also allowing it to be raised out of the water.

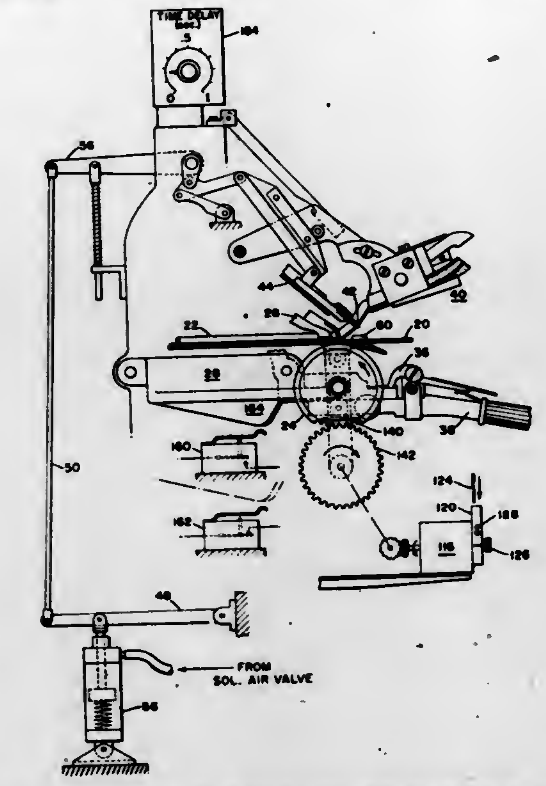
3,724,013
RIB APPLYING MACHINE

Reginald P. Perry, Wellesley, and Nils W. Sjoberg, Lynn, both of Mass., assignors to Prime Manufacturing Company, Lynn, Mass.

Filed June 12, 1972, Ser. No. 262,080

Int. Cl. A43d *43/06*

U.S. Cl. 12—20 15 Claims



A rib laying machine in which the marginal spacing of the rib from the edge of the insole is automatically varied in a predetermined manner as the laying operation proceeds. Adjustments to accommodate for variations in size of the insoles are carried out by interchangeable program means quickly insertable in the machine when another size of insoles is to be run. The automatic adjustment effected by the interchangeable programming means also correlates the rib cut-off mechanism with insole size.

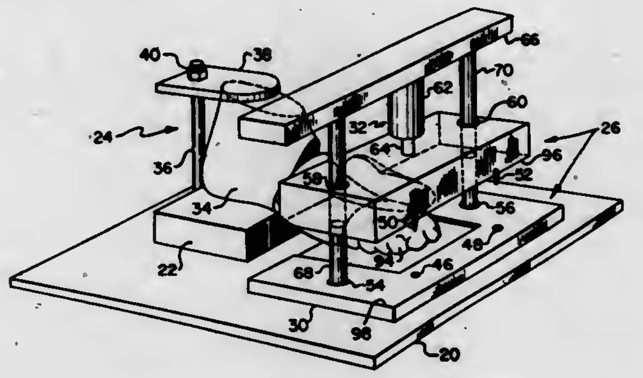
3,724,014
METHOD FOR RESHAPING A SHOE LAST

Delora E. Bennett, Middleboro, and Roger A. Packard, East Bridgewater, both of Mass., assignors to Delro Engineering Corporation, Boston, Mass.

Continuation of Ser. No. 883,550, Dec. 9, 1969, abandoned. This application Nov. 19, 1071, Ser. No. 200,422

Int. Cl. A43d *00/00*

U.S. Cl. 12—146 L 1 Claim



A heated thermoplastic material is applied to a shoe last which is clamped to a supporting member. A die member slidably mounted to the support is urged upon the thermoplastic material by a hydraulic actuator in consequence the thermoplastic material acquires and retains a form which is the complement of the mold cavity of the die. The die is formed with a reservoir for capture of excess thermoplastic material which is extruded when the thermoplastic material is compressed within the mold cavity.

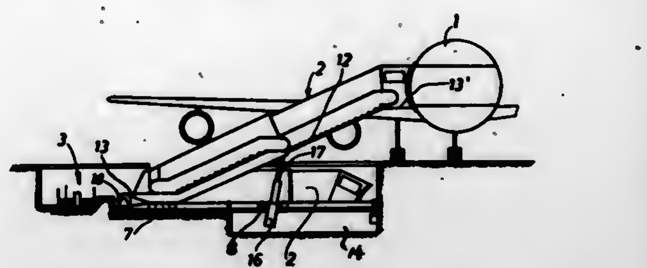
3,724,015
AIRCRAFT LOADING RAMPS

Manfred Japes, Gustavsburg, Germany, assignor to Maschinenfabrik Augsburg-nurnberg Aktiengesellschaft, Nurnberg, Germany

Filed Sept. 23, 1970, Ser. No. 74,698

Int. Cl. B65g *11/00*

U.S. Cl. 14—71 5 Claims



An arrangement on an airport having underground corridor means arranged underneath a portion of the airport terrain and leading to an airport terminal, in which gangway means adjustable in the direction of the longitudinal extension thereof has one end portion connectable to an entrance in an airplane while the other end portion is selectively movable into alignment with said corridor means, said gangway means being pivotable upwardly along a vertical plane from a position in a pit and is also adapted selectively to be lowered into said pit which then may be covered up and driven over, said gangway means also being movable along a horizontal plane.

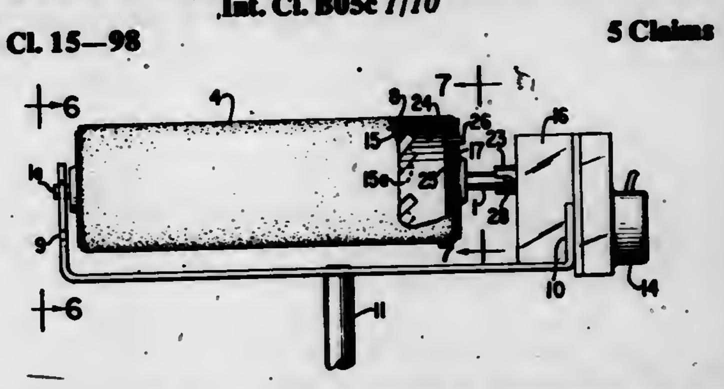
3,724,016
POWER DRIVEN PAINTING DEVICE

Ernst Soffer, 84-50 Austin St., Kew Gardens, N.Y.

Continuation-in-part of Ser. No. 842,445, July 16, 1969, abandoned. This application Nov. 2, 1970, Ser. No. 85,921

Int. Cl. B05c *1/10*

U.S. Cl. 15—98 5 Claims



A paint applicator roller combination comprising an extendable handle, a rotating cylinder having perforations through the cylindrical surface and an absorbent cover, end means closing each end of said cylinder, means within said rotating cylinder to close said perforations, detachable means to mount said rotating cylinder on said extendable handle, a motor mounted on said extendable handle adjacent said rotating cylinder and transmission means connecting said motor and said rotating cylinder whereby said rotating cylinder rotates at a speed of from 75 to 100 rpm.

3,724,017
COMBINED SQUEEGEE AND SCOURING PAD WINDOW CLEANING IMPLEMENT

George R. Mallory, Blenheim, Ontario, Canada, assignor to Mallory Hardware Products Limited, Blenheim, Ontario, Canada

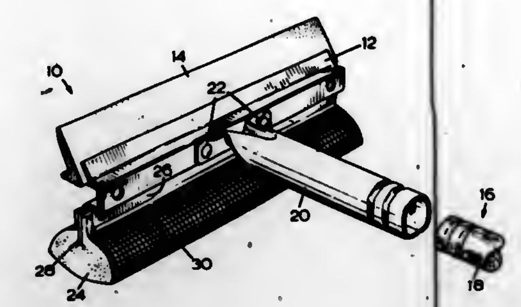
Filed July 1, 1971, Ser. No. 158,934

Claims priority, application Canada, July 30, 1970, 089547

Int. Cl. A47l *1/08*

U.S. Cl. 15—121 10 Claims

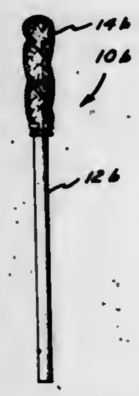
An improved window cleaning device of the type having a flexible wiper blade and a sponge mounted in a spaced parallel relationship on a head having a manually engageable handle extending therefrom. The improvement comprising a netlike cover of nylon or the like having a pair of permanently set crease lines and secured in a position extending over the sponging surface of the sponge so as to protect the sponge. The net-like cover preferably being interposed between the sponge and the handle on which it is mounted so as to further strengthen the sponge.



3,724,018

SWAB WITH FOAM PLASTIC WIPING TIP

Albert J. Sills, 117 Adams, Apt. No. 2, Glendale, Calif.
Continuation of Ser. No. 850,311, July 30, 1969, abandoned, which is a continuation-in-part of Ser. No. 749,064, July 31, 1968, abandoned. This application Aug. 4, 1971, Ser. No. 169,110
Int. Cl. A47l *13/46*
U.S. Cl. 15—244 R **1 Claim**



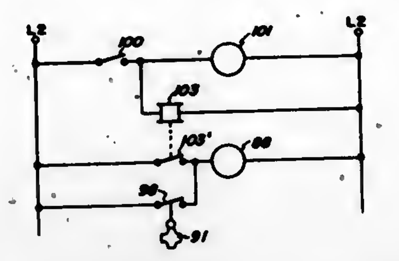
A swab having a reticulated plastic foam wiping tip formed by wrapping a foam strip in a unique way about one end of a handle. The wiping tip is characterized by a multiplicity of interconnecting cellular pores which enter the external surfaces and extend throughout the interior of the tip, whereby the swab is effective to remove foreign material from a surface by moving the tip across the surface in such a way that the material enters and becomes entrapped within the pores of the tip and to apply to a surface material contained within the pores by moving the tip across the surface while pressing the tip against the surface.

3,724,019

WIPER BLADE CLEANING APPARATUS FOR XEROGRAPHIC MACHINES

Alan L. Shanly, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 13, 1971, Ser. No. 142,964
Int. Cl. G03g *15/00*
U.S. Cl. 15—256.53 **5 Claims**

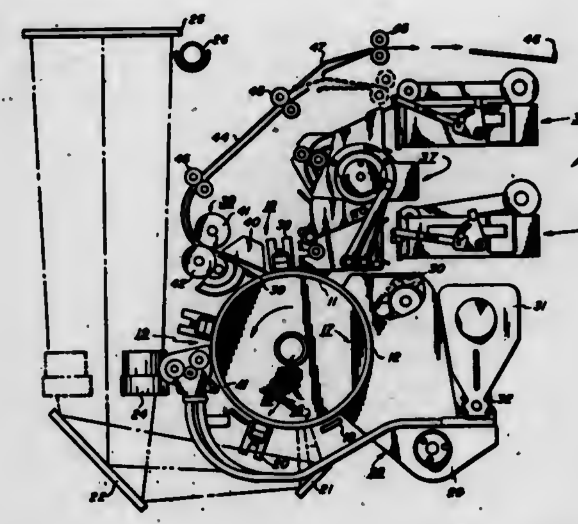
Apparatus for cleaning dry residual toner from the photoconductive surface of a xerographic type copying machine for reuse. The apparatus comprises a wiper blade disposed across the path of operating movement of the photoconductive surface with the wiping edge thereof in physical contact therewith. The wiper blade is supported on a carriage movable in a direction generally longitudinal of the blade. A driver is provided to slowly oscillate the carriage together with the wiper blade back and forth to improve blade cleaning action and wear, and reduce the tendency for toner and other foreign matter to become trapped under the blade. A control means is provided to operate the carriage driver while the photoconductive surface is moving and thereafter up to a short interval.



3,724,020

WIPER BLADE CLEANER FOR XEROGRAPHIC MACHINES

Henry R. Till, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 13, 1971, Ser. No. 142,965
Int. Cl. G03g *15/00*
U.S. Cl. 15—256.53 **5 Claims**



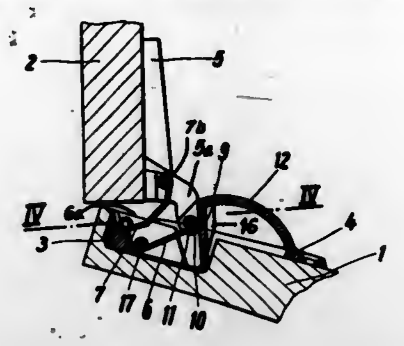
Apparatus for cleaning dry residual toner from the photoconductive surface of a xerographic type copying machine for reuse. The apparatus comprises a wiper blade disposed across the path of operating movement of the photoconductive surface with the wiping edge thereof in physical contact therewith. The wiper blade is supported on a carriage movable in a direction generally longitudinal of the blade. A driver is provided to slowly oscillate the carriage together with the wiper blade back and forth to improve blade cleaning action and wear, and reduce the tendency for toner and other foreign matter to become trapped under the blade. A control means is provided to operate the carriage driver while the photoconductive surface is moving and thereafter up to a short interval.

3,724,021

SNAP HINGE FOR FURNITURE DOORS

Karl Lautenschlaeger, Wersau/Odenwald, Germany, assignor to Karl Lautenschlaeger KG, Reinheim/Odenwald, Germany
Filed March 29, 1971, Ser. No. 129,016
Claims priority, application Germany, April 7, 1970, P 20 16 398.8
Int. Cl. E05d *3/06*
U.S. Cl. 16—163 **10 Claims**

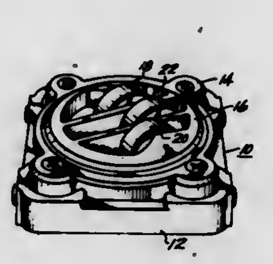
Furniture hinge of a snap type holding the door open after a predetermined movement of the door in a door opening direction and exerting a closing force on the door as the door moves past a dead point toward its closed position. A socket member mortised in the door forms a stop for the door, a pivot support for two swing levers pivotally connected to a bracket member extending from a wall of the cabinet and hinging the door for movement about an imaginary axis. A spring formed integrally with the socket member extends outside of the socket member and is inclined at an oblique angle relative to the plane of the door. The spring has engagement with an end of the innermost swing lever within the socket and moves the door toward a closed position when moving past the dead position, upon door closing movement. The socket member and spring are preferably molded from a single piece of plastic material.



3,724,022

CONVEYING CASTER MEANS

John Alberti, Seattle, and William W. Nanninga, Bellevue, both of Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Feb. 1, 1971, Ser. No. 111,396
Int. Cl. A47b *91/00*
U.S. Cl. 16—45 **7 Claims**



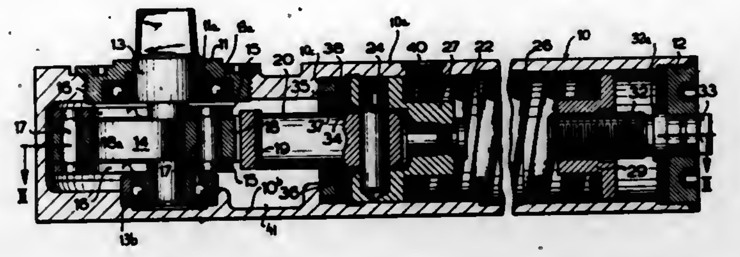
A swiveling base carrying a low profile axle supporting structure with three or more caster wheels arranged in a triangular supporting and conveying pattern for distributing the load and thereby being capable of continuously achieving automatic alignment with associated receiving cargo. In addition, the feature of receiving cargo is improved by the conical edge design of the swivel base and the spring loaded mounting of the base structure.

3,724,023

AUTOMATIC DOOR CLOSER

Horst Tillmann, Ennepetal-Voerde, Germany, assignor to Dorken & Mankel KG, Ennepetal-Vorde, Germany
Filed Sept. 22, 1970, Ser. No. 74,352
Claims priority, application Germany, Sept. 30, 1969, P 19 49 240.1
Int. Cl. E05f *3/10*
U.S. Cl. 16—53 **5 Claims**

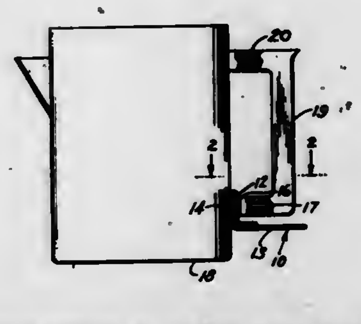
An automatic door closer wherein the spring which urges the door closing spindle to its starting position bears against the piston of the braking device for the spindle and against a retainer which is adjustable by means of a shaft extending from the housing of the door closer. In this way, the initial stress upon the spring can be changed in fully assembled and installed condition of the door closer. The cylinder of the braking device is rigid with the housing and has an end wall which faces the spindle and is traversed by the piston rod of the piston. The end wall serves as a support for a check valve which admits fluid into the compartment between such end wall and the piston when the spindle rotates during opening of the door but prevents the flow of fluid when the spindle rotates toward its starting position.



3,724,024

HEAT SHIELD

William R. Anderson, 603 White Horse Pike, Hoddon Heights, N.J.
Filed April 20, 1971, Ser. No. 135,724
Int. Cl. A47b *95/02*
U.S. Cl. 16—116 **1 Claim**

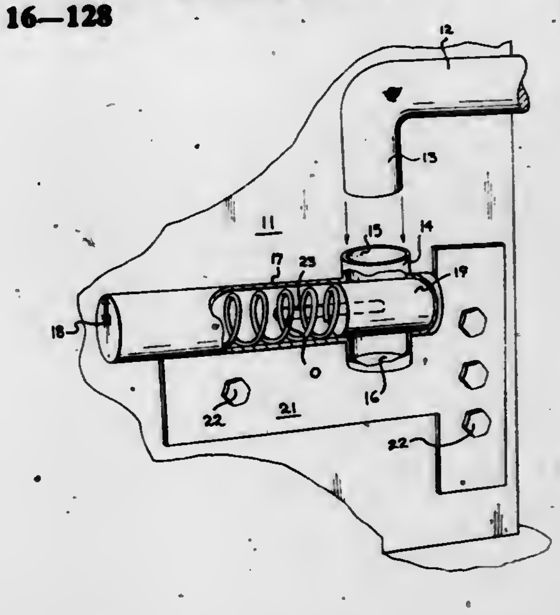


A device for attachment to coffee percolators and the like in order to prevent heat damage to the handle. This device includes a strip of metal with an asbestos sheet secured within the fold thereof and a washer of asbestos insulates the handle from the metal of the device when it is secured to the bolt at the lower portion of the handle of the percolator.

3,724,025

TELLTALE HINGE MOUNTING FOR DOORS

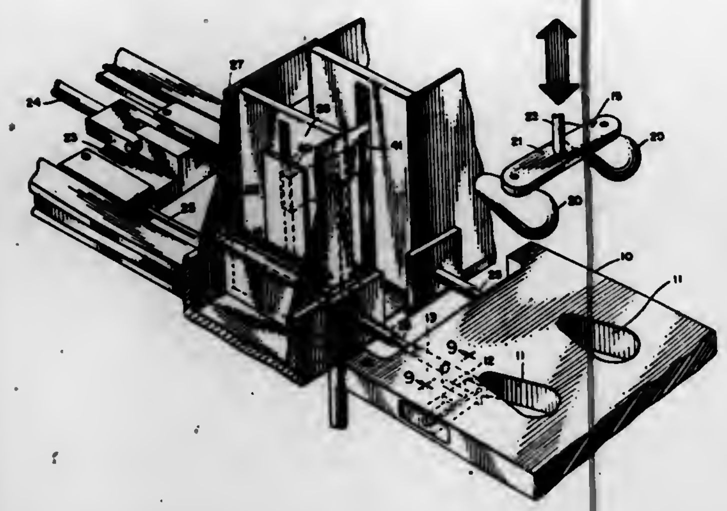
Hjalmar L. Hicks, Toledo, Ohio, assignor to Kenneth A. Hicks and Linda Kaye, both of Toledo, Ohio
Filed April 19, 1971, Ser. No. 135,110
Int. Cl. E05d *9/00*
U.S. Cl. 16—128 **3 Claims**



A telltale hinge mounting for doors which are locked, as by padlocks in which the door can be lifted from its hinge mounting to afford access to the interior in the event of an emergency. Thus, entrance can be gained even though the door is locked. However, to restore the hinge to its normal useful position, a spring pressed plunger must be retracted to clear the way for the pintle and this must be done from the inside of the door. This can not be achieved with the door in locked condition, so that with the door lifted from its hinge mounting, it would at once be apparent that unauthorized entry has been had.

3,724,026
PRODUCING MOLDED MEAT STICKS

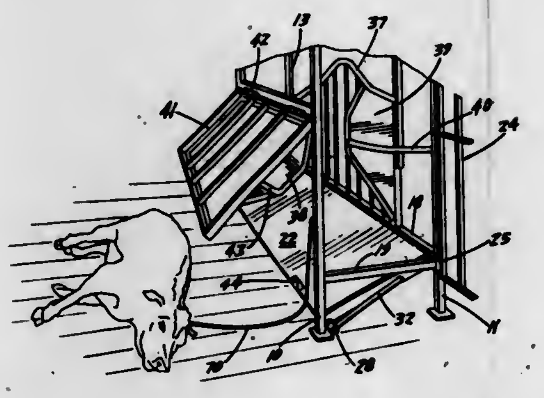
Louis E. Gernandt, Eau Claire, Wis., assignor to Armour and Company, Chicago, Ill.
Filed Oct. 30, 1970, Ser. No. 85,408
Int. Cl. A22c *7/00*
U.S. Cl. 17—1 **7 Claims**



A mold plate is provided with mold recesses open at the bottom and top adapted to receive coherent meat bodies and the like, with a communicating open-bottomed slot at the end of each recess having a spring-urged closure, and sticks are pressed through the slots to open the closures and enter the meat bodies, the meat bodies with attached sticks being then discharged from the plate bottom.

3,724,027
RESTRAINING PEN

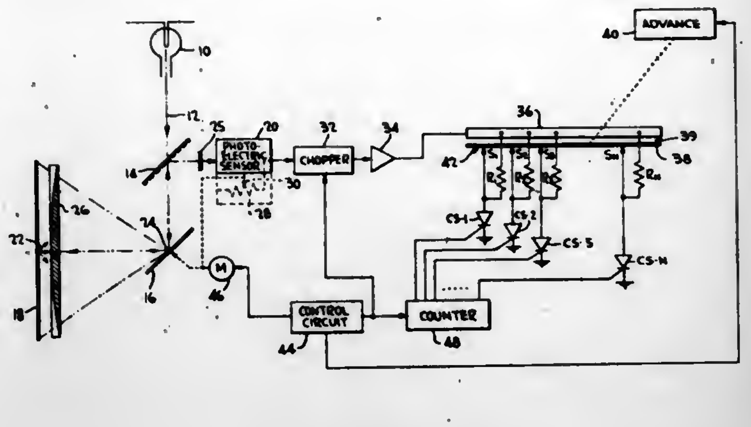
Chauncey E. Zuber, St. Louis Park, Minn., assignor to E. F. Zuber Engineering & Sales Co., Bloomington, Minn.
Filed March 27, 1972, Ser. No. 238,281
Int. Cl. A22b
U.S. Cl. 17—1 A **9 Claims**



A restraining or "knocking" pen for conveniently and safely confining and restraining a livestock animal for humane slaughter. The pen is characterized by automatically locking guillotine-type restraining means for holding the head of the animal and drop-away floor and releasable side panel to free the animal from the pen after stunning.

3,724,028
METHOD AND APPARATUS FOR PHOTOELECTRIC REPRODUCTION OF CONTINUOUS RELIEF ORIGINALS

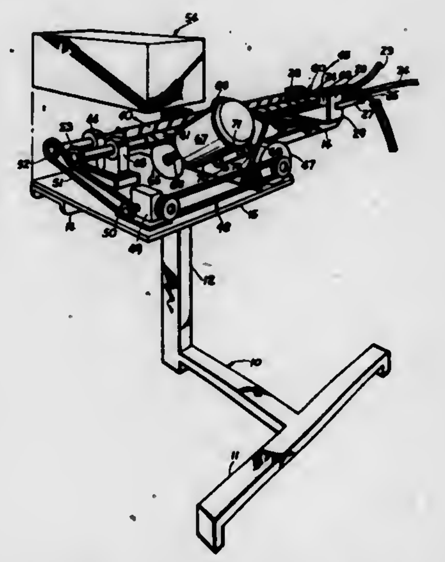
Guy Weber, Arques La Bataille, France, assignor to La Cellopane, Paris, France
Filed May 25, 1971, Ser. No. 146,626
Int. Cl. G03g *13/22, 15/22*; H04n *1/30*
U.S. Cl. 178—6.6 A **26 Claims**



A method of photoelectrically reproducing an original or a dielectric support including scanning the original with an incident beam to provide a reflected beam having an intensity varying with relief variations of the original, converting the reflected beam into a plurality of electrical signals having varying amplitudes, and provided a plurality of electric charges on the dielectric support corresponding to the varying amplitudes of the electrical signals such that the dielectric support carries a pattern of electric charges corresponding to the relief of the original, and apparatus for effecting the above described method.

3,724,029
APPARATUS FOR KILLING POULTRY OR OTHER FOWL

Ernest E. Lewis, Flowery Branch, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.
Filed Dec. 17, 1970, Ser. No. 99,024
Int. Cl. A22c *21/00*
U.S. Cl. 17—11 **4 Claims**

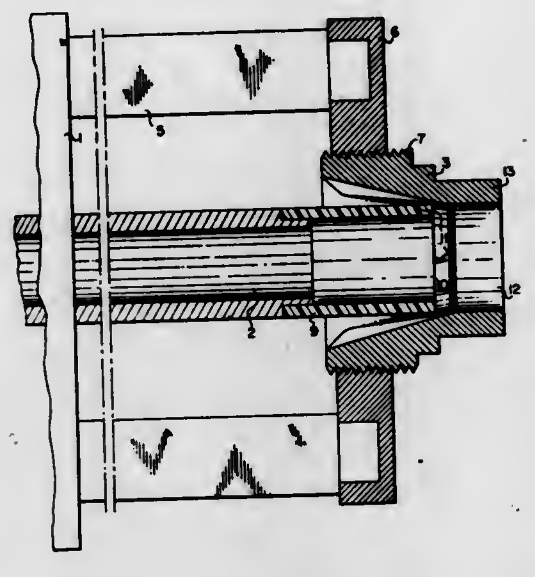


This invention relates to a method and apparatus for killing chicken or other fowl suspended in a head lowermost position by making a cut or similar opening through the skull of the bird to sever the arteries going to the brain and eyes adjacent

the base of the brain. More particularly, this invention includes a pair of spaced guide means detailed for guiding and orienting the head of the fowl to be killed along a predetermined path and to a predetermined location. The spaced guide means includes rotary guiding and orienting members which are provided for advancing the neck of the fowl along the predetermined path and for moving the head to the predetermined location. The rotary guide members are provided with fluid lubricating means to permit the neck of the fowl to be moved easily through the guide means. A rotary cutting member is detailed in location relative to the predetermined path and predetermined location to make a cut or similar opening through the skull of the bird for severing the arteries going to the brain and eyes as the bird is advanced along the predetermined path. The rotary cutter means is adjustable relative to the predetermined location whereby the angular position and depth of the cutting operation can be varied.

3,724,030
TWISTABLE NOZZLE DEVICE FOR A SAUSAGE FILLING APPARATUS

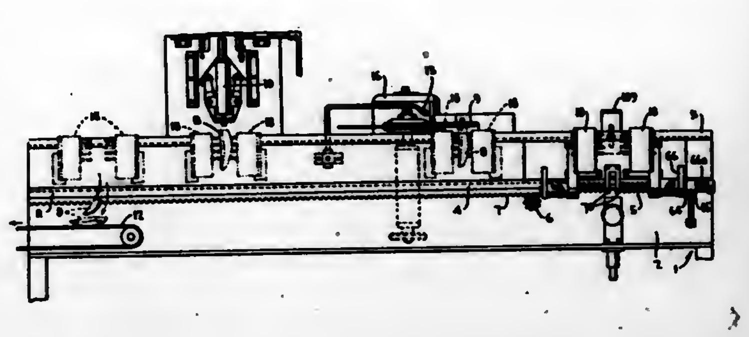
Felix Rassbach, and Rolf Buttner, both of Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Dec. 29, 1970, Ser. No. 102,296
Claims priority, application Germany, Dec. 31, 1969, P 19 65 672.5
Int. Cl. A22c *11/02*
U.S. Cl. 17—41 **3 Claims**



This invention relates to an improvement in a twistable nozzle device for filling shirred sausage casings and twisting the filled casings in which the mouthpiece of the pipe of the nozzle device is made of an elastic material and is surrounded by an annular nozzle with a tapered bore whereby an annular passage is formed between the nozzle and the mouthpiece of such an adjustable width that a sausage casing fed therethrough is restrained and in which the smallest cross-section of the nozzle is at or closely ahead of the orifice cross-section of the mouthpiece of the nozzle device, the improvement comprising a passage having a length of 10 to 25 mm in the nozzle ahead of the orifice cross-section of the pipe of the twistable nozzle device, the base of which passage substantially corresponds to the outside diameter of the mouthpiece of the pipe of the nozzle device.

3,724,031
METHOD OF SHUCKING BIVALVES

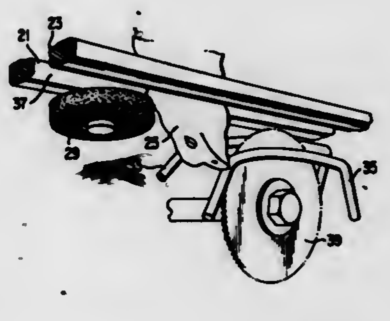
G. Harris Sterling, Beaufort, and Ben P. Zober, Charleston, both of S.C., assignors to Harris Automated Machinery Co., Dover, Del.
Division of Ser. No. 763,816, Sept. 30, 1968, Pat. No. 3,605,180. This application Sept. 17, 1970, Ser. No. 73,239
Int. Cl. A22c *29/00*
U.S. Cl. 17—48 **13 Claims**



This invention pertains to shucking fresh bivalves and it encompasses both an apparatus and method which removes rapidly; and without damage, the edible portion of the bivalve. The invention consists of removing a portion of the shells of the bivalve (preferably after some of the fluids contained in the bivalve cavity have been eliminated particularly in the case of oysters), thereafter severing muscles of the bivalve which connect the meat to the shells, and finally separating the meat and the shells, and the apparatus for accomplishing the foregoing operation. The invention pertains to bivalves in general but is especially useful in the shucking of oysters and clams.

3,724,032
METHOD FOR KILLING FOWL

Grover S. Harben, Jr., Gainesville, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.
Filed April 1, 1970, Ser. No. 24,696
Int. Cl. A22c *21/00*
U.S. Cl. 17—52 **4 Claims**

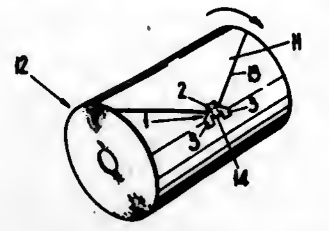


A chicken or other fowl suspended in a head-lowermost position is killed by making a saw-cut or similar opening through the skull of the bird for severing the artery going to the brain and eyes thereof at the base of the brain.

3,724,033
PASTER TABS

Noel John Baker, London, England, assignor to Witton-James Limited, Wembley, England
Filed May 10, 1971, Ser. No. 141,703
Int. Cl. B42f *1/00*; B65h *19/26*
U.S. Cl. 24—67 AR **5 Claims**

A paster tab for effectively securing the free end of a reel of paper, film, foil or like material to the body of the reel to prevent unwinding of the reel even when rotated at speed, but which is shaped in such a manner that it can be readily torn away to release the end of the material on splicing it to the expiring end of a web of similar material being fed or drawn continuously into a printing press or other machine.



3,724,034
DEVICE FOR TYING FISHING LINE

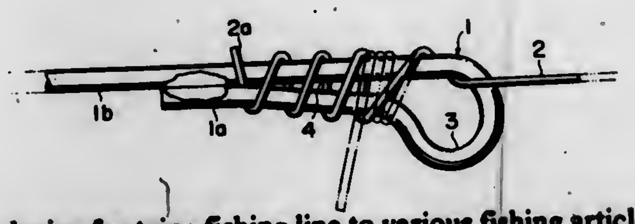
Kumao Osano, Kanigaya 313, Kawasaki-shi, Kanagawa-ken, Japan

Filed Nov. 2, 1970, Ser. No. 85,988

Claims priority, application Japan, Nov. 11, 1969, 44/106893; Nov. 11, 1969, 44/106894

Int. Cl. A01k *91/04*

U.S. Cl. 24—131 C **5 Claims**



This device for tying fishing line to various fishing articles is made of a wire material of a round or oval shape in cross section and comprises a loop for putting one end of the fishing line therethrough, a quill for having an end portion of the fishing line wound therearound, and a V-shaped clip means for securely holding one end of the fishing line therein. The device makes it simple and easy to tie fishing line to various fishing articles and, in use, is capable of preventing the fishing line from being cut at that portion of the line where the tie is made.

3,724,035
CHAIN RETAINING DEVICE

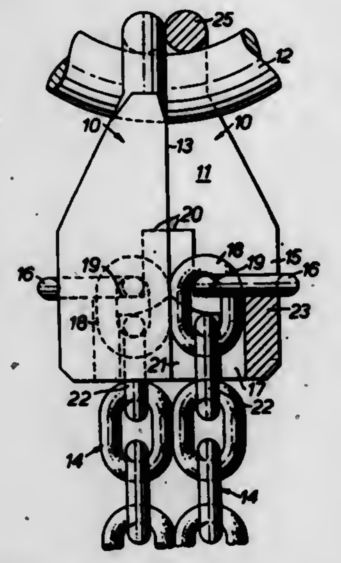
Joseph Cyril Smith, Stocksbridge, England, assignor to British Steel Corporation, London, England

Filed Jan. 29, 1971, Ser. No. 110,808

Claims priority, application Great Britain, Feb. 6, 1970, 5,774/70; June 4, 1970, 27,041/70

Int. Cl. F16g *15/04*

U.S. Cl. 24—116 C **11 Claims**



A chain securing device consists of two identical blocks connected to a crane hook ring. Each block has an opening through which chains can be passed. The openings have slot portions shaped to retain the chain ends. A chain can be inserted into the device and secured with any desired link retained in the opening so that the effective length of the chain can be adjusted at will. The chain can also easily be detached from the device.

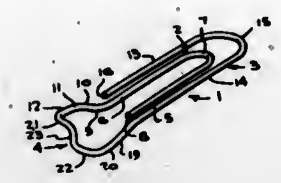
3,724,036
PAPER CLIP

Samuel Botsford, 136 Edwards Ferry Road, Leesburg, Va.

Filed Feb. 24, 1971, Ser. No. 117,989

Int. Cl. B42f *1/02*

U.S. Cl. 24—261 PC **5 Claims**



A paper clip bent from a length of wire and having U-shaped nested gripping members, with opposite legs of the gripping members being joined by a connecting member. The connecting member has an intermediate vertical offset to position the ends of the connecting member vertically spaced from, and on opposite sides of, the gripping members to permit substantial contact of the gripping members with the surfaces of paper sheaves over a wide range of thicknesses. In one form, the closed ends of the gripping members are bent toward one another to improve the gripping power of the clip. In another form, the inner gripping member consists of a single straight leg bent to form an eye at its end remote from its juncture with the connecting member.

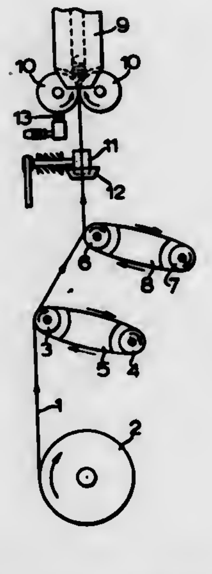
3,724,037
PROCESSES AND APPARATUS FOR CRIMPING SYNTHETIC FILAMENTARY MATERIALS

Bruce Nicholson, Rawtenstall, and James Mitchell, Egerton, both of England, assignors to T.M.M. (Research) Limited, Lancashire, England

Continuation of Ser. No. 822,273, May 6, 1969, abandoned. This application May 10, 1971, Ser. No. 143,703

Int. Cl. D02g *1/12*

U.S. Cl. 28—1.6 **12 Claims**



A process and apparatus for crimping synthetic continuous filament yarn is provided wherein the yarn is drawn in a draw zone to effect orientation of its molecules, and the yarn is thereafter continuously fed from the draw zone to a stuffer box crimper. The drawn yarn is delivered from the draw zone at a temperature elevated by the application in the draw zone of external heat or by the action of drawing to a level to cause interfilament fusion of the yarn within the stuffer box. The drawn yarn is cooled in its passage to the stuffer box to avoid this interfilament fusion.

3,724,038
CONTINUOUS PROCESS FOR RELAXING HEAT TREATMENT AND APPARATUS THEREFOR

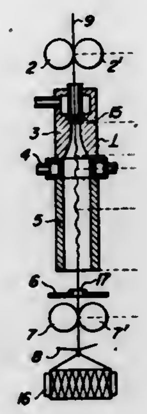
Kazuya Chimura; Takashi Kaneko; Ryuichi Nakazono; Takuma Mukai; Atushi Nakazima, and Kenichi Sakunaga, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed June 23, 1971, Ser. No. 155,722

Claims priority, application Japan, July 4, 1970, 45/58626

Int. Cl. D02g *1/00*

U.S. Cl. 28—1.2 **5 Claims**



An improvement in a continuous process for the relaxing heat treatment of crimpable filaments, particularly potentially crimpable filaments which comprises passing the filaments overfed from a filament charging apparatus through an ejecter, wherein a heated fluid is ejected, to subject the filaments to pre-heating and fiber separation, spraying a heated fluid onto the filaments at right angles from their circumference in a low tension zone under a tension as low as 1 mg/denier or less to subject the filaments to relaxing heat treatment, and then passing the treated filaments through a heat treatment chamber to subject the filaments to thermal setting, and an apparatus therefor.

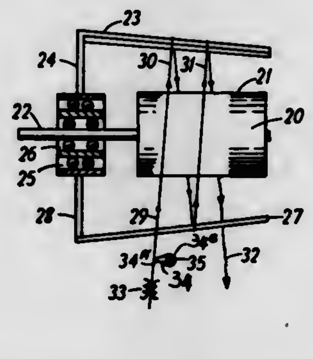
3,724,039
YARN TEXTURIZING APPARATUS AND PROCESS

Hsin Lang Li, Parsippany; Dusan Ciril Prevorsek, Morristown, and Noel York Rothmayer, Madison, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed April 12, 1971, Ser. No. 133,054

Int. Cl. D02g *1/10*

U.S. Cl. 28—1.5 **12 Claims**



Apparatus and process for preventing the individual wraps of yarn from entangling as multiple wraps of a continuous length of yarn is texturized at high speeds by guiding the yarn under controlled tension and temperature in frictional engagement with a texturizing element which advances in the same direction as, but at different relative speeds with respect to, the moving yarn.

3,724,040
DEVICE AND PROCESS FOR THE PRODUCTION OF YARNS WITH INTERLACED STRANDS

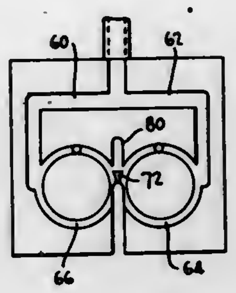
Gabriel Ohayon, Lyons, France, assignor to Societe Rhodiaceta, Paris, France

Filed June 14, 1971, Ser. No. 152,733

Claims priority, application France, June 15, 1970, 7021838

Int. Cl. D02g *1/16*

U.S. Cl. 28—1.4 **13 Claims**



A device for the production of yarns having interlaced strands which includes a first plate having a passage for the yarn therethrough; a second plate having a passage for the yarn therethrough aligned with the passage of the first plate and a surface in abutting relation to a surface of the first plate; and at least two curved conduits defined by recesses in at least one of the abutting surfaces of the first and second plates, such conduits communicating with the passages through the first and second plates. Means is provided to hold the yarn in a substantially constant position when traveling through the passages of the first and second plates and the curved conduits converge substantially tangentially toward such means to hold the yarn in place. When a rapidly moving fluid, e.g. air, is passed through the curved conduits the same impinges upon the yarn and interlaces the same.

3,724,041
PORTABLE LOOM

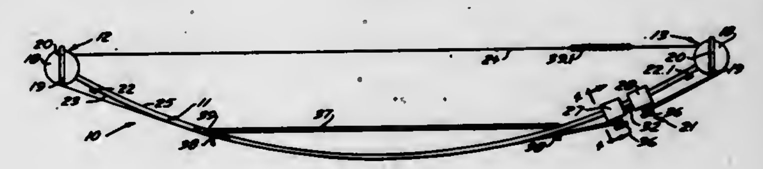
Sidney B. Cleverley, 730 Pemberton Road, Victoria, British Columbia, Canada

Filed July 26, 1971, Ser. No. 166,105

Claims priority, application Canada, Feb. 11, 1971, 105,071

Int. Cl. D03d *29/00*

U.S. Cl. 28—15 **6 Claims**

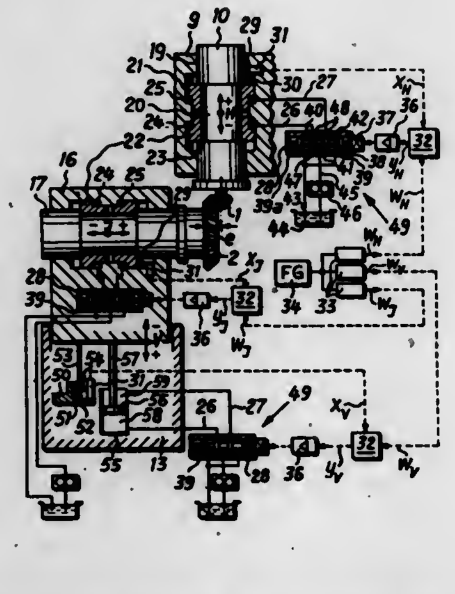


A loom having a normally straight flat springy base adapted to be bowed longitudinally for tensioning warp threads which extend longitudinally and over ends of the base, and which are secured to a warp connecting member mounted for slidable movement longitudinally of the base, the warp being applied with the base in a bowed condition so that tendency of the base to return to its normally straight condition maintains the warp under tension.

3,724,042

APPARATUS FOR THE LAPPING OF TWO GEAR WHEELS

Ulrich Raess, Opfikon, and Daniel Jan, Glattbrugg, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland
Filed Oct. 27, 1971, Ser. No. 193,028
Claims priority, application Switzerland, Nov. 3, 1970, 16249/70
Int. Cl. B21c *37/30*
U.S. Cl. 29—90 5 Claims

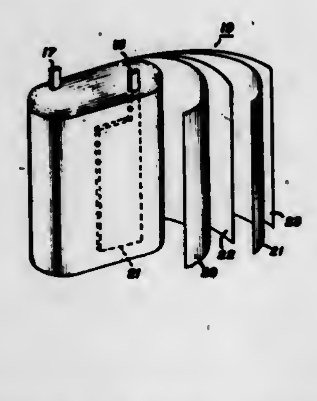


Apparatus for the lapping of two gear wheels which are given a lapping movement which comprises at least two oscillatory components. Apparatus comprises separate control units for the control of each component of movement. Each control unit has means for changing the velocity of the components of movement during a cycle so that the lapping movement is performed along a line of adjustable shape. The control units produce periodic voltages of the same frequency.

3,724,043

METHOD OF MAKING A CAPACITOR WITH A PREIMPREGNATED DIELECTRIC

John W. Eustance, South Glens Falls, N.Y., assignor to General Electric Company, New York, N.Y.
Continuation of Ser. No. 861,609, Sept. 29, 1969, abandoned. This application May 13, 1971, Ser. No. 143,155
Int. Cl. H01g *13/04*
U.S. Cl. 29—25.42 13 Claims

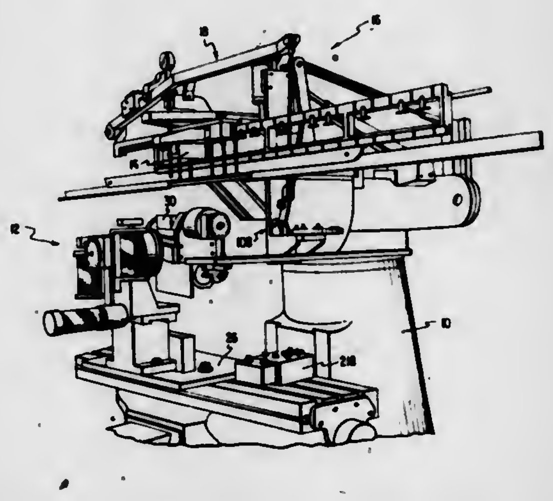


A liquid dielectric capacitor impregnant such as a halogenated aromatic hydrocarbon, castor oil, or mineral oil is added to finely divided polypropylene resin and thoroughly mixed therein. The resulting composition is then passed through a high temperature apparatus to produce capacitor grade polvpropylene film. This film may contain the impregnant in significant amounts up to and exceeding about 20 percent by weight. An epoxide stabilizer material may also be preincorporated in the resin or added to the liquid impregnant. After a capacitor has been made with the preincorporated impregnant, the capacitor is impregnated to increase the amount of liquid dielectric therein.

3,724,044

APPARATUS FOR CONDUCTING MACHINING AND/OR ASSEMBLY OPERATIONS

John A. Cupler, II, 10 Cupler Drive, LaVale, Md.
Division of Ser. No. 868,517, Oct. 22, 1969, Pat. No. 3,663,998, and a continuation-in-part of Ser. No. 715,711, March 25, 1968. This application March 4, 1971, Ser. No. 121,214
Int. Cl. B23q *3/157*
U.S. Cl. 29—26 A 5 Claims

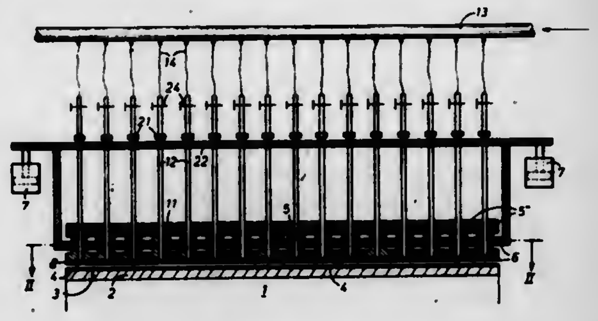


The disclosure is directed to a vertically oriented automatic tool changer employing non-captive tools for performing machining and/or assembly operations at a plurality of work locations on a single workpiece which workpiece is supported by a work positioner capable of infinite adjustment to present any desired number and spacing of work locations, on the workpiece, to the working axis of the non-captive tools.

3,724,045

APPARATUS FOR APPLYING PRESSURE TO AN ADVANCING WEB OF RIGID MATERIAL

Jacques Max Charles Dryon, Auvelais, Belgium, assignor to Ateliers Heuze Malevez et Simon Reunis Societe Anonyme, Auvelais, Belgium
Filed March 9, 1971, Ser. No. 122,327
Claims priority, application Belgium, March 10, 1970, 122,327
Int. Cl. B24b *39/00*
U.S. Cl. 29—90 8 Claims



A device for exerting an adjustable pressure against one side of continuously moving web of a rigid strip material having the

other side thereof contacted by a surface treatment apparatus, including one or more blocks connected to a source of pressurized gaseous medium and having a plane surface in proximately spaced relationship with the first mentioned surface of the web, the surface having gas passageways therein so as to follow the formation of a gas cushion between the web surface and the block which prevents direct contact therebetween while concurrently imparting pressure to the surface of the web in the direction of the surface treatment apparatus.

3,724,046

SHAVING METHOD AND SHAVING CUTTER

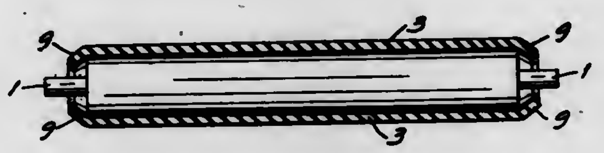
Harutaka Mayuzumi, Kawasaki; Motoyuki Shinoda, Hiratsuka, and Kosuke Akizuki, Tokyo, all of Japan, assignors to Isuzu Motors Limited
Filed March 26, 1970, Ser. No. 22,835
Claims priority, application Japan, April 3, 1969, 44/25715
Int. Cl. B26d *1/12*
U.S. Cl. 29—104 3 Claims

A shaving method and a shaving cutter for use in carrying out a shaving operation, wherein the cutter and the gear to be processed are rotated in crossed axes relationship and the gear is shaved by one side tooth flank of a plurality of teeth formed on the circumference of the cutter.

3,724,047

INKING SLEEVE

Stanley G. Peterson, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Continuation-in-part of Ser. No. 806,535, March 12, 1969, abandoned. This application Aug. 6, 1971, Ser. No. 169,786
Int. Cl. B21b *31/08*
U.S. Cl. 29—129.5 4 Claims



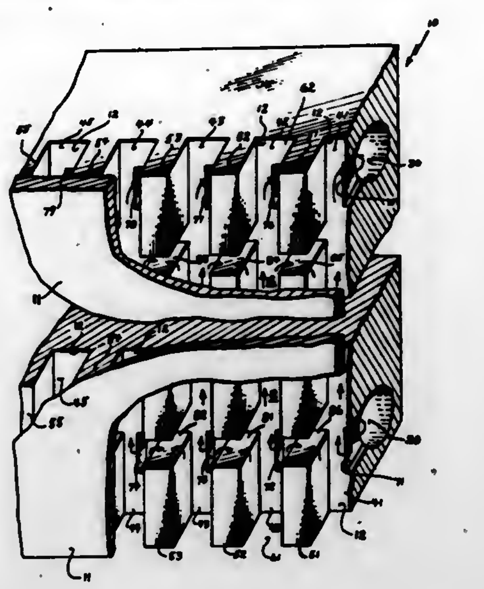
A polyurethane inking sleeve for assuming a tight gripping relationship with a printing roller body and thereby provide the same with a fresh inking surface. The sleeve is made by mixing millable curable polyurethane elastomer with suitable curing agent, plasticizer, and fillers, forming a sheet of a mixture, overwrapping the sheet on a suitable mandrel, curing the mixture, and grinding the resultant structure to provide a tube with a uniform wall thickness.

3,724,048

METHOD OF PREVENTING THE PLUGGING OF LIQUID COOLANT PASSAGES OF A REGENERATIVELY COOLED ROCKET ENGINE THRUST CHAMBER

Joe D. Duesberg, Canoga Park, Calif., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Nov. 16, 1971, Ser. No. 199,126
Int. Cl. B21d *53/00*
U.S. Cl. 29—157 C 4 Claims

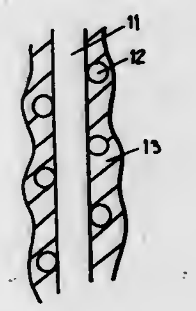
The liquid coolant passages of a regeneratively cooled rocket engine thrust chamber are prevented from becoming plugged by foreign particles by a method which includes the steps of forming an inlet and an outlet for each liquid coolant passage, with each inlet and each outlet so configurated and so dimensioned as to prevent the entry into the respective liquid coolant passage of foreign particles of a predetermined size and larger which would plug the liquid coolant passage.



3,724,049

TITANIUM FILAMENT FOR USE IN VACUUM TECHNIQUES

Charles Biguenet, Paris, France, assignor to CSF-Compagnie Generale de Telegraphie Sans Fil, Paris, France
Continuation-in-part of Ser. No. 722,654, April 19, 1968, abandoned. This application Feb. 4, 1971, Ser. No. 112,548
Claims priority, application France, April 21, 1967, 67103754
Int. Cl. B32b *15/00*
U.S. Cl. 29—191 1 Claim



Filaments for vacuum devices of the titanium getter type, said filaments comprising a refractory core of tungsten, molybdenum or tantalum which is coated with a layer of pure titanium.

3,724,050

METHOD OF MAKING BERYLLIUM SHAPES FROM POWDER METAL

Edmund M. Velten, Hazleton; George J. Jagaciak, Conyngham; John N. Wambold, and Arthur Epstein, both of Mountaintop, all of Pa., assignors to The Beryllium Corporation, Reading, Pa.
Filed Sept. 19, 1968, Ser. No. 760,997
Int. Cl. B22f *1/00*
U.S. Cl. 29—182 7 Claims

A method of making beryllium or beryllium alloy shapes from powder metal by first pressing the beryllium or beryllium alloy shape either by isostatic pressing or conventional mechanical compacting methods at room temperature to 60 percent to 95 percent of theoretical density at a pressure of between 30,000 and 90,000 psi or above and subsequently pressing and heating to final size and density at temperatures between 1,400° F and 2,150° F (preferably 1,550° F to 1,900°

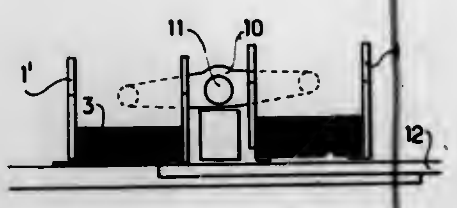
F) and pressures of from 100 to 10,000 psi effective pressure on the compacted powder, preferably at 100 to 2,500 psi. The second pressing of the shape is done with mechanical pressure simultaneously with the application of heat under vacuum or inert environment.

3,724,051
DISTRIBUTORS COMPONENTS

Rene Brocart, Hellemmes-Lille, and Henri B[illegible]rez, Lezennes, both of France, assignors to Manufacture D'Accumulateurs et D'Objets Moules, Paris and Societe Fu[illegible]en, Hauts-de-Seine, both of, France

Filed July 6, 1971, Ser. No. 159,905
Claims priority, application France, July 3, 1970, 7024810
Int. Cl. H01m *37/00*

U.S. Cl. 29—204 **4 Claims**



An assembly machine allowing the selective distribution of battery components including pairs of magazines of plates, the magazines of each of the pairs being joined and being able to oscillate, in such a way that the tappets are able to selectively drive the plates contained in one or the other of the magazines of each of the pairs.

3,724,052
OVER TRAVEL LINKAGE FOR ASSEMBLY MACHINE STATION

James T. Graham, Birmingham, and Fred W. Hackstock, Sterling Heights, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 62,228, Aug. 3, 1970, Pat. No. 3,648,346.
This application Dec. 3, 1971, Ser. No. 204,755
Int. Cl. B23p *19/00*

U.S. Cl. 29—200 P **6 Claims**

A station for an automatic nonsynchronous multistation assembly machine is described which is operated by a cam shaft extending transversely to the line of movement of the parts in the transport system, featuring an arrangement for accurately locating the members positioned by the cam mechanism.

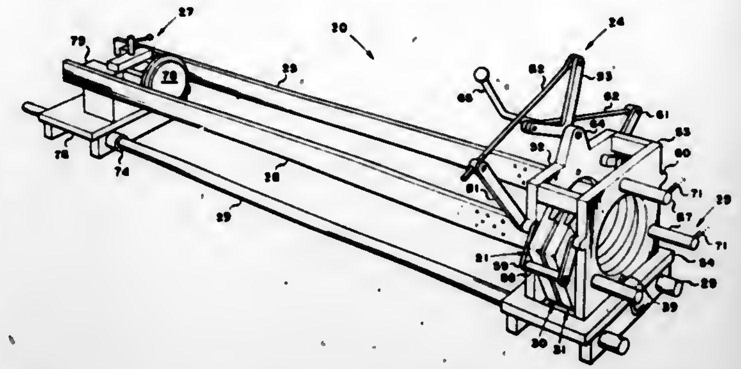
3,724,053
APPARATUS FOR PERFORMING AXIALLY-AND-RADIALLY LOCATED OPERATIONS ON TUBULAR CONSTRUCTION

Abraham M. Finkel, North Hollywood, and Michael Surwill, Burbank, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Sept. 28, 1971, Ser. No. 184,556
Int. Cl. B23p *19/00, 19/04*

U.S. Cl. 29—200 B **18 Claims**

An apparatus for performing axially and radially located operations on a tubular metal construction. Specifically disclosed is a crimping operation. A crimping die assembly is mounted in a suitable frame connected to a pair of guide rails along which a slidable assembly is mounted for advancing a length of tubing to the die assembly. Means are provided to open and close the die assembly in its frame. A pin assembly mechanism is connected to the slidable assembly and cooperates with a pair of established elongated pattern bars which are disposed between the die assembly and the advancing means. The mechanism's pins are caused to register with the pattern bars so as to index the advancing assembly to one station to the next, along the length of the apparatus. Thus, the spacing between crimped ring elements along the length of the tubing is controlled, and an efficient, continuous operation is achieved. A pneumo-hydraulic pressure system is applied directly to the die assembly to actuate it in performing its crimping function.

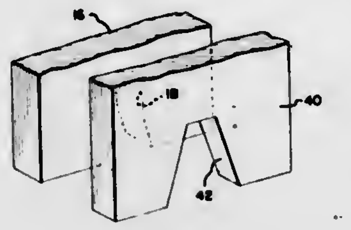


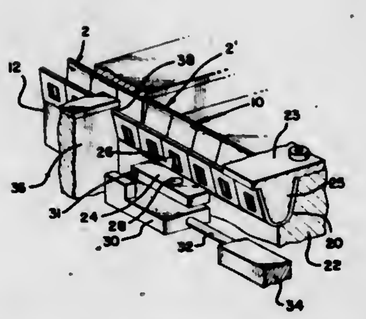
3,724,054
MACHINE FOR FEEDING A CONTINUOUS STRIP OF ELECTRICAL CONNECTORS

Charles Henry Fernald, Oberlin, and Joseph James Chick, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 739,316, June 24, 1968, abandoned.
This application Nov. 9, 1970, Ser. No. 88,041
Int. Cl. H01r *19/04, 43/00;* **H02g** *15/00*

U.S. Cl. 29—203 D **1 Claim**





A continuous strip of U-shaped electrical connecting devices is fed to a crimping anvil to position the leading connector of the strip on the anvil preparatory to attachment to a conductor. The feed stroke is controlled by feeding the strip through a confined passageway. During each stroke of the press, a connecting device which is upstream form the confined passageway is reformed so that it can pass through the passageway. The next adjacent connector, which has not been reformed cannot pass through the passageway and limits the feed stroke.

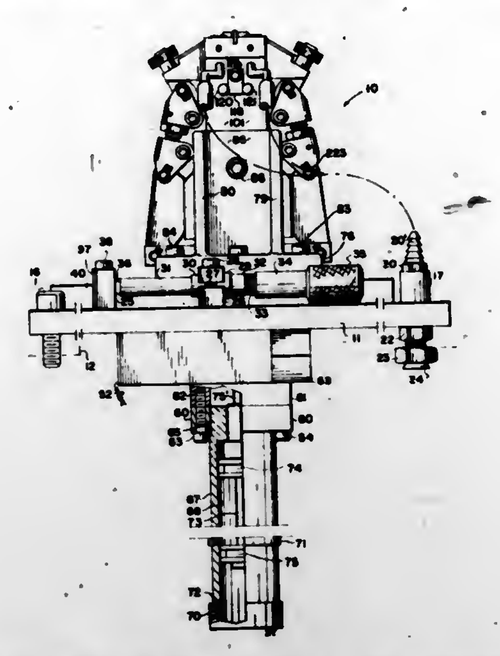
3,724,055
LEAD CUT AND OUTWARD CLINCH MECHANISM

Robert H. Holmes, and Albert W. Zemek, both of Binghamton, N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,267
Int. Cl. H05k *13/04*

U.S. Cl. 29—203 B **8 Claims**

An electronic component lead cutting and outwardly clinching mechanism having a linkage arrangement whereby the component leads are severed and outwardly clinched and the remaining portion of the lead is carried out of the cutting and clinching area by an evacuation channel. The mechanism has a three stage linkage attached to the cutters and the outward clinch members which act, respectively, to cut and then outwardly clinch the remaining lead portion beneath a circuit board.

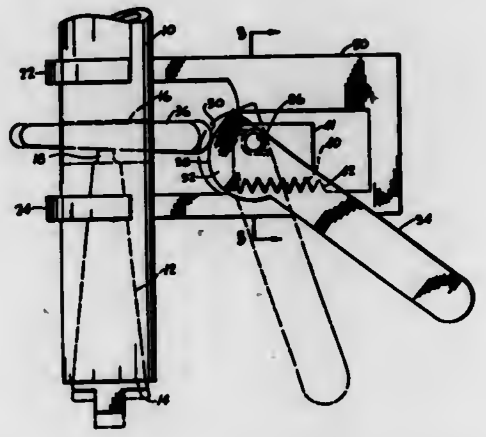


3,724,056
EJECTION TOOL

John Antal, 12853 Kohler Drive, Traverse City, Mich.

Filed June 16, 1969, Ser. No. 833,384
Int. Cl. B23p *19/04*

U.S. Cl. 29—253 **2 Claims**



An ejection device, manually operable, for extracting tapered tools from a tapered tool receiving bore in a spindle.

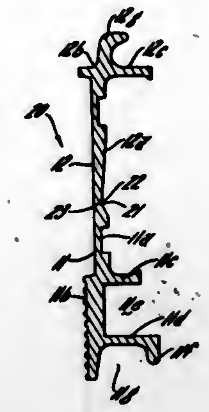
3,724,057
METHOD OF MAKING VALANCES FOR LUGGAGE

Samuel J. Holtzman, Baltimore, Md., and Peter A. Cosme, Lockport, Ill., assignors to Roper Corporation, Kankakee, Ill.

Filed Oct. 6, 1971, Ser. No. 187,088
Int. Cl. B23p *17/00*

U.S. Cl. 29—416 **3 Claims**

The method of making extruded metal valances for luggage which includes steps of extruding male and female valance cross sections integrally edge-to-edge, welding the extrusion into a closed loop, expanding the loop to the desired size and shape, with accompanying bending, severing the extrusion at the joined lateral edges to form mating male and female valances, and then reversing the order thereof for assembling in mating relation. The procedure includes heat treating and anodizing as a preliminary step before the extrusion is cut and formed and the piercing of any necessary holes or lugs while the extrusion is still in a single, easily handled piece and prior to severence.

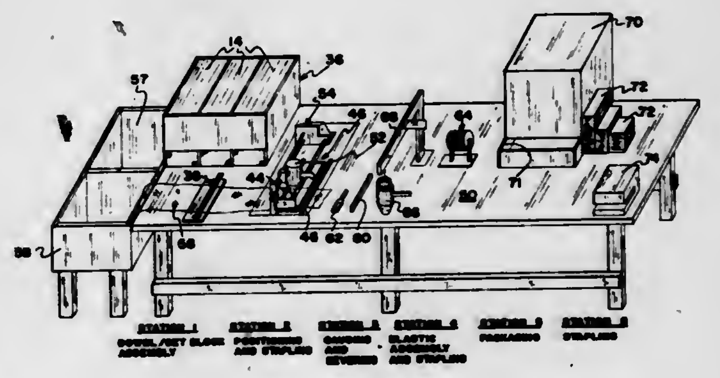


3,724,058
METHOD OF MAKING COMBINED CATCHER/PROJECTOR FOR AERIAL PROJECTILES

Rulon R. Dahl, West Jordan, Utah, assignor to Killebrew, Inc., Salt Lake City, Utah

Filed June 24, 1971, Ser. No. 156,281
Int. Cl. B23p *17/00*

U.S. Cl. 29—417 **10 Claims**



A catcher/projector for aerial projectiles comprises a resilient mesh pocket whose peripheral confines are delimited by opposed pairs of rigid and elastic members. The rigid members comprise manually manipulatable handles while the desired pocket memory is achieved by an interweavement of the elastic members with the mesh.

One method for making the combined catcher/projector is based on a unit-handled assemblage of closely spaced handle pairs which are secured to an indefinite length mesh at spaced locations therealong. Severance of the mesh intermediate each closely spaced pair of handles then results in a plurality of mesh connected handle pairs which are then interconnected by elongate elastic strands interweaved with the mesh. The untensioned length of the elastic strands is less than that of the mesh with which it is interweaved to define the pocket memory.

3,724,059

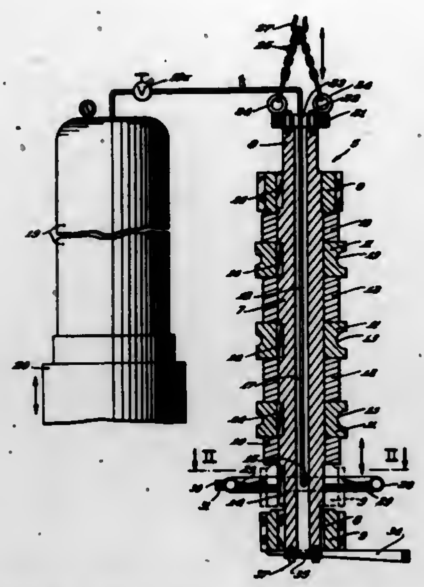
METHOD OF AND MEANS FOR SEPARATING INTERFERENCE-FITTED MEMBERS

Michael E. Celovsky, Bloomfield Hills, Mich., assignor to Industrial Tool Engineering Company, Detroit, Mich.

Filed Jan. 15, 1970, Ser. No. 3,021

Int. Cl. B23p *19/00*

U.S. Cl. 29—426 **41 Claims**



Members which have been secured in assembly by interference fit are separated by temperature differential shrinking the inner of the members and expanding the outer of the members. In a preferred manner, this is done by introducing a heat abstracting medium such as cold gas, i.e. nitrogen, to the interior of the inner member to cause it to shrink at least selectively in the area engaged by the outer member, and expanding the outer member by heating it, i.e., flame, induction, radiant.

3,724,060

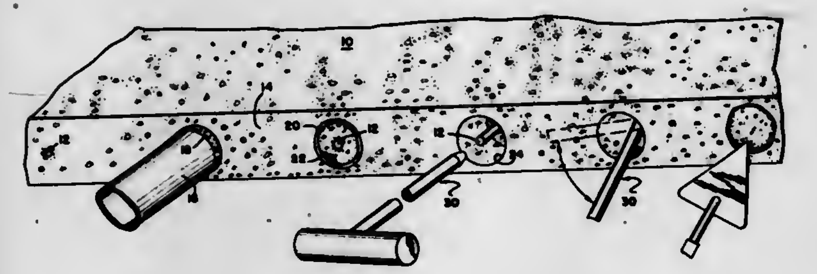
METHOD OF FORM TIE REMOVAL

Joseph A. McElroy, 34 Short St., Randolph, Mass.

Division of Ser. No. 762,005, Sept. 24, 1968, abandoned. This application Jan. 8, 1971, Ser. No. 105,079

Int. Cl. B23p *19/00*

U.S. Cl. 29—427 **2 Claims**



A method wherein a small hole with sides parallel to a form tie is drilled into the concrete, a tool comprising a long rod with a tight-fitting sleeve is slipped over the stub of the tie and is rocked within the confines of the hole until the stub tie breaks off, and the hole is patched without feather edges.

3,724,061

METHOD AND APPARATUS FOR PIPELINE CONNECTION

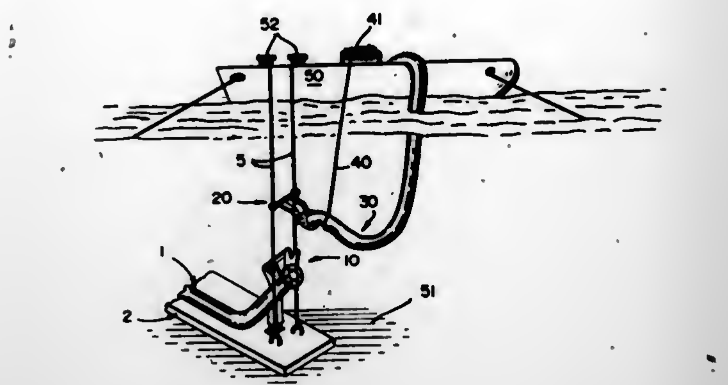
Dirk A. Schipper, P.O. Box 28, Tapline, Sidon, Lebanon

Filed July 7, 1971, Ser. No. 160,309

Int. Cl. B23q *3/00*

U.S. Cl. 29—464 **9 Claims**

A method and apparatus for aligning the mating surfaces of two sections of fluid conduit that are to be joined, one section of which is lowered from a position above the other, and for maintaining this aligned configuration of the mating surfaces until the joining of the aligned sections can be accomplished. The method and apparatus involves the use of notched plates attached to the fixed conduit section and a T-bracket attached to the conduit section being lowered between a pair of fixed guidelines, which T-bracket engages with the notched plates and guides the mating surface of the conduit section being lowered into mating alignment with the fixed conduit section.



3,724,062

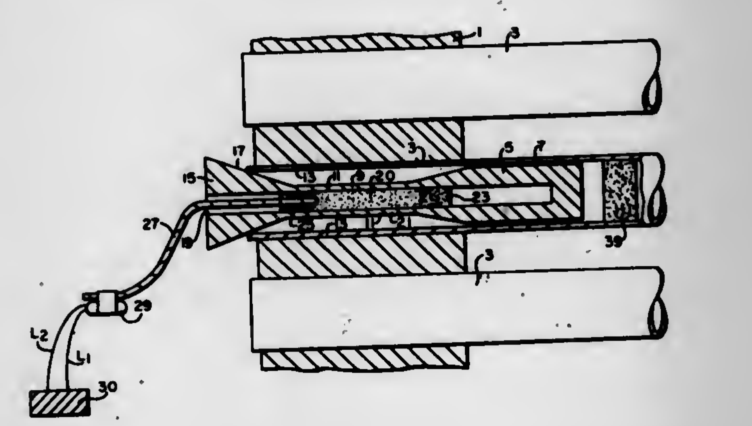
EXPLOSIVELY WELDED PLUG FOR LEAKY TUBES OF A HEAT EXCHANGER AND METHOD OF USING THE SAME

Roger E. Cantrell, and Louis A. Sturiale, both of Tampa, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 18, 1971, Ser. No. 125,514

Int. Cl. B23k *21/00*

U.S. Cl. 29—470.1 **10 Claims**



A plug for a leaky tube of a heat exchanger, the plug being weldable to the leaky tube by a shock wave propagated by an explosive charge disposed within the plug and a method of plugging a leaky tube by explosively welding the plug to the leaky tube.

3,724,063

METHOD OF MAKING RIVETED JOINT

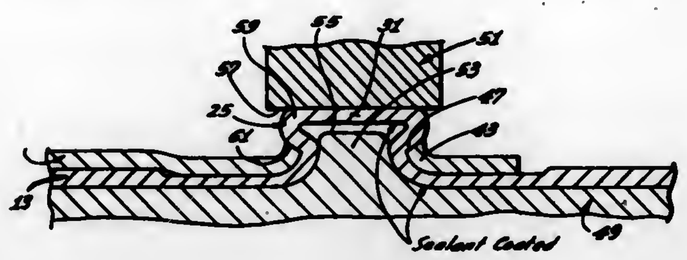
Omar Brown, Kettering, Ohio, and George F. Smyth, Los Angeles, Calif., assignor to Ermal C. Fraze, Dayton, Ohio

Division of Ser. No. 881,408, Dec. 2, 1969, Pat. No. 3,637,106. This application May 10, 1971, Ser. No. 141,574

Int. Cl. B21d *39/00;* **B23p** *11/00*

U.S. Cl. 29—509 **5 Claims**

A container wall having a tear portion attached to a tab by a hollow rivet which is formed in the tear strip and which extends through an aperture in the tab. The sheet material around the aperture is deformed outwardly with a liberal radius of curvature to form a boss which terminates in an annular end face forming a conical seat. The end face slopes toward the can top as it extends radially inwardly. The hollow rivet is expanded in a manner to form the head of the rivet against the conical seat to permanently join the tab to the container wall.



3,724,064

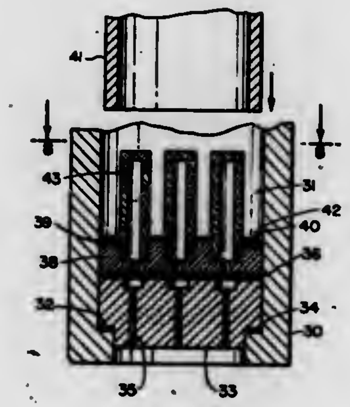
SEALING METHOD

Lambert H. Mott, c/o Mott Metallurgical Corp., P.O. Drawer "L" Farmington Industrial Park, Farmington, Conn.

Continuation-in-part of Ser. No. 215,458, Jan. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 51,884, July 2, 1970, abandoned. This application May 3, 1972, Ser. No. 249,967

Int. Cl. B21d *39/00;* **B23p** *11/00*

U.S. Cl. 29—520 **9 Claims**



A filter element for the high pressure filtration of synthetic polymers is locked and sealed in a filter body by providing a peripheral shoulder in the filter element and a soft metal rim seated in the peripheral shoulder, the rim having a longitudinal corrugation which is flattened to radially expand the rim inward and outward to lock and seal the filter element in the filter body. A hard metal locking rim may be used to provide a seal if a means is provided to maintain a pressure on the rim to flatten its corrugation and expand it inward and outward. Other elements may be sealed by the method of this invention.

3,724,065

FABRICATION OF AN INSULATED GATE FIELD EFFECT TRANSISTOR DEVICE

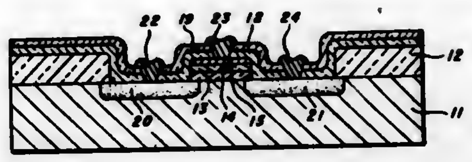
Bernard G. Carbajal, III; William Milton Gosney, both of Richardson, and Lou H. Hall, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 1, 1970, Ser. No. 77,222

Int. Cl. B01j *17/00*

U.S. Cl. 29—571 **16 Claims**

An insulated gate field effect transistor is fabricated by a sequence of steps beginning with the growth and patterning of a thick oxide layer on an n-type silicon wafer. A thin gate-dielectric film is then formed on the exposed silicon surface, followed by deposition and patterning of the gate electrode thereon. The excess gate dielectric is removed, using the electrode as an etch resistant mask, and the wafer is then covered with a boron-doped silane oxide diffusion source for the formation of p-type source and drain regions. The resulting self-aligned and passivated-gate structure is then provided with ohmic contacts to complete the device.



3,724,066

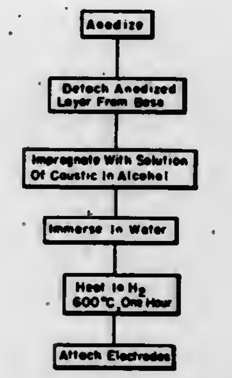
LIGHT AMPLIFIERS

Eugene Wainer, Shaker Heights; Selwyn H. Rose, Beachwood, and Theodore M. Harkulich, Chagrin Falls, all of Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated of Ohio, Cleveland, Ohio

Division of Ser. No. 764,370, Sept. 20, 1968, Pat. No. 3,626,233. This application July 19, 1971, Ser. No. 165,827

Int. Cl. B23p *17/04*

U.S. Cl. 29—592 **11 Claims**


Anodize
Detach Anodized Layer From Base
Impregnate With Solution Of Caustic In Alcohol
Immerse In Water
Heat In H2 600°C, One Hour
Attach Electrodes

Microchannel plates prepared from anodized aluminum layers etched to increase the pore volume to approximately 50 percent and then treated to exhibit suitable electrical properties for use as a channel plate.

3,724,067

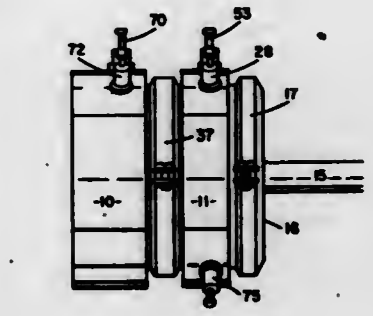
METHOD OF ASSEMBLING A SWITCH BY THE USE OF AN ALIGNING PIN

Charles M. Tygard, and James H. Cameron, both of West Covina, Calif., assignors to Spectrol Electronics Corporation, City of Industry, Calif.

Division of Ser. No. 828,617, May 28, 1969, Pat. No. 3,585,562. This application June 1, 1970, Ser. No. 54,045

Int. Cl. H01h *11/00, 11/02*

U.S. Cl. 29—622 **2 Claims**



A combined potentiometer and switching structure including wiper contacts fixed to a shaft and having contacting engagement with an annular resistor and a pair of switching rings. The wiper contacts are located coincident, or in phase relation. The switching rings are each provided with an interrupted area, such areas are located in an arc complemental to the arc of the resistor and are circumferentially spaced apart a distance not greater than the length of the resistor contacting surface whereby, during rotation of the shafts, circuits connected to the switch rings are opened at different positions with respect to the resistor wiping contact. Alignment openings in the rings accommodate a pin to permit proper positioning of the rings relative to one another and also provide a passage for a conductor upon removal of the pin once the rings are properly positioned and secured against displacement.

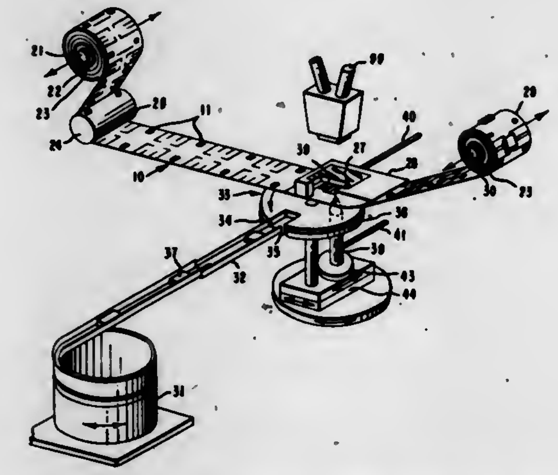
3,724,068
SEMICONDUCTOR CHIP PACKAGING APPARATUS AND METHOD

Richard J. Galli, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1971, Ser. No. 118,805

Int. Cl. H05k *3/30*

U.S. Cl. 29—626 **21 Claims**



An apparatus for packaging semiconductor device chips (e.g., integrated circuit chips) using flexible transparent carrier strips having metallizations thereon. This apparatus accomplishes inboard bonding of the active face of the chip to the carrier metallizations, die bonding of the nonactive face of the chip to the substrate, and outboard bonding of the carrier metallizations to substrate metallizations, to form a package. Also, an apparatus for the inboard bonding step, as well as an apparatus for die and outboard bonding. Continuous automated bonding at high rates is possible using this apparatus. Also, a method for packaging chips.

3,724,069
ELECTRIC CAN OPENER WITH REMOVABLE CUTTER MOUNTING PLATE AND PIVOTALLY ATTACHED HAND LEVER

Robert E. McLean, Raytown, Mo., assignor to Rival Manufacturing Company, Kansas City, Mo.

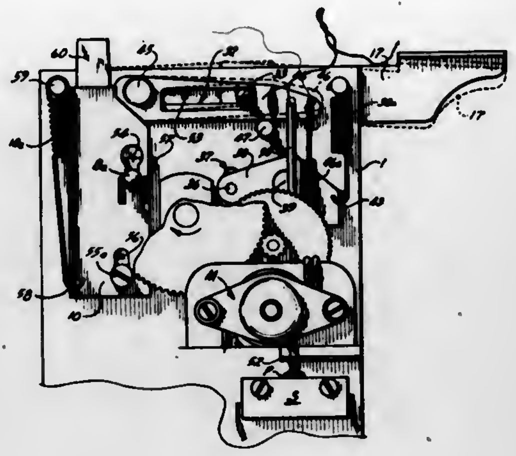
Filed Sept. 3, 1971, Ser. No. 177,688

Int. Cl. B67b *7/38*

U.S. Cl. 30—4 R **10 Claims**

An electrically powered can opener with power-pierce and automatic shutoff has a cutter mounting plate (carrying the can cutter member thereon) which is selectively removable from its operative position on the upright can opener frame. A hand lever is pivotally connected to the cutter mounting plate with an interposed plate and spring combination located therebetween to assist the pivotally attached lever in moving the cutter mounting plate so that the cutter member and can feed wheel are either appropriately separated or brought into an operative position for piercing and severing the end from the can. The can opener frame has a movable can guide extending therefrom which cooperates with a fixed can guide extending from the cutter mounting plate to assist in initiating the power-pierce and automatic shutoff. A portion of the cutter mounting plate assists in the movement of the movable can guide. The hand lever has a surface for contacting a cutter mounting plate mating surface to pivot the cutter mounting plate (and the associated cutter element located thereon) in a direction to permit either insertion of a can to be opened into the can opener or to permit the opened can to be released therefrom.

A second embodiment of the invention modifies the construction of the cutter mounting plate so that the upward swinging of the pivotally mounted hand lever is not resisted by the spring force of the movable can guide as the lever is swung upwardly. This latter feature eliminates the tendency to tilt or to rotate the entire can opener when the hand lever is so swung.



Both embodiments of the invention include a spring biased push button operated latch which engages the pin member extending from the cutter mounting plate through the upright frame so that removal of same (and the cutter member carried thereon) is accomplished by manipulation of the push button latch.

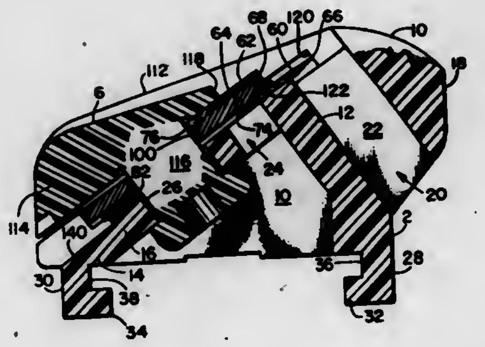
3,724,070
DUAL RAZOR BLADE ASSEMBLY

Francis W. Dorion, Jr., Hingham, Mass., assignor to The Gillette Company, Boston, Mass.

Filed March 15, 1971, Ser. No. 124,068

Int. Cl. B26b *21/06, 21/22*

U.S. Cl. 30—47 **20 Claims**



A razor blade assembly including a platform member connected to a cap member with blade means disposed therebetween. The blade means comprises a plurality of blade members having cutting edges extending in the same direction, whereby in a shaving operation all the cutting edges are utilized substantially simultaneously.

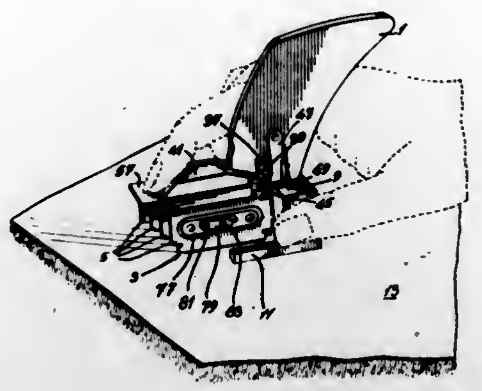
3,724,071
CUTTING TOOL FOR PELTS OR THE LIKE

Horace Hurtubise, 3256 rue Allard, Ville Emard, Quebec, Canada

Filed Feb. 1, 1971, Ser. No. 111,374

Int. Cl. B26b *29/00, 3/04*

U.S. Cl. 30—287 **12 Claims**



Tool for cutting fur pelts, sheets of leather, or the like, into narrow strips and formed of a handle to which block of cutting blades is removably fixed. The blades are removably secured to a body in spaced parallel relationship; the spacing between blades being equal to the desired width of the strips.

In a first embodiment, the blades are secured to the body in such a manner that the cutting tips lie in a line that extends obliquely with respect to the longitudinal axis of the blade block, that is at an angle less than 90° with respect to the direction of cutting. In this embodiment, the blade block is removably mounted on the handle by being clamped between two jaws, one of which can be bodily displaced toward the other in clamping engagement.

In the second embodiment, the blade body is removably mounted on an arm extending from the handle, being held thereto by a spring biased locking pin removably received in a T-shaped slot of the body.

3,724,072
SHEARHEAD FOR DRYSHAVERS

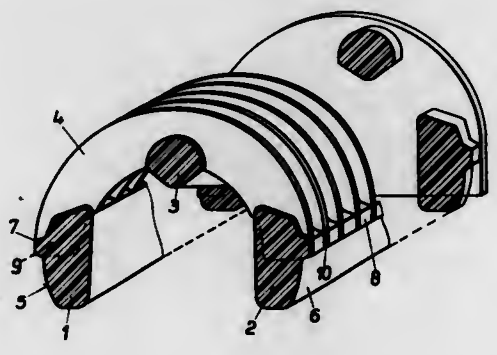
Werner Messinger, Kronberg, Taunus, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed April 16, 1971, Ser. No. 134,682

Claims priority, application Germany, April 23, 1970, P 20 19 744.8

Int. Cl. B26b *19/04*

U.S. Cl. 30—346.51 **7 Claims**



An elongated mounting body of a shearhead for dryshavers has opposite lateral side faces. A plurality of cutter blades are mounted on the mounting body straddling the same transversely of its elongation and having free edge portions which project laterally beyond the side faces thereof. Ribs are provided on and laterally project from the respective side faces and each surround and embed one of the edge portions of the respective cutter blades.

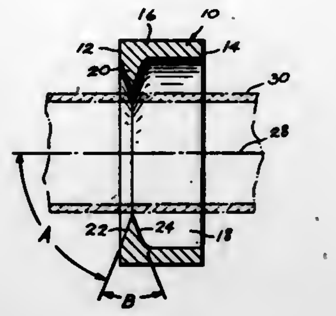
3,724,073
ANNULAR CUTTER FOR TUBING

Stephen H. Lewandowski, Decatur, Mich., assignor to Hamilton Alloy Products, Inc., Decatur, Mich.

Filed March 10, 1971, Ser. No. 122,767

Int. Cl. B23d *21/04*

U.S. Cl. 30—347 **4 Claims**



A cutter for tubing which is adapted for use in a machine which imparts circular-oscillative movement to the cutter. The cutter includes a bore through which the tubing is inserted and an annular V-shaped cutting part which protrudes into the bore and which, upon movement of the cutter, causes the tubing therein to be separated into selected lengths. The annular cutting part of the cutter is continuous and is defined by converging first and second faces each extending at an acute angle to the axis of the cutter bore.

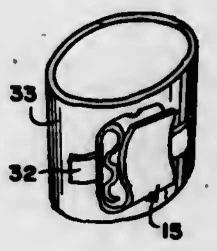
3,724,074
BRACKETS FOR SUPPORTING ARCH WIRES, AND ADAPTED TO FUNCTION IN ORTHODONTIC PROCEDURES IN SYSTEMS FOR TILTING, UPRIGHTING AND TURNING TEETH

Melvin Wallshein, 8645 Bay Parkway, Brooklyn, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,556

Int. Cl. A61c *7/00*

U.S. Cl. 32—14 A **14 Claims**

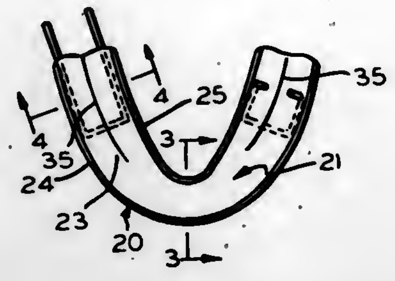


The brackets are made of resilient strip material bent in sinuous, convolute or tortious formations to include bight-joined flights one in front of another offering a plurality of V-clamp structures with transverse channels for arch wires of various sizes and cross-sections; the rear flight being fixed onto a band which is for tight fit onto a tooth. The channels may have fulcrum teeth or teats to grip an arch wire against movement therealong and may be made to serve to aid a slight tilting movement of a tooth. A fulcrum may be provided by having a narrow intermediate flight. For appreciable tilting and uprighting of a tooth, the channel is flared from a central region to have the form of the longitudinal half of an hourglass shape, thus providing a fulcrum and clearance for arch wire movement in a vertical plane. The bracket is also adaptable to move a tooth a part turn about its longitudinal axis. The

V-clamps function cumulatively, offering high clamping action. The flights may have transverse dents for tie wires.

3,724,075
UNIVERSAL TOOTH POSITIONING AND RETAINING APPLIANCE

Peter C. Kesling, Green Acres, LaPorte, Ind.
Filed March 8, 1971, Ser. No. 121,771
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 B **14 Claims**



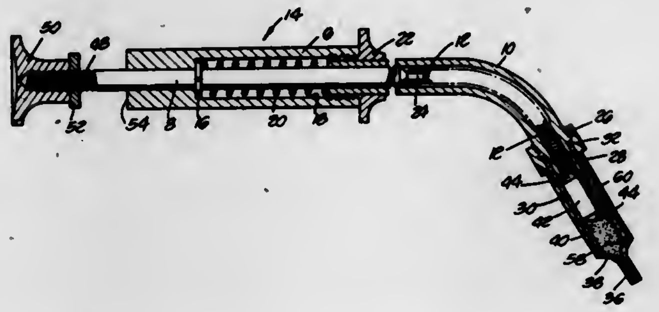
An orthodontic appliance for use in the final stages of orthodontic treatment to ideally position and retain teeth, which comprises an arch-shaped body of resilient material having upper and lower archways for receiving the upper and lower arches of a patient, and seating springs anchored to the body for engagement in embrasure areas to maintain the appliance in place and cause closing of teeth spaces. The appliance is premolded in several sizes, and the seating springs are custom fitted to the patient's arches in a short period of time by the orthodontist, thereby eliminating the usual wait for a custom molded appliance produced from impressions of the patient's teeth.

ERRATUM

For Class 32—19 see:
Patent No. 3,724,099

3,724,076
DENTAL CEMENT GUN

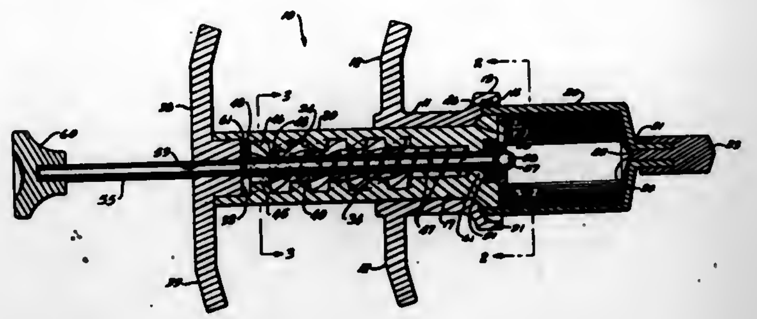
William L. Schmitz, San Marino, Calif., assignor to Vac-O-Cast, San Marino, Calif.
Filed April 5, 1971, Ser. No. 130,943
Int. Cl. A61c *5/04*
U.S. Cl. 32—60 **3 Claims**



A device for forcing or expressing dental cavity filling materials into tooth cavities wherein the materials are incompatible with metals or will objectionably adhere thereto and wherein those portions of the device are not contacted by the dental filling materials desirably are of metal, and those portions which are located within the filling materials and from which said materials are forced or expressed into the cavities, are of plastic or similar substances unaffected by the dental filling materials; the device including structure simplifying the charging thereof with the filling materials and also being constructed to utilize as much of said filling materials as possible without waste due to the expense of said filling materials.

3,724,077
MIXING SYRINGE

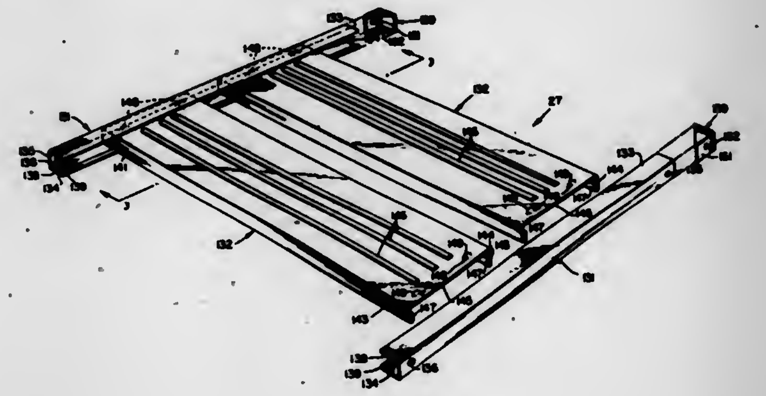
Leonard A. Preston, Monrovia, and Seymour J. Shriver, Glendora, both of Calif., assignors to Unitek Corporation, Monrovia, Calif.
Filed Nov. 26, 1971, Ser. No. 202,089
Int. Cl. A61c *5/04*
U.S. Cl. 32—60 **12 Claims**



A syringe for mixing and dispensing compounds or mixtures such as dental impression materials. Components of the material to be mixed are placed in a disposable cup which is attached to the syringe. A plunger knob on the syringe is next repeatedly depressed against a return spring to drive a rotating slotted mixing plate back and forth through the material to effect mixing. A pair of handles on the syringe are then squeezed toward each other to force the mixed material out of a nozzle on the cup.

3,724,078
LOCK JOINT FOR FABRICATED PLATFORM ASSEMBLIES

Edward T. Carlin, and Bobby L. White, both of Shreveport, La., assignors to Gym-Dandy, Inc., Bossier City, La.
Division of Ser. No. 863,603, Oct. 3, 1969, Pat. No. 3,601,397. This application Feb. 18, 1971, Ser. No. 116,683
Int. Cl. E04f *11/16*; E04c *2/30*
U.S. Cl. 52—177 **6 Claims**

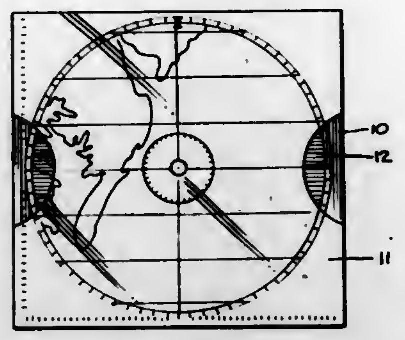


A platform assembly fabricated from a pair of channel-like supporting rails and one or more channel plate platform members end connected into the opposing channel grooves of the rails through longitudinally spaced slots in the lower rail, channel groove, side faces receiving the dependent channel plate side flanges and upstanding, button punched, protuberances formed at the opposite ends of the channel plate main body to interlockingly engage with the upper rail, channel groove, side faces. A positive interlock and smooth rounded exposed flange edge construction is secured by return bending the free flange edges of both the rails and channel plate platform members upon themselves so the spaced rails slots can be formed in the return bent portions of the lower rail, channel groove, side faces and the upstanding protuberances may

be cammingly engaged with the return bent portions of the upper rail, channel groove, side faces during endwise entry of the channel plate ends into the rail channel grooves to final home position with the protuberances end butted with the terminal ends of the return bent portions of the upper rail, channel groove, side faces.

3,724,079
NAVIGATIONAL CHART DISPLAY DEVICE

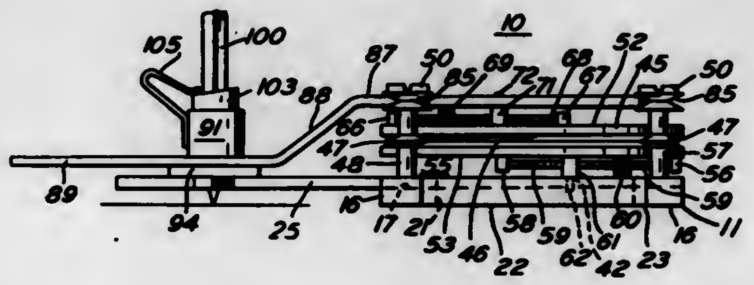
Robert E. Jasperson, and Mitchell Arthur Kapland, both of Annapolis, Md., assignors to Trident Engineering Associates, Inc., Annapolis, Md.
Filed Sept. 23, 1970, Ser. No. 74,702
Int. Cl. G03b *21/00*
U.S. Cl. 33—1 SD **3 Claims**



A navigational chart display device which is adapted to enable a pilot to fix his position, to plot courses and to measure distances. The device is constituted by a stationary board having printed within a circular zone on the face thereof a Mercator projection of a selected region, the zone being encircled by a true compass rose. Within the true compass rose and concentric therewith is a magnetic variation rose. Superposed on the chart board is a transparent writing panel, and sandwiched therebetween is a transparent disc which is pivotally mounted for rotation about the zone center of the chart. The disc is provided with orthagonally-crossed diameter lines ruled thereon, which lines terminate in pointers and are adapted to indicate angular positions with respect to the true compass rose, the disc also having an array of equi-spaced grid lines ruled thereon in parallel relation to one of the diameter lines. The grid lines on the rotatable disc serve to plot bearings, lay off courses, plot latitude and longitude coordinates and to measure distances, these procedures being carried out by drawing erasable lines on the writing board.

3,724,080
ELLIPSE COMPASS

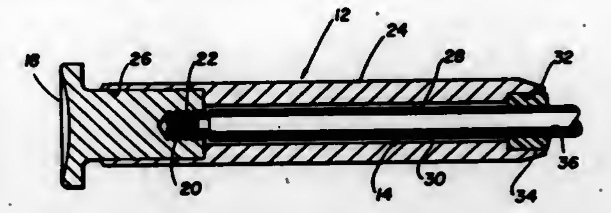
Leslie Kane, Philadelphia, Pa., assignor to Kane and Sullivan, Inc., Mechanicsville, Pa.
Filed May 3, 1972, Ser. No. 249,875
Int. Cl. B43l *11/04*
U.S. Cl. 33—30 D **9 Claims**



An ellipse compass is provided that has a base plate, a top plate, an intermediate plate, and rotatable disc therebetween with pins adjustable as to their positions engaged in the top plate and intermediate plate such that relative motion is obtained therebetween to permit drawing of ellipses, and which may include a gauge to determine the setting of the minor axis dependent on the size of the major axis.

3,724,081
DENTAL INSTRUMENT

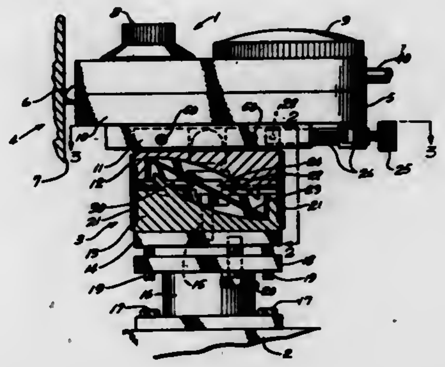
John C. Windecker, 355 Wheatley Road, Old Westbury, N.Y., and William Hayman, 53 Woodland Drive, Oyster Bay Cove, N.Y.
Filed Sept. 7, 1971, Ser. No. 178,257
Int. Cl. A61c *3/00*
U.S. Cl. 32—40 R **4 Claims**



A dental instrument having its gripping end centered in an oversized internal bore of its handle so that there is minimal amount of vibration transmitted to the handle.

3,724,082
FLEXURE MOUNTING FOR FRICTION-WHEEL MEASUREMENT DEVICE

Irven H. Culver, Playa del Rey, Calif., assignor to Primus Mfg. Inc., San Lorenza, Puerto Rico
Continuation-in-part of Ser. No. 9,872, Feb. 9, 1070, abandoned. This application Aug. 27, 1970, Ser. No. 67,379
Int. Cl. G01b *3/12*
U.S. Cl. 33—141 E **19 Claims**

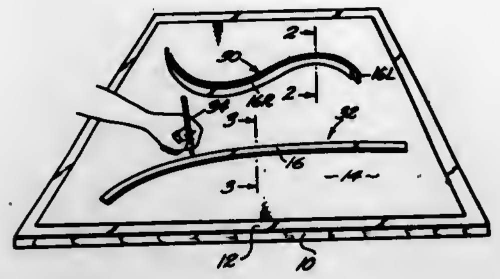


A mounting and biasing mechanism for maintaining an essentially constant tracking force between a frictionally driven distance measuring metering wheel and a measurement surface, along which the wheel rolls in use, is described. An end-loaded leaf spring of desired stiffness provides the desired tracking force, and is preloaded and predeflected as a slender column so that the wheel follows undulations of the measurement surface with essentially no change in the force applied by the spring to the wheel.

3,724,083
MAGNETIC STRIP DRAFTING INSTRUMENT

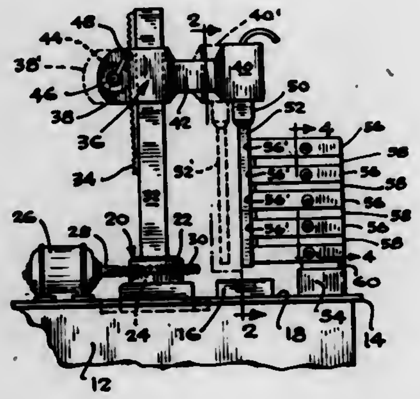
Charles W. Mehl, P.O. Box 728, Redlands, Calif.
Filed April 17, 1970, Ser. No. 29,427
Int. Cl. B43l *13/20*
U.S. Cl. 33—177 **1 Claim**

An instrument comprising two or more elongated flexible strips of plastic having magnetic properties such that when the strips are in a first position relative to one another, they overlap their full widths and cling together to form a multiple thickness assembly; and in a second position with the ends of one strip reversed relative to the other, they overlap only half widths. In the first position, the strips form a laminated flexible drafting spline which adheres to a sheet-steel-faced board underlying a sheet of drawing paper. There are measurement graduations and indicia along the edges and the two overlapping strips can be slipped endwise with respect to one another to form an extensible measuring tape for measuring distances along curved lines. Strips with logarithmic graduations can be used in said second position to form a slide rule.



3,724,084
ALIGNMENT APPARATUS

Leonard D. McNeece, 1913 Saint Charles Road, Maywood, Ill.
Filed Sept. 28, 1970, Ser. No. 75,941
Int. Cl. B27g *23/00*
U.S. Cl. 33—185 R **1 Claim**

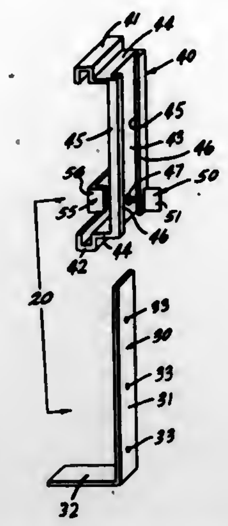


An apparatus comprising a probe element for aligning and for checking the alignment of a tool, or the like, with respect to a work piece. The tool is moved into engagement with the probe element thereby activating indicators which are provided on the probe to provide a manifestation of alignment or mis-alignment. Once the tool, or other element, has been aligned it usually will maintain this condition during a normal period of use.

3,724,085
DRAPERY ROD INSTALLATION TEMPLATE

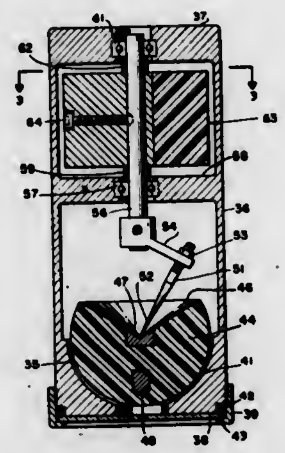
Henry C. Wentworth, 948 Pine Street, Muskegon, Mich.
Filed Feb. 16, 1971, Ser. No. 115,231
Int. Cl. B25h *7/00*
U.S. Cl. 33—189 **12 Claims**

This drapery template includes a flat, elongated rule, having a linear rib projecting rearwardly from the rear face of the rule so that it can be hung on a window casing. There are a plurality of regularly spaced markings along the length of the rule whereby the distance of one end of the rule from the vertical edge of a window casing can be determined. Near the same end of the template, there are a pair of vertically spaced drill guide fixtures extending through the body of the rule. A pair of casement brackets can be slidably mounted on the rule such that it can be used in conjunction with a casement window. A second similar rule, with drill guide fixtures located at the opposite end from the drill guide fixtures of the first rule includes a bracket whereby the two rules can be releasably engaged together in endwise abutment.



3,724,086
INSTRUMENT MOUNTING

Henry P. Lichte, Jr., Houston, Tex., assignor to Sperry Sun Well Surveying Company, Sugar Land, Tex.
Continuation of Ser. No. 778,491, Nov. 25, 1968, abandoned. This application April 6, 1970, Ser. No. 26,044
Int. Cl. G01c *17/02*
U.S. Cl. 33—304 **16 Claims**



The particular embodiment described herein as illustrative of one form of the invention utilizes, in an instrument for lowering into a wellbore, an indicator device mounted in an inverse position in the instrument for measuring angular parameters of the wellbore, and a camera unit for recording the indicator measurements. The indicator is positioned above the camera in a fluid environment and on a pivotal surface with the indicator face pointing down. In order to permit a high angle of operation of the instrument, the pivotal surface is movable with respect to the indicator so that the pivot does not restrict the movement of the indicator for measurements in wellbores having an inclination up to 90°.

3,724,087
SPIRIT LEVEL WITH TRANSLUCENT SPIRIT VIAL HOUSINGS

Seymour A. Ostrager, 1188 Grand Concourse, Bronx, N.Y.
Filed Oct. 26, 1970, Ser. No. 84,040
Int. Cl. G01c *9/32, 9/30*
U.S. Cl. 33—348 **9 Claims**

A spirit level of elongated structure for determining plumb and horizontal orientations having spirit vial units at longitudinally spaced intervals thereof is provided. The spirit level frame comprises an elongated channel having parallel side

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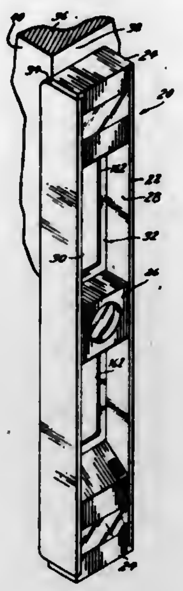
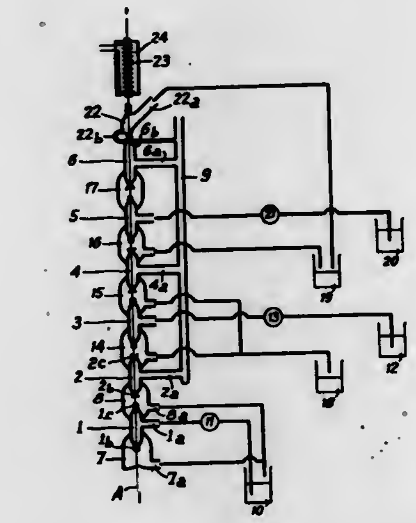
walls and a connecting web extending perpendicularly between the side walls. The side walls form a recess which is adapted to receive the spirit vial units. At least one of the spirit vial units has a pair of spirit vials disposed perpendicularly to each other to permit simultaneous reading of both spirit levels to determine plumb. The spirit vial unit has a translucent housing for maintaining the vials in the recess. The housing has a transparent window to enable simultaneous reading of both the vials from a lateral position. The remaining portion of the translucent housing facilitates ease of reading by providing additional light to the vials while preventing the viewer from confusing other structure within the housing with said vials.



3,724,088
PROCESS USING SHOCK WAVES FOR THE CONTINUOUS TREATMENT OF THREADS

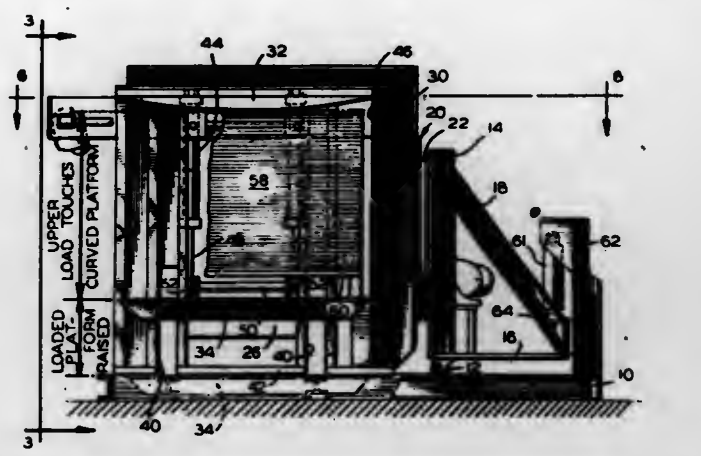
Michel S. M. Lefebvre, Saint-Ouentin, and Jean-Claude M. L. Hennion, Arly, both of France, assignors to Omnium De Prospective Industrielle, Saint-Quentin, France
Filed Jan. 18, 1971, Ser. No. 107,166
Claims priority, application France, Jan. 21, 1970, 7002183
Int. Cl. F26b *5/04*
U.S. Cl. 34—16 **6 Claims**



This invention relates to a process for squeezing and/or drying a humid thread, particularly a textile thread, in the course of a treatment, such as dyeing, effected continuously on said thread during the rectilinear displacement thereof, wherein the humid thread is passed into a zone traversed by a current of air at a pressure much lower than the pressure prevailing about the thread during the operation having provoked it humidification. The invention also relates to an apparatus for continuously treating a thread, for example a textile thread, applying the process as described hereinabove.

3,724,089
SHEET WINDING, TURNING AND ALIGNING METHOD AND APPARATUS

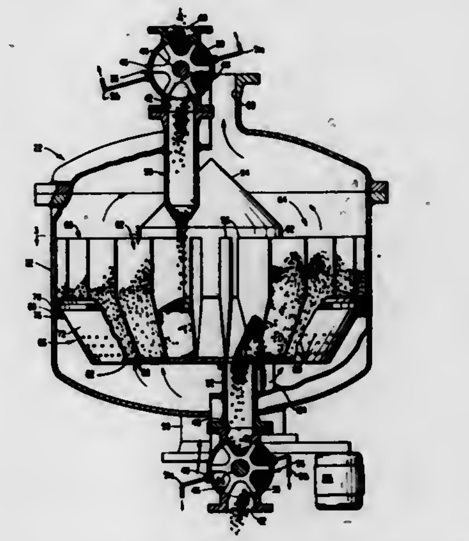
Gene C. Thompson, Hollis Center; Joseph W. Radomski, Saco, and David E. Wilson, Cumberland Center, all of Maine, assignors to Southworth Machine Company, Portland, Maine
Continuation-in-part of Ser. No. 147,944, May 28, 1971, Pat. No. 3,680,220. This application Dec. 2, 1971, Ser. No. 204,252
Int. Cl. F26b *3/04*
U.S. Cl. 34—23 **18 Claims**



A sheet winding, turning and aligning method and apparatus for printed paperboard sheets and the like wherein a stack of horizontal sheets comprising the stack are rotated in the vertical plane while being confinedly supported, beyond 90°, with the boards being projected against a curved plate to implement breaking any ink pack which may be in a load due to movement of the sheets against one another and to provide enhanced column strength to prevent a tendency of the board slipping to the bottom of the pile as retaining jaws of the turner are opened, with resultant bottom edge pressure preventing proper winding or aeration, the boards or sheets comprising the load subsequently being tilted by the device to dispose the bottom and side edges at an angle from the horizontal and the vertical planes and vibrating and aerating the bottom and side edges of said sheets when so tilted to align sheet edges.

3,724,090
APPARATUS FOR PROCESSING PARTICULATE SOLIDS

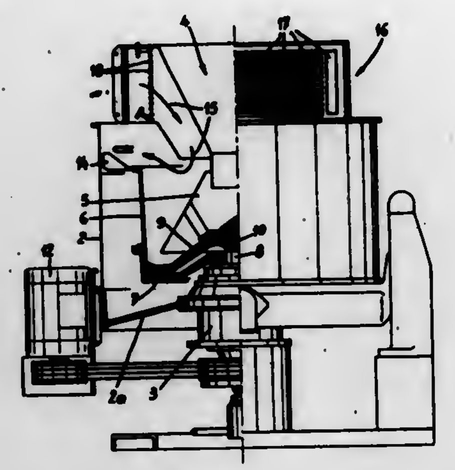
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Division of Ser. No. 44,464, June 8, 1970, Pat. No. 3,615,668. This application Nov. 3, 1970, Ser. No. 86,457
Int. Cl. F26b *17/22*
U.S. Cl. 34—57 D **11 Claims**



Apparatus for processing particulate solids in a continuous operation, which includes a reactor, a system for heating and circulating a fluid through the reactor, and arrangements for continuously supplying material to be processed to and discharged from the reactor.

3,724,091
CONTINUOUS PRODUCTION CENTRIFUGE

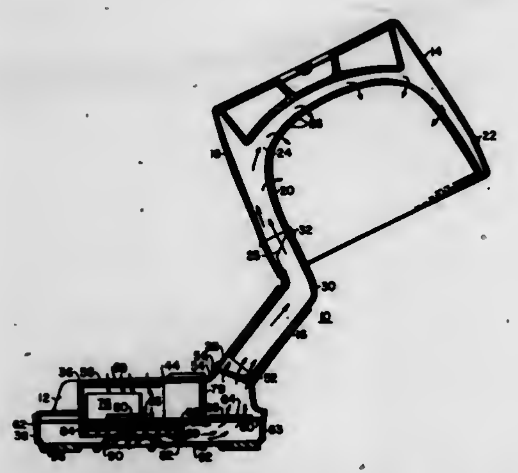
Joseph Antoine Noel Rousselet, Montalivet, Annonay, France
Filed May 11, 1971, Ser. No. 142,248
Int. Cl. F26b *17/30*
U.S. Cl. 34—58 **7 Claims**



In a continuous-production centrifuge comprising a loading hopper, a material distributing cone, a material receiving perforated basket and a push-pan housed in the bottom of said basket and adapted to be moved in the axial direction thereof for pushing the dried material towards the free edge of said basket, this assembly is disposed centrally of a fixed tank and characterized in that this tank comprises a tangential outlet orifice located at the level of the free edge of said perforated basket, this edge comprising blades adapted to direct the dried material towards said outlet orifice and to create an air current for pneumatically transferring the material, adequate collecting means being provided on the outer side of said orifice; the kinetic energy of the material is utilized for projecting same tangentially towards said outlet orifice, means being provided for adjustably heating the air or gas introduced into the tank of the machine and partaking in the transfer of said material, in order to accelerate the drying of said material.

3,724,092
PORTABLE HAIR DRYER

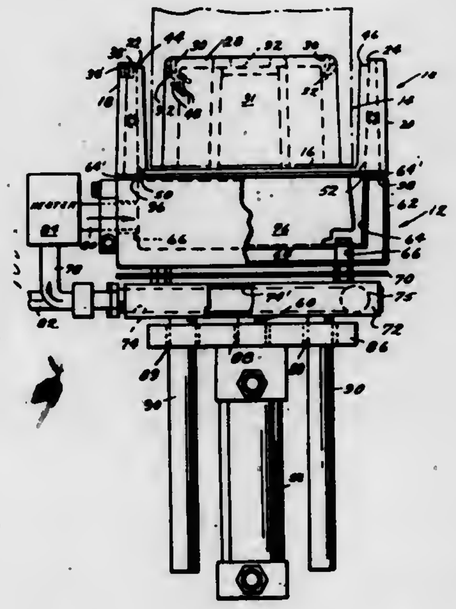
Earl W. McCleerey, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 12, 1971, Ser. No. 161,667
Int. Cl. A45d *20/00*
U.S. Cl. 34—99 **4 Claims**



A portable hair dryer having a base generally comprising a molded casing housing a motor and centrifugal fan assembly, a heater element, air inlet openings for receiving ambient room air and delivering it to a duct connected to an air chamber having a plurality of outlet openings and contoured to receive the head of hair to be dried. The centrifugal fan is characterized by a plurality of radially extending upper blades and lower blades separated by an intermediate plate. The air inlet includes an upper opening in the casing for air delivery to the upper blades and a lower opening for air delivery to the lower blades with the air expelled by the fan into a fan chamber directing it to a generally enlarged duct to substantially increase the capacity of the fan and the volume of air delivered to the hair.

3,724,093
HEATER FOR SEALING CARTON CONTAINERS

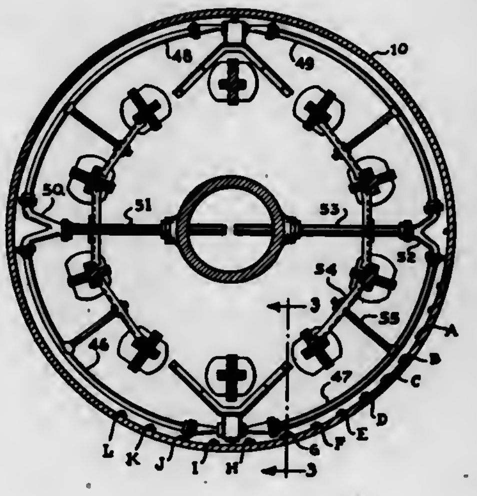
Howard E. Oilia, St. Paul, Minn., assignor to Haskon Incorporated, Warsaw, Ind.
Filed Oct. 30, 1970, Ser. No. 85,805
Int. Cl. F26b *25/00*
U.S. Cl. 34—104 **13 Claims**



A heating apparatus for use with a carton forming machine for selectively heating the sealing surfaces of carton closure elements. A hot air distributor head is formed to receive the closure elements of the carton in adjacent relationship and to selectively heat portions of the closure elements by convection and radiation.

3,724,094
ROTARY DRYING DRUM

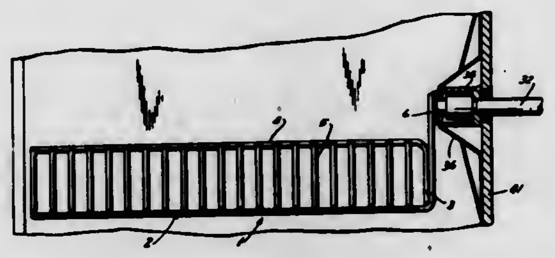
David W. Appel, and Sung Ho Hong, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of Ser. No. 720,055, April 10, 1968, abandoned. This application Feb. 16, 1971, Ser. No. 115,815
Int. Cl. F25d *11/02*
U.S. Cl. 34—124 **12 Claims**



A rotatably mounted cylindrical drier drum having a steam supply connection for directing steam into the drum and a condensate removal connection for removing condensate out of the drum, the drum being provided with a plurality of bars extending lengthwise of the drum and disposed on the internal surface of the drum for giving turbulence to the condensate in the drum, with the bars being spaced from each other from a spacing of 2.5 inches to a spacing of 7.4 inches with each of said spacings being multiplied by $d/2.2$, where d is the internal diameter of the drum in feet.

3,724,095
DELICATE GOODS TRAY

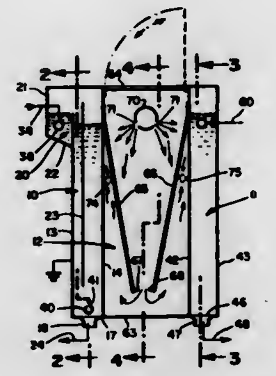
Terry J. Laue, and Leo V. Buck, both of Herrin, Ill., assignors to Fedders Corporation, Edison, N.J.
Filed June 1, 1971, Ser. No. 148,655
Int. Cl. F26b *11/02*
U.S. Cl. 34—139 **5 Claims**



The axle of a horizontally mounted drum is provided with a special female receptacle. A delicate goods tray is provided with a male fitting adapted to fit within the female receptacle so as to cantilever support the tray and hold it stationary during movement of the drum. The tray is particularly adapted to hold goods which cannot be subjected to tumbling action during a drying operation.

3,724,096
APPARATUS FOR DRYING AN ELECTROPHOTOGRAPHIC SUPPORT

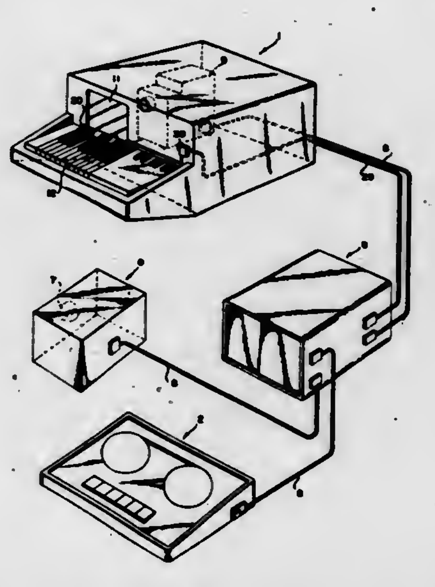
Arthur R. Mandeville, South Hadley, Mass., assignor to Scott Paper Company, Delaware County, Pa.
Filed May 6, 1971, Ser. No. 140,889
Int. Cl. F26b *13/00*
U.S. Cl. 34—150 **4 Claims**



A method for drying an electrophotographic support element containing on its front surface a latent electrostatic image which has been developed in a liquid medium, in which the support element is placed on a downwardly inclined foraminous member so that its back surface contacts the foraminous member and its front surface is directed away from the foraminous member, and cool air is circulated over the front surface and the back surface of the support element so as to evaporate the volatile components of the liquid medium from the support element. Apparatus for drying, in accordance with the method described, an electrophotographic support element containing on its front surface a developed latent electrostatic image, including means to circulate cool air over the front and back surfaces of the support element held in an inclined position in a drying chamber. The method and apparatus are particularly useful for drying support elements which are of unusually large size and weight and which have toned images of a type rendering the support elements suitable for use as lithographic masters or offset printing plates on a printing press.

3,724,097
PROGRAMMED AUDIO-VISUAL PRESENTATION OF INFORMATION FOR INSTRUCTION IN THE OPERATION OF KEYBOARD CONTROLLED INSTRUMENTS

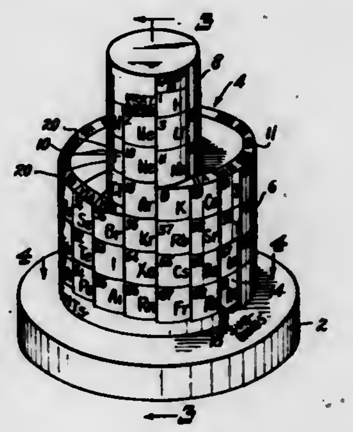
Arthur R. Schmoyer, 11708 River Road, Potomac, Md.
Filed June 10, 1971, Ser. No. 151,729
Int. Cl. G09b *15/04*
U.S. Cl. 35—6 **12 Claims**



A system for instruction in the operation of a keyboard controlled instrument includes means for playback of synchronized prerecorded instructional programs including audio instructions and pictorial representations of the proper position of an operator's fingers when carrying out the audio instructions. In alternative embodiments, the pictorial representation is presented either proximate to the respective keys or is projected directly upon the key surface, but in either instance the position of the pictorially represented keys corresponds to that of the actual keys of the keyboard. The effect of the pictorial representation may be reinforced by additional indicators in the form of lights associated with the individual keys and projected thereon.

3,724,098
PERIODIC TABLE DISPLAY DEVICE

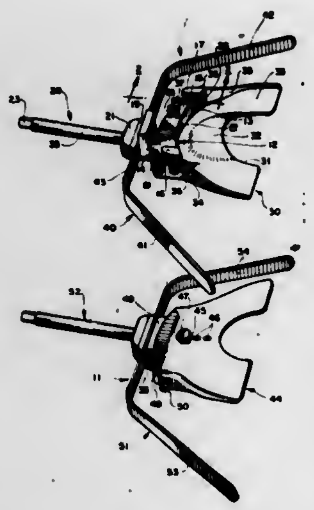
Dwight G. McSmith, 500 Chapel St., Hampton, Va.
Filed April 8, 1971, Ser. No. 132,292
Int. Cl. G09b *23/24*
U.S. Cl. 35—18 R **5 Claims**



A three-dimensional device for displaying the periodic table of chemical elements in a substantially continuous helical sequence with substantially all elements arranged to be adjacent those having sequential atomic number and with those of the same chemical family or group being arranged in the same column. A rotor in the device has indicia denoting the lanthanides and actinides and is rotatable to expose selected indicia through a window in the device.

3,724,099
REFERENCE PLATE WITH OUTRIGGERS FOR DENTAL WORK

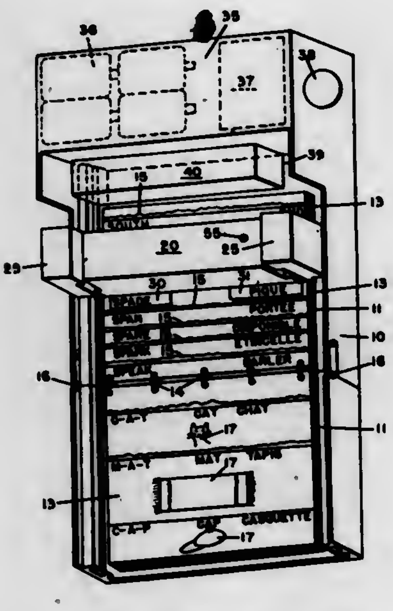
Charles Edward Stuart, P.O. Box 891, Ventura, Calif.
Filed July 21, 1971, Ser. No. 164,695
Int. Cl. A61c *9/00*
U.S. Cl. 32—19 **15 Claims**



A dental reference plate has a bearing plate hinged to a frontal bar generally shaped to conform with the anterior portion of a patient's teeth. Clamped between the frontal bar and a removable stud is a pair of outriggers which may be used in conjunction with external holding means to assist in firmly holding the reference plate against the patient's jaw.

3,724,100
TALKING BOOK

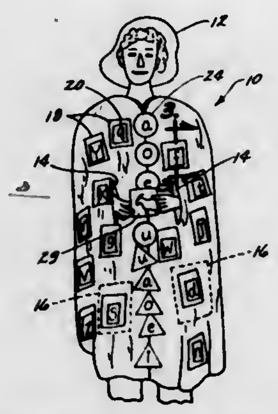
Emile G. Surel, 6 Brigham Lane, Medway, Mass.
Filed Jan. 25, 1971, Ser. No. 109,247
Int. Cl. G09b *5/06*
U.S. Cl. 35—35 C **8 Claims**



A talking book has pages with spaced-apart lines of recordings of the sounds of words. A slide is arranged to be movable by hand over the lines. Near one end of each line is the recorded word of that line written in one language, for example, English, and near the other end of that line is the recorded word of that line written in another language, for example, French. The slide has windows through which the written word can be seen. A motor driven pick-up head is supported by the slide, and is movable by the motor when the latter is started, over and along the length of a recorded line. The pick-up head contains a scanner for producing electrical currents of audio frequency corresponding to the recordings, which currents are amplified and converted into sound.

3,724,101
TEACHING GARMENT

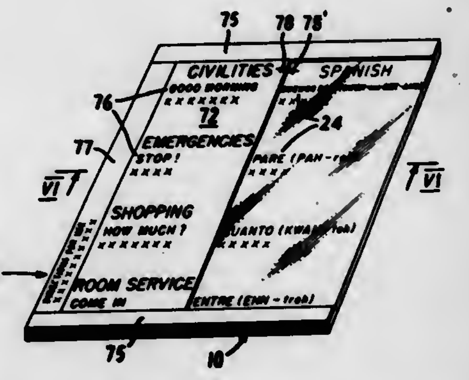
Imogene F. Slezak, 520 North 5th, Carlisle, Iowa
Filed June 16, 1971, Ser. No. 153,700
Int. Cl. G09b *1/08*
U.S. Cl. 35—35 R **9 Claims**



A cape for a teacher to wear having 21 colored patch pockets on the front with detachable patches thereon displaying the consonants of the alphabet. A vertical row of 10 patches down the center include long vowels in black on circles of white felt and short vowels on triangles of white felt. The patches having consonants and vowels may be removed from the garment and placed on a display board for spelling out words. The consonant patches are rectangular or square in shape. The pockets carry items or cards having first letters corresponding to the consonant on the patch.

3,724,102
LANGUAGE TEACHING DEVICE

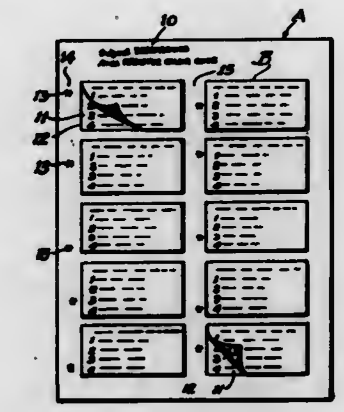
Charles A. Van Patten, 1220 Park Avenue, New York, N.Y.
Continuation-in-part of Ser. No. 206,103, Dec. 8, 1972, abandoned. This application May 24, 1972, Ser. No. 256,529
Int. Cl. G09b *19/08*
U.S. Cl. 35—35 H **20 Claims**



A language teaching device which includes an open-ended holder in which can be received a card having intelligence in a first foreign language provided on the opposite faces of the card. The intelligence is arranged on the card in a column of successive linear entries extending longitudinally of the card and corresponding intelligence in the language of the user is provided in like manner on portions of the sides of the holder, the holder being of a transparent material which is masked in respect of the portions thereof carrying intelligence so that the card may be viewed through the unmasked portions. The card and holder further are provided with cooperating indicia means for assuring that the corresponding side of the card appears through the unmasked portion of the holder and for aligning the intelligence on the card and that on the holder registrably thereby associating any given entry in the language of the card with its corresponding equivalent in the language of the holder.

3,724,103
METHOD FOR EDUCATIONAL TEST PREPARATION

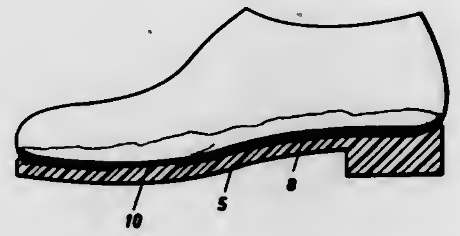
Donald Walker, 2603 Greenfield Avenue, West Los Angeles, Calif.
Filed Dec. 17, 1971, Ser. No. 209,035
Int. Cl. G09b *1/06*
U.S. Cl. 35—48 A **8 Claims**



Adhesive-back question-bearing slips are taken from a teacher's file and affixed to a copy holder which consists of a back sheet to which the slips are adhesively attached, and a transparent cover or flap which folds downwardly from its upper margin over the back sheet, and which is imprinted with suitable heading data. The composite of back sheet, with attached question-bearing slips, and transparent fold-over part, constitutes a master copy which is inserted in a duplicator and reproduced in sufficient quantity to provide test sheets for all pupils of a class taking an examination, the heading data as well as the questions appearing on each test sheet. When duplication is completed, the copy holder is removed from the duplicator, the question slips are detached from the copy holder, and the slips are returned to the teacher's file for preservation for possible future use.

3,724,104
SHOE AND METHOD OF MANUFACTURING SAME

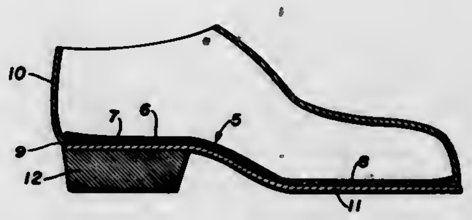
Otto Eder, Ternitz, and Wladimir Hascic, Maria Enzersdorf, both of Austria, assignors to Semperit Aktiengesellschaft, Vienna, Austria
Division of Ser. No. 839,728, July 7, 1969, Pat. No. 3,605,290. This application Jan. 18, 1971, Ser. No. 107,000
Int. Cl. A43c *13/08*
U.S. Cl. 36—14 **10 Claims**



There is disclosed a shoe having an outsole of elastic material in which the connection between the outsole and the insole is interrupted at least in that area of the insole that underlies the ball portion of a wearer's foot. According to the invention, the interruption of the connection is accomplished by cutting out such area of such insole to leave an opening that is filled with elastic outsole forming material. There is further disclosed a method of making such a shoe in which an upper joined to an insole provided with an outsole connection interrupting means in the form of a cut-out is pulled over a last, a mold cavity is closed by the last and outsole forming material introduced into such cavity to mold an outsole and bond same to said formed upper and insole except at the area provided with said connection interrupting means.

3,724,105
FOOTWEAR

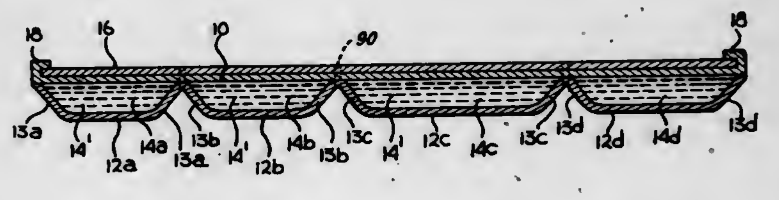
Donald Weight, Chalfont Saint Giles, England, assignor to Monsanto Chemicals Limited, London, England
Division of Ser. No. 793,559, Jan. 23, 1969, Pat. No. 3,624,191. This application March 18, 1971, Ser. No. 125,889
Int. Cl. A43b *13/38*
U.S. Cl. 36—44 **8 Claims**



Footwear, such as a boot or shoe, having an insole comprising an extruded foamed resin sheet wherein the resin is an ethylene-vinyl acetate copolymer or a blend thereof with polyethylene and has a polymerized vinyl acetate content of 2–17 percent by weight. The insole has a substantially uniform thickness, a substantially closed cell structure, and a density of 17–40 pounds per cubic foot. Preferably, the insole is treated with an electric discharge prior to being bonded to the other components of the article of footwear. The insole can be bonded to these other components by any suitable means, preferably by the use of an adhesive.

3,724,106
INSOLE STRUCTURE

Herbert Magidson, 1450 Carla Ridge, Beverly Hills, Calif.
Filed June 29, 1971, Ser. No. 158,018
Int. Cl. A43b *13/38*
U.S. Cl. 36—44 **4 Claims**



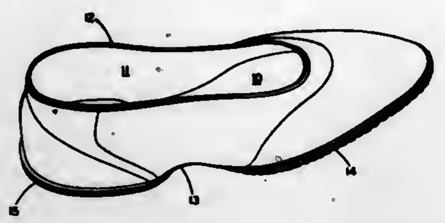
An insole structure for footwear comprised of upper and lower surfaces which form one or more internal cavities within the body of the structure, the cavities so formed containing a fluid such as water, air or a gel, providing thereby a durable and comfortable means for cushioning and supporting the feet inside footwear such as shoes, sandals, slippers and/or boots. The present invention may find embodiment in (i) a flexible contoured insole designed for insertion into conventional footwear or (ii) in footwear having the invented insole structure built into and made and integral part thereof. The shape, location, height, etc., of the cavities can be designed to achieve particular therapeutic objectives such as the support of weak arches.

3,724,107
ELASTIC OVERSHOES

Winnifred B. Makinen, Berea, and Raymond C. Srail, Parma, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,663
Int. Cl. A43b ***1/10***

U.S. Cl. 36—7.3 **6 Claims**



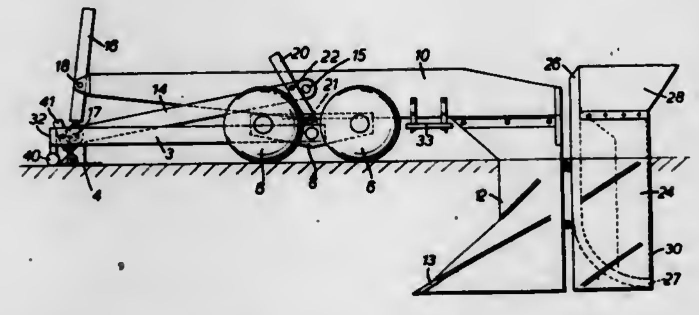
Elastic overshoes of the type which are stretched over the street shoes, commonly called "rubbers," are molded from a material which is elastomeric and vulcanized, and which when heated, stretched, and cooled, will retain the stretched size and shape. The overshoes may be heated and pressed into a solid cake for storage and shipping. Before use, the overshoes are reheated, stretched over the street shoes of the user while hot, and when cooled, will retain the proper size and shape to fit the user's shoes.

3,724,108
PLOW DEPTH ADJUSTMENT APPARATUS

Eric Arthur Clayton, Stockton-on-Tees, England, assignor to Hadswell Yates Developments Limited, Yorkshire, England

Filed Jan. 29, 1971, Ser. No. 110,821
Int. Cl. E02f ***5/18***

U.S. Cl. 37—193 **13 Claims**



A mole plough comprises a wheeled carriage on which is pivotally mounted an elongated rigid beam carrying at its rear end a coulter provided with a mole. The beam is pivotally connected at a point intermediate in its length to the rear ends of a pair of forwardly-extending tension links whose front ends are pivoted to the front end of the carriage. The links thus transmit the majority of the tractive force from the carriage to the beam and thence to the coulter and mole. The beam is supported at an adjustable height by means of a pair of pivoted raising rams acting between the carriage and the links near their rear ends. At its front end the beam is provided with a grading control ram acting between the front end of the beam and the front end of the carriage, extension and contraction of the grading control ram altering the height of the front end of the beam relatively to the carriage.

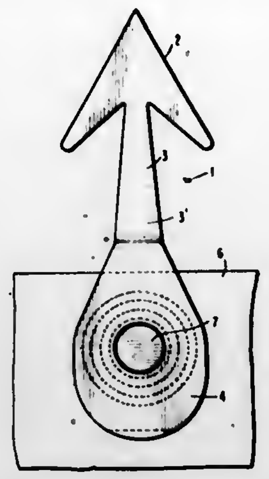
3,724,109
PLASTIC TAG-FASTENING ELEMENT

Erwin A. Ruegg, Stony Point, N.Y., assignor to Staffel Seals Corporation, Tuckahoe, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,165
Int. Cl. G09f ***3/12***

U.S. Cl. 40—22 **16 Claims**

A plastic body to be attached to a flat tag, for example, for securing such tag to a wide mesh woven sack, which includes at one end an anchoring portion and at the other end a tag-fastening portion consisting of two substantially flat, parallel leg portions defining therebetween a tag-receiving slot; one of the leg portions is provided with a boss-like projection formed integrally with the same in the "as-molded" condition such that the weak connection, which exists between these two parts, can be severed by applying a sharp axial blow to the outer surface of the boss-like projection to drive the same through an aligned hole of complementary shape in the other leg portion whereby a slug of the tag material is punched out and the plastic body is securely fastened to the tag after the end of the projection in the hole is enlarged in a rivet-like manner.

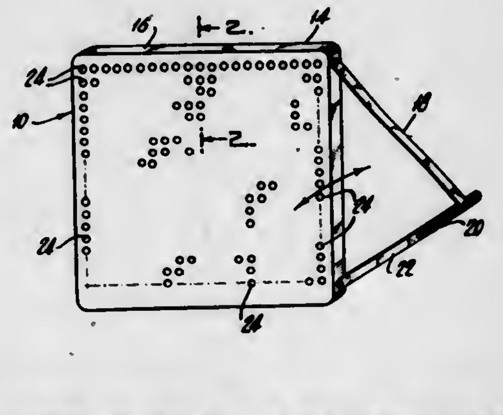


3,724,110
VISUAL DISPLAY BOARD

Norman L. Meyerson, Glen Rock, N.J., assignor to Worthington Corporation, Harrison, N.J.

Substitute for Ser. No. 867,271, Oct. 17, 1969, abandoned. This application May 22, 1972, Ser. No. 255,787
Int. Cl. G09f ***11/00***

U.S. Cl. 40—28 C **2 Claims**



A visual display device with a multi-apertured front side. The apertures are the forward ends of a plurality of passages in the visual display board in which a plurality of respective movable members cause a character to be displayed responsive to the positions of the movable members.

3,724,111
APPARATUS FOR ILLUMINATING TRANSPARENT IMAGES, ESPECIALLY DIAPOSITIVES

Karl Heinz Grieger, Max-Eyth-Strasse 12, Nellingen, Germany

Filed Jan. 14, 1971, Ser. No. 106,389

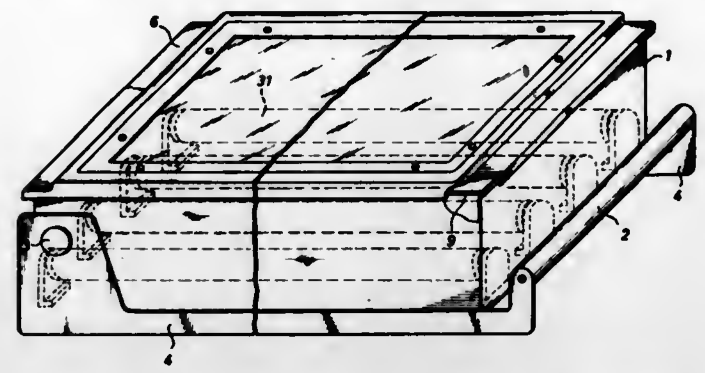
Claims priority, application Germany, Jan. 15, 1970, P 20 01 632.4; Oct. 8, 1970, G 70 37 173.2

Int. Cl. G09f ***13/10***

U.S. Cl. 40—106.1 **5 Claims**

An apparatus for illuminating diapositives, negatives or the like for inspecting the same which comprises a box-shaped housing the open upper side of which is covered by a plate of opal glass or the like and carries a supporting frame the lateral sides of which are provided with index studs upon which a flat,

partly transparent, pocketlike element for holding one or more diapositives or the like may be applied in different positions. This frame is adapted to receive a cover frame for holding down the pocketlike element in each of its positions. This cover frame may be exchanged for another which is provided with apertures in each of which a framed diapositive or the like may be deposited.

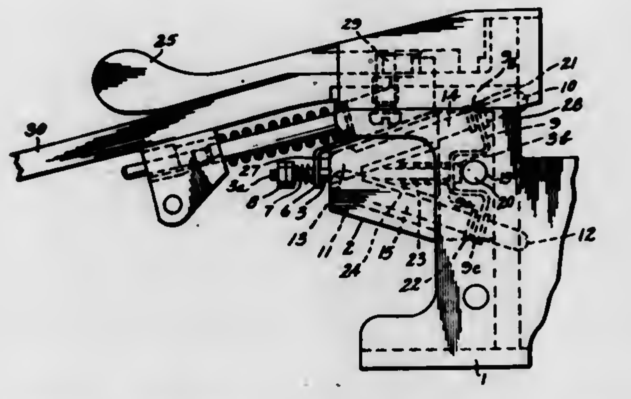


3,724,112
FIRING PIN MECHANISM FOR FIREARMS

Douglas E. Bullis, and John P. Linde, both of Ilion, N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed July 7, 1971, Ser. No. 160,434
Int. Cl. F41c ***19/00, 19/18***

U.S. Cl. 42—41 **3 Claims**



A unique "floating-type" forwardly biased firing pin arrangement for firearms. The system is designed to prevent breakage of the pins resulting from "dry-firing" the gun. The firing pins are striker or hammer initiated. When the gun is loaded, the hammer engageable ends of the pins protrude from a housing within the receiver so that they are capable of being struck. When the firearm is not loaded, the hammer engageable ends of the pins are recessed behind the housing face, where they remain inaccessible to the hammers, causing the housing to absorb the full impact of the hammer blows.

3,724,113
SAFETY DEVICE FOR THE FIRING PIN OF HAND FIREARMS OR SMALL ARMS

Walter Ludwig, Neuhausen am Rheinfall, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

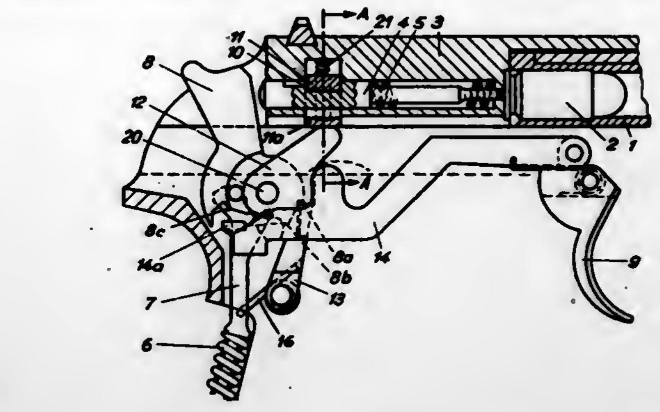
Filed Aug. 19, 1971, Ser. No. 173,004

Claims priority, application Switzerland, Aug. 24, 1970, 12618/70

Int. Cl. F41c ***17/04***

U.S. Cl. 42—70 F **3 Claims**

A safety device for the striking bolt of a hand firearm comprises a spring-loaded safety bolt which in the safety position engages a recess in the axially slidable striking bolt and has an extension engaged by a safety lever operable by a trigger controlled by a pivotally mounted striking hammer. The safety lever has thereon a projection for the purpose of slidably moving the safety bolt and simultaneously therewith rotating a catch lever into a position in which the striking hammer is released. A special release lever which engages a projection on a release disk is adapted to disengage a catch lever and is effective to slowly move the striking hammer during its return stroke into its released position in which the catch lever is locked in safety position.

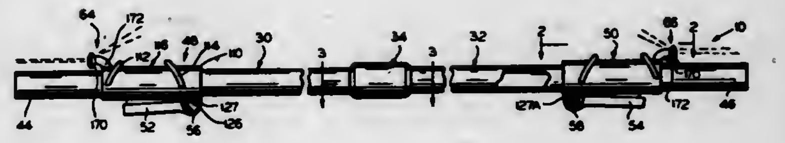


3,724,114
NON-LETHAL HOME DEFENSE IMPLEMENT

Kenneth W. Jones, 205 Railroad, Claredon Hills, and Edward H. Richie, 4327 Elm St., Downers Grove, both of Ill.

Filed Dec. 31, 1970, Ser. No. 103,022
Int. Cl. F41c ***19/12, 21/14, 27/00***

U.S. Cl. 42—84 **8 Claims**



A non-lethal home defense implement in the form of a projectile firing tube for firing a non-lethal type projectile, in which the tube nozzle end has a hand grip portion equipped with a hand operated contact closing member for energizing a target light beam directed in the direction of firing, and the other end of the implement is equipped with a hand grip portion including a trigger for firing the tube. The operator holds one end of the device in either hand and presses the contact closing member with the hand at that end of the implement to energize the contact beam for directing same at the target, with the trigger being actuated by the other hand to fire the implement. The implement electric circuiting is arranged so that both the contact bar and trigger must be depressed to fire the implement.

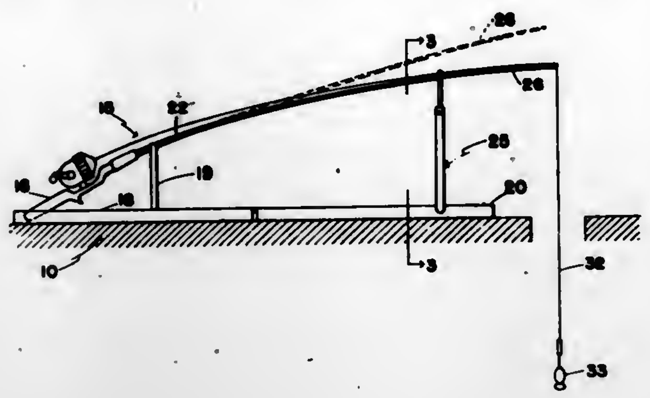
3,724,115
FISHING DEVICE

Clifford Derie, 16 Sackville Drive, S. W., Calgary, Alberta, Canada

Filed Nov. 8, 1971, Ser. No. 196,524
Int. Cl. A01k ***97/00, 97/10***

U.S. Cl. 43—15 **12 Claims**

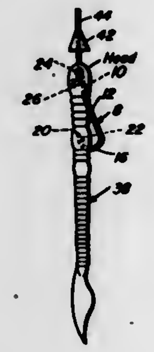
A support for a fishing rod comprising a base with means thereon to support the rod at an inclined angle. The rod butt is held adjacent one end of the base and a member extending upwardly from the base supports the rod at an intermediate point thereof. Another member having a hooked end to detachably hold the rod adjacent the tip end under tension is pivotally secured adjacent to the other end of the base. When the rod tip is pulled downwardly the hooked end is released and the rod snaps upwardly to set the hook in the fish's mouth. The base is foldable and includes means to store the component parts therein.



3,724,116

FISH HOOK FOR USE WITH A PLASTIC WORM

Ronald J. Lindner; Allen J. Lindner, both of Route 6, and Nicholas S. Adams, Route 7, all of Brainerd, Minn.
Filed March 4, 1971, Ser. No. 120,946
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.24 6 Claims

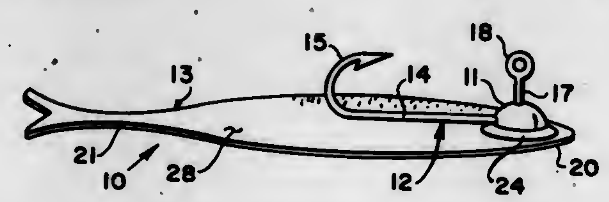


A weedless plastic worm rig characterized by a leader, a conical slip sinker slidable on the leader, a plastic worm and a long shank sproat hook. The trailing end of the shank terminates in a relatively short pointed barb. The leading end is doubled upon itself to form a line attaching eye and embodies a J-shaped terminal end portion which is wholly embedded and anchored in the head of the worm to prevent the worm from sliding down the shank. The short pointed barb is embedded in the worm to assume an upward bite-responsive locale immediately under the surface of the skin of the worm.

3,724,117

FISHING JIG HAVING A FLEXIBLE BODY

Lindley E. Flanagan, Jr., 5700 Rockville Road, Forth Worth, Tex.
Filed Sept. 3, 1971, Ser. No. 185,122
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.24 8 Claims

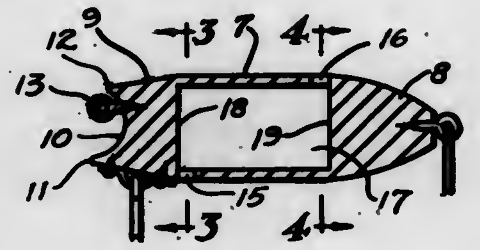


A fishing jig having a hook, weight means for causing the lure to sink within the water, means for maintaining the lure in a substantially upright position within the water, and an elongated body of flexible, resilient, sheet material. The body extends from the weight means alongside the hook shank and is free to flex in a direction away from the hook shank but is prevented by the shank from flexing substantially in the opposite direction. The jig achieves a generally horizontal motion through the water when alternately raised and lowered within the water and combines desirable characteristics of conventional jigs and conventional lures of the type which are trolled or retrieved horizontally through the water. In a preferred embodiment, the body is canted in a manner which causes the jig to move about a circular path beneath the tip of the fisherman's rod.

3,724,118

FISHING LURE

George F. Putthoff, 7146 Lydia, Kansas City, Mo.
Filed May 26, 1971, Ser. No. 146,905
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.06 5 Claims

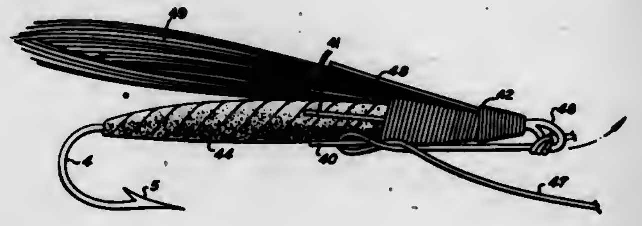


A fishing lure that has an elongated body portion that has a cylindrical hollow mid-portion and solid tapering end portions, the front end being concavely curved so as to form a lower lip that projects further than an upper lip. The lure has a port at the bottom forward end of an air chamber provided in the cylindrical mid-portion, and a vent at the rear top of this chamber, which vent is slightly greater than the port. The forward end portion has an eye for attaching a line that is nearer the top than the bottom of the forward end.

3,724,119

FISHING FLY WITH LEADER ATTACHING PRONGS

Allen Lewis Putnam, Fullerton, Calif., assignor to Allen Putnam; Leland C. Launer and Mark L. Kerridge, all of Fullerton, Calif., part interest to each
Division of Ser. No. 704,457, Feb. 12, 1968, Pat. No. 3,500,574. This application March 16, 1970, Ser. No. 24,444
Int. Cl. A01k *85/08*
U.S. Cl. 43—42.25 1 Claim

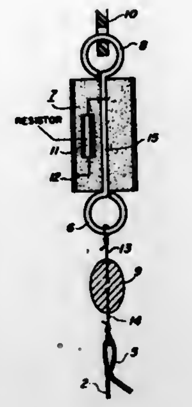


A fishing fly comprising a hook having a shank, an eye and a barbed point, a fly body and head formed on the shank between the eye and the barbed point and an attaching means for a leader mounted between the head and the body. The attaching means is lashed to the fly body and to the hook shank to form top and bottom prongs and right and left side prongs extending from their positions behind said head to points substantially half-way down the length of the fly's body.

3,724,120

DELAYED RELEASE DEVICE

Joseph D. Richard, 3613 Loguat Avenue, Miami, Fla.
Filed Dec. 18, 1970, Ser. No. 99,606
Int. Cl. A01k *93/00*
U.S. Cl. 43—100 1 Claim

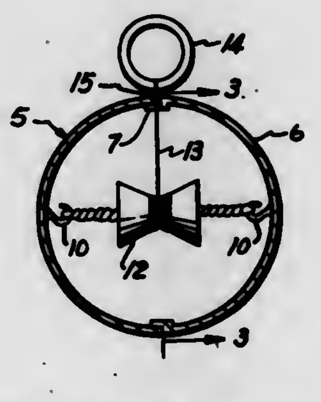


An improved delayed release device comprising an expendable anode linkage and a re-usable cathode assembly for temporarily securing fishing gear beneath the sea surface. The highly corrosive anode member of the galvanic couple breaks after a predetermined period of immersion in seawater. Changes in corrosion rate due to variations in sea water conductivity are substantially reduced by including an electrical resistance between anode and cathode members of the couple.

3,724,121

BANDALORE

Luther C. Atkins; Jimmy G. Atkins, and Vonniebelle Atkins, all of 5207 North Villa, Space No. 7, Clovis, Calif.
Filed Nov. 22, 1971, Ser. No. 200,862
Int. Cl. A63h *27/12*
U.S. Cl. 46—61 4 Claims



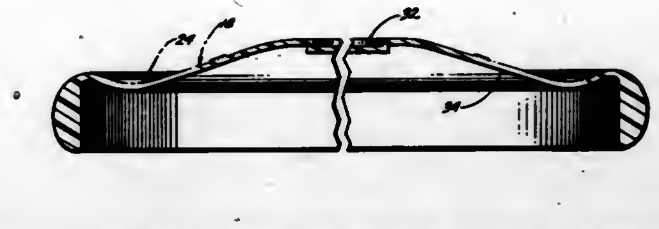
This invention consists of a ball made in two parts in which is secured a spindle held in place by a rubber band at each end thereof. The outer end of each rubber band is secured by a hook to the inside wall of the aforesaid ball. A string is wrapped around the longitudinal center of the aforesaid spindle and extends upward through an opening in the aforesaid ball. When the spindle in the ball rotates and winds up, the rubber bands will cause the invention to ride up and down on the string which is held in the hand.

3,724,122

FLYING SAUCER

Richard L. Gillespie, Sr., San Gabriel, Calif., assignor to Wham-O Mfg. Co., San Gabriel, Calif.
Filed March 16, 1971, Ser. No. 124,784
Int. Cl. A63b *27/00*
U.S. Cl. 46—74 D 11 Claims

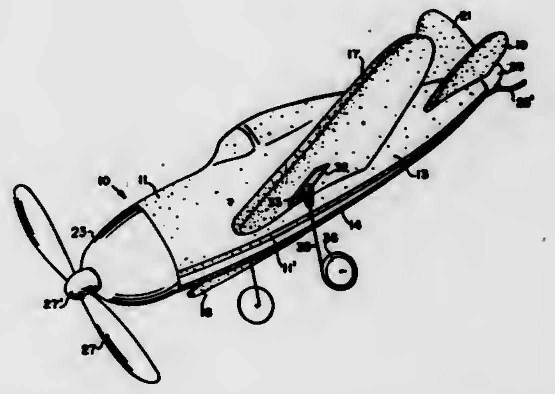
An improved saucer shaped throwing implement. A portion of the upper surface of the saucer located intermediate a circular rim portion and crown portion is also below the points of maximum elevation of the rim and crown portions to create a trough or depression extending around the saucer which is located immediately adjacent to the rim portion. A low profile contributes to the ability to "fly" the saucer at a relatively high speed.



3,724,123

FLYING MODEL AIRPLANE

Jerome H. Lemelson, 85 Rector Street, Metuchen, N.J.
Filed July 6, 1971, Ser. No. 160,006
Int. Cl. A63h *27/02*
U.S. Cl. 46—78 11 Claims



A propellor driven model airplane having a body which is molded of light weight, expanded, cellular plastic material which is capable of self-supporting although incapable of properly supporting a motor per se for driving the propeller of the model airplane. A special, thin walled nose fitting is secured to the nose end of the cellular plastic body and rotatably supports a propeller mounted on the shaft to which is attached one end of a rubber band motor. The other end of the motor is retained by a hook forming part of a special fitting at the tail end of the cellular plastic body.

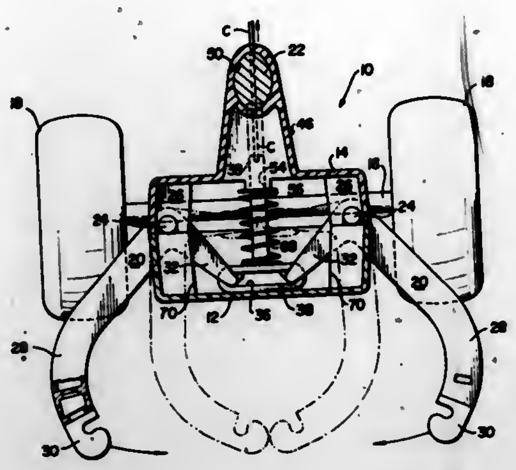
In a particular embodiment, the cellular plastic body is shaped with a channel extending longitudinally therealong which is open substantially the length of the body and provides ample space for accommodating the rubber band motor. In another form, other suitable fittings are also provided for properly securing landing gear to the wings or body of the model airplane.

3,724,124

ROBOT PUSH TOY

Charles F. Foley, Minnetonka; Charles D. McCarthy, Wayzata, both of Minn., and Charles H. Hardin, Nashville, Tenn., assignors to Kusan, Inc., Nashville, Tenn.
Filed Feb. 22, 1972, Ser. No. 227,872
Int. Cl. A63h *11/10*
U.S. Cl. 46—97 10 Claims

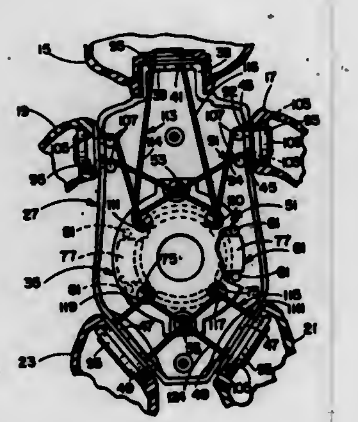
A wheeled, figure push toy of the robot type having arms or upper legs which are pivotable together from a spread out position by means of an operating lever adjacent the handle of a push rod by which means the figure may be propelled and/or



tilted toward the supporting surface to pick up or put down an object such as a child's block, etc.

3,724,125
PUSH BUTTON DOLL

Adolph E. Goldfarb, Tarzana, Calif., and Carl Ayala, Chicago, Ill., assignors to said Goldfarb, by said Ayala
Filed Jan. 29, 1971, Ser. No. 111,037
Int. Cl. A63h *11/00*
U.S. Cl. 46—119 14 Claims

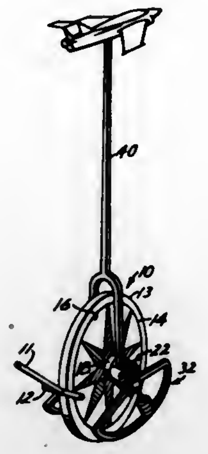


A doll comprised of a body to which is affixed controllably movable separate limbs and a head. In the body there is disposed a spring loaded button which is accessible from the front of the doll. Means individually connect each of the limbs and head to the button so that with the button in a normal position the limbs and head are in certain positions. Upon depression of a portion of the button, there is attendant movement of the limb or limbs, or the head connected to the portion of the button depressed.

3,724,126
TOY HOOP WITH STABLE PLATFORM FOR DECORATIVE DISPLAYS

Alfred Cyrus LaGrew, 3615 North Harvard, Peoria, Ill.
Filed May 4, 1971, Ser. No. 140,041
Int. Cl. A63h *13/02*
U.S. Cl. 46—220 12 Claims

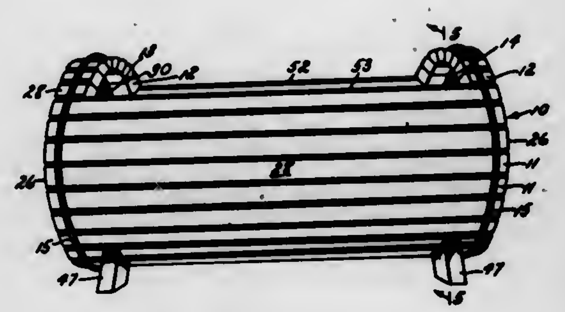
An ornamental hoop, or similar rotating member, with a counterbalance supported from the center axis of the member, serving to stabilize the hoop during rotation and



maintain an ornamental standard in a vertical position during operation.

3,724,127
HORIZONTALLY ORIENTED PLANTER

Wallace Rosenwach, 2 Harbow Road, Great Neck, N.Y.
Filed Nov. 11, 1971, Ser. No. 197,658
Int. Cl. A01g *9/02*
U.S. Cl. 47—34 1 Claim



A planter for flowers and the like comprising a first plurality of longitudinal members of arcuate cross section, each having mating tongue and groove means on side surfaces thereof, and extending the entire length of said planter. A second plurality of members of shorter length are positioned in arcuate juxtaposed relation with said first plurality at each end of the latter to define an opening therebetween. A tensioned strap means surrounds the first and second members at each end of the opening. Each of the first and second members is provided with a groove on an inwardly disposed surface to engage one of first and second end wall members which are provided with a corresponding tongued peripheral area engageable therewith. The device relies upon the constrictive forces of the strap members to maintain it in assembled condition, in the absence of any gluing.

3,724,128
PLANTER

Michael T. Tabone, 248881 Ward, Taylor, Mich.
Filed Jan. 15, 1971, Ser. No. 106,833
Int. Cl. A01g *1/08*
U.S. Cl. 47—33 13 Claims

This invention relates to a planter. It comprises plastic toroidal members having corresponding interlocking male and female portions. These members have an inner upward vertical portion; an intermediate horizontal portion; and an outer downward vertical portion. The inner upward vertical portion is raised above the ground and surrounds the soil which is immediately adjacent the plant. The intermediate horizontal portion is substantially level with the ground level outward from

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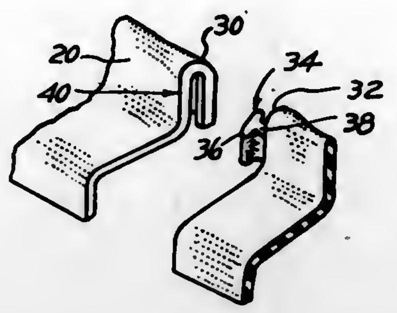
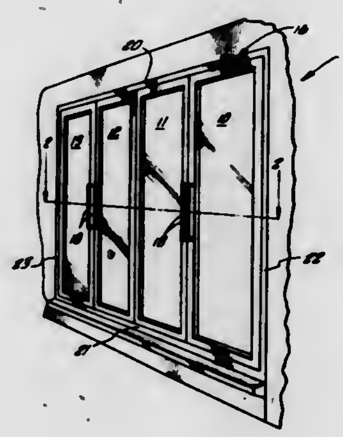
but adjacent the planter. The outward downward vertical portion depends from the intermediate horizontal portion and extends vertically downward therefrom segregating the soil portion, outward from but adjacent the planter, from the plant.



3,724,129
DOOR AND DOOR MOUNTING FRAME

Michael E. Stromquist, Studio City, Calif., assignor to Anthony's Manufacturing Company, Inc.
Filed Dec. 14, 1970, Ser. No. 97,672
Int. Cl. E06b *7/00*
U.S. Cl. 49—70 9 Claims

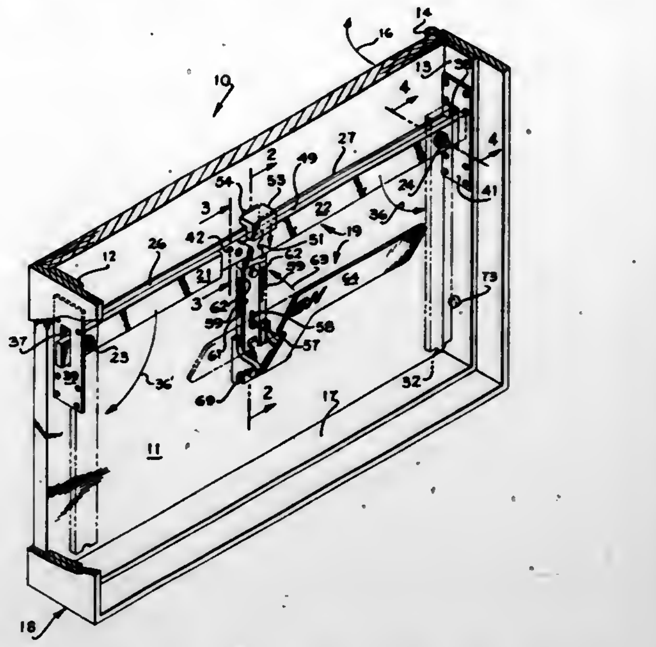


A refrigerated cabinet door and door mounting frame structure for mounting a plurality of electrically heated refrigerator doors with each door having selectible left or right hinging.

3,724,130
CLOSURE ASSEMBLY AND EMERGENCY RELEASE LOCKING MECHANISM THEREFOR

Joseph A. Bogue, 661 Eden Avenue, San Jose, Calif.
Filed Aug. 5, 1971, Ser. No. 160,352
Int. Cl. E05c *15/02*
U.S. Cl. 49—141 7 Claims

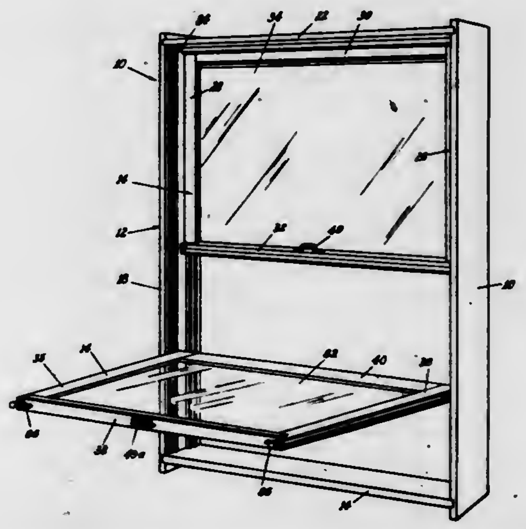
A lock mechanism for use on an exit door adapted to be mounted in a door frame having spaced parallel jambs comprises a pair of tandemly abutting bars extending across the inside face of the door. The remote ends of the pair of bars engage a portion of a respective one of the jambs to preclude opening the door from the outside. Means are provided supporting each of the bars comprising a pivot axis normal to the door and disposed closer to the laterally outer end of the bar than to the other end thereof so as to permit its remote end to rotate out of engagement with its associated one of the jamb portions. Yieldable retaining means readily releasably engages and holds the bar from rotating about its pivot axis while means for releasing the bars conjointly to rotate downwardly about their respective pivot axes are provided to include a depresser element movable between advanced and retracted positions to engage the abutting ends of the bars to move the bars free of the retaining means thereby permitting the bars to rotate about their respective pivot axes under their own



weight and disengage the remote ends of the bars from the jamb portions.

3,724,131
TILT-TAKE-OUT WINDOW ASSEMBLY

Theodore H. Schnormeier, Gambier, Ohio, assignor to Wenco, Inc., Mount Vernon, Ohio
Filed March 13, 1972, Ser. No. 234,146
Int. Cl. E05d *15/22*
U.S. Cl. 49—181 7 Claims

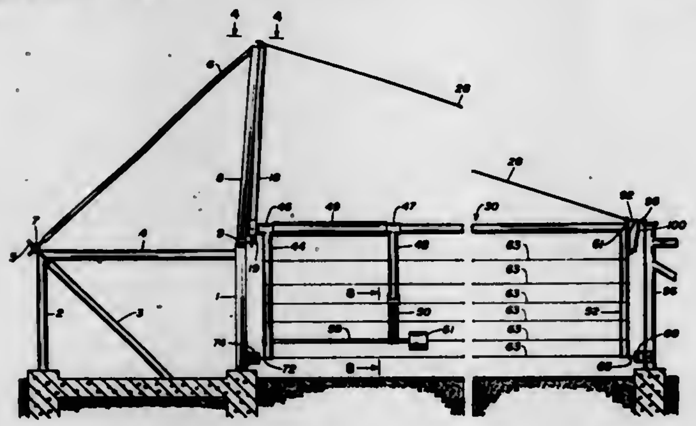


The specification and drawings disclose a tilt-take-out window assembly which includes a frame having a pair of spaced apart, generally parallel jamb members which between them define a recess. Guide members in the form of flexible, elongated strips are joined to each of the jamb members to define parallel guide tracks intermediate outwardly extending, raised portions. The flexible strips are joined to the jamb members along at least one of their edges and have a normal configuration to bow into the recess. Window sash members (having lateral edges spaced apart a width very slightly less than the distance between the jamb members but greater than the distance between the strips in their bowed configuration) are positioned between the guide tracks. For example, the window sash members may have lateral edges spaced apart a width about 3/16 inch less than the distance between the jamb members as compared with the usual width of prior art constructions of about 1 3/16 inches less than the distance between the jamb members. The lateral edges of the sash members have guide grooves formed therein to receive the outwardly extending portions of the flexible strips. Additionally, counterbalance spring members are carried in each of the guide grooves and have one end provided with hook members adapted to releasably engage the jamb members. Pivot block means are joined to the other ends of the spring members and are adapted to be connected to the edges of the sash members. Carried in each of the pivot block members is an outwardly biased pin means adapted to engage in a groove in the guide track.

3,724,132

VEHICLE ACTUATED AUTOMATIC GATE

Felix B. Romberg, P. O. Box 218, Holland, Tex.
Division of Ser. No. 106,807, Jan. 15, 1971. This application Feb. 25, 1972, Ser. No. 229,600
Int. Cl. E05f *13/02*
U.S. Cl. 49—364 **3 Claims**

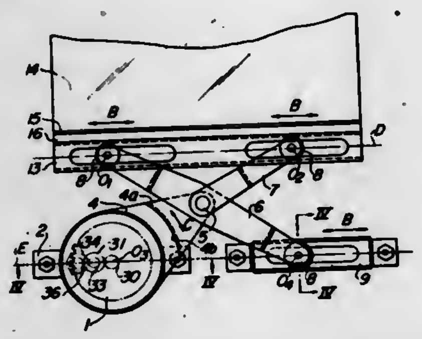


The specification discloses a rectangular gate normally latched at one end and including an initially stressed torsion bar spring horizontally disposed at the other end. When thrust from a vehicle is applied to the gate, the gate yields along the bottom while rotating along an upper horizontal axis, thereby storing energy in the bar spring and releasing the latch. Propelled by the spring stored energy, the released gate then springs about a vertical axis to an open position. The gate includes an improved vertical gate supporting post mechanism, an improved initially stressed torsion bar spring, a vehicle bumper contact device to eliminate scuffing of the vehicle bumper and an improved hooking mechanism to protect a unitary frame connection between the gate ends from additional wire tension.

3,724,133

MEANS FOR OPENING AND CLOSING A WINDOW ASSEMBLY OF A VEHICLE

Takeaki Shirai, Nagoya; Masumi Kato, Aichi, and Kiyomitsu Oshikawa, Kariya, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed March 25, 1971, Ser. No. 127,956
Claims priority, application Japan, April 3, 1970, 45/28717; April 4, 1970, 45/28925
Int. Cl. E05f *11/44, 15/16*
U.S. Cl. 49—349 **5 Claims**

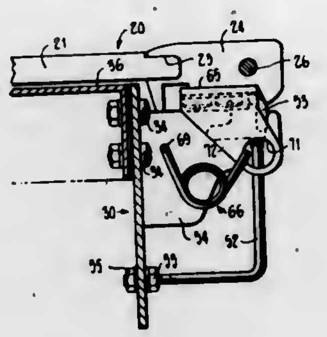


Means for automatically opening and closing a window assembly of a vehicle comprising an X-shaped linkage assembly, a power unit and three rollers rotatably secured to the linkage assembly, the rotation of power unit being transmitted to an internal gear provided at an arm forming the linkage, thereby moving up or down the arm and opening and closing the window assembly.

3,724,134

DOOR CONTROL MECHANISM

Michael A. Verdone, Hillsborough, Calif., assignor to The Singer Company, New York, N.Y.
Filed July 9, 1971, Ser. No. 161,042
Int. Cl. E05f *1/00*
U.S. Cl. 49—379 **9 Claims**

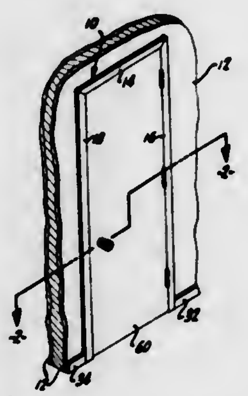


A mechanism for controlling the partial opening of a cover, or door, of a cabinet upon release of a latch and for thereafter retaining the door in a fully open position following the exertion of an additional opening effort.

3,724,135

QUICK INSTALLATION DOOR FRAME AND METHOD

John S. Heliotes, 350 Orange Blossom Lane, San Rafael, Calif.
Filed Nov. 3, 1971, Ser. No. 195,264
Int. Cl. E06b *1/04*
U.S. Cl. 49—504 **14 Claims**

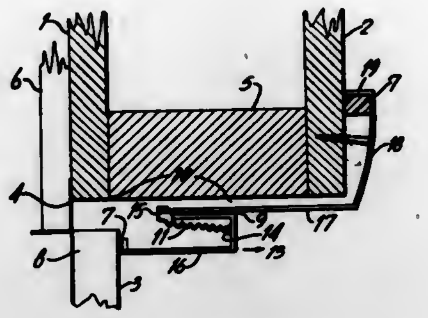


A quick-installation metal door frame for mounting a door between upright cripples. Hinge and strike frame sides are joined at their upper ends to a horizontal header by means of an overlapping, nesting miter joint. The hinge and strike plates are mounted in depressions formed in frame sides, and fastener means extend into the associated cripples through recessed holes formed in the depressions so that the hinges or strike plate trap the fastener means concealing them from view. The frame sides are thus secured to the cripples so as to provide an assembled door frame which is properly aligned, even though the cripples may be out of plumb. Bendable tabs are formed at the lower ends of the hinge and strike frame sides in a manner affording simplified attachment to a wall structure, with the tabs concealed from view by the abutting wall base member or rug. Tab slots provide a range of vertical adjustment for the frame sides without the necessity of removing the tab fasteners. A protective layer is secured to the outer surface of the header, hinge and strike frame sides, and this layer is adapted for removal after assembly of the door frame to expose the underlying frame surfaces.

3,724,136

SELF ADJUSTING WINDOW TRIM

Albert G. Forsberg, R.R., Theodosia, Mo.
Filed Sept. 30, 1970, Ser. No. 77,176
Int. Cl. E06b *1/04*
U.S. Cl. 49—505 **2 Claims**

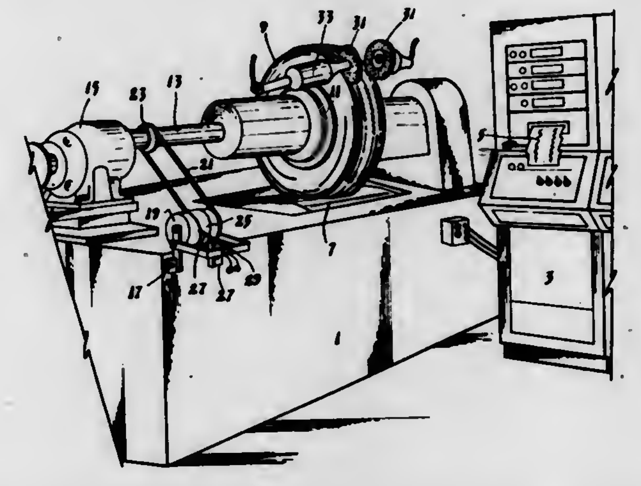


Inside and outside trim for metal and plastic windows which can be adjusted to fit with self adjusting means to keep proper fit thereafter.

3,724,137

MEANS FOR CORRECTING NON-UNIFORMITY IN TIRES

Clarence Hofelt, Jr., Cuyahoga Falls, and John E. Corl, Akron, both of Ohio, assignors to The General Tire & Rubber Company
Division of Ser. No. 613,252, Feb. 1, 1967, abandoned. This application Feb. 27, 1970, Ser. No. 18,773
Int. Cl. B24b *5/00*
U.S. Cl. 51—106 R **21 Claims**



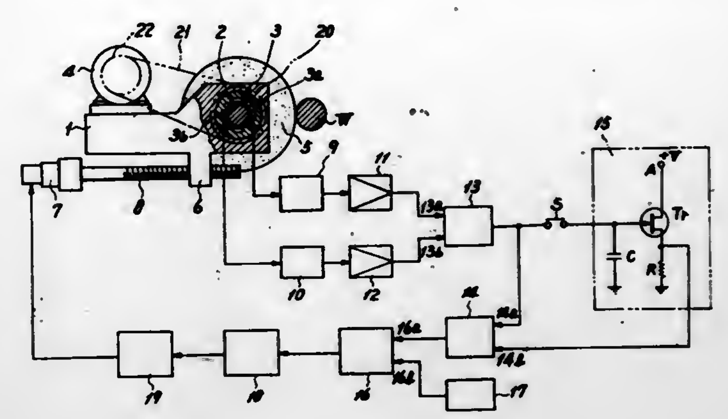
Self-excited force variations in rolling pneumatic vehicle tires are a principal source of vehicle shake, roughness, and steering disturbances. These variations in a tire are measured by a tire uniformity machine after which the tire is subjected to a corrective action consisting of the removal of a small amount of tread material at the proper location.

3,724,138

GRINDING RESISTANCE DETECTING DEVICE

Mineo Ishikawa, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Sept. 29, 1971, Ser. No. 184,672
Claims priority, application Japan, Oct. 2, 1970, 45/86979
Int. Cl. B24b *49/16*
U.S. Cl. 51—165 R **5 Claims**

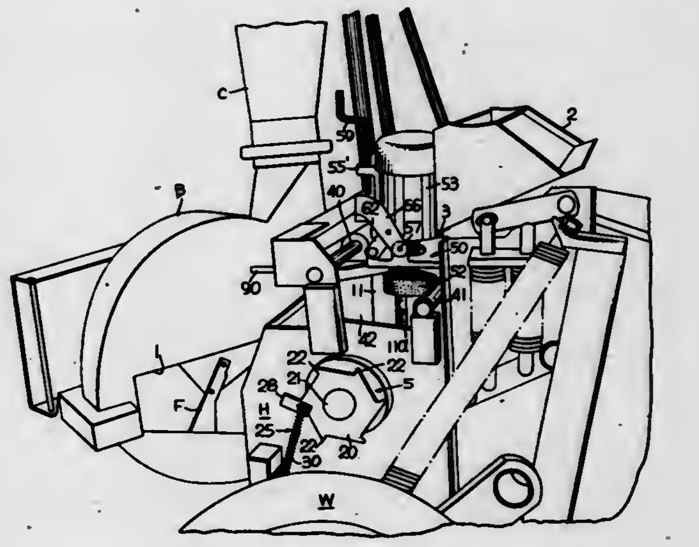
A grinding resistance detecting device includes a strain sensitive transducer having semiconductor strain gauges for generating an output voltage level proportional to a grinding resistance. A contact is connected to the strain sensitive transducer and is closed at a non-grinding period. A memory circuit is connected to the contact for storing a drift voltage level of the strain sensitive transducer and a differential-input amplifier is connected to the strain sensitive transducer and to the memory circuit for providing a voltage which is purely proportional to the grinding resistance.



3,724,139

BLADE SHARPENING DEVICE FOR ROTATABLE CHOPPING CYLINDERS

John H. Leverenz, West Bend, Wis., assignor to Gehl Company, West Bend, Wis.
Filed June 11, 1971, Ser. No. 152,206
Int. Cl. B24b *19/00, 3/00, 5/18*
U.S. Cl. 51—249 **7 Claims**



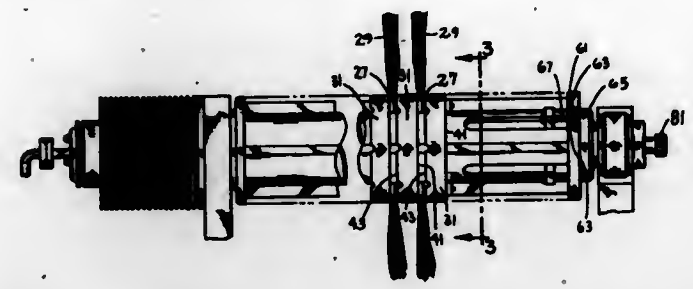
A blade sharpening device for use on a rotatable chopping cylinder of a forage harvester or the like, which cylinder has a plurality of circumferentially spaced and generally parallel blades that are of a generally spiral shape. The device includes a carriage that moves along parallel to the cylinder and has a sharpening tool extending from it for contact with the blades, and guide means connected directly to the carriage for guiding abutment with a succeeding blade whereby as the carriage moves along the axis of the cylinder, the guide means abutting against the succeeding blades insures that the sharpening tool is at all times properly orientated to the blade being sharpened.

3,724,140

BUFFING WHEEL

John Ford Harper, Ames Hollow Road, Portland, Conn.
Filed Nov. 12, 1971, Ser. No. 198,254
Int. Cl. B24b *9/02*
U.S. Cl. 51—332 **5 Claims**

The buffing wheels of this invention include a buffing wheel shaft on which buffing wheel sections and spacers are alternately slidably mounted with the spacers interconnected in keyed engagement with each other and with the rims of the wheel sections firmly gripped between the faces of paired and interkeyed spacers.



ERRATUM

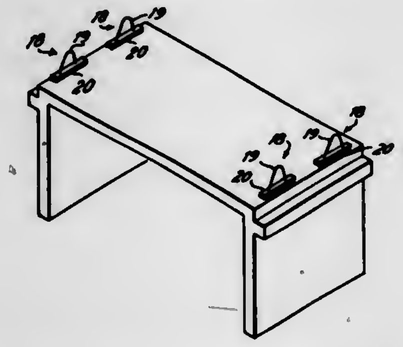
For Class 52—177 see:
Patent No. 3,724,078

3,724,141

MODULAR UNITS, BUILDINGS AND SYSTEMS

Michael J. Kelleher, Greenway Apartments, Route 73, West Berlin, N.J.

Filed Jan. 15, 1970, Ser. No. 3,113
Int. Cl. E04h ***1/04***
U.S. Cl. 52—79 **11 Claims**



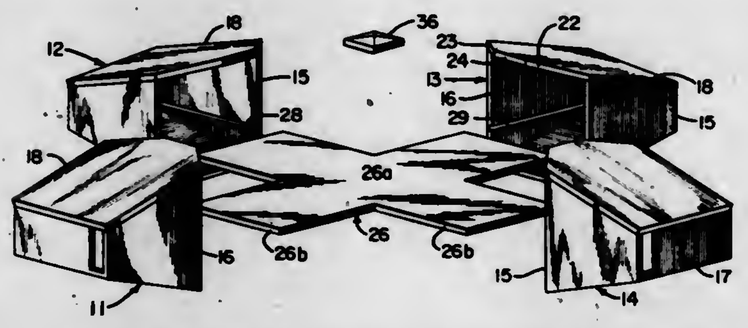
Modular and other units of concrete or similar matter, generally precast for various constructions and buildings, and housing. The modular units have portions which are adapted to hold slabs to link two consecutive modules, the modules can be stacked vertically, and the system comprising such modules and slabs can be extended laterally and longitudinally to form a great variety of buildings.

3,724,142

MODULAR BUILDING STRUCTURE

Carl A. Worthington, 2026 Balsam Drive, Boulder, Colo.

Filed Jan. 6, 1971, Ser. No. 104,211
Int. Cl. E04b ***1/348***
U.S. Cl. 52—73 **8 Claims**



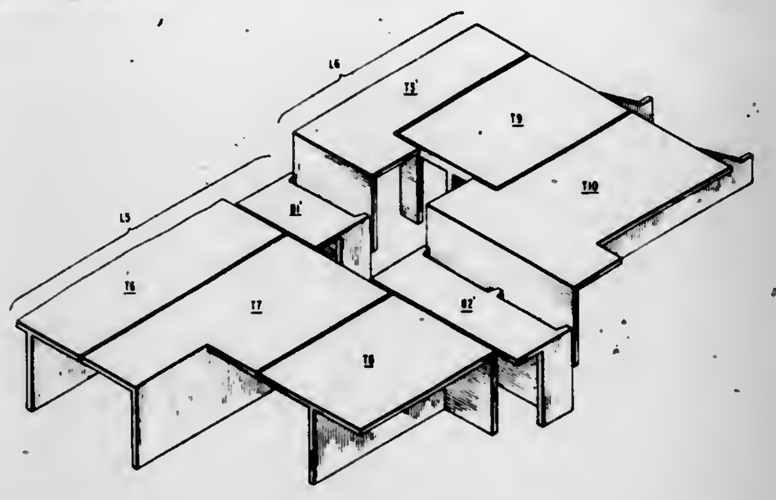
In a modular building structure there is provided a plurality of prefabricated modular units arranged to branch outwardly from a common central area and connected together to form a central room. Each modular unit has an open inner end and terminates in an outer end wall. A horizontally disposed floor member partitions each modular unit into an upper room and a lower space. The modular units are conveniently arranged side by side or one on another to provide building structures of a desired size.

3,724,143

INDUSTRIALIZED BUILDING CONSTRUCTION

Visvaldis Paukulis, 176 Collins Road, Waban, Mass.

Filed Oct. 29, 1971, Ser. No. 193,773
Int. Cl. E04h ***1/04***
U.S. Cl. 52—79 **17 Claims**



The building construction employs precast elongated T'shaped elements (T's) or T's and modified T's, i.e., half T's or inverted L-shaped elements. The T's are superposed one over the other in lateral and endwise juxtaposition to form a pair of adjacent ranks of T's and a plurality of endwise extending files of T's. The stems of the T's in side-by-side relation form opposite side walls of internal cells. The flanges of the T's form common floors and ceilings between superposed cells. One rank of T's is elevated with respect to the other rank to define splitlevel units. The splitlevel construction provides both vertically and horizontally interleaved units.

3,724,144

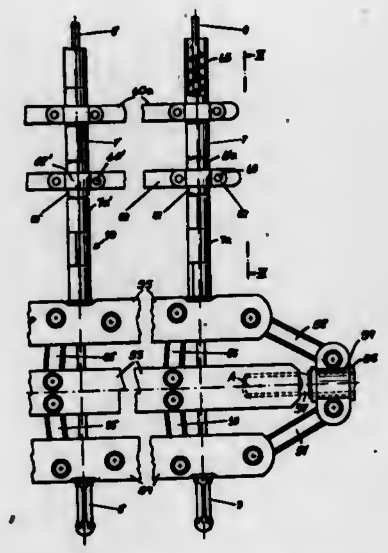
REINFORCING STRUCTURE FOR BODIES WITH CURVED LOAD-SUPPORTING SURFACES

Wilhelm Schuster, Neubauzeile 57, 4020 Linz/Danube, Austria

Filed Dec. 14, 1970, Ser. No. 98,003

Claims priority, application Austria, Dec. 12, 1969, A 11611/69

Int. Cl. A47b ***83/04;*** **E04h** ***12/18***
U.S. Cl. 52—108 **11 Claims**



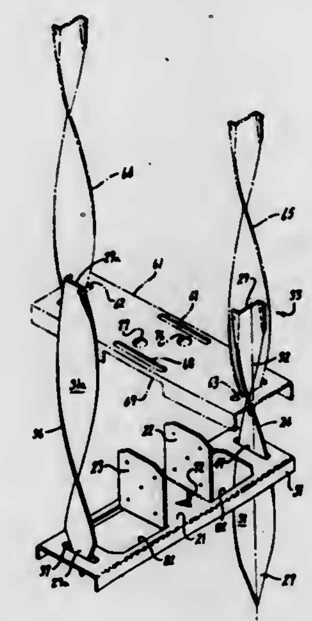
A tensionable internal reinforcing structure for a mattress, seat cushion or the like, comprising one or more elongate tension members each traversing a column of mutually abutting pressure elements to form a collapsible armature, includes several wedge pieces which are inserted between adjoining pressure elements to impart a desired curvature to the armature. The wedge pieces may be in the form of longitudinally slitted sleeves which are clipped either directly onto a tension member or onto a pressure element, being provided in the latter case with triangularly profiled end flanges to separate the engaged pressure element from its neighbors on one side of the centerline of the column. Aligned wedge pieces of adjoining armatures may be interconnected by a transverse strap.

3,724,145

APPARATUS FOR ANCHORING A STRUCTURE TO EARTH MATTER

Dorce L. Daniel, 1115 W. 5th Street, Benicia, Calif.

Filed April 5, 1971, Ser. No. 131,182
Int. Cl. E02d ***5/80***
U.S. Cl. 52—157 **5 Claims**



Apparatus for anchoring a structure, such as a fence, to earth matter is disclosed. The apparatus includes a base member formed with a structure supporting portion and at least one elongated stake, preferably a metallic strip, having a twist or helical surface which engages the earth matter. The stake is preferably formed with means to lock it against the rotation relative to the base and against axial displacement of the base away from the earth matter and stake. The use of two helical strip-like stakes driven into slots in the base and the use of a second super-imposed base member are disclosed.

3,724,146

VIBRO-GYRATORY MILLS

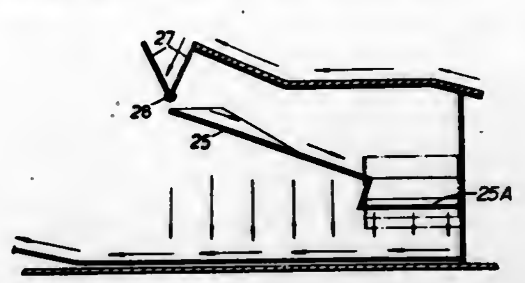
Denis Fahey, and Reginald L. Clarke, both of Newcastle-under-Lyme, England, assignors to William Boulton Limited, Burslem, Stoke-on-Trent, Great Britain

Filed Jan. 4, 1971, Ser. No. 103,560

Claims priority, application Great Britain, Nov. 4, 1969, 53,929/69

Int. Cl. B24b ***31/00, 1/00;*** **B02c** ***17/14***
U.S. Cl. 51—163 **7 Claims**

A vibro-gyratory grinding or finishing mill with an annular treatment chamber round which the charge of workpieces and media progresses under the influence of the vibratory movement, separation of workpieces and media being effected by exposing a normally covered screen to the charge, one component the charge falling through the screen and back into the chamber and the other component being retained by the screen and delivered to a discharge opening.

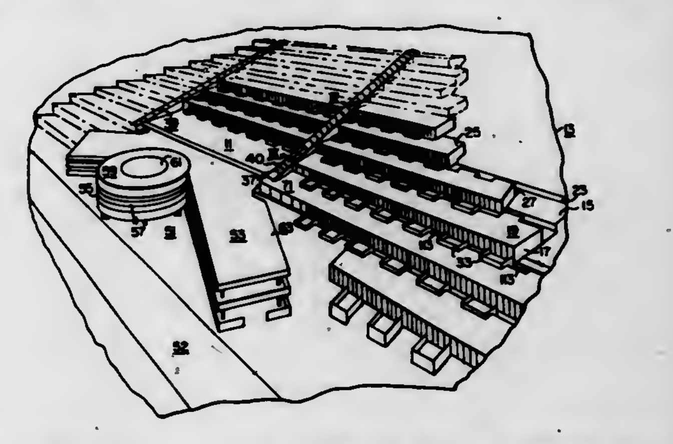


3,724,147

HOUSING ASSEMBLY ON A HILLSIDE

Nathan S. Levenson, 1365 Cordova Road, Pittsburgh, Pa.

Filed Jan. 8, 1971, Ser. No. 104,982
Int. Cl. E04h ***1/02***
U.S. Cl. 52—169 **11 Claims**



There is disclosed a housing assembly for disposition on a hill. The hill is graded into terraces at approximately equally spaced elevations. Typically the height of each terrace above the terrace just below is about 9 feet and the width of each terrace is about 50 feet. Housing units are disposed along the terraces with a pedestrian passageway and an open area for a court or garden for each unit between the wall rising from the terrace to the next terrace above and the walls of the unit. Typically each unit is about 9 feet high, 40 feet long, and 32 feet wide, for lower cost the unit may be 9 by 36 by 24 feet. Each unit provides a shelter along the passageway below and has a clear view away from the hill. The units are formed of two-bedroom modules which are readily convertible into one- and three-bedroom units. The passageways for the units are approachable by a pedestrian approach perpendicular to the terraces at an angle to the horizontal convenient for pedestrian use. Parking, recreational, and service facilities are on the periphery of the assembly.

ERRATUM

For Class 52—192 see:
Patent No. 3,724,881

3,724,148

CABLE RECEIVING FLOOR CONDUIT

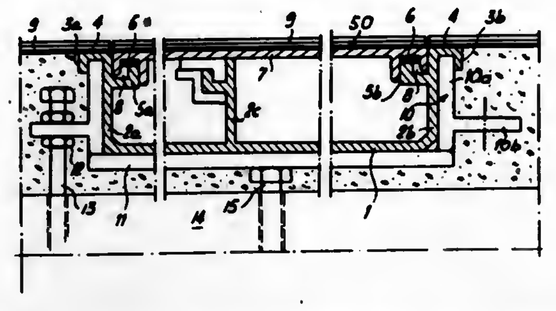
Otto Bregenzer, St. Gallen, Switzerland, assignor to O. Bregenzer & Co., St. Gallen, Switzerland

Filed Aug. 28, 1970, Ser. No. 67,780

Claims priority, application Switzerland, Sept. 3, 1969, G 13448/69

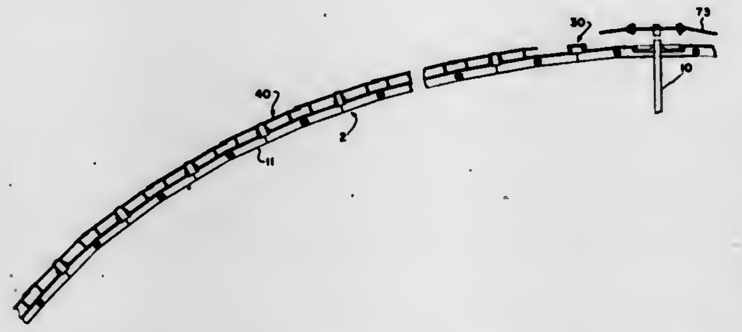
Int. Cl. E05f ***17/08***
U.S. Cl. 52—221 **9 Claims**

A floor conduit for laying cables and pipes and similar structures comprises at least one substantially U-shaped section which is closed by a cover. The U-shaped section includes upright longitudinal walls and the outer ones have downwardly opening hooks at each top side which provide a level top support for the floor structure and which also supply an engagement surface for engaging over a supporting beam supporting the conduit.



3,724,149
VENTILATED, SHADED, WATERPROOF ROOF STRUCTURE

Kenneth D. Detman, 357 Morgan Avenue, Mobile, Ala.
Filed Feb. 9, 1970, Ser. No. 9,770
Int. Cl. E04b *7/08, 1/32*
U.S. Cl. 52—22 **16 Claims**

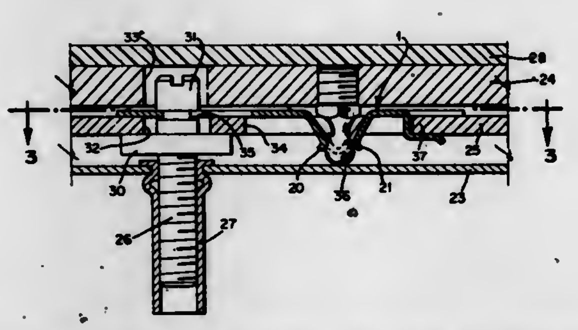


A domed roof formed by bolting or otherwise fastening together mostly identical prefabricated, preferably hexagonal pans. The pans may have solid tops or may have a central nozzle to accommodate a number of different covers to allow either ventilation, shade, both ventilation and shade, or neither ventilation nor shade, as required. Some variation in the pan shape may be required at the outer edges of the dome to suit the foundation or openings as doors or windows.

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

3,724,150
UNDERFLOOR ENTRANCE MEANS

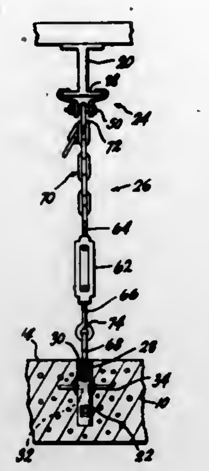
Frederick W. Hudnall, Parkersburg, W. Va., assignor to Textron Inc., Providence, R.I.
Division of Ser. No. 858,906, Aug. 14, 1969, Pat. No. 3,648,559. This application Nov. 17, 1971, Ser. No. 199,624
Int. Cl. E04f *17/08*
U.S. Cl. 52—221 **3 Claims**



The combination of a fastener, tile trim or adjusting ring, cover and body of an underfloor trench, junction box, etc. The fastener rests on the tile trim or ring underneath the cover. The trim has a pair of openings. A pin secured to the body sticking up through one opening in the trim has a retaining groove flush with the trim surface. The fastener has a keyhole slot fitting in the retaining groove and also has a keeper fitting over the edge of the other trim opening. This holds the fastener.

3,724,151
MOBILE HOME ANCHOR

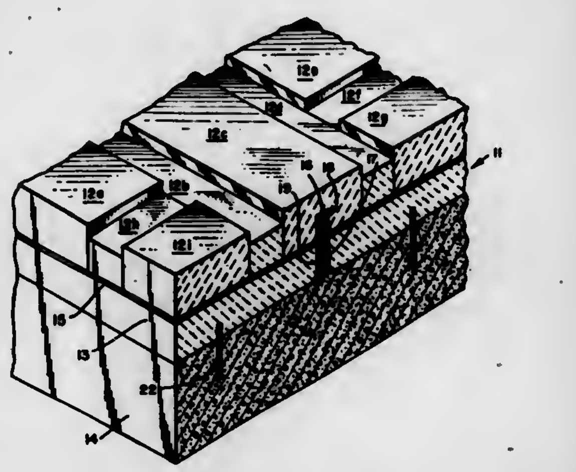
Roy H. Kaywood; Roy G. Kaywood, both of Stockbridge, Mich., and Keith P. Clayton, Jackson, all of Mich., assignors to Kaywood Products Corporation, Jackson, Mich.
Filed Jan. 18, 1971, Ser. No. 107,258
Int. Cl. E02d *27/32*
U.S. Cl. 52—295 **10 Claims**



Anchor means for producing a downward holding force on mobile home frames to prevent the mobile home from shifting on its support and provide a stability beyond that achieved solely from the weight of the home. The anchor includes a base element adapted to be embedded in a concrete base and a clamp for attachment to the mobile home frame. Linearly adjustable tension producing means in the form of a turnbuckle and chain is interposed between the base element and the frame clamp.

3,724,152
MASONRY LAMINATE

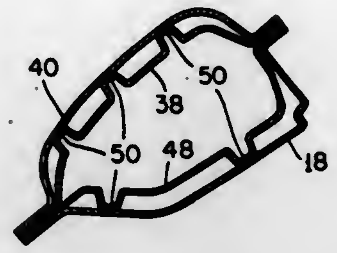
Albert L. Castellarin, 67 Crescent Avenue, Revere, Mass.
Continuation-in-part of Ser. No. 4,671, Jan. 21, 1970, abandoned. This application Jan. 13, 1971, Ser. No. 106,037
Int. Cl. E04b *1/16, 5/04*
U.S. Cl. 52—378 **6 Claims**



A masonry laminate comprising a facing sheet of architectural grade marble or granite or the like, a supporting member of suitable hard stone such as marble or granite and a backing member comprising a layer of concrete or a combination of concrete and hollow blocks. The facing sheet which may optionally consist of several pieces is cemented to the supporting member by means of a thin layer of a high strength, nonshrinking, quick setting adhesive and the bond is reinforced by metal rods which pass through the supporting member and part way through the facing sheet.

3,724,153
JOINT CONSTRUCTION

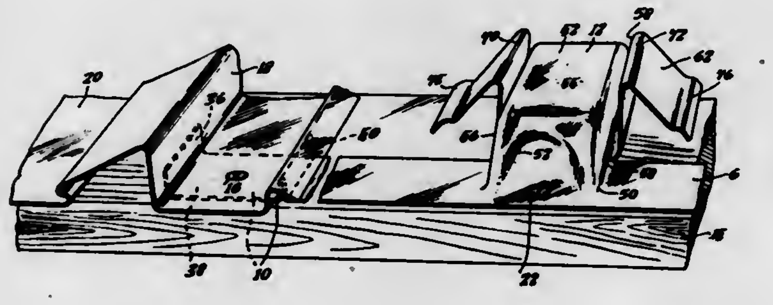
Henry W. Wessells, III, Paoli, and Walter S. Eggert, Jr., Huntingdon Valley, both of Pa., assignors to The Budd Company, Philadelphia, Pa.
Division of Ser. No. 842,279, July 16, 1969. This application Jan. 19, 1971, Ser. No. 107,762
Int. Cl. E04c *1/30, 3/32*
U.S. Cl. 52—588 **3 Claims**



A fabricated uniside unit for a unitized body structure having reinforced joint constructions utilizing small economical stampings doubled in high stress areas for greater strength and forming frustum reinforced beam sections at extremely stressed areas.

3,724,154
FIXING DEVICES FOR ROOFING AND SIDING SHEETS

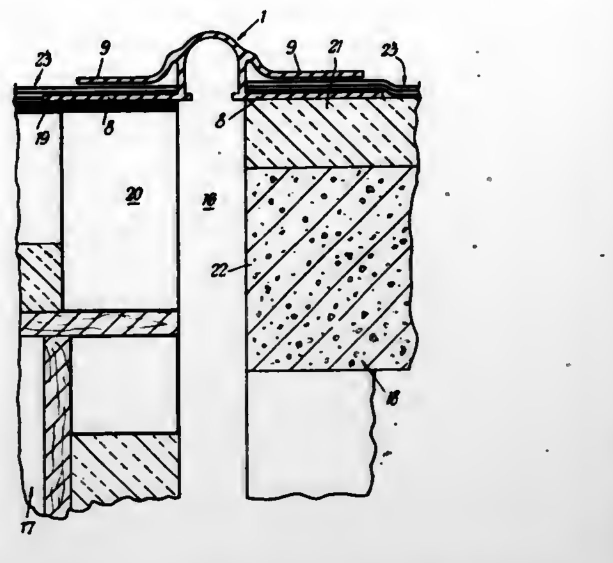
William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited, Southampton, Hampshire, England
Filed Dec. 16, 1970, Ser. No. 98,554
Claims priority, application Great Britain, Dec. 23, 1969, 62,617/69
Int. Cl. E04d *3/36*
U.S. Cl. 52—543 **14 Claims**



A fixing device formed of sheet metal for securing roofing and siding sheets to a structural member has locating means to engage under a downwardly formed portion at the edge of one sheet, a strap having holes by which the device can be secured to a structural member, and clip means to enter a hollow rib of an adjacent sheet and latch into pockets inside the hollow rib. The strap joins the locating means to the clip means and serves to space the two a suitable distance apart.

3,724,155
METHOD FOR THE SEALING OF ROOF OR OTHER STRUCTURES

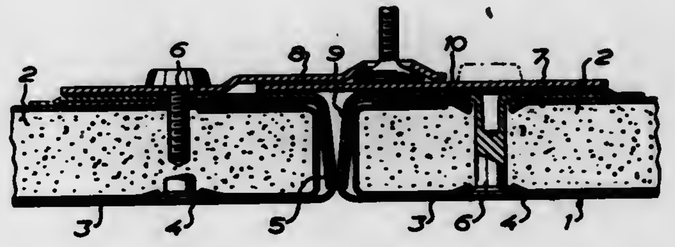
William Ernest Reeve, Huntingdon, England, assignor to Silent Channel Products, Limited, Huntingdon, England
Filed Jan. 4, 1971, Ser. No. 103,669
Claims priority, application Great Britain, Jan. 29, 1970, 4,423/70
Int. Cl. E04d *1/36, 3/366*
U.S. Cl. 52—741 **1 Claim**



The method involves arranging along a roof joint, a longitudinal sealing element having a flexible channel and, at each side of the channel, a base flange and a cooperating upper flange. Roofing felt or other sheet material is located between the flange which embrace and provide a seal for the sheet material. At the interconnections of the roof joints, there are arranged junction sealing elements having, like the longitudinal sealing elements, channel parts and adjacent side flange, the channel parts of the junction elements extending at right-angles are to another so as to correspond to the joint interconnections.

3,724,156
A LINING BOARD

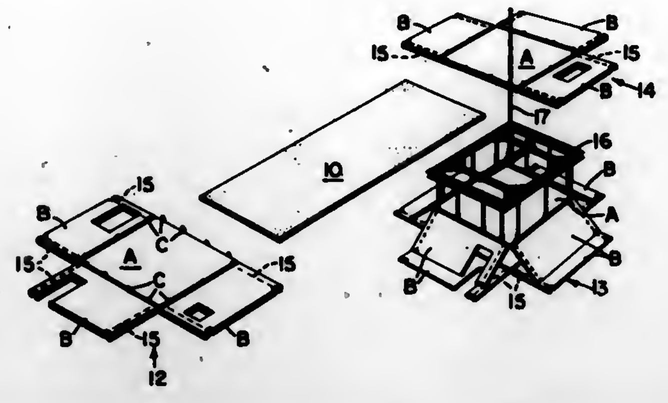
Per-Erik Helmerson, Huddinge, Sweden, assignor to Lectus AB, Stockholm, Sweden
Filed March 2, 1971, Ser. No. 120,219
Claims priority, application Sweden, March 9, 1970, 3059/70
Int. Cl. E04b *1/68*
U.S. Cl. 52—613 **3 Claims**



A prefabricated board, such as gypsum board or fiber board, with a facing of paper, fabric, plastics or like material affixed thereto, is provided with an edge corrector strip which is fastened along the edge of the board before the facing layer is adhered thereto. The strip preferably is of L-shape and one limb portion thereof lies flat against the rear side of the board while the other limb portion thereof lies along the edge face of the board, the facing material being wrapped or folded about the edge corrector strip.

3,724,157
METHOD OF MULTI-LEVEL BUILDING CONSTRUCTION

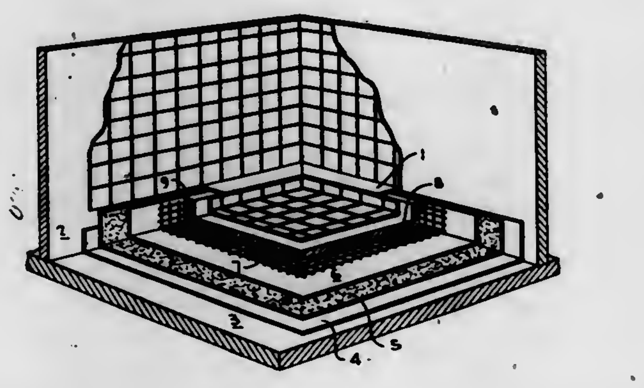
Oleg V. Miram, 759 Flood Building, San Rafael, Calif.
Filed April 16, 1971, Ser. No. 134,623
Int. Cl. E04g *21/14*
U.S. Cl. 52—745 **12 Claims**



A method of constructing buildings of modules is disclosed in which the modules are formed of overhead and wall panels fabricated with means embedded therein having no portion extending beyond the boundaries thereof for distributing the weight thereof to a plurality of points spaced from each other along their edges, which edges are mechanically interconnected by removable hinge joinder means extending between the embedded means in adjacent panels when they are in selected juxtaposition. Means for raising the overhead panels to an elevated position including said removable hinge joinder means are described. Preferred means for forming the overhead and wall panels in the selected juxtaposition and preferred removable hinge joinder means are disclosed. Preferred methods and means for interconnecting vertically and horizontally adjacent modules into structural units of the final building structure before or after removal of said removable hinge joinder means are described.

3,724,158
METHOD FOR REPAIRING FLOORING CONSTRUCTION

Walter L. Knecht, 51 Cedar Street, Wilkes-Barre, Pa.
Division of Ser. No. 19,383, March 13, 1970, Pat. No. 3,675,384. This application Dec. 14, 1971, Ser. No. 208,012
Int. Cl. E04b *1/64*
U.S. Cl. 52—743 **5 Claims**

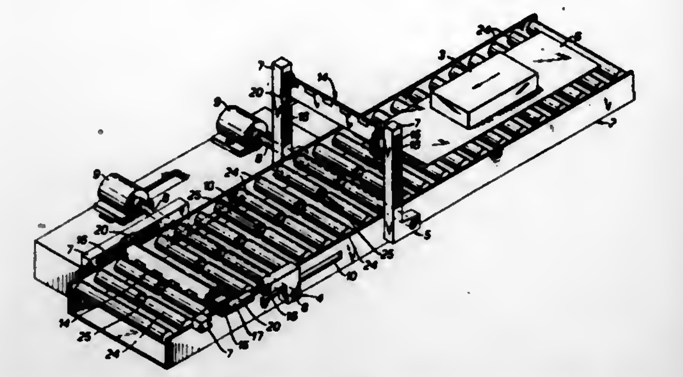


A floor construction is provided which may be used as original installation or in the repair of leaking shower stalls, etc. The floor construction comprises a metal angle, placed at the bottom of the shower stall walls, and succeeding layers of asphalt mastic, waterproof fibrous material, wire lath, mortar and tile.

Also provided in connection with the repair of leaking shower stalls is a method for raising the drain so as to compensate for the raised level of the floor.

3,724,159
APPARATUS AND METHOD FOR PACKAGING

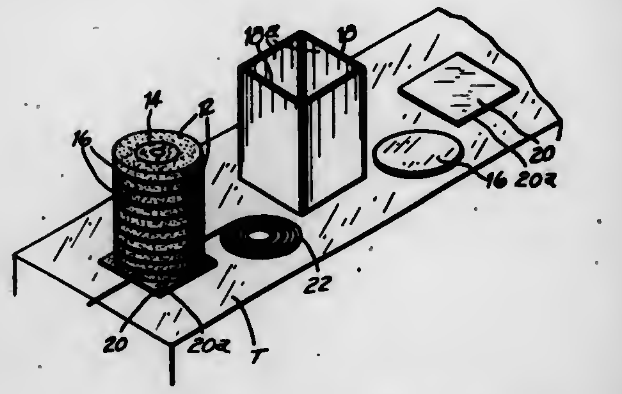
Geoffrey Ronald Reed, London, England, assignor to The British Iron and Steel Research Association, London, England
Filed April 13, 1971, Ser. No. 133,576
Claims priority, application Great Britain, July 21, 1970, 24,649/70
Int. Cl. B65b *11/02, 49/10*
U.S. Cl. 53—3 **10 Claims**



Bundles of steel sheet are packaged by folding a steel sheet around them. A bundle is placed on a sheet larger than the base of the bundle. The ends of the sheet are clamped by clamps carried on pivoted folding arms. Hydraulic cylinders tension the sheet by urging the clamps away from the pivoted ends of the arms. The arms are then moved so that the clamped ends of the sheet move up and over the end of the bundle so as to form fold lines in the sheet along the edges of the bundle.

3,724,160
METHOD OF PACKAGING GRINDING WHEELS

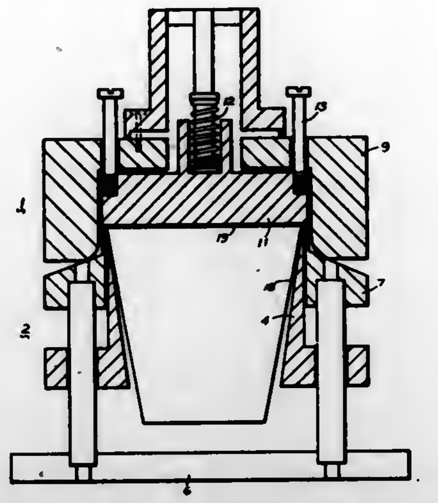
Franz F. Rechberger, Hamilton, Ontario, Canada, assignor to Norton Company, Worcester, Mass.
Division of Ser. No. 11,386, Feb. 16, 1970, Pat. No. 3,630,349. This application June 24, 1971, Ser. No. 156,522
Int. Cl. B65b *23/00, 13/00*
U.S. Cl. 53—26 **3 Claims**



A package for grinding wheels and method for assembly thereof in the form of an elongated square wheel supporting container for holding one or more axially aligned grinding wheels of substantially the same diameter therein and having square end covers within opposite ends of the container, and tensioned tied strands of strapping extending across the end covers and axially along the center of each side of the container opposite a line of contact between the inside walls of the container and the wheels. Disclosed also, is a method of packaging grinding wheels by stacking and centering them upon an end cover. A square container of sufficient length is slipped over the stack endwise and another end cover is placed over the exposed end of the stack of wheels to fit within the tube. Strapping is then stretched tightly across the outside of the end covers and along the center of each side of the container to force the wheels together and each side of the container into contact with the periphery of each of the wheels.

3,724,161
CLOSURING CONTAINERS

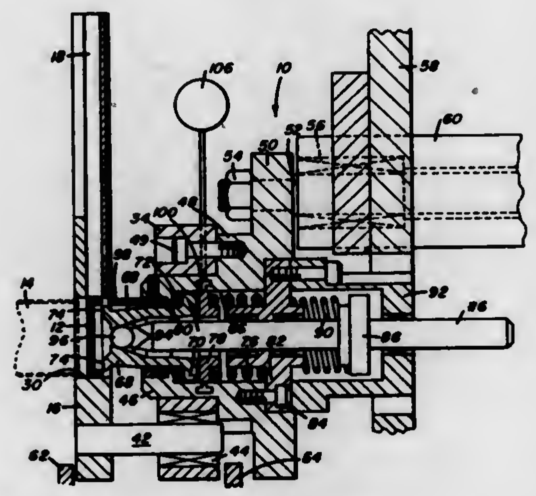
Emile R. Vermeulen, Ghent, Belgium, assignor to Sidaplax N.V., Gentbrugge, Belgium
Continuation-in-part of Ser. No. 868,162, Oct. 21, 1969. This application Sept. 29, 1971, Ser. No. 184,697
Claims priority, application Great Britain, June 29, 1971, 30,386/71; Oct. 28, 1971, 51,058/68
Int. Cl. B65b *7/28*
U.S. Cl. 53—42 **11 Claims**



Improvements in closuring a container with a sheet of biaxially oriented thermoplastic resin by shrinking a portion of the sheet overlying the container mouth to tightly mechanically engage portions of the sheet which had been previously crimped under a peripheral lip on the container. The container, which may be of the thin walled variety, is supported by a holder during closuring in the vicinity of the peripheral lip to minimize the vertical load applied thereto.

3,724,162
MISALIGNED END CAP DETECTING MECHANISM FOR A CAPPING DEVICE

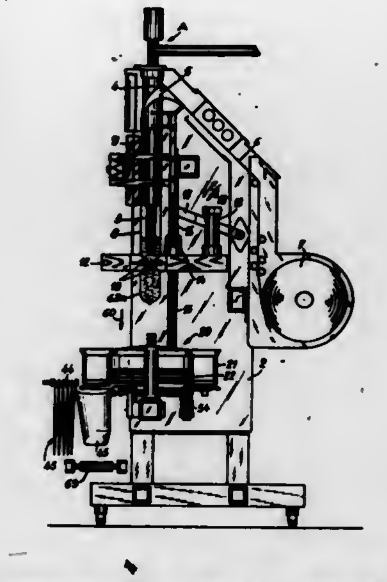
Raymond Lorenzini, and Richard I. Kinsella, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 23, 1971, Ser. No. 201,509
Int. Cl. B65b *57/18*
U.S. Cl. 53—78 **7 Claims**



A detecting mechanism in a capping device of a spooling machine for detecting an improperly capped magazine by sensing a predetermined level of interference between a magazine and an end cap during the capping operation, and in response thereto actuating a control circuit for controlling several operations such as, among other things, inhibiting the operation of a staking mechanism, stopping the spooling machine including the capping device after it has completed a cycle of operation, opening a reject chute to receive the improperly capped magazine, and alerting the operator by actuating a signal device. Any interference between the end cap and magazine equal to or in excess of the predetermined level causes relative movement between the staking mechanism and a staking head which moves the staking mechanism to its staking position. Such relative movement causes leakage in a positive or negative fluid pressure system of the detecting mechanism resulting in a change in pressure which is sensed by a fluidic sensor of the detecting mechanism. The sensor is interrogated by an interrogating input in the form of a voltage pulse, and the interrogating pulse in combination with a change in pressure actuates a flip-flop circuit to initiate the aforementioned operations.

3,724,163
MACHINE FOR PACKING FLUID PRODUCTS IN BAGS

Jean Roussel, Caluire, Rhone, France, assignor to Societe Anonyme dite THIMONNIER & Cie, Lyon, France
Filed Oct. 18, 1971, Ser. No. 190,049
Int. Cl. B65b *9/08*
U.S. Cl. 53—171 **6 Claims**



This machine comprises two parallel, spaced filling units and an overpacking assembly comprising a distributor having a plurality of equal radial compartments, a fixed bottom provided with an aperture, a frap door normally closing said aperture and means for opening an overpacking bag beneath said aperture so that the primary bag or bags deposited into said compartments can drop by gravity into an overpacking bag while separating by gravity said thus filled overpacking bag from its supporting means; this machine is advantageously utilized for all fluid products, notably liquid, pasty, pulverulent or granular products.

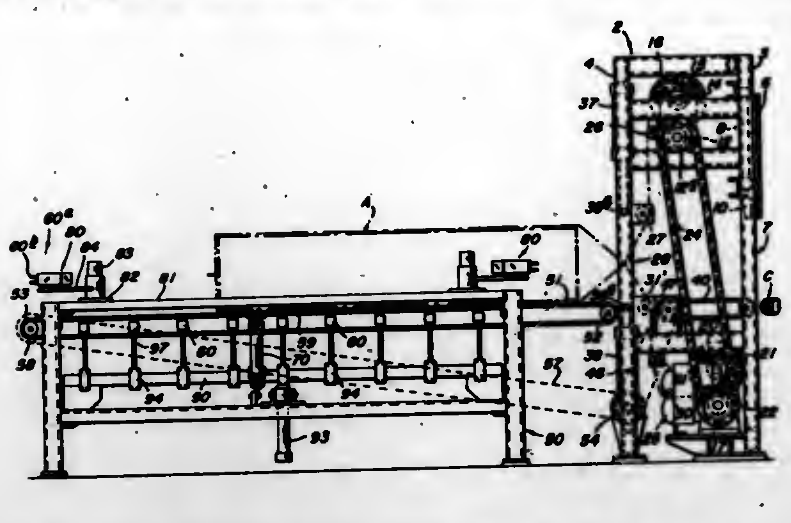
ERRATUM

For Class 53—186 see:
Patent No. 3,724,185

3,724,164
SHRINK-WRAPPING APPARATUS

Robert Brevko, Bridgeville, Pa.; Michael P. Bitsura, Duluth, Minn.; John R. Mucka, Pittsburgh, and Peter Zinski, Carnegie, both of Pa., assignors to Ruburn Engineering, Inc., Pittsburgh, Pa.
Filed July 17, 1970, Ser. No. 55,890
Int. Cl. B65b *11/48, 49/08, 51/14*
U.S. Cl. 53—229 **4 Claims**

Apparatus is disclosed for wrapping an object or stack of objects in shrink wrap plastic sheets wherein an upper plastic sheet and a lower plastic sheet are brought together and heat seamed across their full width. The object to be wrapped is conveyed against the fused sheets and then moves on with the two sheets unwinding from their respective rolls, one being under the object and the other draped over it. At the trailing end of the object, the two sheets are heat seamed together along spaced parallel lines and severed between the two lines. The margins of the bottom sheet ate folded up to overlap the down-draped margins of the upper sheet at each side of the object and the overlapped edges tack-fused or welded along the sides of the package, which is then ready to be placed in a shrink tunnel.



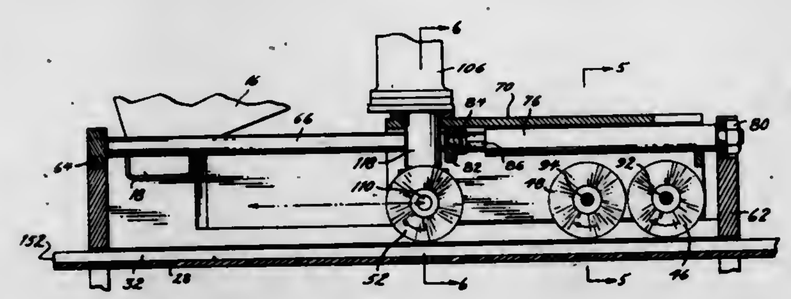
3,724,165
APPARATUS FOR INSERTING TABLETS INTO BLISTER PACKAGES

Matthew Nichols, Norristown, Pa., assignor to Sauter Packaging Company, Souderton, Pa.

Filed May 10, 1971, Ser. No. 141,762

Int. Cl. B65b *5/00*

U.S. Cl. 53—250 **6 Claims**



An apparatus for filling tablets into blister packages, including a lower assembly which provides a vibrating guide for directing elongate thermoplastic strips longitudinally through the apparatus. A movable carriage reciprocates above the lower assembly and carries a plurality of brushes in rotary contact with the top surface of the thermoplastic strips of material. A portion of said brushes are transversely disposed with respect to the elongate thermoplastic strips and are rotatively journalled within the carriage assembly. Other of said brushes circularly rotate with respect to the elongate strips and combine with the transverse brushes to thoroughly sweep the entire top surface of the strips to urge medicinal tablets and the like into depending blisters which are formed in the thermoplastic strips.

3,724,166
CLOSING SPINDLE

Leonardus Petrus van der Meer, Roelofsarendsveen, Netherlands, assignor to N.V. Leidsche Apparatenfabriek, Leiden, Netherlands

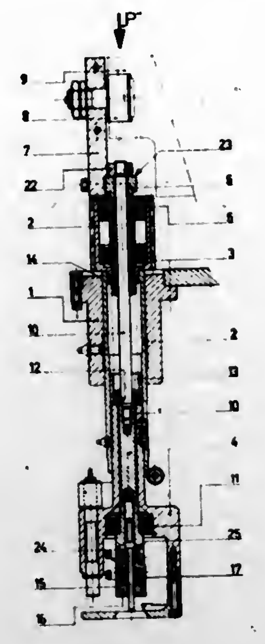
Filed March 16, 1971, Ser. No. 124,994

Claims priority, application Netherlands, Dec. 8, 1970, 7017856

Int. Cl. B65b 7/28

U.S. Cl. 53—334 **7 Claims**

A closing spindle particularly for the application of bottle caps on pressurized bottles. The spindle comprises a cam for motion along a fixed cam track for taking up impact forces generated by the device. The cam is connected to a coupler moving along with the bottle to be capped. The coupler is integral with a spindle shaft and a telescopically movable spindle under the pressure of a spring. The spindle is prevented from rotating with respect to the spindle shaft and is surrounded by



the rotatable shaft. The rotatable shaft is provided with a telescopically movable shaft having means to force the bottle cap onto the bottle. The last mentioned movable shaft is prevented from rotating with respect to the rotatable shaft and is prevented from longitudinal motion with respect to the spindle.

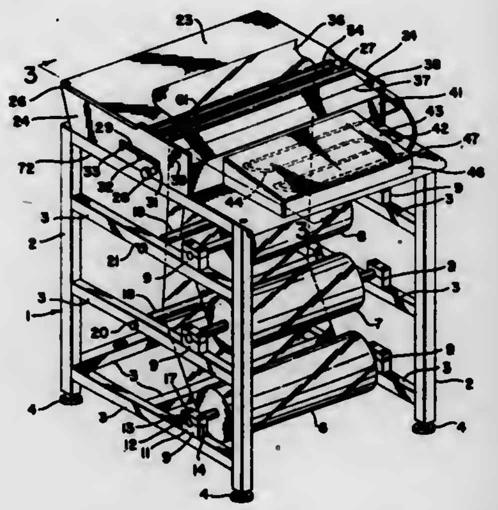
3,724,167
WRAPPING MACHINE

Frank Pizmoht, Willoughby, Ohio, assignor to Heat Sealing Equip. Mfg. Co., Cleveland, Ohio

Continuation of Ser. No. 493,075, Oct. 5, 1965. This application March 28, 1968, Ser. No. 717,049

Int. Cl. B65b *11/02, 11/04, 49/00*

U.S. Cl. 53—390 **11 Claims**



A machine to facilitate the wrapping of packages having a framework, rods attached to the framework for rotatably supporting a plurality of rolls of wrapping material and a platform on which the packages may be wrapped. An adjustable film selector, slidable under the platform, holds the ends of the wrapping material. Separators are utilized to isolate the different pieces of wrapping material from each other as they unwind from the rolls.

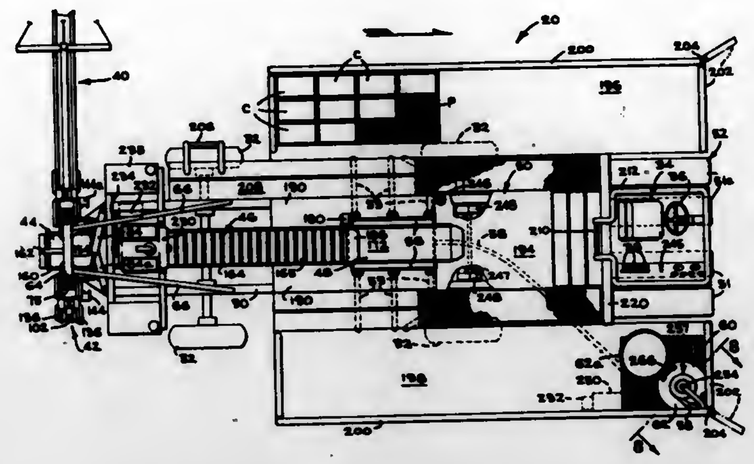
3,724,168
ROW CROP HARVESTING METHOD AND APPARATUS

Henry W. Cassady, Jr., San Jose, and Robert E. Stilwell, Santa Clara, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed June 21, 1971, Ser. No. 154,928

Int. Cl. B65b *67/02*

U.S. Cl. 53—3 **9 Claims**



A row crop harvester having elongated boom conveyors which may be adjusted to positions parallel to the boundary roads of a field being harvested when the harvester is being driven parallel to the rows whether or not the rows are perpendicular or at an acute angle relative to the boundary roads. The boom conveyors are also horizontally and vertically adjustable to a transport position where they are directed rearwardly of the harvester and upwardly to an angle of about 30 degrees. The harvester further includes a sorting station, a packing station, a pallet unloading station, and a vacuum conveying system for rapidly but gently handling soft produce.

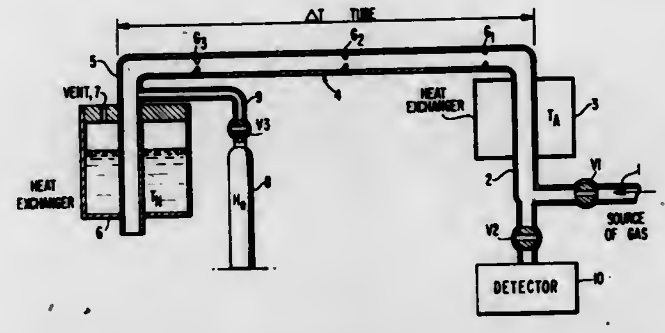
3,724,169
DELTA T BAR SPECTROMETER

Donald J. Santeler, Scotia, N.Y., assignor to Aero Vac Corp., Troy, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,602

Int. Cl. B01d *5/00*

U.S. Cl. 55—20 **35 Claims**



Analysis of constituents of the atmosphere, particularly in the range from 1 PPM to 1 PPB, requires a many-fold factor of concentration, such as 10^5, before normal detection and analysis measurement can occur. Gages are selectively condensed at temperatures in a gradient maintained along a thermally conductive surface in a vacuum chamber in a gas flowing at a rate adjusted to cause substantially complete separation of zones of condensation for the gas and its impurities or the contaminants. and constituents of an atmosphere to be investigated. A temperature gradient is maintained along the exterior of a bar in a vacuum chamber or within a conductive tube through which the gas sample passes. Close control of gas flow diffusion rate, and condensing surface temperature is established between two fixed temperature points as in a tube cooled at one end by liquid nitrogen, for effective separation along the tube wall of constituents. Measurement of the composition of a flowing gas sample, after condensation, is effected through successive component evaporation either into a vacuum or into a carrier gas in a reverse flow to an apparatus such as a mass spectrometer, commencing at the low temperature end. The Δ T bar separates each of the constituents including trace contaminants in a gas to permit successive recovery of the purified or concentrated components in timed sequence according to a controlled temperature rise along the Δ T bar.

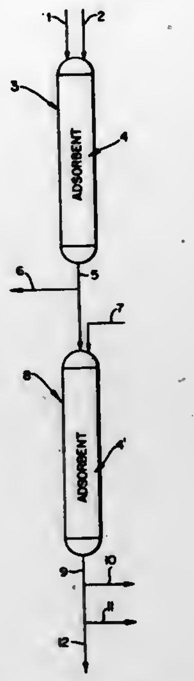
3,724,170
STAGED SEPARATIONS OF AROMATIC MIXTURES WITH ZEOLITES

Paul T. Allen; B. M. Drinkard, and Edward H. Unger, all of Beaumont, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 13, 1971, Ser. No. 179,917

Int. Cl. B01d *15/08*

U.S. Cl. 55—67 **16 Claims**



An improved method for the separation and isolation of individual components contained in a C_8 aromatic mixture such as a p-xylene and ethylbenzene, by contacting the mixture with an aluminosilicate zeolite in stages and recovering the components. It is preferred to use as the zeolite one which has been contacted with an organic-radical substituted silane to modify the characteristics of the zeolite.

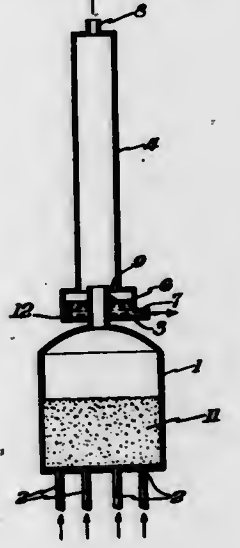
3,724,171
ANNULAR FLOW CONDENSER

Wendell E. Dunn, Jr., Sydney, Australia, assignor to Wendell E. Dunn, Inc., Wilmington, Del.

Filed April 29, 1971, Ser. No. 138,462

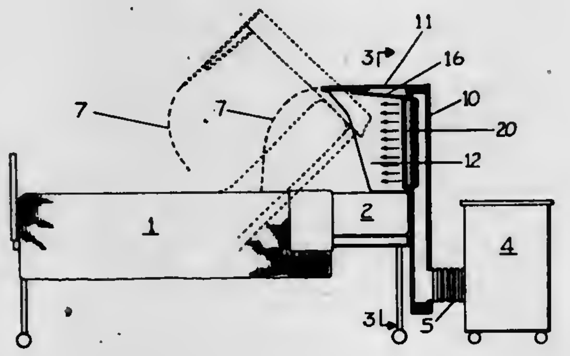
Int. Cl. B01d *53/00*

U.S. Cl. 55—71 **3 Claims**



This invention relates to a method of condensing iron chloride gases, particularly ferrous chloride, evolved from the chlorination of titaniferrous ores to separate the ferrous chloride from other gases evolved from the reaction, by means of annular flow condensation incorporating refluxing of the condensate along the cooling walls in a direction countercurrent to the gas flow from the reactor.

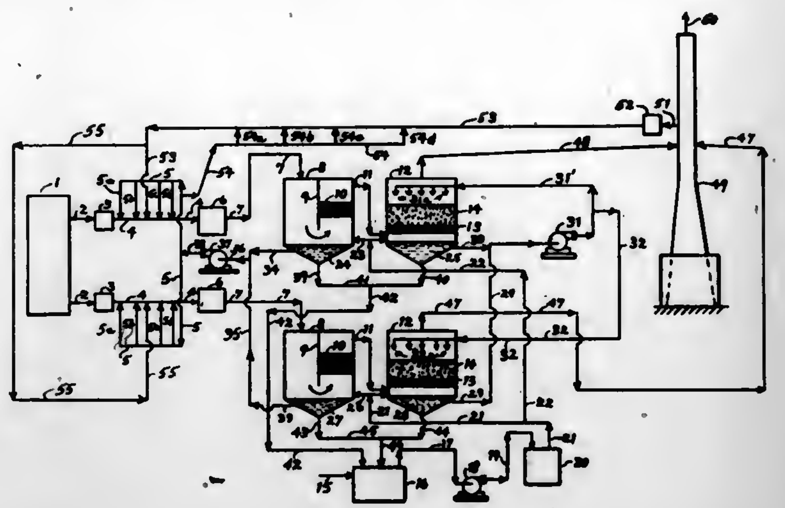
3,724,172
FILTERED AIR BREATHING ZONE
Walter Bruce Wood, 2106 Evergreen Road, Anchorage, Ky.
Filed June 16, 1971, Ser. No. 153,612
Int. Cl. B01d *46/00*
U.S. Cl. 55—97 **19 Claims**



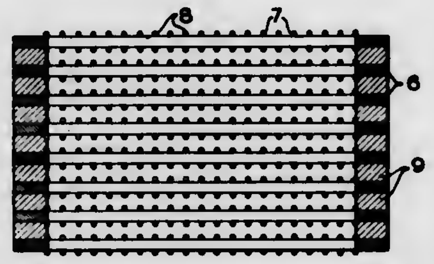
A highly portable, localized filtered air breathing zone for a patient suffering from those respiratory diseases or who require protection from air borne contamination. The filtered air in which essentially all particulate matter has been removed provides a gaseous envelope in the breathing zone adjacent the top portion of the patient's bed. In another embodiment, the apparatus is arranged as to extend longitudinally of the bed and thus provide a patient zone extending transversely across the bed for essentially its entire length. The latter modification is to provide an essentially contamination free patient zone or breathing zone for intensive care units and for enclosures for small children requiring contamination free air. The patient zone is isolated from ambient air by means of three gas patterns, one formed at either vertical edge of the patient zone and one formed transversely across the top of the patient zone. These act as relatively high velocity air curtains and thus shield the center portion of the patient zone from the surrounding ambient air. A gas pervious diffusion wall is provided in the apparatus between the areas defined by the three high velocity gas patterns. This forms the center portion of the patient zone and provides a positive method for filling the breathing zone with contamination free filtered air. All of the air circulated is taken from a purified or filtered air source preferably derived by impelling ambient air through a high efficiency filter.

3,724,173
POLLUTION CONTROL PROCESS
Lloyd A. Fry, Sr., Hinsdale, Ill., assignor to Lloyd A. Fry Roofing Company, Summit (Argo P. O.), Ill.
Filed March 24, 1971, Ser. No. 127,500
Int. Cl. B01d *47/06*
U.S. Cl. 55—89 **8 Claims**

Process for substantially reducing the particulate emission, opacity and odor of an asphalt saturator effluent to form a substantially odor-free gas stream using an exhaust stack stream that has previously been substantially purified for recycle to the process.

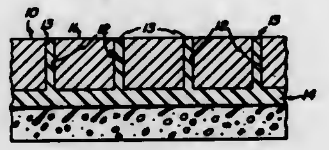


3,724,174
ELECTRICALLY OPERATED DUST MASK
Wilhelm Walkenhorst, Bochum, Germany, assignor to Bergwerksverband GmbH, Essen-Kray, Germany
Filed Sept. 28, 1970, Ser. No. 76,033
Int. Cl. B03c *3/04*
U.S. Cl. 55—123 **2 Claims**



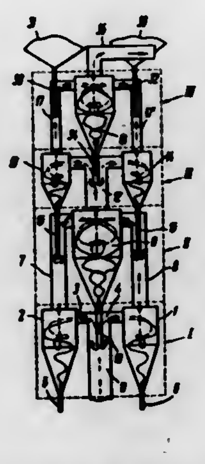
A breathing filter for dust filtering masks in which electrodes in the form of insulated metal wires are employed. The polarity of the electrodes changes in periods which are of greater duration than the duration of dust particles in the filter, but is less than the time required for equalizing the difference in potential of the electrodes. Hardly any electrical energy is used so that a source of voltage of low yield can be used.

3,724,175
COMPOSITE MEMBRANE USEFUL IN NONINVASIVE SENSOR FOR GASES AND VAPORS
Willem J. van der Grinten, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Aug. 5, 1971, Ser. No. 169,170
Int. Cl. B01d *53/22*; B29d *27/00*
U.S. Cl. 55—158 **8 Claims**



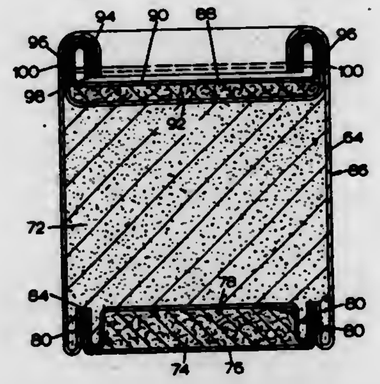
A two-phase membrane construction is described comprising a perforated substrate of essentially non-permeable material, each perforation of which is impregnated with solid polymer material. Means are also provided adjacent the surface of the substrate for equalizing the gas flux over the surface of the polymer-filled perforations. An exemplary two-phase membrane in a membrane/vacuum/mass spectrometer combination is described for use in the non-invasive on-time treatment of gas and vapor partial pressures on the skin (or body membranes) of patients or in body fluids held in vitro.

3,724,176
DEVICE FOR HEAT TREATMENT OF FINELY DISPERSED MATERIAL
Konstantin Pavlovich Vishnevsky, Ulianovskaya ulitsa, 19, kv. 24, and Sergei Alexandrovich Belyanov, Vilonovskaya ulitsa, 13, kv. 32, both of Kuibyshev, U.S.S.R.
Filed May 19, 1971, Ser. No. 144,912
Int. Cl. B01d *51/06*
U.S. Cl. 55—269 **1 Claim**



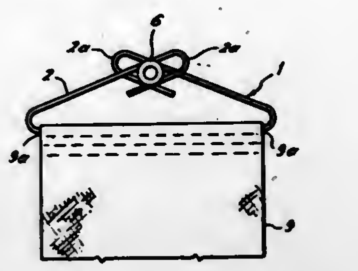
A device for heat treatment of finely dispersed material in which there are several stages of duplex and single cyclone-heat-exchangers with the last cyclone in the line serving as a precipitator and being of a multistage construction.

3,724,177
CARTRIDGE FOR FILTER FOR MOISTURE AND OIL VAPOR
George A. Grote, Glen Rock, Pa., assignor to National Central Bank of York, Pa. Administrator, d.b.n.c.t.a. of the Estate of Willard C. Beach, dec'd and Administrator c.t.a. of the Estate of Mary B. Beach, Hanover, Pa.
Continuation-in-part of Ser. No. 37,125, May 14, 1970, Pat. No. 3,678,662. This application Feb. 11, 1972, Ser. No. 225,382
Int. Cl. B01d *53/16*
U.S. Cl. 55—316 **14 Claims**



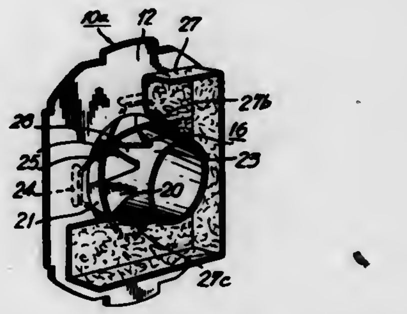
A cartridge for a filter system to absorb and separate water and oil vapors from gases comprising a cylindrical container connectable in a supply line for said gases and containing at least one such cartridge comprising a seamless cylindrical sleeve, the diameter of said sleeve being slightly greater than the inner diameter of said container so that when the filter unit is supported within said container the periphery of the sleeve will smoothly and tightly engage the inner surface of the container to prevent bypassing of gases between the sleeve and container during use.

3,724,178
SPRING HANGER
Joe S. LeBoeuf, Bakersfield, Calif., assignor to Continental Carbon Company, Houston, Tex.
Filed June 21, 1971, Ser. No. 154,909
Int. Cl. B01d *46/02*
U.S. Cl. 55—341 **2 Claims**



A wire hanger particularly designed for hanging a bag filter is of substantially triangular configuration with two overlapping loops extending beyond the apex of the triangle. The overlapping loops define an eye by which the hanger is supported. Each loop is slideable on the other so that the hanger also functions as a tension spring.

3,724,179
SELF-SEALING END CLOSURE FOR DISPOSABLE DUST BAG
Karl Eric Leinfelt, Solna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Continuation of Ser. No. 690,490, Dec. 14, 1967, abandoned. This application Nov. 6, 1969, Ser. No. 871,639
Claims priority, application Sweden, Dec. 26, 1966, 1730/66
Int. Cl. B01d *46/02*
U.S. Cl. 55—367 **5 Claims**

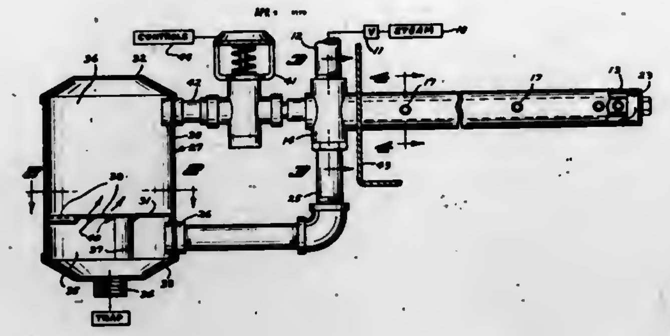


A self-sealing end closure for a disposable paper dust bag having superimposed outer and inner cardboard sheets, the inner sheet having an opening and tongues cut therefrom for holding one or more elongated rubber strips which are substantially in the plane of the inner sheet, and the outer sheet having a plurality of triangular-shaped flaps cut therefrom which overlie the inner sheet at the opening therein with their apices located approximately at the center of such opening. The flaps are forcibly swung about several fold lines in the outer sheet through the opening in the inner sheet by a tubular member through which dust-laden air is conducted into the paper dust bag, the flaps moving inward to provide a hole in the end closure, the material of the end closure defining the hole receiving the tubular member. The one or more elongated rubber strips resist inward movement of the flaps and resiliently hold the flaps against the tubular member to provide a substantially air-tight seal between these parts with first flap portions substantially in their entirety bearing against the outer surface of the tubular member and with second flap portions, which extend radially outward from the first flap portions, inclined to the plane of the plate by the action of a sealing gasket on the tubular member. When the tubular member is withdrawn from the end closure, the elongated rubber strips, which overlie the inner faces of the flaps, urge the flaps into the plane of the outer sheet to close the hole and effect self-sealing of the end closure.

3,724,180
STEAM HUMIDIFIER WITH CENTRIFUGAL SEPARATOR

Bernard W. Morton, Hopkins, and Willard E. Morton, Minneapolis, both of Minn., assignors to Environmental Industires Inc., Hopkins, Minn.

Filed Jan. 22, 1971, Ser. No. 108,706
Int. Cl. B01d *45/12*
U.S. Cl. 55—410 4 Claims

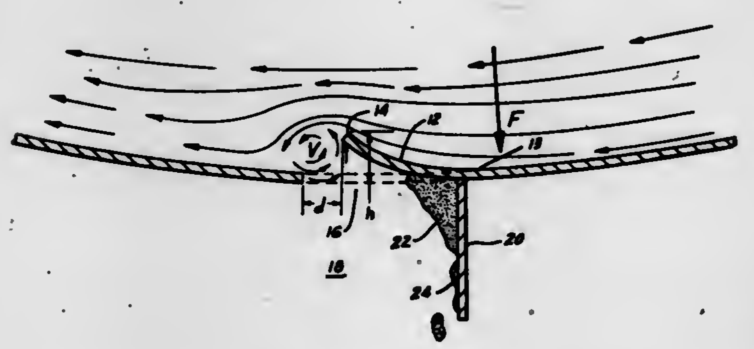


A steam humidifier used to maintain the relative humidity within a desired range in buildings which utilizes a dispersion tube that has a jacket through which the steam passes to keep the dispersion tube at steam temperature, and which has a centrificial separator in the input line to separate out water droplets or slugs of condensate so that no liquid is emitted from the dispersion tube with the steam.

3,724,181
PROCESS FOR SEPARATING PARTICLES FROM AEROSOLS

Harvey S. Benson, Jr., Mico, Tex., assignor to Envirco Corporation, San Antonio, Tex.

Filed June 11, 1971, Ser. No. 152,208
Int. Cl. B01d *45/12*
U.S. Cl. 55—432 4 Claims

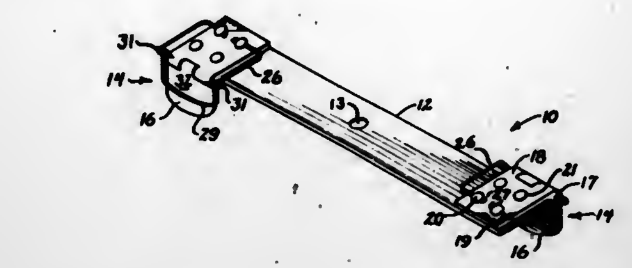


Apparatus for the removal of liquid or solid particles from an aerosol flowing through a conduit. A feature of the method and means for this invention is the provision of (a) a deflector baffle member arranged to divert the flow of the gaseous stream of said aerosol from a wall of the conduit and to cause the stream to pass over a lip of the deflector member whereby an area of turbulence is formed downstream from the deflector member, and (b) a passage provided through the wall of the conduit adjacent said lip and downstream therefrom. It is a discovery of this invention that highly efficient particle separation is achieved by the formation of such turbulent area, or vortex, behind the lip wherein particles are momentarily trapped and then caused to move through the passage into a collection chamber.

3,724,182
ROTARY LAWNMOWER ATTACHMENT

Marvin B. Long, 109 South 8th, and William A. Crowe, 807 West Main Street, both of Hamilton, Mont.

Filed July 6, 1971, Ser. No. 159,952
Int. Cl. A01d *75/18*
U.S. Cl. 56—10.4 1 Claim

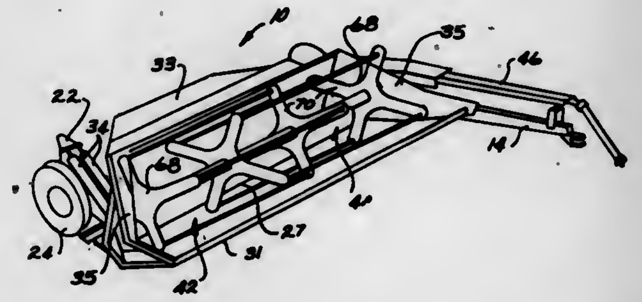


Removably mounted in horizontal attitude on the lower end of the vertical drive shaft of a rotary lawnmower is an elongated bar carrying on its outer ends a pair of hinged paddles which are spring-urged toward a substantially vertical attitude. The paddles are located on the trailing edges of the bar ends so that impact with a rock or stationary object will temporarily deflect the paddle against spring bias without damage to the paddle. The paddles, per se, serve as leaf, grass or loose snow blowers; and by fitting the paddles with one or more tines, a scarifying member is afforded, permitting the attachment to be used either to scrape hard snow and ice or to renovate lawns.

3,724,183
REEL DRIVE TRAIN

Joseph C. Hurlburt, Leola, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Continuation-in-part of Ser. No. 71,551, Sept. 11, 1970, Pat. No. 3,664,101. This application Dec. 30, 1971, Ser. No. 213,858
Int. Cl. A01d *47/00*
U.S. Cl. 56—14.3 11 Claims



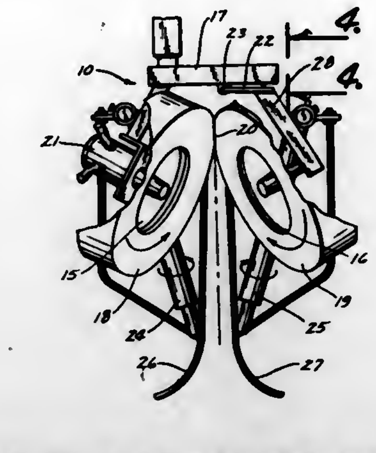
A drive train adapted to drive a reel assembly having multiple reel sections. Disposed in side-by-side relationship, the reel sections are rotatively mounted about a main support tube and driven through a gear drive that includes a main drive shaft journalled within said main support tube and having a series of pinion gears fixed thereto and laying open through openings formed within said main support tube. Each pinion gear is meshed with an internal gear carried by a reel spider such that the rotation of said main drive shaft results in the simultaneous timed rotation of each reel section.

3,724,184
DETASSELING DEVICE

Jerry L. Wright, R.R. No. 2, Scranton, Iowa

Filed Sept. 20, 1971, Ser. No. 182,034
Int. Cl. A01d *45/02*
U.S. Cl. 56—51 6 Claims

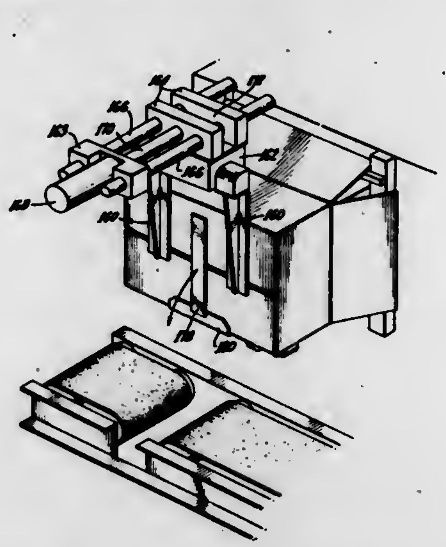
A device for removing tassels from corn stalks including a pair of rotatable wheels mounted at an angle with respect to one another and forming a gripping surface at an area contiguous to the pair of wheels. The pressure at the gripping surface is controlled by an adjustable hinge mounting one of the wheels. Leaf depressing rollers activated by contact with the rotating wheels are provided.



3,724,185
PACKING STATION FOR FOLDABLE CARTON HANDLING APPARATUS

Joseph C. Berney, 2700 Peterson Way 22B, Costa Mesa, Calif.

Filed Sept. 8, 1970, Ser. No. 70,460
Int. Cl. B65b *43/28*
U.S. Cl. 53—186 9 Claims

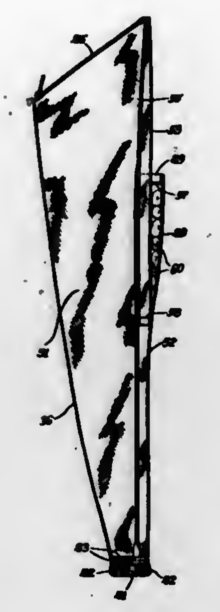


An automatic carton handling apparatus for erecting foldable cartons and positioning them adjacent to a packing machine of the kind which loads the cartons while they are resting on their side panels. The apparatus includes a feed magazine which feeds carton blanks from a stack to a loading station disposed below it, a reciprocating carriage for moving carton blanks from the loading station to a forming station, an opening mechanism for forming the cases into an essentially rectangular tubular configuration, pivotable arms for closing the bottom end flaps, rectilinear arms for closing the bottom side flaps, and a retractable pusher arm associated with the carriage for transferring the opened case from the forming station to a packing station. Included at the forming station is an arm for opening the leading top end flap of the opened carton and a flap flange for maintaining the flap in its opened position. The packing station has associated with it a pivoting carton positioning arm which pushes the opened carton against an end stop, an angular flanged packing horn, carton transfer arms for pushing the opened carton off the carriage onto the packing horn and a lowering arm which contacts the bottom of the carton on the packing horn and lowers the carton after it has been filled, to place the carton in an upright position on a conveyor. The apparatus is synchronized to sequentially feed the cartons in a downstream manner so that the cartons are opened, packed with canned goods, and moved downstream.

3,724,186
LAWN MOWER GRASS BAG HAVING A LITTER POCKET

Charles A. Mattson, Oak Park, Ill., assignor to Sunbeam Corporation, Chicago, Ill.

Filed March 3, 1971, Ser. No. 120,443
Int. Cl. A01d *35/22*
U.S. Cl. 56—202 11 Claims

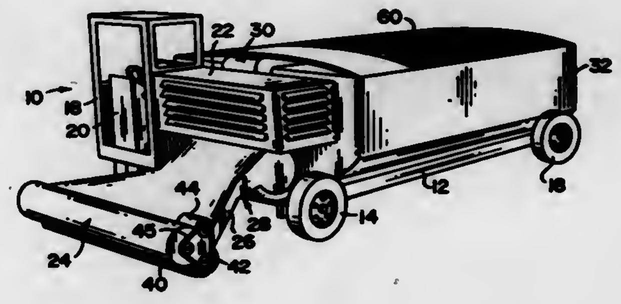


A grass collection bag assembly for receiving the cut grass clippings is releasably mounted on a rotary power mower in register with the mower discharge chute. The assembly includes a bag which is provided with a closable opening for disposing of the collected clippings. A litter pocket opening is also provided on the bag for receiving objects or debris which the lawn mower operator has picked up by hand. The pocket opening is designed such that the items deposited therein may be disposed of at the same time the collected grass clippings are emptied from the bag. In one embodiment, a pocket separate from the grass clipping retaining portion of the bag is provided, while in other embodiments the pocket opening communicates directly with the grass clipping retaining portion of the bag, and the items deposited therein intermingle with the collected grass clippings.

3;724,187
ORGANIC DISPOSAL MACHINE

Loomis O. Bunker, 4338 Newcomer Road, Kent, Ohio

Filed Nov. 11, 1971, Ser. No. 197,805
Int. Cl. A01d *43/02, 87/00*
U.S. Cl. 56—361 9 Claims



A self-contained machine for gathering organic materials such as leaves or grass clippings from the ground, pulverizing such materials and mixing them with water to form a slurry and dispensing the slurry as a fertilizer. A method for disposing of such organic materials is also disclosed.

3,724,188

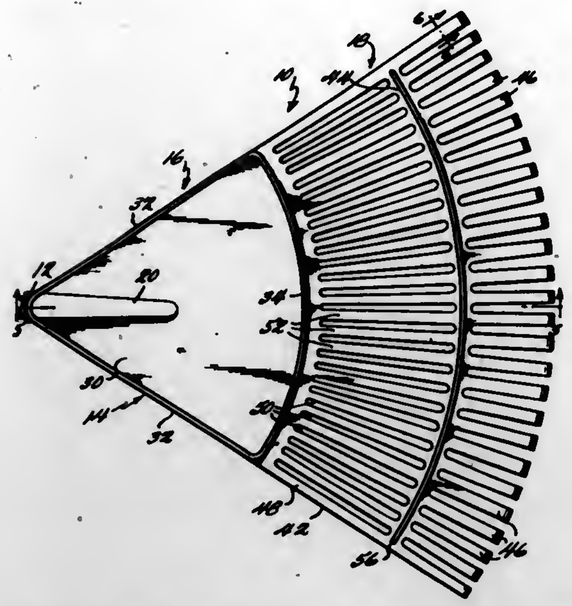
LEAF RAKE WITH IMPROVED MOLDED HEAD

Harold O. Eads, Parkersburg, W. Va., assignor to McDonough Co., Parkersburg, W. Va.

Filed May 23, 1972, Ser. No. 256,166

Int. Cl. A01d *7/00*

U.S. Cl. 56—400.17 **14 Claims**



A leaf rake of the tine type comprising a rake head molded of polypropylene or the like as an integral unitary structure including a handle part of rigid ribbed panel construction providing a centrally located socket for receiving the end of the rake handle and a tine part having an intermediate portion provided with openings and tapered ribs to insure outwardly increasing flexibility, the intermediate portion terminating in a band section disposed within the outer half of the tine part which also includes a series of flexible L-shaped tines extending from the band section.

3,724,189

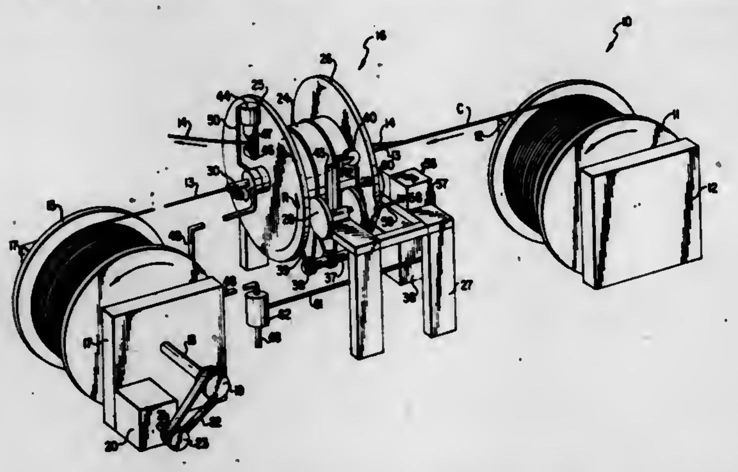
METHOD AND APPARATUS FOR STRIPPING CABLE

Dwight Bishop, Hawesville, Ky., and Ronald W. Baskin, Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed May 27, 1971, Ser. No. 147,468

Int. Cl. D01h *1/00*

U.S. Cl. 57—2.5 **25 Claims**



This disclosure relates to a method and apparatus for stripping the outer strand from a cable composed of a core and at least one wound strand by passing the cable through a rotating member with the core being drawn through a passage extending along the axis of rotation and the partially unravelled outer strand being drawn through another passage offset from the axis of rotation. The outer strand is unwound by being rotated about the core while simultaneously being drawn through the rotating member. A pneumatic shear timed in accordance with the rotation of the rotating member severs predetermined sections of the unwound outer strand.

3,724,190

METHOD OF PRODUCTION OF MULTISECTIONAL FILAMENT COILS AND CONTROL SYSTEM OF A COILING MACHINE OPERATING ACCORDING TO THIS METHOD

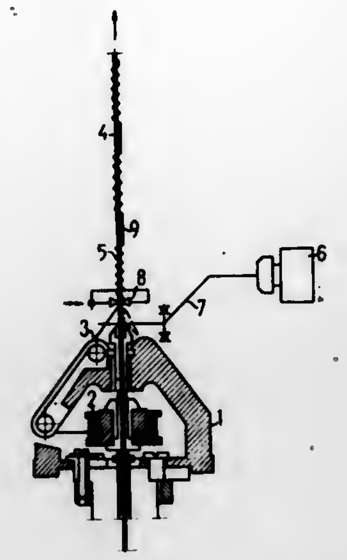
Jan Balbatun, Szenwalda 1/22, and Antoni Makarewicz, Gwardii Ludowej 13/3, both of Koszalin, Poland

Filed Sept. 13, 1971, Ser. No. 179,974

Claims priority, application Poland, Sept. 12, 1970, 143163; April 13, 1971, 147554

Int. Cl. H01b *13/00, 13/08*

U.S. Cl. 57—18 **8 Claims**



Filament coils with coil sections and intermediate section of a straight wire are formed by winding the wire onto an advancing core to form the coil sections, halting the winding of the wire during the initial phase of formation of the intermediate sections and reversing the direction of wind of the wire through a predetermined angle during the final phase of formation of the intermediate sections. Thereby the wire will be formed straight and parallel to the core and substantially free of stress. The drive of the core and wire are controlled by an electronic control system equipped with counters regulating the number of coil turns, pitch, and length of intermediate sections.

3,724,191

TREATMENT OF SYNTHETIC YARNS

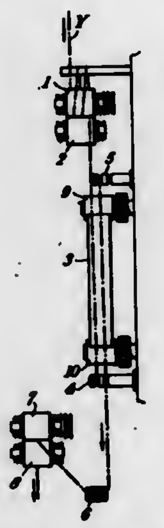
Norbert Hooper, Castleton, near Rochdale, and Terence Gurnshaw, Accrington, both of England, assignors to T.M.M. (Research) Limited, Lancashire, England

Filed Dec. 14, 1970, Ser. No. 97,969

Claims priority, application Great Britain, Dec. 16, 1969, 61,237/69

Int. Cl. D01h *13/28*; D02j *13/00*

U.S. Cl. 57—34 HS **23 Claims**



In a method of treating a synthetic yarn, the yarn is advanced over a heat transfer element by the passage of the yarn at one end or at each end of the element over guide means which causes a reversal of the direction of travel of the yarn over the element and a transfer of the yarn from a path in contact with one side of the element to a path in contact with the other side of the element and which is stationarily arranged or arranged in operation to revolve at a speed less than that of the contacting traveling yarn. The yarn upon leaving the element is twisted by twisting means with the twist running back to the yarn passing over the element beyond the guide means or beyond at least the last contacted guide means.

3,724,192

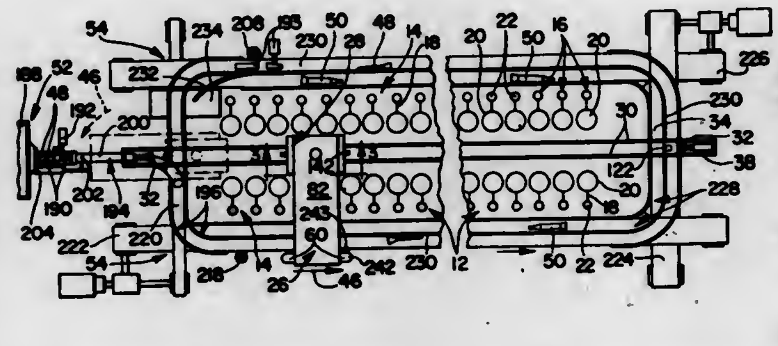
SPINNING SYSTEM

John V. Cardoz, Warwick, R.I., assignor to Lessona Corporation, Warwick, R.I.

Filed April 30, 1971, Ser. No. 138,900

Int. Cl. D01h *13/26*

U.S. Cl. 57—34 R **3 Claims**



An automatic spinning system has at least one spinning frame with opposite banks of spinning stations. A tractor carries a tender capable of randomly servicing the spinning stations. The tractor is mounted for back and forth movement between opposite ends of a track above the banks of spinning stations. The tender is mounted on the tractor for swinging movement about the ends of the spinning frame from one of the banks of spinning stations to the other bank when the tractor is at either of the opposite ends of its track. Thus, the tender patrols the stations as it travels in one direction along a continuous path about the banks of spinning stations, and is capable of randomly servicing the spinning stations. Either a broken strand of yarn or a full bobbin at a station requiring servicing is sensed by operating mechanism for stopping the tender in servicing orientation with the station requiring servicing, whereupon the tender doffs the bobbin from the station spindle and donns an empty bobbin and starts the strand winding onto the empty bobbin. Empty bobbins are conveyed to the tender and filled bobbins are conveyed from the tender as they are doffed. If desired, the tender may be equipped with a system for ridding the spinning frame of lint.

3,724,193

Patent Not Issued For This Number

3,724,194

TEXTILE SPINNING MACHINES

Robert Greenwood, Whalley, near Blackburn, and John Michael Shepherd, Ilkley, both of England, assignors to T.M.M. (Research) Limited, Lancashire, England

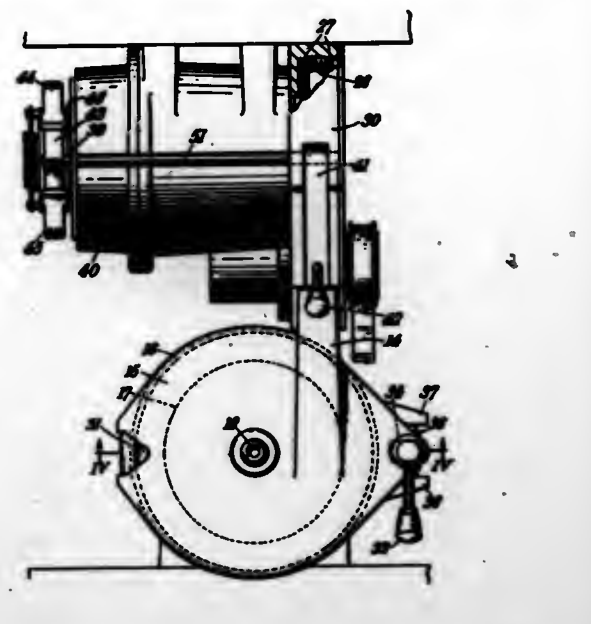
Filed July 8, 1970, Ser. No. 53,247

Claims priority, application Great Britain, July 8, 1969, 34,331/69

Int. Cl. D01h *1/12*

U.S. Cl. 57—156 **2 Claims**

A method of open end spinning textile yarns from fibers having a mean staple length of 2 inches or more using a spinning rotor, in which discrete fibers are fed to the interior fiber collecting surface of the spinning rotor through a feed passage having a length greater than the mean staple length of the fibers.



3,724,195

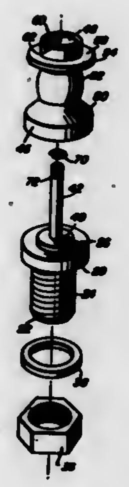
SPINDLE ASSEMBLY FOR TEXTILE MACHINE

William S. Moore, 5 Parkway Drive, Rome, Ga.

Filed Sept. 10, 1971, Ser. No. 179,483

Int. Cl. D01h 7/52

U.S. Cl. 57—75 **10 Claims**



A spindle assembly for a yarn spinning or twisting machine consisting of a stator secured to the spindle rail of the machine in a stationary manner and a rotor rotatably mounted on the stator rotated by a spindle tape with yarn being fed from a drafting system through a yarn guide, around a spinning ring, through a rotating traveler and into a slot at the upper end of the rotor and then down through a hollow tube forming part of the stator to a takeup mechanism.

3,724,196

HIGH SPEED TEXTURING OF SYNTHETIC CONTINUOUS FILAMENT YARN

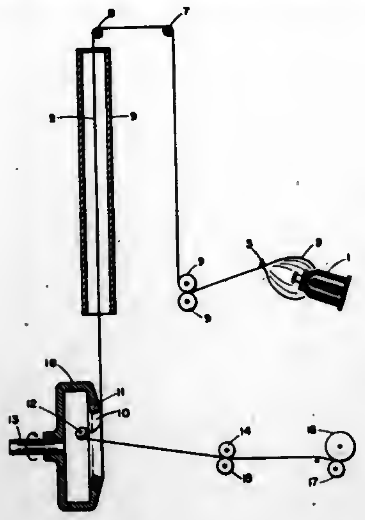
Charles E. Holland, Lincolnton; Robert E. Hinson, Jr., and Richard V. Putnam, both of Charlotte, all of N.C., assignors to Celanese Corporation, New York, N.Y.

Filed May 28, 1970, Ser. No. 41,436

Int. Cl. D02g *1/04*

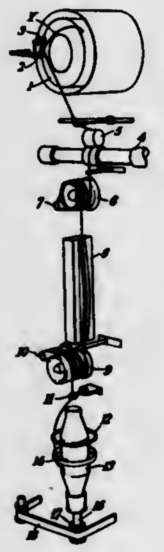
U.S. Cl. 57—77.4 **11 Claims**

A filamentary yarn is false twist textured by being heat set in a twisted configuration. The twist is imparted to the yarn by contact with the inner surface of a rotating friction insert having a profiled friction surface, the insert being mounted in a rotatable cup. The threadline contacts the friction surface at an angle to the surface and passes from the friction surface through a guide and out of the interior of the friction insert.



3,724,197
METHODS OF AND APPARATUS FOR DRAWTWISTING TEXTILE YARNS OR FILAMENTS

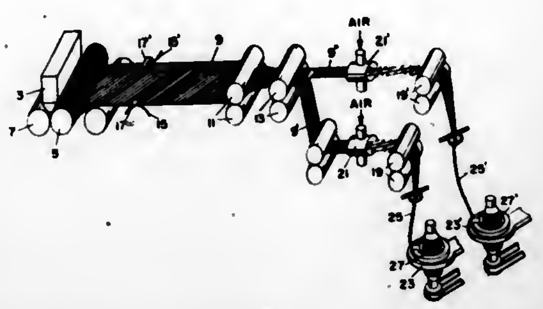
Hector Scowcroft, Bolton, England, assignor to T.M.M. (Research) Limited, Lancashire, England
Filed Oct. 19, 1970, Ser. No. 82,017
Claims priority, application Great Britain, Oct. 20, 1969, 51,390/69
Int. Cl. D01h *1/26*
U.S. Cl. 57—93 **18 Claims**



A method and apparatus for drawtwisting textile yarns or filaments wherein the yarns or filaments are drawn in a drawing zone and then wound by a ring and traveller upon a rotating bobbin carried by a driven spindle to form a wound package, the diameter of which continuously increase during the winding operation. A predetermined spindle speed program drives the spindle initially at a speed lower than an predetermined maximum spindle speed at the commencement of a package build, gradually increases the spindle drive speed to said maximum speed during an initial portion of the build, and then gradually decreases the spindle drive speed throughout the whole of, or a part of, the remainder of the package build.

3,724,198
METHOD FOR PREPARING SPUN YARNS

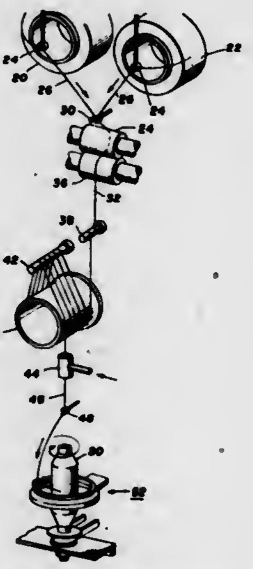
Charles W. Kim, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed July 10, 1970, Ser. No. 53,718
Int. Cl. D02g *3/22*
U.S. Cl. 57—140 R **8 Claims**



Spun strands are prepared by fibrillating a striated film having striations disposed at an angle to its transverse angle and twisting the resulting fibrillated product. The strand, which can be in the form of a yarn, a thread or a string, depending upon the twist level, is a true spun yarn composed of staple length fibers twisted together, as opposed to continuous filaments.

3,724,199
PROCESS FOR MAKING CONTINUOUS FILAMENT HEATHER YARN

Luther W. Armstrong, and William A. Rollings, both of Pensacola, Fla., assignors to Monsanto Company, Saint Louis, Mo.
Filed April 20, 1970, Ser. No. 29,981
Int. Cl. D02g *1/16*
U.S. Cl. 57—157 S **2 Claims**

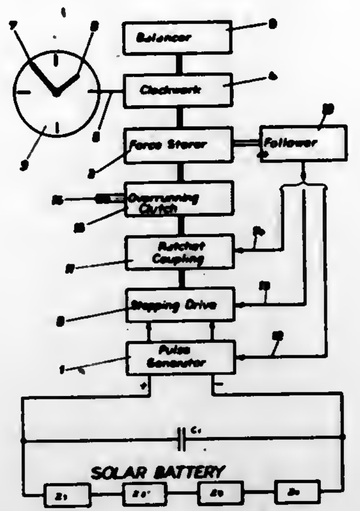


Doubled spun yarns having different dye receptivities are drawn simultaneously to the same degree, plied by filament intermingling, and wound on a package. This produces a heather type yarn.

3,724,200
ELECTRONIC CLOCK WITH LOW POWER CONSUMPTION

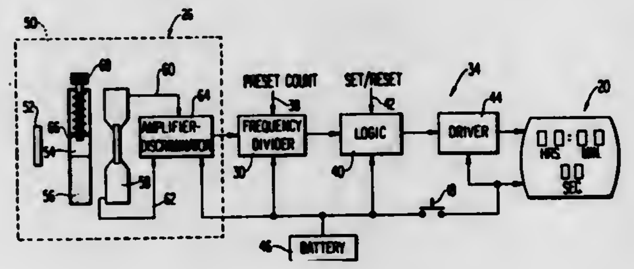
Siegmar Donner, Augsburg-Spichel, Germany, assignor to Firma Kieninger & Obergfell, Georgen, Germany
Filed Feb. 1, 1971, Ser. No. 111,264
Claims priority, application Germany, Jan. 30, 1970, P 20 04 076.0
Int. Cl. G01c *9/00;* **G04b** *9/02*
U.S. Cl. 58—41 R **21 Claims**

An astable multivibrator, driven by a solar battery or other long-term current supply, pulses an electromagnetic stepping drive for intermittently winding up a coil spring which powers a mechanical clockwork. The spring, connected to its stepping drive via a one-way coupling permitting manual rewinding, has one end secured to a leadscrew and has its other end tied to a nut thereon so that the degree of unwinding is indicated by the axial position of the nut on the lead screw. When the spring has been tightened to a predetermined extent, the nut trips an electric switch or a lever to prevent overwinding by disconnecting the multivibrator, arresting the stepping drive or decoupling that drive from its load.



3,724,201
NUCLEAR-PACED SOLID STATE WRISTWATCH

John M. Bergey, Lancaster, Pa., assignor to HMW Industries, Inc., Lancaster, Pa.
Filed Jan. 27, 1971, Ser. No. 110,167
Int. Cl. G04b *19/30;* **G04c** *3/00*
U.S. Cl. 58—50 R **14 Claims**

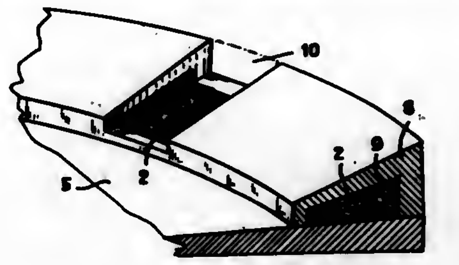


Disclosed is a solid state wristwatch incorporating a nuclear timing source. A radioisotope such as Radium 226 decays, producing alpha particles that are detected and converted into electrical pulses of constant frequency. The electrical signals are divided in a CMOS binary chain and used to drive a digital time display of light emitting diodes. The watch is powered by a conventional 3 volt battery.

3,724,202
RING MEMBER FOR A WATCH DIAL

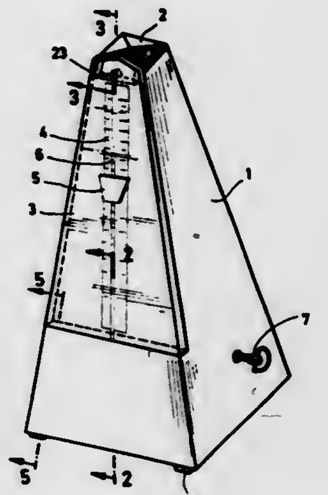
Gilbert Feller, Le Locle, Switzerland, assignor to Metalem S.A., Le Locle, Switzerland
Division of Ser. No. 79,778, Oct. 12, 1970, Pat. No. 3,675,295.
This application Dec. 29, 1971, Ser. No. 213,583
Claims priority, application Switzerland, Oct. 14, 1969, 15353/69
Int. Cl. G04b *19/06*
U.S. Cl. 58—127 R **9 Claims**

A ring member possessing decorative or functional markings for an article, especially for use in a watch, wherein there is provided a metallic ring member body equipped with at least one substantially ring-shaped groove at its base portion which is not exposed to the observer of the article. At least one electrically non-conductive material is deposited in such groove, and the surface of the ring member is provided at predetermined locations with openings for exposing at least given portions of the electrically non-conductive material.



3,724,203
PYRAMIDAL METRONOME

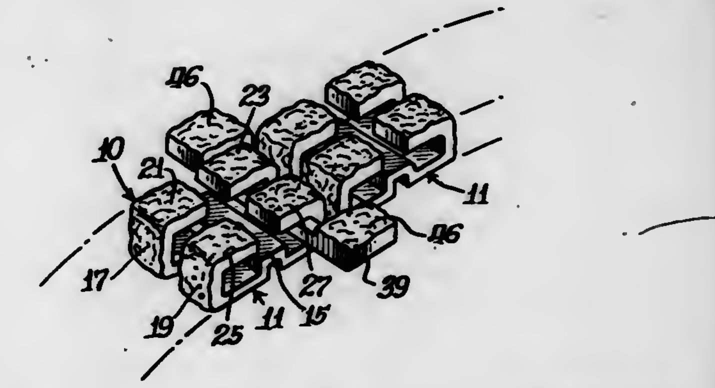
Rudolf Wittner, 7972 Johnstr. 6, Isny, Allgau, Germany
Filed July 21, 1971, Ser. No. 164,700
Claims priority, application Germany, July 22, 1970, P 20 36 319.3
Int. Cl. G04f *11/02*
U.S. Cl. 58—130 R **13 Claims**



A generally pyramidal cabinet for a metronome is formed by a molded truncated pyramidal body portion having appropriately arrange d integrally formed elements coacting with a cap portion, a base portion and a cover portion to hold the cabinet together without the use of additional fasteners.

3,724,204
FLEXIBLE CHAIN FOR PERSONAL WEAR

William N. Frederick, 1858 North Sedgwick, Chicago, Ill.
Filed Oct. 15, 1971, Ser. No. 189,693
Int. Cl. F16g *13/00*
U.S. Cl. 59—80 **5 Claims**



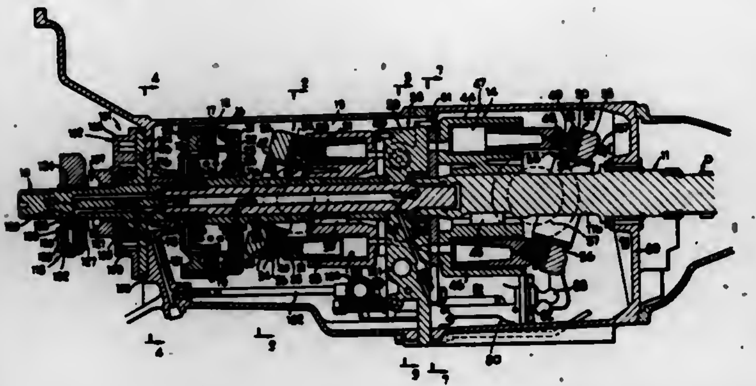
A chain useful as a bracelet and necklace comprised of a plurality of independent link members and coupling bars linked to provide a flexible chain of attractive appearance and having no clasp. A coupling bar can be inserted past a constriction in the link member only when the plane of the coupling bar is substantially normal to the plane of the link member.

3,724,205
AUTOMATIC TRANSMISSION CONTROL SYSTEM

Irving H. Hallberg, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 1, 1971, Ser. No. 203,617
Int. Cl. F02b *41/00*

U.S. Cl. 60—19 **17 Claims**



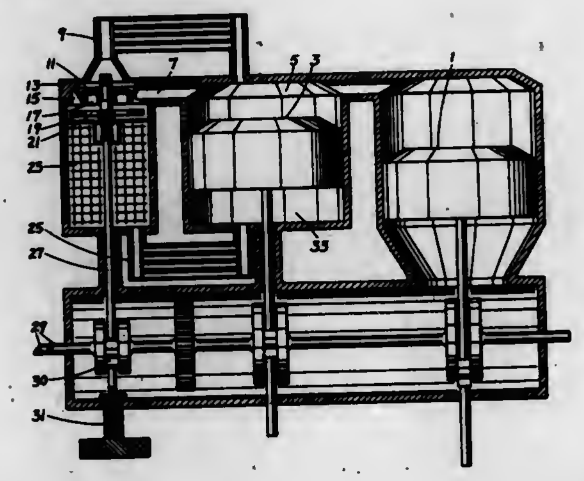
An automatic transmission for an automotive vehicle having a driving engine with a throttle, and comprising a variable speed ratio hydromechanical power transmission connecting an engine-driven input shaft and a wheel-driving output shaft including a hydrostatic unit of a pump and a motor having swash plates movable to provide infinitely variable speed ratios of the shafts and a mechanical unit in the form of a friction clutch operable to directly couple the shafts. Hydraulic control means are provided for displacing the swash plates and operating the clutch in response to vehicle speed, throttle operation, and hydraulic motor swash plate angular displacement.

3,724,206
SPEED CONTROL APPARATUS FOR HOT GAS ENGINE

Melvin Andrew Ross, 37 West Broad, Suite 630, Columbus, Ohio

Filed Jan. 12, 1972, Ser. No. 217,314
Int. Cl. F02g *1/06*

U.S. Cl. 60—24 **7 Claims**



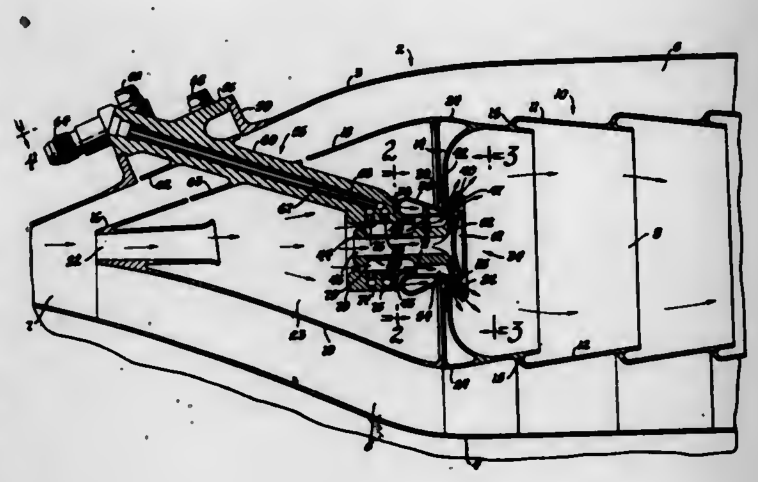
A speed control regulator for a closed-cycle displacer type hot gas engine comprising a separate heating device situated between the regenerating device and the hot end of the displacer cylinder, a passageway bypassing the heating device by leading directly from the regenerating device into the hot end of the displacer cylinder, an externally controlled variable valve which determines what portion of the working gas, if any, will bypass the heating device when being transferred into the hot end of the displacer cylinder, and nonvariable valves which allow all of the working gas to bypass the heating device when being transferred out of the hot end of the displacer cylinder. The hot end of the displacer cylinder is provided with insulation, becoming a mere repository for hot gas, as opposed to an externally heated adjunct to the heating device, in order to obtain rapid regulator response over a wide range of engine speeds. The total mass of gas within the engine's working chambers may remain constant at all speeds.

3,724,207
COMBUSTION APPARATUS

Douglas Johnson, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 5, 1971, Ser. No. 169,307
Int. Cl. F02c *3/24*

U.S. Cl. 60—39.74 R **2 Claims**



A combustion apparatus having outer and inner casing walls and an annular combustion liner mounted between them. The combustion liner is supported at its upstream end by brackets extending from the front wall of the liner having a radial slip fit connection with struts connecting the outer and inner casings. An annular diffuser fitting against the front end of the combustion liner and extending from and between the struts supplies air to the front wall of the combustion liner. Fuel is introduced through combined fuel and air inlet structures spaced around the front wall of the liner, these having an outer air entrance, an intermediate mixed fuel and air entrance, and an inner air entrance all flaring at the inner side of the combustion liner front wall to direct the entering air and fuel generally radially from these entrances.

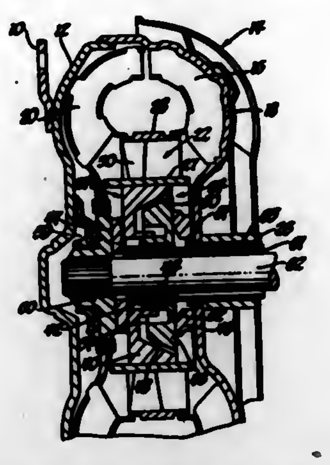
3,724,208
FRICTION DEVICE FOR HYDRODYNAMIC UNIT ROTOR

Earl S. Welch, Huntington Woods, and Roland J. Petelka, Ypsilanti, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed April 2, 1971, Ser. No. 130,584
Int. Cl. F16d *31/06*

U.S. Cl. 60—54 **4 Claims**

Hydrodynamic torque converter in which the stator is mounted on a cone-type friction device having a first cone member fixed to a ground sleeve and a second cone member which carries the stator. The second cone member is supported on the first cone member and is moved into and out of frictional engagement in accordance with the flow conditions within the converter. At stall and up to coupling, the flow of fluid through the converter acts on the front faces of the stator blades to provide a force which effects the frictional engagement of the friction device so that the stator is grounded to provide for reaction and torque multiplication. As turbine speeds increase to pump speed, the fluid exiting from the turbine flows against the rear faces of the stator blades removing the apply force allowing the stator to freewheel so that the converter operates as a fluid coupling.

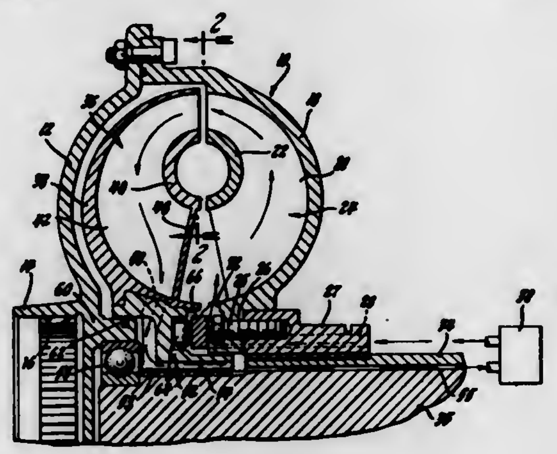


3,724,209
FLUID UNIT WITH DUMP AND FILL CONTROL

Harry Fackenthal, Muncie, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 22, 1971, Ser. No. 191,604
Int. Cl. F16d *33/06*

U.S. Cl. 60—54 **5 Claims**



This hydrodynamic unit has a number of turbine fluid flow passages blocked by end walls provided between the vanes and these passages are connected by internal radial passage within the unit leading to a central discharge line. The unit will evacuate its oil by the direct tapping of the toric oil flow in the unit in response to the decrease in supply of oil to the unit torus from the controls. By controlling the amount of oil fed to the unit torus, the torque transmitting capacity of the unit is controlled.

3,724,210
PUSH ROD MECHANISM FOR PARALLEL CYLINDERS

Uichiro Kobashi, and Masahiro Kito, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 18, 1971, Ser. No. 116,365

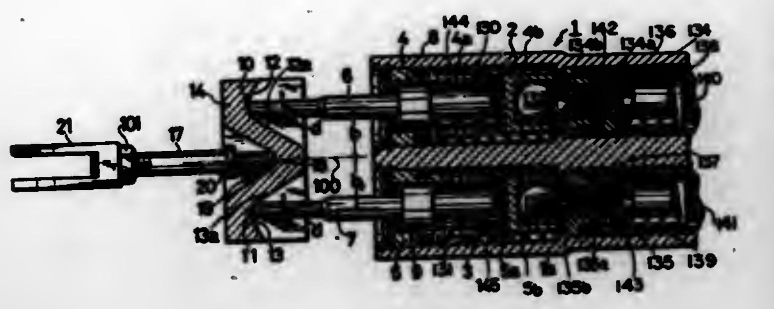
Claims priority, application Japan, Feb. 20, 1970, 45/15087; May 27, 1970, 45/52005

Int. Cl. F15b *7/00*

U.S. Cl. 60—54.6 E **6 Claims**

This invention relates to a push rod type motion-transmitting mechanism including a main push rod and a pair of auxiliary push rods, said main push rod being mechanically connected with a foot-operated brake pedal and said auxiliary rods being operatively connected respectively with control pistons slidably mounted in dual and parallel control cylinders formed within a hydraulic brake pressure control assembly adapted for valvingly control the hydraulic pressure supply to automotive wheel brake cylinders through dual pressure supply means leading thereto. All the main and auxiliary push rods are arranged in parallel to each other. There is provided a floating intermediate motion-transmitting member, said main push rod and the auxiliary push rod pair being kept in pressure contact with said intermediate member from both sides thereof substantially in opposed arrangement.

The improvement resides in the specific configuration of rod end-receiving surfaces formed on said intermediate member, so as to transmit motion from said intermediate member to said auxiliary push rods substantially in the axial direction, regardless of occasional inclination or partial rotation of said member caused by, for instance, accidental disabling of one of the dual pressure liquid supply means on account of pipe bursting or the like cause. The specific configuration of the said surface is defined by a pseudo-involute curve situated inwardly of an ideal involute curve as a main working part of said surface.

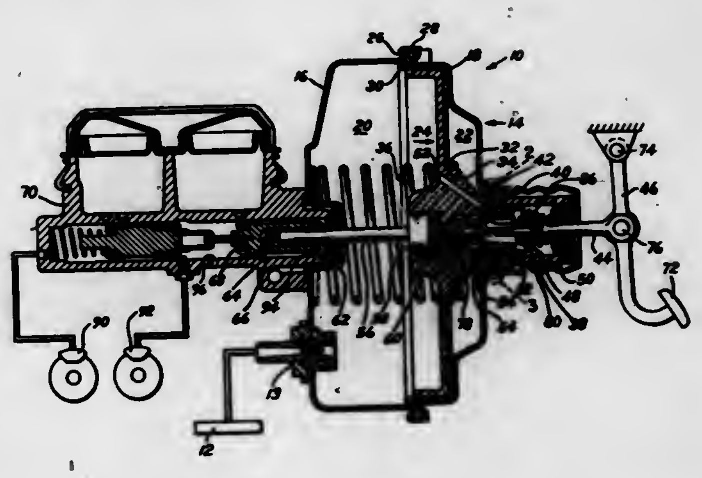


3,724,211
REAR SEAL FOR SERVOMOTOR

Thomas M. Julow, South Bend, Ind., assignor to The Bendix Corporation

Filed June 30, 1971, Ser. No. 158,327
Int. Cl. F15b *7/00*; **F16j** *15/18*

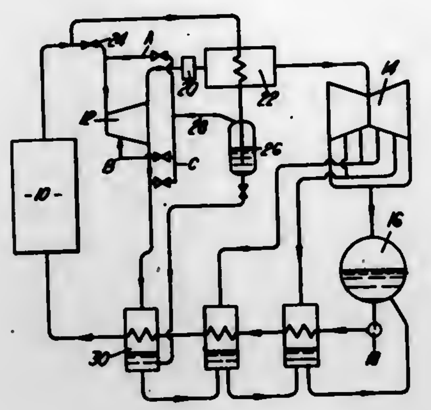
U.S. Cl. 60—54.6 P **4 Claims**



A combined seal and bearing member for aligning a force transmitting member of a servomotor. A U-shaped retainer frictionally held in an opening of the housing of the servomotor has a first leg surrounded by a resilient member. A hinged lip attached to the resilient member surrounds a tubular projection of the force transmitting member and seals the opening in the housing. A resilient wedge adjacent the first leg has its apex near a second leg of the U-shaped retainer. The second leg holds the bearing member which surrounds the tubular projection in contact with the resilient wedge. The resilient wedge will permit the bearing member to move transversely inside the retainer to align the tubular projection with the rear bearing of a power piston of a master cylinder.

3,724,212
POWER PLANTS

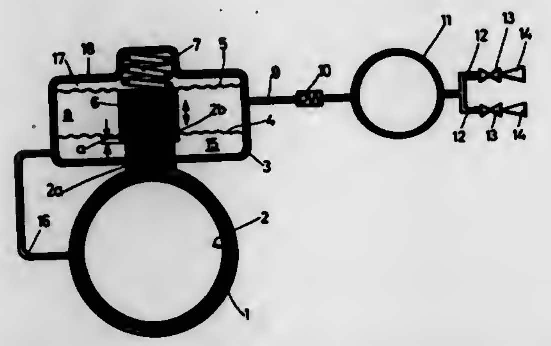
Alan Bell, London, England, assignor to Foster Wheeler John Brown Boilers Limited, London, England
Filed Nov. 26, 1969, Ser. No. 870,576
Int. Cl. F01k *13/00, 7/44*
U.S. Cl. 60—73 **9 Claims**



This invention relates to steam power plants where the generated steam is used to drive a turbine so providing power. In order to reheat the steam at an intermediate point in the turbine, the steam is removed from the turbine, dried if required, reheated in heat exchange with a substantial excess over that which will condense of the live steam, and then returned to the turbine. The live steam is derived from the same source as that used to feed the turbine and, after being used to reheat the steam from the turbine, the excess steam is separated from the condensed water, and both the steam and water are used in the power plant so as not to waste them.

3,724,213
FUEL SYSTEM, IN PARTICULAR FOR ROCKET ENGINES

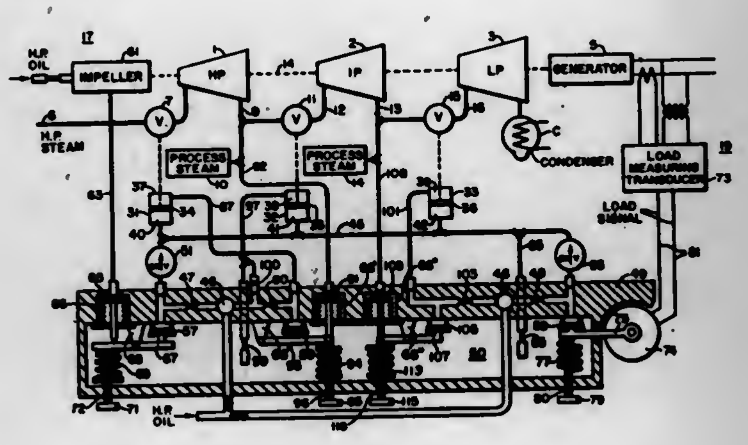
Wolfgang Muller, Mockmuhl, and German Munding, Bad Friedrichshall, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany
Filed Dec. 3, 1971, Ser. No. 204,648
Claims priority, application Germany, Dec. 4, 1970, P 20 59 583.2
Int. Cl. F02c *9/08*
U.S. Cl. 60—39.27 **8 Claims**



The fuel system includes a series connection of a fuel reservoir, containing at least one monergolic fuel, a catalyst for fuel decomposition, and a decomposition gas chamber. There may be two or more such series connections depending upon the number of monergolic fuels involved. A multi-part capillary body is interposed between each fuel reservoir and the catalyst, and at least one part of each capillary body is mounted for displacement in a direction to control the flow cross-sectional area for the fuel. The movable capillary body part may be suspended inside a housing by means of a control diaphragm subjected to the prevailing decomposition gas pressure, on one side, and to a counterpressure, such as a spring pressure, on the other side. Both the catalyst and the movable capillary body part may be suspended by two diaphragms forming a chamber for the decomposition gases escaping from the catalyst. Alternatively, the movable part of the capillary body may be a slide programmed by mechanism controlled by cams.

3,724,214
EXTRACTION CONTROL SYSTEM FOR A TURBOGENERATOR SET

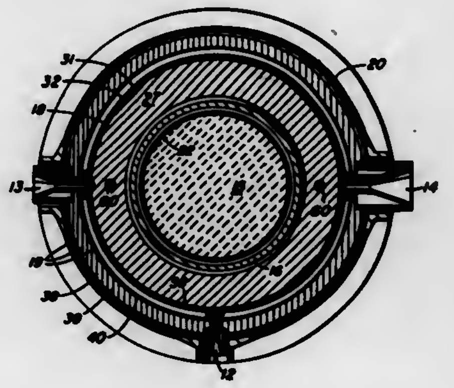
Ozro N. Bryant, Chester, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed March 5, 1971, Ser. No. 121,317
Int. Cl. F01k *13/02, 17/02, 7/16*
U.S. Cl. 60—73 **7 Claims**



A turbogenerator set having an extraction control system for maintaining a selected pressure at each steam extraction point regardless of the flow at individual extraction points and irrespective of whether the load on the generator is maintained at a selected load or whether the load is varied, as long as the load on the generator is greater than the power supplied by that portion of the extracted steam which passes through the turbine.

3,724,215
DECOMPOSED AMMONIA RADIOISOTOPE THRUSTER

Joseph W. Neudecker, and Kenneth C. Cooper, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed May 19, 1971, Ser. No. 144,954
Int. Cl. F02k *11/00*
U.S. Cl. 60—203 **4 Claims**



A radioisotope heated propellant reaction control system wherein energy from the decay of plutonium-238 is used to heat and decompose ammonia propellant, and the decomposition products, nitrogen and hydrogen, are expanded through nozzles to provide desired increments of thrust. Three nozzles provide thrust levels of 10×10^{-3} to 100×10^{-3} lb_f at a specific impulse of 310 seconds in a pulsing mode.

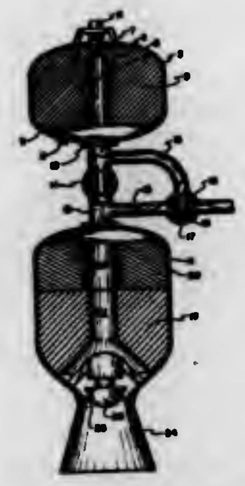
3,724,216
COMBINED ROCKET-RAM-JET AIRCRAFT

E. Quimby Smith, Jr., Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 13, 1957, Ser. No. 665,612
Int. Cl. F02k *3/00*
U.S. Cl. 60—245 **2 Claims**

1. In a combined rocket-ram-jet aircraft, a tubular casing having both an inlet and an outlet for ram air, a tubular mass of solid propellant concentrically disposed within said tubular casing for rocket motor operation, a liquid ram-jet fuel container concentrically disposed within said tubular mass for ram-jet motor operation, a combustion chamber comprising a tubular chamber concentrically disposed between said tubular casing and said solid propellant in a manner to permit radial burning of said solid propellant, a mechanical valve composed of non-consumable material and of generally annular configuration encircling said liquid fuel container and positioned between said combustion chamber and said ram-air inlet so as to prevent air flow through the combustion chamber when in closed position, said valve being maintained in closed position by contact with said solid propellant, said valve comprising a plurality of radially-hinged flaps designed to be substantially air-tight when in contact with said solid propellant and being opened by the pressure of ram air when said tubular mass has been consumed in a manner to permit ram air to pass to said combustion chamber whereby said ram-jet motor becomes operative to sustain flight of said aircraft.

3,724,217
ROCKET SYSTEM

Allan J. McDonald, Brigham City, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed Oct. 6, 1971, Ser. No. 187,009
Int. Cl. F02k *9/04*
U.S. Cl. 60—254 **7 Claims**

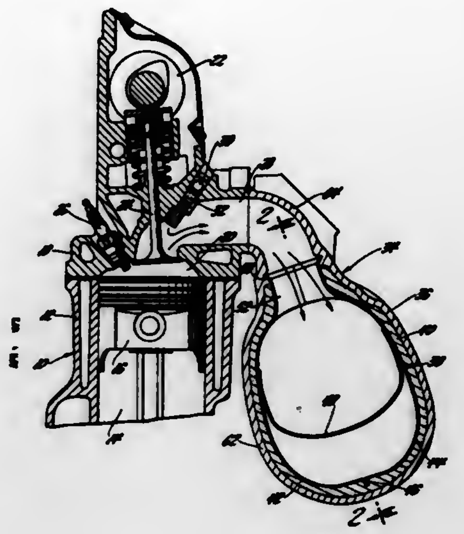


An extinguishable, solid propellant rocket motor has a forward propellant grain in abutting relationship with an aft propellant grain, with a common perforation extending through both. The aft grain, primarily for propulsion, is much more energetic than the forward grain, which is primarily for furnishing gases for control mechanisms. A gas generator in communication with the forward end of the rocket motor is valved therewith so that, in cooperation with the rocket motor, a variety of operations are possible with gases being contributed by either or both the rocket motor and the gas generator for propulsion and control mechanisms.

3,724,218
ENGINE EXHAUST REACTOR AND METHOD OF MAKING

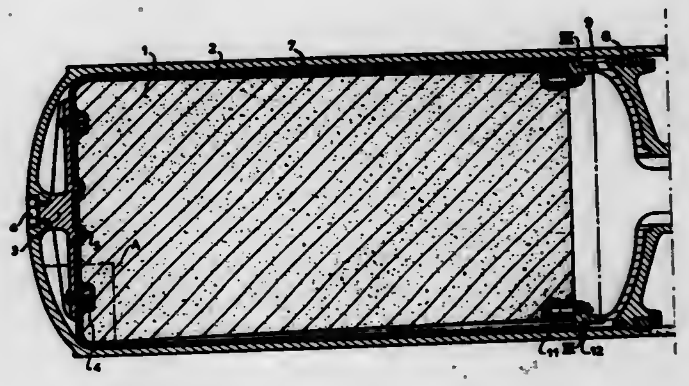
Edward N. Cole, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 4, 1971, Ser. No. 140,035
Int. Cl. F01n *3/10, 7/18*
U.S. Cl. 60—282 **8 Claims**

An exhaust reactor for an internal combustion engine is preferably formed as a large volume manifold having a cast iron outer shell containing a baffled sheet metal inner liner with an intermediate insulating layer of core sand encapsulated between the walls of the inner liner and outer shell. The reactor is constructed by first fabricating the metal inner liner, then applying the insulating layer of core sand to the outer surfaces of the liner exclusive of certain protruding portions, casting the iron outer shell around the sand core and sheet metal liner so as to completely encapsulate the sand layer between the inner layer and outer shell.



3,724,219
DEVICE FOR SECURING A SOLID PROPELLANT GRAIN IN A COMBUSTION CHAMBER

Pierre Allard, Antony; Jacques Laparre, Viroflay; Claude Lemaitre, Wissous, all of France
Filed May 21, 1971, Ser. No. 145,834
Claims priority, application France, May 28, 1970, 7019637
Int. Cl. F02k *9/04*
U.S. Cl. 60—255 **5 Claims**



A device for securing a propellant grain in the combustion chamber of a propellant unit comprises a plate fast with the front end of the propulsion unit. The front face of the propellant grain is fixed rigidly to the plate. The propellant grain is secured to the plate by means of stud members engaging into openings formed adjacent the periphery of the plate and permitting expansion of the grain without engendering significant stresses. A grid fast with the rear face of the grain and having a cylindrical bearing surface cooperates with a bore of the rear end of the propulsion unit.

3,724,220
EXHAUST GAS PURIFYING DEVICE FOR INTERNAL COMBUSTION ENGINES

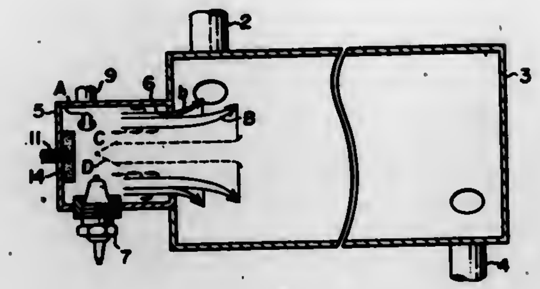
Yasusi Tanasawa, Nagoya; Tokuta Inoue, Sizuoka-ken; Kenji Ishiguro, Aichi-ken, and Tokio Kohama, Nishio, all of Japan, assignors to Nippondenso Co., Ltd., Aichi-ken; Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, all of Japan

Filed Oct. 26, 1971, Ser. No. 192,089

Claims priority, application Japan, Nov. 4, 1970, 45/97022; Nov. 4, 1970, 45/97023; Nov. 4, 1970, 45/97024

Int. Cl. F01n *3/14*

U.S. Cl. 60—303 11 Claims



An exhaust gas purifying device for burning the unburnt component contained in the exhaust gas of an internal combustion engine. A swirl of air is formed in a combustion chamber, fuel is supplied into the combustion chamber and burnt, and a combustion flame swirling in the combustion chamber is blown into a reaction chamber disposed in an exhaust pipe of the internal combustion engine. A porous member made of noncombustible material is mounted to an opening of a fuel spouting pipe opened into the combustion chamber.

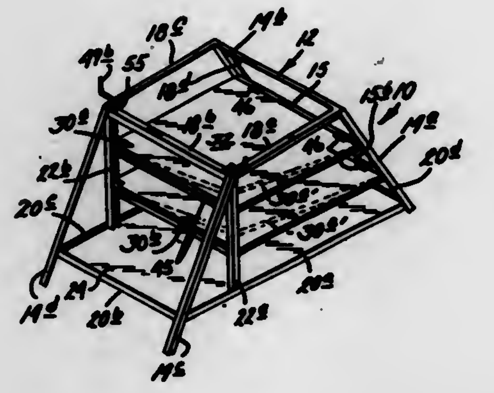
3,724,221
WATER CURRENT DIRECTING APPARATUS

Arthur R. Cool, Box 121, 111 Sunrise Drive, Livingston, Mont.

Filed Oct. 21, 1971, Ser. No. 191,414

Int. Cl. E02b *3/04*

U.S. Cl. 61—3 8 Claims



A water current directing unit including an essentially open frame structure for supporting a plurality of flexible, vertically spaced current directing surfaces. Each of the current directing surfaces is inclined slightly upward from the horizontal toward the downstream end of the frame structure causing the water passing over the surfaces to force the unit toward the bottom of the stream, channel, etc. (i.e. to anchor the unit). The upstream edge of each of the current directing surfaces is pivotably attached to the frame structure and each of the corners along the downstream edges is independently moveable in the vertical direction so as to form a curved current diverting surface. A plurality of the current directing units can be positioned in either a series or parallel arrangement so as to effect the desired current diversion.

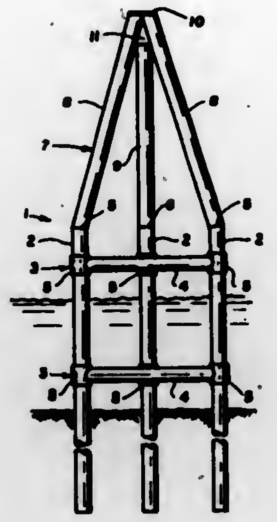
3,724,222
MOORING STRUCTURE AND METHOD

Graydon H. Crain, Freedom Road, RD No. 3, Mars, Pa.

Filed June 10, 1971, Ser. No. 151,641

Int. Cl. E02d *13/00*; E02b *3/06*

U.S. Cl. 61—46 5 Claims



This invention relates to a mooring structure and method of construction thereof, comprising a triangular template or diaphragm having vertical sleeves at the corners through which tubular legs or piles are driven in telescoping arrangement while the template is supported by beams whose ends are held on two barges straddling the structure. The sleeves are welded to the legs. A prefabricated triangular tripod is welded to the top of the legs. Concrete is then poured into the legs. One or more diaphragms may be used with each structure at a selected height above or below the water level.

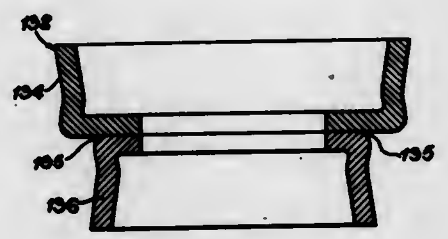
3,724,223
ONE PIECE, DRIVE FIT, CLOSURE CAP AND SLEEVE FOR PILES

Charles R. Pepe, Old Quarry Road, Apline, N.J.

Filed Nov. 27, 1970, Ser. No. 93,278

Int. Cl. E02d *5/00*, *5/72*; F16l *25/00*

U.S. Cl. 61—53 28 Claims



A drive fit, closure cap for pipe piles formed of a pan having tapered upright sides, the tapered sides serving to lead the pipe into the pan and thereby reduce the pipe diameter to a lesser diameter than it originally had, to thus make a nonwelding self locking water tight joint for efficient pile driving. The pan is provided with an internal annular ring which may be utilized to retain gasket and/or sealant material or may be sized to be a drive fit on the inside of the pipe while the tapered sides of the pan form a drive fit on the outside of the pipe.

A drive fit sleeve for joining two pipe piles formed of two such drive fit closure caps joined bottom to bottom and having their bases' centers blanked out.

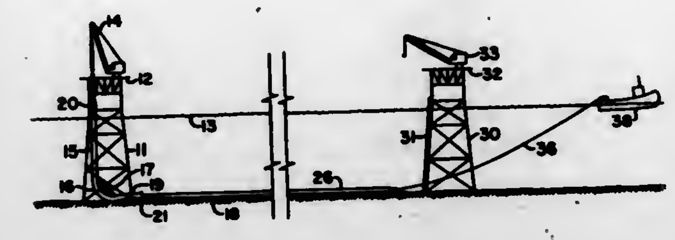
3,724,224
METHOD FOR INSTALLING DOUBLE-WALLED PIPELINES

Jamie F. Matthews, Jr., Houston, Tex., assignor to Esso Production and Research Company

Filed June 7, 1971, Ser. No. 150,497

Int. Cl. F16l *1/00*, *7/00*

U.S. Cl. 61—72.3 18 Claims



A double-walled pipeline is installed on the bottom of a body of water by installing a riser having a large bend near its lower end or a similar member at an offshore platform or other installation from which the pipeline is to extend, installing an outer pipe string along the pipeline route between the platform or other installation and the pipeline terminus, passing a cable through the riser or similar member and the outer pipe string, and then moving an inner pipe string into position within the riser or similar member and the outer pipe string.

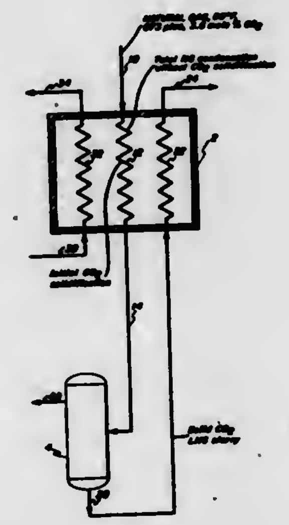
3,724,225
SEPARATION OF CARBON DIOXIDE FROM A NATURAL GAS STREAM

Paul A. Mancini, New York, N.Y., and Walter G. May, Summit, N.J., assignors to Esso Research and Engineering Company

Filed Feb. 25, 1970, Ser. No. 13,931

Int. Cl. F25j *1/00*, *1/02*

U.S. Cl. 62—12 1 Claim



A process for the removal of carbon dioxide from a natural gas stream during the liquefaction of said gas stream. The gas stream containing carbon dioxide is cooled, resulting in the crystallization of carbon dioxide from the totally condensed liquid stream. A slurry comprising the crystallized carbon dioxide and a portion of the liquid is recycled, providing a fraction of the refrigeration required for cooling the gas stream.

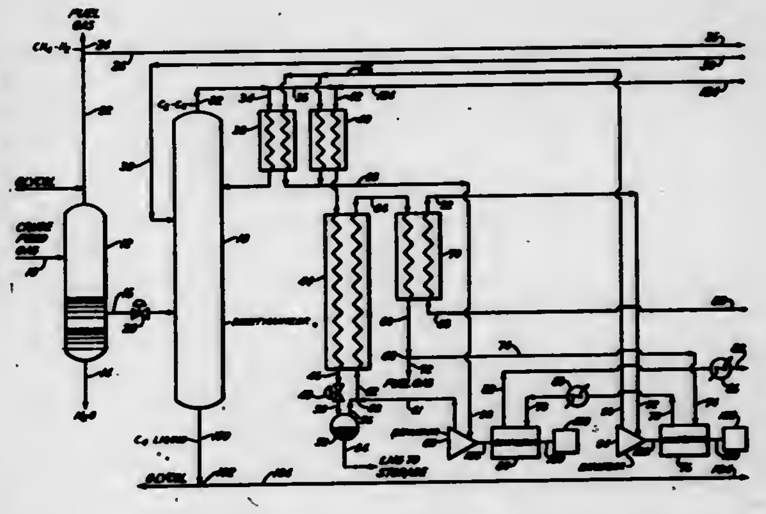
3,724,226
LNG EXPANDER CYCLE PROCESS EMPLOYING INTEGRATED CRYOGENIC PURIFICATION

Robert W. Pachaly, Greenwich, Conn., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed April 20, 1971, Ser. No. 135,615

Int. Cl. F25j *1/00*, *3/00*, *3/02*

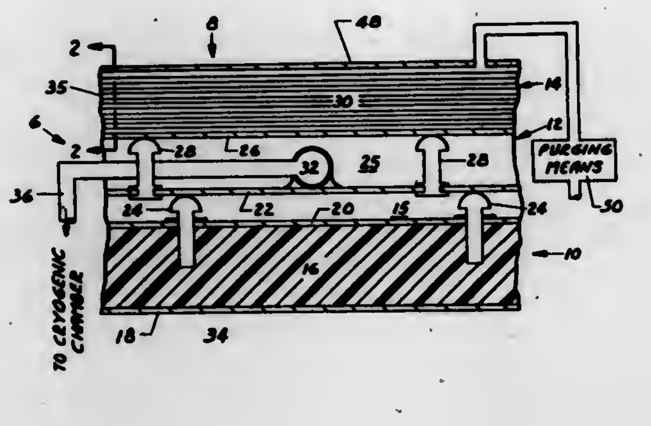
U.S. Cl. 62—39 17 Claims



A process and apparatus for the liquefaction of natural gas wherein raw feedstock is cryogenically fractionated to remove essentially all of the carbon dioxide and C_{3+}-hydrocarbons therefrom, and wherein the cryogenically purified feedstock is cooled and liquefied under pressure in a cryogenic heat exchanger. The pressurized cold liquid from the heat exchanger is isenthalpically expanded to reduce the pressure and further cool the liquid while at the same time flashing a minor gas fraction. Refrigeration for the liquefaction of the natural gas is supplied by a circulating refrigerant stream which is compressed and work-expanded to obtain the necessary cooling. The minor flash gas portion of the liquefaction step is commingled with the circulating refrigerant stream so that the analysis of the refrigerant stream is always rich in the lighter portions of the liquefaction stream, thus aiding in maintaining refrigeration temperature differentials to drive the liquefaction step. The work-expanded refrigerant portion undergoes a compression cycle and is work-expanded in a series of expansion turbines. The expansion turbines furnish at least part of the power necessary to drive the compressor system in the refrigerant gas cycle.

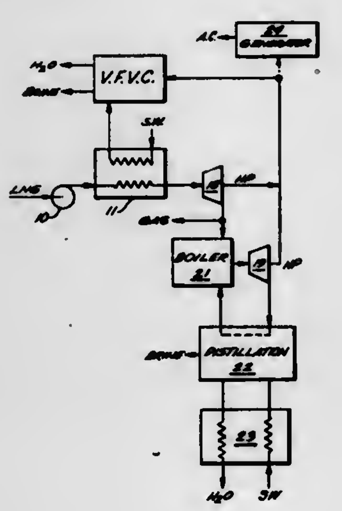
3,724,227
Patent Not Issued For This Number

3,724,228
COMPOSITE INSULATION FOR CRYOGENIC VESSEL
Blase J. Sollami; Howard R. Lundeen, and Bruce F. Gerth, all of Davenport, Iowa, assignors to The Bendix Corporation, South Bend, Ind.
Filed July 30, 1970, Ser. No. 62,220
Int. Cl. F17c *9/02*
U.S. Cl. 62—50 **1 Claim**



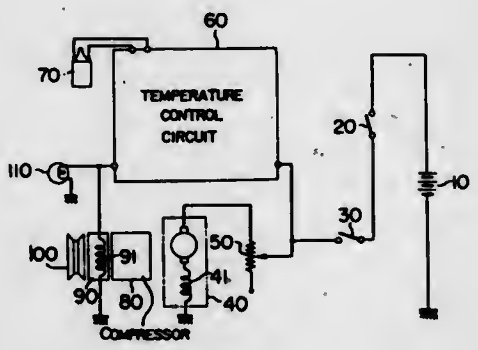
A pressure vessel having a series of discrete insulating members for reducing the transfer of conductive, convective and radiant energy from an environmental atmosphere to the surface of the vessel.

3,724,229
COMBINATION LIQUEFIED NATURAL GAS EXPANSION AND DESALINATION APPARATUS AND METHOD
Joseph Seliber, Wilmette, Ill., assignor to Pacific Lighting Service Co., Los Angeles, Calif.
Filed Feb. 25, 1971, Ser. No. 118,668
Int. Cl. F17c *7/02*
U.S. Cl. 62—52 **14 Claims**



A method and combined apparatus for vaporizing liquefied natural gas and expanding the gas through a turbine for generating power is described. The energy for heating the liquefied natural gas for vaporization is obtained by transferring heat from sea water or other saline water. The water, so cooled, is then passed to a vacuum freezing, vapor compression system for obtaining fresh water and brine. In another embodiment, cooling of sea water is obtained from cold natural gas already expanded through a first turbine for producing shaft horsepower. Energy for vaporizing and expanding the liquefied natural gas is obtained by transferring heat from compressed air. The air so cooled is liquefied and fractionated to produce liquid nitrogen and either liquid or gaseous oxygen. In both embodiments shaft horsepower from the turbines is coupled to the compressor of the vacuum freezing, vapor compression apparatus. The power available from natural gas expansion is augmented by power from a steam or gas turbine. Waste heat from the turbine is employed for distillation desalination. If desired, an electrical generator can be coupled to the turbines for providing peaking power.

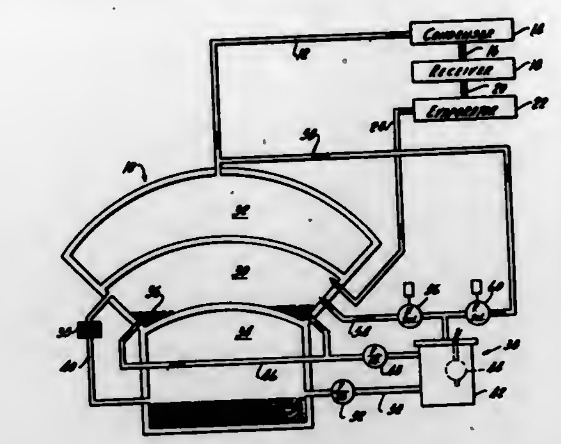
3,724,230
TEMPERATURE CONTROL SYSTEM FOR A CAR COOLER
Katsuya Muto, Kariya, and Yoshichi Kawashima, Gifu, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Nov. 10, 1970, Ser. No. 88,345
Claims priority, application Japan, Dec. 27, 1969, 44/41670
Int. Cl. B60h *3/04*
U.S. Cl. 62—133 **6 Claims**



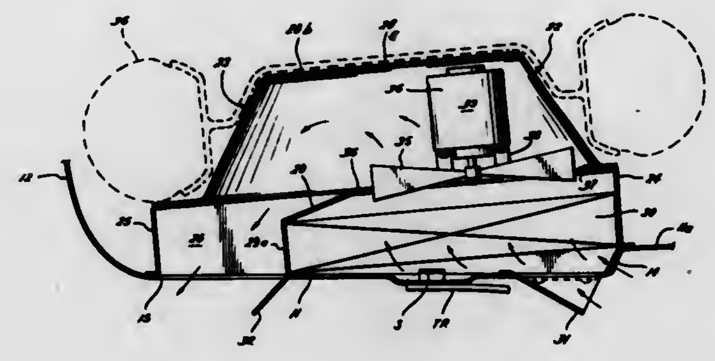
A control system for a vehicle compartment cooler has been provided wherein the cooler is driven by an internal combustion engine through a magnetic clutch having a detector for providing an indication of the compartment temperature. The improvement includes, a revolution detecting means and electrical circuits associated therewith, responsive to the ignition coil for producing a train of signal pulses indicative of number of revolutions of the engine. Circuit means responsive to temperature detector and the revolution detector outputs, produces a control signal when its respective inputs are such that they respectively indicate that the engine speed and the compartment temperature have exceeded selected limits. A switching circuit is provided in order to engage the magnetic clutch for driving the cooler in response to said output control signal.

3,724,231
SINGLE STAGE DRY CYLINDER COMPRESSOR HAVING AUTOMATIC OIL DRAIN FROM SUCTION CHAMBER TO CRANKCASE
Whitney I. Grant, Muskego, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.
Filed Oct. 8, 1971, Ser. No. 187,801
Int. Cl. F25b *31/00*
U.S. Cl. 62—157 **8 Claims**

An automatic draining apparatus for draining the oil from a suction chamber to the crankcase of a single-stage refrigeration compressor. The apparatus includes a collecting tank having a float switch, a first conduit connecting the suction chamber in oil-draining relation with the collecting tank; a second conduit connecting the collecting tank in oil-draining relation with the crankcase; a third conduit having a first solenoid interposed therein connecting the collecting tank in equal pressure relation with the suction chamber; a fourth conduit having a second solenoid valve interposed therein connecting the collecting tank in equal pressure relation with the discharge chamber; and an electrical circuit operatively connecting the first and second solenoid valves to the float switch to automatically control the solenoid valves in response to the level of oil in the collecting tank.



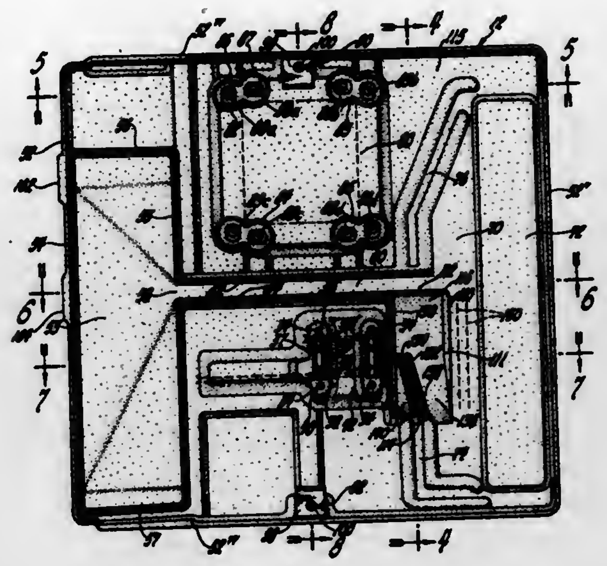
3,724,232
AUTOMOBILE AIR CONDITIONING SYSTEM
Don P. Dixon, and John T. Bertva, both of P.O. Box 8648, San Antonio, Tex.
Filed July 6, 1971, Ser. No. 159,881
Int. Cl. B60h *3/04*
U.S. Cl. 62—244 **16 Claims**



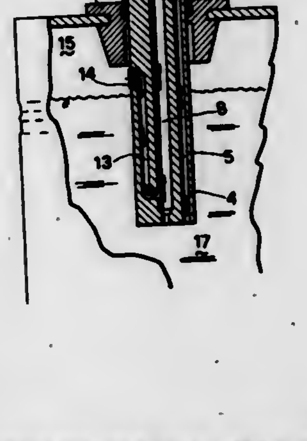
An air conditioning system for an automobile having a spare tire compartment in its front portion and above a generally horizontal wall of the automobile frame. Front and rear openings are formed in the wall and a coil is arranged within a housing mounted on the wall above the openings to cause air flow from the front to rear openings to pass through it.

3,724,233
MOLDED PLASTIC BASE PAN FOR ROOM AIR CONDITIONER
Cecil C. Pugh, Dayton; Emerson L. Wark, Vandalia, and Richard O. Rumpf, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 17, 1972, Ser. No. 227,487
Int. Cl. F25d *21/14*
U.S. Cl. 62—285 **7 Claims**

A molded one-piece plastic base pan for an air conditioner having a raised segmental trough configured to accommodate a notched opening in the air outlet ring portion of a condenser fan shroud. The trough segment has a concave upper surface closing the air outlet ring and is located partially in the depressed sump region of the base pan and includes a plurality of arcuate skewed flow channels for distributing condensate drain water to the condenser fan air stream and a diverting ramp which merges in a substantially tangential juncture with the trough segment upper surface for recirculating condensate to the sump area.



3,724,234
ICE CREAM MAKING MACHINE
Giancarlo Garavelli, Milan, Italy, assignor to Heron Establishment, Vaduz, Liechtenstein
Filed June 24, 1970, Ser. No. 49,450
Claims priority, application Switzerland, July 2, 1969, 10114/69
Int. Cl. F25c *7/14*
U.S. Cl. 62—308 **7 Claims**



An ice cream making machine using disposable air tight containers for the mix, the container being placed under pressure by compressed gas, which thus causes the liquid to mix with the gas, the combination taking place at a molecular level, and which also causes the emulsion thus formed to be conveyed to the ice cream distributor.

3,724,235

SOFT ICE PRODUCT MACHINE WITH HEATING AND COOLING

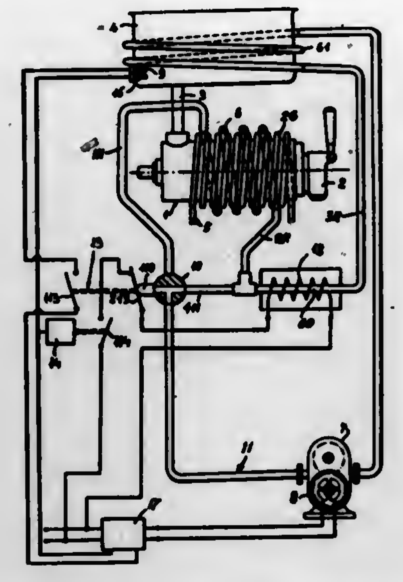
Poerio Carpigiani, Via Cairoli 14, Bologna, Italy

Division of Ser. No. 8,529, Feb. 4, 1970, abandoned. This application March 11, 1971, Ser. No. 123,393

Claims priority, application Italy, Feb. 8, 1969, 6787 A/69

Int. Cl. F25c *7/10*

U.S. Cl. 165—61 3 Claims



The invention relates to a machine and method for making a soft ice cream product formed of frozen air and gelatin dispersion. Heating means are provided to melt the gelatin solution in the liquid mix tank before mixing same with air and feeling same into the freezing cylinder.

3,724,236

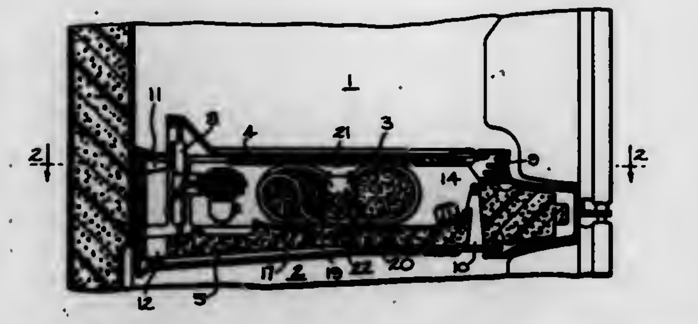
REFRIGERATOR EVAPORATOR

Robert B. Gelbard, Louisville, Ky., assignor to General Electric Company

Filed Nov. 1, 1971, Ser. No. 194,341

Int. Cl. F25d *17/06*

U.S. Cl. 62—419 5 Claims



A compact evaporator unit for refrigerators comprising a helically coiled tubular member having an extended heat exchange surface in the form of a mass of metal wool within and in contact with the coils.

3,724,237

ATTACHMENT COUPLING FOR POWER TOOL

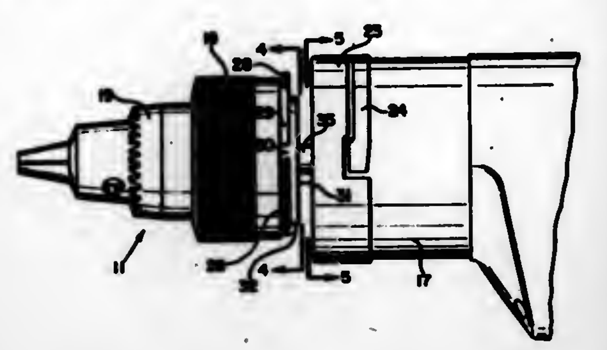
John W. Wood, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed June 7, 1971, Ser. No. 150,344

Int. Cl. F16c *1/06, 1/12*

U.S. Cl. 64—4 17 Claims

An improved attachment coupling means for use in attaching a variety of tool heads to a common power unit is provided in which a spring biasing means is utilized to draw the head and the power unit together when the coupling is made. In addition, flat surfaces are provided at the abutment point so that the spring biasing maintains the head in proper alignment with the drive unit. Axial and radial piloting surfaces are provided for both the stationary and rotary parts of the attachment.



3,724,238

ROTOR MOUNTING

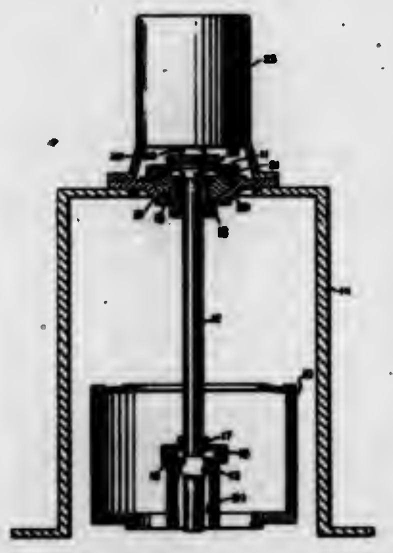
Roger Retali, Saint Cloud; Andre Mercier, La Madelene, both of France, and Claude Billot, Alger, Algeria, assignors to Fives Lille-Cail, Paris, France

Filed March 16, 1971, Ser. No. 124,798

Claims priority, application France, March 17, 1970, 7009383

Int. Cl. F16d *3/02*

U.S. Cl. 64—7 12 Claims



A rotor is pivotally mounted on the lower end of a drive shaft which is suspended for pendular movement. A flexible coupling connects the rotor to the shaft whereby the rotor may be driven by the shaft upon rotation thereof while being permitted to pivot in respect of the shaft, and an elastic return means interposed between the rotor and the shaft tends to move the rotor opposite to the pivoting movement thereof.

3,724,239

RESILIENT COUPLING

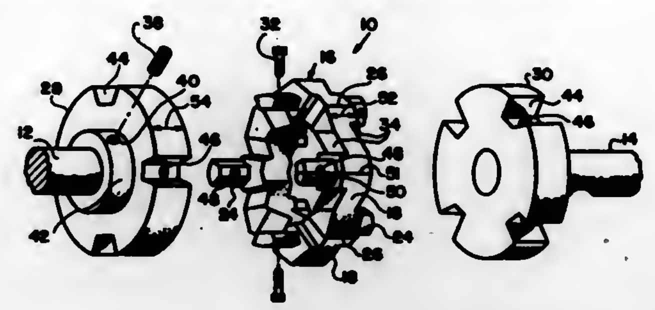
Michael M. Callstrat, Baltimore, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Feb. 8, 1972, Ser. No. 224,505

Int. Cl. F16d *3/78*

U.S. Cl. 64—13 30 Claims

A coupling for two generally coaxially aligned shafts which comprises an annulus having a series of rectilinear, resilient, and compressible columns connected with their longitudinal axes along the sides of a flat polygon. Arms project transversely from the longitudinal axes at each intersection of two adjacent columns; the arms alternately project from the front and rear faces of each of the adjacent columns with respect to the plane of the flat polygon. Hubs are secured on each of the shafts for receiving the alternate arms on the annulus respectively; fasteners operate radially through each arm for securing the arms to the hubs and decreasing the radius of the annulus thereby placing the columns under a precompressive load. A recess is formed on each of the front and rear faces of each column extending from the projection of the arms toward the opposite end of each column for reducing axial thrust during compression of the annulus.



3,724,240

KNITTING MACHINE WITH DEVICE FOR JACQUARD PATTERNING

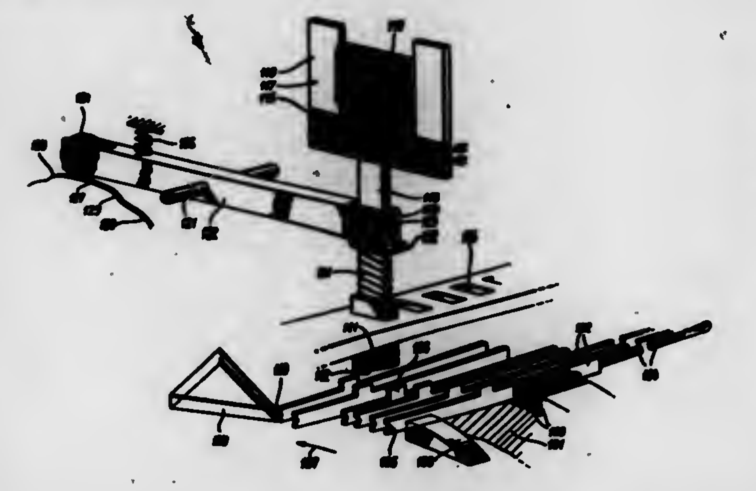
Karl Flad, 29 Hauptstrasse, Undingen, Germany

Filed Nov. 12, 1970, Ser. No. 88,545

Claims priority, application Germany, Nov. 14, 1969, P 19 57 399.0

Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R 10 Claims



A knitting machine is provided with a device for Jacquard patterning which comprises a read-out device for information relating to a desired pattern, wherein the read-out information is arranged to control electromagnets which in turn set displaceable parts, such as jacks or plates, into an operative position in which they can actuate needles associated therewith, or into a rest position, in which they can miss the needles. For this purpose each electromagnet is arranged to control the position of a guide face, and each guide face is arranged to control a group of parts during relative movement between the guide faces and the groups. The parts of a group are separated from each other by the parts of other groups, and are of a number which is smaller by one than the number of electromagnets. The guide faces are staggered is a row transverse to the direction of relative movement and co-operate with control faces which are disposed on the parts at correspondingly staggered locations. The invention is adaptable for use in flat bed knitting machines and circular knitting machines. A mechanical cam disc controls a pivot arm which has an end opposite the control disc in engagement with a member directly controlling a slide member so that such slide member may be moved in one position by said electro-magnetic means only when said cam is in a certain predetermined range of rotation. The slider member has a lower end comprising the guide face for directly engaging the control faces which are provided on the jacks or plates, which jacks or plates in turn directly engage the knitting needles.

3,724,241

WARP KNITTING MACHINE

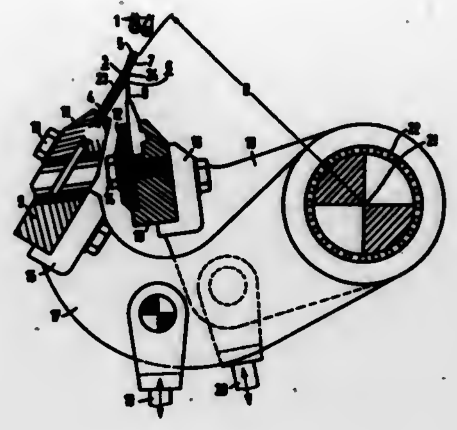
Arno Zwingenberger, Marngrum, and Adolf Hagel, Bobengrum, Bavaria, both of Germany, assignors to Karl Liebrandt, Bavaria, Germany

Continuation of Ser. No. 809,537, March 24, 1969, abandoned. This application June 3, 1971, Ser. No. 149,824

Claims priority, application Germany, April 9, 1968, P17 60 140.0

Int. Cl. D04b *23/00, 27/00*

U.S. Cl. 66—86 R 2 Claims



The speed and smoothness of warp knitting machines are improved by proportioning the upper beveled straight part of the slide to attain its position for picking up and casting off the loop while its bend remains in the shank trough without interfering in its lower position with the loop on the shank of the needle. The beveled part of the slide and the working portion of the hooked needle do not come into contact in the bottom of the shank trough.

3,724,242

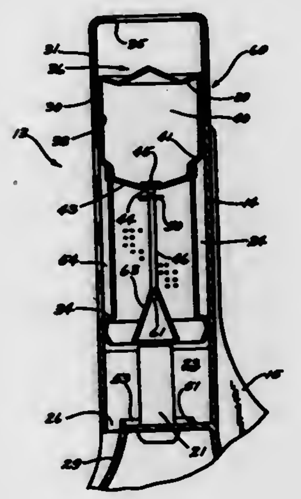
WASHING ADDITIVE DISPENSER

Gordon Jerry Davis, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Oct. 30, 1970, Ser. No. 85,569

Int. Cl. D06f *39/02*

U.S. Cl. 68—17 A 7 Claims



A dispenser is mounted on the agitator of an automatic washer and is responsive to a condition of the washing fluid, such as a predetermined liquid level or agitator-induced liquid movement, for releasing the washing additive into the washing liquid through the hollow centerpost of the agitator.

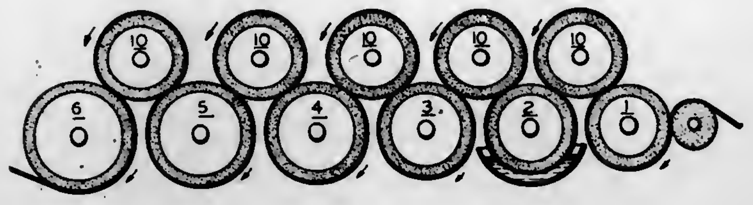
3,724,243
CHAINLESS MERCERIZER SUITABLE FOR USE WITH LIQUID AMMONIA

Timothy A. Calamari, Jr.; Sidney P. Schreiber; Albert S. Cooper, Jr., and Wilson A. Reeves, all of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed May 7, 1971, Ser. No. 141,353

Int. Cl. B05c *3/132*; D06f *45/22*; D06c *15/08*

U.S. Cl. 68—244 1 Claim



An improved chainless mercerizer utilizing a series of graduated rollers which increase the efficiency of a chainless mercerizer. Each driven roller is constructed incrementally larger in diameter than the previous driven roller in the direction of fabric travel through the mercerizer. The fabric being mercerized is stretched incrementally tighter as it is transferred from one driven roller to the next succeeding one, thereby increasing the forces opposing widthwise shrinkage. The idler rollers have a uniform diameter approximately that of any of the driven rollers.

3,724,244
LOCK ACTUATED ANTI-THEFT DEVICE MAINLY FOR AUTOMOBILES

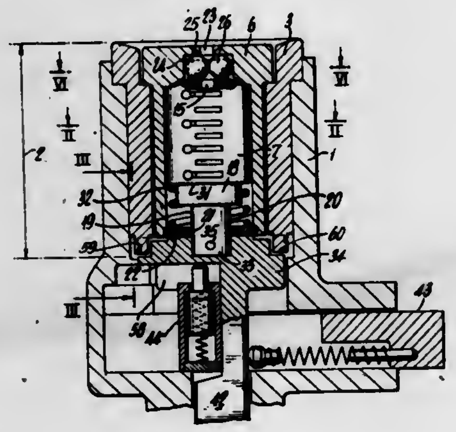
Gunter Schaumburg, Radevormwald, Germany, assignor to Societe D'Exploitation Des Brevets Neiman S.A., Neuilly, France

Filed Nov. 12, 1971, Ser. No. 198,184

Claims priority, application Germany, Nov. 30, 1970, P 20 58 802.7

Int. Cl. E05b *17/14, 27/10*; F05b *65/12*

U.S. Cl. 70—360 11 Claims



Cylinders or other suitably shaped rollers are provided in the direct vicinity of the key hole portion of the lock, for shifting axially and transversely of the lock along suitable wall portions of the lock. Operation of the key causes internal shifting of the rollers and then moves other lock portions into positions wherein the locking latch first becomes ready to lock and then actually locks. The locking position is fully established by total removal of the key from the lock. This leaves the rollers in a certain position, wherein they in turn hold the lock in shake-proof, locked condition, until the key is reinserted.

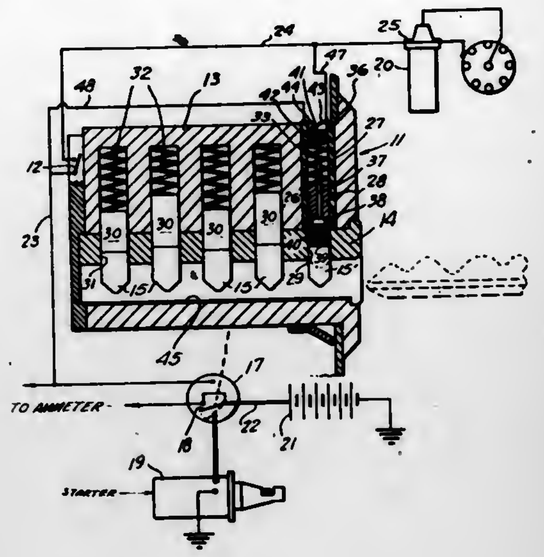
3,724,245
IGNITION LOCK

Ruben P. Kitchen, Jr., Route 3, Box 511, Ashland, Ky.

Filed July 23, 1971, Ser. No. 165,641

Int. Cl. E05b *15/00*

U.S. Cl. 70—431 6 Claims



A starting switch for a motor vehicle. The switch has a rotary key-operated barrel for energizing the conventional starting motor solenoid switch and has an ignition switch element which is closed by the movement of one of the tumblers caused by inserting the key in the barrel and which remains closed until the key is removed, thereby making it impossible to stop the engine unless the key is removed.

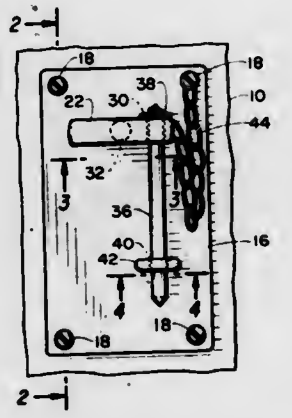
3,724,246
SAFETY LOCK

James Katsaros, 642 North Plymouth Boulevard, Los Angeles, Calif.

Filed June 10, 1970, Ser. No. 151,804

Int. Cl. E05b *17/00*

U.S. Cl. 70—431 3 Claims



Herein described is a safety locking device including an aperture extending through a portion of the locking knob which is displaced offset from the rotational center thereof, and which is aligned substantially on a vertical axis. An elongated pin is provided to be inserted in the aperture in the knob and engage a means permanently affixed on the door or door plate to secure at least one end of the pin to prevent arcuate or rotational movement thereof. A second embodiment illustrates a substantially U-shaped member adapted to fit over the inside of an oblong or elongated shaped knob which includes a substantially elongated shaft mounted to the U-shaped member and extends downwardly from the lock to engage the door knob to prevent rotational movement of the knob when the door is locked.

3,724,247
PRODUCTION OF DEEP DRAWN PRESSINGS

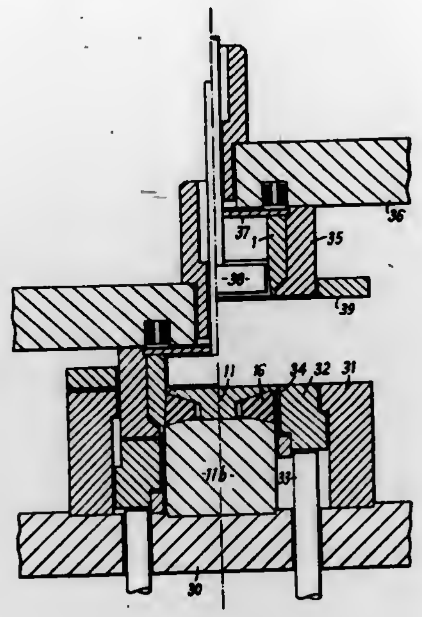
Clifford Frank Page, Banbury, England, assignor to Alcan Research and Development, Montreal, Quebec, Canada

Filed May 27, 1971, Ser. No. 147,380

Claims priority, application Great Britain, June 2, 1970, 26,662/70

Int. Cl. B21d *28/18*

U.S. Cl. 72—60 6 Claims



Wrinkle free deep drawn shells are formed from aluminium foil and other similar materials by employing a tapered die and a punch having a radially compressible elastic or hydropneumatic element at the nose end of the punch, such element having initial dimensions approximately equal to those of the die mouth.

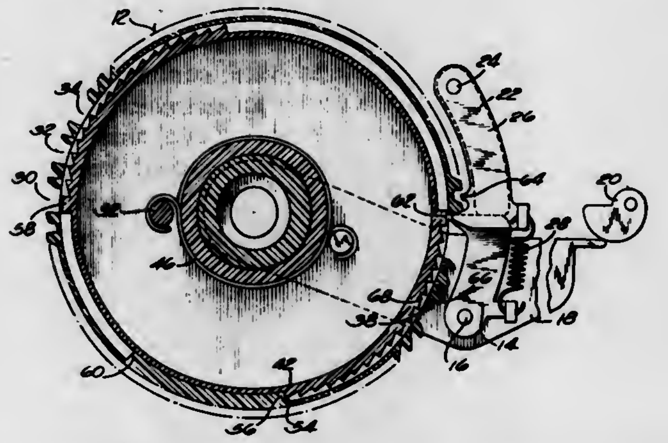
3,724,248
TIMER

George Obermann, Niles, Ill., assignor to Controls Company of America, Melrose Park, Ill.

Filed Oct. 7, 1971, Ser. No. 187,416

Int. Cl. F16h *29/00*

U.S. Cl. 74—122 3 Claims



The outer ratchet wheel is a part of the timing cam drum of a step-by-step type of interval timer. The outer ratchet is advanced by means of a pawl which is reciprocated as the slow rise fast drop cam rotates to retract the pawl one tooth and advance the pawl with a snap action until the pawl abuts a stop member, at which time the retaining pawl engages the same tooth to hold the cam in place. At certain intervals or positions on the outer ratchet the teeth are missing thereby allowing the drive pawl (and then the retaining pawl) to "reach inside" and engage a time delay ratchet which is then advanced inside the outer ratchet a number of steps until the inner ratchet engages the inside of the outer ratchet and starts driving the outer ratchet until the drive pawl and retaining pawl are back onto the outside ratchet, at which time the inside ratchet is released and returned to its original point by the spring bias. This allows what would normally be a short interval on the outer ratchet to be "stretched" to provide a long interval without consuming too many steps of the timing cam.

3,724,249
METHOD OF AND DEVICE FOR THE COILING OF METAL TAPE OR STRIP

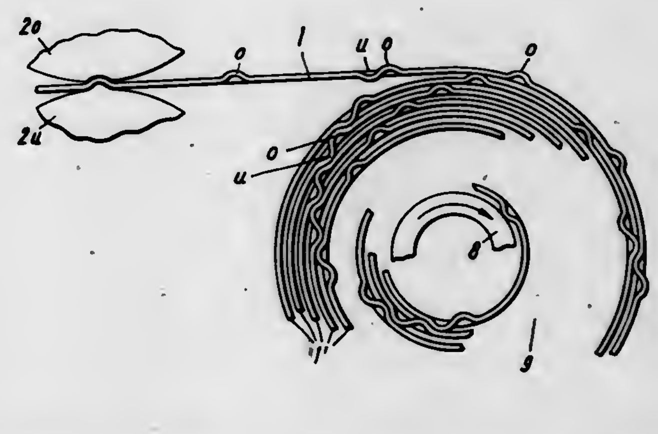
Werner Asbeck, 4 Dusseldorf-Rath, and Hermann Wilkening, Dusseldorf-Kaiserswerth, both of Germany, assignors to Klockner-Werke Aktiengesellschaft, Duisburg, Germany

Filed March 2, 1971, Ser. No. 120,100

Claims priority, application Germany, March 28, 1970, P 20 15 100.2; Nov. 6, 1970, P 20 54 595.3

Int. Cl. B21d *19/00*

U.S. Cl. 72—146 20 Claims



A method of coiling metal tape with spaced convolutions, whereby both rims of the tape are deformed, characterized in that the tape is wound on a horizontal axis and is provided at its edges with deformations arranged so that deformations in adjacent convolutions interlock to prevent relative tangential and/or axial movement between said convolutions, and a device for carrying out the method and for manufacturing tape edge deformations acting in a manner to interlock adjacent convolutions in a coil of tape wound on a horizontal axis whereby tool equipped tool holders rotatable into a working position are provided on the periphery of a pair of disc-bodies arranged respectively on opposite sides of the tape edge.

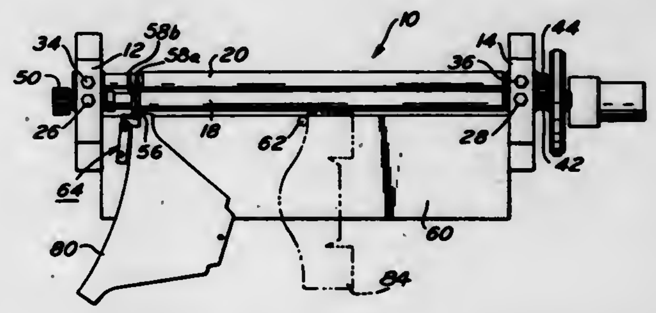
3,724,250
ROLLING AND BEADING MACHINE

Angelo R. Molino, Landmark Apartments, Cherry Hill, N.J.

Filed Oct. 4, 1971, Ser. No. 186,295

Int. Cl. B21d *5/14*

U.S. Cl. 72—171 3 Claims

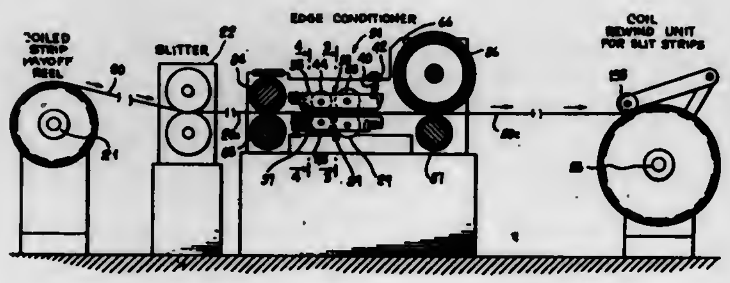


Forming apparatus for forming a sheet of metal preform into a tubular duct. The forming apparatus includes three parallel rollers adapted to bend the preform into a tubular shape as the preform passes between the rollers. The rollers also include mating forming ribs adjacent one end thereof for forming a bead on the end of the tubular member simultaneously with the bending of the preform into the tubular shape. A table is provided in front of the rollers to facilitate feeding the preform between the rollers. On the table are separate guide means for guiding the preform between the rollers. One guide means is adjacent the forming ribs to be used to form a tubular member with a bead on one end. The other guide means is located intermediate the ends of the rollers to be used to form a tubular member without a bead.

3,724,251
EDGE CONDITIONING OF METAL STRIPS

Herman E. Wegner, Riverside, Calif., assignor to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed April 27, 1971, Ser. No. 137,821
Int. Cl. B21b *1/00*
U.S. Cl. 72—203 26 Claims



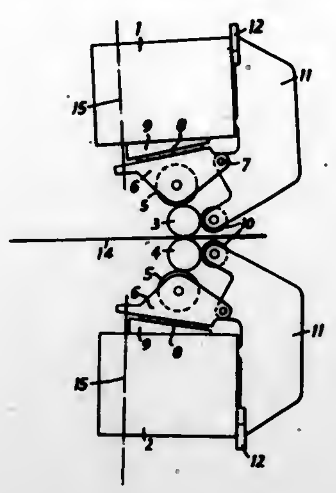
For smoothing the edge corners of a plurality of metal strips advancing side by side, pairs of upper and lower roll means are spaced across the strip path at the strip edge localities and are provided with slightly tapered roll surfaces, each pair of roll means having individually yieldable support pressing its upper and lower rolls toward each other for rolling engagement of their surfaces with the strip edge corners whereby sharp corners and other burrs are rolled below the sheet surface planes. Coacting fin and groove rolls are advantageously disposed to guide the strips at and between the strip edges, as advancing to the corner engaging rolls. Effective roll cages comprise pairs of complementary upper and lower modules, each module extending along the strip path and carrying one of the guide rolls and one of the corner engaging rolls, to coact with like rolls of the complementary module. The several modules, with one of each pair spring-loaded, are removably mounted on supporting structure and are thereon adjustable in position crosswise of the strip path, whereby various numbers and widths of strips can be subjected to edge conditioning.

3,724,252
FLATTENING MILL

William Albert Baker, Walton-on-Thames, Surrey; Anthony Sydney Charles Barker, Deddington, Oxfordshire; John James Edmund Helden, Chester, Cheshire, and Stanley Pilkington Winterburn, Banbury, Oxfordshire, all of England, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Sept. 29, 1970, Ser. No. 76,566
Claims priority, application Great Britain, Oct. 3, 1969, 48,833/69
Int. Cl. B21b *13/14*
U.S. Cl. 72—241 10 Claims

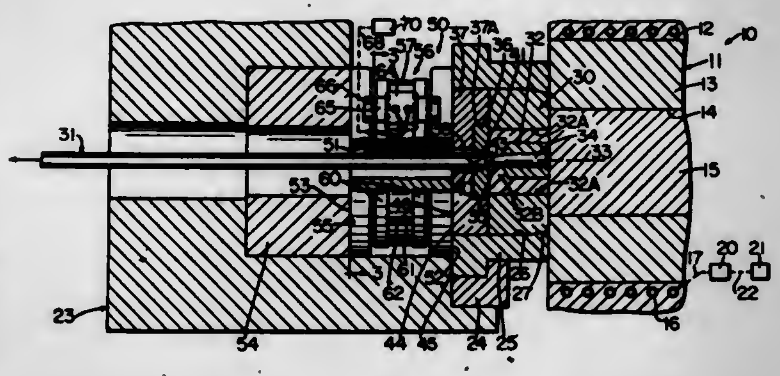
A rolling mill for rectifying or avoiding undesirable shape in rolled products comprises flexible upper and lower work rolls, each work roll being backed either directly or through an intermediate roll by a single row of axially short backing rolls, each of which is carried in a carrier pivoted to a rigid member of the mill frame, the pivots of all the carriers associated with each work roll being aligned with one another, said mill including means for applying a substantially constant loading force to each of said carriers, the work rolls also being contacted by reaction rolls which contact the work rolls in such a manner that the reaction is substantially parallel with the plane of the strip pass between the work rolls to absorb the loads which arise in at least one direction parallel to the strip during rolling.



3,724,253
EXTRUSION APPARATUS AND METHOD

Donald H. Revell, and Frank J. Kittel, both of Louisville, Ky., assignors to Reynolds Metals Company, Richmond, Va.

Filed Feb. 19, 1971, Ser. No. 116,953
Int. Cl. B21c *29/04*
U.S. Cl. 72—253 15 Claims



An apparatus for and method of extruding metal billets is provided and comprises a heated billet container adapted to contain a metal billet adjoined by an extrusion die through which the billet is extruded to define an extruded article. A heated support adjoins the downstream end of the heated die and has an opening therein which is adapted to receive the extruded article therethrough and such support cooperates with the heated billet container to prevent dissipation of heat from opposite ends of the die and thereby provide optimum extrusion efficiency.

3,724,254
EXTRUSION OF SEAMLESS TUBING

Rene Hubert, Boulogne sur Seine, France, assignor to Cefilac, Paris, France

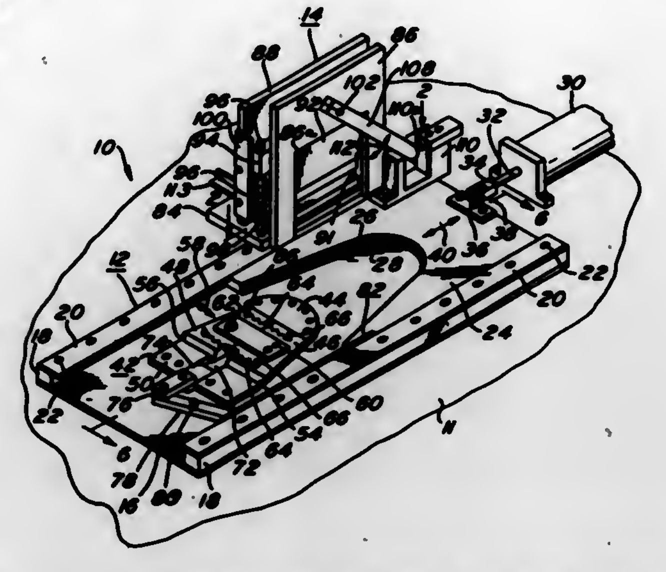
Filed Oct. 16, 1970, Ser. No. 81,570
Claims priority, application France, Nov. 5, 1969, 6937995
Int. Cl. B21c *23/04*; B21b *17/02*
U.S. Cl. 72—264 5 Claims

Improvement in the process of hot extruding metal tubes in a hydraulic press, in which the metal billet inserted into the press has been pierced to a bore diameter largly exceeding that of the extrusion mandrel and the force of the press is applied in a progressive manner.

3,724,255
DUCT FORMING APPARATUS

Angelo R. Moline, 816 East Building, Haddonview Apartments, Haddonfield, N.J.

Filed April 29, 1971, Ser. No. 138,444
Int. Cl. B21d *11/04*
U.S. Cl. 72—306 13 Claims

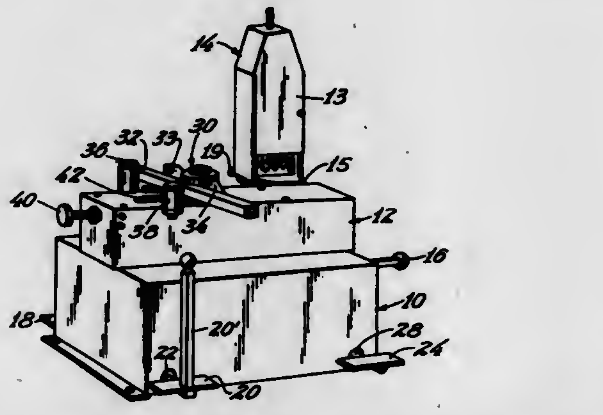


An apparatus for forming the end of a duct member includes a lip forming section and a flange forming section. The lip forming section includes a die bar and a vertical die plate movable vertically toward and away from the die bar. The die bar and die plate have mating die surfaces which when brought together with a portion of the edge of the duct therebetween will form the portion of the duct into a lip. The flange forming section includes a male die member and a female die member lying in a horizontal plane. The female die member is movable horizontally toward and away from the male die member. The male and female die members have mating edges which when brought together with the end of the duct therebetween will form a grooved flange around the edge of the duct. An air cylinder is connected to the female die member to move it toward and away from the male die member. The means for moving the die plate of the lip forming section is connected to the female die member so that the movement of the female die member also moves the die plate.

3,724,256
TUBE BENDER AND CUTTER

Arthur A. Kroetch, P.O. Box 256, Phillips, S. Dak.

Filed Aug. 20, 1970, Ser. No. 65,434
Int. Cl. B21d *9/10*
U.S. Cl. 72—332 17 Claims

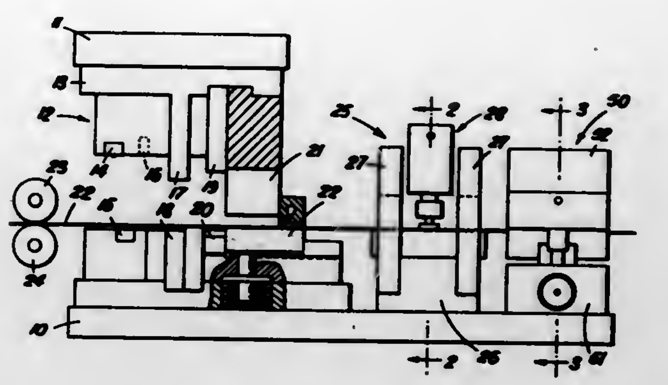


A cutting and bending machine for square or rectangular tubing in which a cutting hydraulic shear is pivotally mounted so as to swing down from the cutting position and help form a working surface upon which the bending operation can be completed. The bending portion comprises an adjustable mandrel adapted to engage a variety of sizes of tube and slidably force the tube between two parallel bending posts.

3,724,257
APPARATUS FOR MANUFACTURING THIN WALL FLEXIBLE BEARING LINERS

Arthur Albert Sims, South Harrow, and Stanley Gordon Sharp, Maidenhead, both of England, assignors to Vandervell Products Limited, Maidenhead, England

Filed Sept. 17, 1971, Ser. No. 181,548
Int. Cl. B21d *43/28*
U.S. Cl. 72—324 21 Claims

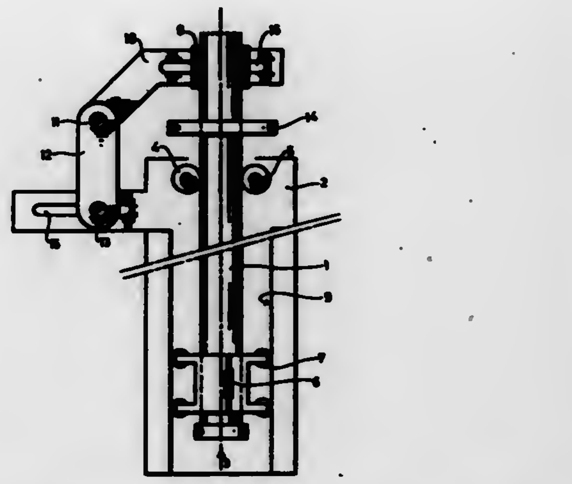


An apparatus for producing thin wall flexible bearing liners has a press for bending and coin pressing strip bearing material and ram operated tools for piercing oil holes in the strip and finally severing the strip into bearing liners. The rams for the tools are controlled by the press to operate before or after coin pressing so that the tools do not impede elongation of the strip due to the coin pressing.

3,724,258
APPARATUS FOR BENDING ELONGATE OBJECTS

Marinus Johannes Hofstede, and Hendrik Legman, both of Rijswijk, Netherlands, assignors to Cojafex N.V., Rotterdam, Netherlands

Filed March 5, 1971, Ser. No. 121,513
Claims priority, application Netherlands, Jan. 8, 1971, 7100269; April 12, 1970, 7003580
Int. Cl. B21d *7/024*, *7/16*
U.S. Cl. 72—342 17 Claims



The apparatus for bending tubes and like elongate objects is of the type in which a narrow transverse zone of the progressively and gradually forward driven tube is heated and in which bending is effected by means of a rotatable bending arm to which the tube is clamped, the center of rotation of the bending arm being situated substantially in the plane of the heated zone of the tube. In order to alleviate some of the forces acting on the tube and on the apparatus the latter is constructed so as to allow a limited movement of the center of rotation of the bending arm and of the heated zone of the tube in relation to each other. Deviations in the bend radius are corrected by displacing the means for heating the tube.

3,724,259

METHOD OF TESTING THE LUBRICATION PROPERTIES OF A LIQUID

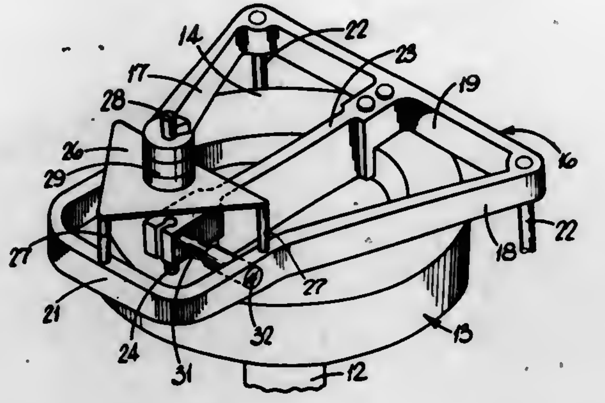
Ronald Edward Blakeley, Solihull, and Robert Turner, Hampton Magna, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 10, 1970, Ser. No. 53,914

Claims priority, application Great Britain, July 15, 1969, 35,485/69

Int. Cl. G01n *3/56, 33/30*

U.S. Cl. 73—10 **7 Claims**



In a method of testing the lubrication properties of a liquid the liquid is poured onto a plate and the plate is rotated so that the thickness of the film of liquid decreases until eventually a point is reached at which interference fringes are seen. When the last interference fringe is seen passing a predetermined point a probe is placed in contact with the plate and the length of time taken for the frictional heat developed between the probe and the plate to destroy the film is measured.

3,724,260

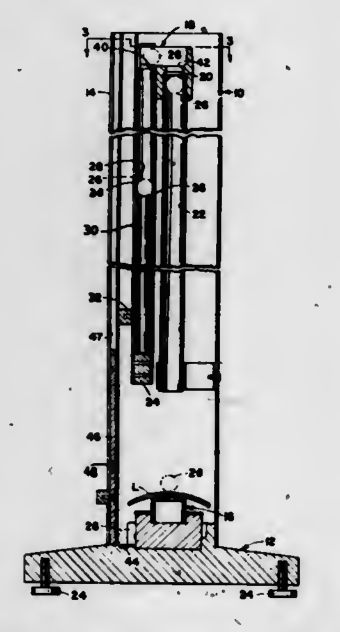
LENS FRANGIBILITY TESTING APPARATUS

Hamilton B. Bole, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed April 19, 1972, Ser. No. 245,441

Int. Cl. G01n *3/62*

U.S. Cl. 73—12 **5 Claims**



Drop ball apparatus for testing the frangibility of a lens including a base having an elongated hollow tower extending vertically therefrom with lens supporting means in the tower adjacent the base and a receptacle for receiving and guiding a steel ball to a drop point adjacent the uppermost end of the tower. A guideway along one side of the tower contains a lift rod normally having its uppermost end disposed intermediately of the height of the tower when the rod is located at a lowermost position in the guideway. A test ball placed upon the uppermost end of the lift rod through an aperture in the tower is elevated to the ball receptacle by raising of the rod. An opening at the bottom of the tower provides access to the lens holder and a sliding door normally closes this opening.

3,724,261

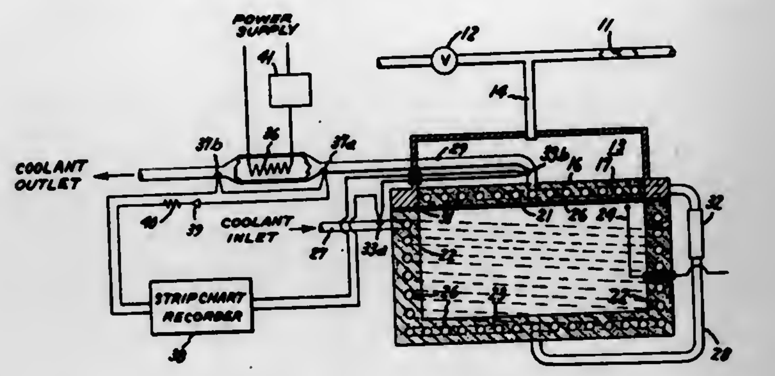
DEVICE FOR MEASURING HEAT RELEASE IN CONTINUOUS CALORIMETER

Paul H. Kydd, Scotia, and George Jernakoff, both of New York, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,475

Int. Cl. G01k *17/00*

U.S. Cl. 73—190 R **9 Claims**



Voltages reflecting the heat released in a continuous calorimeter and absorbed by the coolant flow therethrough are sensed and converted to a convenient parameter by means of the device described herein. The device comprises in combination an electric heater disposed to heat the coolant flow downstream of the calorimeter; means for controlling power input to the electric heater; a first and second pair of means for generating an electromotive force (EMF) as a function of temperature differential (e.g. thermocouples); means (e.g., a strip chart recorder) electrically connected to said first and second pair of generating means for comparing the voltage outputs thereof and continuously displaying the relation therebetween (or some parameter related thereto); the EMF-generating means being disposed in contact with the coolant flow and being electrically connected to the comparing and display means; the two EMF-generating means of the first pair being disposed at the inlet and outlet, respectively, of the coolant flow to and from the calorimeter and the two EMF-generating means of the second pair being located downstream of the first pair with one upstream and one downstream of the electric heater.

3,724,262

METHOD FOR ADJUSTING SWEPT GAIN ON ULTRASONIC PULSE-ECHO INSTRUMENTS FOR UNIFORM SENSITIVITY, IRRESPECTIVE OF FLAW DEPTH

Ludwig Niklas, 5023 Lovenich at Koln, Dachsweg 13, Germany

Filed Dec. 1, 1970, Ser. No. 94,005

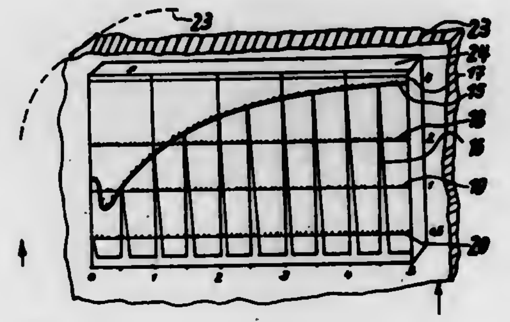
Claims priority, application Germany, Dec. 2, 1969, P 19 60 458.1

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.8 **13 Claims**

An overlay is provided for the cathode ray tube screen of an ultrasonic pulse echo flaw detector having a swept gain control. The swept gain control, sometimes called a time-corrected gain control or a distance amplitude-correction gain control, provides for increasing the gain of the receiver system the later flaw echoes are received. By adjusting this gain properly, echoes from flaws of the same size will produce spikes of identical amplitude on the cathode ray tube screen irrespective of flaw depth. The overlay of the invention bears a plot of amplitude versus distance of echoes received from a known echo-producing interface common to a plurality of parts to be tested when the swept gain control is properly adjusted. The common echo-producing interfaces disclosed and preferably used are an interface perpendicular to the path of the ultrasonic waves in the part having a cross sectional area much greater than the cross sectional area of the ultrasonic beam in the part, a large right angle corner, and a cylindrical test hole of known diameter.

One method of the invention comprises placing the overlay of the invention on the face of the cathode ray tube display, placing the transducer of the system such that multiple echoes are reflected back and forth between opposing parallel faces of the work piece and adjusting the swept gain until the peaks of the displayed multiple echoes correspond to a plot of the peaks of such echoes on the overlay when the swept gain is properly adjusted. When the plates are to be inspected by an angle beam technique, a Y cut crystal is substituted for the normal X cut crystal to provide the ultrasonic beam perpendicular to the opposed surfaces of the plate. In a second technique disclosed, the angle beam transducer is placed at integral multiples of the half skip distance from the edge of a rectangular work piece whereby the ultrasonic echoes are reflected from the right angle corners thereof and the swept gain is adjusted until the peaks of the spikes of these echoes coincide with a plot on the overlay of the peaks of such echoes at multiples of the half skip distance when the swept gain is properly adjusted. A third method according to the invention comprises placing the angle beam transducer at integral multiples of the half skip distance from a cylindrical hole in the work piece of known diameter and again the swept gain is adjusted until the peaks of the echo pulses received at these half skip intervals correspond to a predetermined curve on the overlay, which indicates the height of the echo spikes as seen on the cathode ray tube when the swept gain is properly adjusted.



3,724,263

ELECTRICAL DIGITAL DISPLAY TONOMETER

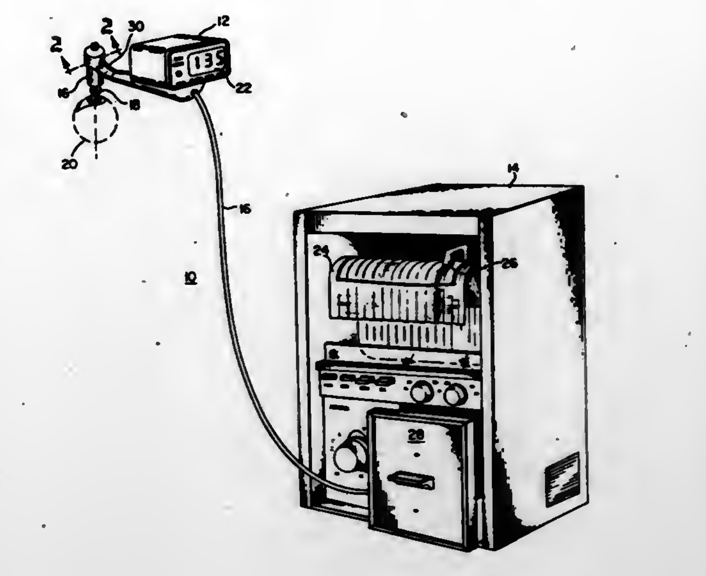
Harold Bern Rose, Los Angeles, and Bruce Jay Sand, Encino, both of Calif., assignors to Bio-Optronics, Inc., Los Angeles, Calif.

Filed Sept. 29, 1970, Ser. No. 76,554

Int. Cl. A61b *3/16*

U.S. Cl. 73—80 **8 Claims**

Apparatus for measuring displacement is disclosed which includes a prehensible member including a transducer for developing an analog electrical signal whose value is a function of the displacement to be measured and digital display means for visually displaying a digital reading of such value. A stationary unit remote from the prehensible member is also provided which includes conversion means for converting the analog signal into a suitable digital signal for display in the digital display means. A flexible cord is provided interconnecting the prehensible member and the stationary unit for conducting the analog signals from the transducer to the conversion means and the digital signal from the conversion means to the digital display means.



3,724,264

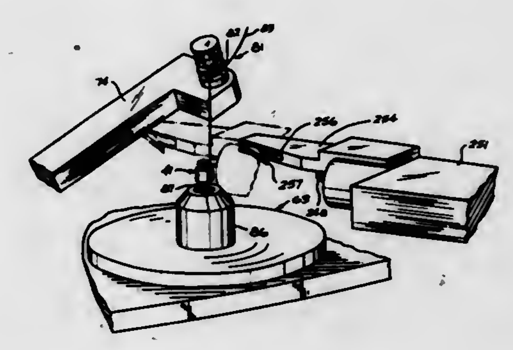
METHODS OF TESTING THE STRENGTH OF WIRE BONDS IN ELECTRICAL COMPONENTS

Thomas Alvin LaValle, Annapolis, Md., assignor to Western Electric Company Incorporated, New York, N.Y.

Division of Ser. No. 878,017, Nov. 19, 1969, Pat. No. 3,618,204. This application Aug. 13, 1971, Ser. No. 171,543

Int. Cl. G01b *5/30*

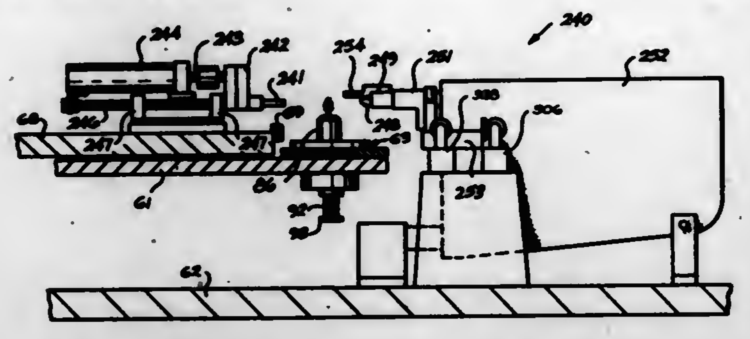
U.S. Cl. 73—88 B **2 Claims**



A rotatable turntable having a plurality of workholders spaced about the periphery thereof is indexed to advance each of the workholders successively through each of a plurality of work stations positioned adjacent the periphery of the turntable to assemble electrical components. A first part positioned in one of the workholders has the leading end of an insulated wire welded thereto. The first part is rotated in the workholder while tensioning the wire extending from and secured to the first part to wind the wire thereon as the workholder is advanced with the turntable through a work station where a second part is assembled to the first part and, simultaneously, the insulation on a portion of the wire extending from the first part is stripped. The trailing portion of the wire is welded to a metal cap which is secured to the second part. As the weld is made, a test device mounted pivotally on a welding electrode is caused to be moved transversely of the path of the electrode. Then, when the electrode is retracted, the test device engages the wire imparting a force thereto and testing the strength of the weld.

3,724,265
APPARATUS FOR TESTING THE STRENGTH OF THE JOINT OF A WIRE JOINED TO A PART

Thomas Alvin LaValle, Annapolis, Md., assignor to Western Electric Company Incorporated, New York, N.Y.
Division of Ser. No. 878,017, Nov. 19, 1969, Pat. No. 3,618,204. This application Aug. 13, 1971, Ser. No. 171,583
Int. Cl. G01n *3/00*
U.S. Cl. 73—88 B 4 Claims

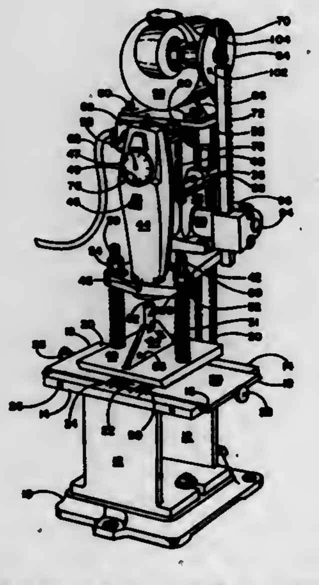


A first part positioned in one of a plurality of workholders has the leading end of an insulated wire extending from a supply of wire welded thereto at a second work station, after which the first part is indexed. A portion of the wire extending to the first part in the workholder is severed from the supply and the new leading end of the wire is attached to the first part in the next succeeding workholder. The first part is rotated in the first workholder while tensioning the wire extending therefrom to wind the wire thereon as the workholder is advanced. A second part is assembled to the first part and, simultaneously, the insulation on a portion of the wire extending from the first part is stripped.

The trailing bared portion of the wire is welded to the second part and the strength of the weld is tested. A welding apparatus has a test device which includes a pivotally mounted pawl that is transversely and longitudinally movable for engaging the length of wire extending from the welded joint. The test device is mounted for longitudinal movement in a path of travel transversely of the wire. During the welding step, a magnetic field is generated about the joint which attracts the pawl and causes the pawl to be pivoted into an extended position to project transversely of the wire. When the test device is retracted, the pawl engages the wire and exerts a pulling force against the wire to test the strength of the joint and break the wire.

3,724,266
WEB STRENGTH AND TENSILE TESTER AND METHOD

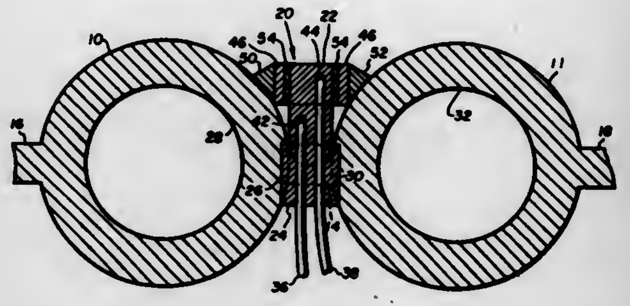
Daniel H. Beckstrom, Winnebago, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sept. 2, 1971, Ser. No. 177,355
Int. Cl. G01n *3/14*
U.S. Cl. 73—95 8 Claims



Method and device for rapidly measuring the tensile strength and stretch energy of web materials, particularly materials such as woven or nonwoven reinforced fabrics and tissue papers. The method is characterized by holding the material while it is subjected to action of a reciprocal probe. The apparatus includes a horizontal table having adjustable sections and clamps to produce a variety of test conditions which in combination with the probe allow rapid approximate duplication of conventional and load cell type tensile testers.

3,724,267
HEAT FLUX SENSING DEVICE

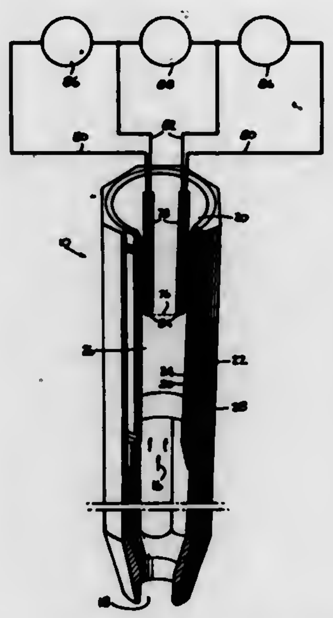
Robert J. Zoschak, Rutherford, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Aug. 28, 1970, Ser. No. 67,725
Int. Cl. G01k *17/00*
U.S. Cl. 73—190 H 3 Claims



Heat absorption rates of cooling tubes are measured accurately without the use of devices which cause high stresses. An elongated conductor extends from between the tubes toward a heat zone on one side of the tubes and is provided with two thermocouples which have junctions at different locations along the length of the conductor, to sense a temperature gradient from which the heat flux through the conductor can be determined.

3,724,268
METERING APPARATUS FOR NUCLEAR REACTORS

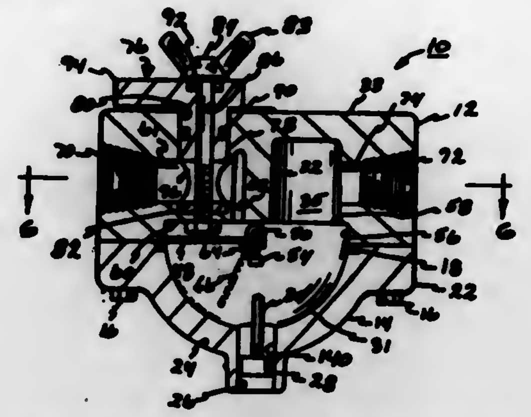
Jun Kuwabara, Ibaraki-ken, Japan, assignor to Atomic Power Development Associates, Inc., Detroit, Mich.
Continuation-in-part of Ser. No. 875,202, Nov. 10, 1969, abandoned. This application Aug. 28, 1970, Ser. No. 67,783
Int. Cl. G01p *5/08*
U.S. Cl. 73—194 EM 10 Claims



This invention relates to apparatus for determining the temperature and/or flow of a conductive fluid through a nuclear reactor subassembly including a pair of permanent magnets, with or without pole pieces, which is installed toward the end of the subassembly to provide a magnetic field in the open channel in the subassembly, and a pair of electrodes which is inserted into the open channel and supported from internal structure of the nuclear vessel, which is independent of the subassembly.

3,724,269
FLUID DEVICE HAVING FLOW CONTROL AND INDICATING MEANS

Nils O. Rosaen, 3774 Quarton Road, Bloomfield Hills, Mich.
Filed June 29, 1970, Ser. No. 50,651
Int. Cl. G01f *1/00*
U.S. Cl. 73—207 11 Claims

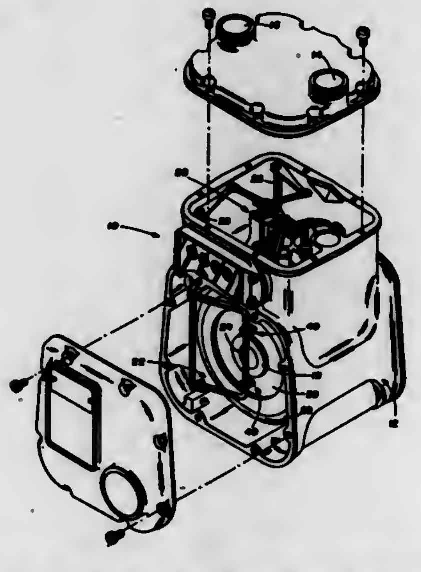


A fluid device having a housing with an inlet and an outlet respectively adapted to be connected to a source of fluid and a fluid user. A valving mechanism carried within the housing between the inlet and the outlet selectively controls the maximum rate of fluid flow therebetween, while a semi-circular vane is movable in response to a change in the flow rate between the inlet and the outlet to rotate a shaft which extends externally of the housing and is operatively coupled to an indicator for providing an external visual indication of the actual rate of flow through the device. The externally mounted indicator includes an electrically operated device responsive to the rotation of the shaft to provide an electrical signal to a remotely mounted indicator.

The shaft extends through a sealing plug having a tapered pipe thread on its outer surface which is adapted to engage a mating tapered pipe thread formed in a bore of the housing in such a manner that an O-ring disposed at the inner end of the sealing plug is radially, inwardly compressed as the sealing plug is threadedly engaged within the bore to thereby form a fluid tight seal around the shaft.

3,724,270
FLAG ARM RETAINING SYSTEM

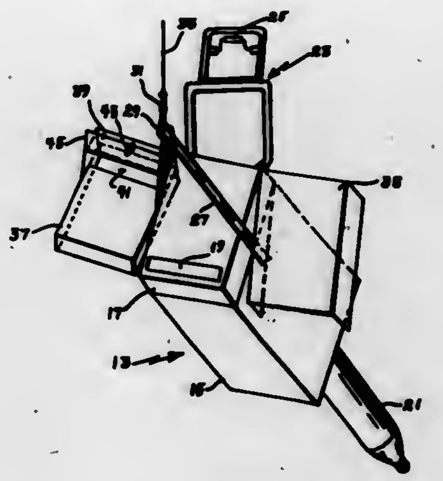
Raymond H. Elder, Dallas, Tex., assignor to Elder Machinery and Tool Engineering Company, Dallas, Tex.
Filed Nov. 17, 1971, Ser. No. 199,490
Int. Cl. G01f *3/20*
U.S. Cl. 73—267 10 Claims



A gas meter includes diaphragms which are cyclically expanded and contracted and flag arms supported for oscillation by the diaphragms. The flag arms are connected to the diaphragms by generally S-shaped flag arm retaining members which are secured to the diaphragms in oppositely facing directions to define open-ended flag arm receiving slots.

3,724,271
SPINNING RADIOSONDE CONFIGURATION

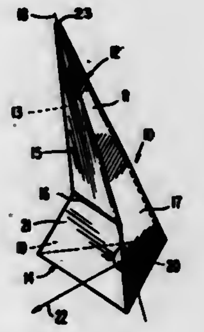
James P. Morrissey, Norwood, and Donald J. MacDonald, Bedford, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force
Filed Dec. 30, 1971, Ser. No. 213,932
Int. Cl. G01w *1/08*
U.S. Cl. 73—336 4 Claims



A radiosonde is provided with a pair of opposite aerodynamic elements attached at an angle to the sides of the housing near the top causing the radiosonde to spin as it ascends. One of the attached elements includes a chamber which contains a humidity measuring means over which a stream of air is caused to flow at an increased rate as the spinning radiosonde ascends.

3,724,272
SELF-SUPPORTING FUSIBLE PYROMETRIC DEVICE

Richard F. Steele, Columbus, Ohio, assignor to The Orton, Edward, Jr., Ceramic Foundation, Columbus, Ohio
Filed Dec. 10, 1970, Ser. No. 96,934
Int. Cl. G01k *11/08*
U.S. Cl. 73—358 9 Claims



A pyrometric device which measures the amount of heat applied during a heat treatment process. The device fuses and deforms during a heat treatment process to provide a visual indication of the amount of heat applied. The center of mass of the device remains at all times directly above the bottom surface thereof so that the device is self-supporting and requires no external support either before, during or after deformation.

3,724,273
PIPELINE SEALING DEVICE

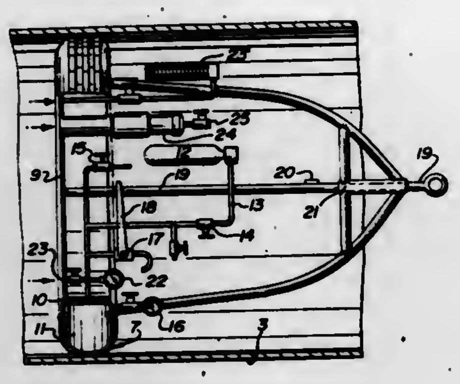
Kenneth D. Awrey, Prince George, British Columbia, Canada, assignor to Westcoast Transmission Company Limited, Vancouver, British Columbia, Canada

Filed June 30, 1971, Ser. No. 158,329

Claims priority, application Canada, Feb. 12, 1971, 105240

Int. Cl. G01l *9/00*

U.S. Cl. 73—389 **6 Claims**



A method and apparatus for sealing operational gas pipelines so that sections of the pipe can be removed and replaced. A sealing plate provided with an inflatable circumferential member is inserted into each of the open ends of the pipeline after a defective section has been removed. By careful manipulation of purge devices and manometers mounted on the sealing plates gas pressure behind the sealing plates can be controlled to avoid hazardous gas/air mixtures in the pipeline so that fire welding can be undertaken without the need for gas or air purging either before or after completion of the welding. One end of the new section is welded in position with the seal in place, which seal is then withdrawn by means of a built-in withdrawal and deflating device.

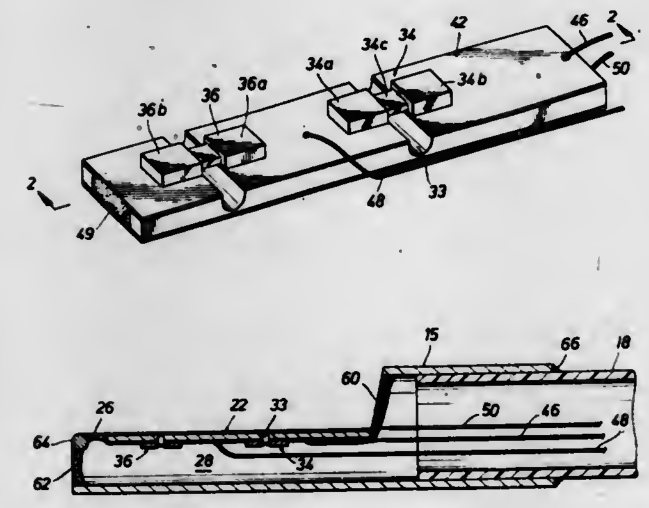
3,724,274
PHYSIOLOGICAL PRESSURE TRANSDUCERS

Huntley D. Millar, Houston, Tex., assignor to Millar Instruments, Inc., Houston, Tex.

Filed Feb. 11, 1971, Ser. No. 114,610

Int. Cl. G01l *9/02*; A61b *5/02*

U.S. Cl. 73—398 AR **23 Claims**



A unique pressure transducer is disclosed which has particular application in making physiological measurements such as intra-arterial or intra-venous blood pressure measurements. The transducer employs the principle of a cantilever beam which is exposed directly to the source of pressure. The pressure applied to the cantilever beam causes flexure which is measured by a strain gauge, or other means for measuring its deformation, and a related electrical signal is produced.

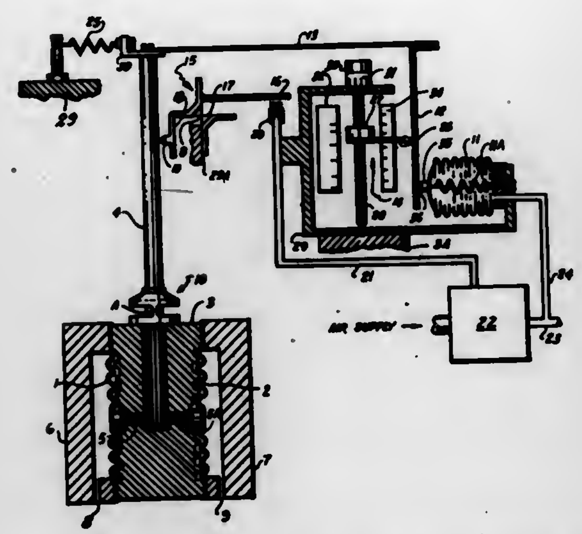
3,724,275
FORCE BALANCE VARIABLE CONDITION TRANSMITTER

Domenic Battaglini, Rochester; Richard G. Beach, Greece, and Howard R. Raquith, Rochester, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed June 23, 1969, Ser. No. 835,387

Int. Cl. G01l *7/08*

U.S. Cl. 73—407 R **17 Claims**



A force balance differential pressure transmitter having a four bar linkage wherein force due to differential pressure exerts a moment on a deflectible bar counterbalanced by an opposing moment exerted on the bar. The fulcrum of the bar is adjustably fixed to the rigid bar of the linkage. The opposing moment is due to a balancing force exerted via a flat anvil against a convex upset on the deflectible bar. The fulcrum is mounted for travel along a screw, and is arranged for vernier adjustment and indication of adjustment. The screw is fixed play free in a frame having rigid feet and spring ears, the latter elastically drawing the former into rigid contact with the rigid bar.

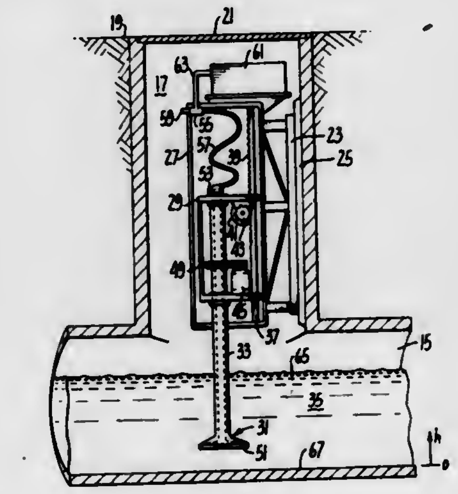
3,724,276
METHOD AND APPARATUS FOR OBTAINING MASS AVERAGE SAMPLES FROM A LIQUID STREAM

Richard G. Schwind, Lahonda, Calif., assignor to Nielsen Engineering & Research, Inc.

Filed Nov. 22, 1971, Ser. No. 200,750

Int. Cl. G01n *1/14*

U.S. Cl. 73—422 R **8 Claims**



An improved technique of extracting small samples from a liquid stream, such as a storm sewer, wherein each sample contains a representative portion from all levels of the stream. The relative sample proportions of liquid mass extracted from each elevation of the stream are directly related to the width

of the stream at that elevation and the average velocity of the stream at that elevation. An apparatus is disclosed for carrying out this technique wherein a substantially continuous flow pump traverses across the liquid stream in a vertical direction with a rate of speed alongits path that is a function of a product of a reciprocal of the velocity and width functions along the height of the stream.

3,724,277
RESILIENT INSTRUMENT CARRYING CASE

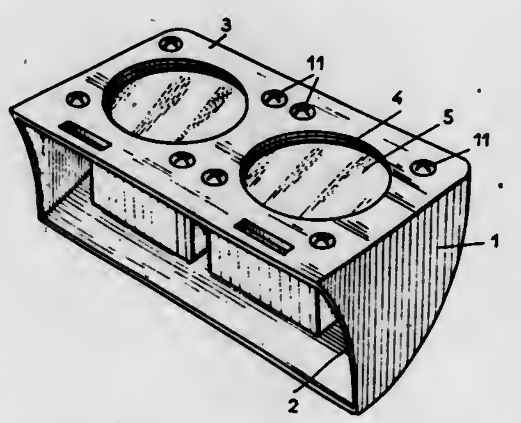
Jean Rene Parmentier, 7, rue Leonard de Vinci, Paris, France

Filed March 22, 1971, Ser. No. 126,558

Claims priority, application France, April 9, 1970, 7012813

Int. Cl. G01d *11/10, 11/24*

U.S. Cl. 73—431 **5 Claims**



A case or enclosure enclosing at least one instrument which is protected against shocks by a body of neoprene or the like elastomer. The elastomer body is provided with a recess the shape and size of which match those of the instrument embedded within said recess, preferably open at both ends. Such cases are intended for use by parachutists or else for laboratory purposes or again on vehicle instrument boards.

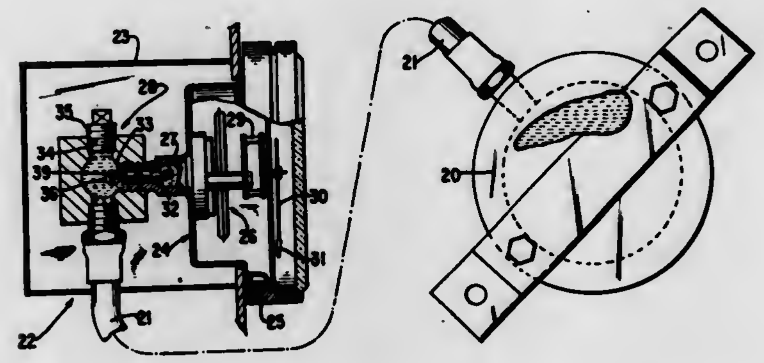
3,724,278
BACKHOE DEPTH GAUGE

Philip W. Harland, Perkasie, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,558

Int. Cl. G01c *5/04*; E02f *9/26*

U.S. Cl. 73—432 HA **5 Claims**



A backhoe has a transmitter on its dipper connected by a flexible, fluid-filled tube to a pressure sensitive gauge mounted at some reference point on the backhoe to define a closed hydraulic system for measuring differences in elevation between the reference point on the backhoe and the dipper. A valve having an axially movable normally closed valve stem is positioned between the tube and the gauge. A pivotally mounted lever has one end engageable with the valve stem and the other end is actuable by the operator of the backhoe to selectively open the connection between the gauge and the tube when a reading on the gauge is desired of the difference of elevation.

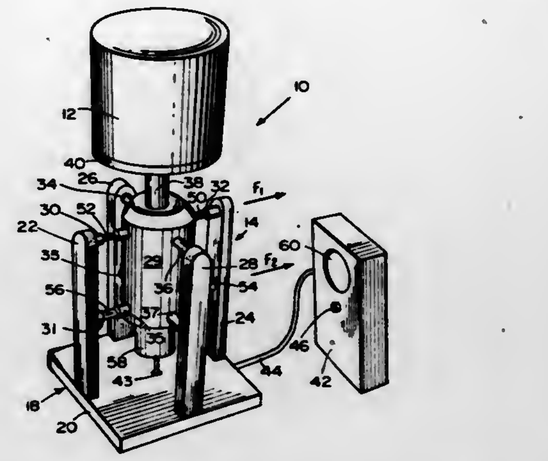
3,724,279
ASSEMBLY FOR MEASURING THE MAGNITUDE OF UNBALANCE IN AN OBJECT

Richard P. Woolley, Boulder, Colo., assignor to Ball Brothers Research Corporation, Boulder, Colo.

Filed Sept. 13, 1971, Ser. No. 179,730

Int. Cl. G01m *1/22*

U.S. Cl. 73—462 **14 Claims**



An assembly for measuring the magnitude of unbalance in an object is disclosed herein and, utilizing a conventional spinning device for spinning the object, provides a direct current output signal which is free of noise or other such distortion and which is proportional in magnitude to a given component of unbalance in the object. This is accomplished by exciting a strain-sensitive bridge circuit responsive to the degree of unbalance in the test object with an oscillatory signal synchronous with the spin rate of the object so as to produce a composite signal, which signal is coupled to a damped galvanometer which by averaging the composite signal over a period of time eliminates noise and other distortion components and thereby produces the desired direct current signal.

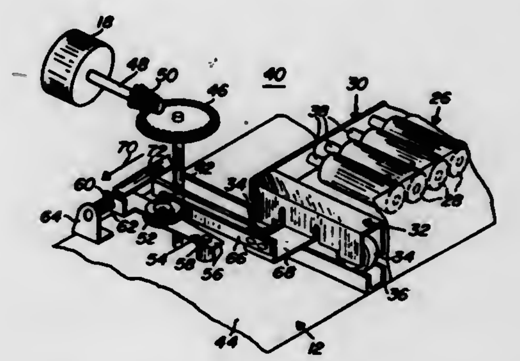
3,724,280
MANUAL TUNING APPARATUS FOR RADIO RECEIVER

Emery E. Olah, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 14, 1971, Ser. No. 143,506

Int. Cl. F16h *35/18*

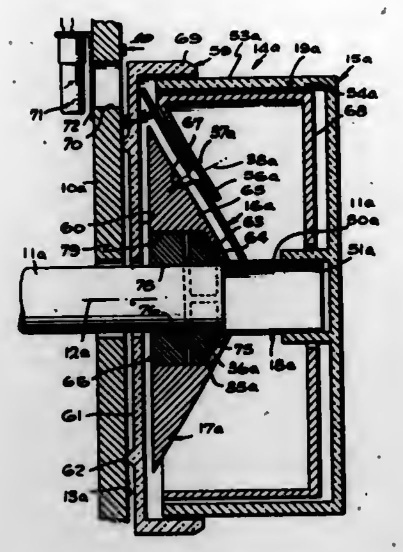
U.S. Cl. 74—10.33 **4 Claims**



Manual tuning apparatus for a pushbutton type radio receiver includes a capstan drive shaft mounted for rotation in response to the manual rotation of the radio tuning knob. A leaf spring coupled to the core carriage of the slug tuned coil assembly of the radio receiver is held in frictional engagement with the drive shaft and moved along a path adjacent the shaft in response to the rotation of the tuning knob, to in turn adjust the setting of the tuning coil assembly. Upon depression of a pushbutton to select a preset radio frequency, the leaf spring is releasable from engagement with the drive shaft to disable momentarily, the manual tuning apparatus.

3,724,281
VERNIER CONTROL KNOB

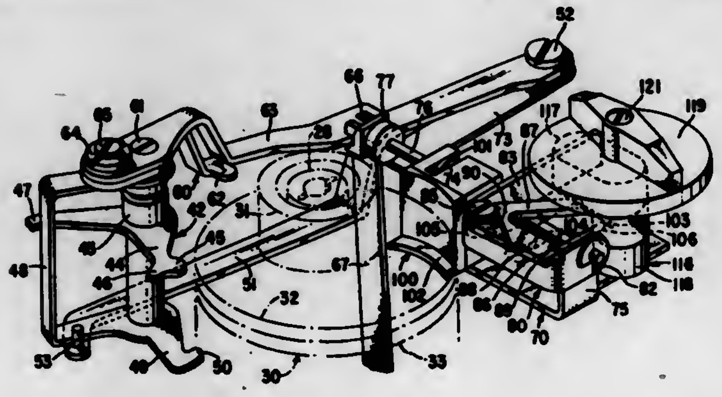
Edwin B. Dorchester, Box 127, Smith River, Calif.
Filed May 27, 1971, Ser. No. 147,463
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.52 23 Claims



A knob assembly for turning a shaft of a radio or other piece of equipment, and having a planetary drive mechanism adapted to turn the shaft at a speed which is reduced as compared with the speed of a manually actuated knob proper, to thereby attain a highly precise type of vernier indication of the knob setting. The planets of the drive mechanism are inclined in a manner enabling them to frictionally engage and roll along a transverse wall disposed about the driven shaft.

3,724,282
CAM AND FOLLOWER RELEASE MECHANISM FOR SEWING MACHINES

Louis F. Daman, Martinsville, N.J., assignor to The Singer Company, New York, N.Y.
Filed Aug. 26, 1971, Ser. No. 175,246
Int. Cl. F16h *25/16*
U.S. Cl. 74—54 1 Claim

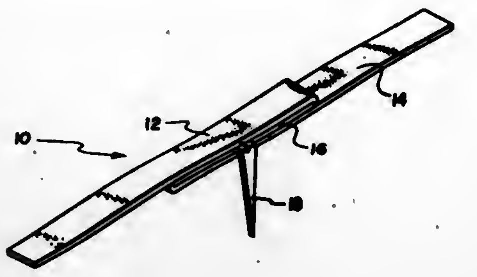


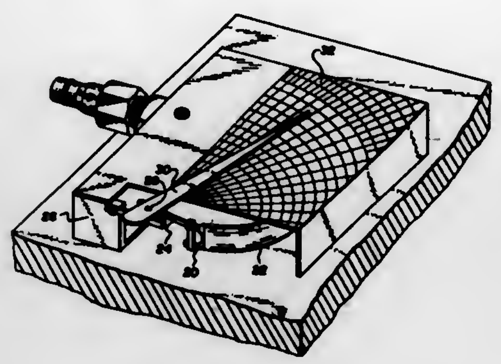
A manually influenced mechanism for removing the cam followers from tracking relation with a replaceable pattern cam unit in a sewing machine and for dislodging the replaceable pattern cam unit from retention means therefor on a cam shaft to facilitate exchange of pattern cam units.

3,724,283
DEVICE FOR CONVERTING LINEAR MOTION TO ROTATIONAL MOTION

Miller R. Hutchison, Jr., Nantucket, Mass., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 26, 1971, Ser. No. 166,169
Int. Cl. F16h *21/44*
U.S. Cl. 74—99 3 Claims

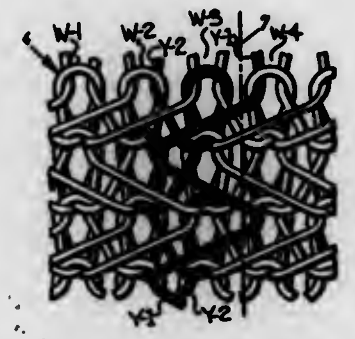
A mechanical device for converting linear motion to rotational motion includes a strip of flexible material formed in a generally Z-shaped configuration in which the sections of the strip near the apexes of the Z remain tangentially oriented during linear motion of the end sections, thereby producing rotational movement of the central section.





3,724,284
V-BELT AND METHOD OF FORMING SAME

Kjell Eng, Kattilstorp, and Sven-Olof Salomonsson, Bramhult, both of Sweden, assignors to AB Sveriges Forenade Trikafabriker, Boras, Sweden
Filed May 17, 1971, Ser. No. 143,993
Int. Cl. F16g *5/00*
U.S. Cl. 74—234 10 Claims

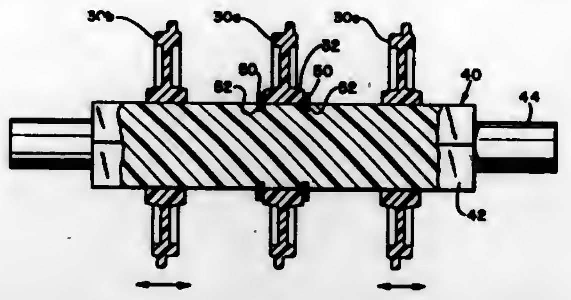


This V-belt is provided with a textile jacket covering the main body of the belt, and the textile jacket is in the form of a warp fabric knit of thermoplastic synthetic yarns. This fabric includes interconnected stitch chains forming wales in the knit fabric and is cut lengthwise, parallel to the wales into strips which are applied to the belt body with the wales extending in the longitudinal direction of the belt. The textile jacket is vulcanized to the belt body and completely surrounds the belt profile.

3,724,285
CONVEYOR DRIVE

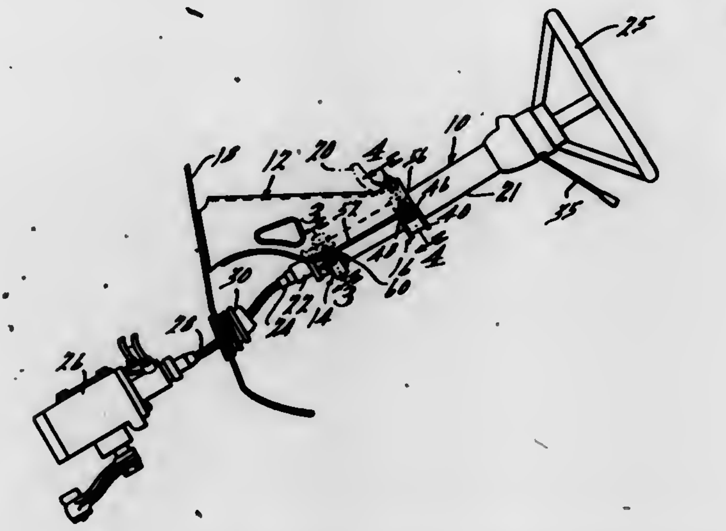
James M. Lapeyre, 13 Richmond Place, New Orleans, La.
Continuation-in-part of Ser. No. 187,746, Oct. 8, 1971, which is a continuation-in-part of Ser. No. 63,523, Aug. 13, 1970, abandoned. This application April 17, 1972, Ser. No. 244,773
Int. Cl. F16h *55/30*
U.S. Cl. 74—243 FC 17 Claims

A sprocket drive assembly designed for a modular chain link conveyor belt subject to relatively large variations in width due to changing ambient conditions such as large cyclic temperature changes. The assembly includes a drive shaft with a square cross section and a plurality of sprockets mounted on the shaft for rotation thereby. One sprocket is fixed against axial movement to provide for proper belt tracking while the remaining sprockets, the number depending upon the width of the belt and the load carried thereby, are located on opposite sides of the fixed sprocket and are free to move axially to accommodate for changes in belt width.



3,724,286
ENERGY ABSORBING STEERING COLUMN ASSEMBLY

Ernest W. Kitzner, Allen Park; Alex Rhodes, Detroit, and James Rose, Saint Clair Shores, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 863,137, Oct. 2, 1969, abandoned. This application Nov. 22, 1971, Ser. No. 200,962
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 25 Claims

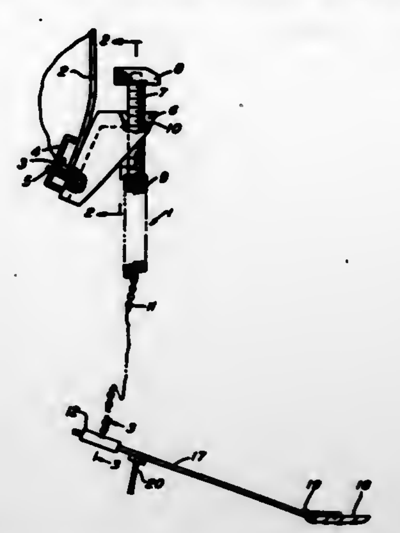


An energy absorbing steering column having an outer tube secured to vehicle support structure. The tube rotatably supports a steering shaft which has a steering wheel connected to its upper end and a steering gear connected to its lower end. Spaced apart support members connect the column to the support structure. One support member includes metal deforming projections which engage the outer tube. The projections are constructed to plastically deform the tube upon axial displacement thereof and thereby absorb the energy of an impact upon the steering wheel. The other support member includes a bushing that permits axial displacement of the outer tube.

3,724,287
THROTTLE CONTROL APPARATUS

Jack Droeben, Northgate Apartments, Apt. 2N, Camden, N.J.
Filed Aug. 13, 1971, Ser. No. 171,486
Int. Cl. G05g *5/04*
U.S. Cl. 74—526 14 Claims

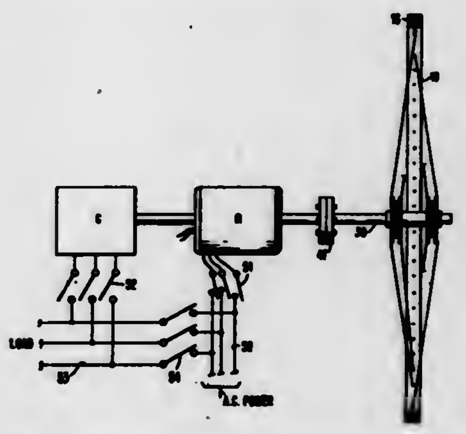
An apparatus for aiding the operator of a vehicle in controlling a throttle mechanism. The apparatus includes a moveable member which is longitudinally adjustable. A spring is rigidly secured to the moveable member at a lower end. A chain is attached on opposing ends to the spring and an accelerator pedal respectively. Adjustment of the moveable member in a downward direction permits the chain to remain in a slackened position until the accelerator pedal is displaced



a sufficient distance to cause the chain to become taut. Increased displacement of the accelerator pedal is then accomplished through extension of the spring which increases the normal pedal resistance force. The operator may override the increased resistance force but is made aware of the increase in vehicle speed.

3,724,288
HIGH ENERGY STORAGE FLYWHEEL

Marek Jakubowski, 7030 Roaring Ford Trail, Boulder, Colo.
Filed Feb. 4, 1972, Ser. No. 223,633
Int. Cl. F16c *15/00*
U.S. Cl. 74—572 6 Claims

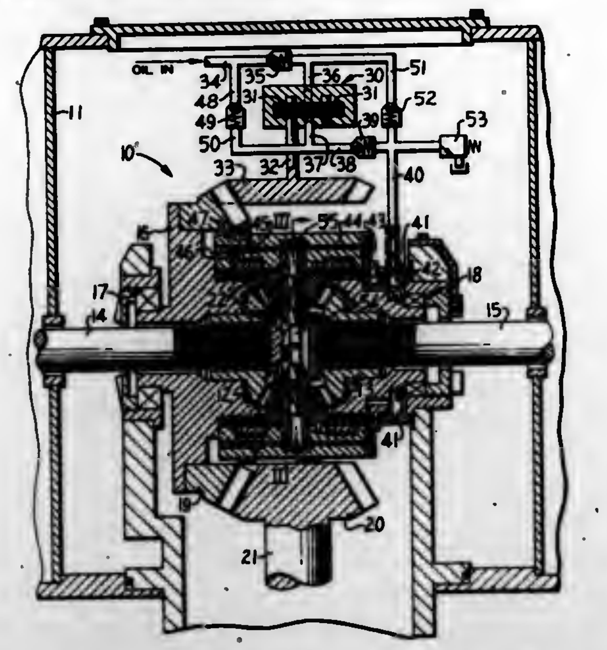


A high energy storage flywheel is described, consisting of a rim of anisotropic material such as music wire. A divided hub has coaxially placed portions which are rotationally displaceable with respect to each other and are intercoupled by resilient means. Distinct sets of spokes connect the respective hub portions to the rim. By this construction the tension of the spokes due to the expansion of the rim upon rotation of the wheel is compensated by the mutual rotational displacement of the hub portions.

3,724,289
LIMITED SLIP DIFFERENTIAL WITH CLUTCH CONTROL MEANS

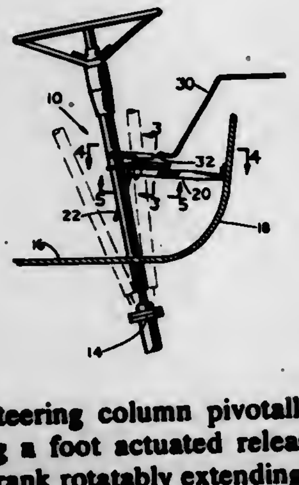
Robert B. Kennicutt, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed March 29, 1971, Ser. No. 128,950
Int. Cl. F16h *1/44*
U.S. Cl. 74—711 11 Claims

A limited slip differential comprises juxtaposed axle gears meshing with intermediate spider gears rotatably mounted on a carrier. A hydraulically actuated friction clutch is positioned between each spider gear and the carrier to retard rotation of the spider gears in response to a rotational speed differential of the axle gears. Control means for automatically actuating the clutches comprises a multi-lobed cam attached to an axle gear and a plurality of pistons reciprocally mounted in the carrier for pressurizing actuating chambers of the clutches.



3,724,290
ADJUSTABLE TILT STEERING DEVICE

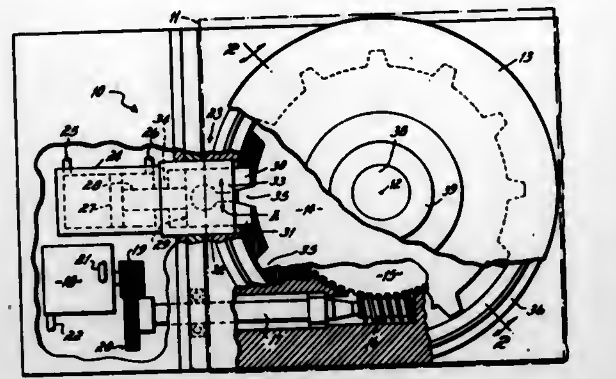
Maurice G. Burton, Salt Lake City, Utah, assignor to Ute Liner, Inc., Salt Lake City, Utah
Filed Sept. 13, 1971, Ser. No. 179,925
Int. Cl. B62d *1/18*
U.S. Cl. 74—493 **9 Claims**



An adjustable steering column pivotally connected to a vehicle and having a foot actuated release crank with the upper end of the crank rotatably extending through brackets. A flat release bar is fixed to the upper end of the crank and bears against vertical slidable release pins with the upper end of the pins bearing against two guide bars welded to a transverse bar. The gripping bar is fixed to the brackets and has bolt members extending therethrough with spring members thereon which urges the gripping bar against the bottom of a longitudinally extending tongue member. An upper fixed transverse bar is disposed on the upper ends of the bolts and bears against the top of the tongue so that the tongue is normally held immobile between the gripping and upper bar. Pressing down on the foot pedal causes the upper end of the crank to rotate in a counter-clockwise direction and causes the rear portion of the release bar to move downwardly and its front portion to move upwardly against the release pins. Since the pins cannot move upwardly and the gripping bar is fixed to the bracket it, too, moves downwardly against the springs compressing them and causing them to move away from the tongue so it can then be adjusted to another position at a different desired angle. Release of the foot pedal releases the springs and they again bear against the gripper bar and it, in turn, against the tongue to cause it to be immobile.

3,724,291
POSITIONING APPARATUS

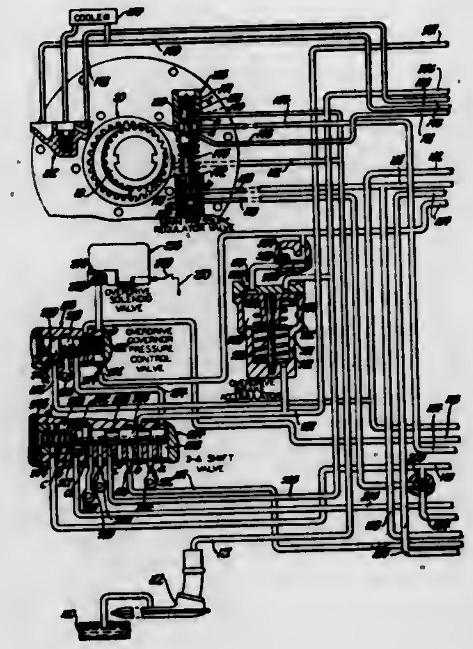
Fred M. Goebel, Cincinnati, Ohio, assignor to Le Blond, Inc., Cincinnati, Ohio
Filed March 29, 1971, Ser. No. 129,049
Int. Cl. B23b *29/32*
U.S. Cl. 74—815 **4 Claims**



A positioning system for an indexable slide or turret comprises a bifurcated member located adjacent the turret and engageable with the teeth of a locating gear to accurately position the turret relative to the bifurcated member. The bifurcated member slides in a bore provided within a sleeve. Upon contacting a selected tooth of the gear, the sides of the bifurcated member are wedged apart by the tooth until they contact the sleeve so that each side is wedged between the tooth and the sleeve, thereby positively and accurately positioning the selected tooth of the gear and the attached tool turret.

3,724,292
TRANSMISSION CONTROL

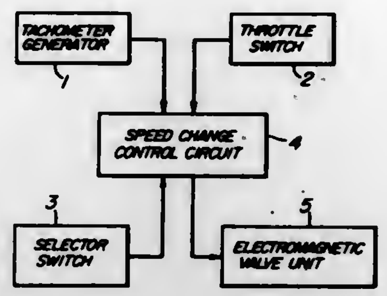
August H. Borman, Farmington, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed March 12, 1971, Ser. No. 123,625
Int. Cl. B60k *21/02*
U.S. Cl. 74—864 **3 Claims**



An automatic transmission control having an overdrive shift valve whose operation is controlled by an overdrive governor pressure control valve which in turn is controlled by an overdrive solenoid valve that is under vehicle operator control, there being further included an overdrive accumulator that operates to establish fluid delivery for establishment of all of the transmission's lower speed drives and also operates as both a valve and an accumulator to effect establishment of and cushion overdrive engagement.

3,724,293
AUTOMATIC TRANSMISSION CONTROL SYSTEM FOR AUTOMOBILES

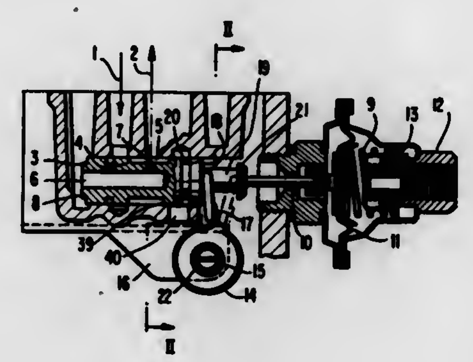
Hisato Wakamatsu, Kariya; Akira Kitano, Nagoya, and Hisasi Kawai, Toyohashi, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Continuation-in-part of Ser. No. 19,780, March 16, 1970, Pat. No. 3,652,901. This application May 4, 1970, Ser. No. 34,098
Claims priority, application Japan, May 7, 1969, 44/34972; May 7, 1969, 44/34973
Int. Cl. B60k *21/00;* **F16h** *3/74*
U.S. Cl. 74—866 **22 Claims**



An automatic transmission control system for automobiles comprising a plurality of speed change signal generator circuits, which are connected to a logic circuit, which is in turn connected to a memory connected to an electromagnetic valve drive circuit including an AND circuit and a power supply circuit feeding solenoids of electromagnetic valves.

3,724,294
REGULATING INSTALLATION OF A HYDRAULIC CONTROL SYSTEM, ESPECIALLY IN VEHICLE TRANSMISSIONS

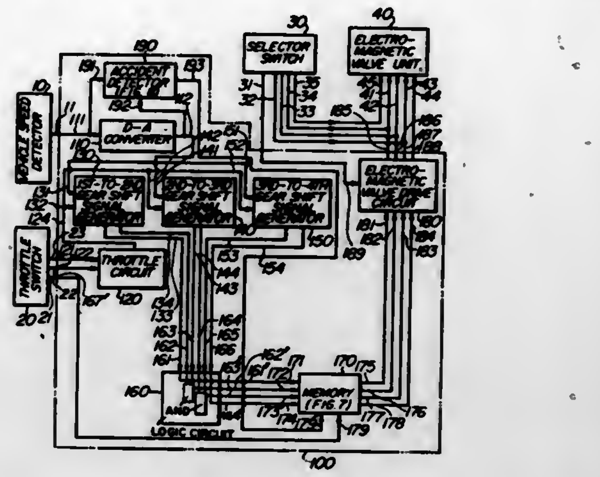
Hermann Gaus, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed April 12, 1971, Ser. No. 133,120
Claims priority, application Germany, April 10, 1970, P 20 17 238.7
Int. Cl. B60k *21/00;* **G05d** *23/00*
U.S. Cl. 74—863 **19 Claims**



A regulating installation for the working or shifting pressure of a hydraulic control system, especially of an automatic vehicle transmission, in which a bimetallic spring circumcirculated by the hydraulic medium is built into the regulating installation, which spring is fixedly mounted at one end and which abuts with the other end at least within a predetermined temperature range at the regulating installation.

3,724,295
AUTOMATIC TRANSMISSION CONTROL SYSTEM FOR AUTOMOTIVE TRANSMISSION OF VEHICLES

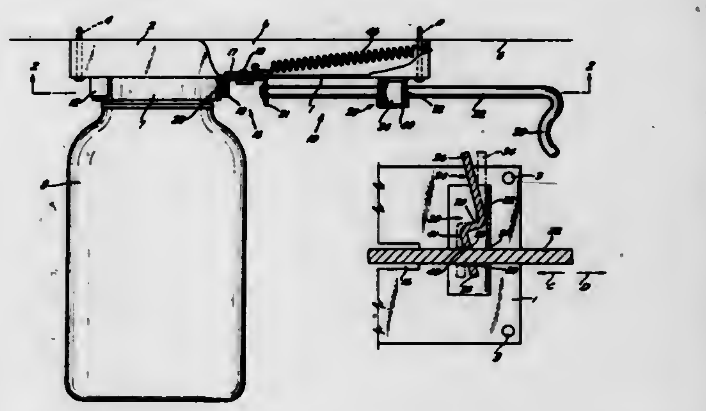
Hisato Wakamatsu, Kariya; Akira Kitano, Nagoya, and Hisasi Kawai, Toyohashi, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Continuation-in-part of Ser. No. 34,098, May 4, 1970. This application Aug. 3, 1970, Ser. No. 60,279
Claims priority, application Japan, Aug. 21, 1969, 44/66378
Int. Cl. B60k *21/00;* **F16h** *57/10*
U.S. Cl. 74—866 **6 Claims**



An automatic transmission control system for automobiles, which comprises a vehicle speed detector to produce an output signal at a frequency proportional to the vehicles speed, a D-A converter to produce an analog signal from the output signal from the vehicle speed detector, an engine load detector to produce an output signal corresponding to the engine load, a gear-shift signal generator circuit to generate a gear-shift signal by detecting a gear-shift point from the output signals from the vehicle's speed and engine-load detectors, a memory receiving the gear-shift signal, and an accident detector to produce an output signal if the voltage level of the output signal of the vehicle speed detector suddenly drops, wherein the output of the memory is normally changed in accordance with the gear-shift signal to shift the position of the gear-shifting mechanism of the transmission, but is it held unchanged irrespective of change of the gear shift signal if the engine throttle valve is closed, and it is also held unchanged if the output signal of the accident detector is present.

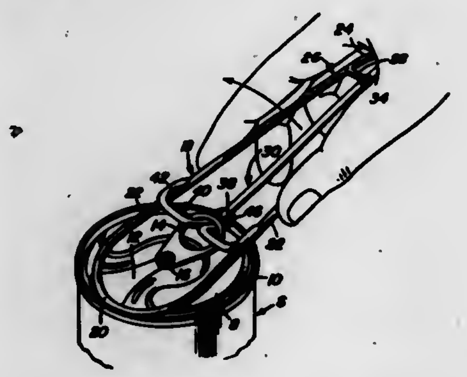
3,724,296
JAR OPENING FIXTURE

Richard T. Graver, 7926 La Casa Way, Buena Park, Calif.
Filed April 16, 1971, Ser. No. 134,577
Int. Cl. B67b *7/36*
U.S. Cl. 81—3.3 R **12 Claims**



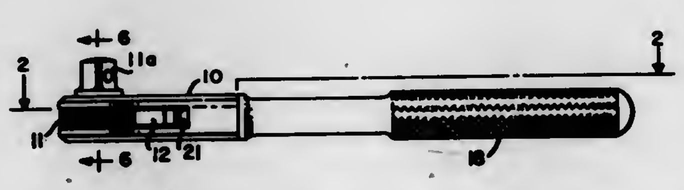
A fixture for use in loosening and removing the lid from a vacuum sealed, screw-type, bottle or jar including a base member which is adapted to be rigidly connected to a supporting surface. The base member supports first and second gripping members, the former being stationary and the latter being mounted for linear movement under control of an actuating rod connected thereto. A locking device is provided for controlling the movement of the actuating rod, the locking device permitting unlimited linear movement of the actuating rod in a direction to bring the gripping members together and releasably inhibiting movement of the actuating rod in an opposite direction whereby the second gripping member may be moved toward the first gripping member to secure the lid therebetween and the locking device will hold the second gripping member in position, such gripping member, in turn, holding the lid, until released. The second gripping member includes a serrated surface which is pivotably mounted on the base member in such a manner that rotation of the lid tends to rotate such surface in a direction to tighten its hold on the lid to prevent slipping thereof.

3,724,297
HAND HELD POP TAB OPENER
Edward P. Bucko, P.O. Box 5, Great Falls, Mont.
Filed April 22, 1971, Ser. No. 136,394
Int. Cl. B67b *7/40*
U.S. Cl. 81—3.46 A **5 Claims**



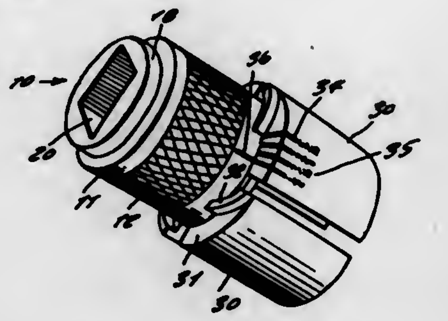
A pull tab lifting, freeing and tab discarding implement constructed to be grasped in one hand and actuated in the manner of a lever while the can or container is held in the other hand. It comprises an elongated flat frame, that is, an adaptation which is made from rod or stout wire stock, the frame being widened and arcuately rounded at the forward end to engage the rim and rest atop the can. The rearward end is gradually narrowed and also arcuately rounded and the two end portions are joined by a median progressively narrowed portion. A cross member, also made or rod stock, bridges and is integrally connected with the median portions of the side members of the frame. A median portion of the cross member is bent upon itself and fashioned into and provides a downbent oblique angled eye engaging and lifting hook. The hook is lifted up with and hitched from the forward end to achieve the desired lifting, tab yanking and removing result. An elongated spring tongue is provided and serves as a racking and storing finger for discardable tabs.

3,724,298
REVERSIBLE RATCHET-TYPE WRENCH
Joseph A. Howard, 22616 Summit Road, Los Gatos, Calif.
Filed April 26, 1971, Ser. No. 137,188
Int. Cl. B25b *13/46*
U.S. Cl. 81—63 **4 Claims**



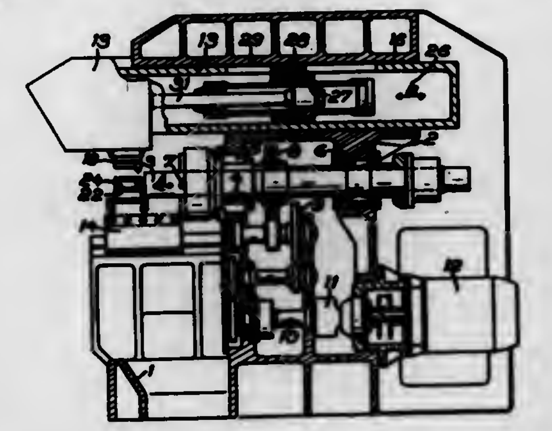
A reversible ratchet-type wrench provided with a ratchet wheel and a pawl with two sets of teeth selectively engageable with the ratchet wheel. The pawl is also provided with two substantially flat surfaces which are on opposite sides of an angular projection that is located opposite the pivot which supports the pawl. The pawl is tilted on its pivot when the handle of the wrench is rotated through a predetermined relatively wide angle so that one of the two sets of teeth of the pawl engage the ratchet wheel depending upon the direction in which it is desired to turn the wrench. A spring-urged ball is supported by the handle in engagement with said angular projection of the pawl to provide a snap action in tilting the pawl after the handle is turned a certain amount whereby positive engagement of the selected set of teeth of the pawl with the ratchet wheel is obtained.

3,724,299
ADJUSTABLE SOCKET
Nicholas R. Nelson, 710 West North St., Bellingham, Wash.
Filed Aug. 2, 1971, Ser. No. 167,955
Int. Cl. B25d *13/18*
U.S. Cl. 81—128 **4 Claims**



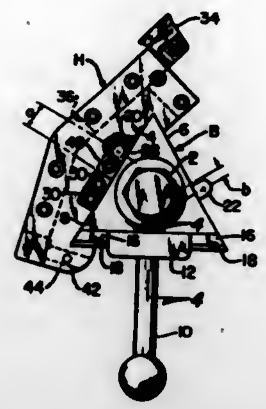
An adjustable socket for use with any standard ratchet wrench, the device being adaptable to be made up in kits that include three of such adjustable sockets in different sizes so that together they replace need of nine to twelve solid sockets of different sizes; each of the adjustable sockets having three or more variable size settings of 1/16 of an inch apart, each adjustable socket including a socket at one end for removable attachment to a conventional socket wrench drive unit, and the other end having a set of radially adjustable, arcuate jaws each one of which is provided with a series of teeth.

3,724,300
FRONTAL MULTI-SPINDLE LATHES
Roger Bardiau, La Celle-St-Cloud, France, assignor to Societe S.E.C.O.R., Courbevoie, France
Filed Nov. 3, 1970, Ser. No. 86,418
Claims priority, application France, July 11, 1969, 6938496
Int. Cl. B23b *9/10*
U.S. Cl. 82—3 **7 Claims**



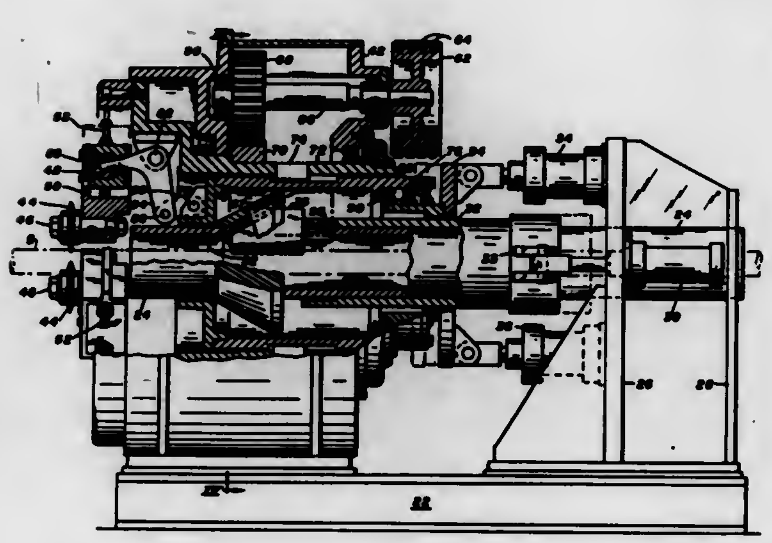
This invention relates to an improvement in lathes comprising a frame constituting a headstock in which the spindles are mounted to rotate. It is characterized in that around the headstock and the spindles are arranged a plurality of beds, mounted to slide over the whole length of said headstock along axes parallel to the axes of the spindles, said beds carrying tool-holder carriages. The invention may be used in frontal multi-spindle lathes.

3,724,301
TOOL HOLDER ASSEMBLY
Philip A. MacKelvie, Denver, Colo., assignor to Multi-Point Tool Co., Inc., Commerce City, Colo.
Filed Oct. 21, 1971, Ser. No. 191,508
Int. Cl. B23b *29/26*
U.S. Cl. 82—36 **8 Claims**



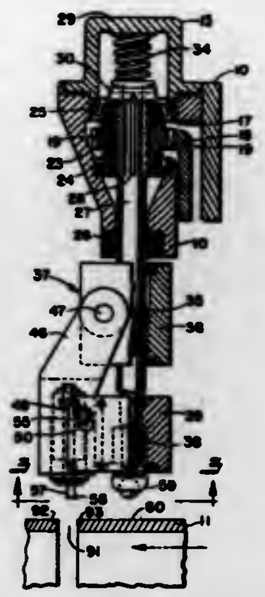
A tool holder assembly is provided for positioning any one of a plurality of tools for use on a work piece in a lathe, the assembly including a tool holder mountable on a tool block which has a pair of mounting faces. A first abutment extends from one face spaced from the vertical centerline thereof a first distance and a second abutment extends from the other face spaced a second and different distance from the centerline of that face. The tool holder is reversibly mountable on either face and has two pairs of adjustable set screws, the first pair being spaced a first equal distance on opposite sides of the vertical centerline of the locating face of the tool holder which first distance is equal to the spacing of the first abutment from the centerline of the one face of the tool block and the second pair spaced a second equal distance on opposite sides of the vertical centerline of the locating face of the tool holder which second distance is equal to the spacing of the second abutment from the centerline of the second face. With this structure, the tool holder may be adjustably mounted on either face and it may be reversed in so that it is useable with as many as four tools.

3,724,302
METHOD AND APPARATUS FOR SEVERING TUBES
Erasmus A. Randich, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 854,349, Aug. 4, 1969, Pat. No. 3,613,489.
This application July 29, 1971, Ser. No. 167,525
Int. Cl. B23b *1/00*
U.S. Cl. 82—47 R **5 Claims**



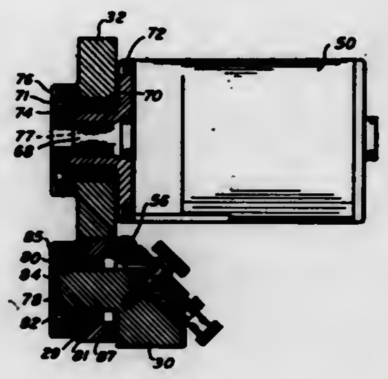
The application describes a method and apparatus for accurately severing tubes and pipes, preferably with a burr free cut. Tubes are clamped into position and severed by means of cutters. The cutters and tubes are in relative revolvement. Clamping is preferably done in a manner which exerts a tensile stress in the axial direction of the tube. The tensile stress substantially precludes burr formation. A preferred cutter is an edge tool with a rounded cutting edge.

3,724,303
CHAMFERING APPARATUS FOR TUBULAR ARTICLES
Michael S. Rinaldo, Youngstown, Ohio, assignor to Wm. K. Stamets Company, Columbiana, Ohio
Filed April 16, 1971, Ser. No. 134,608
Int. Cl. B23b *3/04, 5/14*
U.S. Cl. 82—59 R **18 Claims**



A rotatable tool head having a radially movable tool holder connected to a guide member radially movable into engagement with the cylindrical wall of the work. The guide member has a cam slot for a roller carried by the tool holder which is radially movable at a different speed than the guide member whereby the roller moves in the slot to direct a chamfering tool into cutting engagement with the work piece while the guide member is held in sliding engagement with the cylindrical wall of the work piece by a spring biasing the guide member towards the cylindrical wall. The tool head also carries radially movable tool holders for cutting through the wall of the work piece.

3,724,304
APPARATUS FOR DEBURRING A METAL STRIP
Henry Persson, 224 Glenwood Avenue, Bloomfield, N.J.
Filed Jan. 3, 1972, Ser. No. 214,600
Int. Cl. B26d *3/02, 7/06*
U.S. Cl. 83—3 **9 Claims**

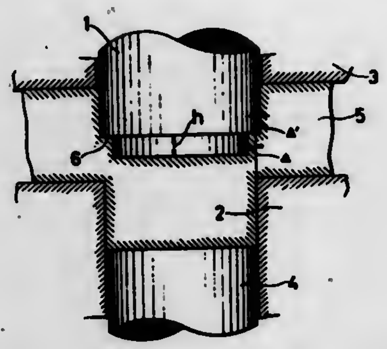


This invention discloses apparatus for conditioning the edge as by deburring of a continuously fed metal strip such as is provided in the slitting of a large strip into many narrow strips. Other strips requiring deburring occur when shearing sheets into strips. The burr or sharp edge or edges on said strip is removed by advancing the strip by a powered roller while at the same time bringing the edge in way of a rotating cup-shaped cutting disc or a scraping cutting blade. A non-powered deburring apparatus may be used with the powered apparatus so that its deburring means is brought in way of the other edge which is deburred in the same manner as the powered deburring apparatus. Rectangular and square sheets can also be deburred with the apparatus of this invention.

3,724,305
PRECISION SHEARING METHOD

Kazuyoshi Kondo, 22-12, Hirosawa 1-chome, Hamamatsu, Japan

Filed Nov. 4, 1970, Ser. No. 86,770
Claims priority, application Japan, Nov. 15, 1969, 44/91703
Int. Cl. B26d *7/08*
U.S. Cl. 83—14 **11 Claims**

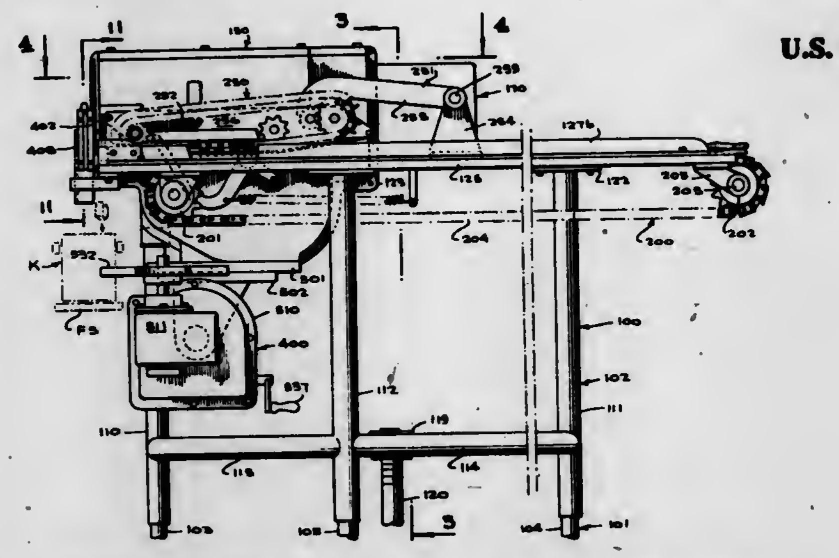


A precision shearing method which uses a pair of shearing die tools having contours corresponding to that of the article to be obtained, one of the tools being of a conventional design and the other tool being stepped to form clearances thereon which are positive and negative or zero with respect to said first tool, comprising urging the latter tool toward the work thereby causing first the positive clearance and then the negative clearance or zero clearance to act upon the work material.

3,724,306
SLICING MACHINE

George E. Meckley, Abbottstown, Pa., assignor to Hanover Brands, Inc., Hanover, Pa.

Filed March 5, 1971, Ser. No. 121,388
Int. Cl. B26d *5/20*
U.S. Cl. 83—210 **14 Claims**

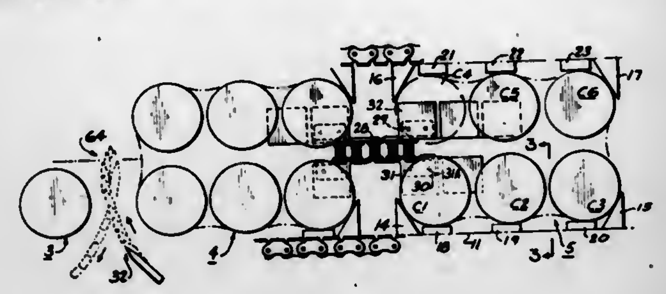


A machine for slicing strips of articles having variable vertical thicknesses to provide individual portions of substantially similar size comprising support means, means mounted on the support means for feeding the strips along a predetermined line of travel, means engageable with the strips disposed on the strip feeding means, for indexing the strip along the line of travel in predetermined increments, means responsive to the vertical thicknesses of the strips, operably connected to the strip indexing means to vary the magnitude of the indexing increments in relation to the vertical dimensions of the strips, and means cooperative with the strip indexing means for severing the leading end of the strips upon the strips being indexed a predetermined increment.

3,724,307
SYNCHRONOUS CUTTER MECHANISM

Roy A. Johnson, Marietta, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 23, 1971, Ser. No. 117,904
Int. Cl. B26d *1/36, 5/02*
U.S. Cl. 83—337 **2 Claims**

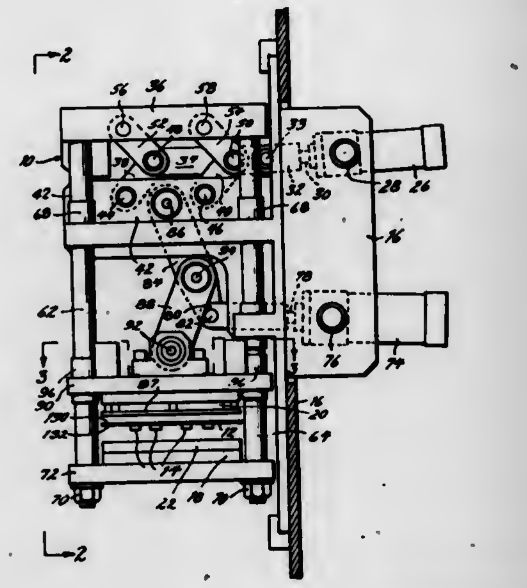


Continuous movement is imparted to a chain made up of a plurality of packets which are interconnected in end to end spaced relation by means of a pair of endless conveyor elements disposed on opposite sides of the path of movement of the chain of packets. Each conveyor is provided with a plurality of packet engaging spacers and with a plurality of positioning bars arranged to engage each packet and to hold it in a predetermined relationship with respect to the conveyor. A rotatable support element is disposed on each side of the path of movement of the packet and a plurality of cutter elements are movably mounted on each support element and a rotatable cam is disposed coaxially with respect to each support element and rotates relative to its associated support element to impart a smooth controlled in and out cutting movement to the associated cutter element each of which is provided with a serrated cutting edge. The cutters separate one packet from another by simultaneously entering the spaces between adjacent packets.

3,724,308
PUNCH AND DIE CUTOUT STATION

Matthew Nichols, Norristown, Pa., assignor to Sauter Packaging Company, Sauderton, Pa.

Filed Sept. 28, 1970, Ser. No. 75,969
Int. Cl. B26d *5/08, 5/12*
U.S. Cl. 83—557 **2 Claims**

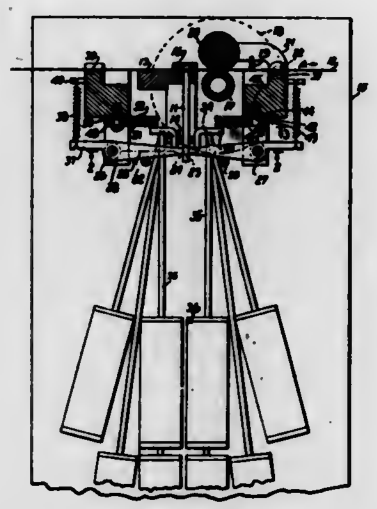


A cut out station for die cutting a previously laminated elongate web of material dna including a lower die member connected to an upper carriage through a plurality of sliding rods and an upper punch member in vertical registry above the lower die member and in sliding engagement with the sliding rods. The lower die member includes means producing vertical reciprocal motion below the web and the upper punch member includes means producing vertical reciprocal motion above the web. The upper punch member is further being characterized by a resilient mounting construction to cooperate with and to absorb the forces generated by the reciprocal operation of the punch and die members.

3,724,309
TAPE PUNCH

George Takenaka, Santa Anna, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.

Filed April 15, 1971, Ser. No. 134,354
Int. Cl. B26d *5/06*
U.S. Cl. 83—575 **11 Claims**

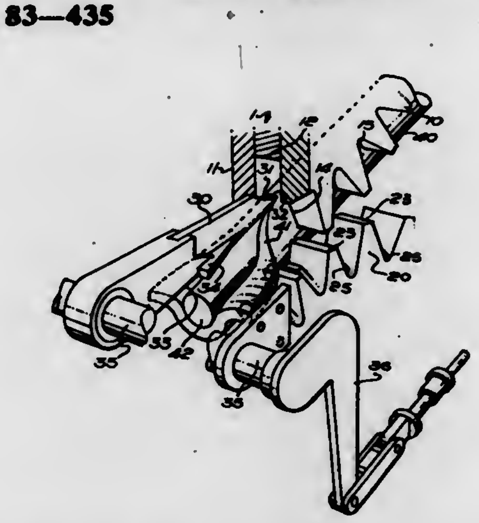


A high speed solenoid operated punch for paper tape or the like in which a relatively weak spring is provided to normally hold the punch in retracted position and to take up clearances in the punch linkage. A second stiffer, cantilever type spring is engaged by the punch linkage only after the punch has partially sheared through the tape and, finally, a much stiffer cantilever type spring is engaged after the punch passes completely through the tape to arrest the punch and to catapult the same back to its retracted position, aided by the second spring.

3,724,310
CABLE SPLITTER

John Chippendale, Otley, England, assignor to Impact Industrial Holdings Limited, Newcastle upon Tyne, England

Filed June 18, 1971, Ser. No. 154,430
Int. Cl. B26d *7/06*
U.S. Cl. 83—435 **7 Claims**

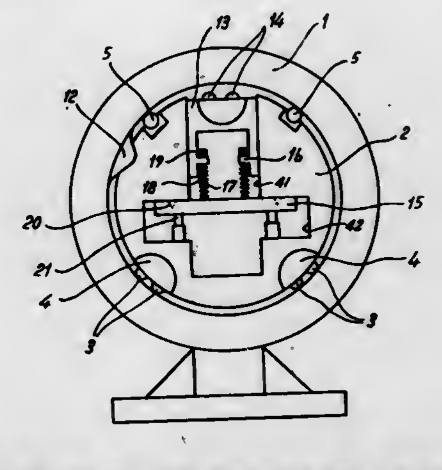


Cable splitting apparatus is provided, for recovering metal from sheathed cables, in which a splitting tool is arranged in collaboration with a central annular groove in one of two gripping wheels the periphery of which is provided with gripping teeth so that during rotation of the wheels the gripping teeth press the sheath against the sides of the splitting tool for the tool and teeth in combination to shear through the sheath.

3,724,311
CONSTRUCTION OF MECHANICAL PRESSES

Federico Streich, Calaf Street, No. 25; Alberto Vargas Gold, Rosario Street, 19&21; Jose Mª Bonastre Oliveras, Menendee Pelavo, Street No. 5.3.2, and Fernando Fernandez Ventura, San Cugat del Valles, Abella Street, No. 42, all of Barcelona, Spain

Filed March 11, 1971, Ser. No. 123,178
Claims priority, application Spain, March 14, 1970, 377500; Feb. 25, 1971, 388610
Int. Cl. B26d *5/16*
U.S. Cl. 83—590 **12 Claims**

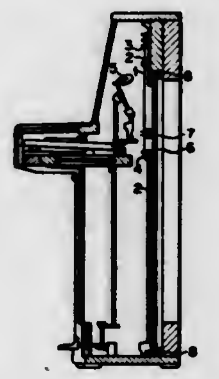


Improvements in the construction of mechanical presses, comprising a large diameter transverse shaft projecting from the frame of the machine and presenting at its front two crossed slots for housing the sliding carriage of the press and the table of the same, an inertia flywheel in ring form, mounted on said shaft and having on the interior thereof cams for driving the carriage, and driving electric motor positioned between said ring-flywheel and the zone of the frame adjacent to the shaft, the ring-flywheel being connected to the rotor of the motor and the frame being connected to the stator.

3,724,312
SOUNDBOARDS FOR STRING INSTRUMENTS HAVING PLASTIC FOAM BODY WITH HARDER OUTER LAYERS

Takashi Yamada, Hamamatsu, and Toyosaku Matsumoto, Toyohashi, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed March 23, 1971, Ser. No. 127,183
Claims priority, application Japan, March 26, 1970, 45/25052; March 26, 1970, 45/25053; April 10, 1970, 45/30317; March 26, 1970, 45/28389
Int. Cl. G10c *3/06*
U.S. Cl. 84—193 **15 Claims**

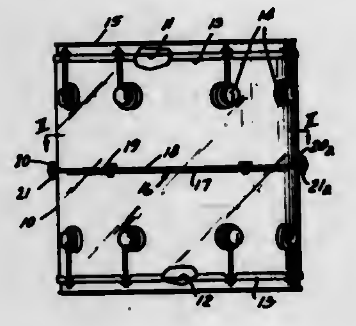


A soundboard is made of a body of plastic foam material which is supplemented by means for improving the vibration transmission characteristics. The means may be a pair of cross-grained thin sheets of harder material than the plastic foam material bonded on both surfaces of the body or may be inserts of harder material disposed in through-holes perforated in the soundboard, the inserts abutting directly on a bridge and ribs, respectively, coupled to both surfaces of the soundboard.

3,724,313
DRUM

Richard J. Frige, 18 West 224 16th Street, Villa Park, and William F. Crowden, 2420 West Berwyn Avenue, Chicago, both of Ill.

Filed Jan. 4, 1971, Ser. No. 103,752
Int. Cl. G10d *3/00, 13/02*
U.S. Cl. 84—452 P **4 Claims**

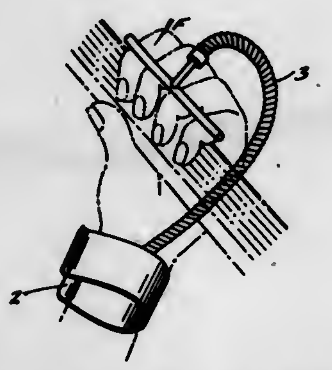


A drum or other musical percussion instrument made of a seamless cylindrical shell of an integral synthetic plastic, such as a methyl methacrylate resin, with a tone or sound modulator associated therewith comprising a one- or multi-part panel of similar transparent plastic material mounted for rotation about an axis parallel to a drum head and intersecting said shell, with clearance therebetween and between the panel and the head, or heads, of the drum to permit adjustability of the panel into various angular positions relative to the plane of the head in order to modulate the sounds caused by playing on said head.

3,724,314
FINGER TRAINING DEVICE FOR STRINGED MUSICAL INSTRUMENTS

Christopher Columbo, 1759 79th Street, Brooklyn, N.Y.

Filed May 18, 1972, Ser. No. 254,754
Int. Cl. G09b *15/06*
U.S. Cl. 84—465 **5 Claims**

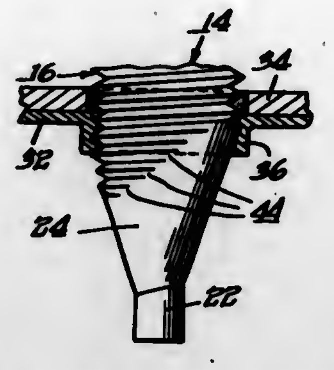


A finger training device for the proper manipulation of the fingers in the course of playing a stringed instrument, constituted by a restraining bar which is adjustably positioned above the fingers as they move along the finger board of the instrument. A flexible, but self-sustaining rod is connected between the restraining bar and a wrist-band adapted to be mounted on the wrist adjacent to the hand which supports the neck of the instrument, and along which the fingers glide for variably contacting the musical strings running therealong. Furthermore, universal joints at each end of the flexible rod facilitate the setting of the bar any desired distance above the fingers to restrain the undue lifting thereof from the strings.

3,724,315
EXTRUDING SCREW

Henry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Wool Works Inc., Chicago, Ill.

Filed Sept. 7, 1971, Ser. No. 177,950
Int. Cl. F16b *25/00*
U.S. Cl. 85—47 **6 Claims**

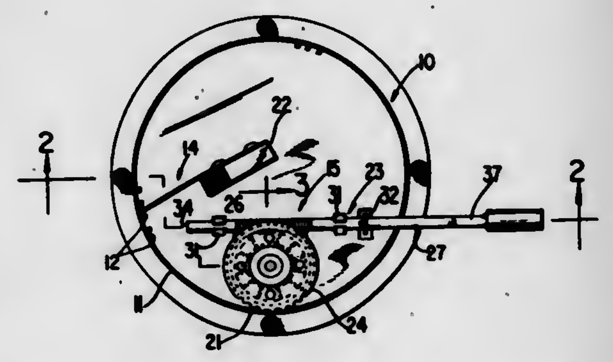


The present invention relates generally to threaded fasteners and more particularly to extruding and/or thread-forming screw fasteners for application to sheet metal. An embodiment of the invention disclosed herein includes a shank having a threaded section, a head at one extremity, a pilot section at the opposite extremity in coaxial alignment with the threaded section and a work swaging substantially conical section interposed between the pilot and threaded shank sections. The conical section is positioned out of axial alignment with the threaded and pilot sections.

3,724,316
MUSIC BOX

Benjamin Kinberg, 425 Riverside Drive, New York, N.Y., and Richard J. Mayer, 34 Mount Vernon, Bloomfield, N.J.

Filed Jan. 28, 1969, Ser. No. 794,672. The portion of the term of this patent subsequent to Nov. 3, 1988, has been disclaimed.
Int. Cl. G10f *1/06*
U.S. Cl. 84—95 **7 Claims**



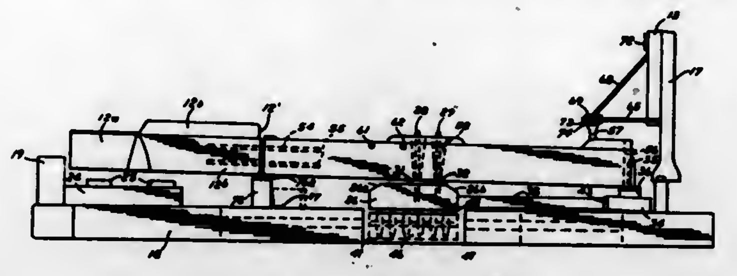
A music box wherein the musical comb operating pins are on the inner surface of a hollow rotating cylinder and the musical comb is mounted within the cylinder whereby the cylinder has a much longer playing surface than a conventional music box of comparable size.

3,724,317
TRANSPOSING PIANO WITH LATERALLY MOVABLE KEYBOARD

Jae P. Rogers, 1186 Yost St., Aurora, Colo.

Filed Aug. 23, 1971, Ser. No. 173,823
Int. Cl. G10c *3/12*
U.S. Cl. 84—447 **11 Claims**

In a transposing piano a movable key lever carriage on the key lever bed is adapted for lateral movement of the key levers for a desired transposition. The key levers are straight, of a reduced length to clear the action supports during lateral movement, and are provided with a center slot which receives a center key pin on the carriage and a rear slot at the rear end which receives and is guided by a rear key pin on the carriage during pivotal movement thereof, the key levers being readily removable from the carriage. A space equalizing assembly is provided on each sticker rod to equalize gap spacing and transmit motion from a selected key lever to a selected sticker rod. A releasable coupling connects each space equalizing assembly to a capstan. A clutch bar supports the key levers to facilitate the release of each space equalizing assembly from each capstan for allowing lateral movement of the key levers.



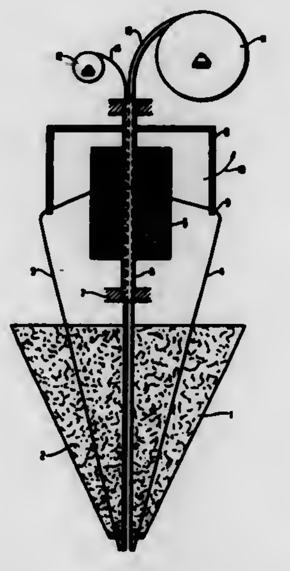
ERRATUM

For Class 85—47 see:
Patent No. 3,724,315

3,724,318
PROCESS FOR THE PRODUCTION OF A FUSE HAVING A HOLLOW CHANNEL

Wilhelm Rohde, and Werner Helfgen, both of Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Dec. 3, 1970, Ser. No. 94,842
Claims priority, application Germany, Dec. 3, 1969, P 19 60 569.7
Int. Cl. C06b *21/02*
U.S. Cl. 86—1 **15 Claims**

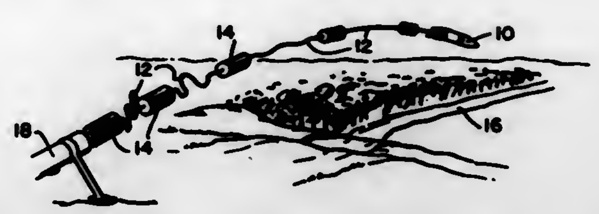


Process and apparatus for the production of a fuse having a cavity extending axially within the explosive core and being provided with a lining. The process includes the steps of continuously producing a casing at the lower end of the feed hopper, introducing an explosive from the feed hopper into the casing, passing the lining through the feed hopper while continuously winding filaments therearound in a helical manner for centrally guiding the lining through the feed hopper, and continuously introducing the lining together with the explosive into the casing at the end of the feed hopper. The apparatus includes a draw-off mechanism arranged vertically above the feed hopper, and one or more supply bobbins for the filaments can be provided as well as a bobbin for a tracer thread.

3,724,319
FAX MINEFIELD CLEARING DEVICE

Richard J. Zabelka, Sault Sainte Marie, Mich., and Lloyd H. Smith, China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed March 8, 1967, Ser. No. 621,707
Int. Cl. F41f *1/00*
U.S. Cl. 89—1 M **2 Claims**

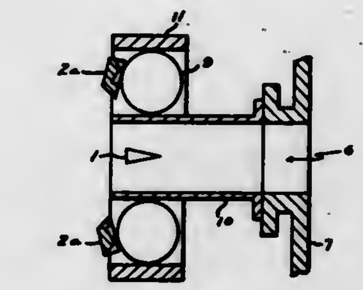


A plurality of fuel containers, series connected together by lines, are deposited along a mine field by a towing projectile, such as a rocket. The containers are then explosively ruptured, forming an elongated fuel-air cloud contiguous to the mine field. Shortly thereafter, the cloud is detonated by a high explosive wave, producing overpressure on the mine field which detonates mines sensitive to such overpressure.

3,724,320
HYDROSTATIC SHOCK OPERATED, FAST CLOSING VALVE AND SABOT

Buford W. Duke, Manchester, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Nov. 15, 1971, Ser. No. 198,579
Int. Cl. F41f *1/00*
U.S. Cl. 89—1 R **9 Claims**



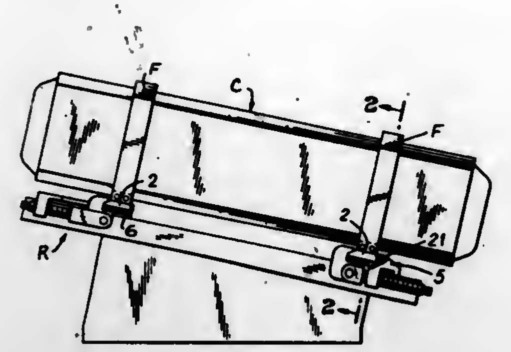
A hypervelocity gun range-valve and sabot-trap mechanism consisting of a thin-walled tube having an opening in the range-flight path and communicating with an instrumented test section, and a liquid-filled tube disposed normal to the flight path and surrounding the thin-walled tube for blocking the segments of the segmented sabot portion of a projectile consisting of a combined test model and sabot being fired from the gun tube. On impact of the projectile with the liquid-filled tube, the sabot completes separation from the model and creates a hydrostatic force in the liquid-filled tube that acts against, and collapses and closes a portion of, and therefore the opening in, the thin-walled tube to prevent contaminants from following the model into the test section of the range.

3,724,321
APPARATUS FOR POSITIONING AND SECURING A PROJECTILE HOLDER ON ITS PAD

Pierre Le Chevalier, Residence "Les Violettes" Lotissement des Violettes, 83 Hyers, and Jacques Blangis, 26 rue de Villeneuve, 92 Garches, both of France

Filed April 21, 1971, Ser. No. 136,067
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.8 **10 Claims**

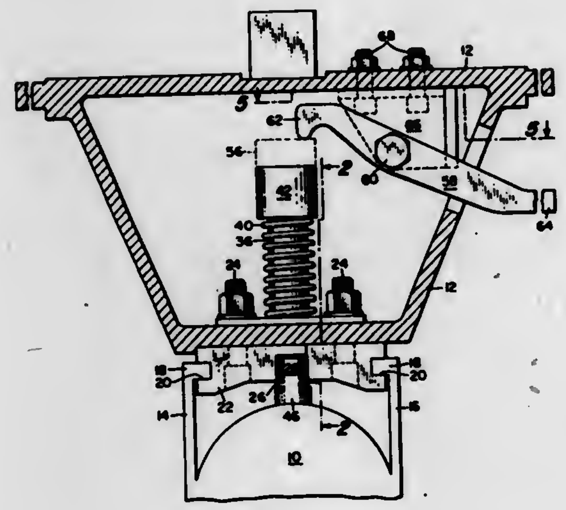
A projectile holder such as a missile container is positioned and secured on its pad, by guides receiving feet on the container and pivotal hooks securing the feet longitudinally on the pad. The guides serve to position the container longitudinally and laterally on the pad. One or more containers can be mounted on a launcher or ramp which may be stationary or adjustable for tracking a target.



3,724,322

RETRACTABLE ELECTRICAL CONNECTOR FOR MISSILES

Richard E. Reed, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 18, 1971, Ser. No. 107,385
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.811 1 Claim



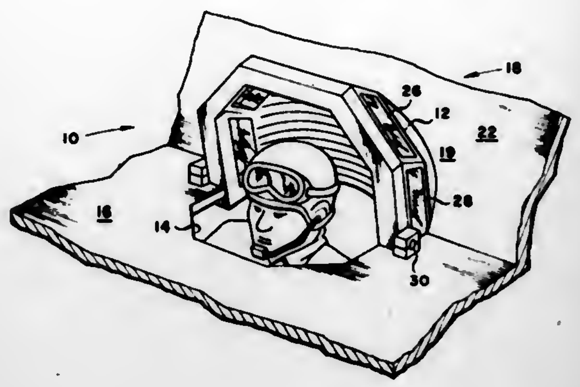
An umbilical connector for missiles, comprising a plug-and-socket assembly of the quick-disconnect type. The plug is carried by the missile, and has prongs which are withdrawn from the socket in the direction of missile movement when the latter is launched. Upon such prong withdrawal, the socket, which is spring-loaded, retracts into the launcher housing, where it is protected from missile exhaust gases. It may be repositioned manually after each operation for use in subsequent launchings.

3,724,323

ROTATABLE HATCH COVER FOR ARMORED VEHICLES

Wolfgang H. Selle, Milpitas, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed March 10, 1971, Ser. No. 122,688
Int. Cl. F41h *5/22*
U.S. Cl. 89—36 L 3 Claims

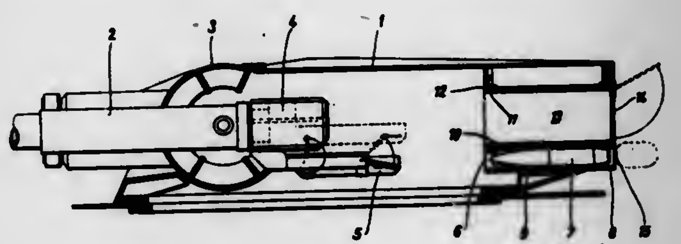
An improved hatch for an armored vehicle wherein an armored collar extending above the armored surface at one side of the hatch opening mates with a rotatable, truncated dome shaped hatch cover to enclose the hatch opening. The hatch cover pivots in a balanced manner down into the hatch opening adjacent to, and inside of, the armored collar to provide an unobstructed hatch opening with improved visibility and protection.



3,724,324

GUN BUILT INTO AN ARMORED TURRET WITH A ROTATING MAGAZINE

Erich Zielinski, Gruiten, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany
Filed July 16, 1970, Ser. No. 55,345
Claims priority, application Germany, July 30, 1969, P 19 38 681.3
Int. Cl. F41f *9/06*
U.S. Cl. 89—36 K 7 Claims



A gun built in an armored turret, particularly of armored vehicles, with a magazine moving in an endless path and comprising tube-like containers for receiving ammunition and disposed parallel relative to each other, which comprises a plurality of containers disposed parallel to the axis of the gun barrel. Means are provided for moving the containers in superposed planes crosswise to the axis of the gun barrel behind the gun. A magazine is arranged and the gun barrel has a loading chamber. The magazine and the loading chamber chamber define a space therebetween, and a loading device is disposed in the space.

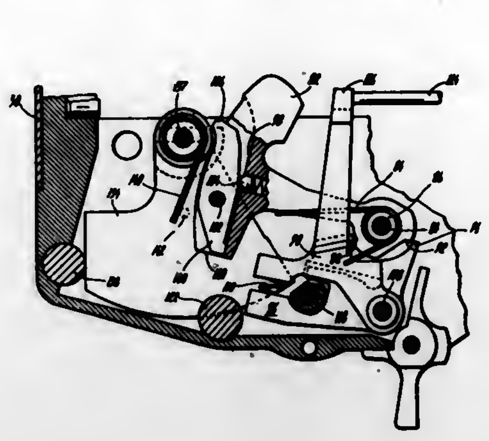
3,724,325

RATE REDUCER

Stanley D. Silsby, Granby, Mass., assignor to Colts Industries Operating Corp., New York, N.Y.
Filed Aug. 24, 1971, Ser. No. 174,334
Int. Cl. F41d *11/02*
U.S. Cl. 89—131 9 Claims

An automatic firearm incorporates an integral rate reduction device which delays hammer fall. The rate reduction device is associated with an automatic sear and includes an inertia mass adapted to be pivoted by the hammer during initial

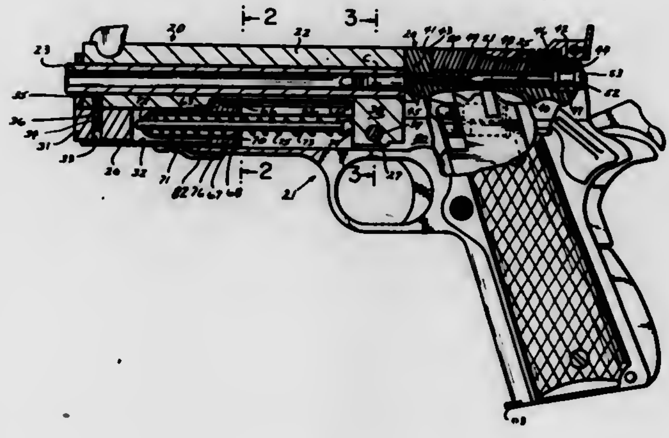
hammer fall. In semiautomatic operation, the inertia mass is not displaced by the hammer when it is pivoted between a cocked position and the fired position, since all rate reducer action is completed before a shooter pulls the trigger.



3,724,326

SUB-CALIBER CONVERSION UNIT

Robert W. Day, 7515 Stagecoach Lane, San Anthonio, Tex.
Filed July 29, 1971, Ser. No. 167,208
Int. Cl. F41d *11/06;* F41c *21/10*
U.S. Cl. 89—196 7 Claims



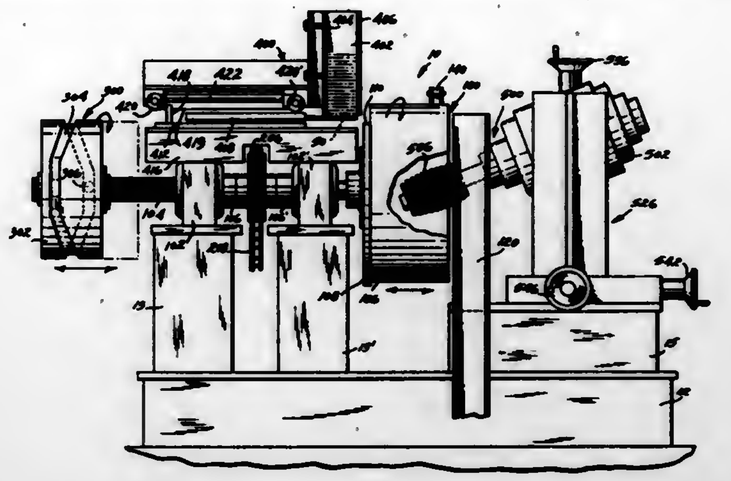
A sub-caliber conversion unit adapted to be detachably secured to and firmly supported by the lower receiver group of a larger caliber pistol, wherein the slide in such conversion unit operates independently of the barrel, and means are provided to permit full travel of said slide.

3,724,327

MACHINE FOR GROOVING BRAKE BLOCKS

Carl Edward Gillberg, North Plainfield, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Filed Aug. 30, 1971, Ser. No. 176,156
Int. Cl. B23c *3/34*
U.S. Cl. 90—11 C 16 Claims

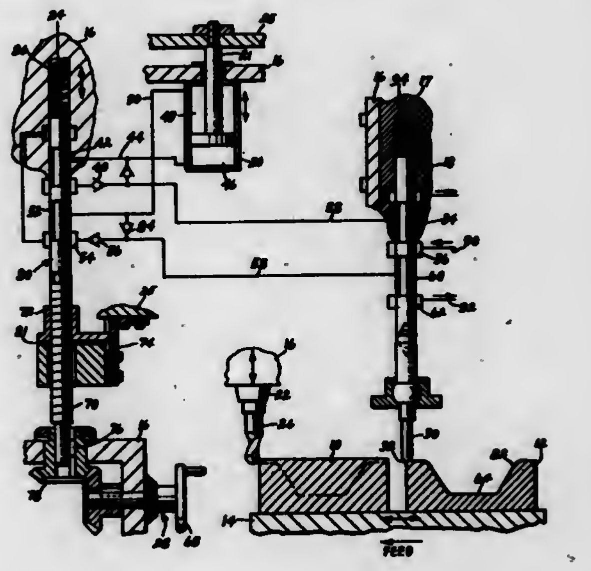
Machine and method for providing criss-cross grooves in the concave face of precurved brake block forms. A precurved brake block from is located with its radii intersecting along a line to define an axis about which the block is swung and advanced linearly therealong in a direction to define a helical path. While traversing the helical path the concave face of the block passes a set of cutters which score the face thereof with a plurality of parallel grooves disposed at a helical angle with respect to the block. The direction of axial advance is then reversed and the concave face of the block passes a second set of cutters which score the face thereof with other parallel grooves which cross the first grooves in a criss-cross pattern.



3,724,328

PLATEAU MILLING SCHEME FOR HYDRAULIC TRACERS

Edward W. Yates, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Nov. 4, 1971, Ser. No. 195,676
Int. Cl. B23c *1/16;* B23q *35/18*
U.S. Cl. 90—62 R 5 Claims



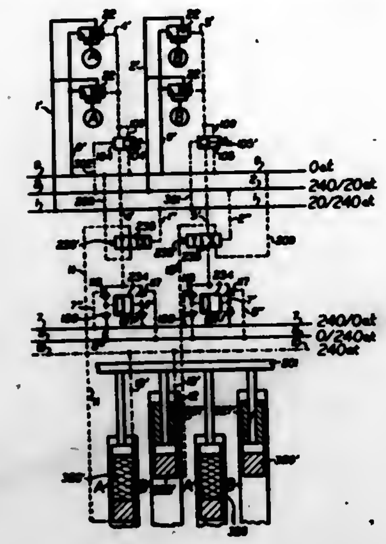
An apparatus for use with an hydraulic tracing system on a machine tool having a slide controlled by the deflection of a tracing stylus wherein there is provided a means for limiting the penetration of a cutting tool into a workpiece. The apparatus comprises means in series with a tracer control valve for shutting off fluid flow to the slide when the cutter has reached a preset penetration level and means for resetting this level.

3,724,329

CONTROL FOR SELF-ADVANCING HYDRAULIC ROOF SUPPORTS FOR LONGWALL FACES IN MINES

Konrad Grebe, Kaiser-Wilhelm-Allee, WuppertalElberfeld, Germany
Filed Sept. 2, 1970, Ser. No. 68,829
Int. Cl. F01l *15/00;* F01b *15/02*
U.S. Cl. 91—189 5 Claims

An improvement in a traveling mine roof support wherein hydraulically at least two frames are moved forward in response to hydraulic pressure, said frames being connected to a piston maintained within a cylinder, said system including means for feeding fluid under pressure into the face side of cylinders holding the frames while one of the frames is maintained immobilized between a mine floor and a mine roof. The device provides means for advancing the frames, one after the other, while one of the frames is stationary. Check valves are provided to open the hydraulic lines. Valves are also provided in the event the pressure in the system exceeds predetermined values.



3,724,330

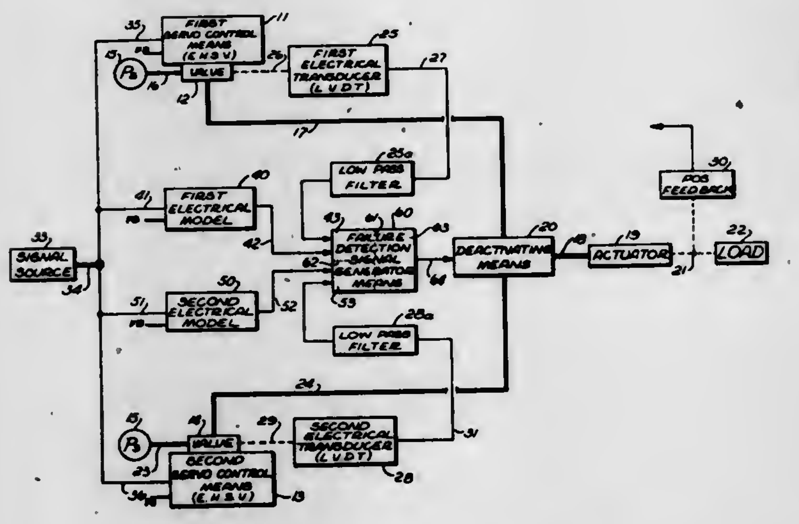
SELF MONITORING CONTROL SYSTEM UTILIZING AN ELECTRICAL MODEL FOR EACH CONTROL MEANS

Richard K. Mason, Grandada Hills, Calif., assignor to Textron Inc., Providence, R.I.

Filed July 12, 1971, Ser. No. 161,455

Int. Cl. F15b *9/03, 9/09*

U.S. Cl. 91—363 A 7 Claims


FIRST SERVO CONTROL MEANS (E.H.S.V)
VALVE
FIRST ELECTRICAL TRANSDUCER (L.V.D.T)
LOW PASS FILTER
FIRST ELECTRICAL MODEL
SIGNAL SOURCE
FAILURE DETECTION SIGNAL GENERATOR MEANS
DEACTIVATING MEANS
ACTUATOR
POS FEEDBACK
LOAD
SECOND ELECTRICAL MODEL
LOW PASS FILTER
VALVE
SECOND SERVO CONTROL MEANS (E.H.S.V)
SECOND ELECTRICAL TRANSDUCER (L.V.D.T)

A control system having a plurality of control channels, each of which includes a servo control means having a valve which moves responsively to the application of control signals so as to control the flow of fluid from a source thereof to an output member connected for positioning a load. Electrical transducer means is connected to the control valve to produce an electrical signal which is characteristic of the servo control means. An electrical model which produces an output electrical signal which is characteristic of that signal desired for the servo control valve is provided. The output electrical signals are connected to a comparator for detecting disparity between the signals thus generated and then for providing an output signal which deactivates the particular servo control means wherein the failure has occurred which causes the disparity in the signals being compared.

3,724,331

FEED MECHANISM FOR MACHINE TOOL

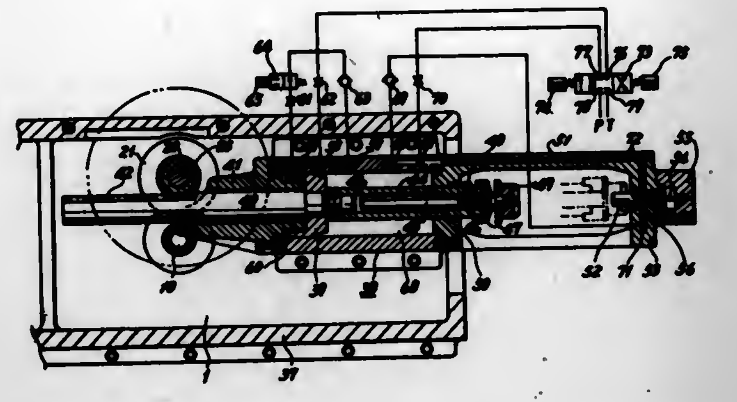
Akiyoshi Kobayashi, Kariya-shi, Aichi-ken, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed March 11, 1971, Ser. No. 123,212

Claims priority, application Japan, March 13, 1970, 45/24103

Int. Cl. F15b *15/22*; F01b *9/02*

U.S. Cl. 91—407 9 Claims



A feed mechanism for a machine tool with a feed table is provided with a hydraulic cylinder for moving the feed table to perform a machining operation. In the cylinder a screw shaft is adjustably threaded into the rod of the piston thereof for adjusting the stroke length of the piston. The free end of the screw shaft is adapted to be brought into engagement with a resiliently urged stop member to control the exhausting of fluid from the cylinder so that the speed of the piston is reduced just before the piston is fully stopped.

3,724,332

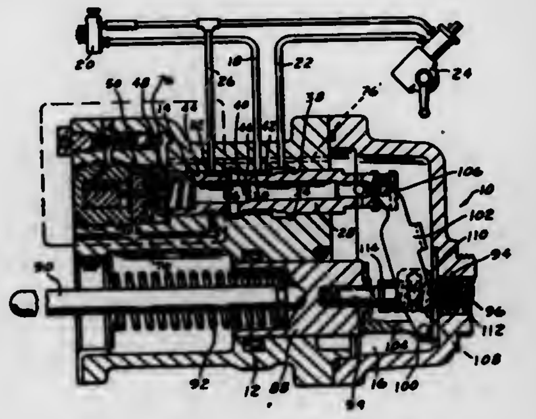
PRESSURE LIMITER FOR HYDRAULIC BOOSTER

Lloyd Gene Bach, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Feb. 10, 1972, Ser. No. 225,060

Int. Cl. F15b *7/00, 13/10, 13/14*

U.S. Cl. 91—391 R 9 Claims



A pressure limiting device for a hydraulic brake booster is disclosed which limits the fluid pressure level in the pressure chamber of the booster to a predetermined maximum level. The pressure limiter includes a differential pressure responsive piston which shifts into engagement with the end of the spool valve used to control communication between the booster pressure chamber and a pressure source when the pressure level in the pressure chamber attains the predetermined maximum value. After the piston engages the end of the spool valve, the latter may not be shifted further from the brake release position to admit higher fluid pressures into the pressure chamber.

3,724,333

OPERATING SYSTEM FOR AIRCRAFT BARRIER NETS

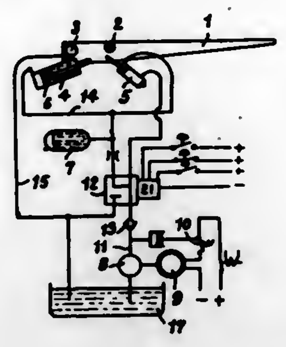
Per Borje Fonden, and Karl Ove Torgny Walander, both of Linkoping, Sweden, assignors to Bergs Fabriks AB, Norrkoping, Sweden

Filed Oct. 23, 1970, Ser. No. 83,439

Claims priority, application Sweden, Dec. 4, 1969, 16740

Int. Cl. F15b *11/16*

U.S. Cl. 91—411 R 4 Claims



Device for operating an aircraft arresting mechanism in which the barrier supporting standard is raised and lowered with respect to the runway by two servomotors, one being larger than the other, the larger one producing the smallest moment and the smaller servomotor producing the largest moment when the standard rests in the lowered position, the moments being so balanced as to exert a downward torque on moments being so balanced as to exert a downward torque on the standard in the lowered position, control means being provided to convert the moments so as to produce a first stage gradual raising operation and a rapid second stage raising operation.

3,724,334

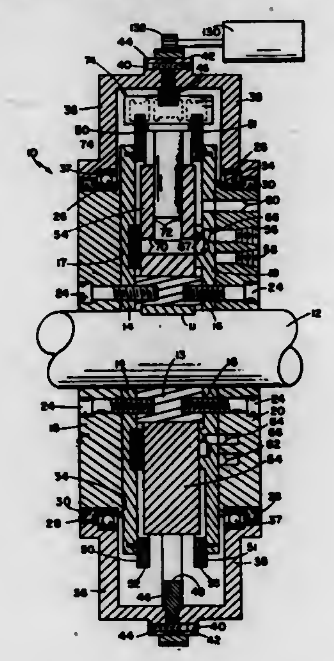
MECHANICAL DRIVING

James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.

Continuation-in-part of Ser. No. 843,545, July 22, 1969, Pat. No. 3,584,542. This application June 11, 1971, Ser. No. 152,253

Int. Cl. F01b *13/06, 15/00*

U.S. Cl. 91—491 26 Claims



A fluid device including, in a first aspect, a fixed member defining a first cam surface having *m* cycles, a movable member defining a second cam surface having *n* cycles, and a movable piston support carrying fewer than the greater of *m* and *n* pistons each of which is mounted for movement relative to the piston support and engages the cam surface; and, including in a second aspect, a hydrostatic piston assembly mounted on a piston support for movement relative thereto in engagement with at least two cam surfaces.

3,724,335

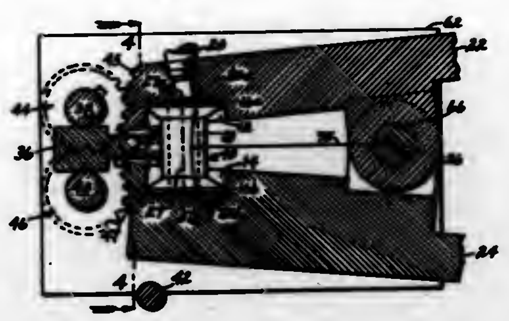
HYDRAULIC ACTUATOR WITH ARCUATE EXPANSIBLE CHAMBERS

Carl W. Kaesemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 15, 1971, Ser. No. 208,133

Int. Cl. F01b *15/04*

U.S. Cl. 92—66 5 Claims



A fluid driving apparatus is contained in one of the ends of two lever arms designed to pivot about a common fulcrum point. The driving apparatus comprises a piston limited to move in a direction perpendicular to its axis, an arcuate expansible chamber in each of the lever arms, wherein each chamber is designed to receive one end of the piston, means for providing fluidic communication between the chambers and means for supplying fluid under pressure to the chambers thereby expanding said chambers and applying a force to the lever arms.

3,724,336

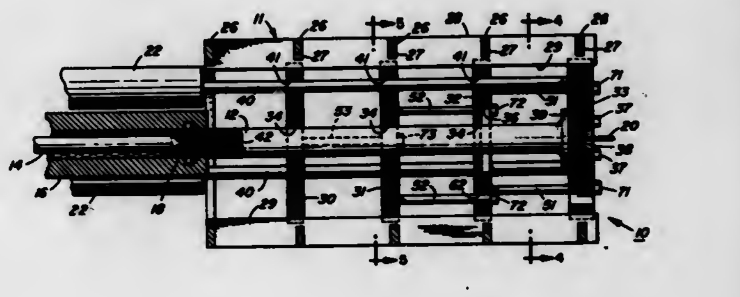
COLLAPSIBLE FEED MECHANISM

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 651,292, July 5, 1967, Pat. No. 3,548,625. This application July 28, 1970, Ser. No. 64,892

Int. Cl. F16j *15/18*

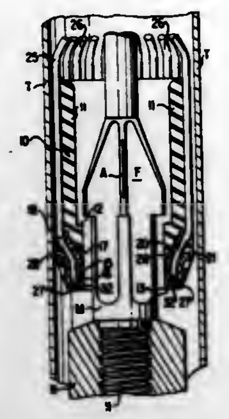
U.S. Cl. 92—166 25 Claims



This disclosure is directed to a collapsible feed mechanism for advancing and retracting a rod or rod-like member, and in particular a "slender column," which may be subjected to large compressive axial loads. The collapsible feed mechanism disclosed herein comprises a plurality of aligning plates and a drive plate all slidably mounted within a support cage. Power cylinders, connected to the drive plate by piston rods, advance and retract the rod, or slender column, which is also connected to the drive plate. The aligning plates and drive plate cooperate to centrally position, advance and retract the rod or slender column, e.g., an extrusion die ram, without bending or buckling the column, even when subjected to large compressive axial loads, e.g., the force of extrusion necessary to advance the die ram upwardly of a billet confined in a high pressure vessel, to extrude the billet into wire.

3,724,337
EXPANDED-RING SWAB CUP CAGE

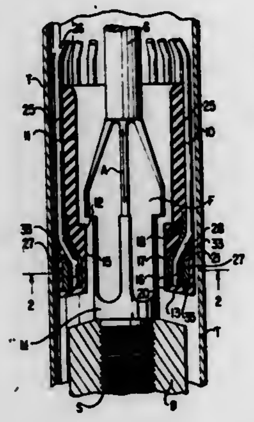
Murl R. Richardson, Fort Worth, Tex., assignor to Oil States Rubber Company, Arlington, Tex.
Filed May 18, 1971, Ser. No. 144,441
Int. Cl. F16j *1/00;* **F04b** *21/04*
U.S. Cl. 92—241 **5 Claims**



A reinforcement cage, and method of making, useful in well swab cups of the type having an annular body of elastomeric material with an axial bore extending therethrough, the cage including a series of axially disposed annularly-spaced wire members held at their lower ends between an outer ring of dimensionally stable hardened metal and an inner ring of softer metal which is initially inserted within the wire members and subsequently radially expanded to confine them tightly between the rings which form the base of the cup. The outer ring has an inwardly extending flange covering the lower ends of the wires and the inner ring, and the inner ring has an upwardly extending portion terminating above a flex zone of the wires and above the level of the outer ring to help prevent slumping of the elastomeric body downwardly and outwardly between the wire members.

3,724,338
SWAB CUP CAGE

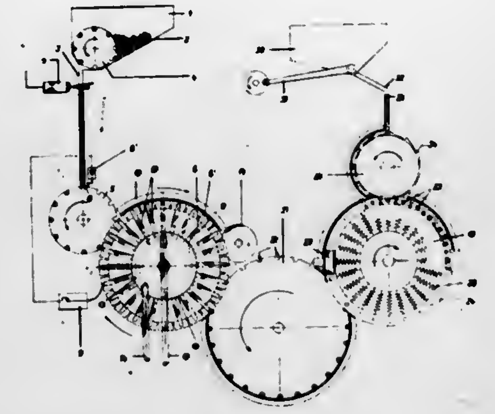
Murl R. Richardson, Fort Worth, Tex., assignor to Oil States Rubber Company, Arlington, Tex.
Filed April 30, 1971, Ser. No. 139,039
Int. Cl. F16j *1/00;* **F04b** *21/04*
U.S. Cl. 92—241 **5 Claims**



An oil well swab cup cage structure in which the lower ends of reinforcement wire members lie against an inner annular base ring, are surrounded by a soft metal intermediate ring displaced inwardly and shaped to lie around and between the lower ends of the wire members ad further surrounded by a hard dimensionally-stable outer ring pressed over the intermediate ring to flow the metal of the latter into tighter engagement about said lower ends to hold them against displacement with respect to said inner base ring. The invention also discloses a method of making a swab cup cage structure including the steps of initially holding the wires in annular parallel orientation, inserting an inner base ring within them, surrounding them in the vicinity of the base ring with a soft-metal intermediate ring, displacing the latter inwardly around and between the wire members, and pressing a hard ring having an interfering internal diameter over the intermediate ring to further contract it on the wire members.

3,724,339
MACHINE FOR INSERTING FILTERS INTO TIP-HOLDERS FOR SMOKERS ARTICLES

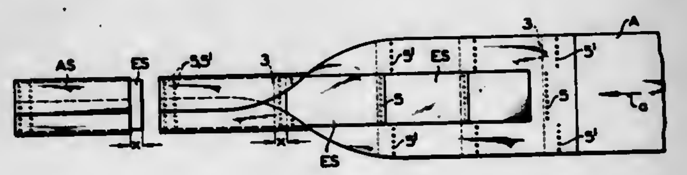
Adrifn Louis Metzinger, Cheseaux-Noreaz, and Charles Raillard, Yverdon, both of Switzerland, assignors to British-American Tobacco Company Limited, London, England
Filed Aug. 31, 1971, Ser. No. 176,574
Claims priority, application Switzerland, Sept. 14, 1970, 13614/70
Int. Cl. A24c *5/52*
U.S. Cl. 93—1 C **9 Claims**



Elongated filter sections are fed from a feed channel to a transfer drum which transfers them to peripheral compartments on a receiving cylinder where they are pushed against a stop by pneumatic means acting in a first zone upstream of means for cutting off filter tips. Transfer means deliver the filter tips to a drum comprising pusher means for inserting the filter tips in tip holders, and the remainders of the sections are pushed against the stop by the pneumatic means acting in a second zone. Means for sensing the absence of filter sections in said compartments actuate electromagnetic means for controlling the supply of filter sections from the feed channel to the transfer drum.

3,724,340
PROCESS FOR MANUFACTURING BAGS COMPRISING A LINER BAG WHICH PROTRUDES FROM THE OPENING

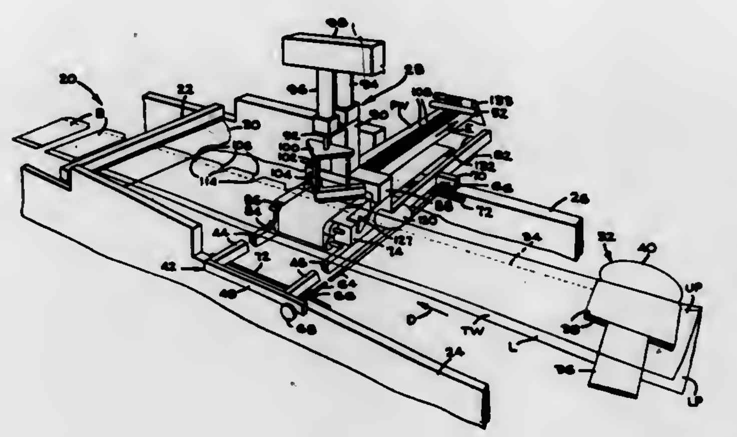
Friedrich Franz Brockmuller, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Westphalia, Germany
Continuation-in-part of Ser. No. 790,579, Jan. 13, 1969, Pat. No. 3,576,154. This application Nov. 17, 1970, Ser. No. 90,333
Claims priority, application Germany, Jan. 13, 1968, P 19 11 710.5
Int. Cl. B31b *49/04*
U.S. Cl. 93—35 R **11 Claims**



A method of manufacturing bags consisting of at least a single ply outside bag and a liner bag which extends at the filling end out of the outside bag. A web of material for the outside bag is divided by transverse perforations into specific outside bag lengths still attached to each other and pieces corresponding to the length of the inner bag are cutoff from a web of liner bag material. The individual liner bag pieces are placed in a sequence on the web of the outside bag material and the web of the outside bag material is wrapped around pieces of the inner bag in a tube shape. The transverse perforations are then torn into lengths of tube and the lengths of tube are fed into a bottom closing machine.

3,724,341
METHOD AND APPARATUS FOR MAKING SQUARE BOTTOM BAGS FROM THERMOPLASTIC WEB MATERIAL

Corey T. Hook, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.
Division of Ser. No. 779,453, Nov. 27, 1968, Pat. No. 3,575,090. This application March 10, 1971, Ser. No. 123,102
Int. Cl. B31b *1/88*
U.S. Cl. 93—35 R **2 Claims**

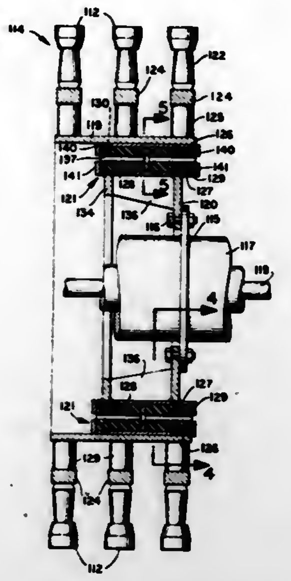


A folded web of thermoplastic material, such as polyethylene, is fed to a bag making machine set up to produce side weld bags. The folded edge of the web encounters a gusseting attachment which forms a reverse fold at this edge. Downstream of the gusseting attachment an apparatus is provided for removing a generally triangular web portion from the gusseted margin of the web by a heated cutting and sealing bar having a configuration corresponding to the removed web portion. During removal of a web portion, hereinafter sometimes referred to as a slug or a chip, areas coming in contact with the cutting and sealing bar are rendered molten. Immediately after removal, the chip is brought in firm contact with a paper web which is located immediately below the thermoplastic web and the molten edges of the chip become attached to the paper web. During each cycle of the bag machine the paper web is indexed to present an additional area for reception of a chip. The chips are attached to the paper web in shingled or overlapping relation. The web portion carrying the waste slugs or chips is fed to any suitable waste receptacle that may be located adjacent the bag machine.

3,724,342
COMPACTION WHEELS FOR EARTH TAMPERS

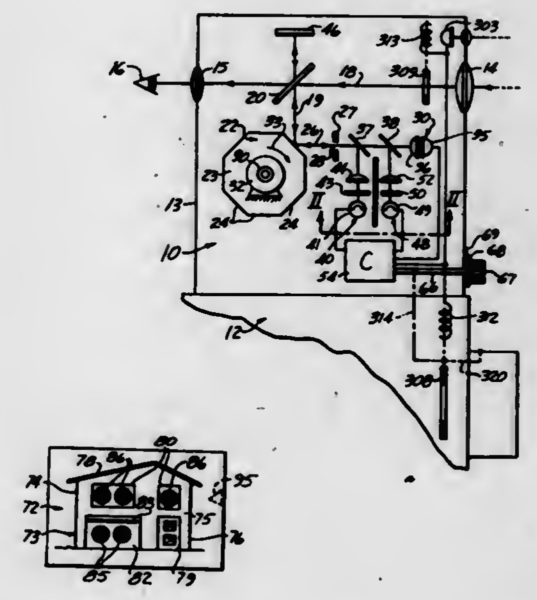
Fred Joseph Caron, Citrus Heights; James Oliver Caron, Sacramento, and George Carrel Gray, Fair Oaks, all of Calif., assignors to Caron Compactor Co., West Sacramento, Calif.
Continuation-in-part of Ser. No. 63,122, Aug. 12, 1970. This application March 10, 1971, Ser. No. 122,746
Int. Cl. E01c *19/26*
U.S. Cl. 94—50 PR **4 Claims**

Compaction wheels for earth tampers. In one embodiment the compaction wheels are of spaced, open ring, spoked construction with sheepsfoot elements projecting outwardly from each ring. The rings have an axial width merging with the width of the spokes and the wheel is constructed and arranged to afford substantially unobstructed full penetration for compaction, with means being provided to cushion the wheel axle from shock loads. In another embodiment the compaction wheels are provided with axle cushioning means which include a plurality of circumferentially arranged, axially disposed shock absorber units each having facing socket members defining a cavity for seating a pair of elastomer cushioning cylinders. The cylinders are formed with axially extending central openings to accommodate expansion of the elastomer material under shock loading.



3,724,343
ANALYTICAL PHOTOGRAPHIC EXPOSURE METER

Joseph H. Lancor, Jr., deceased, late of Arcadia, Calif. (by Ellen B. Lancor, administratrix), and Dexter P. Cooper, Jr., Pasadena, Calif., assignors to Bell & Howell Company, Chicago, Ill., by said Ellen B. Lancor, administratrix
Filed Aug. 23, 1971, Ser. No. 173,761
Int. Cl. G01j *1/42*
U.S. Cl. 95—10 R **18 Claims**



A photographic exposure meter provides a visually observable optical image of a scene and analyses the scene for predetermined light intensities. The exposure meter then provides, within the usually observable image, visually observable indications of presence and location of predetermined light intensities in the scene. An optical scanning device may be employed for aiding in the determination of predetermined light intensities and in the provision of the visually observable indications.

3,724,344
CAMERA FLASHGUN SHOE

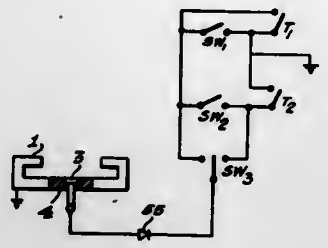
Tetsuji Shono, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 2, 1971, Ser. No. 167,989

Claims priority, application Japan, Aug. 3, 1970, 45/76685; Aug. 3, 1970, 45/76686

Int. Cl. G03b *9/70, 15/02*

U.S. Cl. 95—11 L **3 Claims**



A "hot shoe" accessory for a camera provides for the elimination of electrical shocks to the user. The accessory includes a synchronizing contact supported adjacent to an aperture in the shoe. A two-terminal switching device is connected in series circuit relationship between the synchronizing contact and a terminal of the conventional female PC connectors provided as a standard feature on the camera body. The two-terminal switching device is a unilaterally conductive circuit element which blocks current transmission from the PC connector to the shoe and thereby prevents electrical shocks to the user but which conducts current in the opposite direction during flash operation.

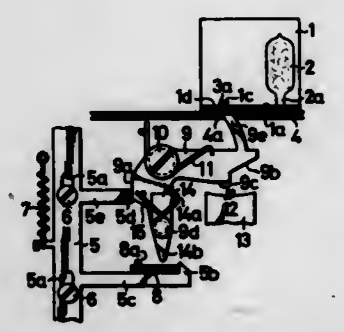
3,724,345
SYNCHRONIZER IN CAMERA

Keiji Yamazaki, Izumi, Osaka Prefecture, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 8, 1971, Ser. No. 160,637

Int. Cl. G03b *15/04*

U.S. Cl. 95—11.5 R **4 Claims**



A synchronizer includes a synchronizing member whose driven portion is positioned in the path of movement of a sector actuating member in operative relation to a shutter release member only when an indicator for flash photographing operation is located at the position indicating the need for flash photography which indicator shifts in accordance with the brightness of the subject. The synchronizing member is further formed with a trigger portion for actuating a striking member for firing a flashlamp. Only when the indicator indicates the need for flash photography, the synchronizing member is moved in operative relation with the sector actuating member to fire the flashlamp.

3,724,346
REFLECTOR EXTENSION FOR LAMP UNIT

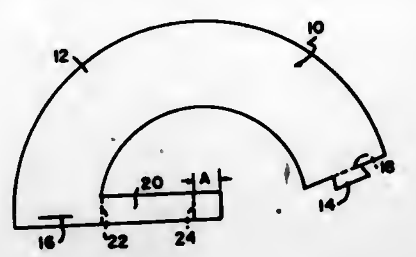
Donald E. Armstrong, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Sept. 22, 1971, Ser. No. 182,625

Int. Cl. G03b *15/02*; F21v *7/18*

U.S. Cl. 95—11 L **2 Claims**

A disposable reflector extension for a flashcube comprising a sheet of reflective material having an arcuate portion adapted for forming a funnel-shaped reflector and a strip portion adapted for shaping a mounting hook to hold the funnel-shaped reflector onto the face of a flashcube.



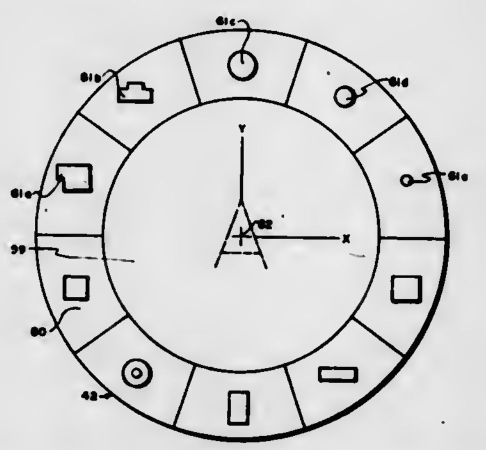
3,724,347
APPARATUS FOR SELECTIVELY EXPOSING A PHOTOSENSITIVE SURFACE

Heinz Joseph Gerber, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed April 23, 1971, Ser. No. 136,909

Int. Cl. G03b *29/00*

U.S. Cl. 95—12 **11 Claims**



A method and apparatus for selectively exposing the photosensitive surface of an article employs a cathode ray tube to generate radiant images which are projected onto the photosensitive surface. The cathode ray tube is connected to a computer which controls the deflection of its beam to generate the images, and the tube and the associated optical system are mounted on a carriage movable relative to the photosensitive surface to enable exposure of different regions of the photosensitive surface and the exposure of lines on the photosensitive surface by moving a projected spot of light. The radiant images are produced both by drawing images on the display screen with the beam and by causing the beam to substantially continuously energize different selected areas of the screen to illuminate predefined images, the shapes of which are determined by masks or similar means, each one of such selected areas having one of the predefined images associated with it.

3,724,348
MEANS FOR PREVENTING FILM MOVEMENT IN A CAMERA

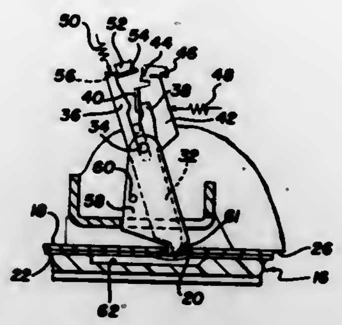
David E. Monks, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed April 12, 1972, Ser. No. 243,361

Int. Cl. G03b *19/04, 1/42*

U.S. Cl. 95—31 R **6 Claims**

A camera includes a transport mechanism for advancing perforated film along an exposure plane. A film sensing pawl is movable between a retracted position on one side of and spaced from the exposure plane and a position transversing the exposure plane through a film perforation to disable the transport mechanism when the perforation reaches a predetermined position. The sensing pawl may be held in its retracted position when the film is not being advanced. A second pawl which is fixed in the housing on one side of and transversing the exposure plane enters a film perforation after the film has been advanced to prevent film movement. The second pawl may be aligned with the film sensing pawl in a direction transverse to the direction of film advance so that both the second pawl and the film sensing pawl enter the same perforation when the sensing pawl is in its extended position.



3,724,349
VIEWFINDER

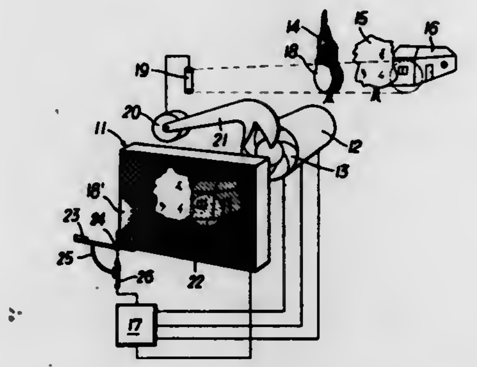
Peter Revy von Belvard, and Robert Scheiber, both of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hausen, both of Vienna, Austria

Filed April 14, 1972, Ser. No. 244,178

Claims priority, application Austria, April 29, 1971, 3683

Int. Cl. G03b *3/08*; H01j *31/50*

U.S. Cl. 95—44 R **21 Claims**



In an optical system an objective defining an optical axis and at least one image plane, the objective forming a real image of an object in the image plane. A device is provided for varying the contrasts of said image. The means is arranged on the optical axis and comprises a plurality of photoelectric receivers arranged in at least one plane within the range of the image plane. The photoelectric receivers have a nonlinear characteristic and have an output, the value of which varies in dependence on the sharpness of the real image in the plane of the photoelectric receivers, the value assuming an extreme with coincidence of the image plane and the plane of the photoelectric receivers. A layer of a plurality of electrooptic transducers is provided, each of the transducers being connectable with a corresponding receiver. Each of the transducers is associated to the other transducers in the same configuration as the corresponding receiver with respect to the other receivers to form an image corresponding to the real image, but having contrasts varied in dependence on the depth of field of the objective.

3,724,350
ELECTROMAGNETIC DRIVE FOR PHOTOGRAPHIC SHUTTERS

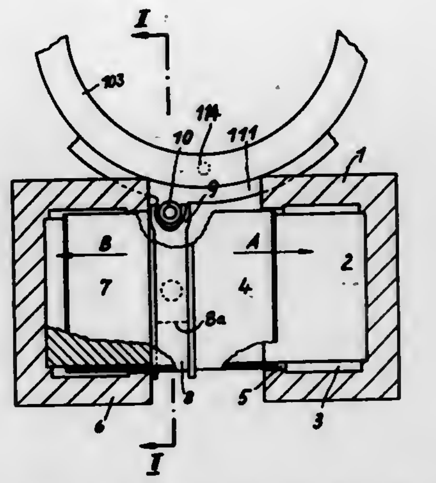
Bodo Mielke, 3300 Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Division of Ser. No. 88,849, Nov. 12, 1970. This application June 22, 1971, Ser. No. 155,415

Claims priority, application Germany, June 26, 1970, P 20 31 565.5; Apr. 22, 1971, P 21 19 609.8

Int. Cl. G03b *9/08*

U.S. Cl. 95—53 E **14 Claims**



An electromagnetic drive for the blades of a photographic shutter, using at least one pot-shaped magnet in fixed position. A cylindrical coil, when properly energized, moves into or out of the pot-shaped magnet. The coil is connected directly to a movable shutter blade in one embodiment, or to a blade operating member (such as a rotatable ring) in another embodiment. To obtain faster exposures, the moving parts engage a resilient stop when the shutter reaches fully open position, and this resilient stop absorbs some of the kinetic energy of the opening movement and gives it back to the moving parts in a closing direction.

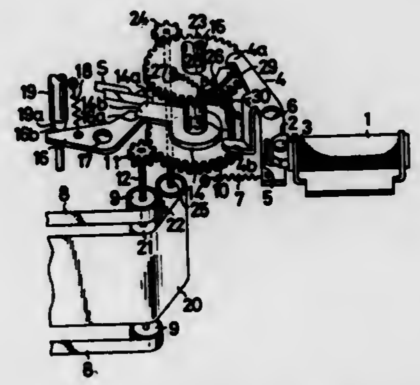
3,724,351
DEVICE FOR MOUNTING ELECTROMAGNETICALLY ATTRACTABLE PIECE FOR LATCHING ELECTRONIC SHUTTER IN CAMERA

Toshiaki Matsumoto, Amagasaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sept. 23, 1971, Ser. No. 182,972

Int. Cl. G03b *9/08*; H01f *7/14*

U.S. Cl. 95—53 E **8 Claims**



An electromagnetically attractable piece having a face to be attracted to an electromagnet is rotatably mounted on a pivot on a shutter latch member, and a restricting member for limiting the rotation of the attraction member is disposed in the rear of the attractable piece, whereby the change in position of the attractable piece with respect to the electromagnet when it is released therefrom is restricted to eliminate detrimental effects on the shutter speed.

3,724,352
SAFETY DEVICE FOR A CASSETTE AND ADAPTER ASSEMBLY FOR CAMERAS

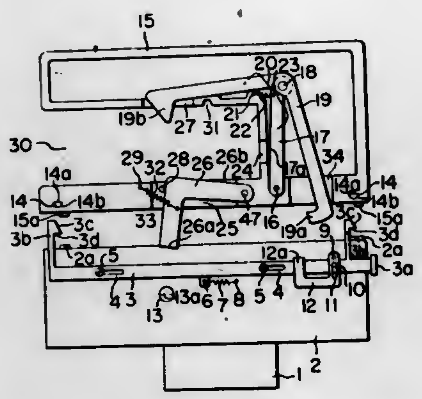
Jun Shimomura, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed June 7, 1971, Ser. No. 150,631

Claims priority, application Japan, June 12, 1970, 45/57522

Int. Cl. G03b *17/26*

U.S. Cl. 95—71 **8 Claims**



A safety device in a cassette and adapter assembly for cameras which prevents the removal of the cassette from the adapter as well as the removal of the adapter from the camera body after a draw cover protecting the photosensitive material in the cassette is withdrawn from the cassette. The safety device prevents the cassette from being mounted in the adapter unless the draw cover of the cassette is in position. Additionally, the shutter button of the camera cannot be actuated when the cassette is installed unless the draw cover has been removed. The adapter can be mounted on the camera body when the cassette is not loaded in the adapter.

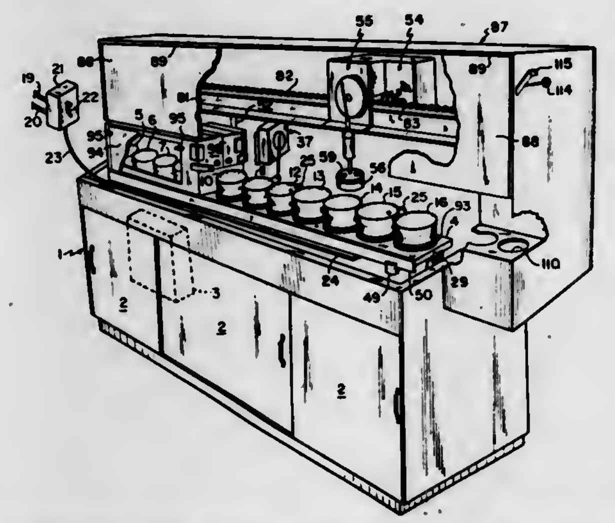
3,724,353
AUTOMATIC LINE TRAVERSE AND DIP FILM PROCESSOR

Harry C. Holbert, 83 Mount Lebanon Drive, Wheeling, W. Va.

Filed Oct. 30, 1970, Ser. No. 85,407

Int. Cl. G03d *3/00, 3/04*

U.S. Cl. 95—89 D **14 Claims**



The automatic film processor will successively dip the film in processing solutions within a dark box, remove the film from the dark box, successively dip the film in further processing solutions, and finally dry the developed film. The processing solutions are held in individual containers carried in and projecting through a pivotal rack, which rack is selectively vibrated at relatively high frequency and rocked at a relatively low frequency, according to a program. The lower ends of the solution containers project into a water bath maintained at a desired temperature, with the water bath being fed by a piping system passing incoming water into the wash containers with overflow into a dump trough separate from the water bath.

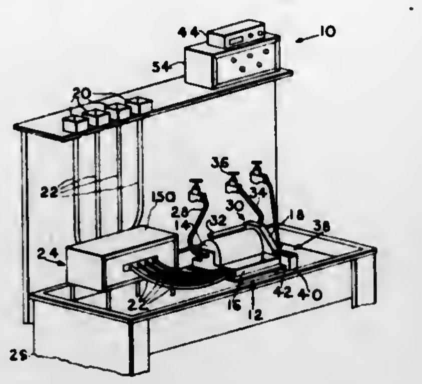
3,724,354
PHOTOGRAPHIC PROCESSING APPARATUS

James McC. Smith, 6 B St., Adams, Mass.

Continuation of Ser. No. 883,797, Dec. 10, 1969, abandoned. This application Nov. 18, 1971, Ser. No. 200,256

Int. Cl. G03d *3/06*

U.S. Cl. 95—93 **10 Claims**



The automatic photo processing apparatus employs a tape control unit in combination with a chemical dispenser, a wash unit and an applicator unit for application of chemicals and wash water to a photographic print in a programmed sequence. The chemical dispenser is adapted to sequentially dispense a plurality of chemicals, and the tape control unit is configured to produce signals on two channels to control the other three units in accordance with a predetermined process.

3,724,355
APPARATUS FOR PROCESSING EXPOSED PHOTOGRAPHIC FILM OR THE LIKE

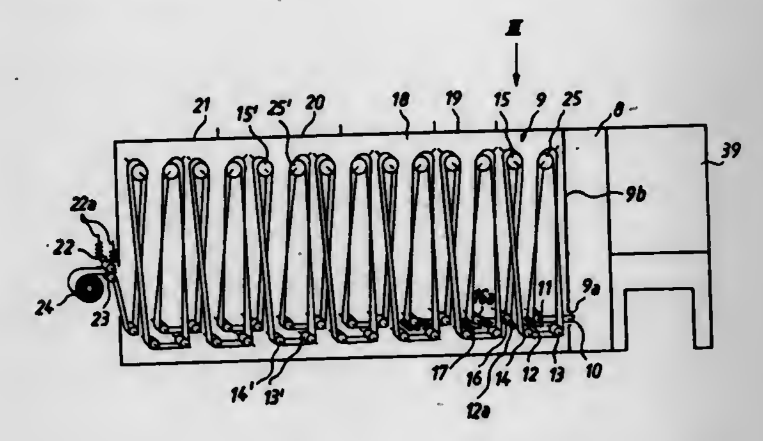
Josef Busch, Eichendorffstr. 11, Bensberg; Herbert Bruck, Havelstr. 3, Leverkusen; Karl-Wilhelm Schranz, Bruchhauserstr. 16b, Opladen; Erwin Schon, Donhoffstr. 92, Leverkusen, and Hans-Dieter Frick, Bozener Str. 7, Munich, all of Germany

Filed June 11, 1971, Ser. No. 152,269

Claims priority, application Germany, June 12, 1970, P 20 29 044.2

Int. Cl. G03d *3/12*

U.S. Cl. 95—94 R **18 Claims**



A system of guide rollers for transporting exposed photographic film past one or more stations where the exposed surface of the film is coated with a viscous adhesive has a set of upper guide rollers and a set of lower guide rollers. The film is caused to travel along an elongated winding path which has vertical sections each extending between an upper guide roller and a lower guide roller, and at least one guide roller of each pair of successive guide rollers has a convex peripheral surface. The central line of each vertical section of the winding path coincides with tangents to the central portions of peripheral surfaces on the respective upper and lower guide rollers. The planes which are normal to the axes of pairs of successive guide rollers make an angle which exceeds zero degrees but is less than 91°.

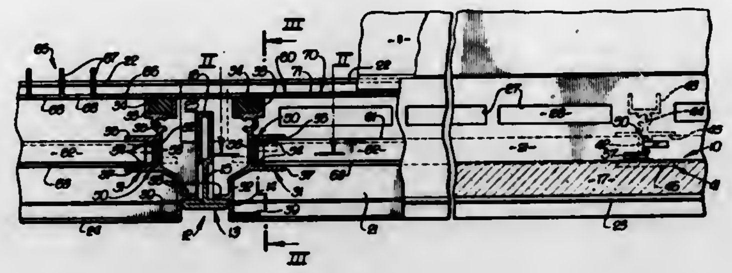
3,724,356
FIRE RESISTANT AIR BAR FOR USE IN A SUSPENDED CEILING STRUCTURE

Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Covina, Calif.

Filed Nov. 15, 1971, Ser. No. 198,692

Int. Cl. F24f *13/06*

U.S. Cl. 98—40 D **9 Claims**



The fire resistant air bar has high temperature resistant side rails for supporting the fire resistant ceiling tiles of a suspended ceiling, and for supporting an air plenum chamber; has high temperature resistant spacer bars located between the side rails with end tabs thereof extending through slots in the side rails to fasten thereto; has lower temperature melting spacers mounted on the spacer bars between the side rails; and has nested weir channel members located between the spacers, whereby when the spacers weaken or melt due to high temperature of a fire, the spacer bars maintain the spacing of the side rails to continue supporting the ceiling tiles for blocking the passage of the fire through the suspended ceiling.

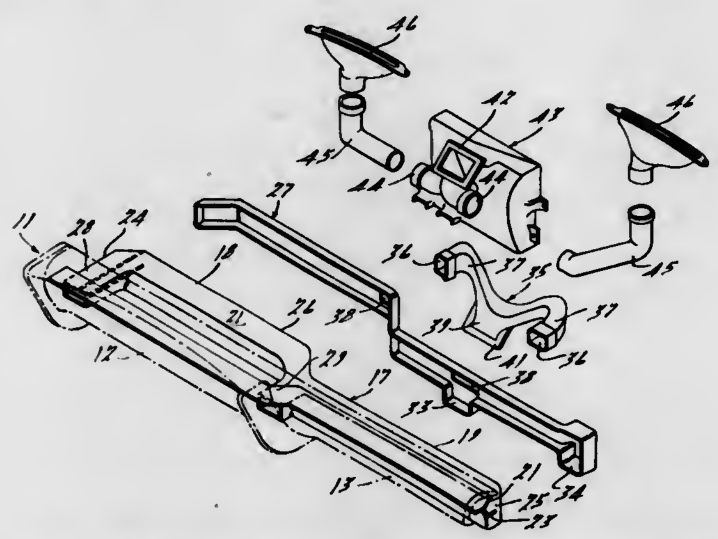
3,724,357
INTEGRATED AIR DISTRIBUTION SYSTEM

Keshav S. Kavthekar, Melvindale, and Jess J. Somers, Redford Township, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 8, 1971, Ser. No. 205,825

Int. Cl. B60i

U.S. Cl. 98—2.11 **12 Claims**



An air distribution system integrated into a molded plastic instrument panel for a vehicle body, the instrument panel being capped by a crash pad. The air distribution system comprises a duct integrally molded into the instrument panel and sharing walls in common therewith. The duct is encompassed across its frontal and upper surfaces by the crash pad with an insulating air gap therebetween. The duct is substantially open on its rear side and the open surface is fitted with a molded plastic cover plate to form the complete duct. Spaced openings in the face of the instrument panel provide for air distribution from the duct to the vehicle body interior. A "V"-shaped piece having indirect line of sight from its inlet to its outlets connects the integral duct to the plenum chamber of a vehicle heating and cooling unit.

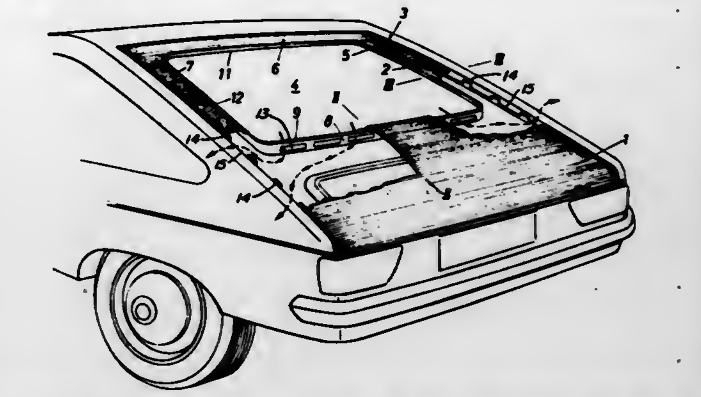
3,724,358
AIRING DEVICE FOR MOTOR VEHICLES

Willi Lang, Ingolstadt, and Manfred Sprenger, Lenting, both of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Ingolstadt, Germany

Filed May 19, 1970, Ser. No. 38,712

Int. Cl. B60h *1/24*

U.S. Cl. 98—2.18 **7 Claims**



An airing device is provided for motor vehicles having a body suitable for air flow and a flap-like rear door. The invention is particularly characterized in that the inner part of this door is provided with slits preferably upon all four frame walls which limit the door surface and which form the frame beams. Frame beams extending parallel to the direction of the drive have walls with slits which open into a space connected with the door joint between the door frame and the door post.

3,724,359
BEVERAGE MAKER

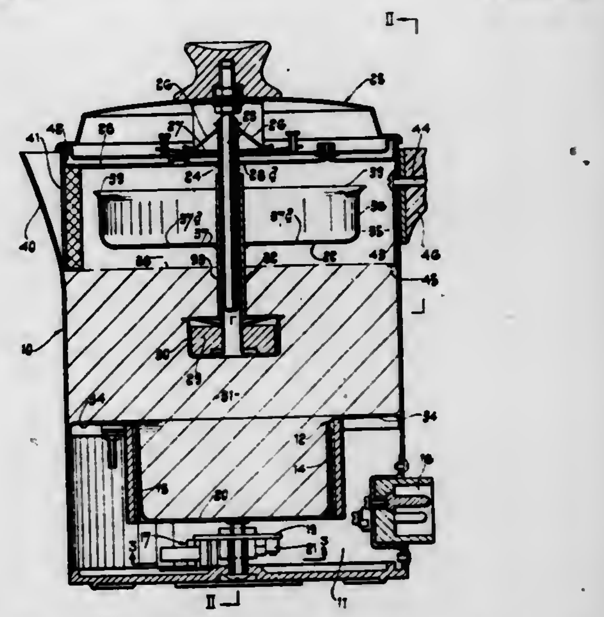
Leonard Kenneth Morgan Masters, Newcastle-under-Lyme, and Thomas Dalziel, Birmingham, both of England, assignors to Russell Hobbs Limited, Alperton, England

Filed May 3, 1971, Ser. No. 139,380

Claims priority, application Great Britain, May 6, 1970, 21,752/70

Int. Cl. A47j *31/00*

U.S. Cl. 99—281 **6 Claims**



In a beverage-maker including a vessel in which a liquid is heated, and a receptacle for a material to be infused in the liquid, the receptacle is mounted for movement in the vessel between an upper position such that contact between the contents of the receptacle and the liquid is prevented and a lower position in which such contact can take place. Means is provided for holding the receptacle in its upper position until the liquid reaches a predetermined temperature and the receptacle is then released to float on the surface of the liquid. Apertures in the bottom of the receptacle then admit liquid at a controlled rate such as to avoid the production of foam to an unacceptable degree by interaction between the liquid and the material in the receptacle.

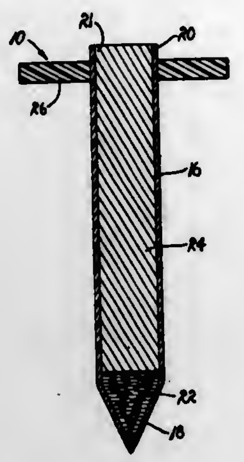
3,724,360
THERMAL INDICATOR

George G. Kliewer; Steven L. Kliewer, and Michael G. Kliewer, all of Fresno, Calif., assignors to Dun-Rite Manufacturing Corporation, Fresno, Calif.

Filed Feb. 25, 1971, Ser. No. 118,910

Int. Cl. A47j *37/00*; G01k *13/00*

U.S. Cl. 99—342 **10 Claims**



A thermal indicator particularly suited for use in indicating temperatures attained by a heated body such as an article of food subjected to cooking temperatures elevated above room temperature. The invention is characterized by a tubular body including a closed end containing a fluid having a predetermined boiling point and an opened end filled with a sealant having a melting point well above room temperature, but substantially below the boiling point of the fluid so that as the boiling point is attained, the fluid is volatilized and the sealant is expelled from the tube and deposited externally of the opened end.

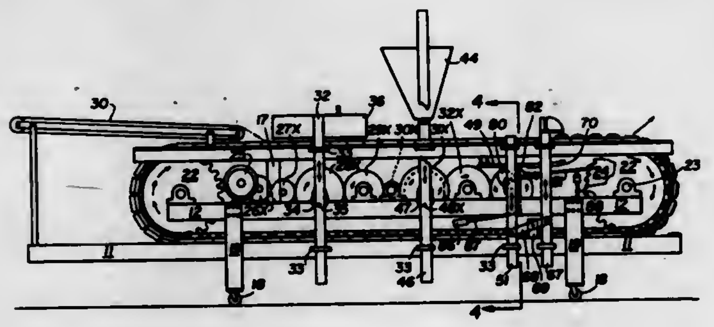
3,724,361
PASTRY MAKING MACHINE

Leonard Schafer, 2770 Briggs Avenue, New York, N.Y.

Filed June 10, 1971, Ser. No. 151,835

Int. Cl. A21c *3/06*

U.S. Cl. 99—450.6 **6 Claims**



This machine relates to a machine for forming edible folded danish pastry to replace the manual preparation thereof. The machine uses a continuous sheet of pastry and first molds a transverse row having a plurality of edible filling receiving pockets; next the pockets are cut into blanks; then edible filling is deposited onto the blanks; then the corners of the blanks are consecutively folded over one another according to predetermined configuration and lastly the folded pastry is lifted up for removal from the machine. The plurality of operating stations are each cam operated from a chain of precalculated gear diameters to effect a timed vertical up and down reciprocity for intermittent operation. The machine comprises a chain conveyor having a plurality of substantially identical transverse slats. Each slat is adapted to receive a removable multi-celled cage. Moreover, each slat is provided with a plurality of different diameter apertures. Some of the apertures are adapted to receive machine operated push rods to effect reciprocal engagement with spring-loaded folder elements disposed above the slat. Other slat apertures are oriented to receive frictionally the prongs of the removable folder units and also the prongs of the separately removable lifter units. Therefore, the pastry contacting units and cage are removable from the machine of this invention, so that they may be sterilized.

3,724,362
ARTICLE FEEDING AND TREATING APPARATUS

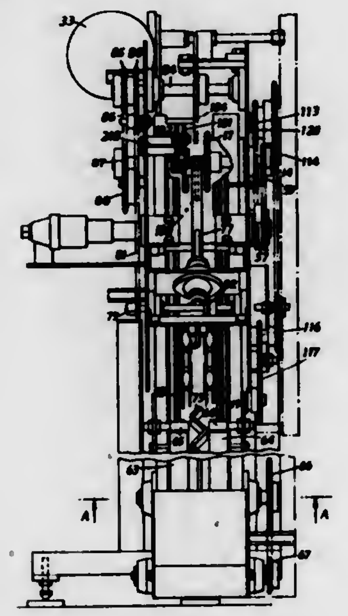
Leslie Arthur Parsons, Burry Port, South Wales, England, assignor to Les. Parsons & Sons (Engineers) Limited, Burry Port, South Wales, Great Britain

Filed Oct. 26, 1970, Ser. No. 83,812

Claims priority, application Great Britain, Nov. 5, 1969, 54,150/69; March 6, 1970, 10,772/70

Int. Cl. A23n *7/00*

U.S. Cl. 99—516 **11 Claims**



An onion skinning machine comprising a wheel or like having onion air-blasting chambers, a hopper to contain onions, endless conveyor means to convey onions from the hopper to the air blasting wheel, and means to remove excess onions from the conveyor.

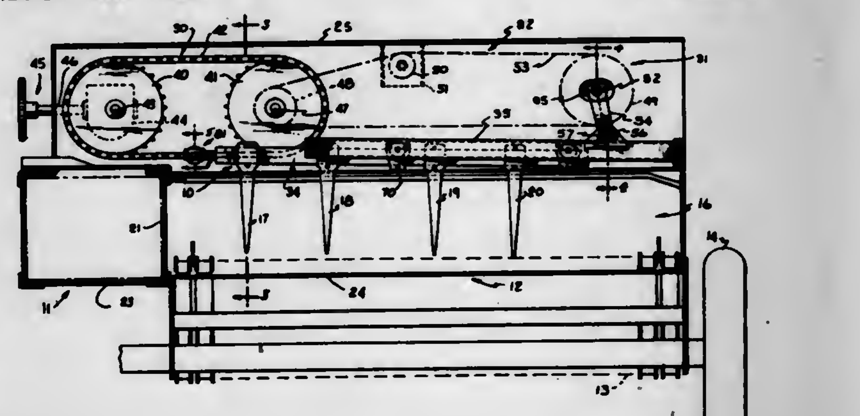
3,724,363
FEED MECHANISM FOR A CROP BALER

Edwin B. Nolt, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed June 1, 1971, Ser. No. 148,374

Int. Cl. B30b *1/00*

U.S. Cl. 100—189 **15 Claims**



A feeding mechanism that sweeps crops along a feed chamber into a bale case of the baler is of the double bar type with a straight tubular feed finger supporting member and a guide member in reciprocal supporting relation thereto. Rollers on the sides of the supporting member are in constant longitudinal spaced relation and ride in transversely spaced U-shaped tracks on opposite sides of the guide member. The supporting member is connected to an elliptical chain drive located in a drive housing above the feed chamber at the bale case end. The guide member is connected to a rotating crank at the opposite end of the drive housing. The drives actuate the members to move the feed fingers along the feed chamber in a feed stroke for sweeping crops into the bale case and return the feed fingers through the drive housing in a generally parallel relation to the feed chamber.

3,724,364
PRESS FRAMEWORK

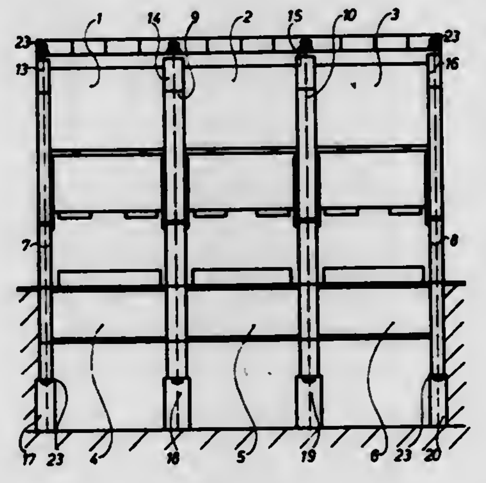
Werner Munch, and Wolfgang Michael, both of Goppingen, Germany, assignors to L. Schuler GmbH, Goppingen, Germany

Filed Nov. 17, 1970, Ser. No. 90,400

Claims priority, application Germany, Nov. 19, 1969, P 19 58 051.9

Int. Cl. B03b *1/00*

U.S. Cl. 100—214 **22 Claims**



A press framework consisting of a top section, a table section and frames receiving the ends of these sections. The frames are formed of hollow columns, bridgepieces contacting the ends of the columns and stays passing through the hollow columns and bracing the bridgepieces with respect to the hollow columns.

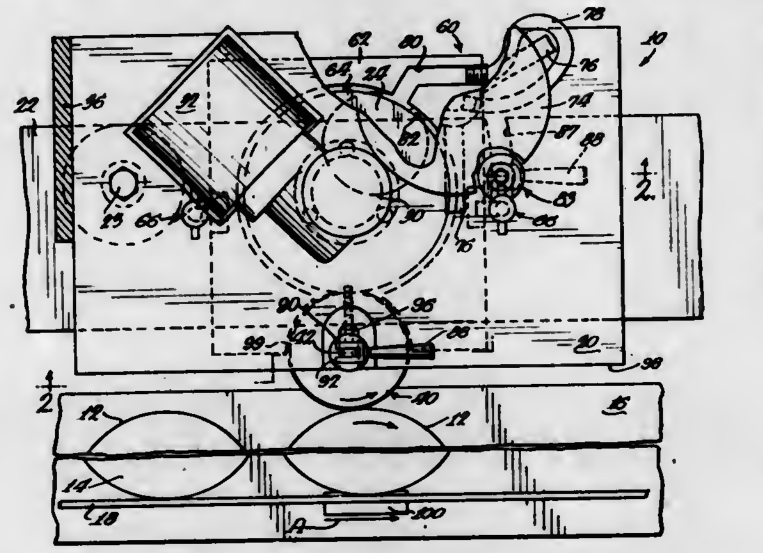
3,724,365
CONTAINER MARKER AND INKING APPARATUS THEREFOR

Sheldon L. Wilde, Crawfordsville, Ind., assignor to H-C Industries, Incorporated, Crawfordville, Ind.

Filed May 5, 1971, Ser. No. 140,388

Int. Cl. B41f *17/20*

U.S. Cl. 101—40 **8 Claims**



Marking apparatus for printing indicia on the peripheral surface of an advancing procession of containers including a printing element consisting of a shaft having first and second axially spaced portions supported thereon. The first portion supports a friction member while the second portion supports a plurality of circumferentially spaced marking characters. The marking apparatus also includes a driven wheel that has a first friction portion arranged to frictionally drive the printing element or wheel in response to rotation of the drive wheel. The drive wheel further includes a second portion that has ink delivered thereto which is transferred to the marking characters by direct engagement therewith. The printing wheel is positioned adjacent the path of the moving containers so as to simultaneously have the friction member and the printing characters in engagement with the periphery of the container to produce a rotation of the container and simultaneous marking of the peripheral surface.

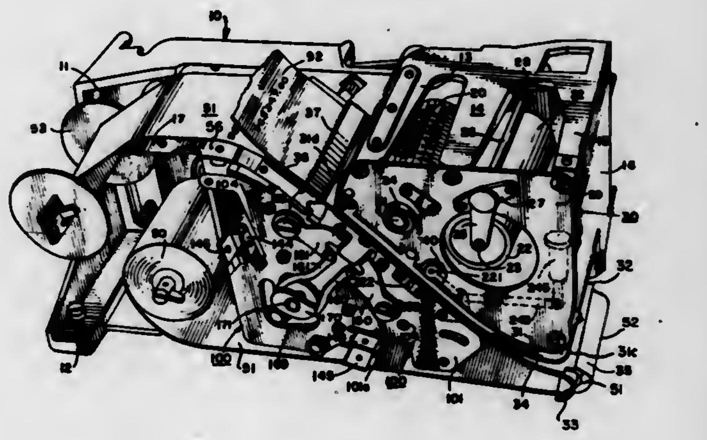
3,724,366
HIGH-SPEED PARALLEL PRINTER

Nanjundiah Narasimha Murthy, West Redding; Joseph Steven Macura, Trumbull; William Gergely, Jr., Fairfield, and Allen Charles Berg, Wilton, all of Conn., assignors to Pitney-Bowes-Alpex, Inc., Danbury, Conn.

Filed Dec. 13, 1971, Ser. No. 207,114

Int. Cl. B41j *41/46*

U.S. Cl. 101—93 C **33 Claims**



An on-the-fly printer having a continuously rotating drum including multiple side-by-side columns of characters, and having multiple spring-energized acceleration and print impact mechanisms associated with the respective character columns, the acceleration and impact mechanism being mechanically restored to, and latched in, energy-stored positions from which they can be selectively released each to drive a separate hammer against paper and/or paper forms inserted between the mechanism and the character drum, the release being accomplished by electronic control circuitry operative to determine when the angular position of the drum is correct and thereupon to print characters located in that row of the drum in one or more of the digit positions corresponding with the various columns of print, the electronic control circuitry subsequently enabling a restore mechanism to retract and latch all of the acceleration and impact mechanisms as soon as a row or line of digit positions has been printed, the printer automatically advancing paper tapes as well as manually inserted forms to the next print position during each operation of the restore mechanism.

3,724,367
PRINT DRUM CLAMP

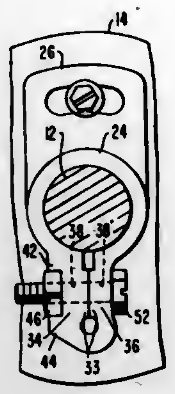
Arthur M. Pasinski, Howell, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 1, 1970, Ser. No. 77,288

Int. Cl. B41j *1/60*; B21b *13/02*

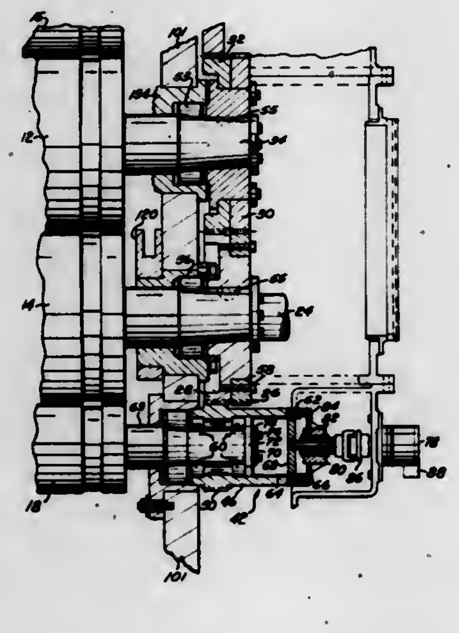
U.S. Cl. 101—110 **7 Claims**

A clamp of one-piece construction for mounting a print drum to a rotatable shaft of a printer is provided, such clamp permitting both angular and lateral repositioning and adjustment of the print drum on the shaft without dismantling or removing any of the parts or mechanisms of the printer.



3,724,368
HARMONIC DRIVE REGISTER ADJUSTMENT DEVICE FOR A PRINTING PRESS

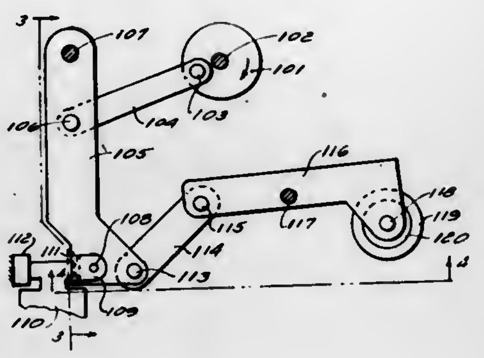
Ernest H. Treff, Groton, Conn., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed June 17, 1970, Ser. No. 47,048
Int. Cl. B41f *13/12*
U.S. Cl. 101—248 **2 Claims**



A printing press includes a first printing unit having a first blanket cylinder for printing one side of sheet material and a first plate cylinder associated with the first blanket cylinder for transferring an image to the first blanket cylinder. The printing press also includes a second blanket cylinder for printing the other side of the sheet material and a second plate cylinder associated with it for transferring an image thereto. The first and second blanket cylinders are positioned such that the images received by the respective plate cylinders are applied to the sheet material simultaneously. A register adjusting device circumferentially adjusts the relative positions of plate cylinders so that registry is maintained between the images applied to the sheet material. The adjusting means includes a harmonic drive unit drivingly connected to one of the plate cylinders so that the rotational position of that plate cylinder with respect to the other plate cylinder may be varied thereby.

3,724,369
PRINTING MECHANISM FOR PRINTING ON FLAT OR CONTOURED SURFACES

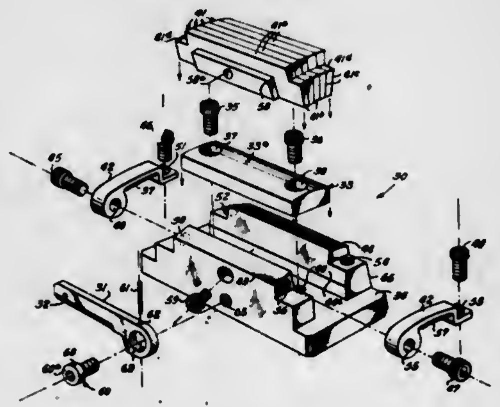
Herbert C. Gery, Villas, and Marvin S. Samson, Lindenwold, both of N.J., assignors to Medical Electroscience and Pharmaceuticals, Inc., Cherry Hill, N.J.
Continuation-in-part of Ser. No. 861,712, Sept. 29, 1969, Pat. No. 3,635,154. This application Sept. 27, 1971, Ser. No. 183,944
Int. Cl. B41f *17/14*
U.S. Cl. 101—327 **6 Claims**



A printing mechanism wherein a pivoted arm carries a printing head facing tangentially of the arm for swinging movement into and out of printing engagement with articles to be printed, a pivoted lever carries inking means swingable with the lever into and out of inking engagement with the printing head when the latter is retracted from its printing position, operating means interconnect the lever and arm to effect simultaneous swinging movement thereof, and drive means power the arm and lever movement.

3,724,370
IMPRINTING CYLINDER WITH REMOVABLE IMPRINTING BLOCK

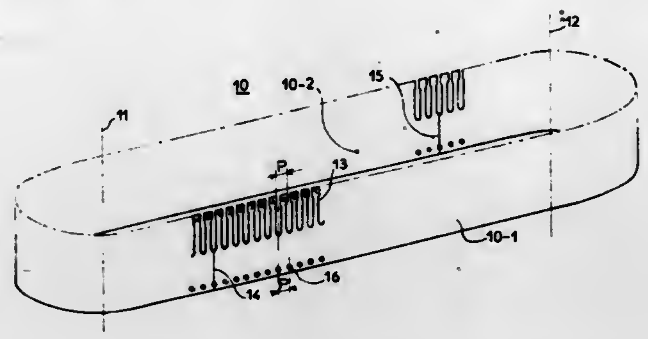
Ralph E. Martin, 7721 Bogart, Fort Worth, Tex.
Filed Dec. 28, 1971, Ser. No. 213,067
Int. Cl. B41f *27/06*
U.S. Cl. 101—377 **13 Claims**



An imprinting cylinder having a cut out portion and an imprinting block adapted to be removably insertable in the cut out portion of the imprinting cylinder. A locking lever pivotable on a screw is provided to pressure lock the imprinting block in the imprinting cylinder. Removable clips are fixed to the imprinting block to retain tapered hot metal cast type slugs. The taper of the hot metal cast type slugs is predetermined to effect a curvature of the imprinting surface paralleling that of the imprinting cylinder.

3,724,371
PROCESS FOR MANUFACTURING A TYPE-CARRYING PRINTING BELT

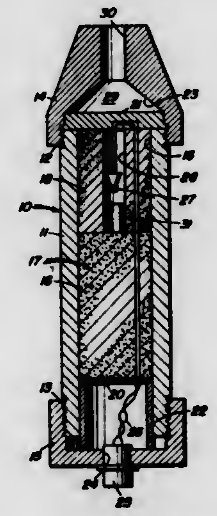
Michel Picard, Belfort, France, assignor to Societe Industrielle Honeywell Bull (Societe Anonyme), Paris, France
Filed Sept. 8, 1971, Ser. No. 178,663
Claims priority, application France, Sept. 15, 1970, 7033395
Int. Cl. B41b *1/02*
U.S. Cl. 101—401.1 **11 Claims**



A process for fabricating an endless type-carrying belt for an on-the-fly printer, wherein open belt portions are first prepared with type-carrying tongue portions defined along the length thereof, each of said tongue portions bearing a stud wherein a raised character is formed in each stud by coining by rolling, and wherein said open belt portions have the ends thereof joined together to form an endless belt.

3,724,372
PYROJET CUTTER FOR UNDERWATER OR LAND USE

Ralph O. Phillips, Old Saybrook, Conn., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 30, 1963, Ser. No. 320,239
Int. Cl. F42b *33/06*
U.S. Cl. 102—1 R **4 Claims**



1. An apparatus for burning through explosive containing cases and for melting out the enclosed explosive comprising a metal cylinder having a bore along the longitudinal axis thereof, said cylinder being externally-threaded at each of its ends;

first combustible solid propellant mixture which burns to produce a relatively high-temperature gaseous product positioned in said bore at one end thereof;

a second combustible solid propellant mixture which burns to produce a relatively low-temperature gaseous product positioned in said bore at the other end thereof;

means closing said one end of said bore including a labyrinthic metal disc and an internally threaded cap adapted for threaded engagement with said cylinder, said cap having an orifice therein and an internal wall tapering outwardly therefrom and defining a frusto-conical-shaped cavity therewithin, said wall abutting said disc for firmly fixing said disc over said bore;

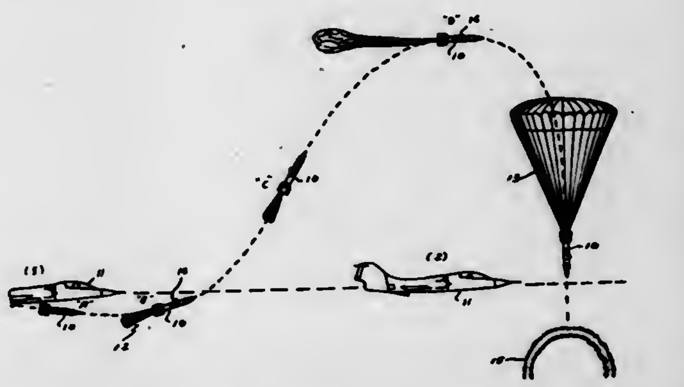
means closing said other end of said bore including a metal sealing disc in said bore, an internally-threaded cap in threaded engagement with said cylinder and a spacer ring mounted between said sealing disc and said cap so that said spacer ring and said sealing disc urge said solid propellant mixtures against said metal disc at said one end of said bore, said last mentioned cap having an aperture therein;

and ignition means for igniting the solid propellant mixtures including a heat sensitive igniter material in contacting relationship with said first solid propellant mixture, an initiator for firing said igniter for firing said igniter material and means carried by said last named cap in sealed engagement with the wall of said aperture in said last named cap for actuating said initiator;

whereby the solid propellant mixtures are ignited in successive order and the gases developed from the burning thereof pass through a labyrinth path in the first-mentioned disc, build up pressure within the frusto-conical cavity of the first-mentioned cap and are discharged from the orifice therein as a high-velocity, gaseous jet, first having a relatively high temperature and then a relatively low temperature.

3,724,373
RETARDED GLIDE BOMB

Arnold S. Rivenes, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 15, 1970, Ser. No. 97,470
Int. Cl. F42b *25/02*
U.S. Cl. 102—4 **7 Claims**



An aerial bomb having a casing equipped with auxiliary airfoil surfaces hingedly mounted thereto, and movable between a retracted position in flush relation to the bomb casing and an extended position oriented at an angle-of-attack to the air stream to provide a lifting force to, and thus retard the fall of, the bomb and its subsequent explosive impact with the target area to thereby allow the delivery aircraft to reach a safe position.

3,724,374
UNDERWATER SOUND SOURCE

James Somerville, Chalfont; Donald F. Smith, and Joseph N. Yaccarino, both of Norristown, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy
Filed April 27, 1962, Ser. No. 190,836
Int. Cl. F42b *22/44*
U.S. Cl. 102—7 **6 Claims**

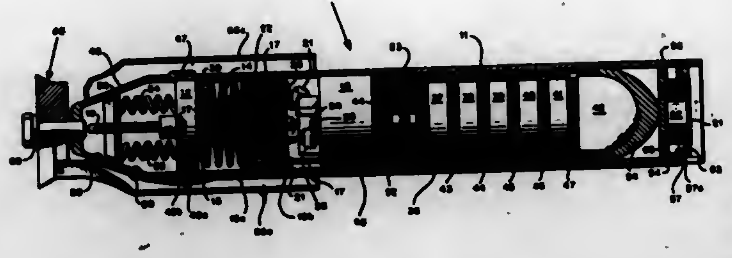
1. A buoy for use as an underwater sound source, comprising in combination:

an elongated cylindrical casing,

a circular plate rigidly fixed at one end of said casing,

a pressure plate disposed at the other end of said casing,

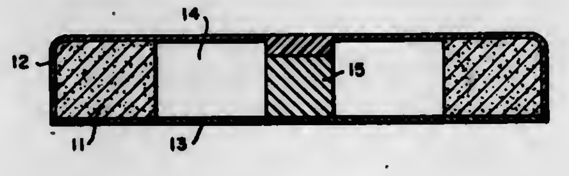
charge means disposed adjacent said pressure plate means within said casing,
inflatable bag means disposed between said circular plate and said charge means,
means for inflating said bag means to eject said charge means from said casing when said pressure plate is released from said casing,
dome means,



clamp means secured to said dome means and extending the length of said casing releasably securing said pressure plate at said other end of said casing,
rotochute means secured to said dome means for retarding the buoy as it falls through the air,
said dome means including spring means biased between said dome means and said circular plate for ejecting said dome means and said clamp means from said casing when said clamp means release said pressure plate,
release means releasing said clamp means from said pressure plate in response to a predetermined pressure on said pressure plate.

3,724,375
ILLUMINATING FLARE HAVING HIGH DRAG CONFIGURATION

Burton H. Calkins, Bloomington, Ind.; Dale L. Carstens, Sault Sainte Marie, Mich., and James J. Riester, Bloomington, Ind., assignors to The United States of America as represented by the Secretary of the Navy
Filed April 6, 1970, Ser. No. 31,040
Int. Cl. C06d *1/04*
U.S. Cl. 102—31 **2 Claims**

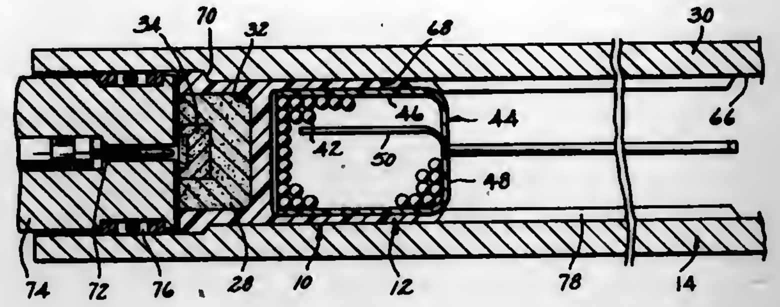


A flat, circular flare having a thin-walled plastic case containing a disk of pyrotechnic material provided with a star-center and having a fuze means for igniting said pyrotechnic material. The flat, circular flare is launched from an aircraft by spinning and the flare floats or sails to the ground while burning.

3,724,376
EXPENDABLE CASE SHOTSHELL

Martin W. Kordas, Stratford; Robert C. May, Fairfield, and John J. Scanlon, Monroe, all of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.
Division of Ser. No. 755,649, Aug. 22, 1968. This application Feb. 2, 1971, Ser. No. 111,949
Int. Cl. F42b *5/30, 7/06*
U.S. Cl. 102—42 C **26 Claims**

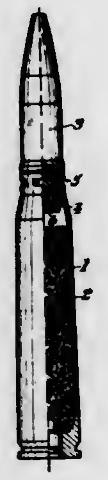
An expendable cartridge made of thermoplastic material which is adapted to contain the necessary propellant, projectile charge, etc., and which is explosively expelled from the gun along with the projectile charge. There are several modifications of the invention, each of which requires some means to slit, fracture, or rupture the outermost cartridge structure,



which then permits the inner structure to be released thus facilitating the ultimate final release of the projectile charge from the expendable cartridge, which then falls to the ground much like conventional shot containers.

3,724,377
SHELL CARTRIDGES

Louis Birkigt, Pregny-Geneve, Switzerland, assignor to Brevets Aero-Mecaniques S.A., Geneva, Switzerland
Filed May 1, 1970, Ser. No. 33,580
Claims priority, application Luxembourg, May 7, 1969, 58.593
Int. Cl. F42b *13/06, 9/10*
U.S. Cl. 102—38 **10 Claims**

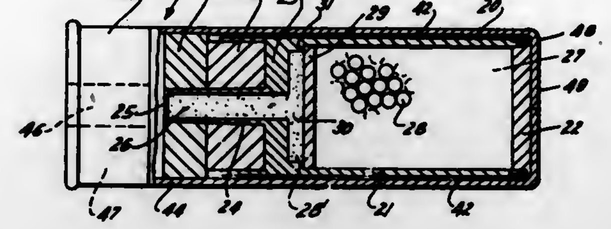


The cartridge case contains a principal propellant charge and a shell adapted to the front of the case having a reardwardly open axial cavity filled at least partly by a solid additional propellant charge. The latter is of greater calorific power than the principal propellant charge. A pastille of powder of lower calorific power than the additional propellant charge masks it rearwardly to delay its ignition. The energy from the additional charge is thus applied from the moment when the pressure generated by the main propellant starts to decrease. The performance of the shell is thus improved without generating dangerous excess pressures.

3,724,378
SHOT CONCENTRATOR

Randolph Bentley Knight, Queenstown, Md., and Lee Ayers Knight, 852 Amostown Road, West Springfield, Mass.
Filed May 13, 1969, Ser. No. 824,219
Int. Cl. F42b *7/08*
U.S. Cl. 102—42 C **1 Claim**

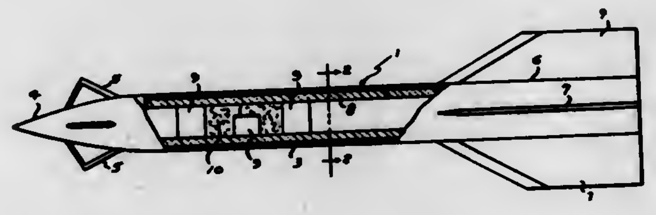
A shot concentrator adapted to be mounted in the casing of a shotgun shell having powder and a primer therein. The concentrator includes a cylindrical hollow tube having a capped forward end and an elongated stem projecting from its closed rear end. The stem has a passage therethrough which communicates with the interior and the exterior of the tube. A charge of powder and a charge of shot are positioned in the tube. A fuse is located in the stem in communication at one end with the charge of powder in the tube and adapted for communication at the other end with the powder in the casing so that when the primer is detonated, the shot concentrator will be expelled from the casing by the explosion of the powder in the



casing and the fuse will be simultaneously ignited. The fuse has a predetermined burning time to facilitate the flight of the shot concentrator for a desired distance before the charge of powder in said concentrator is ignited by the fuse and the charge of shot is thereby separated from the shot concentrator. In this manner, a more accurate and more concentrated pattern of shot is provided at a greater greater distance from the point of initial firing of a shotgun shell.

3,724,379
WARHEAD FOR GUIDED MISSILES

Dale M. Davis, Freeport, Fla., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Oct. 5, 1966, Ser. No. 584,946
Int. Cl. F42b *13/18, 13/30*
U.S. Cl. 102—49.3 **5 Claims**



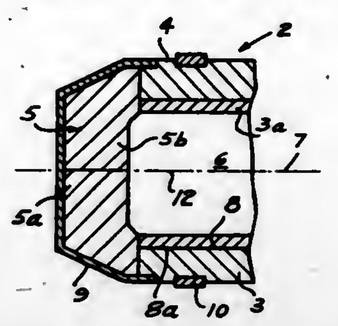
An improved air-to-surface missile having a warhead which is confined solely to the lower half of the missile, and this half contains all the fragments which would normally be distributed throughout both halves of the missile. An upper casing portion need not be employed except to maintain symmetry and aerodynamic stability of the missile as a whole.

In order to offset the slewing effect of the fragment pattern at the target on account of a low angle of approach, the fragmented lower surface of the warhead is flattened as it extends toward the rear end and is also curved upwardly so as to approach the longitudinal axis of the missile which contains the warhead.

3,724,380
DEVICE FOR A PROJECTILE

Bjorn Herman Olof Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
Filed Dec. 16, 1970, Ser. No. 98,540
Claims priority, application Sweden, Jan. 8, 1970, 149/70
Int. Cl. F42b *13/38*
U.S. Cl. 102—60 **4 Claims**

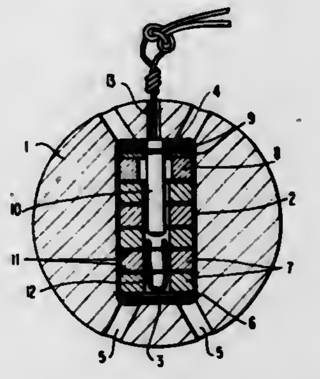
A flare releasing missile has a casing including the propellant charge and a hollow projectile fitted to the casing and housing a flare and a parachute therefor. The projectile including its bottom plate is lengthwise split and the projectile parts thus formed are held together by a cap fitted upon the bottom of the projectile until the same is fired. Upon firing of the projectile the cap is forced off thereby freeing the projectile parts and thus the flare with its parachute. The projectile



parts are thrown out of the trajectory of the flare by the centrifugal force acting upon the parts due to the spin imparted to the projectile by the rifling in the gun barrel.

3,724,381
TEAR GAS ELEMENT

Heinz Gawlick, Furth; Gunther Marondel, Erlangen; Werner Siegelin, Stein; Wolfgang Wasser, and Hellmut Bendler, both of Nurnberg, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed June 26, 1970, Ser. No. 50,172
Claims priority, application Germany, June 28, 1969, P 19 33 029.1
Int. Cl. F42b *27/06*
U.S. Cl. 102—65 **8 Claims**



This invention relates to an irritant agent element such as a tear gas element which can be used for temporarily disabling persons at the target site with a minimum of risk of physical injuries and mechanical damage. The element comprises a tear gas cartridge containing tear gas-producing bodies and detonator and combustion means for deflagrating said tear gas-producing bodies, the feature of the invention residing in the provision of an envelope of resilient, readily deformable material surrounding said cartridge. Channels are provided in the envelope for the emanation of the tear gas from the cartridge.

3,724,382
CASELESS SMOKE GRENADE INCLUDING POLYVINYL CHLORIDE BINDER

Hector Joseph Zilcosky, Colebrook, Conn., assignor to The Ensign-Bickford Company, Simsbury, Conn.
Filed Sept. 23, 1971, Ser. No. 183,252
Int. Cl. F42b *27/00*; C06d *3/00*
U.S. Cl. 102—65 **12 Claims**

A caseless smoke generating grenade consists essentially of a cast flexible main charge. The flameless pyrotechnic composition used in the main charge is comprised of substantially equal proportions of zinc oxide and a perchlorate oxidizer distributed throughout a plasticized polymeric resin fuel having a high halogen content. The composition is free of solvent and provides controlled burning coupled with excellent flexibility, cohesive strength and impact resistance.

3,724,383

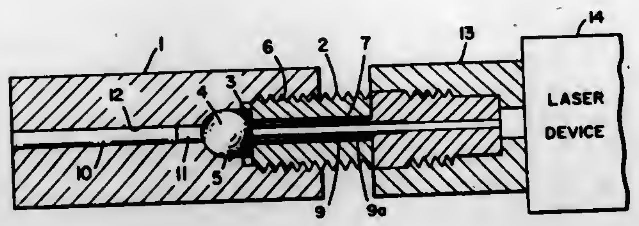
LASSER STIMULATED ORDNANCE INITIATION DEVICE

John A. Gallaghan, Ben Lomond; Ronald W. Benson, Cupertino, and Bertil V. Carlson, Santa Cruz, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 1, 1971, Ser. No. 111,473

Int. Cl. F42b *9/00*

U.S. Cl. 102—70.2 A **3 Claims**



A device for generating a high order detonation by using fiber optics and a spherical glass focusing head to distribute the initiating light pulse and a low energy laser to initiate the explosive material. Potassium Hexanitro Diphenylamine (KHND), a secondary explosive, is initiated by the device to a low order detonation which in turn sets off Pentaerythrital Tetranitrate (PETN), another secondary explosive material, to give a high order detonation.

3,724,384

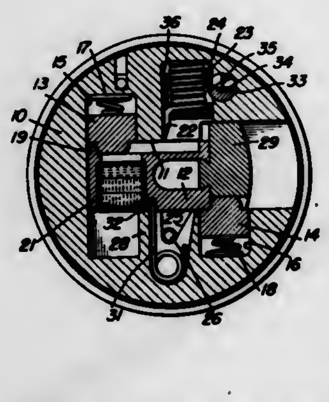
CENTRIFUGALLY ARMED FUZE

William J. Donahue, Takoma Park, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 27, 1965, Ser. No. 491,856

Int. Cl. F42c *15/22*

U.S. Cl. 102—79 **5 Claims**



A centrifugally armed fuze having a spring-biased, spin-actuated slider containing a stab detonator. Once armed at a first predetermined rotational velocity, a compound lever system, having two centrifugally responsive sears, restrains a spring-biased firing pin until the spin rate decays to a second (lower) predetermined rotational velocity.

3,724,385

FUZE HAVING A PNEUMATIC AND INERTIA ARMING SYSTEM

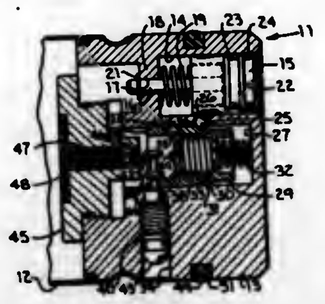
Bobby D. Beatty, Bloomfield; Gary D. Butts, Loogootee; Stanley J. Herold, Switz City, and Donald E. LaGrange, Washington, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 20, 1971, Ser. No. 181,791

Int. Cl. F42c *5/00*

U.S. Cl. 102—81 **2 Claims**

A fuze for a pyrotechnic device having a firing pin for detonating a primer. An inertia sleeve is provided for preventing forward movement of the firing pin until a pneumatic latch is operated by the pressure supplied by a launching force. A borerider pin is also provided for preventing detonation of the primer while the fuze is inside a launcher barrel.



3,724,386

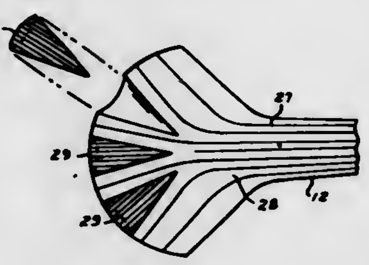
ABLATIVE NOSE TIPS AND METHOD FOR THEIR MANUFACTURE

Donald L. Schmidt, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed June 24, 1970, Ser. No. 49,406

Int. Cl. F42b *15/00*

U.S. Cl. 102—105 **9 Claims**



An ablative nose tip assembly is produced by fabricating a nose tip comprising a rod having one of its ends flared so as to form a round, arcuate cap, inserting the rod into one end of an elongated housing so that the flared end of the rod seats in a correspondingly flared recess in the end of the housing, and locking the rod in position in the housing. The rod is composed of an unidirectional filament reinforced plastic or carbonaceous matrix composite while the housing is comprised of a fiber reinforced resin composite or a fiber reinforced pyrolyzed matrix composite. The nose tip assembly is dimensionally stable, rendering it useful in high speed aerospace vehicles subjected to intense aerodynamic heating and stagnation pressures during passage through a planetary atmosphere.

3,724,387

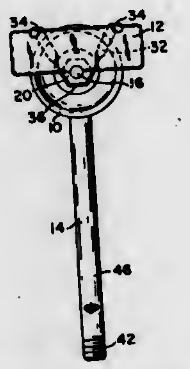
CONVEYOR SUSPENSION TRACK AND TROLLEY SYSTEM

Joseph A. Civitarese, 69 Park Avenue, Lodi, N.J.

Filed Feb. 18, 1971, Ser. No. 116,370

Int. Cl. B61b *3/00*; **B65g** *17/20*; **E01b** *25/22*

U.S. Cl. 104—93 **15 Claims**



An improved trolley hanger structure for a track conveyor system comprising a sheave, adapted to ride on the exterior of a tubular rail, rotatably mounted on an axle immovably fixed to a vertically open box frame and semi-journalled therethrough at one end to a depending vertical shank supporting a clothes hanger rack or like structure, and at the other end through a novel spring clip retaining the axle end on the box frame. In another embodiment, a pair of sheaves are supported via two novel spring clips to a similar box frame. The novel clip or clips serve only a retaining function since the weight of suspension of the conveyor system is directed vertically upwardly, through the sheave and axle ends, against the box frame.

3,724,388

APPARATUS FOR ELECTROMAGNETIC SUSPENSION AND GUIDANCE OF TRACKED CARS

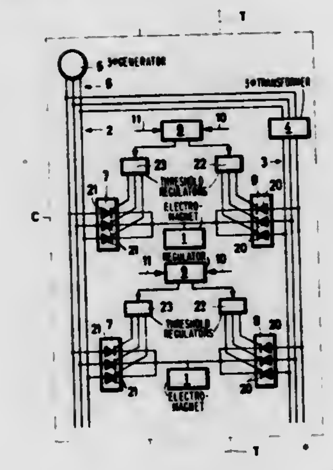
Ludwig Karch, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Oct. 1, 1971, Ser. No. 185,521

Claims priority, application Germany, Oct. 27, 1970, P 20 52 599.9

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 MS **8 Claims**



In the apparatus disclosed current is supplied to electromagnets which suspend and / or guide the cars that travel along tracks in an electromagnetic suspension system. The current is alternately supplied along two mains from a single generator. One main exhibits the voltage rated for the electromagnets of the car and the other a voltage which is higher than the rated voltage by an order of magnitude. The higher voltage main supplies high voltage pulses or shock currents for stabilizing cars which deviate slightly from the normal path along the track in response to transverse winds or other transverse forces.

3,724,389

STORAGE FACILITY

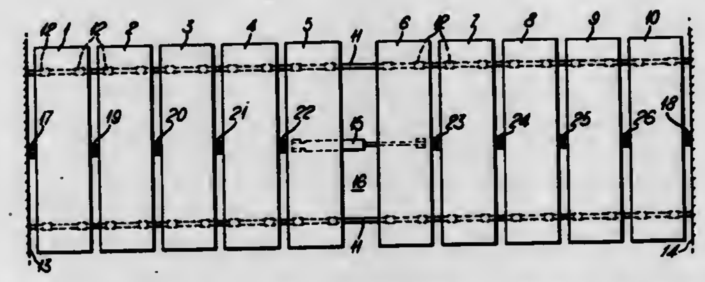
Richard Johnson Greaves, Victoria, Australia, assignor to Brownbuilt Limited, Victoria, Australia

Filed April 14, 1971, Ser. No. 134,020

Claims priority, application Australia, April 14, 1970, PA 0897/70

Int. Cl. B61b *13/12*

U.S. Cl. 104—162 **5 Claims**



A mobile storage facility comprising a plurality of storage structures arranged successively along a track and each movable along the track, power means connected between an intermediate pair of said storage structures and operable to cause relative movement between them, and coupling means selectively to couple the two end storage structures to fixed anchorages and selectively to couple together each successive pair of said storage structures which is not both the intermediate structures.

3,724,390

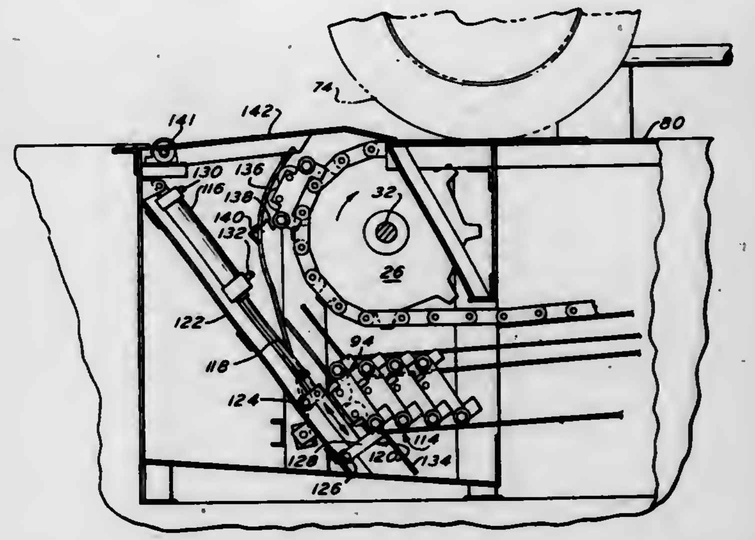
CAR WASH CONVEYOR

Carl C. Beer, Philadelphia, Pa., and Sherman L. Larson, Palmyra, N.J., assignors to Sherman Car Wash Equipment Company, Palmyra, N.J.

Filed Aug. 20, 1970, Ser. No. 65,564

Int. Cl. B65g *15/30*

U.S. Cl. 104—172 B **8 Claims**



A conveyor for an automobile or car washing system includes endless drive chains having a plurality of dollies removably engaged therewith. The drive chains are continuously driven about spaced sprockets and the dollies are selectively interconnected with the drive chains. The dollies include pushers which travel along a wheel-engaging path to move the wheels of the car along a predetermined path through the car washing system. Dollies are connected to the drive chains upon actuation of a switch sensing the presence of the car or by other electrical or mechanical means.

3,724,391

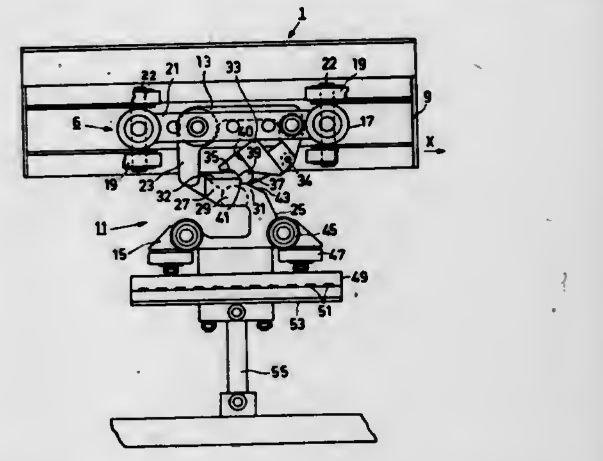
OVERHEAD CONVEYOR

Harm Frank Te Velde, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Claims priority, application Netherlands, Jan. 27, 1970, 7001084

Int. Cl. B65g *17/42*

U.S. Cl. 104—172 S **16 Claims**



A conveyor having a main track and a local lower track and having double trolleys each being formed of a driving crab and a suspension crab. The suspension crab is detachably coupled to the driving crab by means of a self-centering ball and socket type coupling. In the coupled condition the suspension crab is locked against undesired uncoupling by safety means formed of a locking pawl pivotally arranged to engage various cam surfaces of the crabs in order to prevent undesired uncoupling.

3,724,392
MAGNETIC AMPLIFIERS AND APPARATUS

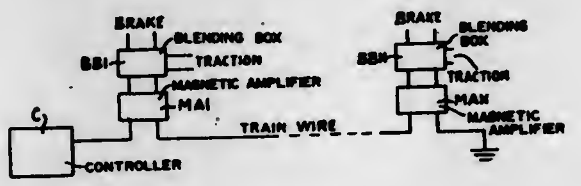
Arthur Maskery, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England

Filed Oct. 26, 1970, Ser. No. 83,731

Claims priority, application Great Britain, Nov. 5, 1969, 54,142/69

Int. Cl. B61e *3/02*; **H03f** *9/00*

U.S. Cl. 105—61 **3 Claims**



A magnetic amplifier is proposed especially for use in traction and/or braking control systems for railways in which control is in response to an analog current flowing in a wire running down the train. The magnetic amplifier is provided with a shorted turn which has the effect of making the amplifier largely independent of d.c. control source impedance variations thereby avoiding requirements for recalibration when the cars of a train are changed for example.

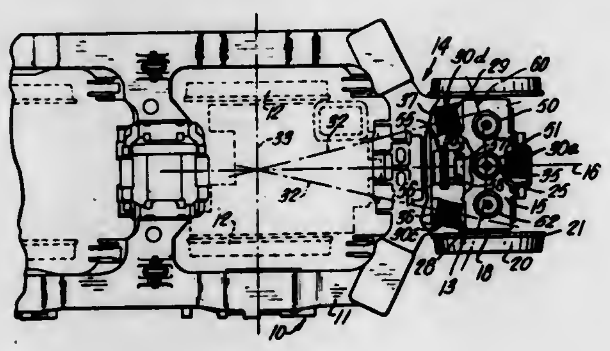
3,724,393
RESILIENTLY BIASED PILOT AXLE ARRANGEMENT

John Henry Parker, 730 Saint Aubin Street, Saint Laurent, Quebec, and F. Thomas McInerney, III, 190 de Normandie Saint, Bruno, Quebec, both of Canada

Filed Feb. 11, 1971, Ser. No. 114,656

Int. Cl. B61f *3/02, 5/30, 5/38*

U.S. Cl. 105—174 **13 Claims**



A railway vehicle truck having a frame provided with a plurality of spaced apart wheel supporting driven axles and a resiliently biased front pilot axle assembly. The front idle axle assembly comprises a pilot axle housing for supporting a pilot axle having a wheel at each end thereof. The pilot axle housing is connected to the frame by precompressed elastomer blocks interposed between the frame and the pilot axle housing. The precompressed elastomer blocks permit smooth guided movement of the pilot axle housing in an arcuate horizontal plane and in the vertical plane.

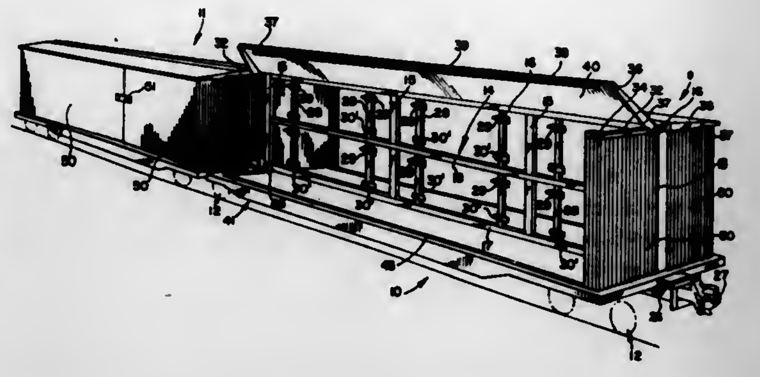
3,724,394
RAILWAY CAR

William L. Pringle, Grosse Pointe Shores, Mich., assignor to Pullman Incorporated, Chicago, Ill.

Filed Aug. 21, 1970, Ser. No. 65,872

Int. Cl. B60p *3/06*; **B61d** *45/00*

U.S. Cl. 105—368 R **6 Claims**



A railway car consists of articulated sections each including a substantially identical upright longitudinally extending truss structure on which vehicles or other cargo is suspended. The truss structure is the primary structural member extending between the car trucks and also serves as the cargo retaining member during transport operation. The truss structure is provided with suitable beams containing brackets to which the cargo is connected and suspended therefrom. The cargo may be in the form of vehicles which are initially connected to pallets or fixtures secured to the underframe members of the vehicle. The fixture is provided with brackets which interengage the brackets on the truss structure to suspend the vehicles directly thereon. The fixture is constructed so that a crane or other material handling device, by engaging and lifting the fixture simultaneously, rotates the fixture and the vehicle into the desired position relative to the truss, the loading operation consisting merely of hanging the fixture and vehicles on the truss so that both are removably retained thereon in suspended relation.

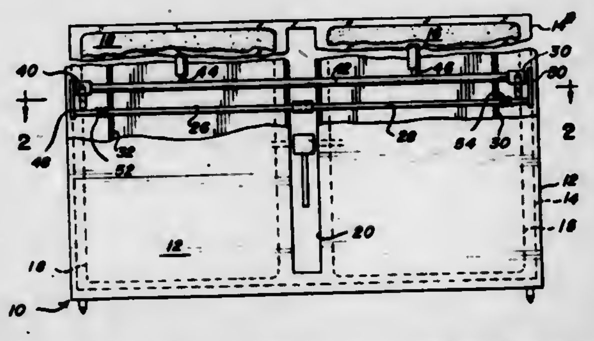
3,724,395
INTERLOCKING DEVICE FOR INFLATABLE BULKHEADS

Samuel H. Enochian, Thornton, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Oct. 26, 1971, Ser. No. 192,148

Int. Cl. B61d *45/00*; **B60p** *7/14*

U.S. Cl. 105—369 BA **5 Claims**



A safety latching mechanism for use with bulkhead cushioning systems that employ a wall-type member, a lading-engaging panel attached to the wall-type member and an inflatable envelope disposed therebetween. When the bulkhead is not in use the envelope is deflated and the lading-engagement panel is automatically and releasably maintained in close relation to the wall-type member by the latching system provided herein. Before the bulkhead can be used the latching system must first be disengaged so as to prevent damage to the bulkhead which might result from inflation of the envelope when the panel and wall-type member are latchably secured in close relation.

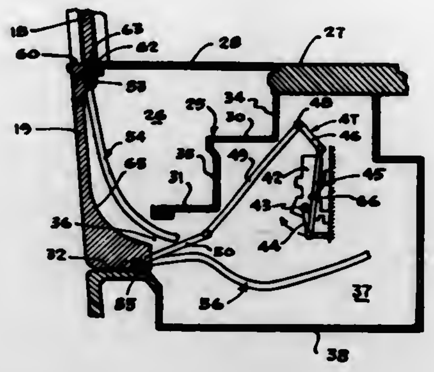
3,724,396
DOOR SYSTEM FOR HIGH-LOW PLATFORMS

Carl W. Roth, Arlington Hts., Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Feb. 18, 1971, Ser. No. 116,409

Int. Cl. B61d *19/00, 23/00*

U.S. Cl. 105—378 **10 Claims**



A door system for a railway passenger vehicle to enable both high and low platform loading of passengers, including a pair of bi-parting doors to be opened for high-level loading, and a low door immediately below the bi-parting doors to be opened with the bi-parting doors for low level loading, and a stair unit coacting with the low door accessible through a trap door, and means for retracting the low door within the car structure behind the stair unit.

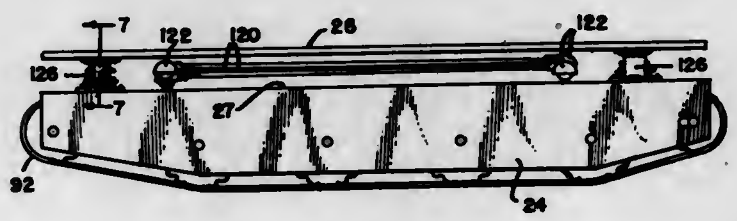
3,724,397
ENDLESS TRACK VEHICLES

Freeman E. Sargent, Old Chesterfield Road, Winchester, N.H.

Division of Ser. No. 840,801, July 10, 1969, abandoned. This application Aug. 2, 1971, Ser. No. 168,264

Int. Cl. B62d *55/00*

U.S. Cl. 180—9.54 **3 Claims**



An endless track vehicle, including a frame, a body on the frame, a pair of endless tracks, independently operated, so that each track can operate at varying speeds, and even in reverse to one another, a closed hydraulic system including connecting pipes to and from a fluid tank, an hydraulic pump, driving fluid to two two-way hydraulic control valves leading to two reversible hydraulic motors each separately driving a track, a gasoline powered engine having a shaft attached to the crankshaft.

A modification includes the same mechanism in which the body is divided into two seperate longitudinal sections, each supporting an endless track, and is connected by independent suspension means so that each track is independently mounted to permit the track to separately conform to irregularities in the terrain.

3,724,398
EXPENDABLE PALLET DEVICE

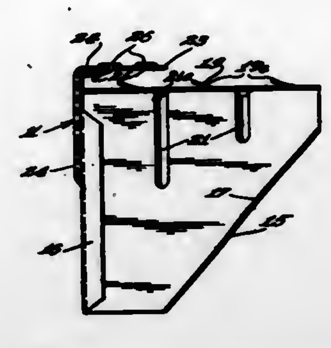
Francis P. Brennan, 1057 Rolling Drive, Lisle, Ill.

Continuation-in-part of Ser. No. 70,407, Sept. 8, 1970. This application March 15, 1971, Ser. No. 123,982

Int. Cl. B65d *19/00*

U.S. Cl. 108—51 **13 Claims**

An expendable pallet leg preformed to provide locking flanges or shelves for selectively attaching a plurality of pallet legs at spaced locations on the material to be transported or handled by a lift truck such as stacks of corrugated boards, laminar metal sheets, ply-wood or other sheet-form material, or to corrugated boxes used for handling transportable articles.



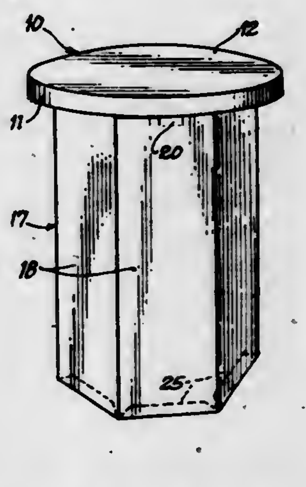
3,724,399
KNOCKDOWN TABLE

Michael F. Notko, Riverside, and Peter J. Hylak, Downers Grove, both of Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.

Filed Dec. 14, 1971, Ser. No. 207,918

Int. Cl. A47b *13/02*

U.S. Cl. 108—157 **8 Claims**



A two-piece knockdown table formed of a corrugated paperboard base and a table top member supported thereon. The two pieces which form the table are adapted to be shipped in flat condition and to be erected at the point of use into a table which has substantial stability and strength. The table top member is formed with a depending flange which is adapted to engage the panels of the base member. The base member has tabs which engage slots formed in the depending flange member of the table top member to secure the base member to the top member.

3,724,400
SAFE

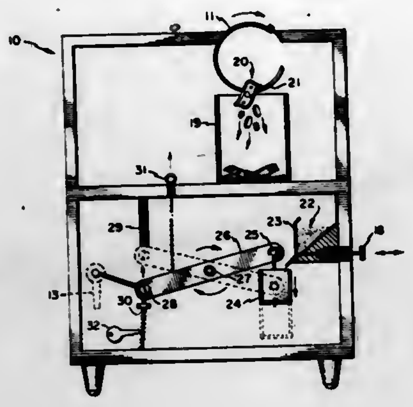
Theodore E. Steiber, 2600 Park Avenue, Bridgeport, Conn.

Filed June 26, 1972, Ser. No. 158,224

Int. Cl. E05g *1/00*

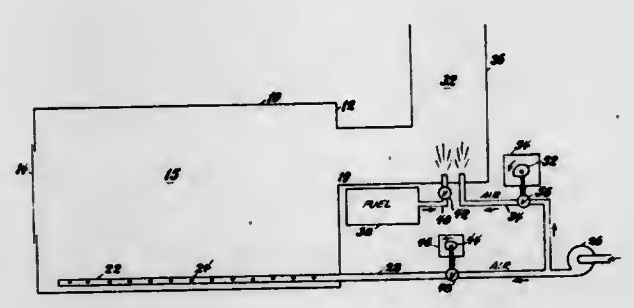
U.S. Cl. 109—53 **4 Claims**

A mechanically time-controlled compartmentized safe is provided having first and second compartments, each of which has a door with a lock thereon and a separate key for unlocking each compartment. The first compartment contains a one-way access opening therein which receives and deposits valuables in the first compartment. The second compartment contains the key for opening the first compartment, and also a mechanical time-controlled blocker which prevents positioning the key in the lock of the second compartment to open it until the blocker is removed. The blocker is mounted on one end of a lever which is pivoted in the center and has on the other end thereof a container in which sand is released from the time control, consisting of a box of sand which is released by a push rod on the outside of the second compartment. When enough sand is deposited in the container, the lever pivots, raising the blocker from the lock of the second compartment and allowing the insertion of the key thereto in the opening of the second compartment to obtain the key and thus open the first compartment. Accordingly, only authorized persons would have access to the valuables deposited in the first compartment, but only after a time delay in accordance with the sand timer.



3,724,401
CONTROLS FOR INCINERATOR

Eugene D. Krumm, Wellsville, N.Y., assignor to The Air Preheater Company Inc., Wellsville, N.Y.
Filed July 16, 1971, Ser. No. 163,198
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 R **7 Claims**

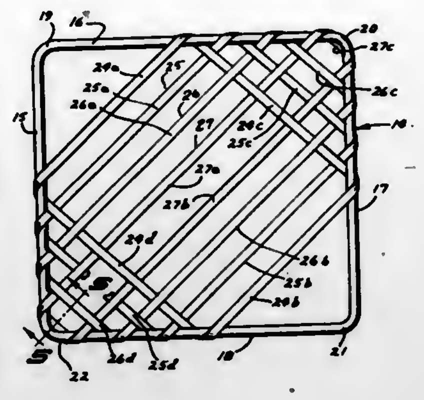


A solid waste incinerator having a control system responding to predetermined conditions that exist within the combustion chamber thereof during a normal burning operation. The usual system of complex temperature and pressure sensors is replaced by a simple controller that operates in response to a predetermined set of average values independent from those at that time in the combustion chamber.

3,724,402
WEBBED PANEL FOR CHAIRS

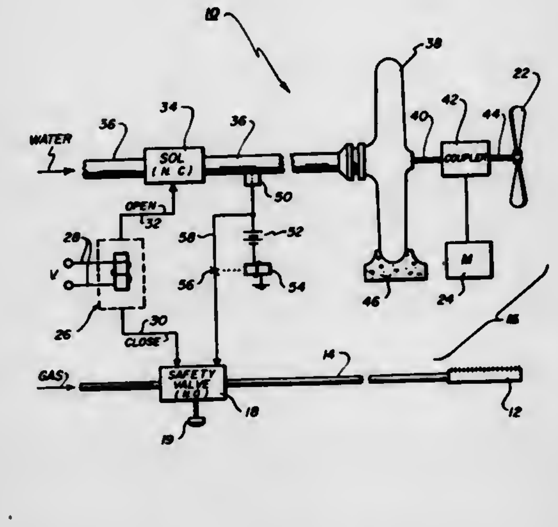
Paul D. Thyberg, St. Paul, and Wallace G. Splettstoesser, Watertown, both of Minn., assignors to General Housewares Corp., New York, N.Y.
Filed June 11, 1971, Ser. No. 152,071
Int. Cl. A47g *5/00;* **E06b** *3/30*
U.S. Cl. 160—371 **4 Claims**

A panel for use as the seat or back of a lawn chair or the like wherein strands of webbing extend diagonally between portions of a rectangular peripheral frame to provide a flexible surface, the webbing herein comprising closed loops of a uniform and predetermined size which are interwoven with each other and secured to the frame without independent attachment means.



3,724,403
FORCED-DRAFT FURNACE SYSTEM

Karl H. Frantzen, Omaha, Nebr., assignor to Northern Natural Gas Company, Omaha, Nebr.
Filed Nov. 12, 1971, Ser. No. 198,345
Int. Cl. F23c *7/00*
U.S. Cl. 110—72 R **7 Claims**

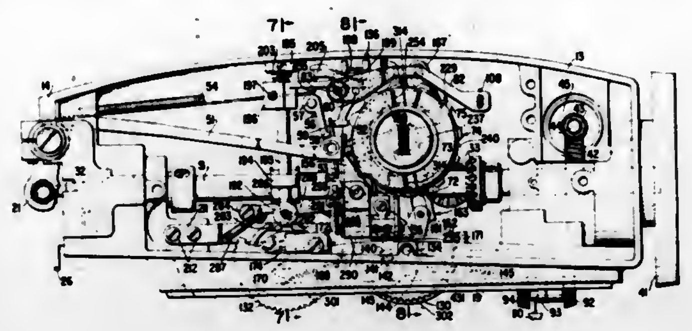


An improved forced-draft heating system wherein the blower can be selectively driven by an alternate power source during electrical power interruptions to remove heated air from the plennum, the system including a water turbine operable from conventional municipal water lines, a coupler for coupling the turbine to the blower and decoupling the blower from the usual electrical motor drive, and manual by-pass means to reconnect the burner to the fuel source during electrical power interruptions.

3,724,404
FANCY STITCH ZIGZAG SEWING MACHINES

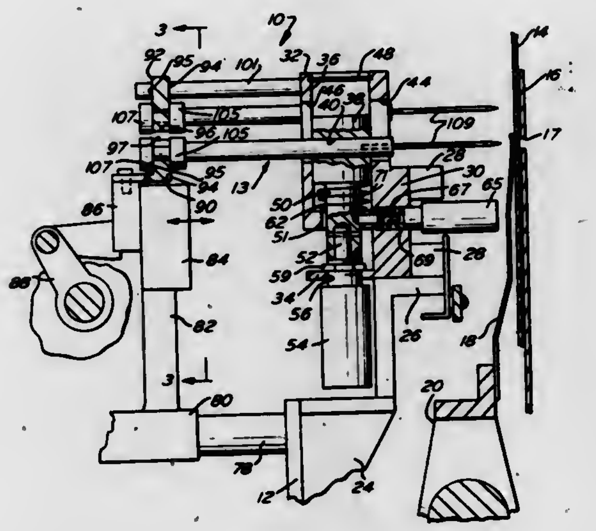
Walter H. W. Marsh, Fanwood, and Lionel J. Coulombe, Matawan, both of N.J., assignors to The Singer Company, New York, N.Y.
Division of Ser. No. 827,867, May 26, 1969, Pat. No. 3,585,876. This application Jan. 4, 1971, Ser. No. 38,596
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 B **1 Claim**

A zigzag sewing machine is disclosed which can exchangeably accommodate any one of a variety of differently organized special cam units for producing special patterns of zigzag stitches, zigzag stitch patterns combined with patterned work feed control, or closed stitch groups such as buttonholes.



3,724,405
COLOR CHANGE MECHANISM FOR AN EMBROIDERING MACHINE

Daniel J. Mullen, Jr., Southampton, Pa., assignor to Penn Novelty Co., Philadelphia, Pa.
Filed July 15, 1970, Ser. No. 55,131
Int. Cl. D05b *55/16*
U.S. Cl. 112—221 **10 Claims**

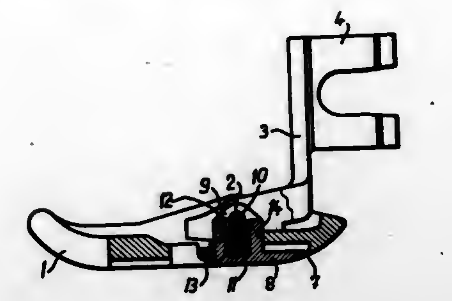


A color change mechanism that comprises actuators associated with each of a plurality of embroidering needles to move them from an inoperative position to an operative position where they engage a reciprocating needle bar and are driven into contact with a material to be embroidered. Adjacent needles are threaded with different colored threads so that by selectively actuating predetermined actuators the color of the embroidered design can be controlled.

3,724,406
PRESSER FOOT FOR A SEWING MACHINE

Marcel Freard, Petit-Lancy, and Jean-Pierre Gabriel, Geneva, both of Switzerland, assignors to Mefina S.A., Fribourg, Switzerland
Filed May 21, 1971, Ser. No. 145,837
Claims priority, application Switzerland, June 2, 1970, 8203/70
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 **5 Claims**

The presser foot has a sole plate pivoted by an axle to a support attached to the presser bar. A portion of the sole plate behind the needle passage hole is upwardly retractable against the action of a spiral spring and is suspended from the axle. Stops, formed by a transverse rod fixed in the sole plate between the needle passage hole and the retractable portion and by an inner edge of the sole plate, limit the oscillation of the retractable portion. The spring is housed in the retractable portion and bears against the axle. Vertical grooves in the retractable portion act as vertical guides. The parts of the foot can be of plastics material.



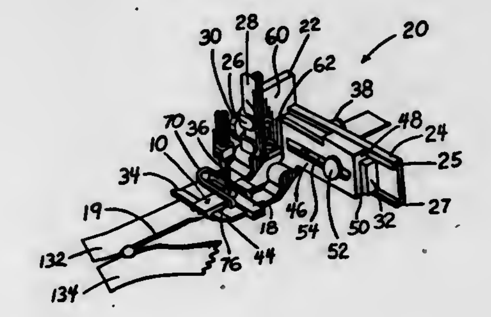
3,724,407
SNAP-ON ZIPPER FOOT

Friedhelm Simon, Karlsruhe, Germany, assignor to The Singer Company, New York, N.Y.
Filed March 15, 1972, Ser. No. 234,963
Int. Cl. D05b *29/08*
U.S. Cl. 112—240 **1 Claim**

A sewing machine presser foot is disclosed which may be readily connected for positioning on either the right or the left side of the sewing machine needle. The presser foot is constructed with a U shaped bracket attached to a sole plate, the bracket having a pivot pin extending between the sidewalls. A shiftable spacer block is carried by the pivot pin leaving sufficient space between the block and a sidewall of the bracket for insertion of the presser foot shank. By inserting the presser foot shank on one or the other side of the spacer block the presser foot may be bodily shifted to one or the other side of the sewing machine needle.

3,724,408
CHANNEL INSERT ATTACHMENT FOR A ZIPPER FOOT

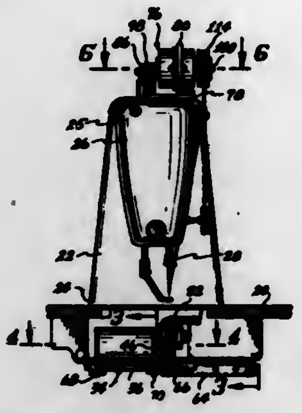
Leoda J. Gooderum, 627 Charles Street, La Crosse, Wis.
Filed March 3, 1971, Ser. No. 120,534
Int. Cl. D05b *29/12*
U.S. Cl. 112—240 **5 Claims**



An attachment for a channel zipper foot accommodating the guiding of a zipper chain as the zipper foot stitches the zipper tape to garments. The attachment inserts into the channel of a zipper foot becoming engageable with the zipper tape. The configuration of the body of the attachment will retain the attachment into its inserted position during a forward or rearward stitch of the sewing machine operation. Zipper chains may be received into a channel formed into the underside of the attachment. A specially shaped attachment becomes an accessory part of a zipper foot to be inserted into a channel already present in the zipper foot, to provide the presser foot with a particular and specially shaped configuration of a channel which is capable of turning and rolling a concealed zipper chain from its otherwise natural position as it also guides the chain.

3,724,409
CONTROLLABLE TENSIONING DEVICES FOR STRAND MATERIAL

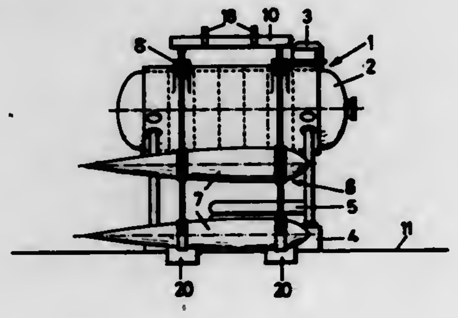
Frederick Darwin Olney, Jr., Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed July 1, 1971, Ser. No. 158,715
Int. Cl. D05b *47/00*
U.S. Cl. 112—255 **5 Claims**



Command responsive devices allow tension adjustments to be made to a strand material on a sewing machine during the sewing operation. The devices comprise an upper strand tensioning device and a lower strand tensioning device, both of which are adapted to apply various tension values to the respective strands in accordance with the command signals received.

3,724,410
COUPLING SUBMERSIBLE TO SERVICE CRAFT

Harmannus Henderikus Lok, Ierseke, Netherlands, assignor to Nereid N.V., Ierseke, Netherlands
Filed April 26, 1971, Ser. No. 137,523
Int. Cl. B63g *8/00*; B63b *35/44*
U.S. Cl. 114—16 R **10 Claims**

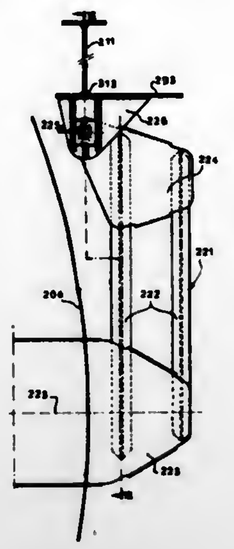


A submersible unit is coupled to a service craft under water while being stabilized and centred by means of arms carrying pontoons, which are raised to engage the service craft.

3,724,411
SUPPORT FOR A SELF-CARRYING STORAGE OR CONVEYING TANK

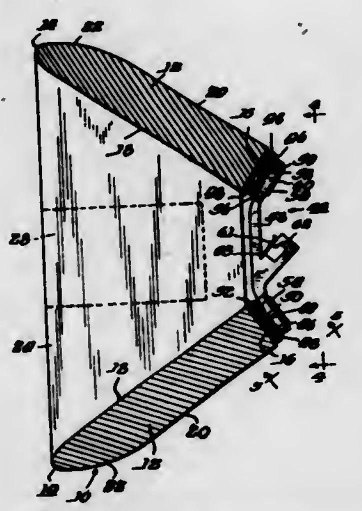
Jean H. Alleaume, Saint-Cloud, France, assignor to Technigaz, Paris, France
Filed Feb. 4, 1971, Ser. No. 112,570
Claims priority, application France, March 26, 1970, 7010991
Int. Cl. B63b *25/08*
U.S. Cl. 114—74 T **14 Claims**

A suspension device for a vehicle-borne rigid storage tank consisting of spaced fastening supports connected to the vehicle structure and to the tank. The supports are distributed horizontally about the tank. The connections between the supports and vehicle structure are provided by rigidly interconnected beams parallel with a horizontal plane of the vehicle and are arranged in a polygonal, convex configuration surrounding the tank.



3,724,412
MAST FOR SAILING VESSELS

Joseph G. Blecker, 6101 Sheridan Road East, Chicago, Ill.
Continuation-in-part of Ser. No. 869,457, Oct. 27, 1969, abandoned. This application May 26, 1971, Ser. No. 147,065
Int. Cl. B63b *15/00*
U.S. Cl. 114—90 **14 Claims**

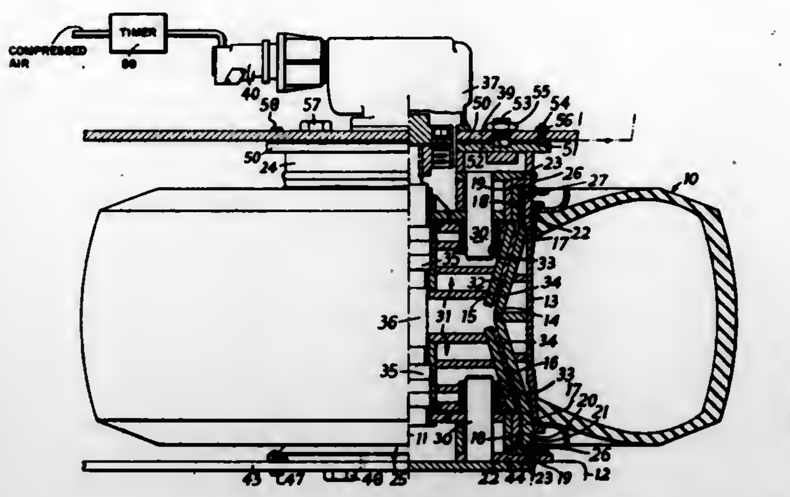


A mast for sailing vessels which includes a pair of elongated spars secured together in laterally spaced relation with their longitudinal axes substantially parallel and with longitudinal median planes containing the major cross-sectional axes of the spars intersecting such that the spars are angularly related and improve air flow over the leeward side of a sail, a base support block for securing the mast to a boat in upstanding relation, and sail attaching means for attaching a sail to the mast longitudinally therealong.

3,724,413
ROTATABLE FENDERS

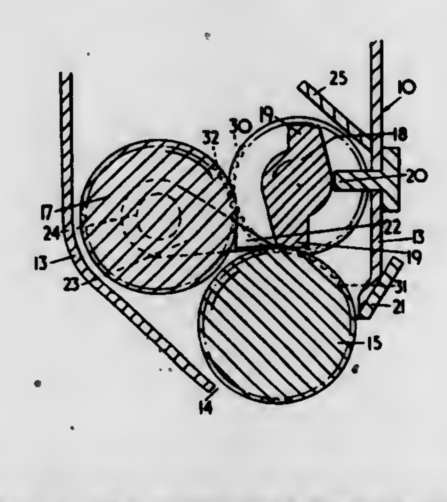
John Duncan, Giles, and Graham Arthur Nigel Hart, Aylesbury, both of England, assignors to Husband's Shipyards Limited, Marchwood, England
Filed Aug. 25, 1970, Ser. No. 66,780
Claims priority, application Great Britain, Sept. 19, 1969, 46,405/69
Int. Cl. B63b *21/56*
U.S. Cl. 114—220 **6 Claims**

A fender, primarily for marine use, comprises a tyred wheel rotatably mounted in a support structure and clutch means operable to prevent rotation of the wheel. The clutch means comprises a pair of opposed, externally frusto-conical clutch elements which are movable in unison into and out of engagement with respective complementary internally frusto-conical surfaces formed in the hub of the wheel. The clutch means includes a device for automatically taking up the wear on the clutch faces.



3,724,414
APPARATUS FOR SPREADING BUTTER AND LIKE SPREADABLE SUBSTANCES

Robert James Wickstead, Kettering, and David Henry Wood, Uxbridge, both of England, assignors to Spiro Engineering Limited, Kettering, England
Filed March 17, 1971, Ser. No. 125,090
Int. Cl. B05c *1/02*
U.S. Cl. 118—1 **5 Claims**

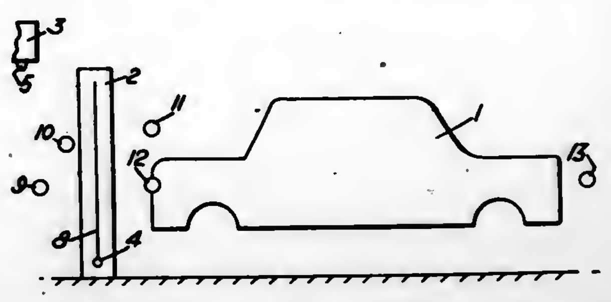


Apparatus for spreading butter including a butter-applying roller is rotatably mounted in a container and has a portion of its periphery extending through a slot in the container. A toothed kneading member is also rotatably mounted in the container adjacent the butter-applying roller, the teeth on the kneading member extending between abutments fixed in the interior wall of the casing. A feed conveyor or roller is provided for feeding slices of bread past the butter-applying roller.

3,724,415
CONTROLLING SPRAY GUNS

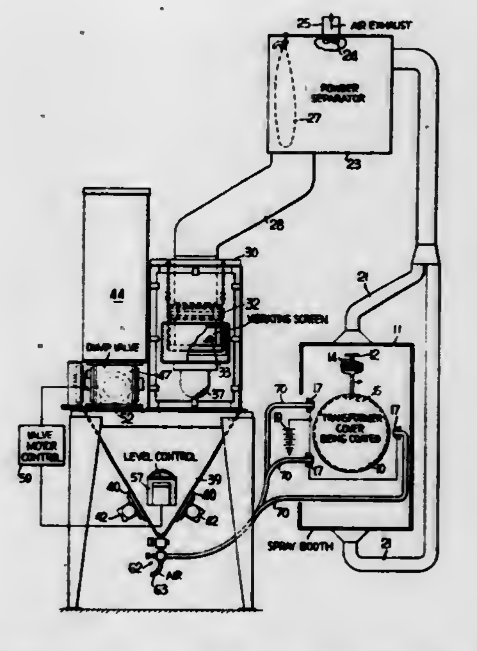
Howard Richard James Knight, Hampton, England, assignor to Carrier Engineering Company Limited, London, England
Filed Aug. 28, 1970, Ser. No. 67,868
Claims priority, application Great Britain, Sept. 3, 1969, 43,669/69
Int. Cl. B05c *11/00*; B05b *3/00*
U.S. Cl. 118—2 **10 Claims**

A spray gun for coating surfaces of a succession of articles of different shapes and sizes has the position of emission of liquid therefrom maintained substantially at a predetermined distance from the surface being sprayed by a variable profile cam the profile of which is automatically varied by adjusting means operable under control of control means which in turn is controlled by sensing devices located along the path of the article and which are arranged to sense the shape and size of the article.



3,724,416
ELECTROSTATIC RESIN POWDER SPRAY SYSTEM HAVING IMPROVED POWDER DISPENSING MEANS

Harold G. Diamond, Wexford, and Floyd L. Gustine, Pittsburgh, both of Pa., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Continuation-in-part of Ser. No. 722,078, April 17, 1968, abandoned, and a continuation-in-part of Ser. No. 728,253, May 10, 1968, abandoned. This application May 28, 1970, Ser. No. 41,229
Int. Cl. B05b *5/02*
U.S. Cl. 118—7 **17 Claims**



An electrostatic spray system for resin coating metallic articles heated above the melting temperature of the resin and moved on a conveyor through a spray booth past spray nozzles for resin powder includes means for recovering and recirculating the overspray resin particles which do not come into contact with the heated article, a bin for the recovered resin powder containing a magnet and a vibrating screen for cleaning the power, a supply hopper below the recovered power bin having venturis at its lower end operated by a pressurized air source for controlling the supply of powder to the spray nozzles, means driven by a motor for delivering new powder to the supply hopper, and means for detecting the level of new and recirculated powder in the supply hopper and for energizing the motor only when the powder in the supply hopper is below a predetermined amount which will prevent agglomeration and compacting of the resin powder particles. In one embodiment a hopper for new resin powder is disposed above the supply hopper, a rotatable valve at the lower end of the new powder hopper is rotated by an electric motor and controls the amount of new powder delivered to the supply hopper, and the powder level detecting means controls the energization of the electric motor. In an alternative embodiment, a flexible screw conveyor driven by an electric motor controlled by the powder level detecting means delivers the new powder to the bin containing the magnet and vibrating screen to remove agglomerated particles and ferromagnetic particles from the new powder.

3,724,417
MACHINES FOR PRODUCING AND DEPOSITING AERATED EMULSION PRODUCTS

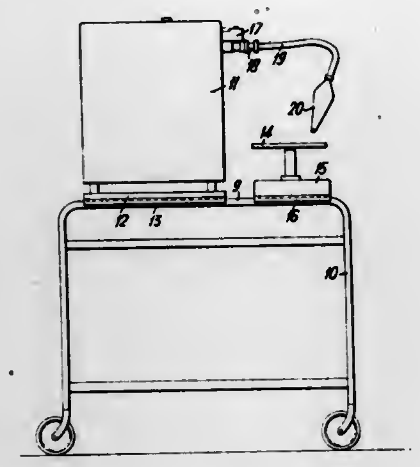
John MacManus, 143-16 Twenty-second Road, Whitestone, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,103

Claims priority, application Great Britain, Sept. 5, 1969, 44,034/69; Oct. 13, 1969, 50,267/69

Int. Cl. A21c *15/00*

U.S. Cl. 118—24 **11 Claims**



A whipping machine has a pump that simultaneously draws in liquid product and air and forces them through a static narrow orifice homogeniser for whipping. The machine has at least one outlet nozzle arranged to discharge the whipped product downwardly onto a confection. The confection is supported on a turntable which is rotatable about a vertical axis. Various means are disclosed for providing translational movement of the turntable as it is rotated.

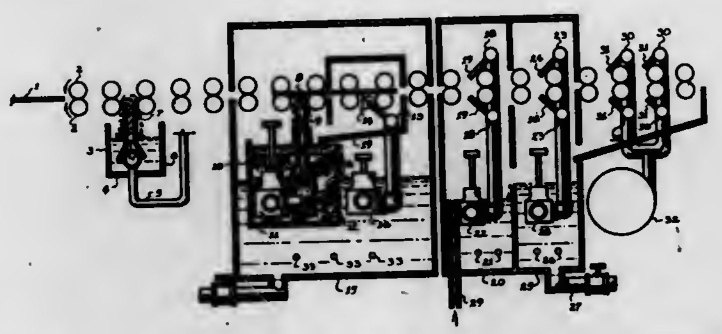
3,724,418
SOLDER COATING APPARATUS

John H. McLain, 208 Winthrop Drive, Huntsville, Ala.

Filed Aug. 20, 1971, Ser. No. 113,044

Int. Cl. B05c *11/10*

U.S. Cl. 118—69 **5 Claims**



This invention, relating to the application of a thin uniform coat of hot tin lead solder to the exposed copper circuitry of electrical circuit boards utilizes a fluxing station, a standing wave soldering station, a hot liquid spray leveling station, a hot water spray cleaning station, a high volume air spray drying station and a conveyor for transporting the electrical circuit boards past the afore mentioned stations. The apparatus contains those pumps, motors, tanks, and electrical and hydraulic systems necessary to support the afore mentioned stations, more fully described in the drawing and in the body of the disclosure.

3,724,419
CLOTH IMPREGNATING MACHINE

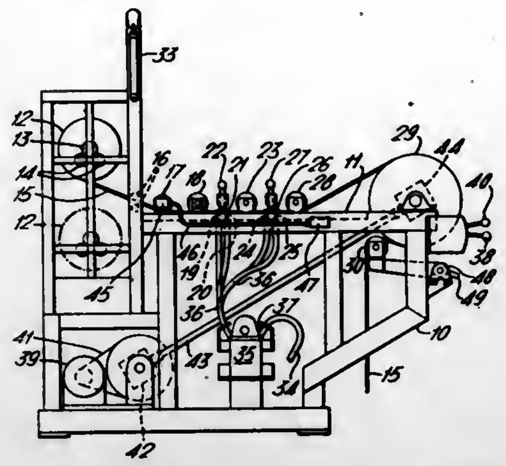
Michael Edward Richard Collis, Southampton, England, assignor to Vosper Thornycroft Limited, Portsmouth, England

Filed Aug. 24, 1970, Ser. No. 66,306

Claims priority, application Great Britain, Aug. 30, 1969, 43,283/69

Int. Cl. B05c *5/02*

U.S. Cl. 118—119 **11 Claims**



A machine for continuously impregnating a web of cloth with a resin mixture has a bed over which the web of cloth passes. Accelerated resin and catalysed resin are supplied by a pump through pairs of transverse slots in the bed to the lower surface of the web and the resin mixture is worked into the web by circumferentially grooved power driven rollers contacting the upper surface of the web which also advance said web along the bed. At the output end of the bed the web passes around a plain power driven roller and is doubled back beneath the bed to pass around a longitudinally grooved delivery roller from which the web is dispensed vertically downwards.

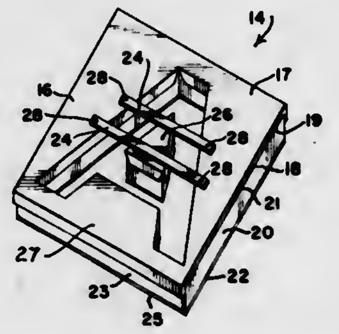
3,724,420
COMPRESSIBLE STENCIL WITH HIGH WALLS AND NARROW BRIDGES

Mary E. Quinn, 200 Mammoth Road, Pelham, N.H.

Filed Feb. 18, 1971, Ser. No. 116,457

Int. Cl. B05b *15/04*

U.S. Cl. 118—505 **3 Claims**



A unitary strippable stencil having an upper layer of thin, flexible, sheet material raised to a substantial height, above the surface to be stencilled by a relatively thick, resilient, compressible, distortable lower layer, which accommodates itself to a rough, or ribbed, surface. Those letters and numerals which have islands, have the islands connected by integral, narrow "bridges" at stencil height so that paint spray may pass thereunder. The stencil includes integral, down-turned flanges encompassing the upper part of the high walls of the compressible layer and includes a pressure sensitive adhesive coating which holds the underface of the thick resilient lower layer in place. The resilient layer may be a polymeric foam.

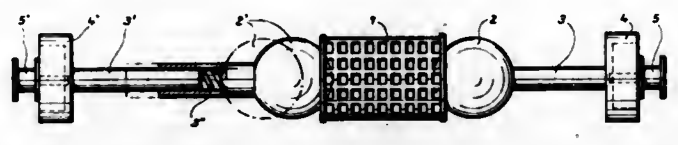
3,724,421
APPARATUS FOR FLOCKING CYLINDRICAL BODIES

Waldemar Schneck, Neckartenzlingen, and Dieter Huttenlocher, Koengen, both of Germany, assignors to Walter Huttenlocher, Kongen-Esslinger, Germany

Filed Feb. 3, 1971, Ser. No. 112,369

Int. Cl. B05b *5/02*

U.S. Cl. 118—630 **3 Claims**



Plastic hair rollers are flocked on automatic machinery in which they are fastened to a conveyor for movement therewith and for rotation about their axes which are at right angles to the direction of conveyor movement. The rollers are dipped in a cleaning liquid in a first processing station, dried by evaporation of the liquid in a second, coated with adhesive composition in a third station, exposed to a stream of fibers moving in an electrostatic field at a fourth station, and the adhesive is cured at a fifth station, whereupon excess fibers are brushed off and the rollers are taken from the conveyor. They are rotated about their axes in most of the processing steps by rolling engagement of a supporting ball bearing on the conveyor with a drive belt or a stationary rail.

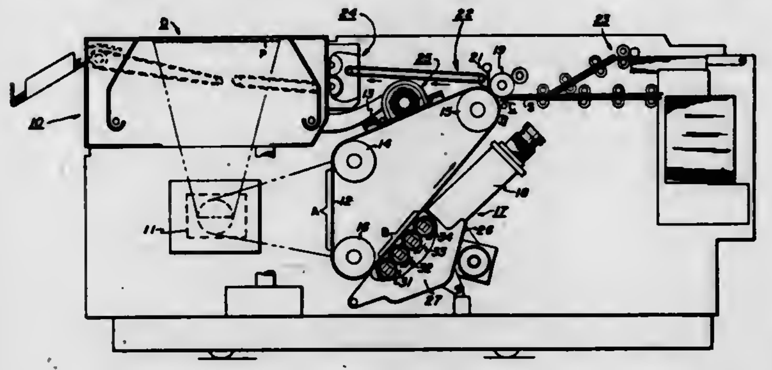
3,724,422
MAGNETIC BRUSH DEVELOPING APPARATUS

Salvatore Latone, Rochester, and Michael R. Stanley, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1970, Ser. No. 97,856

Int. Cl. G03g *13/00*; B05b *5/02*

U.S. Cl. 118—637 **5 Claims**



A magnetic brush developing apparatus for use in an electrostatic printing machine having a plurality of brushes arranged with their axes in parallel and in a plane inclined relative to the horizontal and at such an angle as to allow gravitational forces to return the developing material to a point wherein the magnets associated with the brushes may continuously form bristles thereon.

3,724,423
APPARATUS FOR GROWING CRUSTACEANS

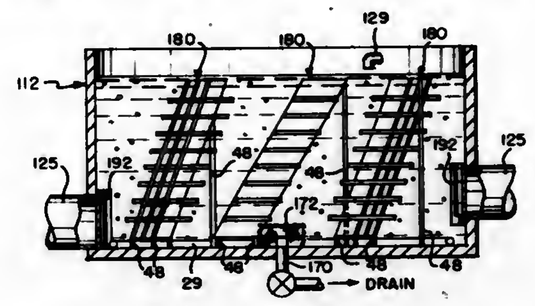
John J. Day, and Paul S. Hirschman, both of Fort Lauderdale, Fla., assignors to Ocean Protein Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 887,819, Dec. 4, 1964, Pat. No. 3,658,034. This application Dec. 8, 1970, Ser. No. 96,137. The portion of the term of this patent subsequent to April 25, 1989, has been disclaimed.

Int. Cl. A01k *61/00*

U.S. Cl. 119—4 **10 Claims**

Apparatus and method for providing optimum conditions for the growth and maturation of crustaceans during the post-larval period. A series of interconnecting tanks is provided. Habitats are positioned in each growing tank to promote the growth of the post-larval crustaceans, the type of habitat in a tank being provided to accommodate different size animals.



The water environment in each tank is continuously changed to remove waste materials from the tank, thereby promoting growth of the crustaceans. The temperature of the water environment is also maintained at an optimum level to further such growth.

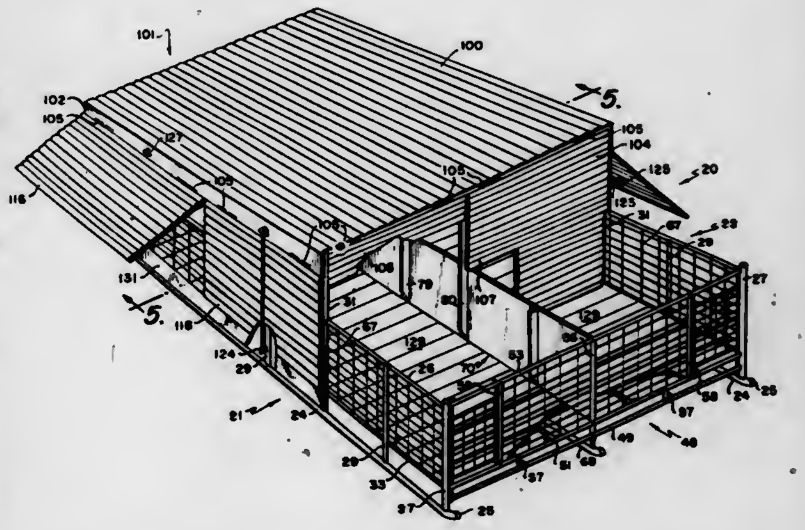
3,724,424
PORTABLE KNOCK-DOWN ANIMAL ENCLOSURE

Marshall E. Benjamin, P.O. Box 727, Amarillo, Tex.

Filed April 30, 1971, Ser. No. 138,877

Int. Cl. A01k *01/02*

U.S. Cl. 119—16 **5 Claims**



A structure for raising animals such as pigs with the animal completely out of contact with the ground. The enclosure is portable with the base forming a skid to permit the enclosure to be moved by dragging it with a tractor or other vehicle over the ground. The floor is completely removeable for replacement when sterilizing the structure after marketing one group of animals and before placing the next group in the enclosure. The enclosure is erected from prefabricated sections which can be shipped flat. The structure can be disassembled for additional shipment when required. Hinged covers are provided for the sides of the structure to serve as an awning in summer and to be dropped tight to the sides of the structure for warmth in winter.

3,724,425
WATER DISTRIBUTION SYSTEM FOR POULTRY AND SMALL ANIMALS

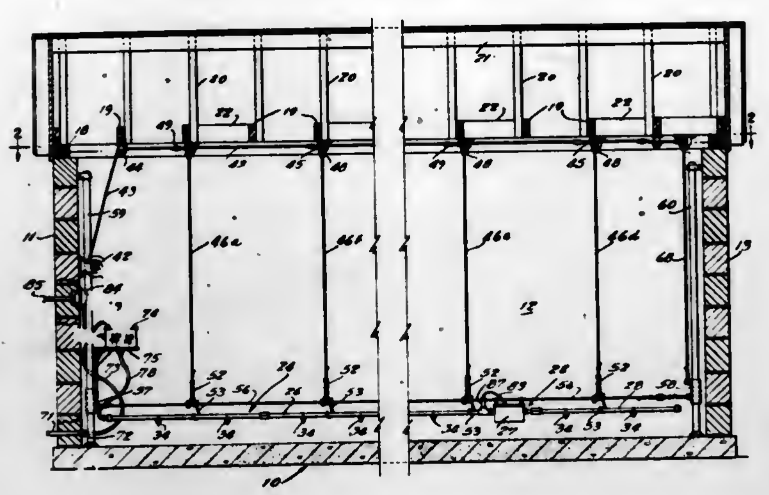
Earl Clayton Thompson, Route 2, P.O. Box 453, Waco, Tex.

Filed May 20, 1970, Ser. No. 39,107

Int. Cl. A01k *07/00*

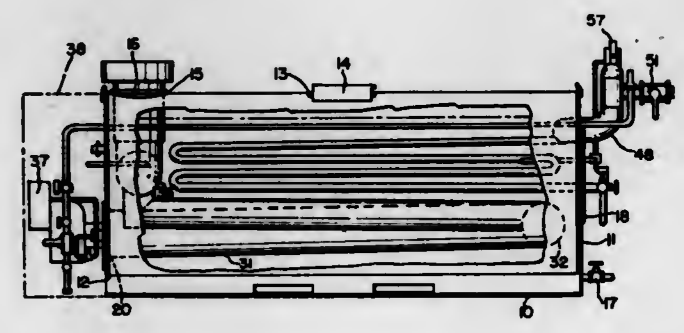
U.S. Cl. 119—72 **2 Claims**

For providing a supply of drinking water to growing poultry and small animals, a manifold conduit or pipe adjustably supported in spaced relation to the floor of a building, such as a poultry house. The manifold is supported from the roof structure of the building by a cable system including a winch for selectively adjusting the height of the manifold. A stabilizer system to prevent lateral movement of the manifold includes a cable extending in close parallel relation thereto and being coupled thereto at spaced intervals, the cable being anchored to the building structure at the ends of the manifold to move vertically therewith to accommodate height adjustments. The manifold includes spaced nibbler valves which are actuated by the animals seeking water to discharge water from the manifold according to demand. Float valve actuated reservoirs are mounted at predetermined heights relative to the manifold to regulate the water pressure available at the drinking valves. A heating cable extends through the manifold to prevent freezing of the water within the manifold.



3,724,426
HYDROTHERMAL LIQUEFIED PETROLEUM GAS VAPORIZATION SYSTEM

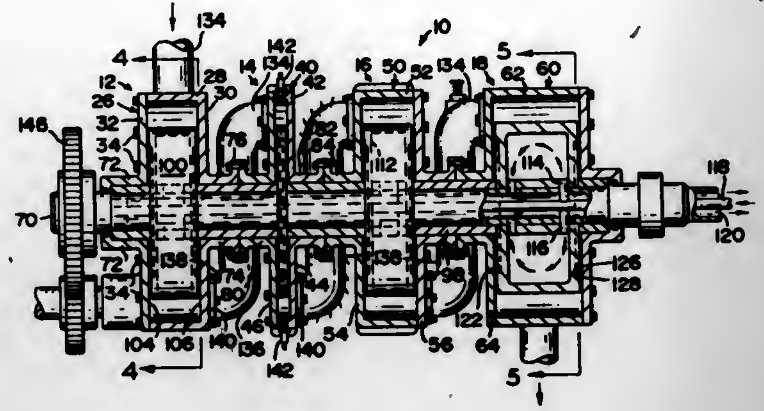
Verle H. Brown, 800 N.W. 46th St., Seattle, Wash.
Filed April 14, 1971, Ser. No. 133,940
Int. Cl. F22b *1/16*
U.S. Cl. 122—33 **6 Claims**



A hydrothermal, indirect fired liquid petroleum gas vaporization system employed as a stand-by liquefied petroleum gas unit utilizes a forced draft power burner firing into a multiple pass gas fire tube immersed in a heat exchange liquid and isolated from a vaporization assembly through which liquefied petroleum gas is passed. A vaporization assembly for vaporizing the liquefied petroleum gas insures low gas velocities and delivery of dry gas vapor and eliminates liquid gas carryover. The liquefied gas from storage enters a manifold and is distributed into multiple heat exchange tubes immersed in the heat exchange liquid. The liquefied gas vaporizes during passage through the heat exchange tubes and passes into a vapor header and vapor outlet riser, all designed to prevent any liquid gas carryover.

3,724,427
ROTARY INTERNAL COMBUSTION ENGINE

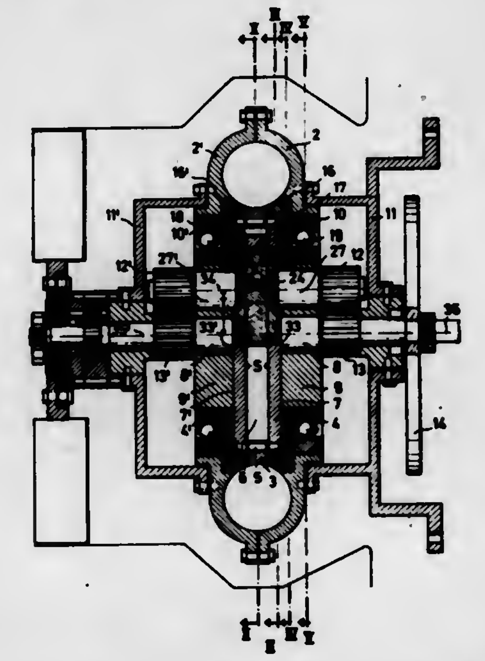
Kenneth D. Sauder, 1861 Brentwood Drive, Clearwater, Fla.
Continuation-in-part of Ser. No. 883,728, Dec. 10, 1969, abandoned. This application June 15, 1971, Ser. No. 153,435
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.07 **9 Claims**



A rotary internal combustion engine including a plurality of segregated chambers arranged in communicating relation with one another such that compression, combustion and expansion of the gases used to rotate the engine may take place in succession, step-like manner. Each of the chambers have mounted therein a rotary pump which may be in the form of a pair of multi-lobed intermeshing rotors mounted on two parallel drive shafts. Alternately, the rotary pumps may be in the form of a single rotor mounted on a single drive shaft which extends through each of the successively arranged chambers so as to position the rotor in movable working relation with the interior of the cylinder.

3,724,428
ROTARY PISTON ENGINE

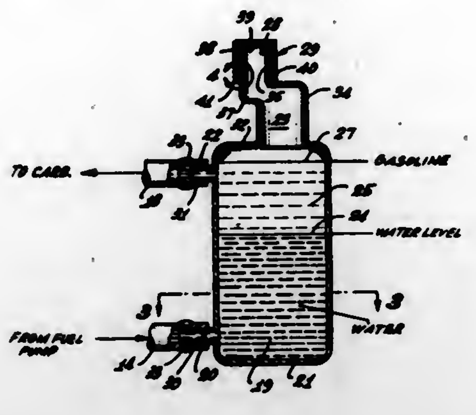
Gerhard Mederer, Am Wehr 14, 8501 Allersberg, Germany
Filed May 28, 1971, Ser. No. 147,899
Claims priority, application Germany, June 3, 1970, P 20 27 109.4
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.47 **3 Claims**



A rotary piston engine comprises an annular circular-sectioned cylinder, a working piston and a contra-piston both part annular and circular-sectioned and both mounted for rotation in said cylinder, a chamber defined in said cylinder, between said pistons constituting a working chamber of the engine and undergoing cycle changes in volume during rotation of said pistons.

3,724,429
POLLUTION-REDUCING FUEL FILTER

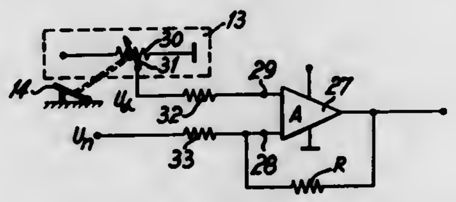
Norfleet Tomlinson, 6433 West 82nd Street, Los Angeles, Calif.
Filed Nov. 16, 1970, Ser. No. 90,201
Int. Cl. F02d *19/00, 47/00*
U.S. Cl. 123—25 R **4 Claims**



A one-piece plastic bottle having an inlet adjacent its lower end receiving gasoline from a fuel pump, an outlet below its upper end passing gasoline to a carburetor, a layer of water mixed with soluble oil below the outlet, and a sealed compartment for captive air above the outlet so that gasoline bubbles through the mixture, forms a layer thereon, and is cushioned from above by captive air under pressure. A refill opening on the upper end of the bottle is closed by a cap frictionally anchored in place by an O-ring seal.

3,724,430
FUEL INJECTION REGULATOR FOR INTERNAL COMBUSTION ENGINES

Karl-Heinz Adler, Leonberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 15, 1969, Ser. No. 866,521
Int. Cl. F02b *3/00, 33/00*
U.S. Cl. 123—32 EA **19 Claims**

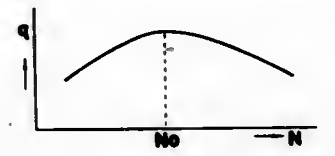


A regulating arrangement for internal combustion engines, particularly of the diesel-engine type. The fuel injection pump is set and displaced through an amplifier having one signal input derived from a speed sensor coupled to the crank shaft of the engine. The input of amplifier may also be fed with a signal derived from the accelerating pedal of the engine. A hydraulic displacement device between the output of the amplifier and the fuel injection pump converts the electrical signal from the amplifier into a corresponding setting of the pump. The feedback network of the amplifier is such that the amplification of the amplifier is substantially high at idling speeds of the engine.

3,724,431
ELECTROMAGNETIC FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

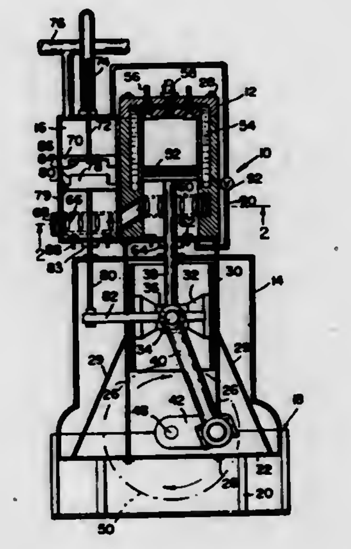
Takashi Inoue; Takao Masuda, and Takeshi Harada, all of Higashi-Matsuyama, Japan, assignors to Diesel Kike Kabushiki Kaisha, Tokyo, Japan
Filed July 13, 1970, Ser. No. 54,228
Int. Cl. F02d *5/02*
U.S. Cl. 123—32 EA **4 Claims**

An electromagnetic fuel injection device for internal combustion engines comprising electric circuit so arranged that the number of cylinders which undergo simultaneous injection in one cycle of the engine is lessened at low rotational speeds where the control time of the amount of fuel injected is relatively long so as to operate all the fuel injection valves through several stages thereby the period of each fuel injection will not correspond to an overlapping period, while for high speed rotation the number of cylinders related to simultaneous injection is increased to equivalently extend said control time.



3,724,432
NONPOLLUTING ENGINE

Tonnes K. Tonnessen, 645 46th Street, Brooklyn, N.Y.
Filed June 3, 1971, Ser. No. 149,439
Int. Cl. F02b *33/12*
U.S. Cl. 123—74 R **10 Claims**

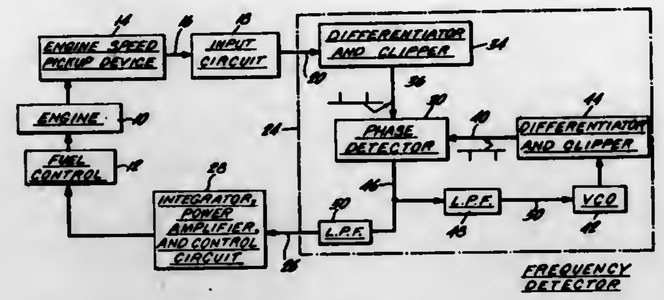


An improved nonpolluting low-emission two cycle diesel crosshead engine designed for the control of air pollution. The engine has a combustion cylinder adapted to slidably accommodate a reciprocating piston. An upper end of the cylinder is provided with a conventional exhaust valve and a fuel injection nozzle. A plurality of apertures defined in a lower end of the cylinder interconnect the cylinder with an independent air chamber. The air chamber has a fluid pump providing an expansible interior volume to accommodate clean air displaced from the cylinder on the power stroke of the piston. A floating pump piston in the air chamber is urged toward a lower end of the chamber to intermittently force a clean, relatively cool charge of air into the cylinder for scavenging the smoke, particulates, fumes and other exhaust emissions and for supplying a clean air charge for compression. A piston lifter is adapted to return the pump piston to its initial position during the compression stroke of the piston; simultaneously, suction valves open to admit cooled and/or filtered air at atmospheric pressure into the air chamber and cylinder. A valve bypass conduit connects the cylinder and the independent air chamber to provide means for regulating the air pressure acting on the floating pump piston and to thus adjust the movement for particular operating conditions of the engine. In a modified embodiment, the independent air chamber is placed concentrically around the cylinder and is provided with a circular pump piston and piston lifter ring.

3,724,433
ENGINE GOVERNOR SYSTEM WITH SIGNAL-LOSS PROTECTION AND CONTROLLED OSCILLATOR CIRCUIT SUITABLE FOR USE THEREIN

James R. Voss, Wilbraham, and William R. Ferry, Agawam, both of Mass., assignors to Ambac Industries, Incorporated, Springfield, Mass.

Filed Aug. 13, 1971, Ser. No. 171,504
Int. Cl. F02d *11/10*
U.S. Cl. 123—102 **9 Claims**

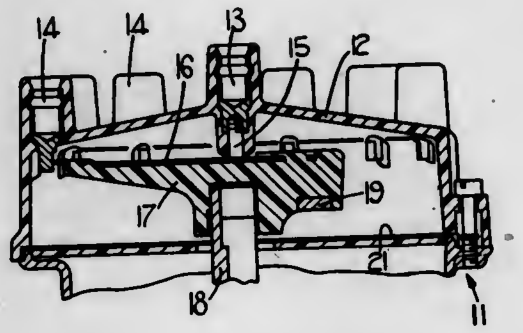

ENGINE SPEED PICKUP DEVICE
INPUT CIRCUIT
DIFFERENTIATOR AND CLIPPER
ENGINE
FUEL CONTROL
PHASE DETECTOR
DIFFERENTIATOR AND CLIPPER
INTEGRATOR, POWER AMPLIFIER, AND CONTROL CIRCUIT
L.P.F.
L.P.F.
VCO
FREQUENCY DETECTOR

A controlled oscillator circuit which, in the absence of an input alternating signal, operates in a free-running manner to produce square-wave output signals at a predetermined frequency, and which responds to input alternating signals of a lower frequency to produce output square-waves at said lower frequency. When used in an engine-speed control system, the input alternating signal is a pickup signal representative of engine speed, and the square-wave output is applied to a phase-locked-loop type of frequency detector, the output of which varies the fuel control for the engine in the sense to accomplish the desired control. Should a loss of input alternating signal from the engine pickup device occur while the engine is operating, the controlled oscillator will nevertheless produce output square waves at a relatively high frequency to operate the frequency detector and reduce the engine power or completely shut it down, thereby avoiding erratic operation or "runaway" of the engine should the input alternating signal disappear. The controlled oscillator circuit preferably comprises a differential operational amplifier having a relatively long time-constant negative-feedback circuit and a relatively short time-constant positive feedback circuit providing two alternate astable states for producing square waves during free running, the input alternating signal being applied to a control input electrode of the operational amplifier to cause it to stay in each of its alternate astable states for a time equal to about one-half cycle of the input wave and to operate in synchronism with the input alternating signal.

3,724,434
FUEL INJECTION SYSTEMS

John Longstaff-Tyrrell, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 7, 1970, Ser. No. 95,621
Claims priority, application Great Britain, Dec. 17, 1969, 61,435/69
Int. Cl. F02p *5/04, 7/02*
U.S. Cl. 123—117 R **4 Claims**

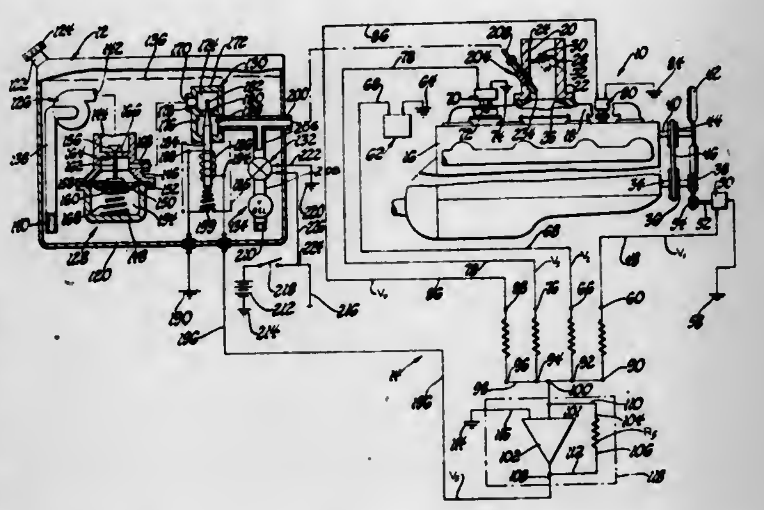


A fuel injection system for use with a multi-cylinder engine of the kind employing an ignition distributor includes a permanent magnet carried by a part of the distributor which rotates with the distributor shaft in use, and a plurality of magnetically operable switches positioned within the casing of the distributor adjacent the locus of movement of the permanent magnet. The switches are operated by the magnet in turn as the distributor shaft rotates and serve to control operation of means for supplying fuel to the cylinders of the engine.

3,724,435
REMOTE METERING SYSTEM

Kenneth C. Bier, Bloomfield, Mich., assignor to Holley Carburetor Company, Warren, Mich.

Filed Jan. 29, 1970, Ser. No. 6,656
Int. Cl. F02m *39/00*
U.S. Cl. 123—139 E **1 Claim**

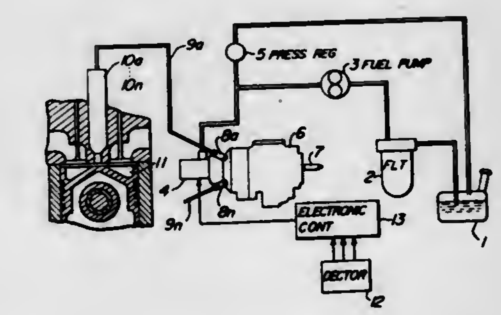


An internal combustion engine and a fuel supply tank, located remote to the engine, are provided with transducers sensitive and responsive to parameters of engine speed, engine intake manifold pressure, engine temperature and ambient temperature for providing control signals in accordance with such parameters; a fuel supply pump, pressure regulator and fuel metering device are situated within the fuel tank and connected by conduit means to a fuel discharge valve situated for discharging metered fuel to the engine induction passage; and control means responsive to the control signals is operatively connected to the fuel metering device for control thereof in order to thereby meter fuel to the engine in accordance with the demand therefor.

3,724,436
FUEL FEED CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

Senichi Nagata, Nagoya; Oyuki Ogawa, Kariya, and Nobuhito Hobo, Inuyana, all of Japan, assignors to Nippondenso Co., Ltd., Aichi-ken, Japan

Filed March 23, 1971, Ser. No. 127,203
Claims priority, application Japan, April 2, 1970, 45/28031
Int. Cl. F02m *51/00*
U.S. Cl. 123—139 E **1 Claim**



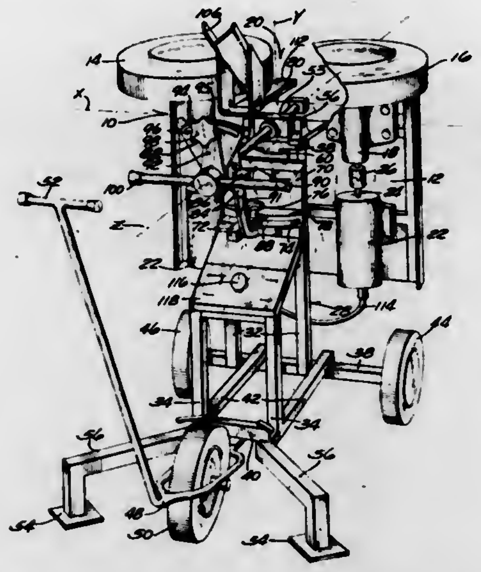
A fuel feed control device for internal combustion engines, having a fuel supply source for supplying fuel at an optional predetermined pressure and a fuel injection pump for feeding

the pressurized fuel to fuel injection valves mounted in an engine, and further having a valve disposed directly in the pump chamber of said pump in communication with said fuel supply source and opened and closed by electric signals, the quantity of fuel discharged from said fuel injection pump and the period of discharge being regulated by controlling the current conducting time and current conducting period to said valve.

3,724,437
BALL THROWING MACHINE

Earle W. Halstead, Saint Petersburg, Fla., assignor to Tru-Pitch, Inc., St. Petersburg, Fla.

Filed Nov. 23, 1970, Ser. No. 92,080
Int. Cl. F41b *15/00*
U.S. Cl. 124—1 **6 Claims**

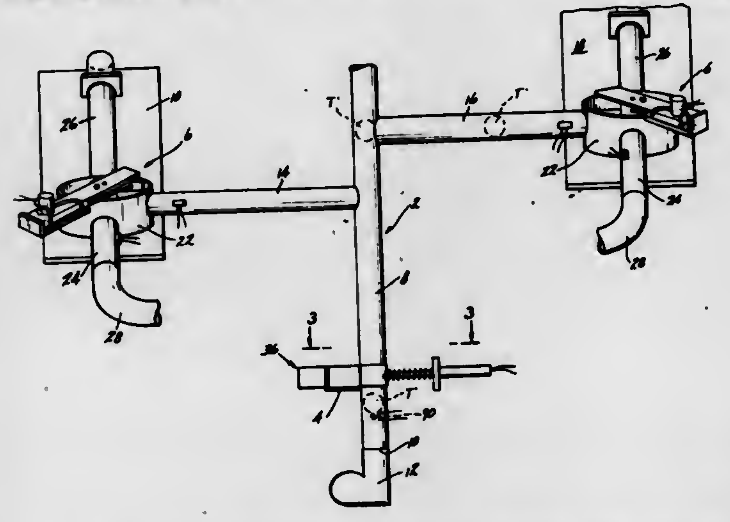


A ball is introduced on a track into the nip between two counter-rotating wheels which throw the ball. Separate variable speed motors drive the wheels and control the speed of the thrown ball and, as a result of the relative speeds of the wheels, impart a spin to the ball to produce a curve, slider, etc. A control system is arranged to automatically and repeatably select the relative speeds of the motors to provide the type and/or speed of the pitch desired. A universal joint arrangement allows pivotal movement of the wheel supporting structure about three axes for controlling and repeatably selecting the direction of the thrown ball. Ball-engaging portions of the wheels and the surface of the ball track are constructed from low friction materials and are arranged to minimize discoloration of and damage to the ball.

3,724,438
TARGET LAUNCHER

William L. Brandt, Lebanon, Mo., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 19, 1971, Ser. No. 116,866
Int. Cl. F41f *1/04*
U.S. Cl. 124—11 R **5 Claims**

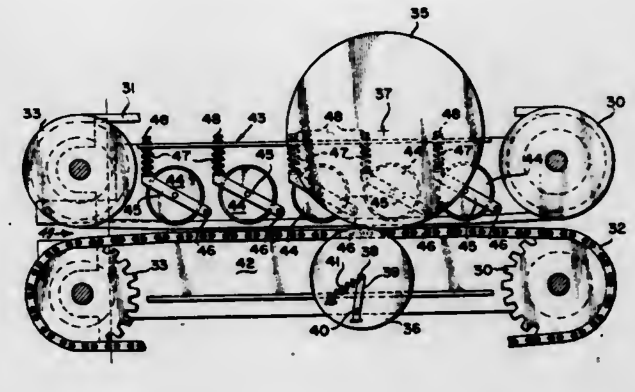


Apparatus for launching spherical targets into the air including a tubular pneumatic conveyor system having a main trunk portion and branch portions. A transfer mechanism is connected to a remote end of each of the branch portions of the conveyor to receive a target from the conveyor and deposit the targets is a pneumatically actuated launching tube. Targets are thus fed from a source through the conveyor and into the launching tubes to be propelled into the air.

3,724,439
APPARATUS FOR TRIMMING SLATE

Robert G. Cabell, Colombia; Thomas A. Yancey, Arvonia; Roy Norman Linville, and Daniel J. Harrington, both of Richmond, all of Va., assignors to Arvonia-Buckingham Slate Company, Inc., Arvonia, Va.

Filed Dec. 15, 1967, Ser. No. 691,059
Int. Cl. B28d *1/32*
U.S. Cl. 125—23 T **11 Claims**

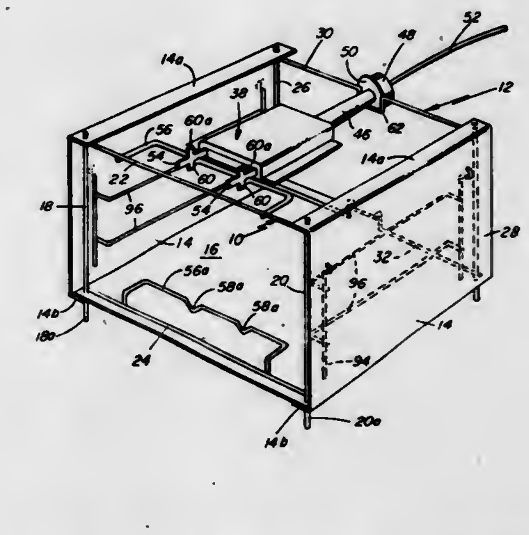


A trimming apparatus for slate blanks wherein two opposing circular wheels are used to trim the blanks and at the same time accommodate warpage and irregularities in the blanks in order to furnish high production with relatively small breakage.

3,724,440
PORTABLE OVEN

Robert A. Clark, Allentown, and Peter L. Helgeson, Macungie, both of Pa., assignors to Raytheon Company, Lexington, Mass.

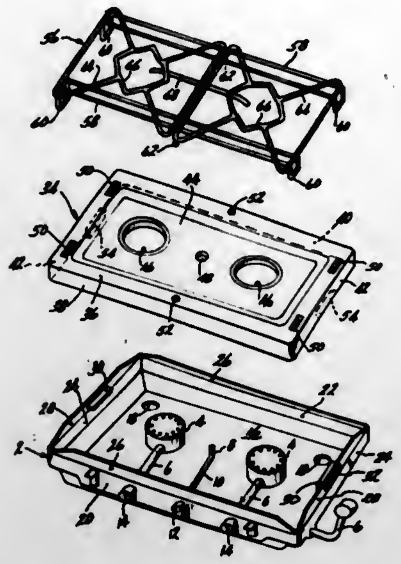
Filed Feb. 25, 1972, Ser. No. 229,423
Int. Cl. F24c *1/16;* **A47j** *37/07*
U.S. Cl. 126—9 R **6 Claims**



A portable gas or electric oven comprising a wire framework which is easily assembled and disassembled and which embodies means for efficiently supporting a burner in position for broiling or baking of foods supported in the oven, and which further embodies rigid wall portions and, if desired, a disposable wall covering which may be utilized during actual cooking processes and thereafter discarded, and which may be eliminated entirely for oven demonstration purposes.

3,724,441
CAMP STOVE TRAY TO CASE MOUNT

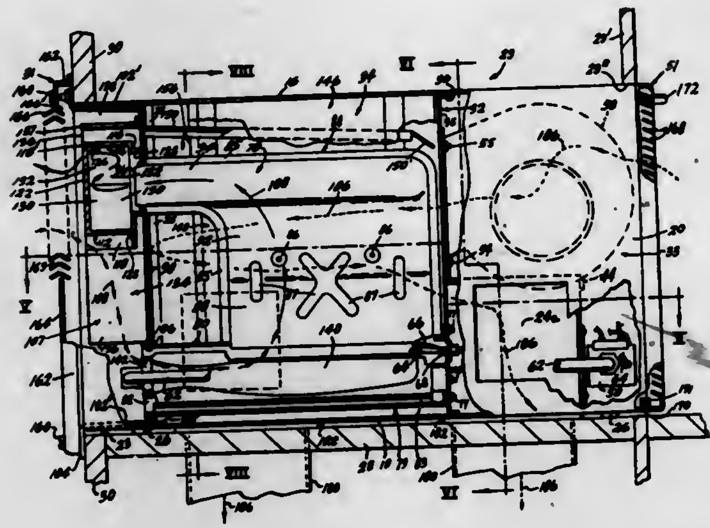
Carl E. Finley, Sycamore, Ill., assignor to Olin Corporation, New Haven, Conn.
Filed Aug. 25, 1971, Ser. No. 174,728
Int. Cl. F24c *5/20*
U.S. Cl. 126—38 3 Claims



A camp stove of the portable variety which includes a casing basal portion on which are mounted burners and an igniter. A tray is releasably mounted on the casing to protect the casing against spattering and dirt and may be easily removed for cleaning. A grill is seated on the tray for supporting cooking utensils over the burners, the grill being easily removed for cleaning.

3,724,442
SEALED COMBUSTION FORCED AIR FURNACE

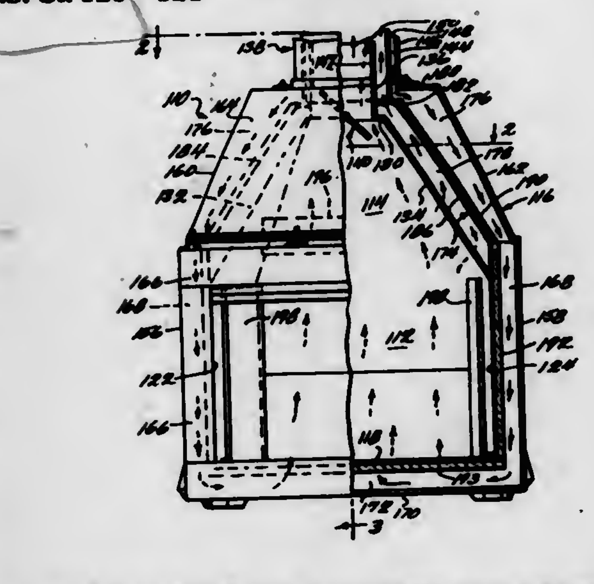
Chester T. Gurney, and Arnold P. Gatti, both of Fresno, Calif., assignors to Motor Wheel Corporation, Lansing, Mich.
Filed April 13, 1971, Ser. No. 133,632
Int. Cl. F23j *11/00*; F24c *3/00*; F24h *3/00*
U.S. Cl. 126—85 B 34 Claims



A sealed combustion forced air furnace for use in a mobile home or the like comprising a rectangular casing having open interior and exterior ends communicating with the interior and exterior of the home respectively. A partition within the casing divides the casing into forward and rear compartments and includes a cut-out communicating the two compartments. An interior grill covers the open interior end of the casing and a motor-driven blower within the forward compartment draws room air through the interior grill into the forward compartment and discharges the air through the cut-out into the rear compartment. A pair of vertical side baffles and a top baffle in the rear compartment extending rearwardly from the cut-out define a central air heating tunnel. A rectangular burner box lies vertically below the tunnel and a pair of heat exchangers project upwardly therefrom within the air heating tunnel. A pair of burners are within the burner box below each heat exchanger. A vent pan encloses the open exterior end of the casing by means of an interior upright wall and an exterior grill covers the exterior end of the vent pan to define therewith a ventilation chamber. The burner box communicates with the ventilation chamber, and the heat exchangers have discharge outlets communicating with the ventilation chamber. A flue pan assembly within the ventilation chamber comprises a vertical deflector plate spaced rearwardly opposite the discharge outlets, and a pair of lateral exhaust openings between the upright vent pan wall and the deflector plate. The flue pan assembly further includes a pair of vertical side walls spaced laterally outwardly of and opposite the lateral exhaust openings. The upper portion of the exterior grill has a plurality of louvered openings and an imperforate lower portion in juxtaposition to the burner box. The uppermost louvered openings are at the same or higher elevation as the lateral exhaust openings. The combustion air circuit and the room air circuit are sealed from one another in the casing. In the combustion air circuit, outside combustion air is drawn by natural gravity draft through the lowermost louvered openings in the exterior grill to flow downwardly within the ventilation chamber. The air then enters the burner box where it is mixed with fuel in the burners and ignited to produce hot flue gases which rise upwardly within the heat exchangers to flow through the discharge outlets. The flue gases are deflected and divided by the deflector plate to flow in diverging streams laterally against the side walls of the flue pan assembly and then outwardly through the uppermost louvered openings in the exterior grill. In the room air circuit the blower draws room air through the interior grill and horizontally discharges the room air into the heating tunnel to sweep the outer surface of said heat exchangers to be heated. The heated room air upon exiting from the tunnel is deflected and divided by the upright wall of the vent pan to flow in two streams between each side baffle and the adjacent casing side wall to a plurality of discharge openings in the casing bottom and sides. The furnace controls are located within the forward compartment and are conveniently accessible from the interior of the home by removing the interior grill. The burner box and heat exchangers are rendered accessible for cleaning from the exterior of the home by removing the exterior grill.

3,724,443
COUNTER-FLOW FIREPLACE

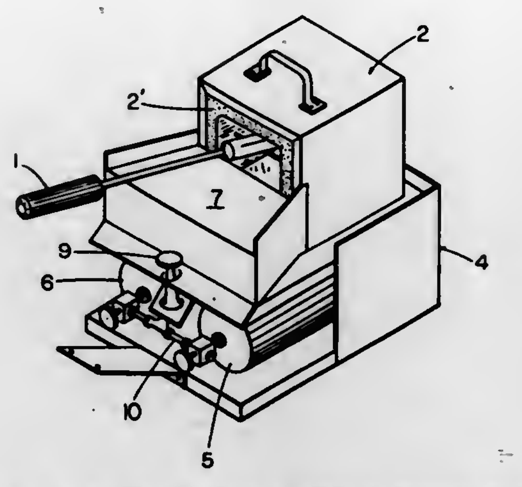
Walter C. Carson, Savannah, Ga., assignor to Martin Stamping & Stove Company, Huntsville, Ala.
Continuation-in-part of Ser. No. 846,911, Aug. 1, 1969, Pat. No. 3,601,117. This application Aug. 20, 1971, Ser. No. 173,590
Int. Cl. F24b *7/00*
U.S. Cl. 126—121 6 Claims



A prefabricated fireplace assembly is constructed as a double-walled structure defining an open-front hearth and a dome portion terminating at its upper end in a smoke pipe adapted to cooperate with counterflow chimney of the type having concentric ducts for drawing in cooling air and discharging warmed air. A hood-like baffle surrounding the front and sides of the dome portion and disposed in the space between the double walls directs cooling air from the chimney over internal surfaces to be cooled and back to the chimney.

3,724,444
PORTABLE FIRE POT FOR SOLDERING IRON

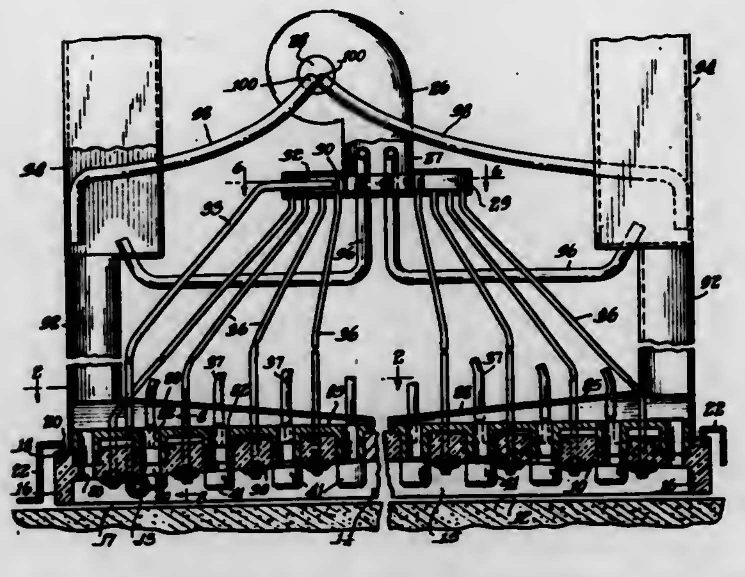
Paulino G. Varona, 5535 Saint Rock Avenue, New Orleans, La.
Filed Dec. 28, 1970, Ser. No. 101,663
Int. Cl. F24c *3/00*
U.S. Cl. 126—237 4 Claims



A soldering iron furnace which is light in weight so as to be readily portable, in which the degrees of heat generated is subject to manual control, which provides for rapid and economical heating of the soldering irons, and which confines the flame so as to be safe for use in areas selected for soldering; a dual fuel supply with a common T-joint connection is provided thereby adding much flexibility to the refill timing and allowing use of the device while one-half of the fuel supply is being replenished.

3,724,445
HEATER FOR ASPHALT CONCRETE ROADWAYS AND THE LIKE

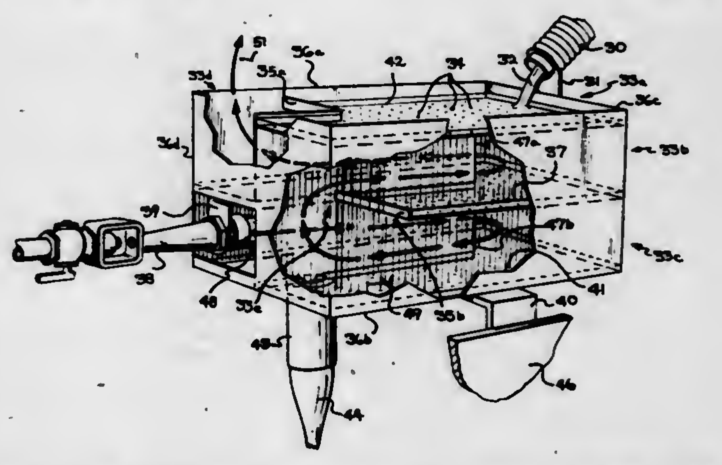
Earl F. Cutler, Lawrence, Kans., assignor to Cutler Repaving Inc., Lawrence, Kans.
Filed March 30, 1971, Ser. No. 129,404
Int. Cl. E01c *23/14*
U.S. Cl. 126—271.2 A 11 Claims



Fuel such as pentane is heated to 300°F to 400°F and then mixed with the air needed to oxidize the carbon and produce a smokeless exhaust. The mixture is delivered into a shallow chamber of which the pavement to be heated is the bottom. The roof of the chamber is of infra-red brick and has depending side walls and end walls extending down close to the pavement to be heated, providing heat-radiating surfaces. The spent gases are aspirated through holes in the roof near its edges to keep the pressure in the chamber automatically identical with the atmospheric pressure outside. The intensity and rapidity of the heat transfer into the roadbed is such that exposure to the naked flame in the chamber can only be continued for a fraction of a minute without getting the surface hot enough to injure the pavement. The completion of the process is as disclosed in my earlier U.S. Pat. No. 3,361,042 and includes roweling all the softened roadbed to dislodge heated material and additional cooler material lower down, and a second heating of the roweled surface.

3,724,446
SWIMMING POOL HEATER

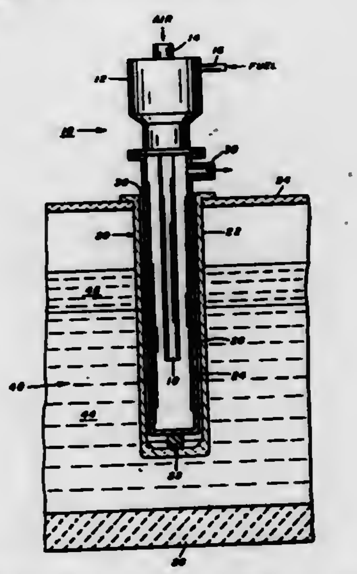
Raymond S. Richards, 2755 Sagamore, and Douglas F. St. John, 4433 Terrace View South, both of Toledo, Ohio
Filed March 24, 1971, Ser. No. 127,499
Int. Cl. F24h *1/10*
U.S. Cl. 126—350 R 8 Claims



There is disclosed a direct contact, water-nonsubmerged system for heating of a swimming pool by the transverse flowing of water into direct contact with a flowing heat source. In the specific practice, a source of swimming pool water is flowed onto a water dispersing surface containing a multiplicity of weep holes and then flowed through the weep holes into aheat source flowing transverse to the water flow through the weep holes.

3,724,447
IMMERSION HEATER

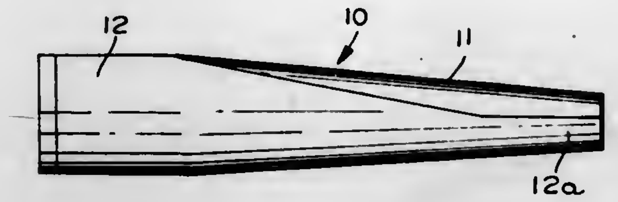
Vernon E. Parkhill, Lower Burrell, and Marshall J. Bruno, Greensburg, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Oct. 27, 1971, Ser. No. 193,113
Int. Cl. F24h *9/18*
U.S. Cl. 126—360 R 9 Claims



An improved immersion heater assembly for heating baths containing molten aluminum or magnesium and salt flux features an outer refractory jacket and an inner metal liner. The improved assembly offers resistance to both the salt and the corrosive aluminum providing extended heater life.

3,724,448
SOLID OVOSCOPE

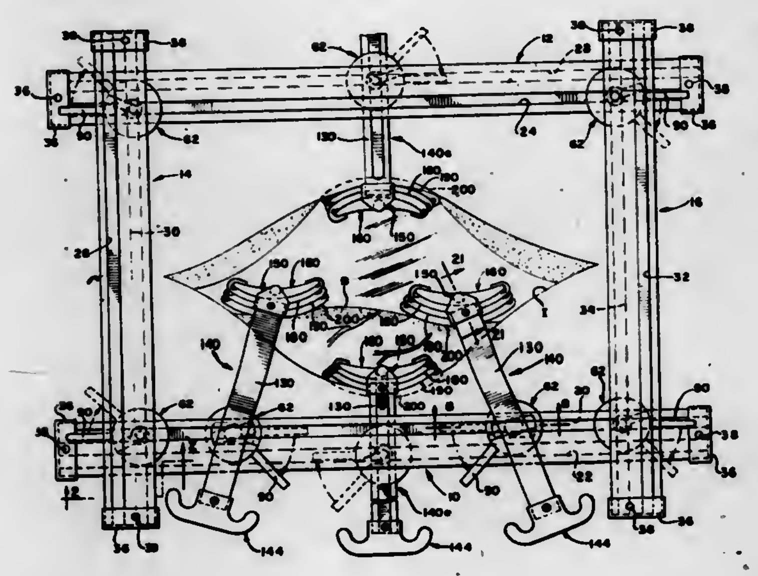
Jorge Rodrigues Lima, Av. N.S. de Coapacabana 342, Apt. 403, Rio de Janeiro, Brazil
Filed Oct. 16, 1970, Ser. No. 81,307
Int. Cl. A61b *1/00*
U.S. Cl. 128—6 **2 Claims**



A solid ovoscope having an outer plastic shell and an inner refringent body for use in visualizing amniotic contents and fetal assessment during pregnancy.

3,724,449
RETRACTOR APPARATUS

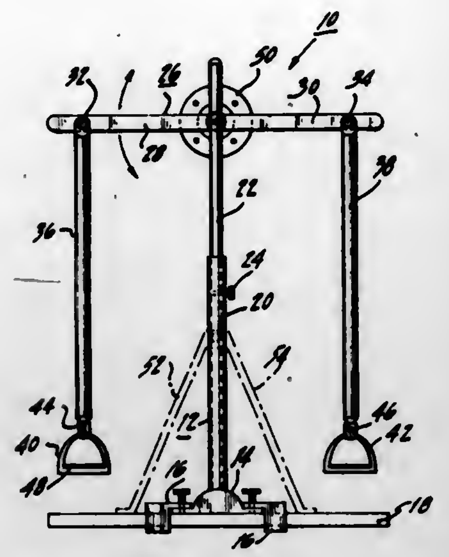
William Kohlmann Gauthier, 310 Codifer Boulevard, Metairie, La.
Continuation-in-part of Ser. No. 873,051, Oct. 31, 1969, abandoned. This application Oct. 19, 1970, Ser. No. 81,651
Int. Cl. A61b *17/02*
U.S. Cl. 128—20 **23 Claims**



A frame includes a plurality of frame portions. Connecting means interconnects these frame portions for movement with respect to one another to define a substantially rectangular framework. Locking or latching means is associated with each of said connecting means for selectively locking or latching the frame portions in position with respect to one another, each of said locking or latching means including an outwardly extending manually engageable portion which can be readily operated. Support arms are also movably mounted with respect to the frame portions by connecting means, and similar locking or latching means are associated with such connecting means to lock or latch the support arms in position relative to the frame portions. Retractor blade means including a plurality of telescopic sections is connected to one end of the support arms.

3,724,450
LIMB OSCILLATOR

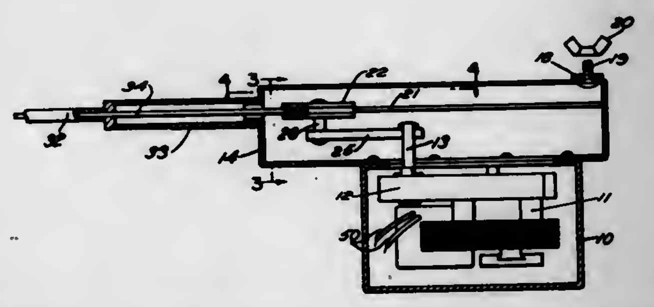
Horace Chaltin, 6 Peppermill Road, Roslyn, N.Y.
Filed May 5, 1971, Ser. No. 140,337
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 R **13 Claims**



A device for oscillating the legs of a patient comprises a vertical center member having means for mounting said member upon a base, a horizontal member moveably mounted on said vertical center member such that the point of mounting provides a fulcrum around which said horizontal member can oscillate, vertical end members extending downward from near the ends of said horizontal member, said vertical end members being provided with stirrups for supporting the feet of the patient and means for oscillating said horizontal member about said fulcrum, thereby alternately raising and lowering the legs supported by the stirrups.

3,724,451
PORTABLE MASSAGING DEVICE

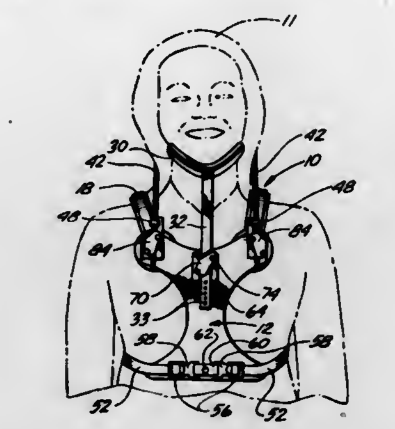
Don Santo, 1440 N. 64th Way, Hollywood, Fla.
Filed July 12, 1971, Ser. No. 161,782
Int. Cl. A61h *7/00*
U.S. Cl. 128—52 **8 Claims**



A portable massaging device utilizing an AC motor having a high torque at a slow speed. The motor drive shaft operates a crank lever arm. The end of the arm is freely slidable within an elongated slot on a sliding member. Rotation of the crank arm will therefore cause reciprocation of the sliding member. A Bowdoin type cable is attached to the housing holding the sliding member with the operating central wire threadedly attached to the sliding member. The other end of the Bowdoin cable is mounted in a handle having a central axial opening. The central cable wire extends into this opening and is provided with a member having an internally threaded opening. Any suitable massaging attachment may be used. For example, the attachments may include brushes, vibrators, rollers, etc. Each attachment is provided with a carrier shaft having a threaded end which can be inserted into the handle and threaded into the member at the end of the central wire of the cable. With this hook-up, when the motor is turned on, the crank arm causes reciprocation of the sliding member. This causes the central cable wire to reciprocate so that its end will reciprocate within the axial handle opening. If the handle is grasped manually, the attachment will also reciprocate and can be applied to a suitable portion of the body.

3,724,452
CERVICAL BRACE

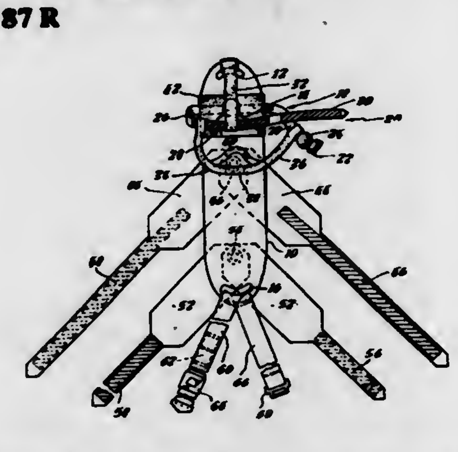
Robert O. Nitschke, Rochester, N.Y., assignor to Ted J. Green, Costa Mesa, Calif.
Filed March 4, 1971, Ser. No. 120,871
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **15 Claims**



A cervical brace includes a chest plate, a pair of shoulder bars pivotally mounted on the chest plate and resting on a patient's shoulders, and a pair of straps extending from the ends of the shoulder bars across the patient's back and secured to the chest plate to hold it firmly against the patient's sternum. A chin support is held under the patient's chin by an elongated chin support bar having vertically spaced apart holes, one of the holes being fitted over a pin on the chest plate. A hinged plate on the chest plate pivots over the chin support bar to hold it on the pin. The plate may be swung aside to remove the chin support from the chest plate and later replace it at the proper elevation under the patient's chin without moving the patient's head. An occipital support is held under the patient's occiput by an occipital support bar which extends over the patient's shoulders and is secured to the chest plate. An adjustable stop on each side of the occipital support bar fits into a respective slot on the chest plate, each stop being held in its slot by a respective hinged plate on the chest plate. When the hinged plates are swung aside the occipital support may be applied to the patient's occiput without substantial movement of the patient's head, neck, or upper torso.

3,724,453
SPLINTS

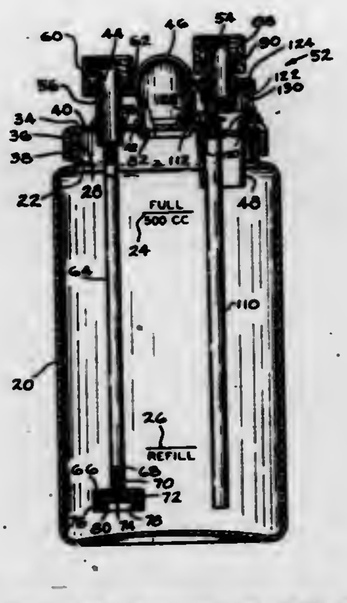
Amers Ernest Dixon, 44 Sutton Street, Walkergate, Newcastle upon Tyne, and Michael Proctor, 27 Beach Avenue, Whitley Bay, both of England
Filed Aug. 4, 1970, Ser. No. 60,840
Claims priority, application Great Britain, Aug. 6, 1969, 39,341/69
Int. Cl. A61f *5/04*
U.S. Cl. 128—87 R **4 Claims**



A splint which is of particular value in extricating persons from vehicle crashes where an injury of the spine or neck is to be feared comprises a solid backing member which is of a length to stretch from adjacent the bottom of the spine to behind the head of an injured person, and which has secured thereto a harness for holding the head in position against the splint and further harness for rigidly securing the torso to the splint (which harness may also hold the arms rigidly).

3,724,454
HUMIDIFIER - NEBULIZER

Joseph W. Brown, Chicago, Ill., assignor to The Bendix Corporation, South Bend, Ind.
Filed Feb. 4, 1971, Ser. No. 112,523
Int. Cl. A61m *11/00*
U.S. Cl. 128—194 **1 Claim**

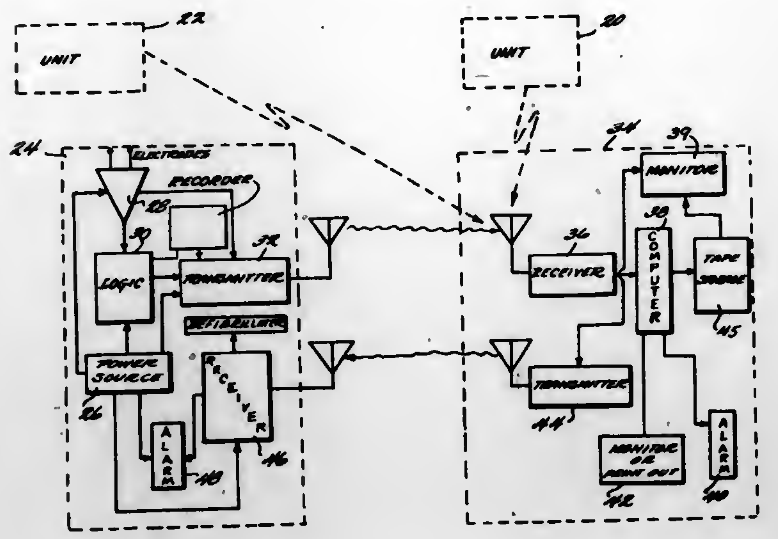


A container defining a chamber partially filled with a liquid such as water is provided with a pair of pressurized oxygen flow inlet ports and an outlet port from which humidified or nebulized oxygen flow is discharged for breathing. A humidifying device connected to one of the inlet ports includes a diffuser immersed in the water and provided with relatively small slots through which pressurized oxygen is forced to form minute bubbles that rise through the water to provide humidified oxygen flow which passes out of the outlet port. A nebulizing device connected to the second inlet port includes a tube having one end extending into the water and an opposite end exposed to a low pressure region generated by high velocity oxygen flow through an orifice. Water thereby aspirated through the tube is broken up and entrained by the oxygen flow and the resulting mixture discharged into an enlarged volume chamber and directed against a fixed pin or baffle in the chamber to further break up the entrained water particles. An adjustable inlet port communicates the chamber with room or ambient air to provide preselected dilution of the nebulized oxygen flow with room air which room air is aspirated into the chamber by sub-atmospheric pressure generated therein. The diluted nebulized oxygen flow subsequently passes out of the outlet port. The humidifying and nebulizing devices are independently operatively depending upon which one of the pair of inlet ports is connected to a suitable pressurized oxygen source.

3,724,455
CARDIAC WARNING DEVICE

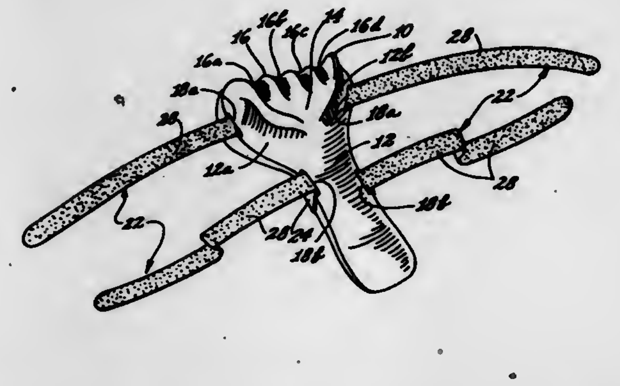
Paul N. Unger, 945 Arthur Godfrey Road, Miami Beach, Fla.
Filed June 2, 1970, Ser. No. 42,850
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A **10 Claims**

A method and apparatus for detecting and responding to herald signs in the cardiac waveform, such as a fast heartbeat rate, a low rate or a skipped heartbeat. In one embodiment the detection of a herald sign causes the ECG waveform to be transmitted to a remote location where it is analyzed and a signal retransmitted to the patient triggering an alarm or causing other appropriate action. In another embodiment, the detection of a herald sign causes the ECG to be recorded on a loop of magnetic tape or a modular solid state memory device in the unit so that the tape can be replayed and acoustically coupled to the telephone line after the patient calls the central facility. In yet another embodiment, the detection of different herald signs causes different alarm signals, e.g., colored lights, different alarm signals identifying the abnormality, to be operated to indicate to the patient what medication he should administer to himself or whatever other action he should take in the event that communication with central facility cannot be immediately achieved.



3,724,456
EXTREMITY SUPPORT ATTACHMENT FOR INTRAVENOUS FEEDING

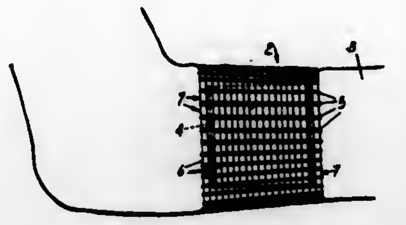
Rudy Waxman, 17132 Killion St., Encino, Calif.
Filed May 5, 1971, Ser. No. 140,458
Int. Cl. A61m *05/00*
U.S. Cl. 128—133 **10 Claims**



A device to support a human extremity, such as a hand or foot and to be secured thereto, having among other uses intravenous (i.v.) feeding and blood transfusion, the device including a member of a rigid material contoured to hold comfortably and in an anatomically correct position one of such extremities when the member is laid upon a horizontal surface. A disposable liner of sterilized resilient cellular material is placed directly upon the contoured area of the member and is folded over the extremity after the i.v. needle has been properly inserted in the patient's vein and the extremity is disposed therein. Straps having prickly inner surfaces are provided to be wrapped over the exposed area of the thus-folded cellular liner to secure the extremity to the contoured device and the i.v. needle to the patient's extremity. Locking means may also be employed to prevent a patient from attempting to remove the straps.

3,724,457
BANDAGING MEANS

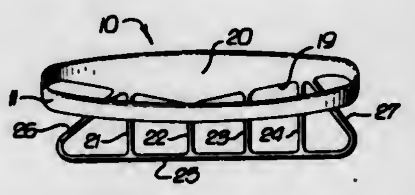
Ernst Karel Klatte, 9 Noolseweg, Laren, Netherlands
Filed Nov. 17, 1970, Ser. No. 90,372
Claims priority, application Great Britain, Nov. 20, 1969, 56,829/69
Int. Cl. A61f *13/00*
U.S. Cl. 128—171 **5 Claims**



A bandaging means for retaining dressings in place comprises a tubular fabric of special open mesh structure. Row of chain stitches made from non-elastic yarn extend in axial direction of the fabric, and elastic yarns are each arranged in reciprocating fashion between two successive rows of chain stitches and linked therewith so as to form between those two rows of chain stitches, on tensioning of the fabric, a line of trapeziums alternately inverted in relation to each other. The two parallel sides of each trapezium are formed by the rows of chain stitches and the other two sides are formed by the elastic yarn.

3,724,458
TOE HARNESS

Tracy D. Piper, 7900 Teesdale Avenue, North Hollywood, Calif.
Filed Nov. 2, 1970, Ser. No. 86,113
Int. Cl. A61f *13/00*
U.S. Cl. 128—171 **3 Claims**

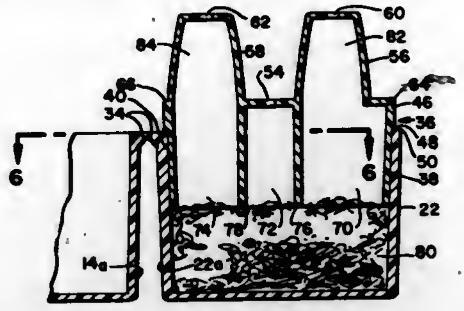


An elastic band of a suitable length to contract about the foot just behind the toes to retain itself in place, this band having cottonstuft-retaining elastic strips secured to its forward edge at points located above the foot and aligned with vertical planes in which the toes are contiguous, said elastic strips extending downward between said toes and being connected at their lower ends by a transverse elastic strip, the opposite ends of said transverse strip being connected with the front edge of said band by wing elastic strips which pass outwardly and upwardly around the big and little toes and serve to keep said transverse elastic strip taut, said cotton-tuft-retaining elastic strips overlying and retaining in place medicated tufts of cotton placed between the toes.

3,724,459
DUAL INHALER

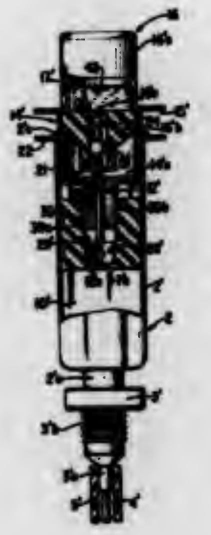
Peter Leo Congro, 222 8th Avenue, San Francisco, Calif.
Filed June 7, 1971, Ser. No. 150,499
Int. Cl. A61m *15/08*
U.S. Cl. 128—200 **4 Claims**

A two piece nasal inhaler comprising an integral case with a cover hingedly joined and an insert for said case with two nostril shaped protuberances mounted on a housing with a channel extending through the protuberances and communicating with said housing. An air passage is provided to permit the flow of air through the housing and up through the protuberances.



3,724,460
DISPOSABLE CARTRIDGE FOR ADMIXING TWO COMPONENTS OF INJECTABLE MEDICAMENT

Eloy A. Gomez, West Chester; Stephen W. Goodsir, King of Prussia, and Dominic A. Marrocco, Chester, all of Pa., assignors to American Home Products Corporation, New York, N.Y.
Division of Ser. No. 775,726, Nov. 14, 1968, Pat. No. 3,636,950. This application Jan. 28, 1971, Ser. No. 110,433
Int. Cl. A61m *5/00*
U.S. Cl. 128—218 M **8 Claims**

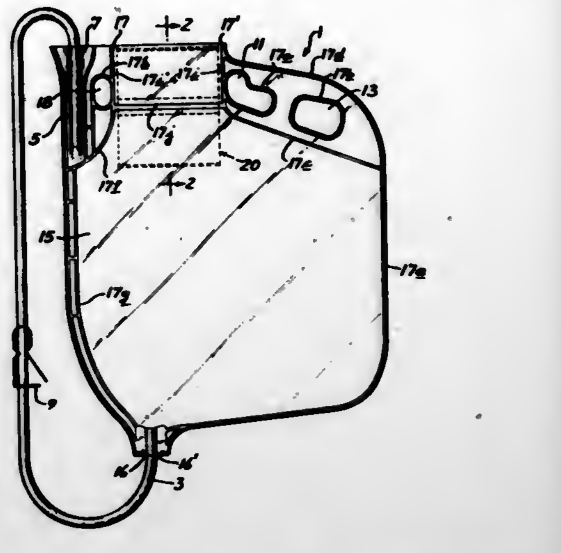


A cartridge unit for use in, or as a syringe, and comprising two chambers, each for containing a separate component of the final injectable mixture, wherein one of the chambers is detachably mounted on the unit, the other chamber is provided in the unit, and a double-pointed cannula is provided for communicating the two chambers and then causing the contents of the removable chamber to be introduced into the other chamber, whereafter the detachable chamber is removed to permit attachment of a push rod to the plunger or stopper when the unit is to be used.

3,724,461
CONTAINER WITH SELF-CLOSING ONE-WAY VALVE

Melvin I. Eisenberg, 2908 W. Lunt, Chicago, Ill.
Filed Oct. 20, 1971, Ser. No. 190,926
Int. Cl. A61m *3/00*
U.S. Cl. 128—227 **19 Claims**

A container for fluid or the like including a pair of closely confronting flexible walls unsecured along a portion thereof to form a supply opening for the container. The supply opening includes a one-way valve comprising a pair of confronting flat walls of flexible sheet material forming a flattened sleeve-like structure open at the opposite ends thereof and respectively secured to the confronting container walls. An arcuate seal-forming spring member is secured to and extends across the outside of one of the valve walls with the convex side thereof facing the same to draw the valve walls thereto into sealing relation. A pair of oppositely curving partially expanded confronting spring members are located between said valve walls, the spring members curving about an axis extending in the direction of the open ends of the flattened sleeve-like valve structure, with the concave sides thereof facing one another, so that the confronting spring members can be squeezed to expand the same to balloon the same outwardly together with the valve walls on the outside of the same to form a large inlet passageway into the container.



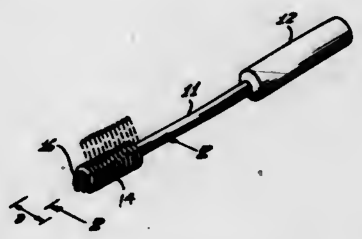
3,724,462
WATER-DISPERSIBLE INSERTION DEVICES FOR TAMPONS AND THE LIKE

David E. Hanke, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Nov. 1, 1971, Ser. No. 194,694
Int. Cl. A61f *15/00*
U.S. Cl. 128—263 **8 Claims**

Improved water-dispersible insertion devices for tampons, suppositories and the like of the type which comprises a pair of telescoping plastic tubes made from plastic sufficiently sensitive to water to be softened in the presence thereof. One of the tubes is made from a type of water-sensitive plastic material which is different from the material used for the other tube. In addition, the plastic material of one tube is incompatible with the plastic material of the other tube.

3,724,463
ROTATABLE HYGIENIC VAGINAL SWAB DEVICE

Edward O. Vail, 330 W. Chevy Chase Drive, Apt. No. 33, Glendale, Calif.
Filed Nov. 9, 1970, Ser. No. 87,725
Int. Cl. A61m *35/00*
U.S. Cl. 128—269 **4 Claims**



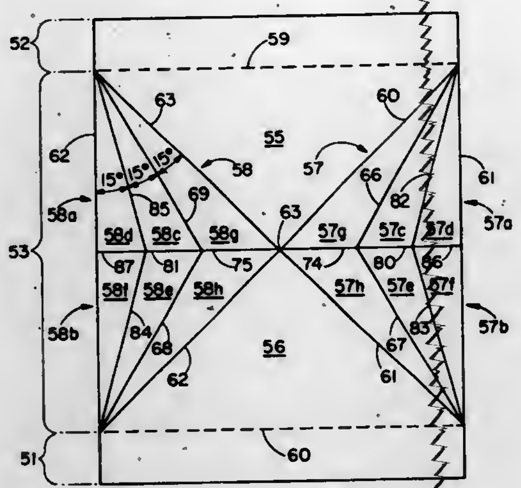
A vaginal swab device for use in cleansing the vaginal canal comprising: an elongated manually rotatable element having a series of adjacent spiral coils of absorbent strands wound thereon adjacent one extremity of said element, one end of each of said strands secured to said element whereby they may be spirally wound by rotating said element in one direction and unwound by rotating the element in the opposite direction.

3,724,464
PREFOLDED DISPOSABLE DIAPER

Kenneth M. Enloe, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 11, 1971, Ser. No. 105,160
Int. Cl. A61f ***13/16***

U.S. Cl. 128—284 **4 Claims**



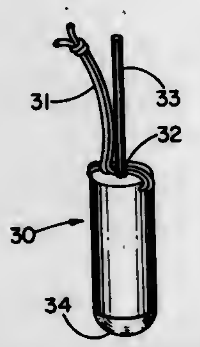
An improved prefolded disposable diaper folded to provide a centrally disposed, downwardly depending, main pocket flanked on each side by laterally disposed secondary pockets.

3,724,465
TAMPON COATED WITH INSERTION AID AND METHOD FOR COATING

David V. Duchane, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 22, 1971, Ser. No. 165,134
Int. Cl. A61f ***13/20***

U.S. Cl. 128—285 **6 Claims**



A compressed absorbent tampon provided with an improved insertion-aid coating on at least the tip portion and a method for applying the improved coating and similar coatings to the tampon. The improved coating comprises a normally solid polyethylene glycol containing at least one stabilizing agent. Suitable agents include water-insoluble metal stearates and/or fumed silica.

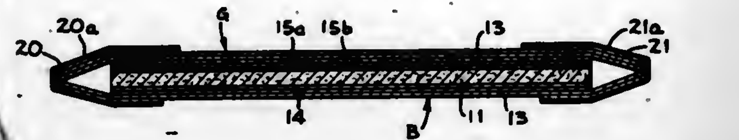
3,724,466
SANITARY NAPKIN

Laurel A. Hendricks, P.O. Box 943, Palo Alto, Calif.

Filed Nov. 10, 1971, Ser. No. 197,210
Int. Cl. A61f ***13/16***

U.S. Cl. 128—290 R **12 Claims**

A sanitary napkin having adhesive peel-off strips at the ends of the napkin for securing the napkin to an undergarment of a wearer. The peel-off strips with a pile or soft plastic surface finish are scored or cut to permit peel-off tabs on the garment side of an absorbent cover for the napkin to be removed by peeling toward the longitudinal center of the napkin. Thus, the napkin, whether in the form of a mini-pad or a regular size pad, is a relatively inconspicuous device that can be attached relatively indiscernibly to the undergarment of the wearer.

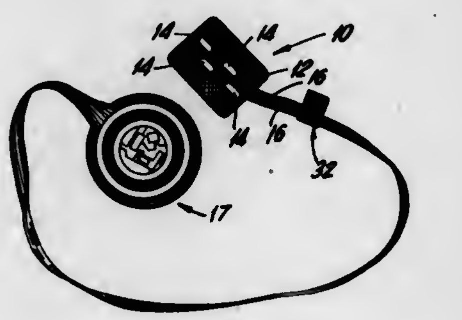


3,724,467
ELECTRODE IMPLANT FOR THE NEURO-STIMULATION OF THE SPINAL CORD

Roger E. Avery, Mellville, N.Y., and James G. Wepsic, Jamaica Plains, Mass., assignors to Avery Laboratories, Inc., Farmingdale, N.Y.

Filed April 23, 1971, Ser. No. 136,924
Int. Cl. A61n ***1/04***

U.S. Cl. 128—418 **11 Claims**



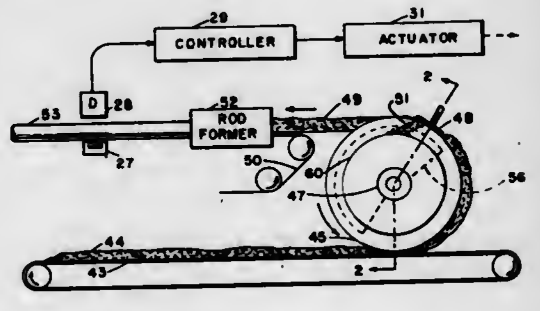
An improved implantable device for electrically stimulating a selected portion of the spinal cord is provided. A relatively thin and flexible strip of physiologically inert plastic is provided with a plurality of electrodes. Lead wires that are also encapsulated in the same physiologically inert plastic material are secured to the electrodes and extend therefrom at approximately the same angle as the spine's posterior process. A packing gland may be positioned about the lead wires to the electrodes to minimize leakage of spinal fluids.

3,724,468
PROCESS CONTROL SYSTEM

Donald E. Varner, Scituate, Mass., assignor to Industrial Nucleonics Corporation

Continuation of Ser. No. 433,932, Feb. 19, 1969, abandoned, which is a continuation-in-part of Ser. No. 85,426, Jan. 27, 1961. This application Aug. 8, 1967, Ser. No. 659,236
Int. Cl. A24c ***05/32***

U.S. Cl. 131—21 D **5 Claims**



Specifically disclosed herein is a control system for a cigarette making machine in which a stream of tobacco is picked up in the peripheral groove of a rotating pickup wheel and held by suction applied through the interior of the wheel while the stream is trimmed by a rotary trimming knife to the size required to form a cigarette rod. The trimming knife occupies a fixed position at a predetermined distance from the periphery of the wheel, and the weight per unit length of the cigarette rod is controlled by automatically adjusting the spacing between a pair of wheel flanges which form the sides of the peripheral groove in the pickup wheel. The width of the groove is thus controlled in response to the signal from a beta ray gauge which measures the cigarette rod.

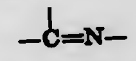
3,724,469
TOBACCO SMOKE FILTER

Jefferson W. Reynolds, and Cephas H. Sloan, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 23, 1971, Ser. No. 183,223
Int. Cl. A24b ***15/02***

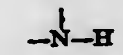
U.S. Cl. 131—266 **5 Claims**

Disclosed are cigarette filters containing compositions of certain cobalt or iron chelates adsorbed or supported on the surface of a suitable particulate support such as activated carbon particles. These cigarette filters remove substantial quantities of nitrogen oxides from cigarette smoke. Chelates suitable for use in this invention are of iron or cobalt and an organic compound containing a



$$-\overset{|}{C}=N-$$

group and a functional group capable of forming a bond with the iron or cobalt atom. In a first embodiment of the cigarette filter aspect of the invention the cigarette filter can comprise a cylinder of crimped, continuous, plasticized cellulose acetate fibers, and the activated carbon particles, having the chelate adsorbed or supported on the surface thereof, are bonded to the cellulose acetate fibers. In a second embodiment of the cigarette filter aspect of the invention the cigarette filter can comprise a first cylinder of crimped, continuous, plasticized cellulose acetate fiber, and coaxially positioned with respect to the first cylinder, a second cylinder of a composition comprising the activated carbon particles having the chelate adsorbed or supported on the surface thereof. In the composition aspect of the invention the composition comprises the material used to prepare the second cylinder. In one aspect of this invention the functional group capable of forming a bond with the iron or cobalt atom can be —OH or



$$-\overset{|}{N}-H$$

The chelate of cobalt and the condensation product of salicylaldehyde and ethylene diamine is a particularly desirable chelate for use in this invention. Polyethylene glycol diacetate is a particularly desirable plasticizer for the cellulose acetate fibers because it can also be used for bonding the activated carbon particles to the cellulose acetate fibers.

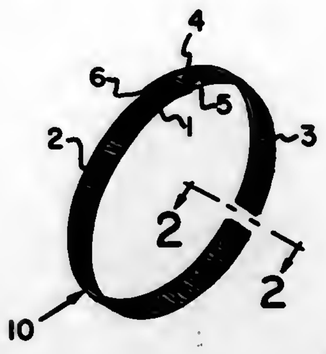
3,724,470
MEANS FOR SECURING HAIR PIECES AND THE LIKE TO THE HEAD AND A METHOD OF USING SAME

Josie Dianne Wilson, P.O. Box 149, Winnsboro, La.

Filed Nov. 17, 1970; Ser. No. 90,360
Int. Cl. A45d ***8/00***

U.S. Cl. 132—46 R **5 Claims**

An improved means for securing wigs, wiglets and the like to the head of the user and a method of using such means. The improved means are designed to secure the hair piece more firmly to the head while at the same time affording increased comfort to the user. In one embodiment, the improved means are secured to the head by working the hair of the user into a plurality of U-shaped hooking members to thereby provide a firm bond between said means and the hair. In an alternate embodiment, the improved means is held in place by tufting at least one, and generally a plurality, of locks of hair in slits provided therefor.

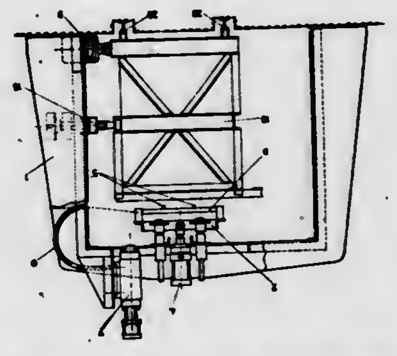


3,724,471
HYDRAULIC PROCESS FOR REMOVING THE ZINC DEPOSITED ON ZINC ELECTROLYSIS CATHODES

F. J. Sitges, Oviedo, Spain, assignor to Asturiana De Zinc, S.A., Oviedo, Spain

Filed Oct. 26, 1970, Ser. No. 83,810
Claims priority, application Spain, Oct. 25, 1969, 372,891
Int. Cl. B08b ***3/02*****; C23b** ***7/08***

U.S. Cl. 134—34 **2 Claims**



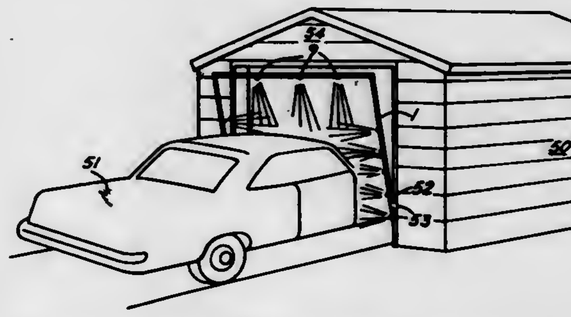
A process for removing zinc deposited on zinc electrolysis cathodes utilizes a high pressure stream of water applied to the cathodes and moved progressively along the line of demarcation between the cathode and deposited zinc.

3,724,472
SPRAY-WASHING APPARATUS FOR VEHICLES

Tobie W. Jenkins, 3330 Ash St.; Delbert G. Jenkins, 3303 Ash St., and Dennis L., Jenkins, 3015 Ash St., all of Denver, Colo.

Filed May 3, 1971, Ser. No. 139,717
Int. Cl. B60s ***3/04***

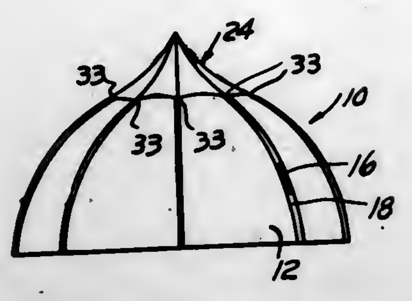
U.S. Cl. 134—93 **2 Claims**



A pipe frame having spray nozzles mounted therealong is pivotally attached at garage doorway to selectively spray-wash an automobile driving in or out of garage. Water supply to the frame may be from house supply, and mechanism is provided to mix soap with the water supply.

3,724,473
AIR-DROP FOLDING PORTABLE SHELTER

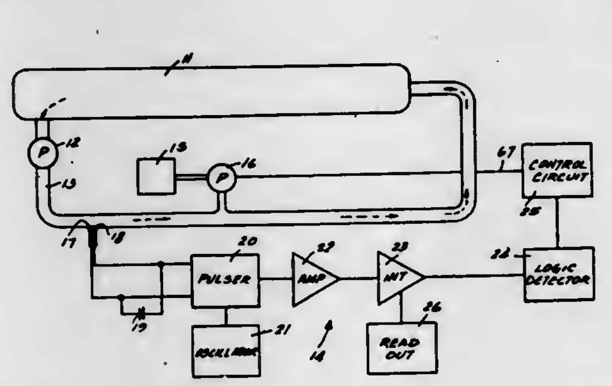
Charles W. Moss, 1169 Aberdeen, Ann Arbor, Mich.
Filed Oct. 5, 1971, Ser. No. 186,684
Int. Cl. A45f *1/00, 1/16*
U.S. Cl. 135—4 R **16 Claims**



A folding portable shelter which when dropped from an aircraft automatically opens into its erected configuration, locks itself into the erected configuration, and then functions as a parachute to deliver a payload to the ground. The shelter has a ventilating opening in its top, a doorway with a canopy extending from it, and internal partitions. Also, a plurality of the shelters can be joined at their doorways and their bases to form a modular complex shelter.

3,724,474
APPARATUS FOR MONITORING AND CONTROLLING HALOGEN LEVELS IN A WATER TREATMENT SYSTEM

Donald P. DeVale, Schaumburg, Ill., assignor to Halogen Controls, Inc., Barrington, Ill.
Filed Sept. 20, 1971, Ser. No. 181,813
Int. Cl. G05d *11/08, 21/02*
U.S. Cl. 137—5 **13 Claims**

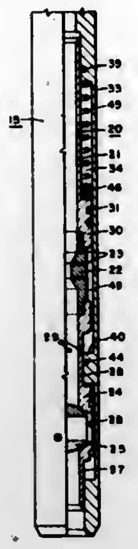


The halogen level in a water treatment system is monitored and controlled by a method which includes continuous sensing of the halogen level in a flow of the water under treatment, detecting insufficient halogen levels, adding halogen in response to detection of insufficient halogen levels, and terminating the addition of halogen upon detection of a second halogen level which is above that of the first-mentioned level. Apparatus for carrying out this method includes a pair of electrodes disposed in a stream of the fluid undergoing treatment, a charge storage device connected across the electrodes, means for pulsing the electrodes and charged storage device, means for detecting the decay of stored charge as a function of the halogen level of the fluid and means for controlling the addition of halogen in accordance with desired halogen levels.

3,724,475
SUBSURFACE SAFETY VALVE

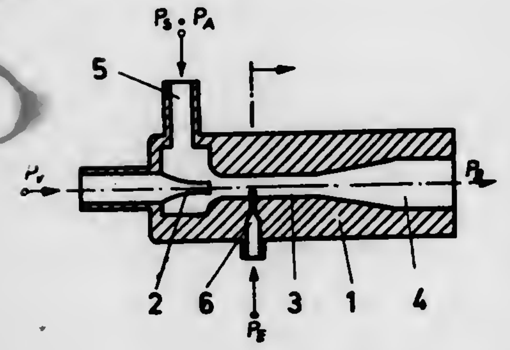
James Harold Ruppel, Gretna, La., assignor to Esso Production Research Company, Houston, Tex.
Filed Dec. 16, 1970, Ser. No. 98,777
Int. Cl. F16k *17/20, 17/36*
U.S. Cl. 137—67 **22 Claims**

A subsurface safety valve capable of being installed in and retrieved from a well tubing string is held open by a spring and is closed by well pressure. Erosion from well fluids and/or a predetermined flow rate of well fluids through the valve will cause the valve to close.



3,724,476
PNEUMATIC AMPLIFIER

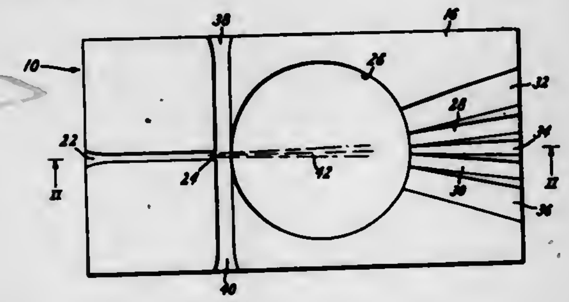
Horst Bader, Stuttgart-Fasanenhof, Germany, assignor to J. C. Eckardt AG, Stuttgart, Germany
Filed May 10, 1971, Ser. No. 141,691
Int. Cl. F15c *1/04*
U.S. Cl. 137—842 **14 Claims**



A fluid medium amplifier which includes an operating nozzle, a suction channel and a mixing chamber adjoining the suction channel and operating nozzle as well as a control nozzle downstream of the operating nozzle which as input signal disturbs the mixing progress in the mixing chamber so that an amplified output signal is produced in the suction channel.

3,724,477
LAMINAR RATE SENSOR

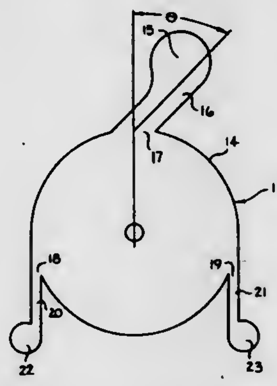
Donald L. Rexford, Schenectady, N.Y., assignor to General Electric Company, New York, N.Y.
Division of Ser. No. 878,824, Nov. 21, 1969. This application Jan. 10, 1972, Ser. No. 216,493
Int. Cl. F15c *1/18*
U.S. Cl. 137—81.5 **4 Claims**



A laminar fluidic angular rate sensor for sensing the rate of angular rotation of the sensor which includes a supply passageway; at least two receiver passageways; vents, at least one of which is located between the two receiver passageways and is aligned with the supply passageways; and a cavity which are of a configuration and location such that fluid flowing through the supply passageway forms a laminar fluid stream which is capable of being received by the receiver passageways in the laminar state. The Reynolds number of the fluid forming the laminar fluid stream is preferably within the rante of 200-1500.

3,724,478
TURN-UP VORTEX VALVE

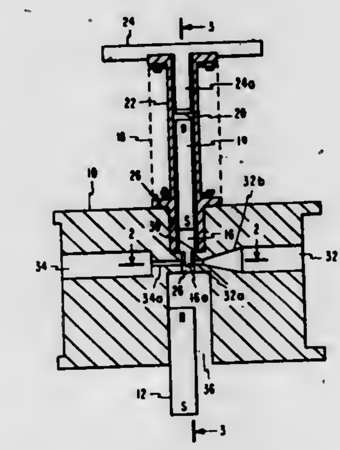
Kenneth Browning Haefner, Schenectady, and Carl Gustav Ringwall, Scotia, both of N.Y., assignors to General Electric Company, New York, N.Y.
Filed Dec. 17, 1971, Ser. No. 209,276
Int. Cl. F15c *1/16*
U.S. Cl. 137—81.5 **9 Claims**



A turn-up vortex valve for modulating fluid flow including an enclosed substantially cylindrical spin chamber having an output port formed in at least one end wall thereof, at least one control pressure port formed in a wall of the chamber for admitting a control fluid flow tangentially to the perimeter of the chamber, and an inlet supply port formed in a wall of the chamber for admitting the fluid supply flow on an angle to the perimeter of the chamber whereby in contradistinction to prior art forms of vortex valves modulation of the supply flow is achieved with control pressure equal to or less than the supply flow pressure and whereby the output flow from the turn-up vortex valve is in phase with the control flow pressure.

3,724,479
PNEUMATIC VALVE

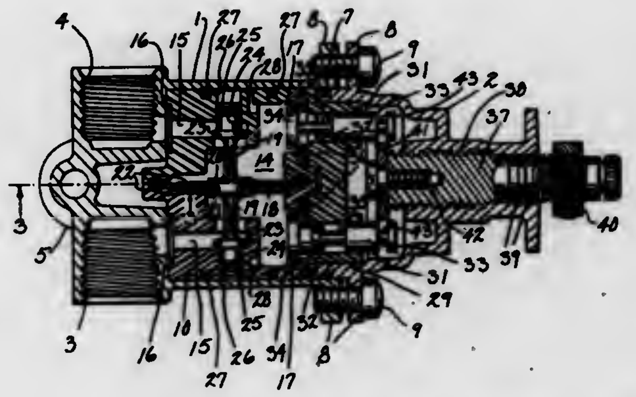
Roger F. Dimmick, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 7, 1971, Ser. No. 141,124
Int. Cl. G05d *16/20;* **F15b** *5/00*
U.S. Cl. 137—83 **4 Claims**



An electrically operated pneumatic valve including a valve block having small diameter inlet and outlet jet ports transmitting an air jet across a cavity, a gate of smaller width than the cavity and movable into the cavity and across the air jet so as to interrupt the jet, an electric coil having a permanent magnet armature therein for moving the gate out of jet blocking position, and a return magnet positioned opposite the armature so as to move the armature into jet blocking position.

3,724,480
PRESSURE COMPENSATED MIXING VALVE

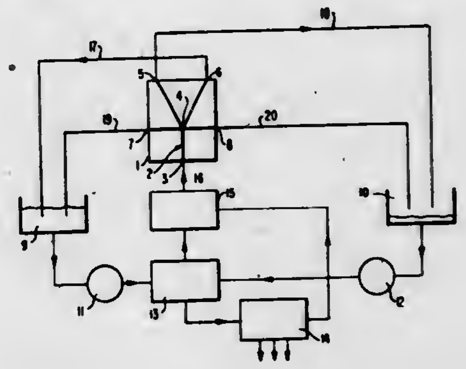
Eugene A. Povalski, and Edwin F. Bolgert, both of Kohler, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Nov. 19, 1971, Ser. No. 200,435
Int. Cl. F16k *19/00*
U.S. Cl. 137—98 **4 Claims**



A pressure compensated mixing valve includes a diaphragm actuated compensating valve and a double spool type mixing valve. The mixing valve spools extend into hot and cold inlet sections and are arranged to seal with supply pressure. The two valves are in separate cartridges removably disposed in a valve body; and the cartridges are spaced from the body to define a mixing chamber, which allows the main supply and outlet passages to be at the same end of the valve. Two washers serve as sealing seats for the spools and also as seals between the cartridges, and are trapped by the heads on the spools to prevent loss during assembly or disassembly.

3,724,481
CONTROL INSTALLATION FOR BALANCING FUEL LEVELS IN MOTOR VEHICLE FUEL TANKS

Hans-Dieter Schutzenauer, Schorndorf, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart Untertuerkheim, Germany
Filed April 6, 1971, Ser. No. 131,706
Claims priority, application Germany, April 7, 1970, P 20 16 464.1
Int. Cl. F15c *1/08;* **G05d** *11/00*
U.S. Cl. 137—101.25 **23 Claims**



A regulating installation for controlling the level of fluid in a plurality of supply tanks for an automotive vehicle. A fluidic control element is arranged in a backflow line for selectively directing the backflow of fuel to the tanks in dependence on the respective levels of fuel existing in the tanks. Control liens leading to the control element from each of the tanks serve for controlling the output of the fluidic control element in response to the particular level of fuel in the tanks. The specific embodiment utilizes a control element constructed with a single inlet communicating with the backflow line and two outlets arranged symmetrically Y-shaped and communicating with respective first and second tanks. Respective first and second control conduits lead from the tanks to a point in the control element downstream of the outlets for controlling the direction of fluid to one or the other of the outlets.

3,724,482
BREATHING VALVE

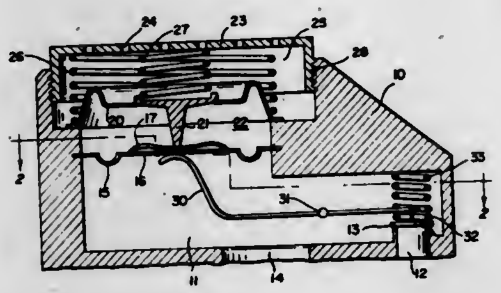
Stafan Walter Ekstrom, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed March 5, 1971, Ser. No. 121,354

Claims priority, application Sweden, March 5, 1970, 2892/70

Int. Cl. A62b *7/04*

U.S. Cl. 137—102 **4 Claims**



A breathing valve having a housing comprising an inlet chamber in communication with which is an inlet opening controlled by an inlet valve, a passage to the breathing organs of the user and an exhalation valve. A control diaphragm subject on one side to the pressure in the inlet chamber acts through an intermediate member to control the inlet valve. An overpressure valve on the side of the control diaphragm across from the inlet chamber receives fluid through the exhalation valve and when the pressure in the overpressure chamber builds up it causes the control diaphragm to open the inlet valve. Springs act on the two diaphragms urging them towards the inlet valve opened position, thereby setting a predetermined pressure value in the overpressure chamber. With this structure, an overpressure is created in the inlet chamber during both inhalation and exhalation.

3,724,483
SPOOL RELEASE AND SEQUENCE VALVE

Glenn R. Hubbard, Racine, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.

Division of Ser. No. 76,686, Sept. 30, 1970. This application Jan. 3, 1972, Ser. No. 214,805

Int. Cl. F15b *11/15*

U.S. Cl. 137—106 **3 Claims**

A hydraulic valve includes a spool movable from an inactive position to a pair of operating positions in each of which one of a pair of motor ports is pressurized. A detent latches the spool in its operating positions, and a spring biased plunger normally urges the detent into engagement with the spool. One side of the plunger is exposed to valve inlet pressure, and normally the plunger is maintained in hydraulic balance by means of restricted communication between its two sides. A pair of pressure responsive valves communicate between the second side of the plunger and the motor ports, and are independently adjustable to open at predetermined pressures thereby to unbalance the plunger and release the spool from the operating positions. The valve may be provided with a centering spring so that upon release the spool returns to its inactive position. Alternatively, the valve is provided with a reversing spring arrangement serving to reverse the operation of the valve when the spool is released from a first operating position so that a pair of operations are automatically carried out in sequence. A system including two or more valves carries out several hydraulic operations in sequence.

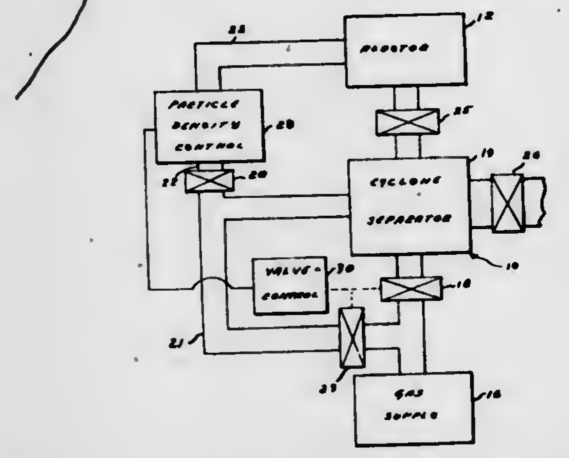
3,724,484
PARTICLE DENSITY CONTROL SYSTEM FOR COLLOID CORE NUCLEAR REACTOR

Bobby N. Turman, Fairborn, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed July 13, 1971, Ser. No. 162,070

Int. Cl. G01n *31/00;* **G21c** *19/28*

U.S. Cl. 137—110 **4 Claims**



A control system as provided in the fuel charging system for a colloid core reactor to control the particle density in the fuel input to the reactor cavity. A sound transmitter is positioned on one side of a tubular member in the fuel input, and a microphone is located on the opposite side of the tubular member. A signal, proportional to changes in phase resulting from changes in the acoustics in the tubular member, is used to control the gas flow in a by-pass to a cyclone separator fuel supply to control the particle density in the input to the reactor cavity.

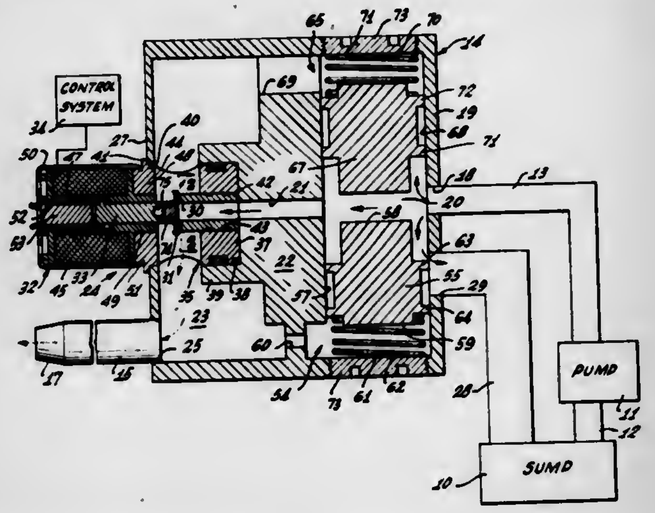
3,724,485
FLOW CONTROLLER

Robert M. Cox, Northridge; Ernest W. Crowley, Chatsworth, and Dan L. Kilmer, Tujunga, all of Calif., assignors to Servo Labs, Inc., Van Nuys, Calif.

Filed May 12, 1971, Ser. No. 142,638

Int. Cl. G05d *7/01*

U.S. Cl. 137—117 **21 Claims**



A flow controller using a solenoid controlled valve to pass a series of high-frequency flow pulses of controlled and variable duration resulting in an average output flow rate that varies linearly with variations in pulse duration. A relief valve maintains a constant pressure differential across the solenoid valve, and an accumulator smooths the output of the controller. Also disclosed is an embodiment having a pair of solenoid valves operating out of phase with each other, and a third embodiment having a pressure-balanced flow multiplier for controlling a proportional flow of substantially greater magnitude through a secondary flow line. Conventional pulse-width modulation techniques are used to activate each control valve.

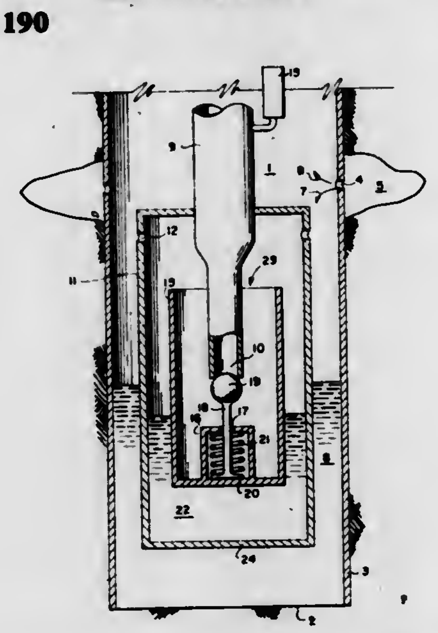
3,724,486
LIQUID SEPARATION IN A WELL

Bobby L. Douglas, Ennis, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 19, 1969, Ser. No. 859,420

Int. Cl. F04f *1/08*

U.S. Cl. 137—190 **3 Claims**



Liquid is separated from gas in a well bore using a liquid container which floats in the well bore liquid and operates a valve which communicates with the interior of the tubing of the well. The valve is resiliently and movably mounted on the container so that the container must move a substantial distance to overcome the resiliency of the mounting and open the interior of the tubing to the liquid in the container.

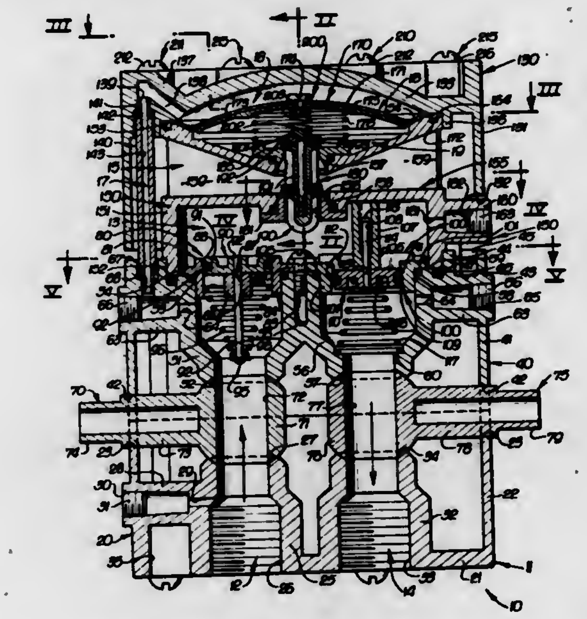
3,724,487
BACKFLOW PREVENTING VALVE CONSTRUCTION

Edwin J. Hunter, Riverside, Calif., assignor to Toro Manufacturing Corporation, Riverside, Calif.

Filed Oct. 19, 1971, Ser. No. 190,531

Int. Cl. F16k *1/12*

U.S. Cl. 137—218 **22 Claims**



This valve is constructed of a multiplicity of molded parts joined by a variable number of bolts into a body with an inlet passage opening to an intermediate chamber via an inlet check valve with wedging sealing action; with the intermediate chamber opening to an outlet passage via an outlet check valve with wedging sealing action; with a diaphragm chamber having a diaphragm therein to divide the chamber into an inlet pressure portion opening to the inlet passage via a interconnecting passage, and into an intermediate pressure portion opening to the intermediate chamber; and with an exhaust passage opening to atmosphere and to the intermediate chamber via a relief valve connected by a spring to the diaphragm whereby fluid normally flows from the inlet passage through the intermediate chamber to the outlet passage but upon attempted backflow of the fluid, the check valves close to prevent such backflow and upon failure of the outlet check valve, the diaphragm flexes to open the relief valve to vent such backflowing fluid, and before failure of the outlet check valve, the spring between the diaphragm and the relief valve compensating for slight flexing of the diaphragm to maintain the relief valve closed and prevent fluid spitting due to slight changes in the pressure of the incoming fluid.

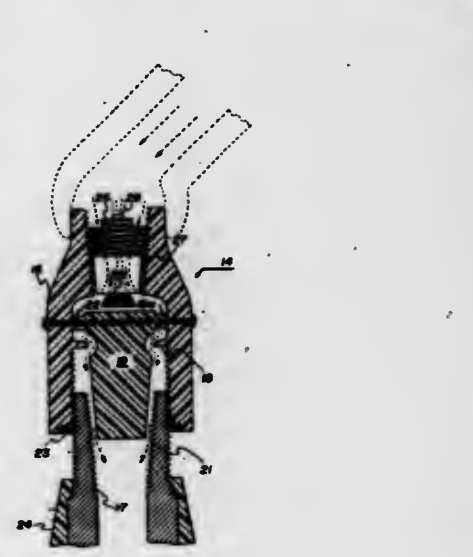
3,724,488
COMBINATION SEAL CAP AND VALVE

Arthur H. Featherstone, 2895 Scenic View Road, Alpine, Calif.

Filed Oct. 1, 1971, Ser. No. 185,755

Int. Cl. F16k *15/20*

U.S. Cl. 137—223 **2 Claims**



A combination seal cap and valve for use with a standard pneumatic tire stem valve having an outer sleeve internally threaded at one end for an internal threadable engagement with a standard valve stem and internally threaded at another end for threadably receiving a standard stem valve. A tapered plug member captured within the outer sleeve and dimensioned for sealing the standard valve stem when the outer sleeve is snugly mounted thereto and for allowing an air passage through said sleeve and said standard valve stem into a tire when backed off from a snug installation.

3,724,489
FRACTIONAL INSPIRATORY OXYGEN MONITORING VALVE APPARATUS

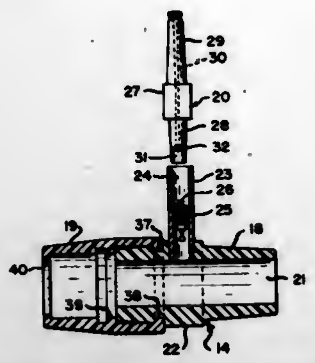
Bela Eross, Penn Hills Township, Allegheny County, Pa., assignor to Instrumentation Industries, Inc., Pittsburgh, Pa.

Filed May 21, 1971, Ser. No. 145,802

Int. Cl. F16l *37/28, 47/00*

U.S. Cl. 137—322 **7 Claims**

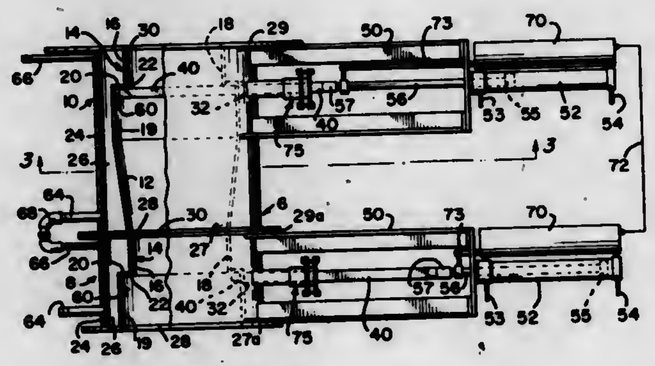
The specification discloses a fractional inspiratory oxygen monitoring valve apparatus, adapted for insertion in respiratory systems used in hospitals for administering oxygen to patients. The monitoring valve apparatus enables withdrawal of a sample of the oxygenated air stream to the patient for purposes of supply to the oxygen analyzer, and insures against leakage of oxygen from the system when the sampling withdrawal is terminated. The apparatus is simple in construction, of relatively low cost, and readily installable and operable by persons of minimal skill or special training.



3,724,490
GATE VALVE

Walter W. Kramer, Allentown, Pa., assignor to Fuller Company, Catasaugua, Pa.

Filed July 6, 1970, Ser. No. 52,316
Int. Cl. F16k *49/00*
U.S. Cl. 137—340 **8 Claims**

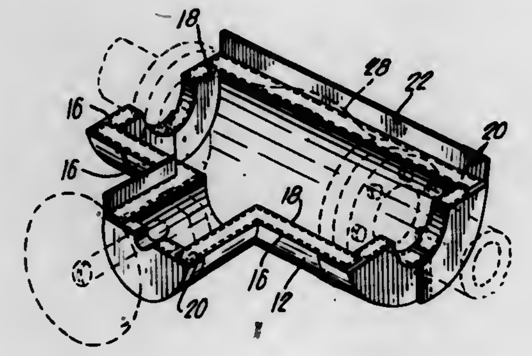


A water cooled gate valve for use with high temperature materials. The valve includes a valve body having a material flow passage therethrough. A housing surrounds and is spaced from the valve body and defines with the valve body a chamber. Cooling fluid such as water is circulated in this chamber. The gate of the valve is hollow and is provided with an arrangement for circulating cooling fluid therein. The valve may be used in pairs in conjunction with a gas-solids separator such as a cyclone separator.

3,724,491
REMOVABLE VALVE INSULATION AND COVER

Kai Knudsen, 947 Provencher Boulevard, and Bent Knudsen, 465 Valery St., both of Ville Brossard, Quebec, Canada

Filed April 5, 1971, Ser. No. 131,174
Claims priority, application Canada, April 6, 1970, 079359
Int. Cl. F16l *59/16*
U.S. Cl. 137—375 **3 Claims**

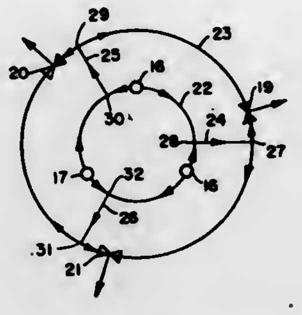


An insulating shell for a valve made up of a plurality of sections which mate together about the valve and each section has inner and outer skins with insulation material between the skins.

3,724,492
DISTRIBUTOR FOR VISCOUS FLUID SPINNING MELTS OR SOLUTIONS

Friedhelm Itter, Remscheid, Germany, assignor to Barmer Barmag Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed May 5, 1971, Ser. No. 140,423
Int. Cl. F16k *19/00*
U.S. Cl. 137—597 **9 Claims**

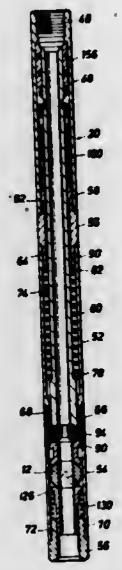


A distributor for viscous fluid spinning melts or solutions in apparatus for extruding or spinning high molecular weight polymers, especially synthetic fiber-or film-forming polymers, the distributor essentially including at least one ring conduit into which there are connected through lateral ports a plurality of sources and sinks for the fluid, there being at least one source with two or more sinks or at least one sink with two or more sources, each source or sink being connected to the ring conduit in an arrangement such that a substantial pressure difference exists as between a source and two adjacent sinks or between a sink and two adjacent sources, and valve means preferably in the form of poppet valves adapted to open and close individual ports while keeping the cross-section of the ring conduit substantially open, thereby maintaining a minimum flow or circulation of the viscous fluid material throughout the distributor.

3,724,493
LOW FLOW SAFETY VALVE

James W. Kisling, III, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed April 28, 1971, Ser. No. 138,138
Int. Cl. F16k *17/24*
U.S. Cl. 137—459 **10 Claims**

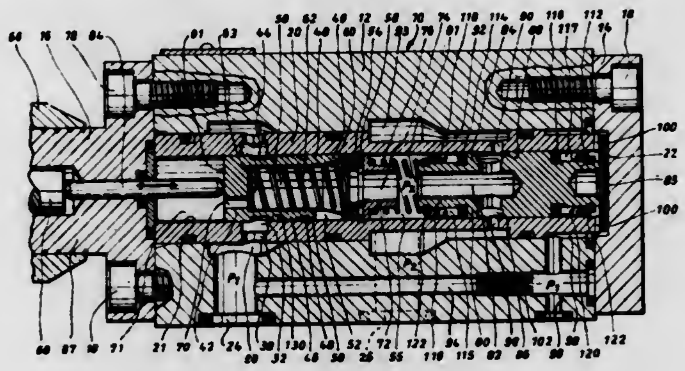


A low flow safety valve according to the present invention relates to a valve construction that may be employed in conjunction with flow conduits such as well production tubing and the like. The valve construction is operative to allow the flow of production fluid through the valve structure as long as the rate of flowing pressurized fluid is above a predetermined minimum sufficient to develop a predetermined pressure differential across a restriction defined within the valve structure. As fluid flow and consequent pressure differential reduce below predetermined minimum levels, actuating means achieves closing of the valve and locking means effectively locks the valve structure against inadvertent reopening. The safety valve also includes means for unlocking and reopening the valve mechanism for the purpose of resuming production flow through the conduit structure with which the valve is associated.

3,724,494
FLOW REGULATING VALVE

Hans Alber, 1324 Outlook Drive, Mountainside, N.J.

Filed Nov. 2, 1970, Ser. No. 86,052
Claims priority, application Germany, Nov. 3, 1969, P 19 55 044.8
Int. Cl. G05d *7/00*
U.S. Cl. 137—501 **22 Claims**

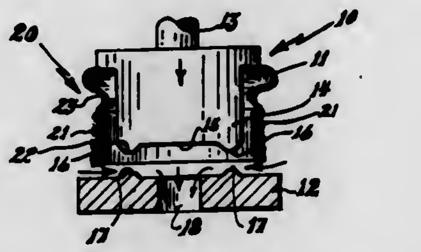


In a chamber of a housing provided with at least one inlet and at least one outlet is accommodated a sleeve having a longitudinally extending passage as well as first and second flow ports communicating with the passage and with the inlet and outlet respectively. A throttling piston is located in the passage displaceable longitudinally thereof with reference to the first ports. A substantially fluid-flow throttling passage is provided in either the outer circumferential surface of the throttling piston or in the inner circumferential surface bounding the passage, and in any case extends longitudinally of the passage and communicates with the respective ports. A control piston is located in the passage downstream of and axially adjacent to the throttling piston for maintaining constant fluid flow through the passage.

3,724,495
APPARATUS FOR CLEAN SEALING VALVES

Jack G. Hartley, Kelso Valley, Calif., assignor to The United States Of Amercia as represent by the Secretary Of Air Force

Filed Feb. 11, 1971, Ser. No. 114,443
Int. Cl. F16k *1/00*
U.S. Cl. 137—547 **1 Claim**

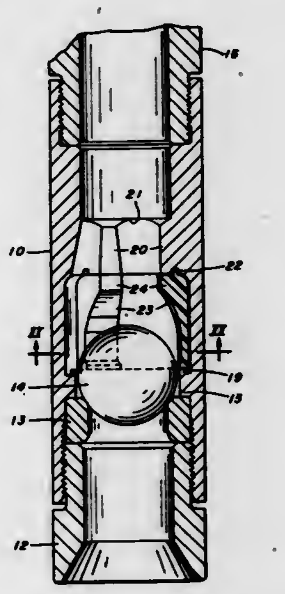


A filter assembly for preventing the entrapment of fluid-entrained particles between metal-to-metal sealing elements of a poppet-type valve assembly at the instant of closure. The filter assembly includes a cylinder-shaped filter holder which is perforated and which surrounds the periphery of the valve head, (i.e. poppet), a filter attached to the filter holder, and a bellows for attaching the filter holder, with the filter attached thereto, to the valve head. The filter assembly is so positioned and is so dimensioned that, when the valve is in the open position, there is unrestricted fluid flow and, at the instant immediately prior to valve closure, there is clean, filtered fluid flow. As a result, at closure there are no particles which can become entrapped between the metal-to-metal sealing elements, and the valve seals cleanly.

3,724,496
CAGE AND GUIDE CONSTRUCTION FOR A BALL-TYPE VALVE

Walter S. Secrist, Dallas, Tex., assignor to United States Steel Corporation

Filed Nov. 11, 1971, Ser. No. 197,685
Int. Cl. F16k *15/04*
U.S. Cl. 137—533.13 **4 Claims**

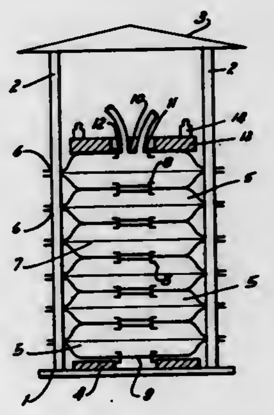


A cage and guide construction for a ball-type valve, used for example in a subsurface pump. The cage has spaced apart internal shoulders which have confronting grooves. The guide pieces lie between the shoulders and have lips received in the grooves to lock them in place. The guide pieces can be either metal or elastomer and are not distorted when inserted or removed.

3,724,497
STORAGE SYSTEM FOR GASEOUS FLUIDS AND THE LIKE

Fritz Federer, Tuerkenfeld, and Henning Neumann, Germering, both of Germany, assignors to Metzeler Aktiengesellschaft, Munich, Germany

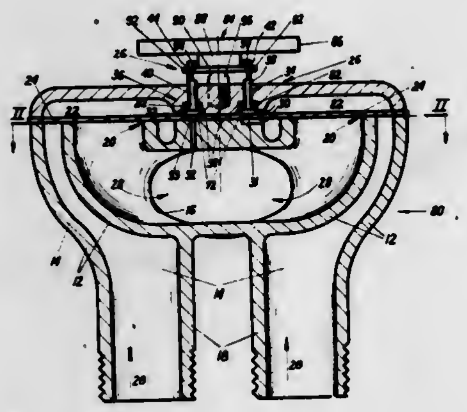
Filed March 4, 1971, Ser. No. 121,020
Int. Cl. B65d *89/04*
U.S. Cl. 137—575 **22 Claims**



A plurality of discrete and individually movable storage vessels are provided each having a hollow interior. The vessels may be of various different shapes and may be rigid but are preferably at least in part of elastic material so that they can be collapsed when empty. They are superimposed in vertically stacked relationship, or they are arranged in side-by-side or horizontally stacked relationship and can be connected with one another so that their respective interiors communicate. They are supported and guided by suitable guide means and weights or spring-biased devices may be provided for applying a predetermined force to a terminal one of the vessels of a respective stack, to thereby subject the contents to a predetermined pressure and to expel them at a predetermined rate of flow through conduits provided for this purpose.

3,724,498
VALVES

John Laddier de Villiers, 1 Brakfontein, Verwoedburg District, Republic of South Africa
Division of Ser. No. 54,343, July 13, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,458
Int. Cl. F16k *19/00*
U.S. Cl. 137—607 **4 Claims**

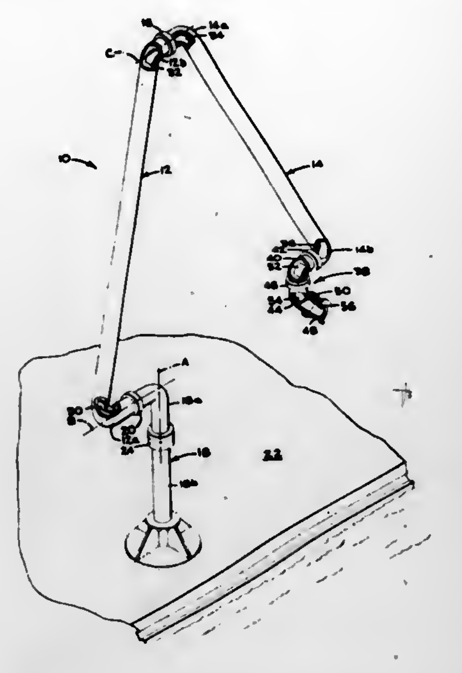


A valve comprising means defining a flow passage, valve seat means in the passage, a bias chamber to receive a working fluid and having a wall which is displaceable and adapted to cooperate with the valve seat means to regulate fluid flow through the passage, and control means to control the volume of fluid held captive in the bias chamber thereby controlling the displacement of the displaceable wall relative to the valve seat means. The control means comprises an inlet bleed passage to place the bias chamber in communication with a source of working fluid under pressure, an outlet bleed passage leading out of the bias chamber, and inlet and outlet control valves operatively associated with the bleed passages, with the control valves biassed into their closed positions.

3,724,499
ANTI-CAVITATION SYSTEM FOR FLUID LOADING ARMS

Sam Hunlu, Los Angeles, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed June 3, 1971, Ser. No. 149,681
Int. Cl. F15d *1/04*
U.S. Cl. 137—615 **10 Claims**

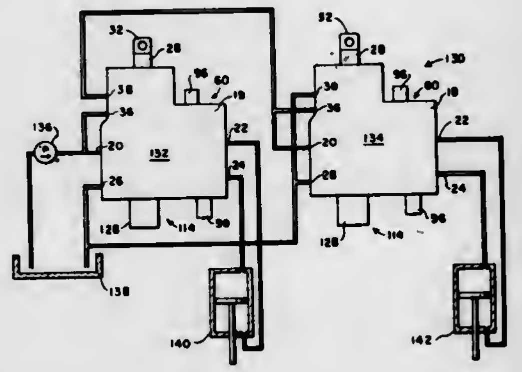
A system of specially modified pipe elbows and a back pressure device to control cavitation in the fluid flowing through a fluid loading arm, thus minimizing noise generation and pipe vibration, and facilitating greatly increased flowrates. The arm's elbows contain one or more rigid vanes curved in the configuration of the flow passage through the elbow in which they are mounted, and the back pressure device comprises a cavitating venturi positioned at the discharge end of the arm.



The venturi may be removable to provide unrestricted reverse flow through the arm when unloading fluid.

3,724,500
SPOOL RELEASE AND SEQUENCE VALVE

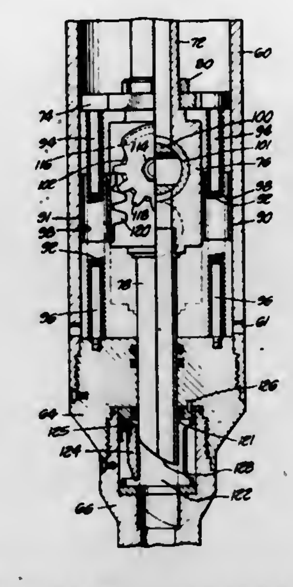
Glenn R. Hubbard, Racine, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.
Division of Ser. No. 76,686, Sept. 30, 1970, Pat. No. 3,650,297. This application Jan. 3, 1972, Ser. No. 214,940
Int. Cl. F15b *11/22*
U.S. Cl. 137—624.18 **1 Claim**



A hydraulic valve includes a spool movable from an inactive position to a pair of operating positions in each of which one of a pair of motor ports is pressurized. A detent latches the spool in its operating positions, and a spring biased plunger normally urges the detent into engagement with the spool. One side of the plunger is exposed to valve inlet pressure, and normally the plunger is maintained in hydraulic balance by means of restricted communication between its two sides. A pair of pressure responsive valves communicate between the second side of the plunger and the motor ports, and are independently adjustable to open at predetermined pressures thereby to unbalance the plunger and release the spool from the operating positions. The valve may be provided with a centering spring so that upon release the spool returns to its inactive position. Alternatively, the valve is provided with a reversing spring arrangement serving to reverse the operation of the valve when the spool is released from a first operating position so that a pair of operations are automatically carried out in sequence. A system including two or more valves carries out several hydraulic operations in sequence.

3,724,501
UNDERSEA WELL TEST TREE CONTROL VALVE AND SYSTEM

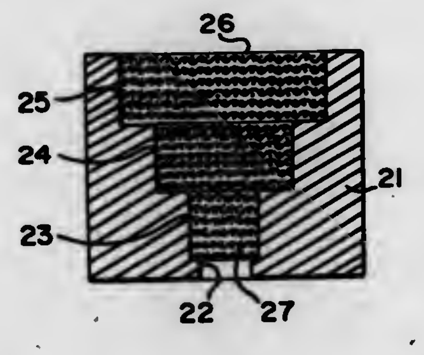
Lyle B. Scott, South Gate, Calif., assignor to Byron Jackson Inc., Long Beach, Calif.
Filed Jan. 21, 1971, Ser. No. 108,534
Int. Cl. F16k *31/12*
U.S. Cl. 137—630.19 **5 Claims**



As part of a subsea well system, a hydraulically actuated and sequentially opening and closing control valve incorporating an upper rotary valve actuated by a rack and pinion or linear actuator arrangement coupled with a lower valve actuated by a stinger or mandrel arrangement whereby the lower valve is opened before the rotary valve is opened and the rotary valve is closed before the lower valve is closed. The lower valve may be of the flapper type. The valve incorporates a hydraulic operator actuated in one direction to open the valve by application of hydraulic pressure from a remote source, and actuated in the reverse direction to close the valve by resilient springs and/or by subsea hydrostatic pressure. The valve may also be closed by closing the rams of the blowout preventer in the subsea system above the valve and applying pressure through the kill line of such blowout preventer.

3,724,502
GAS PRESSURE REDUCING RESTRICTORS

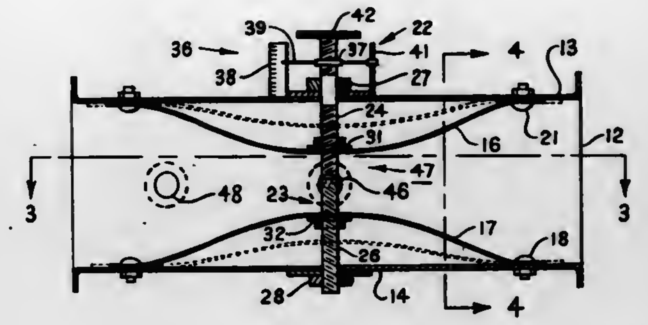
Paul F. Hayner, Lexington, Mass., and Richard J. Brockway, Amherst, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Nov. 27, 1970, Ser. No. 93,193
Int. Cl. F15d *1/02*
U.S. Cl. 138—41 **4 Claims**



A restrictor for reducing the pressure of a fluid comprises essentially many layers of wire mesh in the path of fluid flow and some arrangement for defining a flow path which increases in cross sectional area either continuously or in steps in the direction of flow. Such a path may be defined, for example, by a tapered housing enclosing the layers of mesh, an interiorly stepped housing or a number of constrictions of various sizes positioned within a uniform housing.

3,724,503
FLOW MEASUREMENT AND CONTROL

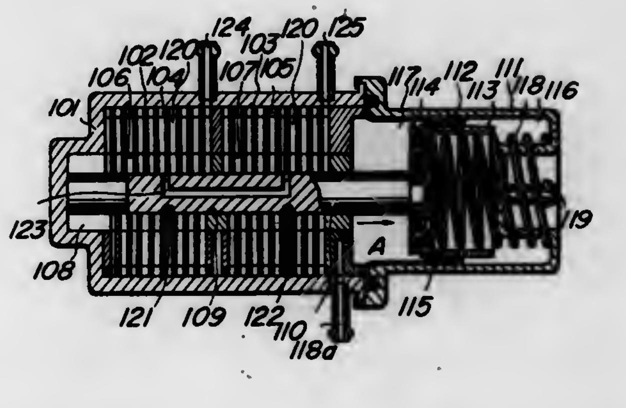
Gerhart M. Cooke, Napa, Calif., assignor to Aeroquip Corporation, Jackson, Mich.
Filed April 30, 1971, Ser. No. 138,914
Int. Cl. F17d *1/10*
U.S. Cl. 138—45 **4 Claims**



A device for controlling fluid flow in accordance with measured flow. A housing with a passage therethrough is provided internally with movable control members and control means therefor extending externally of the housing to thus define a variable venturi or variable flow nozzle for controllably restricting fluid flow through the passage. A pair of apertures in the housing communicating with the passage, one at or near the throat of the venturi or flow nozzle and one upstream thereof, are adapted for connection to a differential pressure indicating means, which may also include recording and controlling functions. A capacity curve is employed with the indicated differential pressure to determine the proper throat opening for any desired fluid flow.

3,724,504
APPARATUS FOR ESTABLISHING A VARIATION OF TIME DELAY BETWEEN INPUT AND OUTPUT FLUID SIGNALS

Kazuma Matsui, Toyohashi, and Hideo Tsubouchi, Kariya, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan
Filed March 26, 1971, Ser. No. 128,374
Int. Cl. F16k *31/145, 47/12*
U.S. Cl. 138—46 **5 Claims**



Apparatus for establishing a variation of time delay between input and output fluid signals comprising a variable-circuit-length body and a pressure-activated body, said device being so constructed that a fluid signal applied to a power supply port on said first body may be delayed in time according to a variation of pressure in the pressure-activated body, said variable-circuit-length body being provided with spiral grooves for delaying the fluid signal.

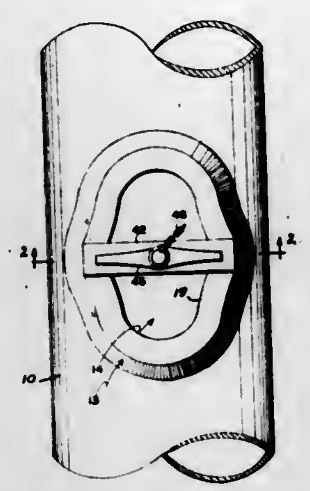
3,724,505
PIPE OR CONDUIT CLEAN OUT TRAP ASSEMBLY

Guenter Jahn, 455 Provencher Boulevard, Winnipeg, Manitoba, Canada

Continuation-in-part of Ser. No. 829,556, June 2, 1969, abandoned. This application May 11, 1971, Ser. No. 142,254

Int. Cl. F16l *55/10, 55/16*

U.S. Cl. 138—92 **1 Claim**



A pipe elbow has an access opening provided with a marginal frame which is undercut to seat the elbow wall and is recessed to receive a closure plate so that the bottom surface of the closure plate and the frame are flush with the inner surface of the elbow wall in a smooth continuity. A flange on the upper surface of the closure plate inside the recess supportingly abuts a gasket which seals against the top wall of the recess when the closure plate is held in position by external clamping means. The supporting abutment of the flange with the gasket is directly opposite to the line of force of any fluid entering the recess from the interior of the elbow.

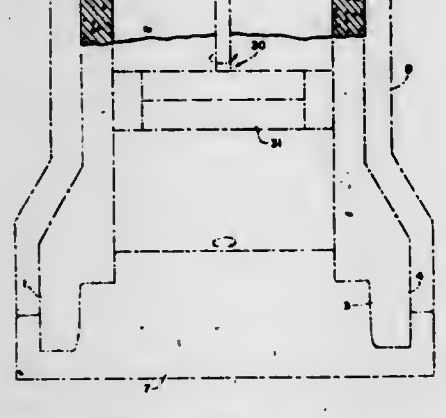
3,724,506
PIPE HAVING DISPOSABLE PROTECTIVE MEANS THEREON AND METHOD OF MAKING SAME

Larry G. Crowe, 1020 3rd Avenue N.E., Waverly, Iowa

Filed Feb. 22, 1971, Ser. No. 117,616

Int. Cl. B65d *59/00;* **B28b** *21/22*

U.S. Cl. 138—96 **3 Claims**



A pipe having a resilient disposable protective ring on one end thereof, wherein the ring is utilized during manufacture of the pipe for forming an annular groove at one end of the pipe for receiving an O-ring therein when the pipe is installed to another pipe, said ring being left in place after the pipe is manufactured to prevent breakage of the pipe during storage and handling of the pipe, and said ring being removed and thrown away when the pipe is to be installed to another pipe.

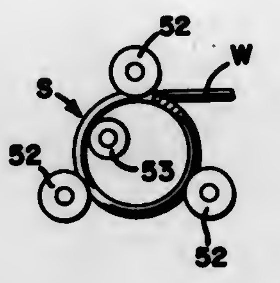
3,724,507
CONTINUOUSLY MANUFACTURED FLEXIBLE CONDUIT

Donald L. Kleykamp, West Carrollton, Ohio; Ivan Gaster; Vernon D. Browning, both of Waynesville, N.C., and Homer N. Holden, Sylva, N.C., assignors to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 89,333, Nov. 13, 1970. This application March 6, 1972, Ser. No. 231,854

Int. Cl. F16l *11/08*

U.S. Cl. 138—122 **2 Claims**



A wire is fed from a supply roll to a device which twists the wire on its longitudinal axis and continuously forms the twisted wire into a non-rotating helical coil. The coil is fed directly from the device through a plastic tube extruding head by a rotatable screw which extends within the coil, and a vacuum is created within the tube as it is extruded over the coil to shrink the tube between the turns of the coil. The coil reinforced tube may then be fed through a device which covers the tube with a continuous fabric member, and the covered tube is then fed through another extruder head which extrudes a second tube over the fabric member and shrinks the second tube onto the fabric member and the first tube. The coil feeding screw, the fabric member forming device, the extruders, and the tube feeding devices are driven at speeds correlated with the speeds of twisting and feeding the wire to provide a continuous conduit forming operation.

3,724,508
METHOD OF AND APPARATUS FOR FILLING THE SHUTTLES WITH WEFT ON PROGRESSIVE SHED WEAVING LOOMS

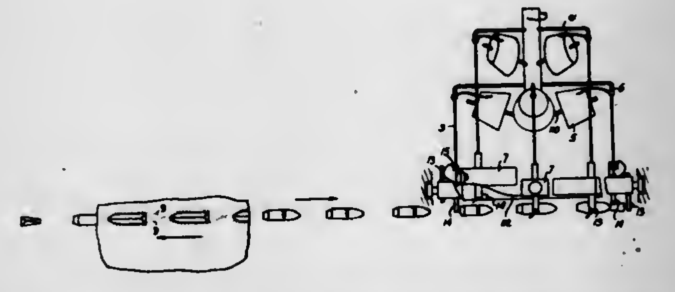
Frantisek Jekl, Usti nad Orlici; Vladimir Mateju, Usti nad Orlici; Josef Pech, Brno, and Karel Hrdina, Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed April 26, 1971, Ser. No. 137,338

Claims priority, application Czechoslovakia; April 28, 1970, 293370

Int. Cl. D03d *47/26, 45/00*

U.S. Cl. 139—12 **10 Claims**



Method of and apparatus for filling the shuttles with weft on progressive shed weaving looms with continuous movement of shuttles along a closed path by means of supply units on a part of a common rotary path along which the supply units and the shuttles move in the same direction with the same speed and at conforming spacings. In the section where the path of the shuttle and that of the supply unit coincide the weft thread is withdrawn from the supply of weft thread and deposited in the form of windings created irrespectively of the running of the weaving loom in a plane identical with the rotary plane of the shuttles in a length proportional to the total multiple of coils on a standing selectively rotatable bobbin disposed in a recess of the shuttle. After the shuttle and the supply unit have parted, the coils on the shuttle are separated from the supply, while at least one end of the supply of weft thread is already held.

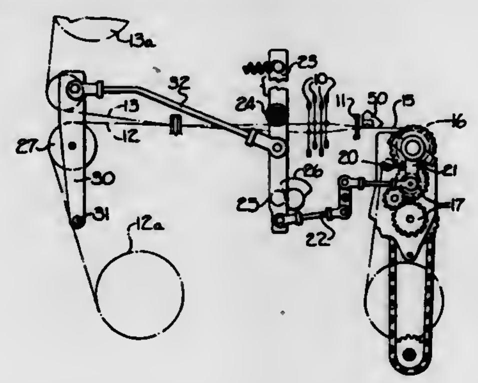
3,724,509
TEMPLE FOR TERRY LOOMS AND METHOD OF OPERATING SAME

Douglas P. Burgess, Woodleaf, and Johnny D. Harkey, Concord, both of N.C., assignors to Cannon Mills Company, Kannopolis, N.C.

Filed July 16, 1971, Ser. No. 163,395

Int. Cl. D03d *39/22;* **D03j** *1/22*

U.S. Cl. 139—25 **5 Claims**



To avoid damage to terry loops formed on that portion of terry cloth which passes through a temple during weaving on the type of terry loom whose cloth is shifted forwardly and backwardly in alternation incident to forming the terry loops, the temple is shifted forwardly and rearwardly with the cloth solely by transmitting such movement directly from the cloth to the temple so there is essentially no relative movement between the cloth and the temple during terry weaving other than the normal take-up of the cloth.

3,724,510
A DOBBY

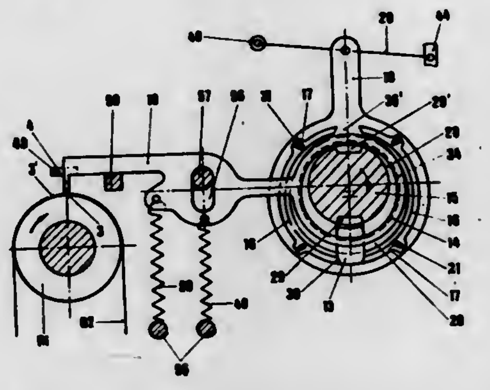
Walter Kleiner, Wadenswil, Switzerland, assignor to Staubli Ltd., Zurich, Switzerland

Filed May 26, 1971, Ser. No. 146,958

Claims priority, application Switzerland, May 29, 1970, 8037/70

Int. Cl. D03c *1/00*

U.S. Cl. 139—66 R **6 Claims**



Dobby with logic control, in which for each heald shaft a needle reads a pattern card and controls the heald shaft operating mechanism, wherein first the reading needle (4) and pattern card perform in the longitudinal direction of the two card reciprocally a pilgrim step movement (61), namely two steps forward, one step backward, and second the reading needle and pattern card perform a reciprocal movement in transverse direction to the pattern card preferably each for a half or full interval back and forth (68).

3,724,511
DEVICE FOR CONTROLLING A WEDGE COUPLING, PARTICULARLY IN A DOBBY

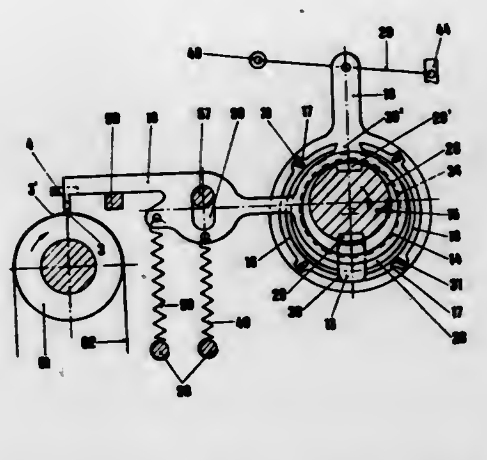
Walter Kleiner, Wadenswil, Switzerland, assignor to Staubli Ltd., Zurich, Switzerland

Filed May 26, 1971, Ser. No. 146,959

Claims priority, application Switzerland, May 29, 1970, 8036/70

Int. Cl. D03c *1/00, 15/00*

U.S. Cl. 139—66 R **6 Claims**



Dobby, in which the movement of the heddle frames is effected by a connecting rod (18), which connecting rod is mounted through an eccentric ring (28) on the driving shaft (15). The control of such movement is accomplished by a coupling wedge (13) which is supported in the eccentric ring and is connected in control relationship alternatively to the driving shaft or to the connecting rod. The control of the wedge is effected by means of a ring (14) movably arranged around the driving shaft, on which ring the wedges slides. One end of an arm (10) is secured to the ring, which arm carries on its other end the reading needle (4). The arm is supported through a slot (56) on a stationary member (57). The springs (49,50) acting onto the arm (10) and the supporting of the arm in the slot cause and permit the arm to tilt and yield in response to the position of the wedge and the needle.

3,724,512
JACQUARD MECHANISM

Karl Kohl, Chlorodontstrasse 10, Obertshausen, near Offenbach/Main, Germany

Filed March 3, 1972, Ser. No. 231,570

Claims priority, application Germany, March 4, 1971, P 21 10 355.9

Int. Cl. D03d *3/42*

U.S. Cl. 139—85 **3 Claims**

A jacquard mechanism of otherwise conventional design, with a vertically reciprocating mounting board and a plurality of vertically extending hooks has the guide plate for the like plurality of harness cords fixedly connected to the mounting board. The harness cords connect respective hooks to operating pins carried by a bar.

3,724,513
LOOM HAVING A COMMON FRAME FOR THE WARP AND CLOTH BEAMS

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

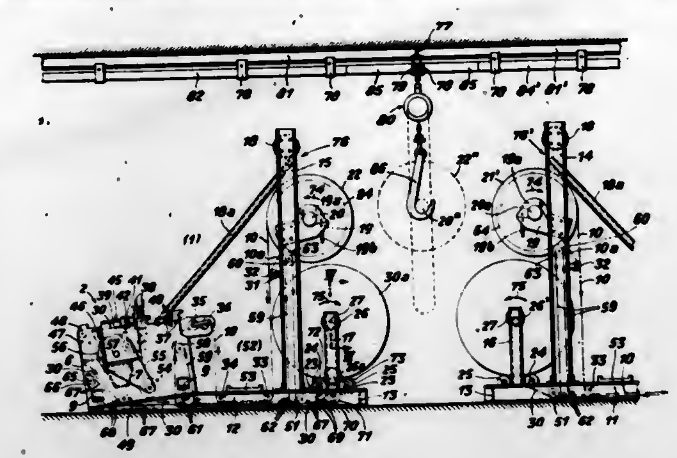
Filed Oct. 29, 1968, Ser. No. 771,472

Claims priority, application Switzerland, July 19, 1968, 10903/68

Int. Cl. D03d *49/02, 49/04*

U.S. Cl. 139—1 **21 Claims**

The warp beam and cloth beam are both mounted at the rear of the loom with the warp beam over the cloth beam. The warp yarn is then led downwardly and across to the loom while the cloth is led downwardly and under the loom for take-up on the cloth beam.



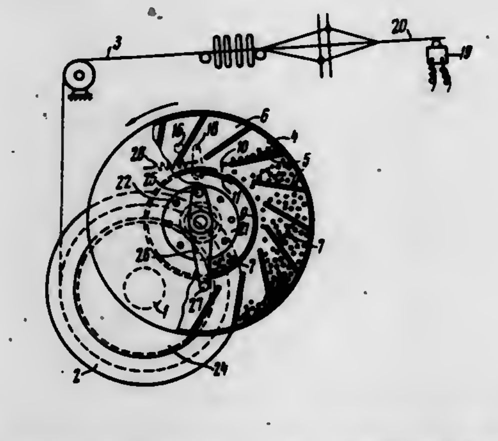
3,724,514
WARP THREAD TENSION DEVICE IN A LOOM

Nikolai Ivanovich Makachev, ulitsa Tsjurupy 12, korpus 1, kv. 27, and Alexei Nikolaevich Parshin, ulitsa Nagorhaya, 34, korpus 43, kv. 53, both of Moscow, U.S.S.R.

Filed April 20, 1971, Ser. No. 135,718

Int. Cl. D03d *49/06*

U.S. Cl. 139—100 **6 Claims**



A tension device, comprising a rotating beam wherefrom warp threads are wound off, and a drum with inner radial blades that form separate sections. At least part of these sections accommodate loose, and the length of the blades is chosen so that between their free ends and the drum axle there remains an annular clearance sufficient for the weights to spill from one section into another during the drum rotation, to develop a torque opposing rotation. A casing is mounted in the drum within the annular clearance and a part of the casing can be selectively opened to allow loose weights to fall into the casing to reduce the counter acting torque.

3,724,515
APPARATUS FOR WINDING TWO POLE DYNAMOELECTRIC MACHINE FIELD COILS

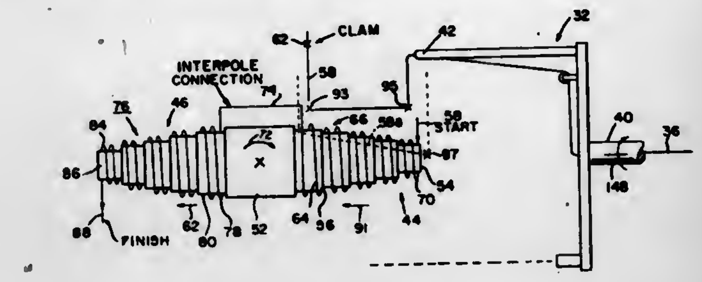
Robert J. Eminger, Fort Wayne, Ind., assignor to Essex International Inc., Fort Wayne, Ind.

Filed Dec. 28, 1970, Ser. No. 101,587

Int. Cl. B21f ***3/04***

U.S. Cl. 140—92.1 **11 Claims**

A method and apparatus for winding field coils for a two pole dynamoelectric machine stator core member, the field coils comprising first and second pole groups of coils each having a plurality of progressively smaller concentric coils. In accordance with the method, the first pole group of coils is wound, without severing the wire from which the coils are wound, upon the first of two stepped, collapsible coil forms with the first coil form being expanded and at a winding position and the second of the coil forms being at an inactive position. Each of the coil forms has a forward distal end and a rear proximal end mounted on a rotatable turret, the smaller step of each coil form being adjacent its distal end and the largest step being adjacent its proximal end. The winding of the first pole group commences with winding of the smallest coil on the smallest step of the first coil form, progresses rearwardly toward the proximal end, and concludes with winding of the largest coil on the largest step of the first coil form. The turret is then indexed, still without severing the wire, thereby to move the first coil form with the coils wound thereon to the inactive position and to move the second coil form to the winding position. The second pole group of coils is then wound, still without severing the wire, upon the second coil form which is expanded and in its winding position, the winding of the second pole group commencing with the winding of the largest coil on the largest step of the second coil form, progressing forwardly toward the distal end, and concluding with the winding of the smallest coil on the smallest step of the second coil form. Finally, the coil forms are collapsed and the coils are removed therefrom.



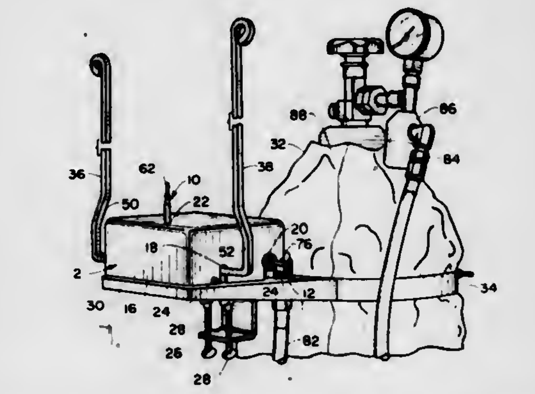
3,724,516
GAS DISPENSER AND INFLATION GAUGE

Edward E. Elson, Anaheim; Kenneth L. McQuary, Marina Del Rey; George H. Karlin, Beverly Hills, and Bert Lane, Palm Springs, all of Calif., assignors to Automatic Helium Balloon Systems, Inc., Beverly Hills, Calif.

Filed April 23, 1971, Ser. No. 136,899

Int. Cl. B65b ***1/30***

U.S. Cl. 141—95 **10 Claims**



A portable dispenser for gaseous fluids such as, for example, helium and inflation gauge whereby the inflatable article, as for example a balloon, may be easily filled with helium and the gauge positioned so as to indicate the extent to which the balloon is being inflated, thereby preventing excessive helium use and possible bursting of the balloon.

3,724,517
PLANING APPARATUS

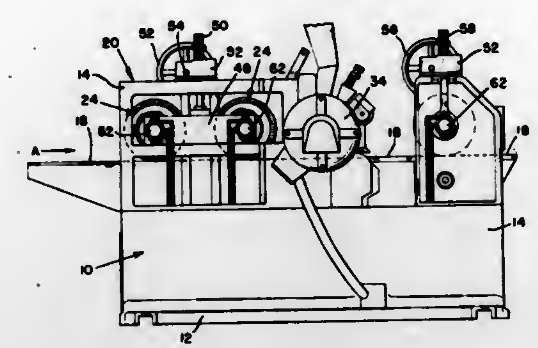
Raymond S. Edwards, Route 3, P.O. Box 481, Roxboro, N.C., and Thomas L. Guy, Route 6, P.O. Box 188-84, Greensboro, N.C.

Filed Sept. 8, 1970, Ser. No. 70,424

Int. Cl. B27c ***1/12***

U.S. Cl. 144—116 **2 Claims**

Apparatus having upper and lower rotary cutter heads for planing stock advanced therethrough. The stock is uniformly gripped and advanced by opposed pairs of roller assemblies regardless of irregularities or variations in the thickness of the stock. Each roller assembly pair includes a plurality of axially aligned, pneumatic tires coupled together for rotation by keyed hub members and driven by hydraulic means.



3,724,518
TREE FEED ROLL ASSEMBLY

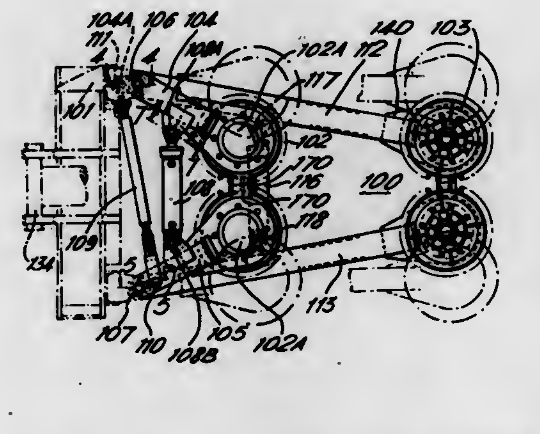
Samuel Zehavi, Cote St. Luc; Joseph J. R. Bolvin, Montreal, Douglas D. Hamilton, Town of Mount Royal, and Raoul Ranzenhofer, Pointe Claire, all of Quebec, Canada, assignors to Canadian International Paper Company; North Shore Paper Company; both of Montreal, Abitibi St. Anne Paper Ltd., Beaupre, all of Quebec, Canada

Filed March 12, 1971, Ser. No. 123,804

Claims priority, application Canada, March 13, 1970, 77403

Int. Cl. B27l ***1/00, 11/02***

U.S. Cl. 144—247 **15 Claims**



A feed roll assembly for propelling trees endwise along a selected path and including two sets of arms pivotally mounted on a frame with one set extending a greater distance from the frame than the other set, one set of said arms being located on one side of the feed path and the other set on the opposite side of each arm having a driven roll cantilevered therefrom to overlap said path.

3,724,519
COLLAPSIBLE SAW

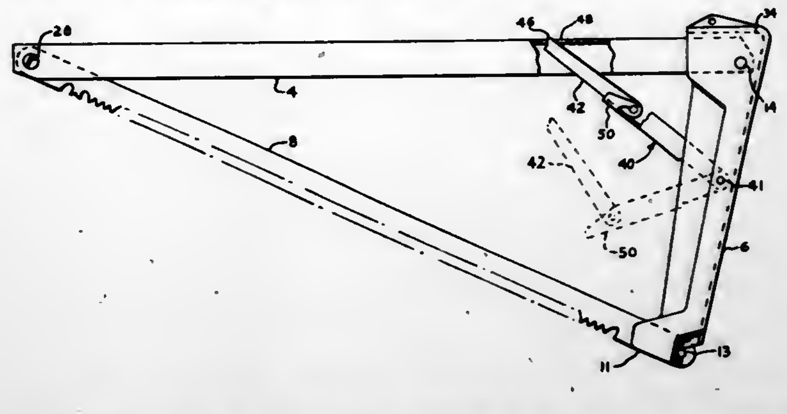
Wilfred M. McCord, Jr., Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.

Filed April 6, 1971, Ser. No. 131,709

Int. Cl. B27b ***21/02***

U.S. Cl. 145—33 E **5 Claims**

Ideal compact saws for outdoorsmen are those having a straight frame member and a handle pivotally connected to one end of the frame. A blade is connected across the angle formed by these two members, from the free end of the frame member to the base of the handle to form a triangularly shaped saw. A triangular saw is provided herein which is easier to convert from its collapsed position to its operable position than known saws, and it has no removable parts to get lost.



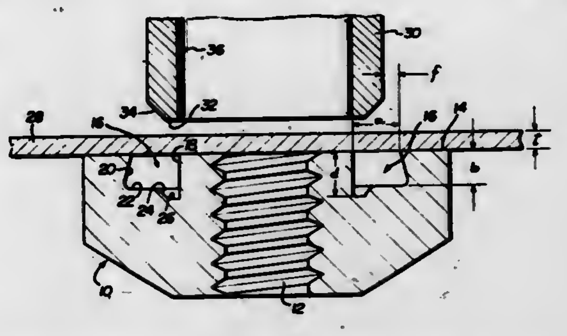
3,724,520
NUT AND PANEL ASSEMBLY

Harold A. Ladouceur, and John H. Steward, both of 12668 Arnold Avenue, Detroit, Mich.

Continuation-in-part of Ser. No. 841,037, July 11, 1969, abandoned. This application Nov. 19, 1970, Ser. No. 90,923

Int. Cl. F16b ***39/34***

U.S. Cl. 151—41.73 **20 Claims**



A pierce nut having a panel metal receiving groove especially designed to achieve improved panel retention characteristics. The panel metal receiving groove of the nut is formed with an undercut outer side wall, and the groove bottom at the inner wall is deeper than at the outer wall, defining a tool receiving recess at the inner wall. A piercing tool having a bevel or ramp surface at its outer edge forces the panel metal inwardly into underlying relationship with the undercut outer groove wall during the piercing operation, securely interlocking the nut and panel.

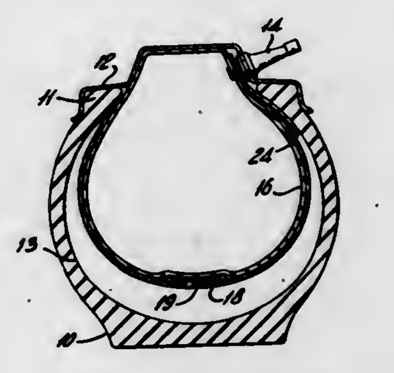
3,724,521
ANTI-FLAT DEVICE

David M. Coddington, Piscataway; William D. Marsh, Cranford, and Harvey Cohen, Woodbridge, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed May 6, 1971, Ser. No. 140,879

Int. Cl. B60c ***17/00***

U.S. Cl. 152—340 **14 Claims**



An anti-flat device for a tubeless pneumatic tire comprising an expandable toroidal air pressure reservoir or small inner tube restrained by a folded and stitched fabric band to prevent the inner tube from filling the tire even though the inner tube is inflated to a higher pressure than that normally employed for the tire. When the air pressure in the tire is reduced below a predetermined value, the band unfolds thereby permitting the inner tube to expand and provide operable support for the tire.

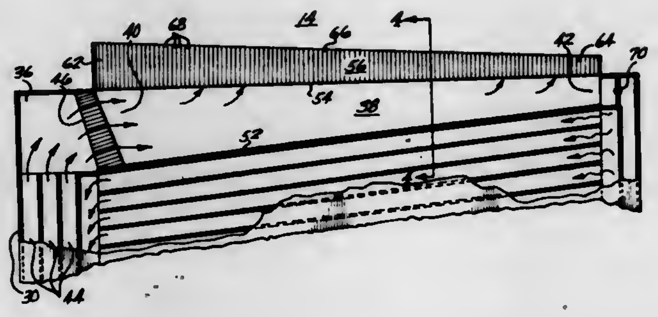
3,724,522
CONSTANT VELOCITY UNIFORM FLOW EVAPORATOR HEADER

John T. Pogson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 10, 1971, Ser. No. 141,891

Int. Cl. B01d *1/22, 3/00;* **A23c** *3/04;* **E03b ; B01d** *3/08*

U.S. Cl. 159—13 B **15 Claims**



An overflow evaporator header providing equal volumetric flow from an upper overflow edge including a generally horizontal longitudinally extending header duct for placement on top of a falling film evaporator panel with said header duct having a first inlet end, a second end, and having a varying transverse cross sectional flow area decreasing from the first end to the second end to provide constant velocity of fluid flow therethrough. A fluid exit port having an open ended cellular structure positioned on top of the header duct and in fluid communication therewith allows the fluid to flow upwardly and out onto an upper overflow surface. The passageways of the fluid exit port can be varied in length, height above a reference datum, or in cross sectional area to compensate for fluid flow frictional pressure losses and fluid flow turning losses experienced by the fluid in flowing down the length of the header duct and upward into the passageways thus providing equal volumetric flow of fluid from each passageway onto the upper overflow surface. Flow director vane structures may be positioned near the inlet end of the header duct to direct the fluid generally longitudinally into the header duct and outlet means may be provided at the second end of the header duct to provide for the discharge of solids contained in the fluid that would otherwise accumulate therein.

3,724,523
TUBULAR STRUCTURE FOR FILM EVAPORATORS

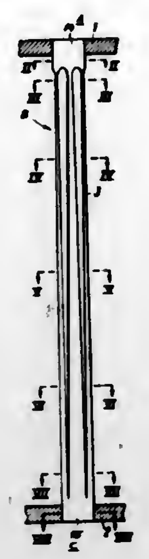
Konrad Mattern, Bad Homburg, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed June 29, 1970, Ser. No. 50,752

Int. Cl. B01d *1/22, 1/00;* **F28f** *13/08, 1/00*

U.S. Cl. 159—13 A **6 Claims**

A tube-bundle evaporator through the interior of the tubes of which the liquid to be evaporated is passed. The tubes are deformed so that the flow cross-section increases longitudinally in the direction of flow of the vapor while the perimeter or peripheral extent of the tube and, preferably, the diameter of the smallest circumscribing circle remains constant over the entire length of the tube.



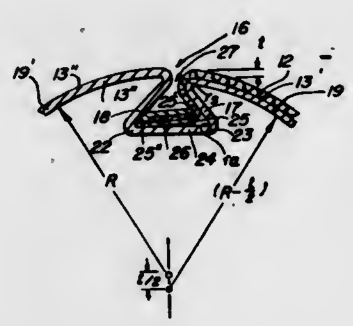
3,724,524
PICTURE SCREEN ROLLER FABRIC ATTACHMENT

Fred S. Potter, Warsaw, Ind., assignor to Da-Lite Screen Company, Inc., Warsaw, Ind.

Filed Feb. 25, 1971, Ser. No. 118,626

Int. Cl. E04f *10/06*

U.S. Cl. 160—24 **2 Claims**



A projection screen having a spring roller with a fabric-locking groove comprised of opposed side walls stepped on the roller periphery to the thickness of the fabric for producing safe mounting and flat hanging of picture surfaces, the side walls of which groove outwardly converge on a gap in the roller periphery of width equal to about twice the thickness of the screen fabric forming an inwardly-bent, wedging channel for locking on a metal strip clamped to the inner edge of the fabric screen and inserted therein so that the more the fabric is pulled, the tighter and more uniformly the screen will be held and the flatter the fabric will hang during use.

3,724,525
WINDOW SHADE SUPPORTS

Roger L. Boneck, W-140, N-5550 Lilly Road, Menomonee Falls, Wis.

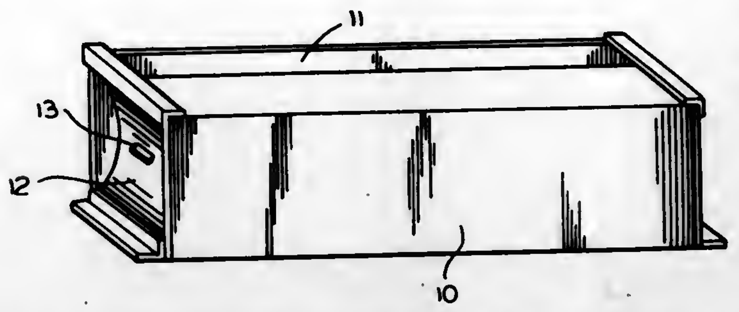
Filed July 12, 1971, Ser. No. 161,557

Int. Cl. E06b *9/08*

U.S. Cl. 160—28 **3 Claims**

A window shade support comprises an attractive elongated box having a concealed shade mounted therein. Angular

brackets on the box may be slipped into mating notches on the window frame. This way the entire shade support assembly snaps into a frame quickly and easily.



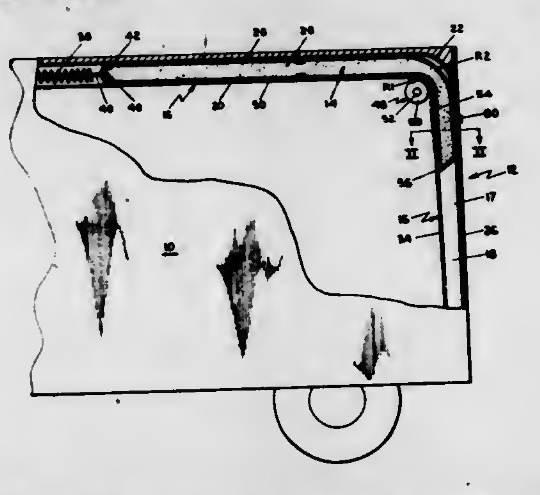
3,724,526
INSULATED OVERHEAD DOOR FOR TRUCKS AND THE LIKE

Carl A. Huprich, 630 N. Buys Road, Muskegon, Mich.

Filed Dec. 16, 1971, Ser. No. 208,737

Int. Cl. A47h *3/00*

U.S. Cl. 160—368 R **19 Claims**



An overhead door assembly including a pair of spaced panels having insulating material located between the inside surfaces and holding the panels together. The insulating material is resilient to allow differential movement of the panels at least longitudinally of each other and preferably also laterally toward each other as the door is bent while moving between closed and open positions.

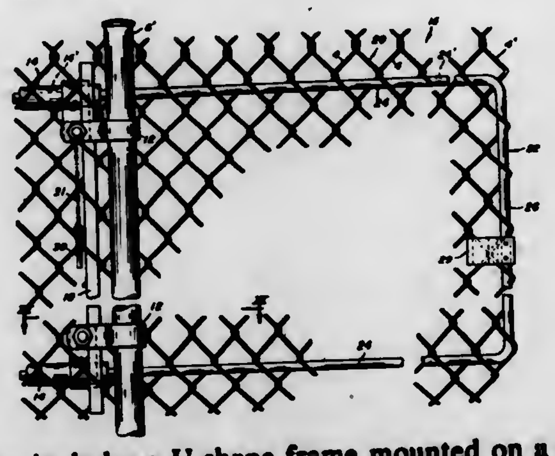
3,724,527
COLLAPSIBLE GATE FOR CHAIN-LINK FENCE GATEWAY

William H. Johns, Hudson, Ohio, assignor to United States Steel Corporation

Filed March 2, 1972, Ser. No. 231,280

Int. Cl. E06b *3/00*

U.S. Cl. 160—368 **2 Claims**



Device includes a U-shape frame mounted on a continuation portion of the fabric of a chain-like fence extending beyond one side of a supporting post of the fence into a gateway. The continuation portion of the fence fabric is the gate. The parallel leg members of the U-shape frame are disposed horizontally and are slidably received in two tubular members mounted on the fence on the opposite side of the supporting post. Movement of the parallel leg members inwardly of the tubular members causes the continuation portion of the fence fabric to collapse longitudinally to open the gateway and movement of the parallel leg members outwardly of the tubular members causes the gate portion of the fence fabric to expand longitudinally to close the gateway.

3,724,528
METHOD FOR MANUFACTURING OF SOUND KILLED STEEL INGOTS

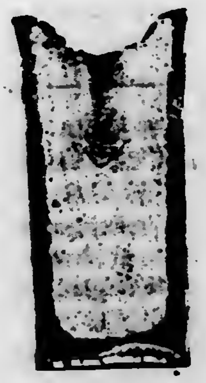
Kiichi Narita, Itami; Takasuke Mori, Ashiya, and Takamichi Itoo, Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobecity, Japan

Filed May 8, 1970, Ser. No. 35,842

Claims priority, application Japan, May 8, 1969, 44/35364

Int. Cl. B22d *27/20*

U.S. Cl. 164—58 **4 Claims**



A high quality homogeneous sound killed steel ingot having a reduced quantity of negative segregation and of inverted V-shaped segregation zones is produced by adding a stirring agent to the molten steel during the solidification process and at a time period between the period during which the negative segregation section and the inverted V-shaped segregation zones are formed, and the period during which the V-shaped segregation zone is formed wherein the stirring agent is preferably an element, alloy, compound or mixture thereof of an element selected from the group of elements of Groups I-*a* or II-*a* of the Periodic Table or zinc, or the halides of an element of Groups I-*b*, III-*b*, IV-*a*, IV-*b*, VI-*a*, VII-*a*, or VIII.

3,724,529
PLANT FOR CONTINUOUS VACUUM CASTING OF METALS OR OTHER MATERIALS

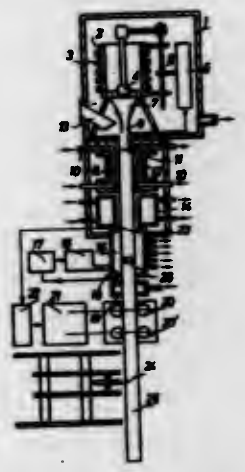
Roger Louis Chaulet, Grenoble; Claude Pierre Albert Louis Guichard, Voiron; Pierre Lucien Menissier, Grenoble, and Jean-Claude Georges Soret, St. Egreve, all of France, assignors to Societe Anonyme Societe Industrielle de Combustible Nucleaire, Haute Savoie, France

Filed Oct. 13, 1969, Ser. No. 865,719

Claims priority, application France, Oct. 18, 1968, 68170599; Sept. 15, 1969, 6931355

Int. Cl. B22c *19/04*

U.S. Cl. 164—154 **7 Claims**



The invention relates to a method for continuous vacuum casting of metals or other materials and a plant for effecting said method more particularly for the obtention of shapes and tubes.

The method applicable to plants comprising a spray means in the open air and a dynamic lock for emergence into air,comprised of chambers which are maintained under decreasing pressures by pumping devices of known types and are separated from each other by diaphragms, consists, on the one hand, in holding the static pressure of the metal on the shape or tube being formed at a constant value, for a given size with respect to the liquid meniscus size, so as to render the permissible difference between the cross-section of said shape or tube, when reaching the dynamic lock, and the cross-section of said diaphragms low enough for the rate of air admission to remain in all cases lower than the pumping rates of said pumping devices, and, on the other hand, in so selecting the cooling zone length, as a function of the suitably set rate of withdrawal of the moulded shape, that said shape will enter the spray means, when leaving the lock, at a constant, controlled temperature.

The invention is especially applicable to the obtention of uranium shapes or tubes.

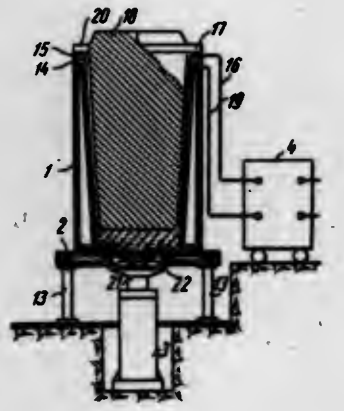
3,724,530
APPARATUS FOR ELECTROSLAG REMELTING OF METALS

Jury Vadimovich Latash, Vozdukhoflotsky prospekt, 87, kv. 14; Boris Izrailevich Medovar, bulvar Lesi Ukrainki, 2, kv. 8, and Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3, all of Kiev, U.S.S.R.

Filed Oct. 12, 1970, Ser. No. 79,940

Int. Cl. B22d *29/06, 27/02*

U.S. Cl. 164—252 **1 Claim**



The present invention relates to apparatus for electroslag remelting of metals.

The apparatus according to the invention is characterized by the fact that it has a device for lifting the deposited ingot to remove it from the mould, in which case the actuating member of the device passes through the aperture in the pan during the lift of the ingot.

The apparatus can be used substantially in production of large ingots having an advantage that it does not require a split mould for removing the ingot.

3,724,531
MOLD FOR CASTING SINGLE CRYSTAL ARTICLES

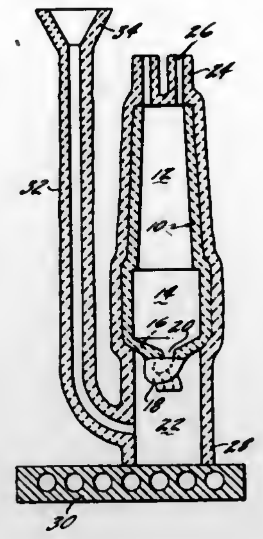
John S. Erickson, Wallingford; Patrick M. Curran, Manchester, and William A. Owczarski, Chesire, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 13, 1971, Ser. No. 106,077

Int. Cl. B22c *9/02;* **B22d** *25/06*

U.S. Cl. 164—361 **2 Claims**

A mold construction for use in making single crystal castings in which adequate metal area is provided for heat conduction to the chill plate during the solidification which facilitates heat control to assure growth of a single crystal into and through the article cavity of the mold.



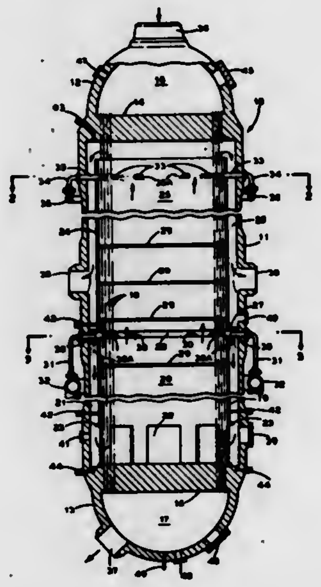
3,724,532
ONCE-THROUGH VAPOR GENERATOR

Theodore S. Sprague, Hudson, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Division of Ser. No. 15,483, March 2, 1970, Pat. No. 3,635,287. This application Oct. 27, 1971, Ser. No. 192,963

Int. Cl. F28f *19/00*

U.S. Cl. 165—1 **7 Claims**



A method and apparatus for separately introducing an auxiliary feedfluid into a shell and tube type vapor generator when the flow of main feedfluid is discontinued. The auxiliary feedfluid provides the vapor for preheating the entering main feedfluid when flow of the latter is resumed thereby reducing temperature differentials between the shell and tube sheet metal and the entering main feedfluid so as to eliminate thermal shock.

3,724,533
REGENERATOR SEAL

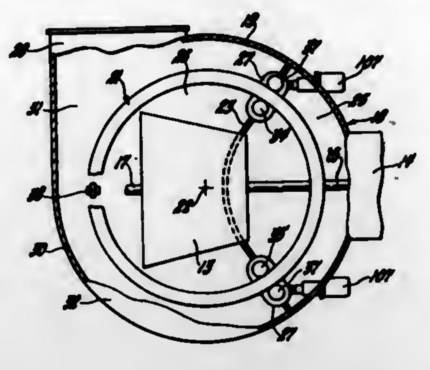
Jack P. Hart, Hinsdale, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 11, 1971, Ser. No. 197,674

Int. Cl. F28d *19/04*

U.S. Cl. 165—7 **3 Claims**

A rotary regenerator of the drum matrix type includes main seals engaging the matrix where it passes through the bulkhead of the regenerator. Each main seal includes a frame closely encircling the matrix including a housing extending across the hot side of the matrix. The matrix is guided and driven by rollers in the main seal frame. The roller at the hot side of the matrix includes a hollow shaft with a roller near each end of the shaft to engage the matrix. Thermal insulation covers substantially all the exposed surfaces of the shaft and rollers from edge to edge of the matrix. The ends of the shaft are mounted in spherical bearings and lubricating and cooling oil is circulated through the shaft. This disclosure incorporated by reference to the parent application, now U.S. Pat. No. 3,638,716.



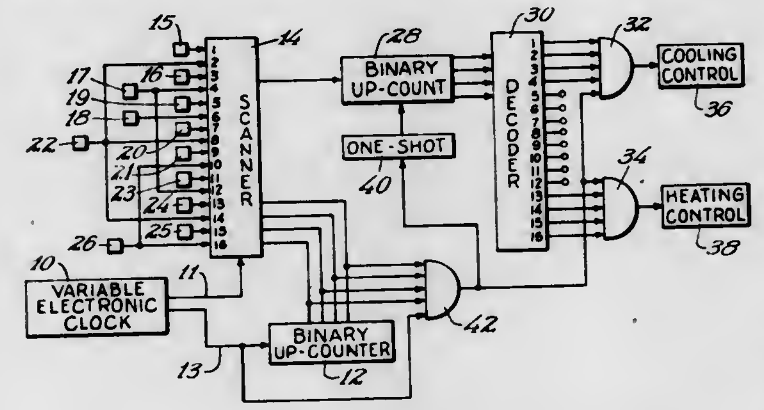
3,724,534
MULTIPLE ZONE CONTROL SYSTEM WITH PRIORITY OF SERVICE

Richard N. Weatherston, St. Paul, Minn., assignor to Weather-Rite, Inc., St. Paul, Minn.

Filed Nov. 26, 1971, Ser. No. 202,176

Int. Cl. F24f *3/00*

U.S. Cl. 165—12 **5 Claims**



A control system for heating and cooling a plurality of zones in which each zone has a thermostat. The total amount of heating and cooling supplied is controlled by an electronic scanning system which periodically samples each of the zone thermostats and adjusts the overall heating and cooling means according to the sum of the zone requirements. Zones which are assigned a greater importance are attached to more than one input of the scanning system so as to have a greater effect on the scanning system so as to receive priority of service.

3,724,535
SYSTEM FOR HEATING OR AIR CONDITIONING

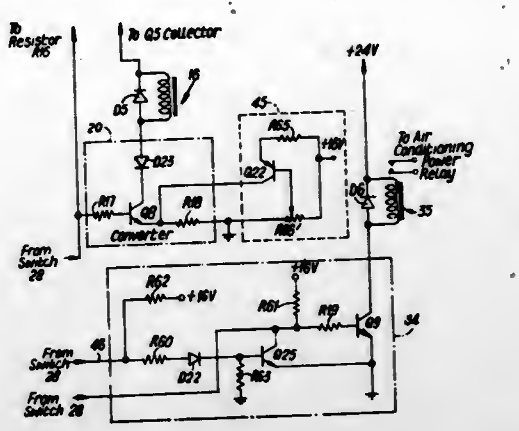
Said Sapir, Westlake Village, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 31,167, April 23, 1970. This application Jan. 10, 1972, Ser. No. 216,509

Int. Cl. F25b *29/00*

U.S. Cl. 165—26 **1 Claim**

A system for heating or air conditioning wherein provision is made for controlling fan speed and/or the heating and modulating valve in accordance with thermostat demand. The thermostat puts out a step function followed by a ramp for both on-off and proportional control. One valve may be used in series with another for each function. A logic gate is provided to override the speed control when the plenum is cold. Half speed is provided for a hot plenum even though there is no thermostat demand for heat. Two detectors are provided for plenum temperature. The same thermostat is used with both voltage sensitive and current sensitive circuits.



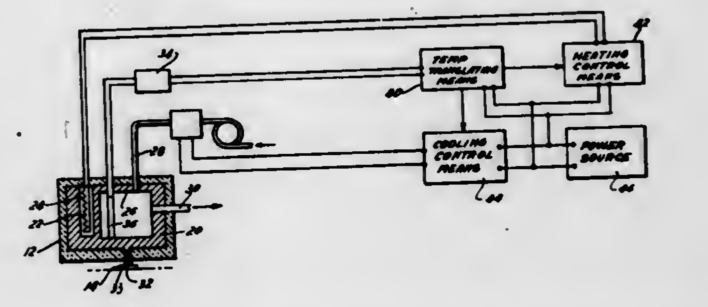
3,724,536
HEATING AND COOLING DEVICE

Brent Baxter, Salt Lake City, Utah, assignor to General Instrument Corporation, Newark, N.J.

Filed Aug. 14, 1970, Ser. No. 63,831

Int. Cl. F25b *29/00*

U.S. Cl. 165—27 **19 Claims**



An apparatus is provided which applies heat and cold to a device such as a semiconductor under test. A supporting structure is movable toward and away from the device under test and carries a housing which encloses a heat conductive member having a part which is engageable with the tested device. The housing also carries a heating means and a cooling means, both in heat transfer relation with said heat conductive member. One or the other of the heating and cooling means is rendered operative at a given time. Temperature sensing means monitors the temperature of the conductive member and transmits an appropriate signal to control means. The control means, in response thereto, causes more or less heat, or more or less cold, as the case may be, to be applied to the device under test.

ERRATUM

For Class 165—61 see:
Patent No. 3,724,235

3,724,537
HEAT EXCHANGER WITH BACKED THIN TUBES

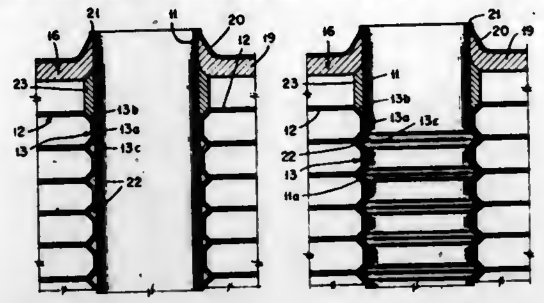
Herbert G. Johnson, 17 North Drexel Avenue, Havertown, Pa.

Filed Sept. 28, 1971, Ser. No. 184,483

Int. Cl. F28f *1/30;* **B21c** *37/22;* **B21d** *53/02*

U.S. Cl. 165—133 **9 Claims**

This application discloses a heat exchanger having thin lining tubes, as of plastic or metal, deformed against structural tubular backing and thermal exchange elements to provide extensive effective thermal transfer contact and support with contoured securement between tubes and backing elements which obviates relative displacement and relieves differential



thermal change in length and stresses. Also the method of making the assembly.

3,724,538

HEAT EXCHANGER

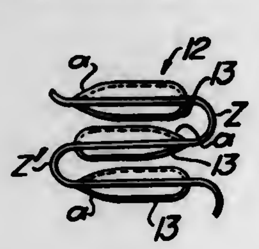
Terumoto Yamaguchi, and Yoshinao Amano, both of Anjo-shi, Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Japan

Filed Oct. 27, 1971, Ser. No. 193,117

Claims priority, application Japan, Dec. 27, 1970, 45/126115

Int. Cl. F28f *1/22*

U.S. Cl. 165—152 **7 Claims**



A corrugated heat exchanging fin element for use with a heat exchanger. The fin element has formed thereon louvers extending therefrom at an angle with respect to the flow of a coolant and cut to define apertures opened in substantially the same direction. Each louver is depressed at the trailing side of the louver as viewed in the direction of feeding of a strip material for the formation of the louvers so that the stresses produced in the material of the louvers at the time of manufacture is removed to enable the fin element to be free from arcuate bend from which the fin element otherwise suffers.

3,724,539

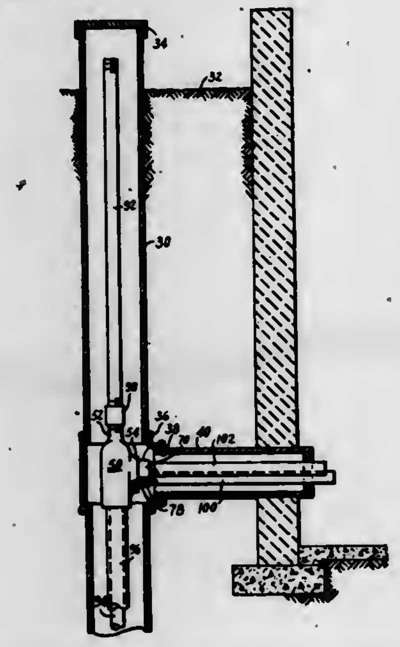
PIPE HANGER ADAPTER

Asa A. Payne, 307 East Canal Street, Chippewa Falls, Wis.

Filed March 23, 1971, Ser. No. 127,250

Int. Cl. E21b *33/03*

U.S. Cl. 166—89 **1 Claim**



A lift leg pipe supporting an adapter within a well casing T for connecting piping below the adapter to offset piping leading to a jet pump.

3,724,540

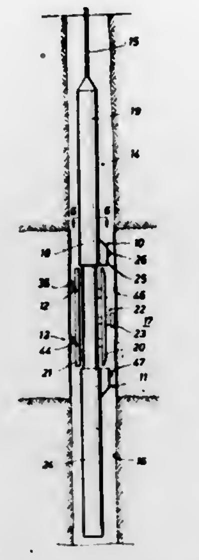
APPARATUS FOR DISENGAGING WELL TOOLS FROM BOREHOLE WALLS

Harold J. Urbanosky, Pearland, and Frank R. Whitten, Houston, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed May 18, 1971, Ser. No. 144,517

Int. Cl. E21b *33/12*

U.S. Cl. 166—100 **16 Claims**



In the several representative embodiments of the invention disclosed herein, outstanding too-disengaging members are uniquely arranged on a typical testing tool including a fluid-sampling member which is adapted for selective engagement with a borehole wall to obtain samples of connate fluids from earth formations adjacent to the borehole. These tool-disengaging members are cooperatively arranged to space the tool body away from the mudcaked borehole wall for minimizing the surface area contacting the wall so as to reduce the possibility of the tool becoming tightly stuck against the borehole wall by differential pressure as fluid samples are taken. Various arrangements of these unique tool-disengaging members are disclosed whereby these members are also cooperatively moved in relation to the borehole wall in response to selected movement of the tool body for readily disengaging the tool from the wall when it is to be moved away from its testing position.

3,724,541

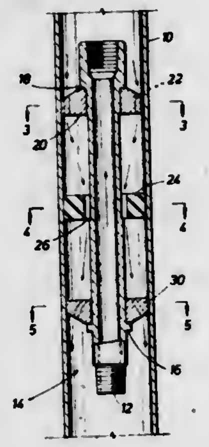
SAFETY DEVICE FOR GAS LIFT WELL

David B. Curry, P.O. Box 405, Woodville, Tex.

Filed March 22, 1971, Ser. No. 126,616

Int. Cl. E21b *33/00*

U.S. Cl. 166—224 **8 Claims**



For use in a well where production is sustained through gas lift methods, an apparatus which shuts in the well on catastrophic failure. The apparatus includes a set of spaced, slidably mounted pistons carried on the production tubing string. Openings in the pistons permit gas flow down through the pistons. When gas flow is upward in the annulus, the lower piston is lifted upwardly and contacts the centrally located piston. The pair slide upwardly against the topmost piston, which is fixedly mounted. When pressed together, the openings through the pistons do not permit continued gas flow in the annulus. This closes the annulus to gas flow.

3,724,542

METHOD OF DISPOSAL OF WASTE ACTIVATED SLUDGE

Charles E. Hamilton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed March 1, 1971, Ser. No. 119,927

Int. Cl. E21b *43/22, 43/26*

U.S. Cl. 166—246 **5 Claims**

Activated sludge from waste disposal operations has been found to grow utilizing hydrocarbons from petroleum or oil shale in an anaerobic environment and producing gas containing an unexpected preponderance of hydrocarbons, particularly methane. The invention provides a method for disposing of waste activated sludge with the concurrent production of useful fuel.

3,724,543

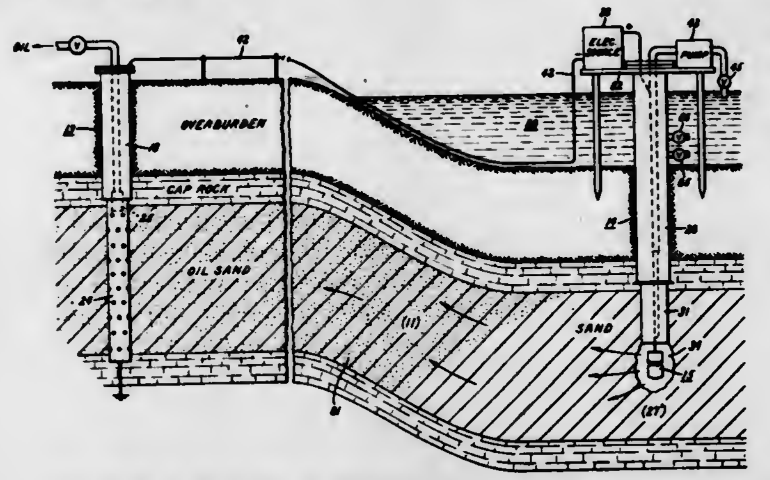
ELECTRO-THERMAL PROCESS FOR PRODUCTION OF OFF SHORE OIL THROUGH ON SHORE WALLS

Christy W. Bell, Berwyn, and Charles H. Titus, Newtown Square, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed March 3, 1971, Ser. No. 120,592

Int. Cl. E21b *43/00*

U.S. Cl. 166—248 **10 Claims**



The flow of oil from an undersea oil-bearing formation to an on-shore well is induced by the steps of locating a relatively small anode in a cavity at an approximately medial elevation of the formation at an off-shore location preferably beyond the reservoir of oil, injecting saline water into that cavity, raising the electric potential of the anode with respect to a cathode in the vicinity of an off-shore well, and withdrawing oil from the well.

3,724,544

SECONDARY RECOVERY METHOD

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 21, 1971, Ser. No. 155,311

Int. Cl. E21b *43/22, 43/27*

U.S. Cl. 166—271 **23 Claims**

Significant improvement in the recovery of hydrocarbons from a subterranean hydrocarbon-bearing formation containing acid-soluble components is accomplished by injecting into the formation via an injection well drilled into a formation communicating with an adjacent producing well and containing acid-soluble components which may or may not have water-sensitive clays and shales included therein, an aqueous acidic solution of a phosphate ester of prescribed formula whereupon the acid component reacts with the acid-soluble components of the formation creating passageways or enlarging existing passageways thus facilitating the flow of fluids therein and the phosphate ester prevents post-precipitation of dissolved salts and thereby increases the recovery of hydrocarbons from the formation through the adjacent producing well.

3,724,545

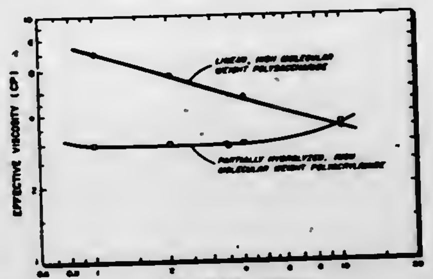
ECONOMICAL MOBILITY CONTROL IN OIL RECOVERY PROCESSES

Bruce L. Knight, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Sept. 28, 1970, Ser. No. 76,140

Int. Cl. E21b *43/22*

U.S. Cl. 166—273 **13 Claims**



Improved mobility control in secondary and tertiary recovery processes is obtained by injecting at least two slugs into the reservoir, one slug designed to effect a permeability reduction and the other slug containing an agent which more effectively increases the fluid viscosity. For example, an aqueous slug containing a partially hydrolyzed, high molecular weight polyacrylamide can be injected (this slug efficiently reduces the relative permeability to the flow of the aqueous slug through the reservoir), followed by an aqueous slug containing a biopolymer, e.g., a linear polysaccharide having a molecular weight of about one million (this agent more effectively increases the viscosity of the water and has a lesser effect on permeability reduction). This combination of slugs gives more efficient and economical mobility control in flooding subterranean oil-bearing formations to recover oil therefrom.

3,724,546

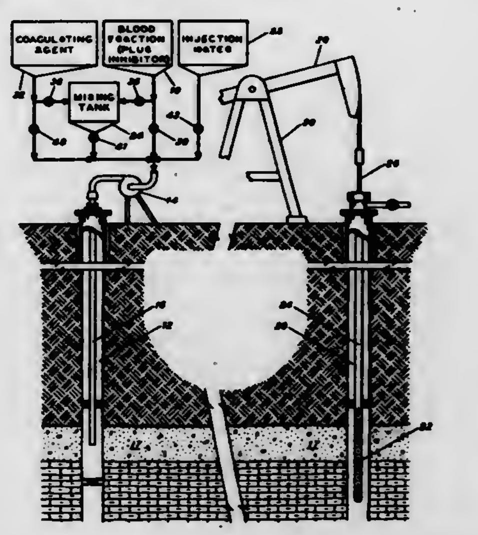
BLOOD FLOOD

Harley Y. Jennings, Jr., Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 11, 1971, Ser. No. 105,192

Int. Cl. E21b *43/16*

U.S. Cl. 166—274 **7 Claims**



A method of using whole animal blood, or a selected fraction of it, is disclosed as a suitable fluid for assisting recovery of petroleum from a reservoir. Bovine or other animal blood recovered from meat slaughtering is pumped into an oil reservoir from an injection well. It is injected either as a solution with flooding water or followed by water after injection in undiluted form. If desired a clotting retardant, such as citric acid or EDTA (ethylenediaminetetraacetic acid) may be added to the blood to prevent coagulation before contacting fluids in the reservoir. Improved oil recovery from the reservoir over straight water flood is believed to be due to the oil-to-water mobility ratio increase by the addition of blood to the drive fluid. Both blood's high natural viscosity and the ability to polymerize its fibrinogen to form fibrin upon contact with the reservoir rock and fluids are contributing factors. At the same time, its colloidal content, cells and platelets, either as a fraction of, or in the whole blood, tend to plug larger permeability channels of the reservoir rock and thereby inhibit bypassing of petroleum by flood water used to drive reservoir fluids to one or more producing wells.

3,724,547
INVERTED LATEX WATER FLOODING METHOD

Lawrence L. Bott, Oak Park, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Jan. 31, 1972, Ser. No. 222,301
Int. Cl. E21b *43/22*

U.S. Cl. 166—274 **12 Claims**

An improved water flooding process for recovering oil from a subterranean oil-bearing formation which comprises introducing a water-in-oil emulsion into an input well penetrating the formation. The emulsion contains dispersed therein from 0.01 to 35 percent by weight of a finely-divided water-soluble vinyl addition polymer and which is capable of being inverted in water whereby the water-soluble vinyl addition polymer is released into the water as a solution.

3,724,548
WATERFLOODING METHOD USING MODIFIED STARCH GRANULES

Harry W. Parker, Lubbock, Tex., and John W. Marx, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 17, 1971, Ser. No. 116,216
Int. Cl. E21b *43/25*

U.S. Cl. 166—275 **7 Claims**

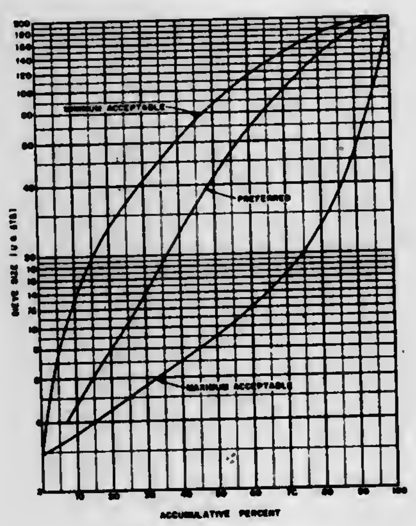
Adding modified starch granules of a preselected size to the flood water for waterflooding a hydrocarbon containing formation and improving the flood front of said flood water.

3,724,549
OIL SOLUBLE DIVERTING MATERIAL AND METHOD OF USE FOR WELL TREATMENT

Walter R. Dill, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 1, 1971, Ser. No. 111,387
Int. Cl. E21b *33/138, 43/27*

U.S. Cl. 166—282 **17 Claims**



PARTICLE SIZE DISTRIBUTION FOR HIGH TEMPERATURE, OIL SOLUBLE DIVERTING AGENT

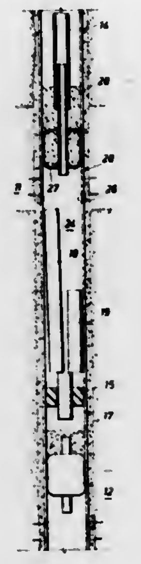
The present invention relates to an oil soluble bridging agent for diverting oil well treating fluids to less permeable portions of an oil-producing subterranean formation having temperatures up to about 360°F.

3,724,550
METHODS FOR RECOMPLETING WELLS

C. P. Lanmon, II, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,419
Int. Cl. E21b *33/00*

U.S. Cl. 166—285 **9 Claims**



As a preferred mode of the new and improved methods disclosed herein for recompleting a production well without removing an existing production string, an intermediate length of the production tubing is severed at spaced locations above the production packer and adjacent to a selected earth formation from which new production is to be obtained. Once the severed tubing section drops into the well bore, a perforator is lowered through the tubing string into the cleared well bore interval and actuated for gaining communication with the selected formation. A so-called "through-tubing bridge plug" having an unblocked tubular mandrel carrying an expansible sealing member is then lowered through the tubing string and operated to position the expanded sealing member in the cleared interval above the new perforations. The upper end of the mandrel is extended upwardly into and packed-off in a suitable manner within the lower end of the tubing string.

3,724,551
SECONDARY RECOVERY OF PETROLEUM

Edwin S. Troscinski, Houston, and James R. Stanford, Sugar Land, both of Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Jan. 6, 1972, Ser. No. 215,897
Int. Cl. E21b *33/138*

U.S. Cl. 166—295 **9 Claims**

This invention relates to the recovery of petroleum, and in particular, involves a process for reducing the amount of water recovered from a producing well. This reduction in water is accomplished by:

A. introducing a brine solution containing from 0.5 to 5.0 percent by weight of a surfactant into said producing well which penetrates said formation; then;

B. introducing a water-in-oil emulsion into said producing well which penetrates said formation, and allowing the water-in-oil emulsion to be left static for from 10 to 72 hours; said emulsion containing dispersed therein from 0.01 to 35 percent by weight of a finely-divided water-soluble vinyl addition polymer and which is capable of being inverted in water whereby the water-soluble vinyl addition polymer is released into the water as a solution.

3,724,552
WELL TREATING METHOD TO REMOVE PARAFFIN DEPOSITION

Earl S. Snavely, Jr., Arlington, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,122
Int. Cl. E21b *21/00, 43/25*

U.S. Cl. 166—304 **10 Claims**

This specification discloses a method of treating a well having an oil column therein and penetrating an oil-containing subterranean formation to dissolve paraffin deposits from the well and the formation. There is injected into an upper end of the well an aqueous solution of a water-soluble compound that has a greater specific gravity than the oil in the well, which water-soluble compound decomposes into carbon disulfide under conditions existing in a lower portion of the well. The aqueous solution of the water-soluble compound settles downwardly through the oil in the well to the lower portion thereof where it decomposes thereby releasing carbon disulfide which then dissolves paraffins from the well and formations communicating therewith. Water-soluble compounds suitable for use in accordance with the method of this invention are selected from the class consisting of trithiocarbonates, dithiocarbamates, and xanthates.

3,724,553
PARAFFIN WELL TREATMENT METHOD

Earl S. Snavely, Jr., Arlington, Tex.; Theodore A. Bertness, Whittier, Calif., and Richard L. Morris, Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 199,963
Int. Cl. E21b *21/00, 43/25*; C09k *3/00*

U.S. Cl. 166—304 **14 Claims**

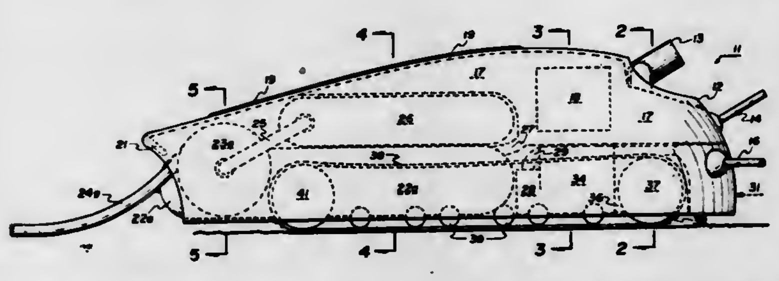
This specification discloses a method of treating a well having an oil column therein and penetrating an oil-containing subterranean formation to dissolve paraffin deposits from the well and the formation. There is injected into the well a thermally stable emulsion in a salt-free environment of a solvent for paraffins in a continuous aqueous phase. The emulsion is stable at the temperatures existing in the well and subterranean formation but subject to being broken by contacting the aqueous phase with salt. The emulsion has a greater specific gravity than the oil forming the oil column and settles downwardly therethrough to a lower location of the well. Salt having a greater specific gravity than the oil is injected into the well either prior to or subsequent to the injection of the emulsion into the well. The salt settles downwardly through the oil column to a lower location of the well and mixes with the emulsion, thereby breaking the emulsion and releasing the solvent to dissolve the paraffins.

3,724,554
FIRE FIGHTING SYSTEM

Paul D. Rupert, and Raymond D. Rupert, both of 5703 Beaumont Avenue, La Jolla, Calif.

Filed May 27, 1971, Ser. No. 147,582
Int. Cl. A62c *3/00*

U.S. Cl. 169—2 A **3 Claims**



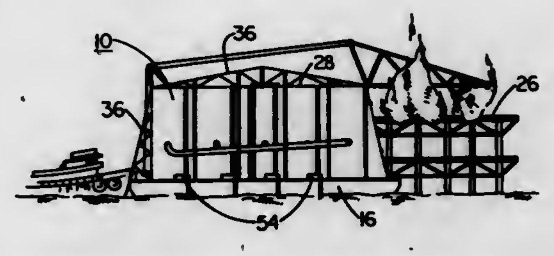
A fire fighting system including a plurality of shielded vehicles which can be remote controlled and are propelled on tracks containing a water tank shield surrounding the remote controlled equipment or an operator and a pair of sweeping nozzles for discharging foam into the fire area together with a remote supply hose reel for reeling out hose as it advances, the hose being connected to a water supply; a TV camera with suitable transmitting equipment, and high pressure air tanks for powering the foamed water to the fire area together with a plurality of hurricane fans being supplied with a fogging agent for blowing fog into the fire area.

3,724,555
FLOATING FIRE EXTINGUISHING APPARATUS AND CATCH BASIN

Randall J. Chiasson, 808 Jefferson St; Ronald G. Bourg, 114 Thorobred Drive, and Tilton J. Arceneaux, 1514 Lynn Avenue, all of Thibodaux, La.

Filed Feb. 29, 1972, Ser. No. 233,384
Int. Cl. A62c *3/00*

U.S. Cl. 169—2 R **5 Claims**



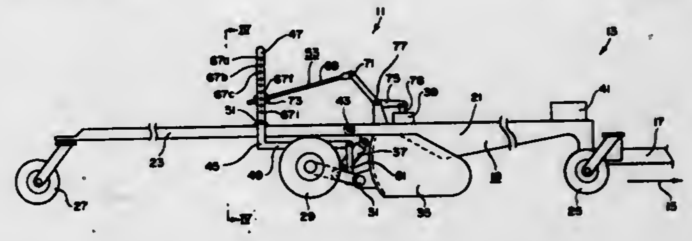
An enclosing floating structure, having an openable end, and pushable by a tug to enclose a burning offshore oil rig through the openable end which is then closed to smother a fire. Pumps mounted on the structure spray water over the burning rig to assist in putting out a fire and to cool the rig. Interconnected pressure relief vents are provided to relieve internal pressures. The annular space defined by the enclosing floating structure in the water for a depth equal to the draft of said structure provides a catch basin for the containment of liquid hydro-carbon liquids. Provision is made for removing pollutants from the catch basin before its capacity is exceeded or the openable end is opened.

3,724,556
FILL MATERIAL COMPENSATOR FOR AN AUTOMATIC HYDRO-MECHANICAL LAND LEVELER

John B. Servatius, P.O. Box 26, East Prairie, Mo.

Filed Oct. 15, 1971, Ser. No. 189,609
Int. Cl. E02f *3/76*

U.S. Cl. 172—4.5 **5 Claims**



Control apparatus including an action booster than can be attached to typical land levelers of the type having an elongated center articulated frame suitably supported at its ends and provided intermediate its ends with a scraper blade fixedly attached thereto and further supported adjacent the center thereof by automatic hydro-mechanical controlled wheels to maintain the height of the blade at a preset relationship with respect to a straight line extending between the support structure adjacent the ends thereof to effect land leveling as it is caused to travel over the surface of the earth. The apparatus boosts the response of the drive structure for the intermediate or blade support wheels to the elevation of the irregularities resulting in an optimum refinement of the leveling action thereof which is controlled by the relationship of the compacted ground contact point of the blade support wheels and a line between the compacted ground contact points of the front and rear support structure. The responsive action compensates for loose material in fill areas and for the problem that fill material would not heretofore spill under the blade properly to fill low places to the exact height of the blade.

3,724,557
APPARATUS ADAPTED TO BE COUPLED TO A TRACTION VEHICLE SERVING FOR THE MAINTENANCE OR CONSTRUCTION OF WATER-BOUND ROADS

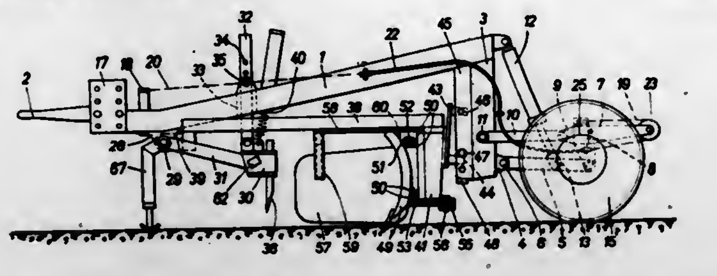
Marcel Boschung, Schmitten, and Hans Gisler, Bern, both of Switzerland, assignors to Firma Marcel Boschung, Schmitten, Switzerland

Filed July 15, 1970, Ser. No. 54,967

Claims priority, application Switzerland, July 22, 1969, 11189/69

Int. Cl. A01b *49/02*

U.S. Cl. 172—197 **4 Claims**



An apparatus capable of being coupled to a traction vehicle and serving for the construction or maintenance of water-bound roads, which is of the type comprising a main support bearing upon an undercarriage. This equipment also incorporates a pavement breaker beam and a levelling plate, both of which are pivotably coupled with the main support independently of one another for movement about at least one axis extending transverse to the lengthwise axis of the apparatus. According to the invention the pavement breaker beam and the levelling plate can each be arrested independently of one another at a respective predetermined spacing with respect to the main support, and further, wherein the rear end of the main support is coupled by means of a guide mechanism with the undercarriage for the purpose of regulating the height of this end above the ground.

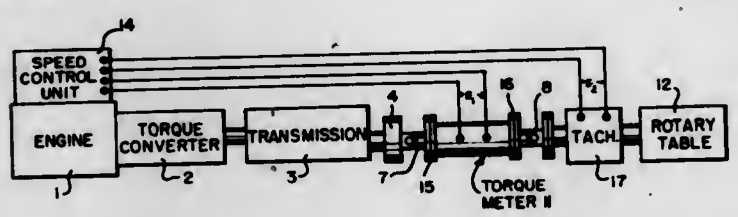
3,724,558
APPARATUS FOR CONTROLLING THE ROTARY SPEED OF A DRILL

Herbert A. Rundell, Houston, and Robert W. Pittman, Bellaire, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 22, 1971, Ser. No. 182,678

Int. Cl. E21b *3/04*

U.S. Cl. 173—1 **10 Claims**



The rotary speed of a rotary drive system, including a rotary engine, for a drill in a well is maintained at a predetermined value and is sensed by a tachometer. An electrical signal from the tachometer is converted to a pneumatic signal by an electro-pneumatic transducer which is applied to a receiver-controller receiving a supply of filtered air at a predetermined pressure. When the electrical signal from the tachometer changes due to a change in the rotary speed of the rotary drive system from the predetermined value, the pneumatic output from the receiver controller changes accordingly until the rotary speed of the rotary drive system is once again at the predetermined value. The pneumatic output from the receiver controller remains at the pressure which returned the rotary speed to its predetermined value.

In achieving speed control, the pneumatic output from the receiver controller is effectively amplified by a booster relay receiving filtered air at a second predetermined pressure to provide a pneumatic signal. The pneumatic signal from the booster relay is applied to the throttle of the rotary engine to control the engine's rotary speed and hence the rotary speed of the rotary drive system and drill.

3,724,559
DRILL BOOM WITH FEED DIRECTION SENSING AND CONTROL

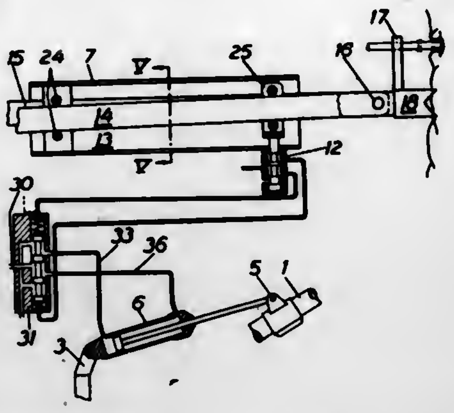
Axel Stromnes, Tunabro, Sweden, assignor to Atlas Copco Aktienbolag, Nacka, Sweden

Filed Feb. 17, 1971, Ser. No. 116,013

Claims priority, application Sweden, Feb. 19, 1970, 2091/70

Int. Cl. E21c *5/11*

U.S. Cl. 173—4 **11 Claims**



A drill boom consisting of a telescopically extendable boom leg, which is pivotably mounted on a rotatable bracket. A rock drill is attached to a pivotable boom head at the opposite end of the boom leg. The boom head is pivotable about an axis which is parallel to the pivot axis of the boom leg. The rock drill is fed by a pivoting force and a length changing force simultaneously acting on the boom. A control system is provided to continuously sense and correct the rock drill position during drilling whereby the corrections is accomplished by adjusting of the composite feeding force direction.

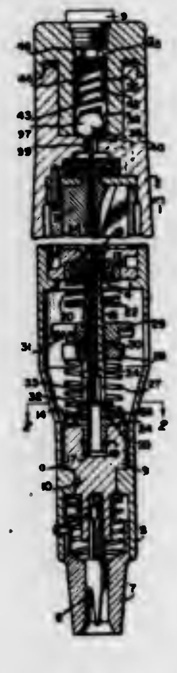
3,724,560
AUTOMATIC THROTTLE SHUT-OFF POWER TOOL

David W. Tibbott, Phillipsburg, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Sept. 8, 1971, Ser. No. 178,553

Int. Cl. B25b *23/14*

U.S. Cl. 173—12 **10 Claims**



A fluid-operated rotary power tool having a motor supply valve which is moved into engagement with a movable valve sleeve in response to a clutch reaching a predetermined torque load, thereby closing the valve and stopping the motor. The movable valve sleeve is normally urged away from the valve. When the movable valve sleeve is engaged by the valve, it is held there by a differential pressure to keep the valve closed until the valve returns to its normally closed position.

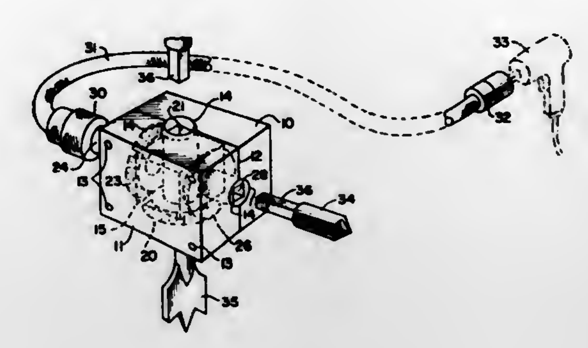
3,724,561
MULTIPLE TOOL DRIVING UNIT

Frederic Price Merrels, 5609 Wilson Lane, Bethesda, Md.

Filed Sept. 9, 1971, Ser. No. 178,919

Int. Cl. B25b *21/00*

U.S. Cl. 173—50 **11 Claims**



A compact multiple tool driving unit driven by a motor remote from, but permanently attached to it, so that a minimum of distance is required between it and the work to be performed. Alternatively, a separate portable power transmitting unit may be used, having an input connection allowing the unit to be driven by a portable hand drill or the like. The unit possesses a plurality of output or tool driving connections which are employed to drive drill bits, screwdrivers and other similar tools. Because of its compact construction, the device enables the user to perform a variety of different operations in tight places where present tools cannot operate, and also to perform a variety of different operations without the necessity of stopping to change tools.

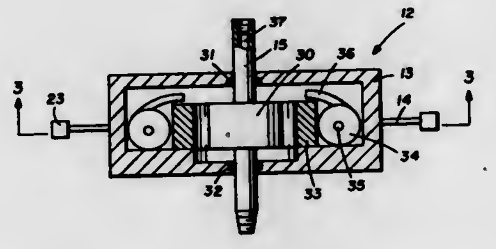
3,724,562
SLIM HOLE DRILLING ELECTRIC POWER UNIT

John H. Striegler, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 65,177, Aug. 19, 1970, Pat. No. 3,670,832. This application Feb. 4, 1972, Ser. No. 223,484

Int. Cl. E21b *3/02*

U.S. Cl. 173—57 **2 Claims**



A slim hole drilling power unit which employs at least one electric motor in mechanical connection with the drill pipe for rotating the drill pipe and moving with same as it advances toward and away from the wellbore. The power unit contains its own fan means so that no cooling air supply hose to said power unit is necessary.

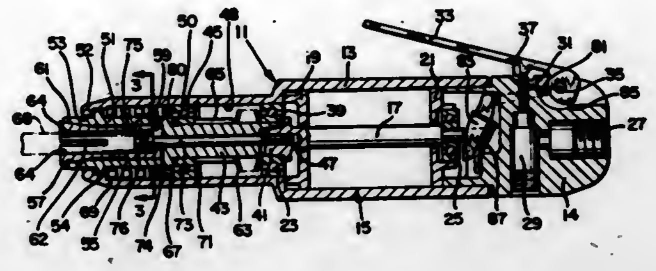
3,724,563
COLLET CHUCK OPERATED BY THROTTLE CONTROL FOR ROTARY POWER TOOL

John L. Wickham, Glen Arm; Lee W. Ramstrom, Joppa; Albert G. Wordsworth, and Robert A. Meloni, both of Baltimore, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed March 8, 1971, Ser. No. 121,731

Int. Cl. B23b *31/20*

U.S. Cl. 173—163 **16 Claims**



A portable rotary power tool including a housing having a vane-type pneumatic motor disposed therein. The motor is coupled to an output shaft rotatably supported within the housing. A collet is keyed within the shaft and is adapted to releaseably grip a tool bit. A throttle valve controls operation of the motor and is operated by a pivoted lever mounted on the housing. When the lever is moved in a direction opposite to that required for operation of the motor, the collet is positively released from the bit.

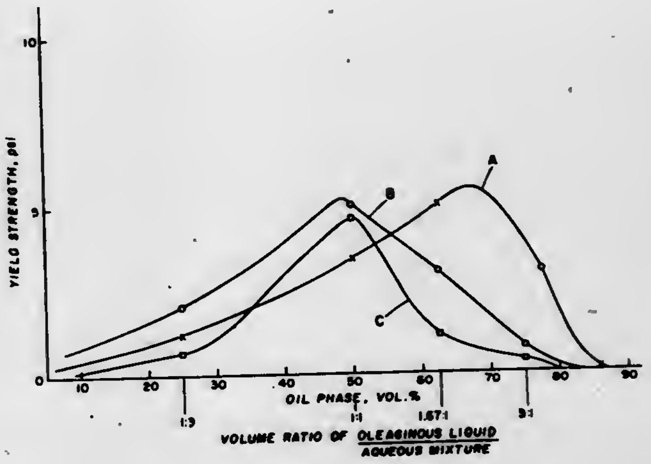
3,724,564
TECHNIQUE FOR CONTROLLING LOST CIRCULATION

Joseph U. Messenger, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 12, 1971, Ser. No. 198,357

Int. Cl. E21b *21/04, 33/13, 43/00*

U.S. Cl. 175—72 **9 Claims**



This specification discloses a method of controlling lost circulation in drilling operations. In carrying out the method of the invention, an aqueous mixture of a dispersing agent, an inert particulate material, and a water dispersible oleophilic colloid is introduced into the well. This aqueous mixture is circulated down the well and into the vicinity of a formation into which lost circulation is occurring. The aqueous mixture is then mixed with an oleaginous liquid and a gel is formed which tends to plug the formation into which lost circulation is occurring. The oleophilic colloid may be a normally water swellable clay such as bentonite which has been treated to render it oleophilic. The oleaginous liquid may comprise an oil-base drilling fluid utilized in drilling of the well. The inert material may be a weighting material such as barite.

3,724,565

METHOD OF CONTROLLING LOST CIRCULATION

John Kelly, Jr., Arlington, Tex., assignor to Mobil Oil Corporation

Filed Nov. 12, 1971, Ser. No. 198,247

Int. Cl. E21b ***21/04, 33/13, 43/00***

U.S. Cl. 175—72 **9 Claims**

This specification discloses a method of controlling lost circulation in drilling operations. In carrying out the method of the invention, an aqueous mixture of a dispersing agent and a water dispersible oleophilic colloid is introduced into the well. This aqueous mixture is circulated down the well and into the vicinity of a formation into which lost circulation is occurring. The aqueous mixture is there mixed with an oleaginous liquid and a gel is formed which tends to plug the formation into which lost circulation is occurring. The oleophilic colloid may be a normally water swellable clay such as bentonite which has been treated to render it oleophilic. The oleaginous liquid may comprise an oil-base drilling fluid utilized in drilling of the well.

3,724,566

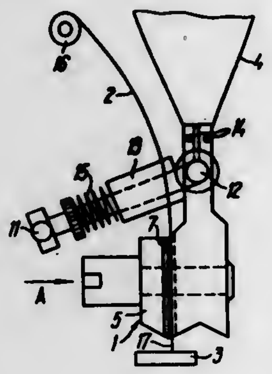
DEVICE FOR ULTRASONIC BROACHING OF A GROUP OF HOLES

Filipp Georgievich Staros, Belgradskaya ulitsa, 18, kv. 226, Leningrad, U.S.S.R.

Filed Sept. 17, 1971, Ser. No. 181,411

Int. Cl. E21c ***3/02***

U.S. Cl. 175—108 **3 Claims**



A device for ultrasonic broaching of a group of holes in articles made from hard and brittle materials by means of a wire tool which is fed periodically by a discrete feeding mechanism as the wires wear out, the holder of the wire tool being fashioned as plates of which one is provided with slots, each slot accomodating one wire.

3,724,567

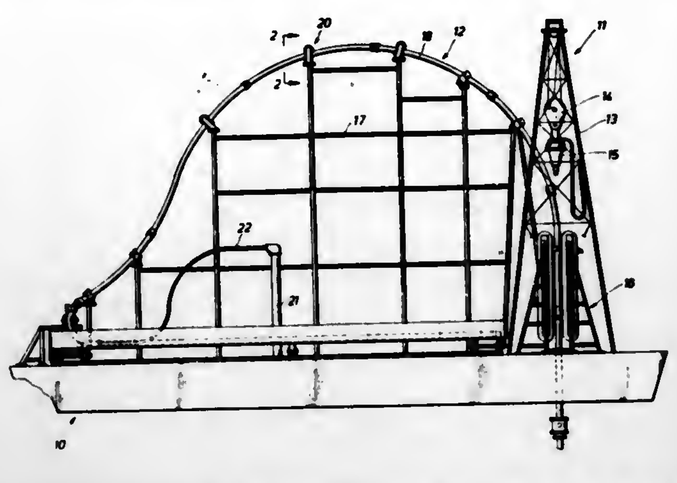
APPARATUS FOR HANDLING COLUMN OF DRILL PIPE OR TUBING DURING DRILLING OR WORKOVER OPERATIONS

Eugene A. Smitherman, 821 Esperson Building, Houston, Tex. Division of Ser. No. 93,840, Nov. 30, 1970, Pat. No. 3,667,554, which is a continuation of Ser. No. 859,634, Sept. 22, 1969, abandoned, which is a continuation-in-part of Ser. No. 685,686, Nov. 24, 1967, abandoned. This application June 5, 1972, Ser. No. 259,908

Int. Cl. E21b ***7/00, 19/00***

U.S. Cl. 175—203 **9 Claims**

An apparatus for removing or installing a column of drill pipe or tubing relative to a well bore during drilling or workover operations wherein the drill string is moved from the well bore preferably in one continuous piece without breaking it into shorter sections, and is moved in an upwardly and radially outwardly curved path from the well bore to a substantially horizontal attitude for storage preferably in a generally circular configuration on the ground or support means for later return to the well bore moving approximately along the same path, and as one piece.



3,724,568

CORE DRILL LATCH

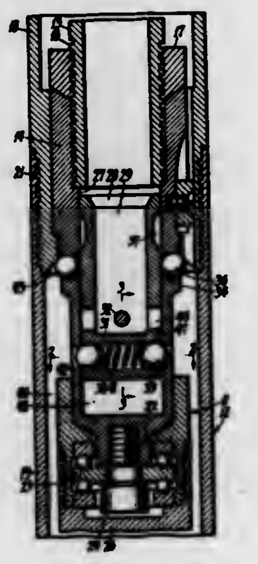
Horst Koepke, East Coburg, Australia, assignor to Mindrill Limited, Preston, Victoria, Australia

Filed Dec. 6, 1968, Ser. No. 781,743

Claims priority, application Australia, Dec. 6, 1967, 30,828/67

Int. Cl. E21b ***9/20, 25/00***

U.S. Cl. 175—247 **6 Claims**



A core barrel inner tube assembly, having a latching mechanism which can latch the assembly into the drill string to prevent upward movement of the assembly relative to the string as it is lowered down a drill hole and which can be released by the application of drilling fluid pressure to allow normal operation during drilling.

ERRATUM

For Class 175—293 see:
Patent No. 3,724,576

3,724,569

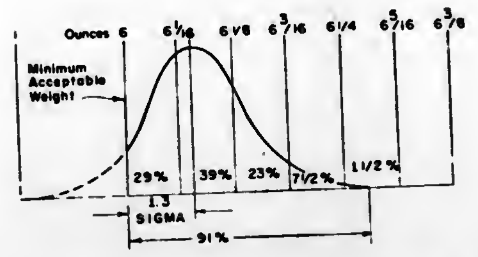
METHOD AND APPARATUS FOR CONTROLLING PRODUCT CHARGE WEIGHTS

Stewart B. Blodgett, 12322 Mossycup Dr., Houston, Tex. Division of Ser. No. 775,858, Nov. 14, 1968, Pat. No. 3,643,752. This application Oct. 29, 1970, Ser. No. 85,271

Int. Cl. G01g ***15/00***

U.S. Cl. 177—1 **5 Claims**

A method of controlling the weights of product charges and reducing product giveaway is provided wherein a predetermined percentage of charges are deliberately held underweight so that a high percentage of the charges are delivered at a weight near the minimum acceptable level. The underweight charges are then brought up to weight by adding additional product so that all charges are delivered at weights above the minimum. A method for maintaining the predetermined percentage of underweight charges is also provided wherein the total number of charges and the number of underweight charges are compared to determine whether the predetermined percentage is being maintained and a resultant control signal produced to increase or decrease the amount fed where the percentage is not maintained.



3,724,570

POSTAL METER WITH LETTER WEIGHT CHECKING DEVICE

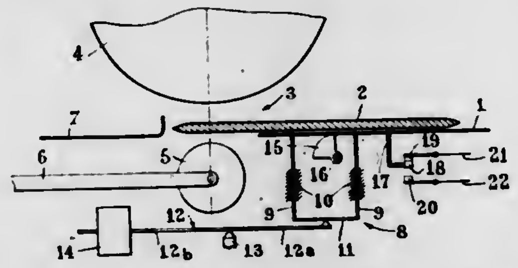
Gabriel Chenut, 68 rue Bourdignon, Saint Maur, France

Filed June 5, 1972, Ser. No. 259,673

Claims priority, application France, June 7, 1971, 7120455

Int. Cl. G01g ***23/38, 19/52***

U.S. Cl. 177—4 **6 Claims**



Postal meter comprising a pre-set weigher and a pre-set postage printer and an alarm means to prevent printing if a letter weighs more than the pre-set weight.

3,724,571

HYDRAULIC LOAD INDICATING DEVICE

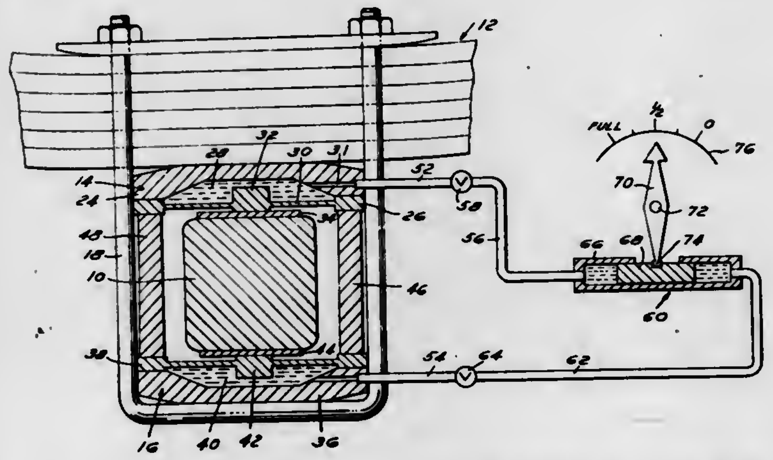
John E. Thorn, Chigwell Row, and Alan A. Selman, Southend-on-Sea, both of England, assignors to Ford Motor Company, Dearborn, Mich.

Filed June 25, 1970, Ser. No. 49,692

Claims priority, application Great Britain, Aug. 26, 1969, 42,425/69

Int. Cl. G01g ***19/10, 5/00***

U.S. Cl. 177—141 **5 Claims**



A hydraulic device is interposed between the vehicle spring and a wheel support member of a motor vehicle suspension system. The device contains an expansible chamber that changes its volume in proportion to the vehicle loading. The chamber volume is sensed by an indicator that gives a reading to the vehicle operator of the load being carried by the vehicle.

3,724,572

ELECTRONIC MEASURING APPARATUS FOR MEASURING MASSES AND FORCES

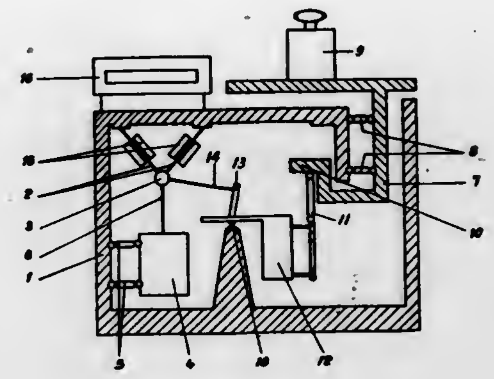
Kaspar Saner, Dubendorf, Switzerland, assignor to Wirth, Gallo & Co., Zurich, Switzerland

Filed May 9, 1972, Ser. No. 251,651

Claims priority, application Switzerland, Aug. 2, 1971, 11358/71

Int. Cl. G01g ***3/14***

U.S. Cl. 177—210 **6 Claims**



Two pretensioned vibrating strings are respectively stressed and stress-relieved by a force to be measured, said force being applied through a compensating lever incorporating an arm whose effective length varies as a function of force applied to maintain linearity.

3,724,573

ELECTRONIC MEASURING APPARATUS FOR MEASURING MASSES AND FORCES

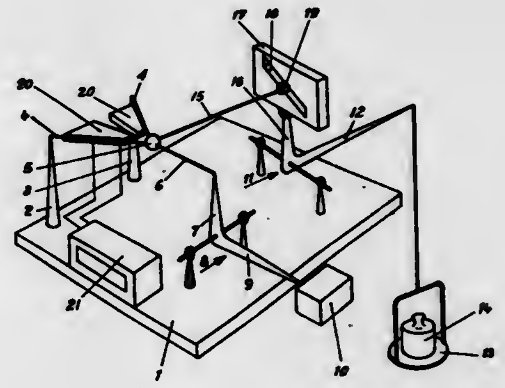
Kaspar Saner, Dubendorf, Switzerland, assignor to Wirth, Gallo & Co., Zurich, Switzerland

Filed May 9, 1972, Ser. No. 251,652

Claims priority, application Switzerland, Aug. 4, 1971, 11505/71

Int. Cl. G01g ***3/14***

U.S. Cl. 177—210 **3 Claims**



Two pretensioned vibrating strings are respectively stressed and stress-relieved by a force to be measured, said force being applied through an adjusting member by which the angle of force application can be varied to compensate initial errors of the apparatus.

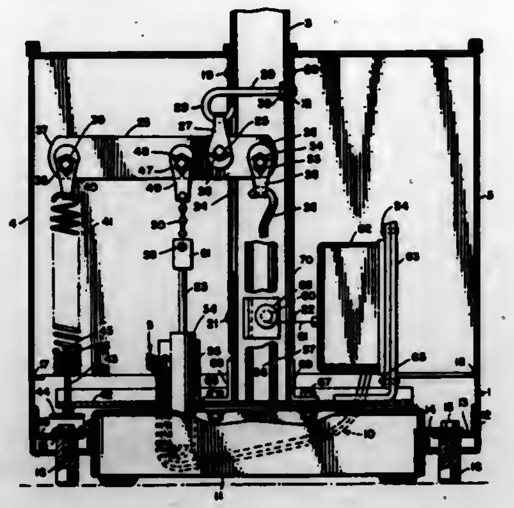
3,724,574
WEIGHING AND HEIGHT MEASURING DEVICE

William Y. Hutchinson, Chicago, and Walter P. Kushmuk, Niles, both of Ill., assignors to Continental Scale Corporation, Chicago, Ill.

Division of Ser. No. 83,924, Oct. 26, 1970, Pat. No. 3,667,561. This application Dec. 13, 1971, Ser. No. 207,329

Int. Cl. G01g *3/02, 7/02, 19/50*

U.S. Cl. 177—210 **6 Claims**



A device for measuring weight and/or height especially adapted for use with a remote digital read-out system comprising a mechanical leverage weighing structure having a high degree of sensitivity and low friction and hysteresis coupled with a compatible electronic measuring system and/or a height measuring means compatible with said system.

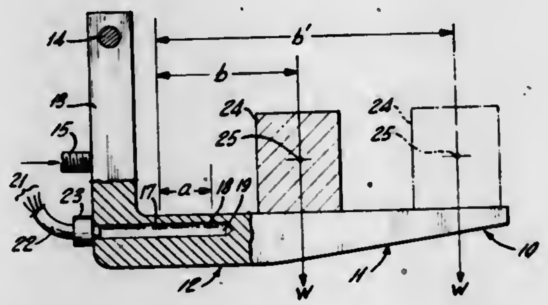
3,724,575
FORCE DETECTING AND EVALUATING APPARATUS

Ali Umit Kutsay, 3520 Lewis Road, Newton Square, Pa.

Filed Jan. 24, 1972, Ser. No. 220,082

Int. Cl. G01g *3/14, 21/14, 3/10*

U.S. Cl. 177—211 **10 Claims**



A bending type load detecting beam, preferably of cantilever construction, includes a load supporting portion and a detecting portion. The detecting portion is of uniform area moment of inertia, modulus of elasticity, and neutral axis of bending stress throughout its effective length. Electric-resistance strain gages are bonded to a longitudinal surface of the detecting portion initially parallel to but substantially spaced from the neutral axis in the beam's plane of bending. The gages are mounted at stations spaced a predetermined longitudinal distance apart from each other, and are aligned for longitudinal actuation along their common mounting line, making them responsive to bending of the beam's detecting portion. By this construction the mutual difference in response of the gages to any given force such as a weight applied via the loading portion, is rendered constantly proportional to the magnitude of the force, irrespective of the shape, center of gravity or position of the applied weight on the loading portion. The constantly proportional differential gage response may be metered by electrical means calibrated to indicate or record directly the actual magnitude of the applied force. The invention also includes apparatus employing a plurality of beams of the above type, instrumentally interconnected, for weighing materials not readily supportable on a single beam.

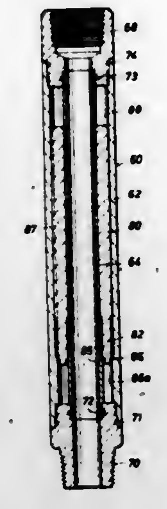
3,724,576
WELL IMPACT TOOLS

Preston C. Roberts, Bourg, La., assignor to Kajan Specialty Company, Inc., Houma, La.

Filed July 6, 1971, Ser. No. 159,878

Int. Cl. E21b *1/10, 17/00*

U.S. Cl. 175—293 **9 Claims**



A well tool for use with a jarring tool comprising an inner tubular member concentrically disposed in an outer cylindrical casing member, leaving an elongated annular chamber therebetween. Adaptors are provided at each end of the casing member for connection in a pipe string. An annular hammer member is mounted in the chamber for limited longitudinal movement therein.

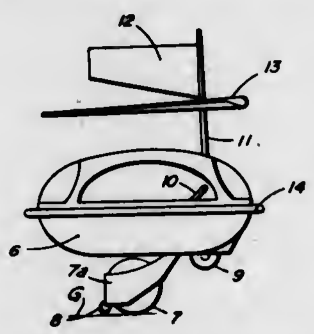
3,724,577
CAFLY

Ferdinand Ferino, 193 Cottoman Ave., Philadelphia, Pa.

Filed March 5, 1971, Ser. No. 121,466

Int. Cl. B62d *35/00, 37/02*

U.S. Cl. 180—1 FV **4 Claims**



A vehicle for traveling upon the ground, the vehicle including a pair of front wheels mounted in tandem side by side arrangement and a singular rear wheel, a pair of wings above the body and a fin rudder, the vehicle normally travelling at lower speed with all three wheels engaging the ground, the vehicle after attaining a 40 mile per hour speed then travelling upon only the rear wheel engaging the ground while the front wheels retract upwardly, balance being provided to the vehicle by means of the wings, together with the fin rudder.

3,724,578
FRONT SUSPENSION FOR SNOWMOBILES

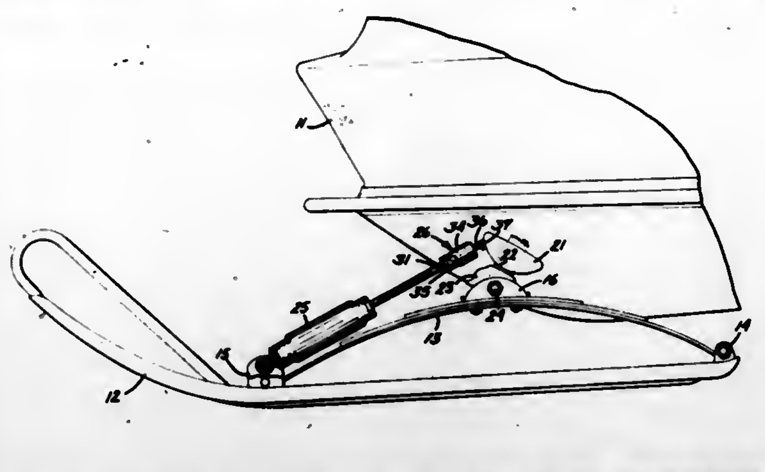
Albin R. Erickson, Roseau, Minn., assignor to Textron, Inc., Providence, R.I.

Filed March 3, 1971, Ser. No. 120,657

Int. Cl. B62b *13/12;* **B62m** *27/02*

U.S. Cl. 180—5 R **6 Claims**

A suspension system for the front running skis of a snowmobile. Each ski is yieldingly mounted by leaf springs to a steering rod on a snowmobile, and is capable of guiding the vehicle as well as compensating for terrain irregularities. A piston-cylinder shock absorber is pivotally connected at its lower end to the ski, and the upper end is connected to the snowmobile body by means of a ball and socket coupling to dampen oscillatory movement of the ski.



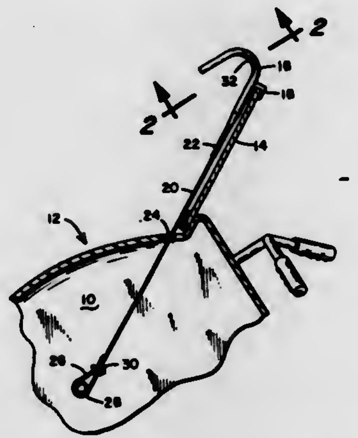
3,724,579
SAFETY DEVICE FOR ALL TERRAIN VEHICLE

Robert V. Albertson, 2100 Shady Wood Road, Minneapolis, Minn.

Filed Nov. 5, 1970, Ser. No. 87,109

Int. Cl. B62m *27/02*

U.S. Cl. 180—5 R **3 Claims**



A safety device for an all terrain vehicle, such as a snowmobile, which protects the vehicle and its operator from injury which may occur when the vehicle strikes an obstacle such as fence wire, low branches or the like. The device comprises a hook-shaped member secured to the upper edge of the windscreen with the hook opening pointing toward the front of the vehicle. A cable is fastened to the shank of the hook and passes through the hood of the vehicle at a point forward of the windscreen and is secured to the frame of the vehicle.

ERRATUM

For Class 180—9 see:
Patent No. 3,724,397

3,724,580
CONVERTIBLE TRACK SYSTEM FOR WHEELED VEHICLE

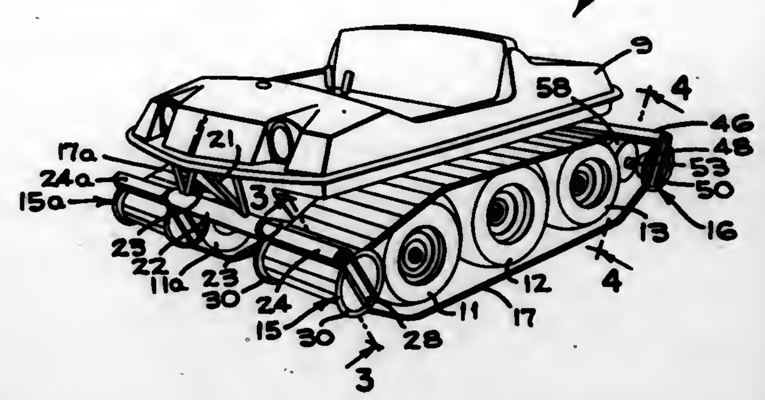
William J. Adams, Jr., San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 8, 1971, Ser. No. 113,528

Int. Cl. B62d *55/04*

U.S. Cl. 180—9.2 R **2 Claims**

An all-terrain vehicle having sets of tandem drive wheels on each side thereof can be converted to a track type vehicle with flanged idlers mounted in front of and behind each set of tandem drive wheels and an endless belt type track on each side of the vehicle extending around one set of tandem drive wheels and idlers. Tires on the tandem drive wheels drive the track by normal traction engagement and distribute the weight of the vehicle over the entire track area. Conversion from wheel to track operation does not require changes in the power transmission, all-wheel drive, suspension, or steering controls and gives the vehicle mobility in deep, powder snow.



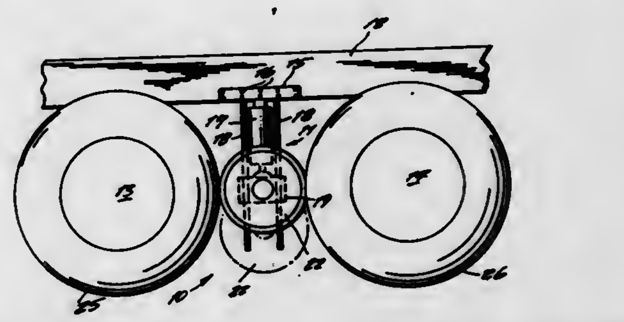
3,724,581
TANDEM AXLE TRACTION EQUALIZER

Harold Terrell, 10901 Endry Street, Anaheim, Calif.

Filed Oct. 1, 1970, Ser. No. 77,179

Int. Cl. B62d *61/10*

U.S. Cl. 180—24.12 **1 Claim**



A mechanism mounted under a three axle type of truck and which includes one power or drive axle and a tag or dead axle tailing, the device comprising a vertically adjustable rollers which can be moved into a position so as to peripherally engage the tires on the power shaft and also the tires on the tag axle so as to transmit power to the wheels of the tag axle, the vertically adjustable rollers being vertically moveable by means of ram cylinders which are controlled from the dashboard of the vehicle.

3,724,582
MOTORCYCLE CHAIN GUARD

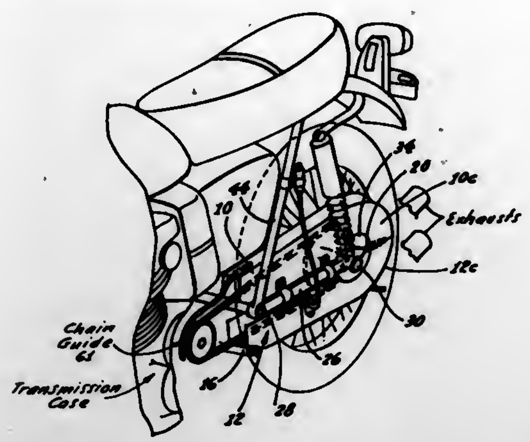
George R. Wood, 528½ East Fairview, Inglewood, Calif.

Filed Oct. 18, 1971, Ser. No. 190,252

Int. Cl. B62j *13/04*

U.S. Cl. 180—33 R **3 Claims**

An oil splash cover for a motorcycle which comprises an elongated U-shaped upper housing section and a similarly configured inverted lower housing section spaced from each other along most of their lengths by brackets, and brought together and bolted at their trailing ends. The forward ends of the thus-held housing sections rest upon motorcycle frame members and the brackets securing the upper and lower housing sections in their spaced relationship are looped and fitted around a swinging arm for the cycle's rear wheel to support the housing in relation to said arm. A chain guide is mounted at a forward position to guide a broken end of the chain around a front sprocket. The two housing sections are configured along their edges adjacent the rear wheel axle to provide a larger opening. The lower housing section is further orificed to receive the end of an oiler tube and to locate said end above the lower portion of the chain loop to drip oil on the chain. The tube extends upwardly to an oil reservoir disposed



below the motorcycle seat or on top chain cover, the reservoir being provided with a manual valve means to regulate the oil drips through the tube and onto the chain. An oil drip drain is also provided at the trailing end of the rear section.

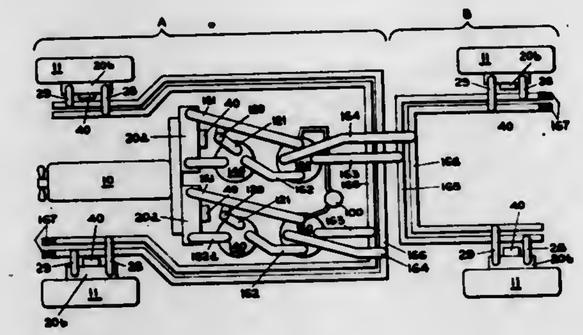
3,724,583
HYDRAULIC MOTOR AND PUMP SYSTEM

Alan K. Caldwell, Grand Rapids, Mich., assignor to Rewop Company, Kent County, Mich.

Filed Dec. 28, 1970, Ser. No. 101,447

Int. Cl. B60k *17/10*

U.S. Cl. 180—66 R **14 Claims**



The specification disclosed a hydraulic system for driving automobiles in which a separate fluid flow system is provided for the front and rear wheels respectively. Each of the drives for the front wheels and for the rear wheels includes three variable displacement pumps, one for pumping fluid and the other two each acting as a motor for one wheel. Both fluid driving pumps are driven by an internal-combustion engine. The hydraulic pumps and hydraulic motors all have counterbalanced vanes which minimize friction. A ratio control valve for each pump and each motor controls the torque to speed ratio at the vehicle wheels. A pressure equalizing valve equalizes pressure between the front and rear fluid flow systems. A bypass valve automatically short-circuits the flow of fluid through a flow system when the vehicle's engine is idling.

3,724,584
VEHICLE GUIDANCE SYSTEM

Claude Varichon, Lyon, France, assignor to Compagnie Generale D'Electricite, Paris, France

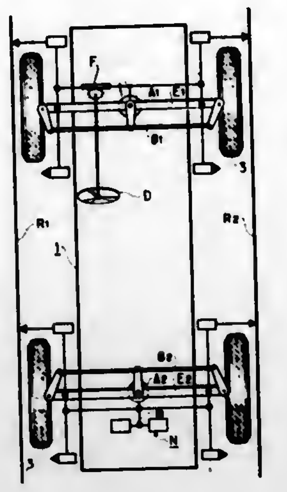
Filed March 18, 1971, Ser. No. 125,676

Claims priority, application France, March 20, 1970, 7010171; Dec. 11, 1970, 7044828

Int. Cl. B62d *1/26*

U.S. Cl. 180—79 **4 Claims**

Guidance systems including at least one detector mounted on a vehicle and a guide rail along the path to be travelled by the vehicle. Each detector is forced to remain in contact with the rail. A throw-off-center between the vehicle and the guide rail is sensed by the detectors which cause guiding wheels on



the vehicle to turn in a direction to reduce the throw-off center.

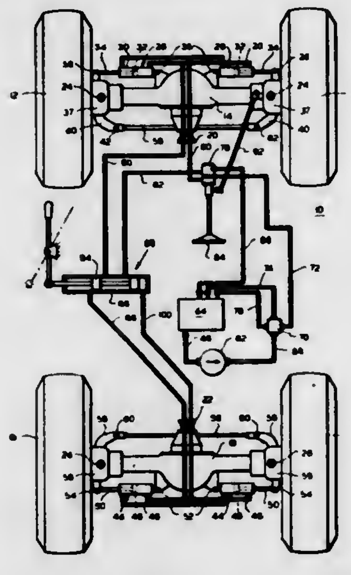
3,724,585
FLUID STEERING SYSTEM

Marcus L. Conrad, Stevensville, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation of Ser. No. 516,249, Dec. 27, 1965, abandoned. This application April 15, 1971, Ser. No. 134,164

Int. Cl. B62d *5/06*

U.S. Cl. 180—79.2 C **5 Claims**



A steering system for achieving three different steering modes, having double acting fluid actuating means for pivoting the front wheels, additional double acting fluid actuating means for pivoting the rear wheels and operative control means for admitting pressurized fluid to and discharging fluid from the fluid actuator means. Two wheel steering is achieved in the usual manner. For conventional four wheel steering, the two fluid actuator means are connected in circuit in a manner that movement of the operator's control means directs pressurized fluid into one of the fluid actuator means, the fluid discharged from the said one actuator means entering the other fluid actuator means and the fluid discharged from the other fluid actuator means returning to the said operator's control means. When four wheel crab steering is desired, the system is first operated in the same manner as for conventional four wheel steering to get one pair of wheels to a desired angle after which the fluid actuator means for such pair of wheels is bypassed and the wheels are held in the selected pivoted position after which the operator's control means is turned in the opposite direction to pivot the other pair of wheels through the straight-ahead position and on to a position in which the other pair of wheels is in an attitude approximately parallel to the said one pair of wheels.

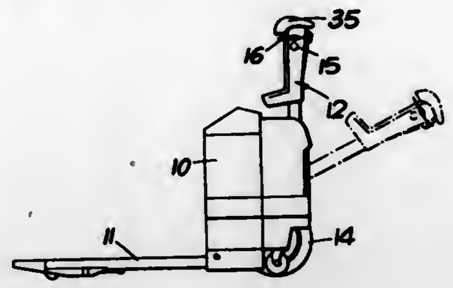
3,724,586
PEDESTRIAN OPERATED INDUSTRIAL TRUCKS

Cecil Goodacre, Basingstoke, England, assignor to Lansing Bagnall Limited, Basingstoke, England

Filed May 5, 1971, Ser. No. 140,524

Int. Cl. B60k *27/08*

U.S. Cl. 180—91 **8 Claims**



A pedestrian operated industrial truck has a reversible driving motor controlled by control means which are operated, through a connecting linkage, by a manually operable control member, the control member and linkage having a forward, neutral, and reverse conditions. There is mounted on a control handle of the truck an element which is displaceable relatively to the truck by engagement with an obstruction during forward movement of the truck. The manually operable control member is coupled with the connecting linkage by a releasable connection, and displacement of the displaceable element is arranged to release the connection and effect movement of the linkage, independently of the manually operable control member, from the forward to the reverse condition. Subsequent return of the displaceable element to its original position, upon reversal of the truck away from the obstruction, allows the linkage to return to the neutral condition, so stopping the truck, and the releasable connection is then automatically re-engageable only when the manually operable control member is also returned to the neutral condition.

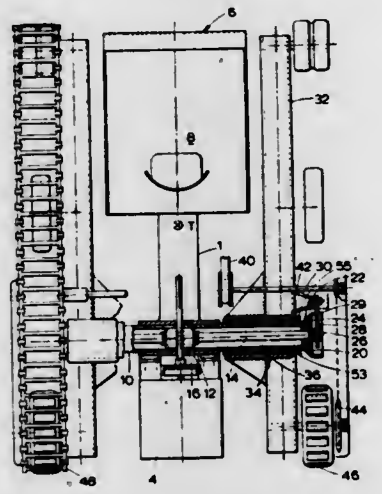
3,724,587
SUSPENSION FOR PIVOTAL TRACK FRAMES ON TERRAIN MOTOR VEHICLES

Hans Kasin, and Odd Krane Thvedt, both of Notodden, Norway, assignors to Christiania Spigerverk, Division JOBU, Oslo, Norway

Filed April 5, 1971, Ser. No. 131,052

Int. Cl. B62d *55/10*

U.S. Cl. 180—9.54 **1 Claim**



A suspension for pivotal track frames on terrain motor vehicles of the kind where the tractor body is supported by one single pivotal track frame on opposite sides of the body. The frames are provided with track wheels or belts. The new suspension comprises a journal bushing fixed to each of the pivotal frames and defining the pivot axis therefore. In the bushing are positioned thick-walled, solid tube-shaped elastic linings made of rubber or the like and which encompass a coaxially extending support beam mounted to the tractor body. The outside and the inside surfaces of the elastic linings are not rotatably joined to the inside of the bushing and the outside of the beam, respectively, such that the pivotal movements of the track frames when the tractor is moving through terrain take place under flexible deformation of the linings, which linings thus operate as spring suspensions and shock absorbers.

3,724,588
CUSHION CONFINING SYSTEM

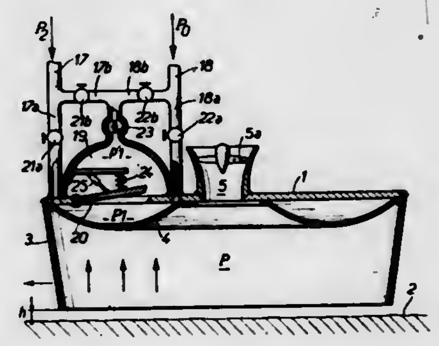
Jean Henri Bertin, Neuilly-sur-Seine, and Paul Francois Guienne, Paris, both of France, assignors to Bertin & Cie, Plaisir, France

Division of Ser. No. 775,697, Nov. 14, 1968, Pat. No. 3,587,773. This application Jan. 25, 1971, Ser. No. 109,200

Claims priority, application France, Nov. 17, 1967, 67128758

Int. Cl. B60v *1/16*

U.S. Cl. 180—118 **8 Claims**



An air-cushion vehicle is provided with a deformable enclosure within the cushion. The enclosure is connected to two sources delivering different fluid pressures through control valves which allow the pressure in the enclosure to be adjusted to any value intermediate those of the above two sources.

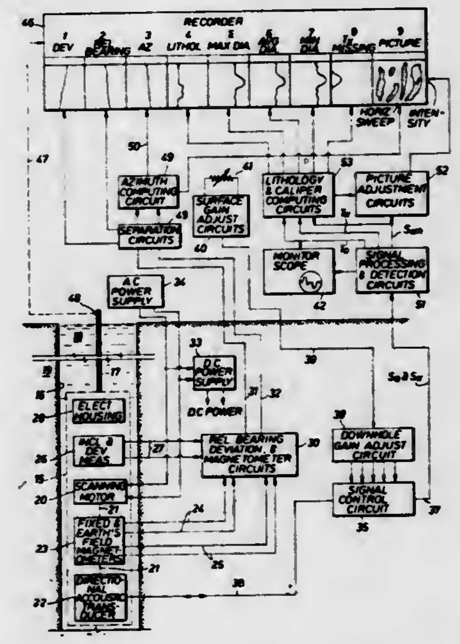
3,724,589
WELL LOGGING METHODS AND APPARATUS

Joseph E. Chapman, III, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 26, 1969, Ser. No. 827,799

Int. Cl. G01v *1/22*

U.S. Cl. 181—.5 BI **45 Claims**



In accordance with an illustrative embodiment of the present invention, a well tool having a rotating transducer means is moved through a well bore. The transducer means is repetitively energized to emit acoustic energy into the media surrounding the well tool, which energy is reflected off various circumferential portions of the well bore wall and returned to the rotating transducer means. An electrical signal pulse is developed in response to each burst of reflected energy received by the transducer means and this pulse, along with an electrical sync pulse representative of the time at which the transducer is energized, are transmitted to the surface of the earth via a receiver or signal pulse channel in the well tool. The signal gain in the receiver channel can be adjusted as desired, from the surface of the earth by sending a digital coded signal to the well tool from the earth's surface.

At the earth's surface, the sync and signal pulses are first normalized by a circuit which operates to maintain the peak sync pulse amplitude, on the average, substantially equal to a selected reference amplitude. The normalized signal pulses, after processing by suitable picture adjustment circuits, are utilized to modulate the intensity of an oscilloscope electron beam being swept across a record medium in synchronism with the rotation of the transducer means. The picture adjustment circuits include contrast and brightness control circuits. A monitor oscilloscope is also provided for visually displaying the sync and signal pulses.

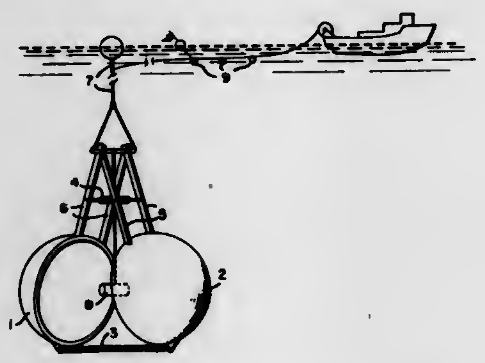
Earth's field and fixed field magnetometers located in the well tool provide orientation signals as well as enabling synchronization of the sweep electron beam with the rotating transducer means. Moreover, the magnetometer signals are combined to provide an indication of the azimuth of the well tool.

Additionally, caliper circuits are responsive to the time relationship of the sync and signal pulses for providing information concerning the well bore diameter, well bore eccentricity, as well as information as to the authenticity of these caliper measurements.

3,724,590
BUBBLE PULSE SUPPRESSION WITH ACOUSTIC SOURCE OPTIMIZATION

William C. Knudsen, 18475 Twin Creeks Road, Nomte Sereno, Calif.

Filed May 10, 1971, Ser. No. 141,849
Int. Cl. G01v *1/10, 1/28*
U.S. Cl. 181—.5 XC **12 Claims**

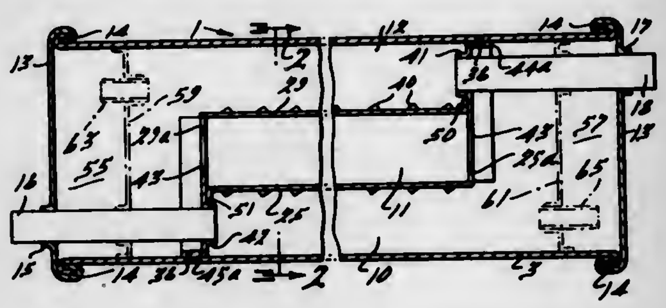


The acoustic wave associated with an underwater gas bubble pulse is optimized by permitting the gas bubble to expand as freely as possible during its initial expansion. After the initial expansion, or primary pulsation, the energy of the oscillatory system in the form potential energy is prevented from being transformed into the kinetic energy of water rushing in to fill a collapsing cavity. The potential energy of the oscillatory system is dissipated gradually to permit the device used to be made ready for the generation of a subsequent gas bubble. The method of the present invention is embodied, for example, in a structure having a surface which is covered with strips of a flexible material whose acoustic properties are close to the acoustic properties of water, e.g. a material for which rho-c, the product of the density of the material times the speed at which sound travels in the material, is close to the rho-c of water. The material is attached to the structure at selected points on the surface thereof. When a gas bubble is generated as a result of the creation of an acoustic wave, the acoustic wave is transmitted through the material and into the surrounding water without significant reflection or alteration. As the bubble expands, the water forced ahead of the expanding bubble is allowed to flow through the structure by the flexing of the covering material at the locations at which the material is not attached to the mesh structure. When the gas bubble has reached its maximum radius and the water surrounding the perimeter of the bubble begins to rush in to fill the cavity of the bubble, the covering material which has flexed to allow the water to flow out of the structure is forced into place around the exterior of the structure by the pressure of the water filling the bubble cavity. The covering material prevents water from rapidly filling the cavity so that the oscillation of the bubble is essentially stopped. The surface of the material may contain perforations to permit water to gradually return into the cavity to provide a reasonably short recycling period of the acoustic wave generation device.

3,724,591
FOLDED SHELL MUFFLER

Wladyslaw F. Malkiewicz, Casa Grande, Ariz., assignor to Tenneco Inc., Racine, Wis.

Filed March 26, 1971, Ser. No. 128,320
Int. Cl. F01n *1/00*
U.S. Cl. 181—53 **6 Claims**

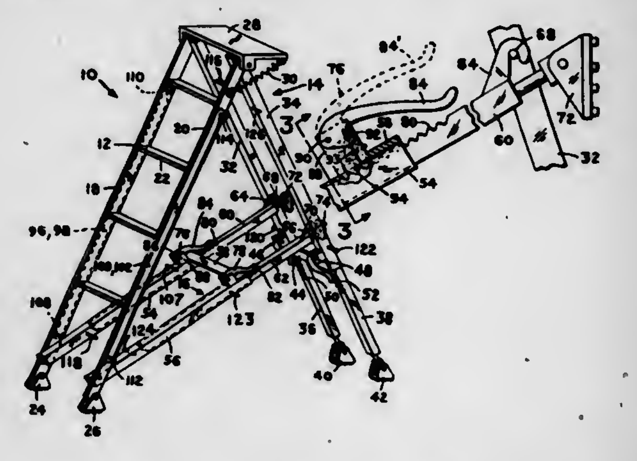


A gas silencing muffler has an external shell and inner gas passages formed from a single piece of sheet metal that is bent, folded, and welded to form a pair of exterior walls that define the shell and a pair of internal walls that define the gas passages.

3,724,592
ADJUSTABLE LADDER AND SCAFFOLD

Henry Fleischer, 18 Notch Park Road, Little Falls, N.J.

Filed June 29, 1971, Ser. No. 157,866
Int. Cl. E06c *1/383;* **E04g** *1/30*
U.S. Cl. 182—27 **5 Claims**

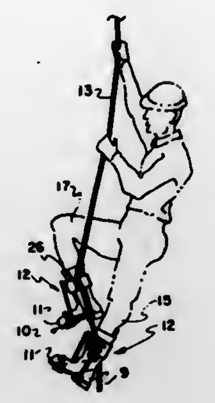


A ladder having one or more of its legs individually extensible so as to enable it to stand or be supported on an irregular surface. The ladder can be converted into a scaffold whose height may be varied utilizing the extensible legs. A standard ladder can be converted for use on irregular terrain by the addition of a novel single leg supported by the lower rung of the ladder and movable therealong.

3,724,593
ROPE CLIMBING DEVICE

Dennis G. O'Keefe, 20450 Acre St., Canoga Park, Calif.

Filed May 10, 1971, Ser. No. 141,488
Int. Cl. A63b *27/00*
U.S. Cl. 182—134 **8 Claims**

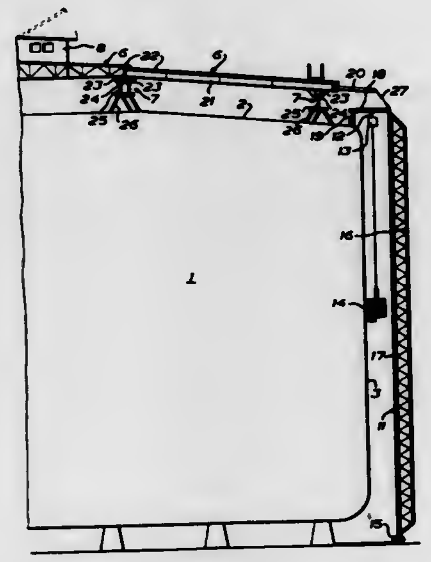


A rope climbing device comprising a frame member adapted to be attached to a climber's legs, rope-griping means connected to said frame member to engage said frame to said rope in a locking relationship, toe operable means to engage or disengage said rope-gripping means from said rope to enable said climber to ascend or descend the rope.

3,724,594
SYSTEM FACILITATING OPERATIONS TO BE CARRIED OUT ON A SHIP

Carldavid Jonsson, Kinstad, Sweden, assignor to Svenska Alucrom AB, Linkoping, Sweden

Filed April 5, 1971, Ser. No. 131,042
Claims priority, application Sweden, June 16, 1970, 8310/70
Int. Cl. E04g *3/14*
U.S. Cl. 182—36 **4 Claims**

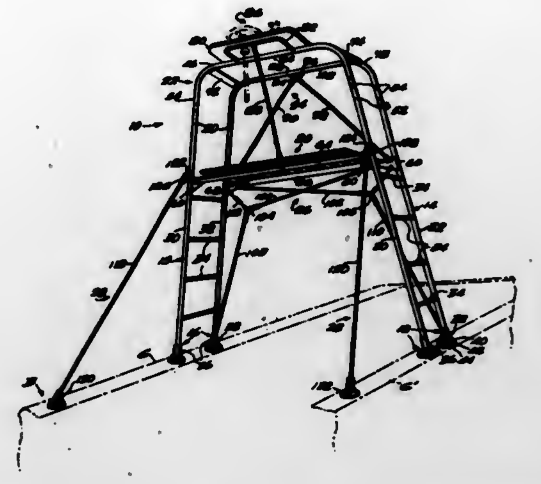


To permit carrying out work on a ship's hull, such as sand cleaning, painting etc. under unfavorable weather conditions it has been necessary hitherto, — if work could be performed at all — to provide for temporary weather protection by way of tarpaulins and like means. The system herein described which permits such operations to be carried out on ship's hulls independently of weather conditions, comprises roof elements, wall elements and end wall elements so mounted as to form heatable premises separated from ambient air.

3,724,595
TUNA TOWER

Jeffrey S. Green, 16810 N.E. 4th Court, North Miami Beach, Fla.

Filed April 14, 1972, Ser. No. 244,111
Int. Cl. E06c *5/02, 7/18*
U.S. Cl. 182—118 **10 Claims**

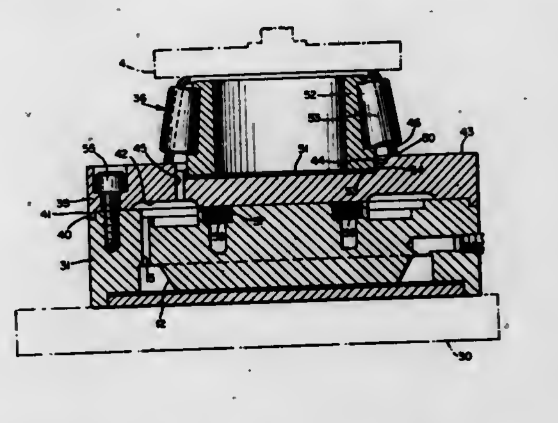


An adjustable, prefabricated tuna tower for installation on boats used for sport fishing. The tuna tower of the present invention is provided in the form of a plurality of sub-assemblies, braces and struts which are sold in a carton package and which may be assembled and installed on any one of a plurality of types of boats having variable beam measurements.

3,724,596
BEARING LUBRICATOR

John F. Freda, 504 Division Avenue, Willow Grove, Pa.

Continuation of Ser. No. 798,354, Feb. 11, 1969, abandoned. This application July 22, 1971, Ser. No. 165,293
Int. Cl. F16n *7/14, 11/10*
U.S. Cl. 184—1 D **14 Claims**



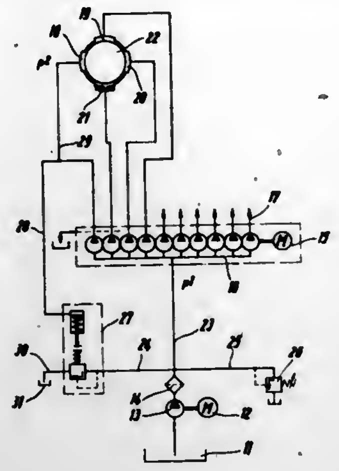
Lubricating equipment for supplying grease to a tapered roller bearing assembly, such an assembly comprising the inner race, the bearings and the cage. The equipment includes a horizontal support surface to engage the cage, an annular groove forming a ring of grease which is caused to rise upwardly into the bearings and a cavity inboard of the groove, the wall of which engages the inner race and positions the assembly so that the bearings are presented to the groove so that the ring of grease rises up inbetween and around the bearings.

3,724,597
DEVICE FOR THE HYDROSTATIC SUPPORTING OF MACHINE PARTS

Arnold E. E. Bereit, Holbeinstrasse 68, Berlin, Germany

Filed Nov. 19, 1971, Ser. No. 200,309
Int. Cl. F16c *1/24*
U.S. Cl. 184—5 **8 Claims**

A device or system for hydrostatically supporting machine parts wherein the pressure fluid is conducted to several points from a supply pressure pump through a multi-circuit distributor pump. A differential pressure valve is connected to the output of the supply pump and to at least one of the circuits from the distributor pump. The differential pressure valve has



a first valve member to control flow from the supply pump to an overflow in a first pressure range and in a second pressure range by a second valve member, the second valve member having a spring means which determines the differential pressure.

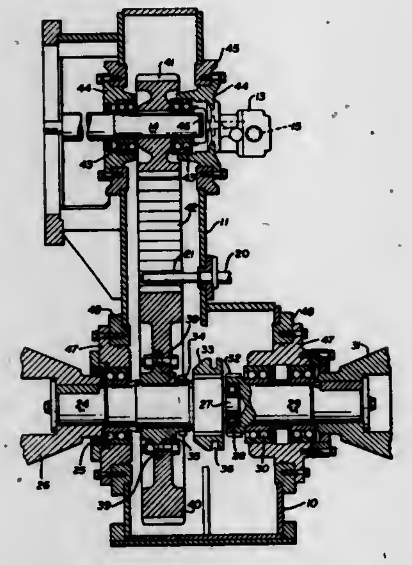
3,724,598
POWER TRANSMISSION WITH LUBRICATING MEANS

Edson W. Smith, Elmira, N.Y., assignor to American LaFrance Inc., Willoughby, Ohio

Filed Aug. 25, 1971, Ser. No. 174,780

Int. Cl. F01m *1/12*

U.S. Cl. 184—6.1 **5 Claims**



A power transmission with lubricating means is adapted for alternately driving a wheeled vehicle and a pump mounted thereon and varies the quantity and application of the lubricant in the transmission to provide desirable quantity and application of the lubricant for each of the alternate operations.

3,724,599
ENGINE OIL PAN

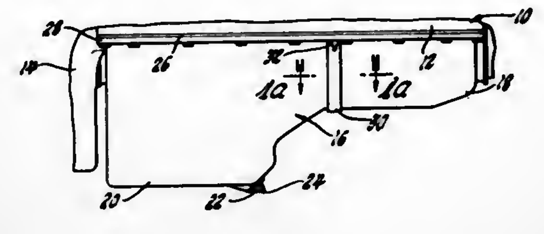
Walter C. Heidacker, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1971, Ser. No. 202,088

Int. Cl. F16n *31/00*

U.S. Cl. 184—6.5 **6 Claims**

An engine oil pan is provided with a tear strip to separate the pan into two portions for ease of removal of the pan when its engine is installed in a vehicle. A flexible plastic liner is used upon reinstallation of the separated portions of the pan to provide an oil containing structure. The liner may also act as a gasket and may include a thickened portion to fill the gap caused by removal of the tear strip.



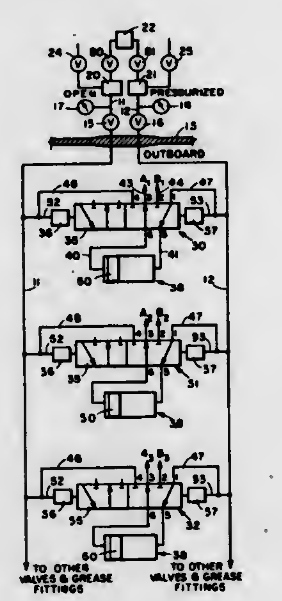
3,724,600
SUBMARINE OUTBOARD GREASING SYSTEM

Paul E. Moody, Barrington, R.I., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 29, 1971, Ser. No. 167,394

Int. Cl. F16n *7/10*

U.S. Cl. 184—7 D **2 Claims**


OPEN
PRESSURIZED
OUTBOARD
TO OTHER VALVES & GREASE FITTINGS
TO OTHER VALVES & GREASE FITTINGS

A greasing system comprised of two major grease supply lines and a series of individual floating valve and piston units connected in parallel, between the supply lines, is provided. Two supply lines penetrate the ship's hull, with both a grease source and a pressurizing means located inside the ship. The system is arranged so that when one supply line is pressurized, the other is open to permit discharge of excess grease. Individual grease fittings are connected in pairs to each floating valve and piston unit. The floating valve alternately opens passages to opposite sides of the floating piston and each floating piston forces a measured amount of grease to alternate fittings through other passages in the floating valve.

3,724,601
METHOD OF LUBRICATING PNEUMATIC MACHINES AND APPARATUS THEREFOR

Edgar P. Scragg, 60 Mulder St., Florida Park Ext. 3, Transvaal Province, Republic of South Africa

Filed June 16, 1970, Ser. No. 46,654

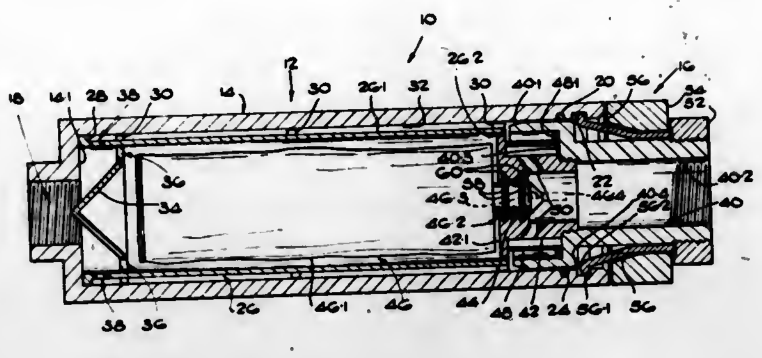
Claims priority, application South Africa, June 23, 1969, 69/4457

Int. Cl. F16n *7/30*

U.S. Cl. 184—56 A **21 Claims**

A device and method are disclosed for dosing a flowing stream of fluid. The prime field of utility of the invention is the

lubrication of pneumatic machines but it is not restricted to this. In its disclosed lubricator form the device includes a casing which is connected into a fluid (generally air) stream with a lubricant container in the casing. The container includes a



bag of flexible material and the fluid stream is caused to impinge on the bag so as to flatten it and expel the lubricant through the nozzle into the stream. The air can be filtered while passing through the casing but prior to it being dosed.

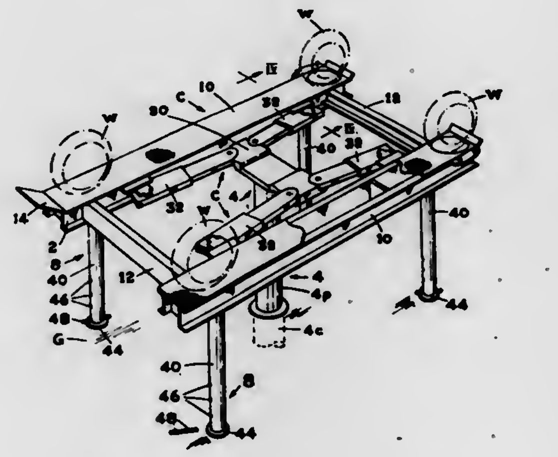
3,724,602
AUTOMOBILE HOIST

Jack Frank Hernick, 6 Carousel Court, Toronto, Ontario, Canada

Filed Feb. 22, 1971, Ser. No. 117,268

Int. Cl. B60s *9/22*

U.S. Cl. 187—8.54 **11 Claims**



A vehicle hoist equipped with runways onto which a car may be driven to be hoisted, and linkage for releasably coupling said runways to the elevating piston of the hoist so as to be lifted thereby; the runways being thereafter temporarily supportable on telescopable props while the piston is de-coupled and lowered to render the vehicle bottom wholly accessible for repairs or analogous services.

3,724,603
COLLISION FORCE ABSORPTION DEVICE

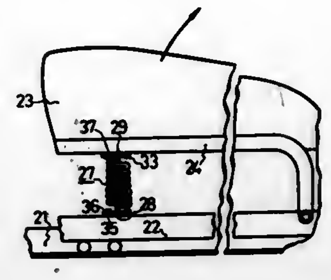
Masanao Shiomi, Toyota, and Tadataka Narumi, Kariya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Division of Ser. No. 884,675, Dec. 12, 1969. This application July 13, 1971, Ser. No. 162,202

Int. Cl. F16d *63/00*

U.S. Cl. 188—1 C **2 Claims**

An energy absorbing member in the shape of an elongated bar folded in its central portion to provide a plurality of closely spaced laminations each substantially perpendicular to the longitudinal axis of the bar, being capable of plastic deformation in one direction only, and being rigid in the opposite direction, said energy member being fixed at one end through



a force receiving member to a vehicle accessory, such as a bumper, or a seat, and being fixed at the other end through a support member to the vehicle chassis.

3,724,604

Patent Not Issued For This Number

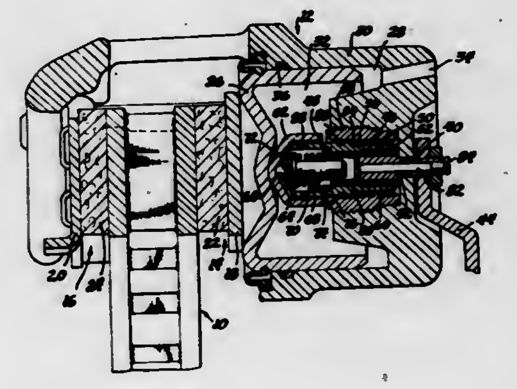
3,724,605
DISC BRAKE WITH INTEGRAL PARKING BRAKE

Thomas D. Naismith, Dayton, and Ronald L. Shellhause, Vandalia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1971, Ser. No. 195,285

Int. Cl. F16d *65/54*

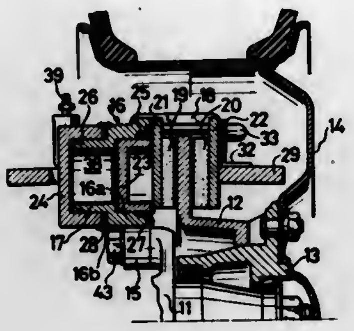
U.S. Cl. 188—71.8 **5 Claims**



A disc brake caliper assembly includes a hydraulically actuated first piston, a second piston engagable with the first piston, a mechanical actuating mechanism which moves axially into the housing when actuated, and an extendable member acting between the adjuster piston and the mechanical actuating mechanism and including an apertured locking plate closely surrounding a shaft to form a one-way clutch. The extendable member provides a rigid force transmitting linkage between the mechanical actuating mechanism and the pistons for mechanical actuation of the brake. An adjuster spring increases the length of the extendable member to move the adjuster piston into closer relationship with the disc to adjust for lining wear.

3,724,606
DISK BRAKE ASSEMBLY

Toyoaki Kobayashi, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed March 29, 1971, Ser. No. 128,844
Claims priority, application Japan, March 30, 1970, 45/26783
Int. Cl. F16d *55/228*
U.S. Cl. 188—72.5 **3 Claims**

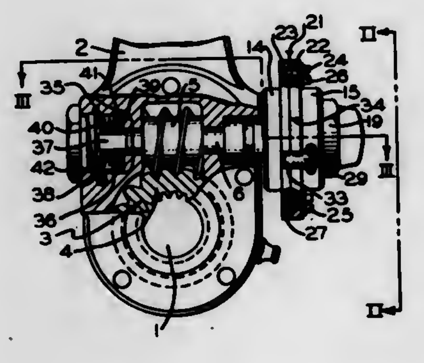


This invention relates to improvements in and relating to a disc brake assembly of the spot-acting type, especially for use with a powered vehicle such as automotive vehicle. More specifically, the invention relates to such a type of automotive brake unit, wherein a stationary brake cylinder having a pair of opposedly acting hydraulic pistons is positioned at one side of a rotatable brake disc and a movable plate is arranged as straddling said plate in a direction parallel to the axis of said disc when actuated upon by an indirectly acting type one of said pistons, while the other directly acting type piston is also being actuated.

The improvement resides in such that said movable plate is mounted at its one end by at least two support lugs formed diametrally opposite to each other on said indirectly acting piston and suspendedly mounted from U-shaped guide pins mounted in turn on a body member of said brake unit, for load distribution and the like purposes.

3,724,607
AUTOMATIC SLACK ADJUSTING DEVICE FOR A BRAKE LEVER

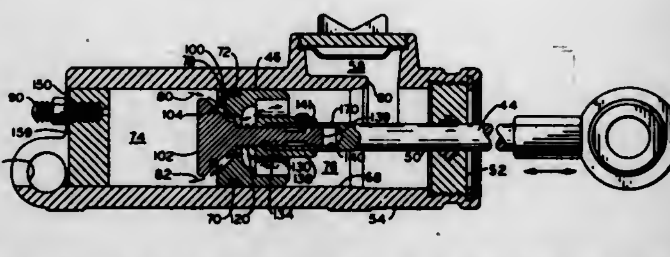
Erich Reinecke, Hannover, Germany, assignor to Westinghouse Bremsen-Und Apparatebau, GmbH, Hannover, Germany
Filed Feb. 22, 1971, Ser. No. 117,372
Claims priority, application Germany, Feb. 21, 1970, P 20 08 139.4
Int. Cl. F16d *65/56*
U.S. Cl. 188—79.5 K **6 Claims**



This invention relates to an automatic slack adjuster arrangement for the brake lever of the brake cam shaft of the brake, especially for street vehicles, with the worm wheel arranged on the brake cam shaft and in engagement with the worm that is positioned on the worm shaft that is rotatably mounted in the brake lever which, as soon as wear of the brake shoe occurs, rocks through an angle that exceeds the permissible value. This additional rocking of the brake lever adjusts the position of the brake lever in the manner hereinafter explained.

3,724,608
DRAFT DEVICE

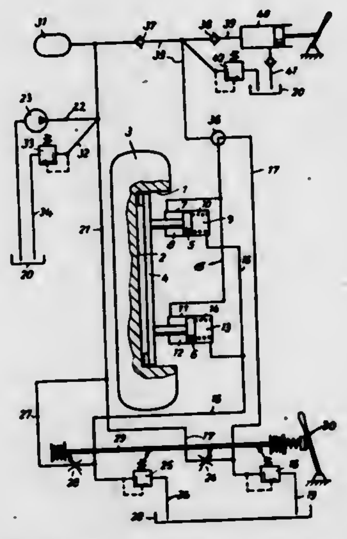
John M. Beach, 116 Davis Avenue, and Melvin A. Brown, both of Dayton, Ohio, assignors to said Beach, by said Brown
Filed March 24, 1971, Ser. No. 127,603
Int. Cl. B60t *7/20*
U.S. Cl. 188—112 **11 Claims**



Between a towing vehicle and a towed vehicle is a draft device made up of a draw bar attached to the towing vehicle and a telescoping draw bar attached to the towed vehicle with a lost motion connection between the draw bars. A cylinder is mounted on the one draw bar and a piston-piston rod is attached to the other draw bar with the piston located in the cylinder to provide two variable volume chambers which exhaust fluid from one chamber to the other during relative movement of the draw bars. A metering orifice is formed in the piston and a valve controls the metering orifice so that if the closing movement between the towing vehicle and the towed vehicle is excessive there will be a sharp increase in the fluid pressure within the exhausting chamber which causes the valve to close the metering orifice. Fluid pressure buildup is then communicated to the hydraulically actuated brakes on the towed vehicle to slow the towed vehicle and prevent further closure between the towing vehicle and the towed vehicle.

3,724,609
HYDRAULIC BRAKING APPARATUS

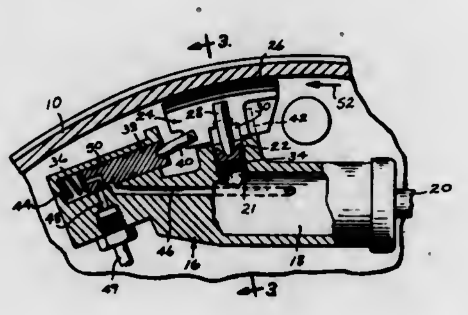
Walter Kobald, Stutgart-Feuerbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Feb. 12, 1971, Ser. No. 114,907
Claims priority, application Germany, Feb. 21, 1970, P 20 08 052.8
Int. Cl. B60t *13/14*
U.S. Cl. 188—170 **9 Claims**



A hydraulic brake is operated by a piston located in a brake cylinder. Pressure fluid from a pump is supplied through two conduits to two chambers formed by the piston in the brake cylinder, and each conduit has an adjustable pressure limiting valve and a variable throttle operated simultaneously by a linkage connected with the brake pedal so that the pressures in the cylinder chambers are varied. The force resulting from the pressure differential between the chambers acts in one direction on the piston for releasing the brake, and in the opposite direction for actuating the brake.

3,724,610
BRAKE LOAD SENSING AND CONTROL DEVICE

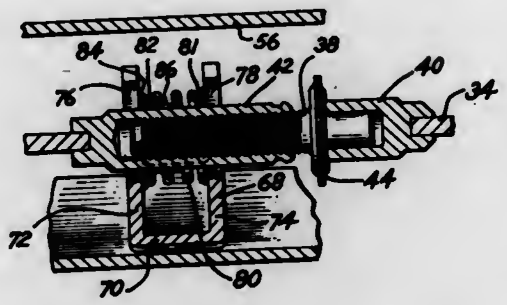
Jose G. Caero, 4205 Clayton Road West, Ft. Worth, Tex.
Filed Jan. 29, 1971, Ser. No. 111,044
Int. Cl. B60t *8/06*
U.S. Cl. 188—181 T **9 Claims**



A brake device responsive to changes in the coefficient of friction between a wheel of a moving vehicle and the road over which the vehicle is passing. The brake device includes a shiftable friction member engageable with part of the rotating wheel. The friction member is operatively connected into the brake actuating system for the vehicle and is constructed so as to experience a movement while the coefficient of friction between the wheel and the road is experiencing a change from the dynamic to static, such as when the wheel becomes locked and the vehicle goes into a skid. This movement of the friction member causes a reaction in the brake actuating system permitting the wheel to road coefficient of friction to return to its dynamic status.

3,724,611
BRAKE SHOE CENTERING MECHANISM

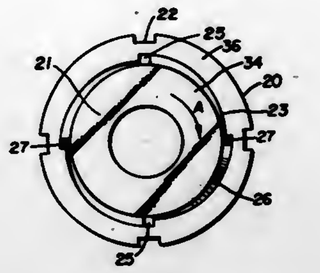
John L. Winge, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.
Filed June 16, 1971, Ser. No. 153,717
Int. Cl. F16d *65/16*
U.S. Cl. 188—216 **6 Claims**



A brake in which friction between a rotating drum and a primary brake shoe produces a force which acts on a secondary brake shoe to move the latter shoe into engagement with the drum to thereby decelerate the drum. A shoe retracting device is mounted on the brake backing plate for operative engagement with a strut which interconnects a pair of adjacent ends of the primary and secondary shoes so that the secondary shoe is withdrawn from engagement with the drum upon brake release.

3,724,612
REFURBISHABLE BRAKE DISC

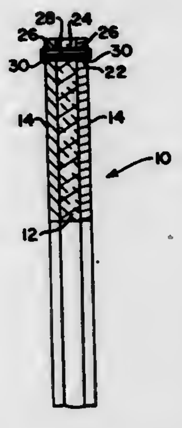
Raymond G. Spain, 4805 Metcalf Drive, Raleigh, N.C.
Filed March 1, 1971, Ser. No. 119,773
Int. Cl. F16d *65/12*
U.S. Cl. 188—218 XL **6 Claims**



A brake disc is provided with a recess in the region which normally frictionally contacts an adjacent disc. A removable insert complementary to said recess is placed therein, rotated, and locked against further rotational movement within the recess. Inserts worn due to use may be replaced with new inserts.

3,724,613
BRAKE DISC WITH BERYLLIUM CORE AND CARBON WEAR FACES

Peter D. Bermingham, Suffield, Ohio, assignor to The Goodyear Tire and Rubber Company, Akron, Ohio
Filed Oct. 16, 1970, Ser. No. 81,208
Int. Cl. F16d *65/12*
U.S. Cl. 188—218 XL **5 Claims**

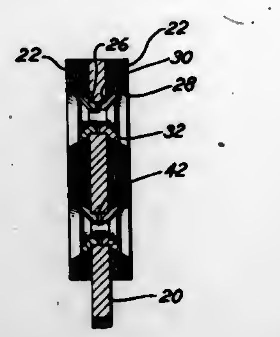


The rotating and stationary discs of a disc brake assembly are each formed of an annular beryllium core and annular carbon wear faces on the surfaces of the beryllium core. The wear faces are held to the core by rivets and bushings. The drive slots in the carbon wear faces are aligned with and match the drive slots of the beryllium core.

3,724,614
COMPRESSION FASTENER

John R. Bender, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.
Filed June 9, 1971, Ser. No. 151,451
Int. Cl. F16b *19/06;* **F16d** *13/62, 65/10*
U.S. Cl. 188—218 XL **7 Claims**

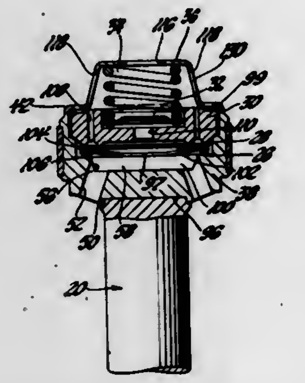
Fastening means including a circular insert adapted to fit into a mating opening of a segment of brittle material and fixedly secure same to a relatively stiff backing member. The insert has a sleeve portion and integral head and shoulder portions. The head portion is funnel shaped with its inner included angle greater than its outer included angle. A plurality of radially extending slots in the head portion permit radially outward flexing thereof. The outer included angle of the head portion is greater than the included angle of the mating opening and contact therebetween is established substantially simultaneously with engagement of the shoulder portion with the backing member. A rivet or similar fastening member extending through the insert exerts an axially directed force



thereon causing the head portion to flex thereby progressively increasing the contact area between the head portion and adjacent wall of the mating opening to draw the segment into contact with the backing member with a minimum of bending force.

3,724,615
SHOCK ABSORBER WITH WELDED PISTON

Joseph R. Stormer, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 16, 1971, Ser. No. 115,222
Int. Cl. F16f *9/348*
U.S. Cl. 188—322 **2 Claims**

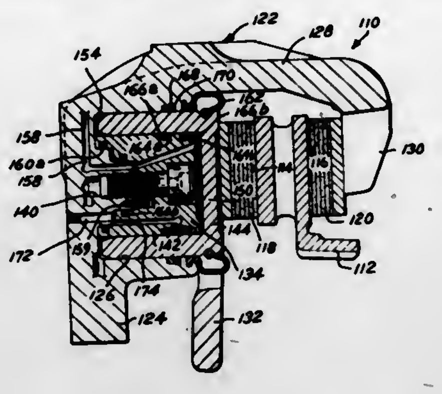


A piston and piston rod assembly for use in a hydraulic shock absorber of the direct acting type has an open ended piston with a base having a flat weld surface thereon fixedly secured to the end of a piston rod. Rebound and compression valving are secured in the open end of the piston and flow passageways are formed in the base of the piston in close noninterference relationship with the weld surface on the piston base. The piston and piston rod are connected by an improved method which maintains flow paths in the connected parts.

3,724,616
TANDEM CYLINDER DISC BRAKE

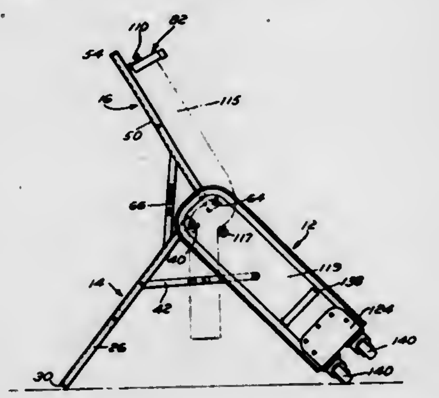
Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.
Filed April 22, 1971, Ser. No. 136,470
Int. Cl. B60t *11/20*
U.S. Cl. 188—345 **2 Claims**

A tandem cylinder caliper disc brake is disclosed which includes a two-piece caliper housing. The main portion of the caliper includes a housing which defines the usual bore therewithin in which the actuating piston of the brake is adapted to reciprocate. The second portion of the caliper is a plug which is secured to the main portion by suitable fastening means and which cooperate with the wall of the bore to define an annular chamber therebetween. The actuating piston includes an annular section and a transversely extending section which closes one end of the annular section. The annular section is slidably received within the annular chamber defined between the plug and the walls of the bore. A first chamber defined between the end of the annular section and the corresponding end of the bore is communicated to a first vehicle hydraulic system, and a second chamber defined between the transversely extending portion of the piston and the end of the plug is communicated to a second vehicle hydraulic system. A pair of axially spaced seals carried by the plug engage the inner circumferential surface of the annular section of the piston. A pair of spaced static seals are disposed between the plug and the main portion of the caliper. Vents are provided to communicate the portion of the interface between the plug and the piston between the two dynamic seals and the portion of the interface between the plug and the main portion of the caliper between the two static seals to the exterior of the caliper.



3,724,617
PORTABLE SAMPLE CASE

Gerald J. Lawler, 71 North Park Street, Franklin, Mass.
Filed Jan. 11, 1971, Ser. No. 105,375
Int. Cl. A45c *3/00*
U.S. Cl. 190—16 **7 Claims**



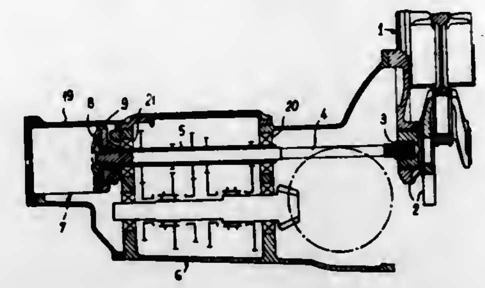
A portable sample case for use in transporting and displaying a stack of flat material such as fabric, wallpaper, rugs and the like, including a frame assembly having frame units pivotally mounted thereon, the frame units being normally located in a closed position wherein the sample case in conveniently transported from one location to another and being movable to an open position, wherein the stack of material located therein is exposed for display.

3,724,618
TRANSMISSION MECHANISMS WITH HYDROSTATIC COUPLING

Francois C. Pravot, and Jean-Claude Carre, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of France
Filed May 10, 1971, Ser. No. 141,631
Int. Cl. F16d *31/02*
U.S. Cl. 192—.07 **15 Claims**

This mechanism for transmitting a torque to a hydrostatic coupling of the barrel-cylinder type is characterized in that

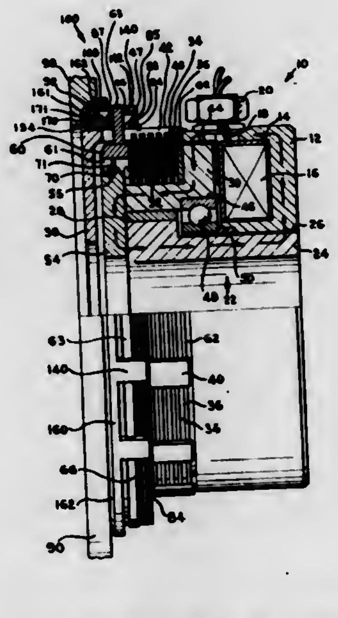
each piston of the barrel-type cylinder block is hollow and incorporates a delivery valve and that its cylinder is supplied with pressure fluid through a non-return valve; furthermore, the inner cavity of each piston is constantly connected to a chamber formed in the cylinder block and centered to the axis



of rotation of this block. A valve member is movable under the control of the fluid contained in said chamber against the force of a central piston having one side responsive to an adjustment pressure. A forced-feed pressure is exerted through said non-return valve for constantly pressing the cylinder-block pistons against the corresponding swash plate.

3,724,619
SELF-ADJUSTING ELECTROMAGNETIC CLUTCH-BRAKE

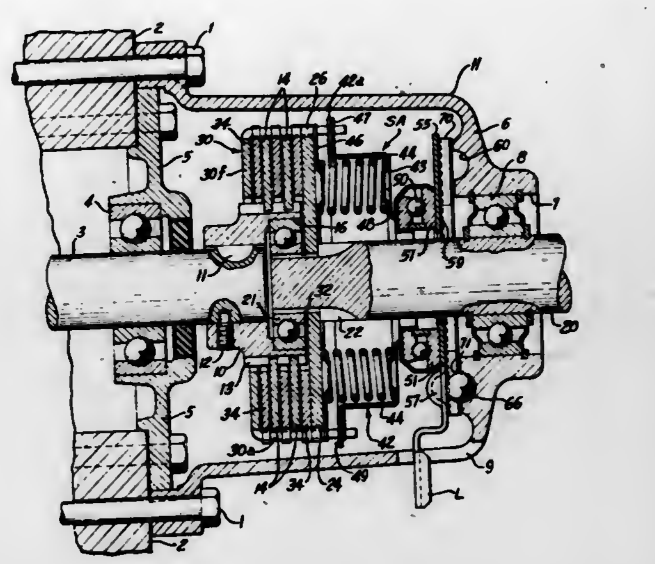
Donald L. Miller, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Filed March 31, 1971, Ser. No. 129,744
Int. Cl. F16d *13/22*
U.S. Cl. 192—18 B **11 Claims**



An electromagnetic clutch with rear compensating means having two sets of coacting friction discs adapted for releasably coupling a driving and driven rotary complement. When the clutch is energized, the armature, which is not in the drive train, contactively engages with the pole faces of the electromagnet causing the freely mounted armature to rotate with the driving member; an adjusting ring which is slidably splined to the driven rotary component and advanceably threaded to the armature for relative rotation therewith, thereby applies the necessary engagement pressure to the friction disc assembly causing torque to be transmitted from the driving to the driven rotary component through the disc assembly. Any lost motion occasioned by wear of the friction disc is automatically compensated by the screw-action of the adjusting ring upon the armature. When the clutch is de-energized, a resiliently biased braking member which is slidably splined to the clutch adjusting ring is caused to bear against a stationary braking body to achieve braking. The brake member is advanceably threaded to a brake adjusting ring to automatically compensate for wear of the braking surfaces.

3,724,620
RELEASEABLE POWER TRANSMITTING DEVICE OF THE FRICTION PLATE TYPE

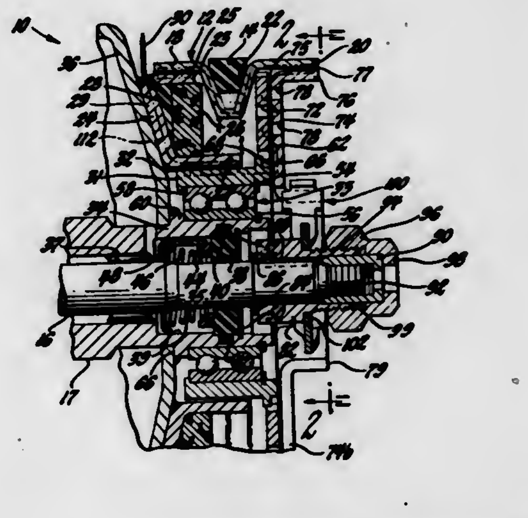
Carl I. Benson, Jr., Westwood, Mass., assignor to Paragon Gears Incorporated, Taunton, Mass.
Filed Oct. 12, 1971, Ser. No. 188,201
Int. Cl. F16d *13/56*
U.S. Cl. 192—70.23 **11 Claims**



A power-transmitting device including releaseable, interleaved friction plates between an input member and an output member, and which device is normally engaged and is releaseable by a camming action between certain of the parts. A spring pack assembly acts to maintain the interleaved friction plates in clamped-up position and the arrangement is such that the spring assembly compensates for wear of the plates and other parts and also provides a constant torque capacity for the device.

3,724,621
ELECTROMAGNETIC CLUTCH

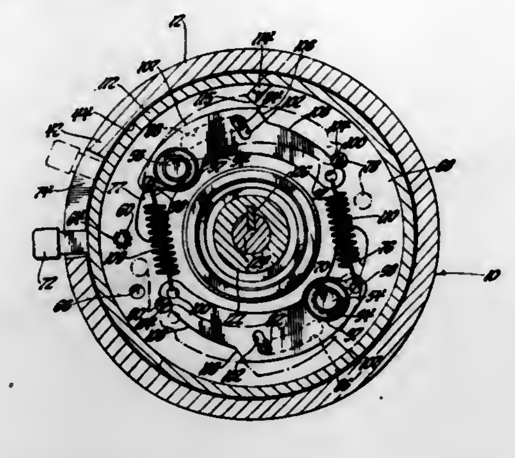
John H. Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 27, 1971, Ser. No. 212,715
Int. Cl. F16d *27/10, 43/14*
U.S. Cl. 192—84 C **5 Claims**



The clutch illustrated includes electromagnetic engagement means having an integral centrifugal action arrangement for supplementing the magnetic engagement when the coil is energized and serving as the resilient means for retracting the armature plate when the coil is deenergized.

3,724,622
SPRING CLUTCH

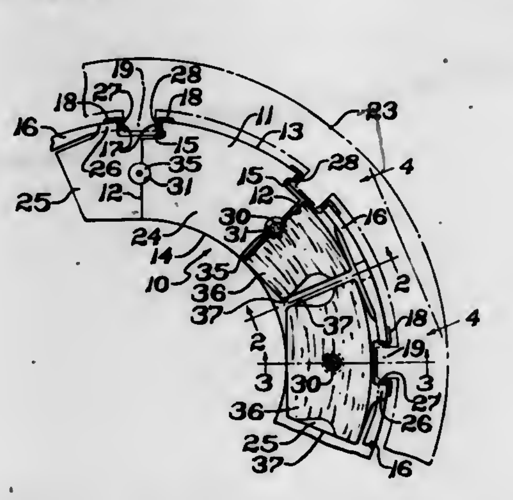
Daniel J. Barbulesco, and John R. Briar, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed April 19, 1971, Ser. No. 135,084
Int. Cl. F16d *43/24*
U.S. Cl. 192—105 CE 6 Claims



A centrifugally-actuated spring clutch including a pair of oppositely disposed arcuate-shaped weight members, each of which has a first camming portion formed on its radially outward surface which, under the action of centrifugal force, engages a bent tab formed on an end of a coil-wound torque spring for causing the spring to expand to engage the inner peripheral surface of a drive member and thus be driven thereby, the torque spring, in turn, being connected via a connector plate to drive an output shaft. Manually rotatable pin means are included for engaging a second camming surface formed adjacent the free end of each of the weight members to prevent their response to centrifugal force during the seasons of the year when the air compressor need not be operative.

3,724,623
SEGMENTED FRICTION MEMBER ASSEMBLY FOR BRAKE OR CLUTCH

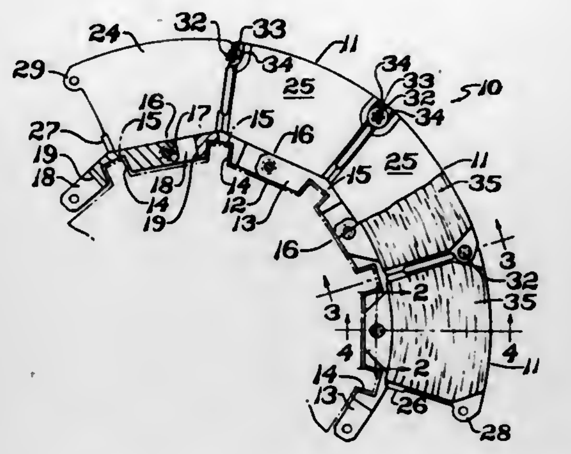
Arthur J. Thrower, and Marvin E. Hotchkiss, both of Troy, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed Sept. 30, 1971, Ser. No. 185,238
Int. Cl. F16d *65/12, 13/64*
U.S. Cl. 192—107 R 17 Claims



A segmented friction member assembly for a disc type brake or clutch in which straps extend around peripheral portions of segmental facing members and segmental heat absorbing bodies to hold the assembly together. The straps connect adjacent facing members in a manner such that there is a balanced reaction to forces exerted on said facing members. The straps also resist wear of the friction member and the torque keys in the area where the friction member is keyed to the rotating or nonrotating structure for transmitting torque thereto.

3,724,624
SEGMENTED FRICTION MEMBER FOR BRAKE OR CLUTCH

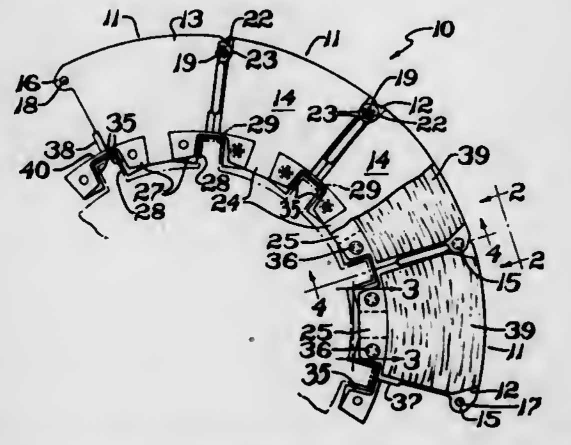
Walter J. Le Blanc, and Friedrich K. W. Rohrlack, both of Troy, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed June 2, 1971, Ser. No. 149,189
Int. Cl. F16d *69/00*
U.S. Cl. 192—107 R 10 Claims



A brake or clutch mechanism having an annular stator or rotor with a plurality of individual segments connected at one periphery to a torque link ring having tongue and groove hinged connections at the ends of adjacent links for transmitting torque forces without tilting the segments. The connection to the torque link ring and the two connections to adjacent segments at the other periphery provide an improved mounting of each segment.

3,724,625
SEGMENTED FRICTION FOR BRAKE OR CLUTCH

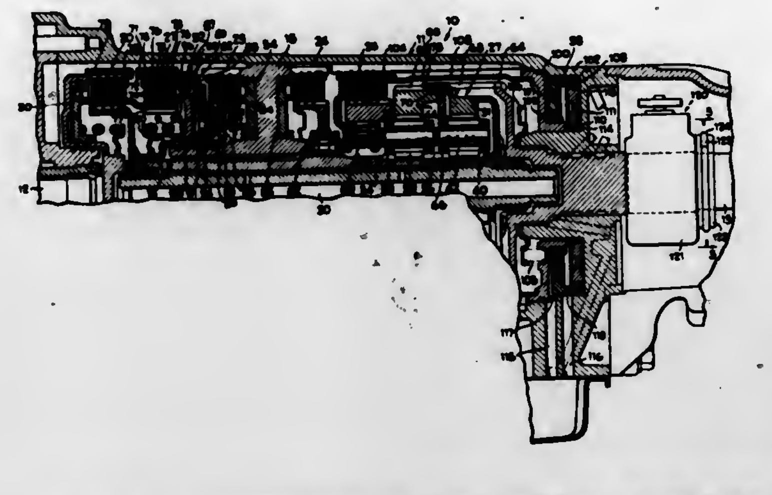
Friedrich K. W. Rohrlack, and Ralph R. Main, both of Troy, Ohio, assignors to The G. F. Goodrich Company, New York, N.Y.
Filed June 2, 1971, Ser. No. 149,190
Int. Cl. F16d *69/100*
U.S. Cl. 192—107 R 6 Claims



A brake or clutch mechanism having an annular stator or rotor with a plurality of individual segments. Each segment has a plate member of heat absorbing material held between facing members connected directly one to the other at radially outer corners through overlapping ears riveted together and to a spacer which fits in indentations at the outer corners of the plate member. At the inner periphery dovetail flanges of the facing members retain a radially extending tongue of the plate member and are connected at each side of the tongue to corresponding flanges on adjacent facing members by torque links with a beveled connection between the torque links and the dovetail flanges to resist twisting and turning of the facing members through a four-point mounting of each segment in the mechanism.

3,724,626
TRANSMISSION

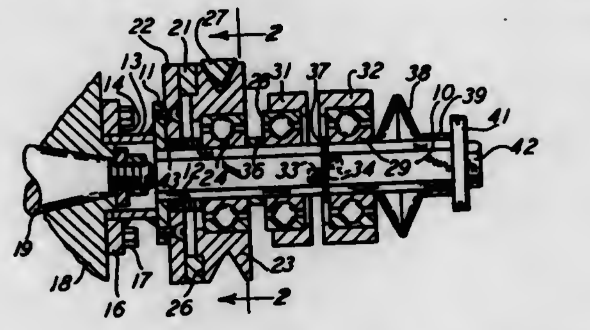
Julius A. Clauss, Jr., Birmingham; Jack S. Conley, Milford, and Robert W. Lemon, Farmington, all of Mich., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Aug. 27, 1970, Ser. No. 67,326
Int. Cl. F16d *13/60*
U.S. Cl. 192—109 F 7 Claims



An automatic transmission providing variable speed ratio and reverse drives between drive and driven shafts and including friction-engaging devices, in the form of friction clutches and brakes, for establishing the drives. The devices are operable by hydraulic servomotors, certain servomotors each having first and second pistons arranged in tandem, with the first piston being movable by hydraulic fluid to engage the associated friction device, the second piston being movable by hydraulic fluid to also move the first piston during the application of hydraulic fluid to the first piston to thereby substantially double the effective area of the pistons of the servomotor to provide additional increased pressure to the engaged friction device. The transmission also includes an hydraulic governor fixed to the driven shaft by a locking spring clamp connector positively holding and keying the governor to the shaft in a simple assembly operation and in a manner to insure sealing between fluid-passage ports in the shaft and in the governor body for transfer of activating hydraulic fluid.

3,724,627
POWER-TAKE OFF CLUTCH

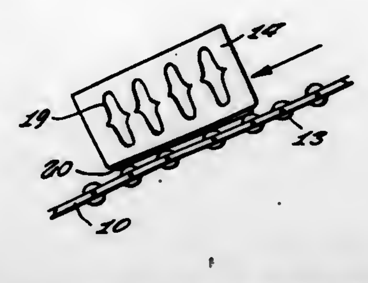
Keith H. Rhodes, Winneconne, Wis., assignor to J. I. Case Company, Racine, Wis.
Filed March 1, 1972, Ser. No. 230,629
Int. Cl. F16d *13/22*
U.S. Cl. 192—110 B 3 Claims



A power-take-off clutch having a shaft and a friction disc rotatable in unison and having a pulley piloted on the shaft to be axially moved into friction and therefore driving contact with the disc for the power-take-off. A series of ball bearings are on the shaft, including one for mounting the pulley, and other ball bearings are available for receiving an actuator which axially displaces the pulley for the drive engagement mentioned. The ball bearings have their inner races with hexagonally shaped bores which slide on the hexagonally shaped shaft, and thus the shaft and the inner races do not rotate relative to each other and they therefore do not wear out.

3,724,628
PLASTIC CARRYING CASE FOR USE WITH SKATEWHEEL CONVEYERS

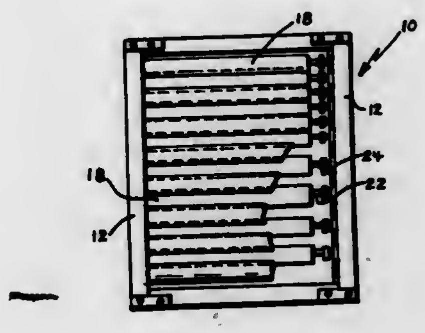
Theodor M. Box, 1108 Aileen Road, Brielle, N.J.
Continuation of Ser. No. 807,302, March 14, 1969, abandoned. This application Feb. 16, 1971, Ser. No. 115,500
Int. Cl. B65g *13/00*
U.S. Cl. 193—35 R 5 Claims



A molded plastic carrying case for use with skatewheel conveyors having outwardly projecting external ribs over substantially the entire base to define an array of geometrically shaped substantially identical recesses whose maximum crossectional dimension is equal to a function of the distance between each axle of the skatewheel conveyor. The recesses can take various forms and the two preferred shapes disclosed are circular and square-shaped recesses.

3,724,629
ROLLER ASSEMBLY

William Collins, 1490 Dillingham Boulevard, Apt. No. 215, Honolulu, Hawaii
Filed Nov. 16, 1971, Ser. No. 199,100
Int. Cl. B65g *13/11*
U.S. Cl. 193—35 R 6 Claims

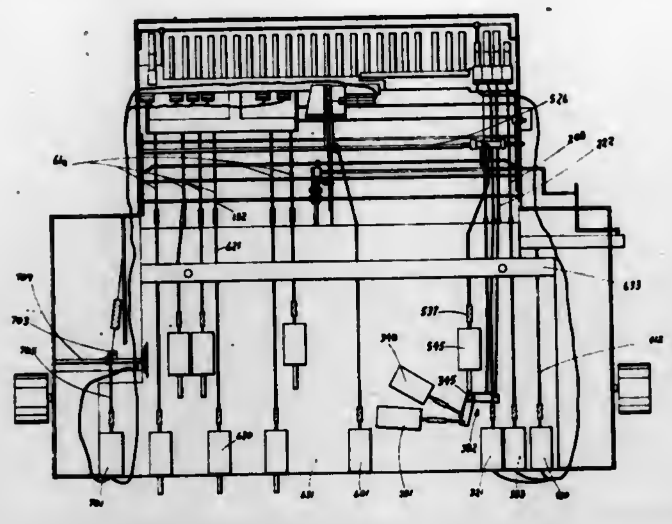


A roller assembly having a pair of frames pivotally joined together and a plurality of rollers mounted therein. A pair of roller supports are secured to each frame in such a manner as to permit individual rollers to be removed from the assembly without interrupting the operation of any remaining rollers.

3,724,630
INPUT-OUTPUT TYPEWRITER APPARATUS

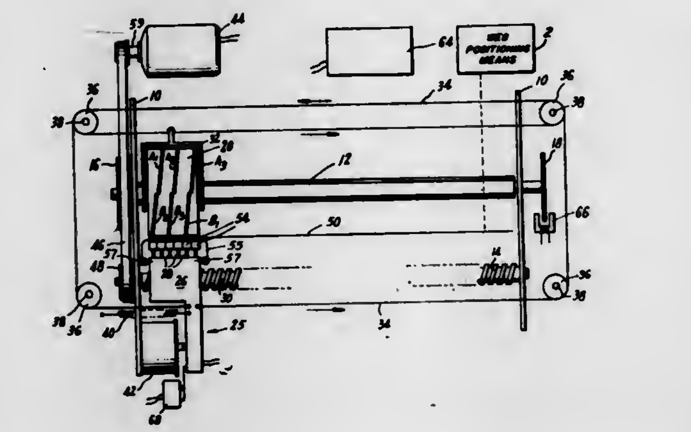
Edwin E. Manson, Harrisburg, Ohio, assignor to MI^2 Inc., Columbus, Ohio
Filed Oct. 8, 1970, Ser. No. 79,202
Int. Cl. B41j *5/30*
U.S. Cl. 197—19 1 Claim

A typewriter which is remotely operable or capable of providing signals for remotely operating another typewriter. The typewriter has movable mechanical mechanisms, such as interposers, for operating the character printing and carriage function mechanisms of the typewriter. A mounting board is horizontally mounted to the typewriter frame beneath the typewriter mechanism and a plurality of horizontally operable solenoids are mounted to the underside of the mounting board. The solenoids are connected to the interposers and other mechanical mechanisms by a plurality of connecting rods which extend downwardly from the typewriter mechanisms and then horizontally beneath the mounting board to the plungers of the solenoids. Blade switches are provided which seat in cam follower relationship against a cam lobe portion of the interposers and other typewriter mechanisms for providing output data. Selected ones of the connecting rods are provided with clevises which may be snapped on the standard clevis pins of the interposers.



3,724,631
PRINTER WITH HELICALLY ARRANGED TYPE DIVIDED INTO AXIALLY OFFSET GROUP

Steven L. Kaczeus, Chelmsford, Mass., assignor to Printer Technology, Inc., Woburn, Mass.
Filed Jan. 15, 1971, Ser. No. 106,850
Int. Cl. B41j ***1/22, 1/32***
U.S. Cl. 197—49 **11 Claims**

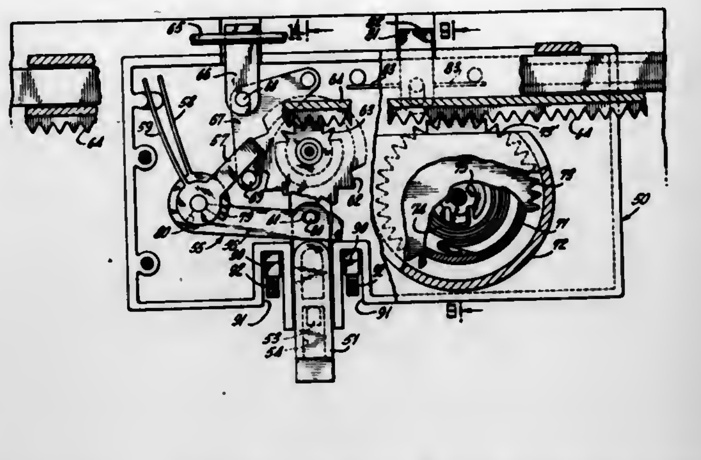


An electronic printer employs a character drum on which the elements are arranged along helical paths, and are divided into a plurality of discrete, axially offset character groups. An impact member is aligned with each of the character groups, and enables printing during concurrent rotation of the drum and axial movement of both the drum and the hammers synchronously past the object to be printed.

3,724,632
TYPEWRITER

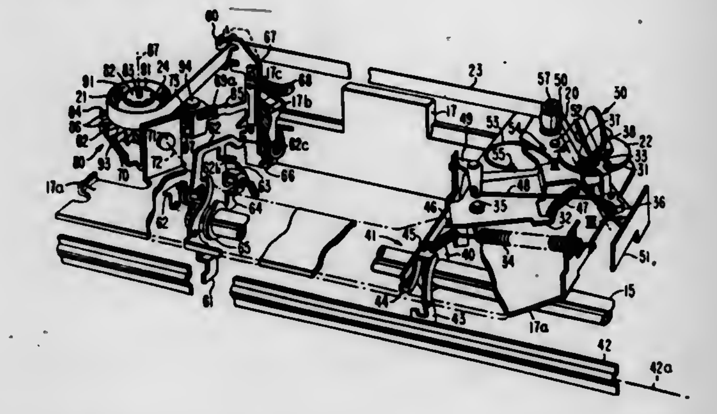
Shigeaki Kuramochi, Tokyo, Japan, assignor to Louis Marx & Co., Inc., New York, N.Y.
Filed May 10, 1971, Ser. No. 141,861
Int. Cl. B41j ***1/32***
U.S. Cl. 197—85 **8 Claims**

The operating characteristics of an inexpensive typewriter intended primarily for juvenile use are improved with respect to the ribbon drive and reversal of ribbon drive direction and with respect to the carriage escapement. A single lever positions two cams so that one reel is driven by key action and draws in ribbon while the other is free-running and feeds out ribbon. Shifting the lever, positions the cams to shift the drive from one reel to the other with reversed direction of rotation and thus changes the direction of ribbon travel. The carriage escapement is contained in a single cartridge and is driven by both key action and space bar action. The cartridge also provides a mount for a ribbon-vibrator.



3,724,633
FEED SYSTEM FOR AN ADHESIVE RIBBON OR THE LIKE

Frank J. Korb, and John O. Schaefer, both of Lexington, Ky., assignors to International Business Machines corporation, Armonk, N.Y.
Filed Dec. 30, 1970, Ser. No. 102,695
Int. Cl. B41j ***33/14***
U.S. Cl. 197—151 **13 Claims**



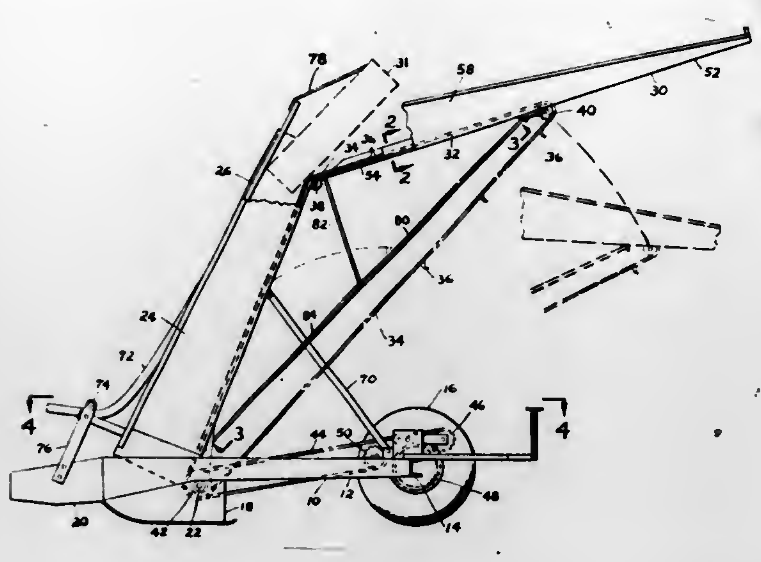
An adhesive erasing ribbon employed in a typewriter is reliably tracked and fed by a supply and takeup mechanism that positively maintains resilient tension on the ribbon. A spring device acting against a cam in the form of a multi-toothed ratchet, positively maintains continuous tension on the ribbon regardless of any tendency caused by vibrations and continued stress for the ribbon to loosen during extended periods of non-feeding operation. The tension maintaining mechanism and the ribbon supply spool are mounted on a tilting platform to minimize the exposed length of adhesive ribbon and thereby minimize its deterioration.

3,724,634
BALED HAY LOADING MACHINE

Richard B. Miskin, Ucon, Idaho
Division of Ser. No. 769,767, July 31, 1968, Pat. No. 3,667,779. This application Aug. 28, 1970, Ser. No. 67,771
Int. Cl. B65b ***65/02***
U.S. Cl. 198—7 BL **4 Claims**

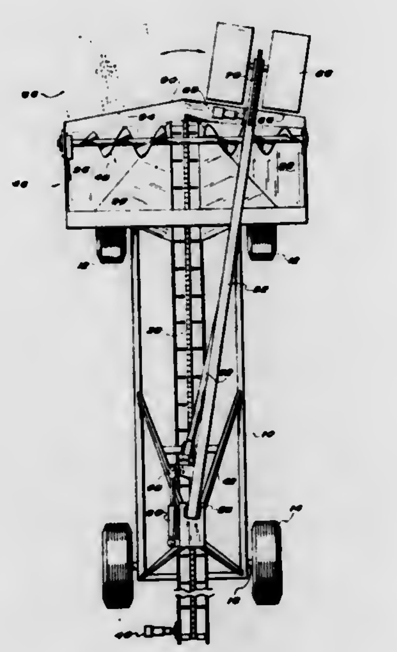
The present invention relates to a hay loading machine with an upper platform that extends rearwardly and with drive

means for loading bales of hay and the like upwardly and then rearwardly along the rear of the platform. The extra long platform and elevator chain means provide means for accumulation of bales along the length of the truck bed waiting for a worker to carry them to desired positions on the truck bed.



3,724,635
SILAGE LOADER

Wylie A. Byrd, Rt. No. 2, P. O. Box 25, Tulia, Tex.
Filed March 16, 1971, Ser. No. 124,876
Int. Cl. B65g ***65/06, 65/28***
U.S. Cl. 198—9 **6 Claims**

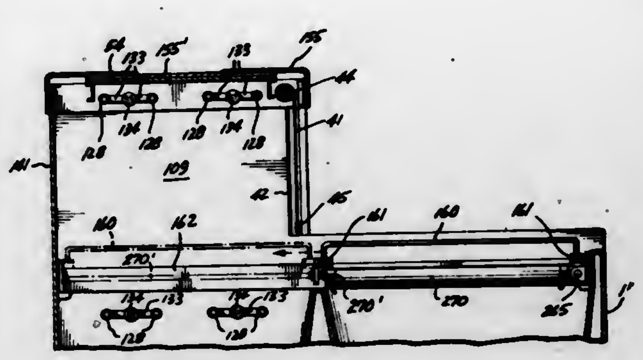


A silage loader includes a boom which is pivotable about a vertical axis as well as swingable about a horizontal axis, thus enabling it to make two or three cuts down the face of a silage bank without moving its supporting vehicle. A V-shaped nose upon the front of the apron accommodates the pivoting boom. The loader operates completely off hydraulic power, i.e., the movement of the vehicle and the guiding of the vehicle, as well as the movement of the boom in both directions and the turning of conveyors and the reel, is all done by power transmitted to these locations by hydraulic fluid.

Improved teeth are mounted on the reel for tearing the silage from the bank.

3,724,636
DISHWASHING MACHINE

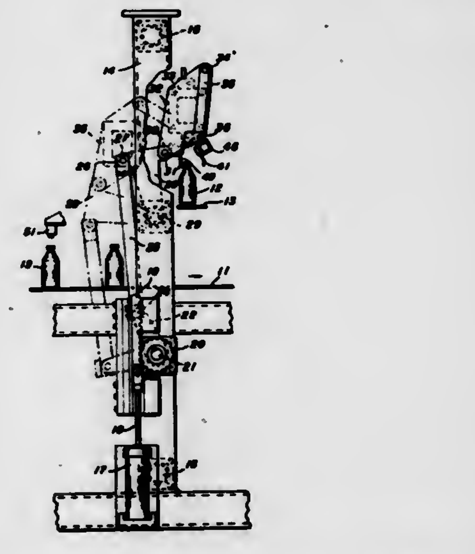
Kenneth F. A. Wright, Westminster, Calif., assignor to Exceltronic Industries, Ltd., Vancouver, B.C., Canada
Division of Ser. No. 801,737, Feb. 24, 1969, Pat. No. 3,530,864, which is a continuation-in-part of Ser. No. 553,862, May 31, 1966, abandoned. This application Sept. 24, 1970, Ser. No. 75,022
Int. Cl. B65g ***25/00***
U.S. Cl. 198—19 **9 Claims**



A loading station, a washing station and an unloading station for dishes are arranged generally in line with a basin under each station. Stationary racks composed of parallel rods at each station can support dishes, and dishes can be moved from the loading station to the washing station and from the washing station to the unloading station by two movable racks having parallel rods interdigitated with the stationary parallel rods which can be translated lengthwise of such rods. The movable racks are movable elevationally to lift dishes from the stationary rack at one station to be transported to the stationary rack at an adjacent station. Latches can connect the two movable racks for conjoint translation. At the washing station sprays oscillating about axes extending transversely of the direction of translation of the racks wash the dishes. During such washing operation roll curtains at opposite ends of a housing over the washing station are lowered to confine the sprays.

3,724,637
APPARATUS FOR PICK-UP AND TRANSFER OF CONTAINERS FROM LEHR CONVEYOR TO CROSS CONVEYOR

Leo Strauss, East Rockway, N.Y., and Michael J. Sobran, Old Greenwich, Conn., assignors to Glass Containers Corporation, Fullerton, Calif.
Filed May 18, 1971, Ser. No. 144,439
Int. Cl. H01h ***19/00***
U.S. Cl. 198—21 **8 Claims**

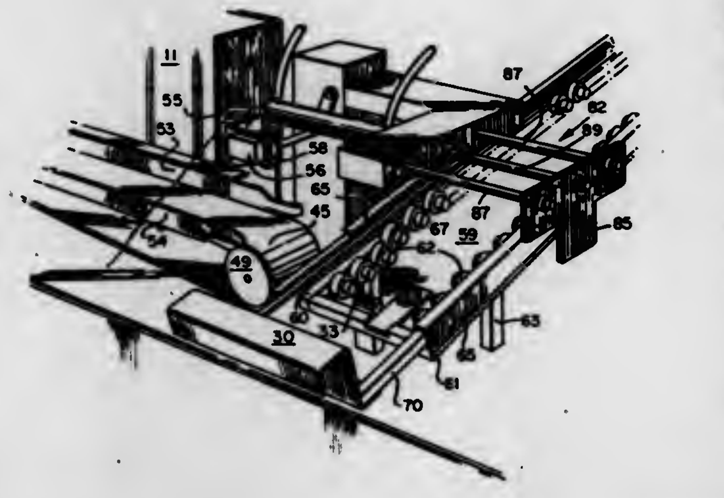


An apparatus for effecting transfer of a row of glass containers from a lehr conveyor upon which aligned rows of containers are advancing, to a cross-conveyor disposed above the lehr conveyor. The cross-conveyor is in a plane parallel to the plane of the lehr conveyor. A container engaging and transfer means is movable in an arcuate path from container engaging position above the lehr conveyor to container deposition position above the cross-conveyor.

3,724,638
SAMPLE CONVEYOR AND TRANSPORT SYSTEM

Joseph C. Peters, and Louis J. Cerulo, both of Marlborough, Mass., assignors to Damon Corporation, Needham Heights, Mass.

Filed Oct. 22, 1971, Ser. No. 191,612
Int. Cl. B65g *47/06*
U.S. Cl. 198—24 **7 Claims**



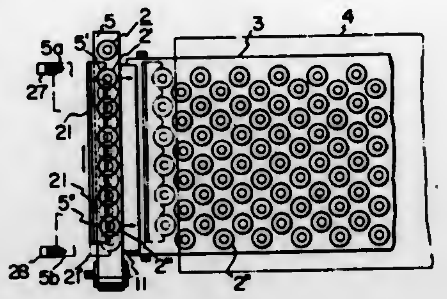
A conveyor and transport system for supplying a succession of racks, each containing a number of sample vials to an automatic liquid sampler, where the conveyor includes an input conveyor section, a belt transport conveyor section and an output conveyor section. The belt transport conveyor carries the racks from the input conveyor to a position under the sampling probe and thereafter to an output conveyor. The input conveyor receives a drawer containing an ordered row of racks and provides for gravity feed of these racks to a position on the conveyor adjacent to the transport conveyor, a pusher element being actuated to transfer each rack from this position on the input conveyor onto the transport conveyor. The transport conveyor discharges the racks onto a drawer positioned on the output conveyor which, the latter including a series of freely rotatable rollers which support racks delivered onto the output conveyor. An air acutated pusher element responds to the delivery of a rack onto the output conveyor by driving that rack toward the rear of the conveyor, thereby filling the output drawer with a row of already processed racks. When this drawer is filled a sensing element provides a signal stopping the conveyor until a new empty output drawer is substituted on the output for the original one.

3,724,639
APPARATUS FOR ARRANGING ARTICLES IN STAGGERED ROWS

Takao Hara, Hiratsuka, Japan, assignor to Toyo Glass Company, Limited

Filed Dec. 21, 1970, Ser. No. 100,194
Claims priority, application Japan, Dec. 19, 1969, 44/101617
Int. Cl. B65g *47/26*
U.S. Cl. 198—31 R **7 Claims**

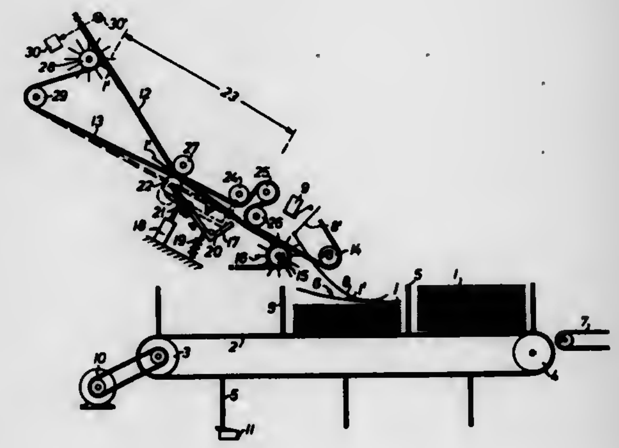
Apparatus is disclosed for arranging articles which are continuously fed in a straight line condition on a feed conveyor into a staggered or zig-zag condition on a receiving conveyor while transferring the articles onto the receiving conveyor in a direction perpendicular to the advancing direction of the feed conveyor. The apparatus comprises a movable arm reciprocating in the direction of movement of the receiving conveyor, a sliding frame slidable in a direction perpendicular to the movement of the arm and having a feeding plate for pushing the articles from the feed conveyor onto the receiving conveyor, and means for driving the sliding frame to slide it with respect to the movement of the movable arm so that it cyclically feeds a predetermined number of articles from the feed conveyor onto the receiving conveyor.



3,724,640
DEVICE FOR FORMING STACKS FROM A FLOW OF CONSECUTIVELY FURNISHED FLAT ITEMS

Hans Rapparlie, Konstanz, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed March 23, 1971, Ser. No. 127,287
Claims priority, application Germany, March 23, 1970, P 20 13 810.7
Int. Cl. B65h *7/00*
U.S. Cl. 198—35 **11 Claims**

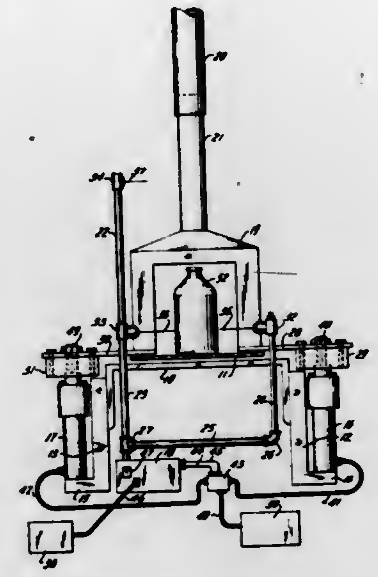


A stacking device having a conveying system for continuously advancing individual, spaced apart flat items, such as pieces of mail, toward stacking compartments carried on a second conveying system. A monitoring and control system is associated with the second conveying system to move a stacking compartment that has been filled with stacked items away from the conveying system and move an empty compartment into a position for filling. An abutment means is disposed to be movable in response to signals from the monitoring and control system to interrupt the flow of items toward the stacking compartment during a hold time involved during the movement of empty and filled compartments. A buffer area is provided in the conveying system ahead of the interrupting abutment means in which the items are stacked during the hold time. The monitoring and control system is also effective, at the end of the hold period, to move the abutment means from an operative position to a rest position so that the conveying system accelerates the movement at the stack of items in the buffer area as a unit to the operatively positioned empty compartment.

3,724,641
AUTOMATIC HOT END COATING HOOD LIFTER

Ralph E. Wainwright, Elmira, and Edward R. Liston, Millport, both of N.Y., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed June 14, 1971, Ser. No. 152,940
Int. Cl. B65g *43/00*
U.S. Cl. 198—40 **5 Claims**

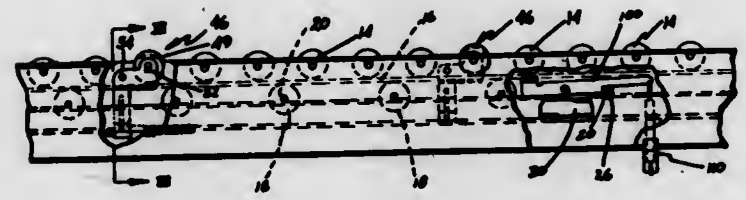


A device for automatically lifting a hood covering a conveyor so that an article in an improper position on the conveyor will not strike the hood. The device comprises a means for detecting an article in an improper position which activates a means for lifting the hood.

3,724,642
ACCUMULATOR WITH BRAKING

Maynard J. De Good, Grand Rapids, Mich., assignor to Rapistan Incorporated, Grand Rapids, Mich.

Filed July 30, 1971, Ser. No. 167,600
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **7 Claims**



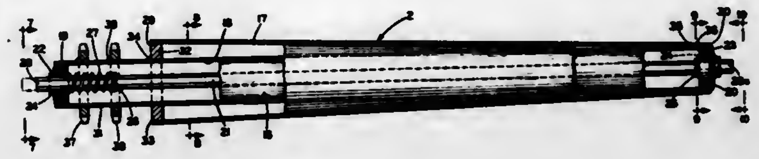
This invention describes a powered roller, accumulator conveyor having a powered propelling member passing through a plurality of independent accumulating zones arranged along the conveyor. The propelling member is shiftable between driving and non-driving positions with respect to the powered rollers. A brake means engages the powered rollers to stop their rotation when the propelling member is shifted to a non-driving position, thereby preventing movement of articles along the conveyor.

3,724,643
TAPERED ROLL CONVEYOR CURVE CONSTRUCTION

Robert E. Kohl, Manlius, N.Y., assignor to Diebold, Incorporated, Canton, Ohio

Filed June 28, 1971, Ser. No. 157,478
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **9 Claims**

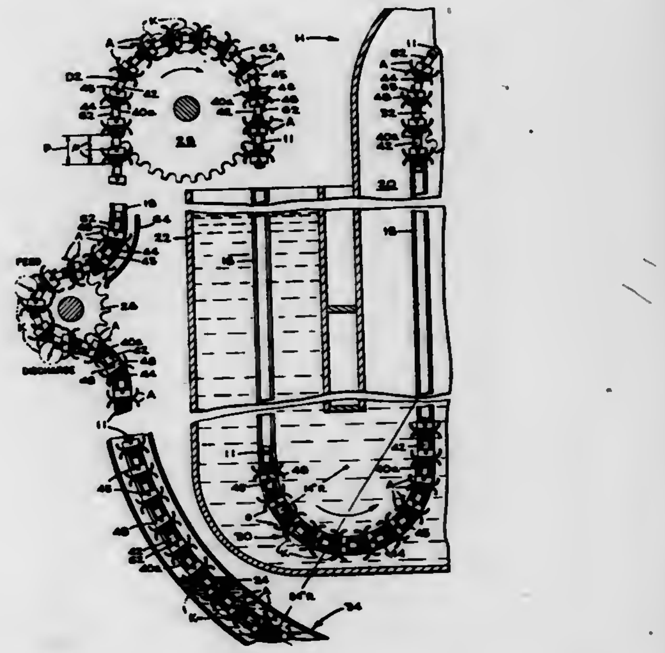
A power driven material handling conveyor curve section having an improved tapered roll construction mounted therein. A tapered sleeve is fixed to a section of or all of a usual cylindrical conveyor roll. A portion of the cylindrical roll or section extends out beyond the large end of the tapered sleeve. The roll shaft is non-rotatably mounted in a support frame, and the cylindrical roll or section and tapered sleeve fixed thereto rotate on bearings journalled on the roll shaft. A pair of chain drive sprockets are mounted on the extended end of the cylindrical roll and are connected by drive chains to similar sprockets on adjacent rolls. The rolls are snapped into and out of mounted position by usual spring means mounted within the roll.



3,724,644
UNIVERSAL CARRIER CHAIN FOR COOKERS

James L. Reimers, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed July 13, 1971, Ser. No. 162,078
Int. Cl. B65g *17/00*
U.S. Cl. 198—131 **8 Claims**



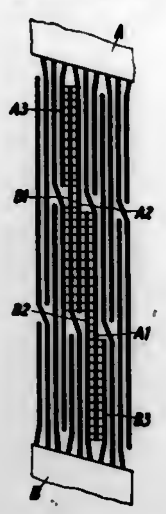
A short pitch conveyor chain for hydrostatic cookers has stop fingers on alternate links and back to back C-shaped carrier members that can be employed with spacer blocks to form pockets that accommodate a range of can sizes without changing the conveyor chains.

3,724,645
CONVEYOR BELT CONSTRUCTION

Gerd Spaar, Cologne, Germany, assignor to Clouth Gummiwerke Aktiengesellschaft, Cologne, Germany

Filed May 4, 1971, Ser. No. 140,061
Claims priority, application Germany, May 5, 1970, P 20 21 947.0
Int. Cl. B65g *15/36*
U.S. Cl. 198—193 **3 Claims**

Two conveyor belt portions which are reinforced with cables, are connected with one another. The cables are arrange din groups of three or four and have end portions of different lengths. According to the invention every end-portion in each group of one conveyor belt portion — except for the shortest portion of the group — is located (when the portions are connected with one another) between two end portions of cables of the other portion, and the shortest end portion of the group is located adjacent the longest end portion of the group with which it is connected.



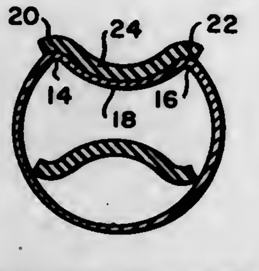
3,724,646
ENDLESS BELT CONVEYOR

Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Filed Feb. 19, 1970, Ser. No. 12,676

Int. Cl. B65g *15/40*

U.S. Cl. 198—201 **3 Claims**



An endless belt conveyor comprising an open ended elongated tube and a belt having one run supported on the surface of the tube and the return run mounted in the tube. The belt and the surface of the tube are similarly contoured to provide stability for the belt on the tube and to provide for transport of specific loads.

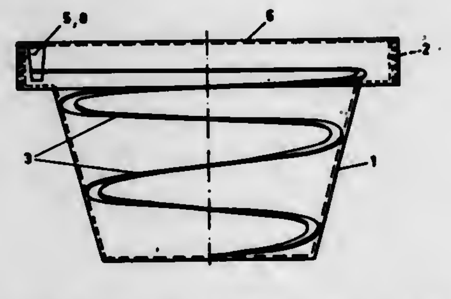
3,724,647
STORAGE CONTAINER FOR SMALL ARTICLES

Johan Ledoux, Dalwagen 47, Dodewaard, Netherlands

Filed May 11, 1971, Ser. No. 142,204

Int. Cl. B65d *83/04;* **B65g** *27/02*

U.S. Cl. 198—220 BC **3 Claims**



A storage container for small articles, such as lozenges, which container at the same time may be used as a vibrator bowl of an apparatus for issuing the articles one by one. The container is preferably made of plastic material and provided at its interior wall with a spiral or helix shaped raising track.

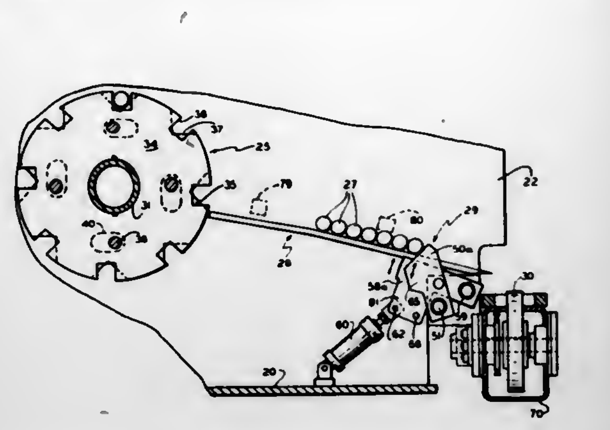
3,724,648
BAR FEEDER APPARATUS

Robert L. Schaller, Syracuse, N.Y., assignor to Sundstrand-Engelberg, Inc., Liverpool, N.Y.

Filed April 14, 1971, Ser. No. 133,912

Int. Cl. B65g *25/08*

U.S. Cl. 198—211 **2 Claims**



Bar feeder apparatus for separating one bar at a time from a supply of bars so that the bars can be individually delivered to a bar working machine upon demand. The apparatus includes a rotatable transfer drum which picks up one bar at a time from the supply and delivers it to a downwardly inclined rack, the pick-up means of the drum being adjustable to enable it to accept bars of different diameters. At the lower end of the rack means are provided to retain the bars in a row on the rack, the retainer means also being adjustable for bars of different diameters. Cooperating with the retainer means is an actuator mechanism for releasing one bar at a time from the rack for delivery to the bar working machine.

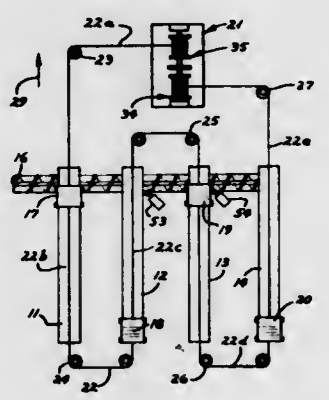
3,724,649
REEL WINDER APPARATUS

Richard H. Ayres, Minneapolis, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed June 1, 1971, Ser. No. 148,767

Int. Cl. B65g *25/08*

U.S. Cl. 198—224 **9 Claims**



For a barn, shed or the like having a plurality of spaced troughs emptying onto a conveyor, for example an auger, a cart in each of said troughs, cable mechanism attached to each cart for moving one cart in an opposite direction to the next adjacent cart and reel rewind apparatus attached to the cable mechanism for driving the cable mechanism, said reel apparatus including a pair of reels mounted in fixed axial positions on the shaft for rotation relative thereto, a reversible motor driving, a sprocket rotatably and axially movably mounted on the shaft between the reels, and lugs on the reels and sprocket for moving the sprocket out of driving relationship with the lug on one reel and into driving relationship with a lug on the other reel when the direction of the motor drive is reversed, and control circuitry for the motor.

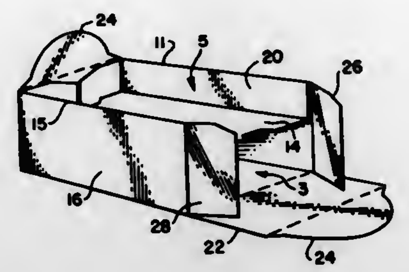
3,724,650
MULTI-PRODUCT CARTON

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed April 23, 1971, Ser. No. 136,917

Int. Cl. B65d *5/50*

U.S. Cl. 206—45.19 **5 Claims**



A dual compartmented carton adapted to hold two or more items that might be of different size and shape wherein the carton contains an exposed tray-like upper portion for packaging one or more of the items completely visible to the consumer, and an enclosed lower portion for packaging the other items. The carton is constructed from a one-piece blank of material such as paperboard or the like so that the two portions are isolated from one another by a carton partition element or panel.

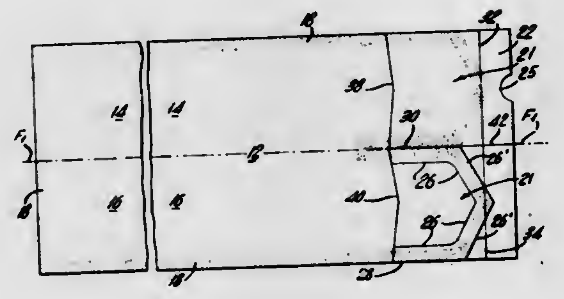
3,724,651
PEELABLE SURGICAL PACKAGE

Martin Link, North Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed March 3, 1971, Ser. No. 120,431

Int. Cl. B65d *17/24, 83/00*

U.S. Cl. 206—56 AA **15 Claims**



A peelable package is provided for containing surgical articles and devices which may be sealed and sterilized within the package and subsequently removed therefrom with a minimum probability of contamination by the unsterile outer surfaces of the package. The package comprises two panels sealed together at their marginal portions to form a chamber therebetween having a sealed mouth and adjacent sealed edges. A section of the sealed marginal portions of one panel, extending across the mouth and along the adjacent edges of the package, is weakened, as by scoring, so that upon the package, the weakened section of the panel will delaminate to the depth of the scoring in preference to yielding at the seal. The package is additionally provided with tabs extending beyond the sealed mouth. The tabs include bending scores which allow them to be folded away from the sterile portions of the package and additionally initiate the delamination of the panel when opening the package.

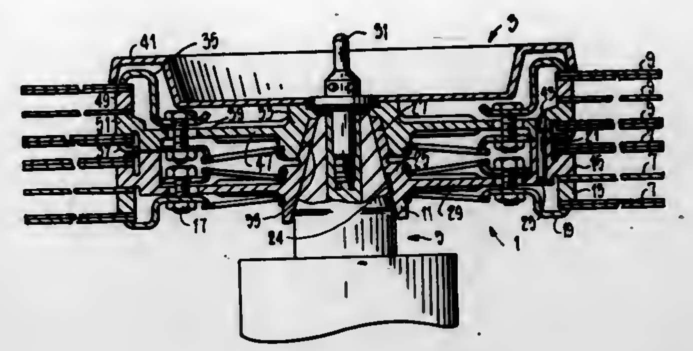
3,724,652
TWIN DISC PACK

Joseph P. Francini, Castro Valley, and Michael A. Verdone, Hillsborough, both of Calif., assignors to The Singer Company, New York, N.Y.

Filed June 14, 1971, Ser. No. 152,796

Int. Cl. G11b *1/02*

U.S. Cl. 206—62 P **35 Claims**



A twin disk pack assembly comprising a first or lower disc pack and a second or upper disk pack. Each disk pack has a number of stacked discs coaxially mounted on a hub in spaced apart relation. Each of the discs has a magnetic recording surface for storing information. The lower disk pack is first placed on the spindle and then the upper disk pack is placed on the spindle and secured thereto. The lower disc pack is provided with a fixed drive pin that is adapted to be inserted into a hole located in the hub of the upper disk pack. Visible indexing symbols are placed on the surface of the uppermost disc of each disk pack to facilitate the engagement of the drive pin in its mating hole. In addition, stabilizer pins are provided to preventing tipping of the upper disc pack before the drive pin has been engaged.

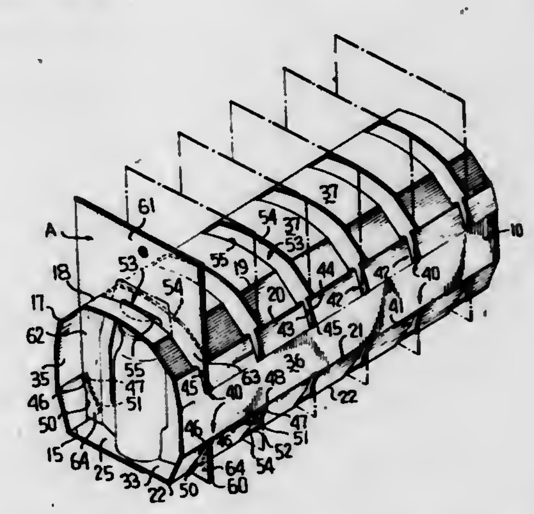
3,724,653
BLISTER PACK CARRIER

Nicholas V. Morgese, Garnerville, N.Y., assignor to Continental Can Company, Inc., New York, N.Y.

Filed June 19, 1970, Ser. No. 47,256

Int. Cl. B65d *71/00, 5/04*

U.S. Cl. 206—65 R **6 Claims**

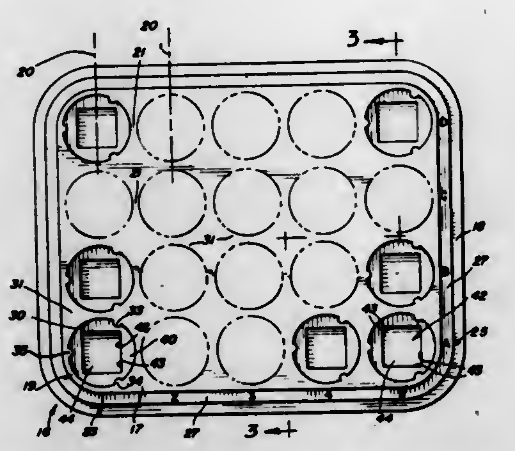


This disclosure relates to a package for carrying a plurality of blister packs or similar articles which normally include relatively thin and flat peripheral margins and an inboard chamber formed by the so-called blister in which may be housed, as an example, a bottle or similar container filled with pills, liquid or most any type merchantable product. The package includes a wrap-around type carrier having respective inner and outer closure panels, a pair of spaced side panels, and a top panel. Each side panel includes a plurality of aligned pairs of slots with the slots interlockingly receiving the flat marginal positions of the blister packs or similar articles for maintaining the same interlocked to the carrier and in spaced relationship to each other. In the embodiment illustrated the top panel is provided with a slot for interconnecting each uppermost pair of slots of the side panels to permit an uppermost flat marginal portion of the blister pack to project therethrough.

3,724,654
CUP TRAY AND CONTAINER

William L. Gerard, Overland, Mo., and Jack E. Pregont, Janesville, Wis., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed June 1, 1971, Ser. No. 148,438
Int. Cl. B65d *1/36*; **B01l** *3/00*
U.S. Cl. 206—72 **7 Claims**

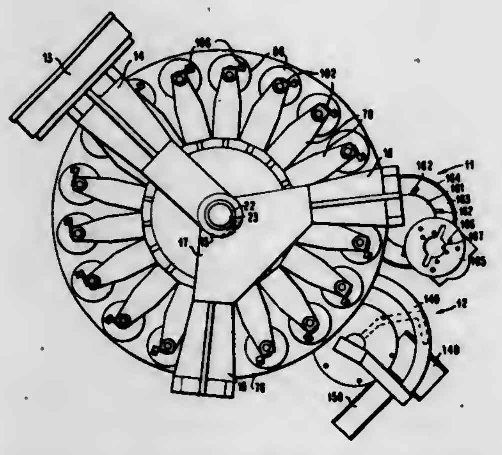


A tray for holding a plurality of sample cups having different top and bottom configurations in either an upright or an inverted position including a top tray member having a plurality of rows of recesses with each of the recesses having a circular portion with radial projections for engaging and holding the cups in an inverted position, and a rectangular portion for holding the base of the cups so that the cups are in an upright position. The tray is provided with a flat bottom member fixed to the top member so that the trays with the cups held therein may be stacked and slid laterally easily with respect to one another. Also provided is a container having a side opening therein to permit one of a stack of trays with or without the cups assembled therewith to be removed therefrom through the side opening whereupon the trays thereabove drop down one step at a time.

3,724,655
CAP TESTER

Charles William Clark, Randolph, N.Y., assignor to Borden, Inc., Columbus, Ohio

Filed Dec. 17, 1971, Ser. No. 209,041
Int. Cl. B07c *5/06*
U.S. Cl. 209—73 **11 Claims**

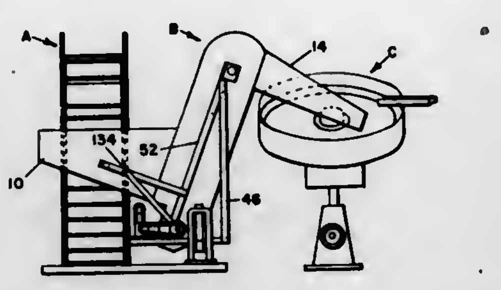


Apparatus for testing thickness of gaskets in caps and for rejecting caps which have gaskets of a thickness outside of a set range, the apparatus being characterized by a first sensing means responsive to gas leaking through the gasket which tests for a minimum set thickness, a second sensing means which is actuated by a floating head when it encounters a gasket exceeding the maximum set thickness and a sorting means which is responsive to the first and second sensing means to eject caps with non-specification gaskets.

3,724,656
SEPARATING AND SORTING APPARATUS

Walter S. Sterling, Quincy, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed April 7, 1971, Ser. No. 131,914
Int. Cl. B07c *1/04*
U.S. Cl. 209—73 **32 Claims**



Apparatus for sequentially separating and distributing items from a mixed relatively compact mass of items having appendages so intertwined as to make separation difficult, comprising tandemly arranged separators for successively operating on the mass. Each separator apparatus has a hopper and an elevator. The elevator in the first separator loosens items from the initially compact mass and transfers random complements to the hopper of the second separator where they collect in the form of a loose mat. The elevator of the second separator loosens the items in the mat and transfers continuous complements to the hopper of a sorting apparatus. The hopper of each apparatus has a sloping bottom so that the mass gravitates toward its lower end and the elevator of each separator comprises a conveyor situated at the lower end of the hopper which extends upwardly relative to the bottom and has fixed to it a plurality of spaced parallel flights operable by movement upwardly relative to the bottom of the hopper to effect oscillation of the mass so as to loosen items in the mass. Eccentrics are mounted in engagement with the bottoms of the hoppers for effecting vibration thereof.

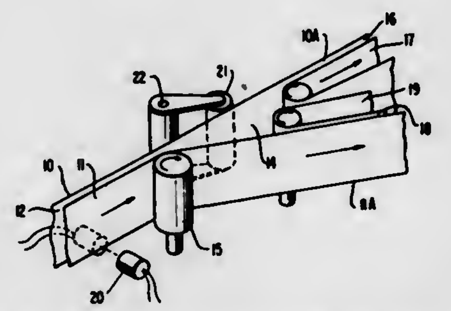
3,724,657
SWITCHING DEVICE FOR DELIVERING SHEET-LIKE ARTICLES

Takeo Katagiri; Kunio Hiromori; Shoichiro Yoshimura; Kazuyoshi Suda, and Jinichi Tanaka, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 14, 1971, Ser. No. 143,366

Claims priority, application Japan, May 16, 1970, 45/41795; May 16, 1970, 45/41798

Int. Cl. B07c *3/06*
U.S. Cl. 209—74 **7 Claims**



A switching device for interswitching the delivery of sheet-like articles conveyed to a bifurcation through a feed route, between the main and the branch routes, each route being formed of the opposing surfaces of a pair of endless belts, comprising, instead of the conventional wedge-shaped switching member disposed within the bifurcation, a switching member located outside the bifurcation. The device may be provided with means for rearranging the dislocated sheet-like matters, if any.

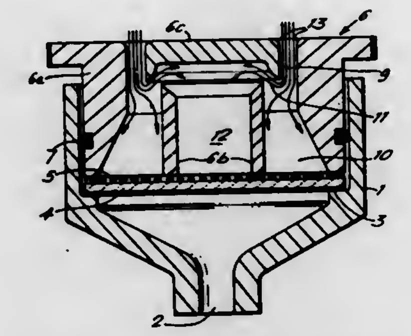
3,724,658
PARTICLE SEPARATION IN A GASEOUS FLUID

John Stephenson, Cholsey, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed March 20, 1970, Ser. No. 21,342

Claims priority, application Great Britain, March 27, 1969, 16,246/69

Int. Cl. B07b *7/086*
U.S. Cl. 209—143 **4 Claims**



Apparatus for separating particulate matter from a gas, particularly dust from air, selectively according to particle size comprising an inlet passage, a duct in-line with the inlet passage and a re-entrant branch duct into which a predetermined fraction of the gas is diverted, the change of direction of flow of said fraction being such that only smaller particles remain entrained therein and larger particles due to inertial and centrifugal forces are not diverted and are entrained in the undiverted fraction of the gas stream together with the particles entrained in said undiverted fraction. The apparatus may be adapted to provide a lung model simulator.

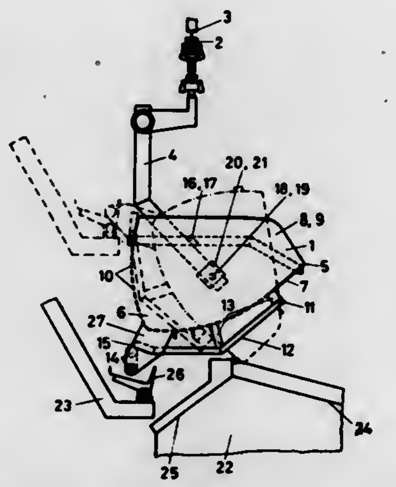
3,724,659
TRANSPORT SYSTEM FOR CASTINGS INCLUDING A SWINGABLE, PERFORATED TRANSPORT BUCKET

Erwin Buhrer, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhauser, Switzerland

Filed Sept. 29, 1970, Ser. No. 76,477

Claims priority, application Switzerland, Oct. 6, 1969, 14975/69

Int. Cl. B07b *1/28, 1/46*
U.S. Cl. 209—238 **5 Claims**



Swingable transport buckets are supported on a track; the buckets have a bottom wall which is perforated and a catch tray is located beneath the bottom wall spaced therefrom to catch sand and the like from the castings as they are being transported in the buckets. The front lip of the bucket extends beyond the front lip of the catch tray so that, upon tipping of the bucket at a discharge station, the castings will fall out of the bucket at a point remote from the sand falling off the tray. The discharge station is formed with inclined surfaces, extending in different directions, to separate the sand and the castings.

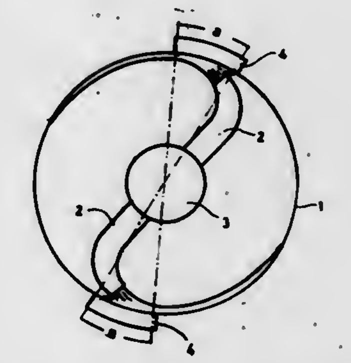
3,724,660
METHOD OF FRACTIONATING WOOD FIBER PULP OR THE LIKE AND DEVICE FOR PERFORMING THE METHOD

Erik Folke Eriksson, Johanneshov, Sweden, assignor to AB Calor & Celsius, Solna, Sweden

Filed April 22, 1970, Ser. No. 30,930

Claims priority, application Sweden, April 22, 1969, 5722/69

Int. Cl. B07b *1/00*
U.S. Cl. 209—250 **15 Claims**



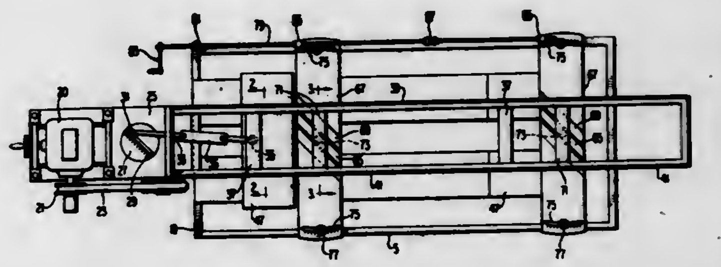
A method of fractionating a fibrous suspension or the like in which a curved perforated stationary screen and at least one stationary nozzle are utilized to divide the suspension into a fine fraction and a coarse fraction. The nozzle directs the suspension as a spray against an impact surface and in a direction parallel to the concave surface of the screen. Substantially only a fine fraction of the suspension is passed through the perforations in the screen at a portion of the screen removed from the impact surface, while the coarse fraction of the suspension is lead toward a rejection outlet.

A device for performing the fractionating method in which the impact surface is constituted by an imperforate portion of the concave surface of the screen or is constituted by an imperforate shield member positioned within the screen. The device may also include a diverting element associated with the screen which receives a portion of the suspension passing through the screen.

3,724,661
DIAGONALLY OSCILLATING CONCENTRATOR

Edmond F. Gobatti, Route 3, Box 252 A, Pueblo, Colo.

Filed Sept. 17, 1970, Ser. No. 73,109
Int. Cl. B03b *3/12*
U.S. Cl. 209—437 **2 Claims**

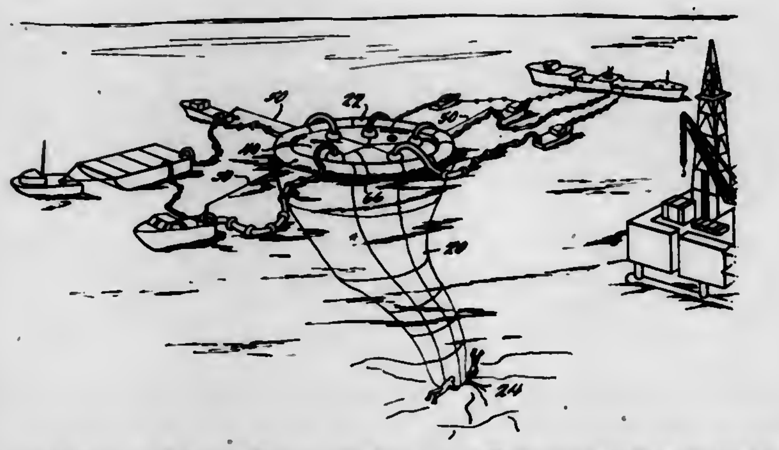


A concentrator of the sluice trough type reciprocates bodily along a path diagonal to the length of the trough. Horizontal plates carrying diagonal guideways thereon guide the trough at points spaced lengthwise of the trough, the plates and hence the guideways being adjustable about vertical axes that transect the midpoints of the reciprocatory path, by means of a horizontal rod common to all the plates and extending parallel to the trough and rotatable to swing the plates in unison about their vertical axes. The rod is pivotally connected to the plates and to the trough support and portions of the rod are universally connected to each other between the plates.

3,724,662
CONTROL OF OIL POLLUTION AT SEA, APPARATUS AND METHOD

Angel J. Ortiz, Calle Rio Guadalquivir No. 30, Mexico City, Mexico

Filed March 12, 1971, Ser. No. 123,779
Int. Cl. B01d *21/00*
U.S. Cl. 210—83 **26 Claims**

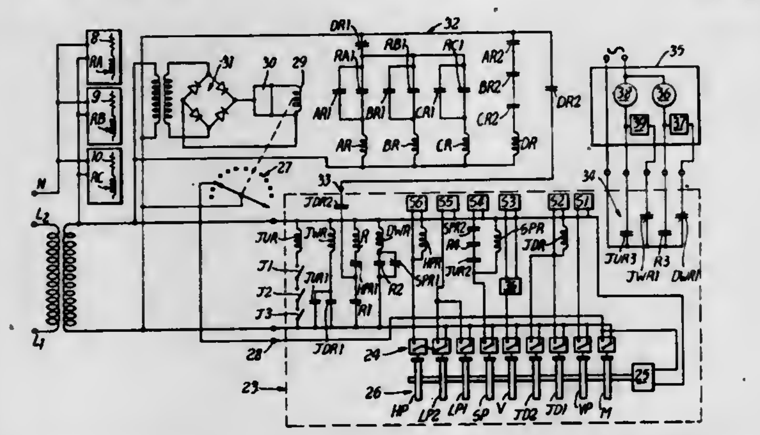


Massive oil spills from tankers or offshore wells and small spills from bottom crevices are eliminated by confining the oil right at the spill source, before it becomes a slick, by means of a marine pollution control system which includes a huge plastic bag from which oil is pumped from the bag to a receiving facility. The marine pollution control system, also referred to as <MPCS>, is a preventive and contingency constituting a complete, self-contained, light and mobile system of men and equipment that can be deployed on very short notice for oil spill containment anywhere in the world.

3,724,663
TUBE PRESSURE FILTERS

Ralph Derek Gwilliam, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England

Filed Feb. 2, 1971, Ser. No. 111,970
Claims priority, application Great Britain, Feb. 11, 1970, 6,698/70
Int. Cl. B01d *29/36*
U.S. Cl. 210—85 **7 Claims**

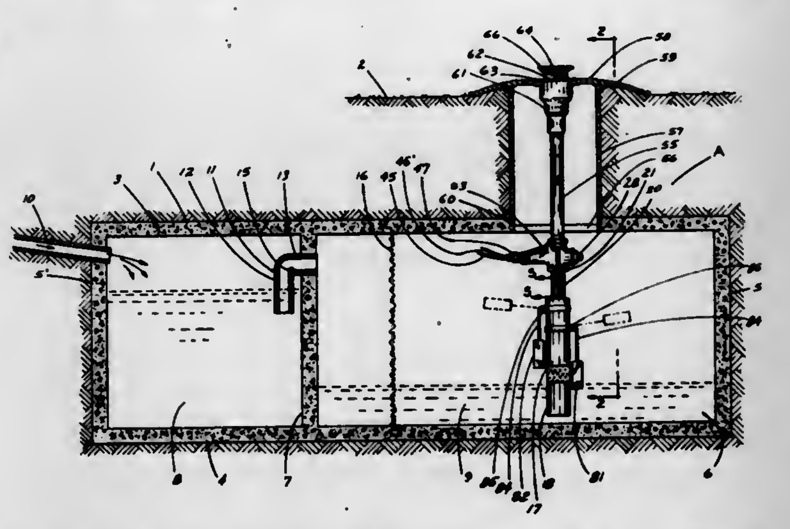


Apparatus for reducing the liquid content of wet, particulate, solid material comprises at least one tube pressure filter having relatively movable, co-axial tubular bodies in association with an arrangement comprising a radiation source for directing a beam of radiation across the intended path of discharging filter cake, a receiver for the beam downstream of said path and sensing means coupled to the receiver for sensing interception of said beam by a filter cake and coupled to sense relative displacement of said tubular bodies, to determine whether filter cake has been discharged from said filter in an operation cycle of said filter.

3;724,664
SEWAGE TREATMENT SYSTEM

Robert A. Lemberger, Vienna, and Jerry L. Gilmore, Rolla, both of Mo., assignors to Missouri Engineering Corporation, Rolla, Mo.

Filed Jan. 25, 1971, Ser. No. 109,233
Int. Cl. B01d *21/24*
U.S. Cl. 210—104 **14 Claims**

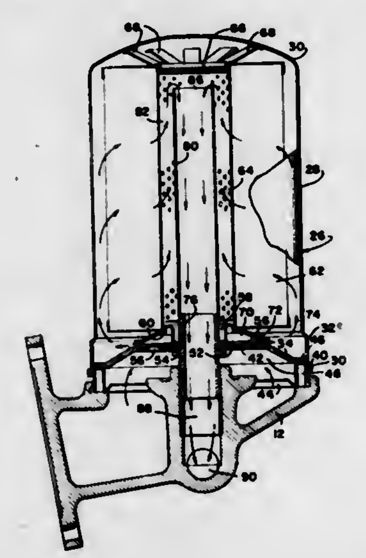


A sewage treatment system especially adapted for residential usage comprising a below ground tank having a settlement chamber for receiving raw sewage, and an aeration chamber in communication therewith; there being a submersible pump within said aeration chamber, an above ground sprinkler, and a control valve connecting said sprinkler and said submersible pump. Said valve is of two position character; in one position, effluent is recirculated within said aeration chamber, and in said other position, effluent is discharged through said sprinkler for dispersion within the surrounding area; and means being provided for entraining air into effluent during recirculation. The operation of said control valve, together with said pump, is governed by timing means.

3,724,665
FILTER UNIT

Robert L. Hall, Mount Carmel, Ill., assignor to Champion Laboratories, Inc., West Salem, Ill.

Filed April 1, 1971, Ser. No. 130,385
Int. Cl. B01d *27/10, 27/08*
U.S. Cl. 210—130 **3 Claims**

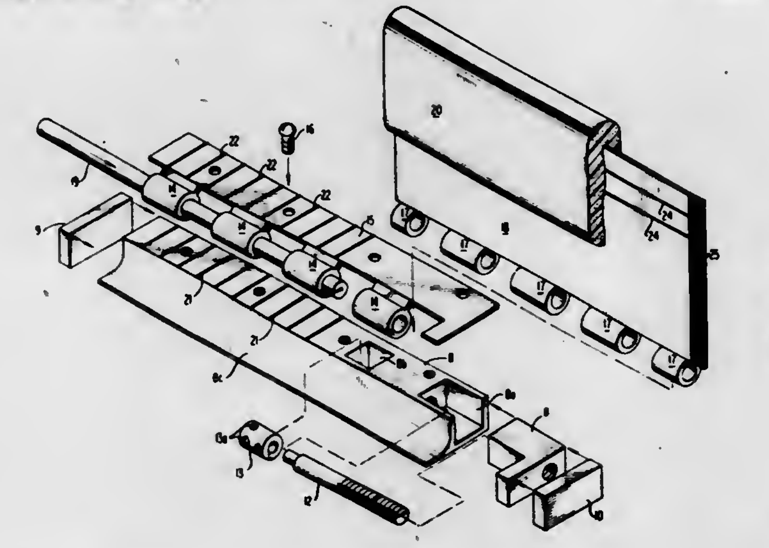


A filter unit comprising a cylindrical casing with a plate member closing off one end thereof and having oil inlet port means and oil discharge means therein and gasket means for seating the filter unit on a pedestal or base mounted on a vehicle engine with threaded means for securing the filter unit to the pedestal or base, and with a standpipe extending centrally of the casing with an annular filter element disposed therearound and with check valve means disposed in the casing adjacent the plate member and a bypass valve disposed within the center tube of the filter element.

3,724,666
UNIVERSAL REPLACEABLE WEIR ASSEMBLY

Clarence S. Johnson, P. O. Box 940, Pomona, Calif.

Filed April 9, 1971, Ser. No. 132,639
Int. Cl. E04h *3/20*; E05d *7/00*
U.S. Cl. 210—169 **9 Claims**

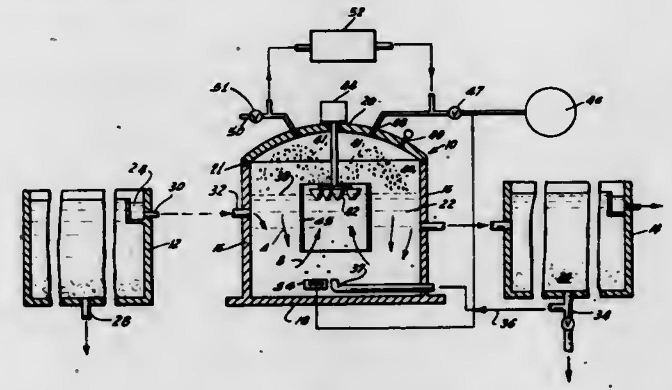


A weir assembly for use in a swimming pool skimmer wherein the weir assembly includes individually replaceable components including a buoyant weir plate hingedly connected to an expandable anchor block mounted within the skimmer inlet, the various components of the weir assembly being constructed and arranged to be fabricated at the job site whereby the assembly is adapted to fit all types and makes of skimmers.

3,724,667
ACTIVATED SLUDGE PROCESS AND SYSTEM

Ross E. McKinney, Lawrence, Kans., assignor to Air Products & Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 42,271, June 1, 1970, abandoned. This application Oct. 28, 1971, Ser. No. 193,604
Int. Cl. C02c *1/10*
U.S. Cl. 210—195 **5 Claims**

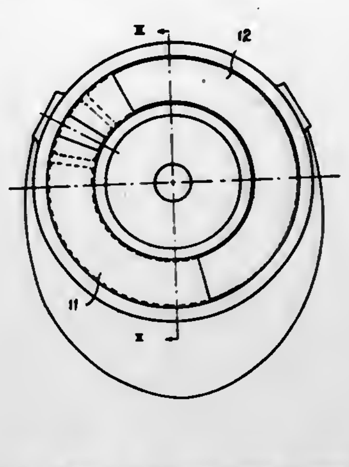


An activated sludge sewage treatment process and system: the process and system include an enclosed aeration chamber providing a vessel for a mixed liquor formed from a liquid biologically degradable waste and recirculated sludge, with an upper region in the enclosed chamber into which droplets of the mixed liquor are generated and a gas containing a major portion of oxygen is injected under pressure. The gas in the upper region is maintained under pressure and oxygen is transferred to the droplets and mixed liquor at an improved rate.

3,724,668
ADJUSTABLE SKIP BRIDGE VALVING MECHANISM FOR DISC FILTER

Harry Richard Ahlquist, Babbitt, Minn., assignor to Erie Development Company, Cleveland, Ohio

Filed Jan. 27, 1971, Ser. No. 110,003
Int. Cl. B01d *33/26*
U.S. Cl. 210—331 **2 Claims**

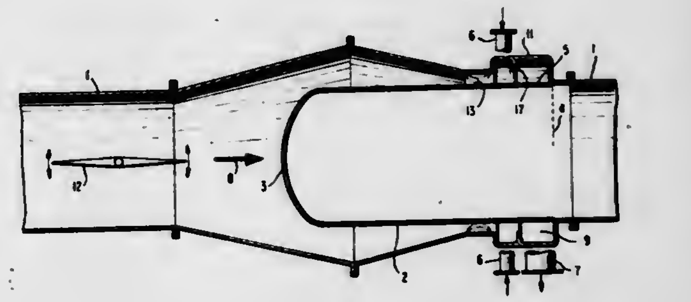


In operating a disc filter an improved control of the dryness of the filtercake is obtained when the vacuum bridging is extended to the extremity of the sector being totally out of the slurry and then "skipping" a portion of vacuum bridging at the lower (i.e., submerged) level of the sector.

3,724,669
SCREEN INSTALLATION

Heinz Thal, Lintorf, Germany, assignor to Ludwig Taprogge, Reinigungsanlagen fur Rohren-Warmeaustauscher, Dusseldorf, Postfach, Germany

Filed May 20, 1971, Ser. No. 145,436
Int. Cl. B01d *29/42*
U.S. Cl. 210—409 **33 Claims**



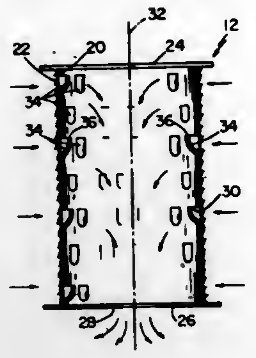
A screen installation for separating solid materials from liquid streams in pipe lines, in which a screen basket is so arranged that its closed end is directed opposite the flow and its open end is connected with the pipe line wall; at least one tangentially outwardly directed flushing medium inlet opening and flushing medium outlet opening each are arranged near the screen base whereby the outlet opening is disposed nearer the screen base while the inlet opening is arranged in another plane disposed upstream of the plane of the outlet opening, as viewed in the direction of the main stream, so that a flushing medium separation channel is formed between the two openings.

3,724,670
SEPARATING FLUIDS

John William Gerahardt, Tulsa, Okla., assignor to Fram Corporation, East Providence, R.I.

Filed Feb. 12, 1971, Ser. No. 115,027
U.S. Cl. 210—448 **5 Claims**

Separator for immiscible fluids having a closed end and an outlet spaced along an axis, a separating medium arranged with inlet and outlet faces generally parallel to the axis so that fluid having passed through the medium flows along the axis toward the outlet, and a multiplicity of flow-directing surfaces arranged adjacent one of said faces to direct fluid entering said separator in a direction having a component along said axis toward said closed end.



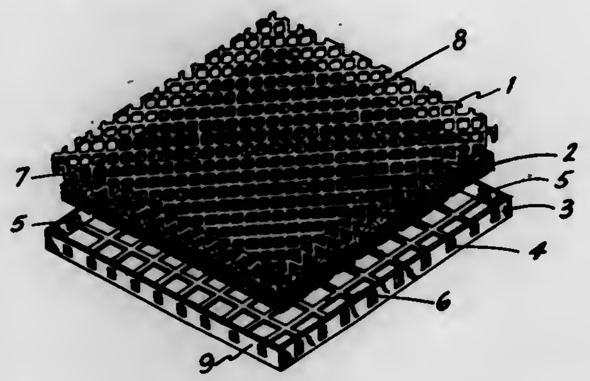
3,724,671
FLUID TREATING FILTER

John E. Tate, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Feb. 4, 1971, Ser. No. 112,628

Int. Cl. B01d *27/08*

U.S. Cl. 210—484 **10 Claims**



An improved fluid treating filter having two support frames adaptable for mating relationship with a filter media disposed therebetween. Each of the support frames has a retaining screen with side means projecting at right angles therefrom, said side means being provided with snap means which are adaptable for holding the support frames in said mating relationship.

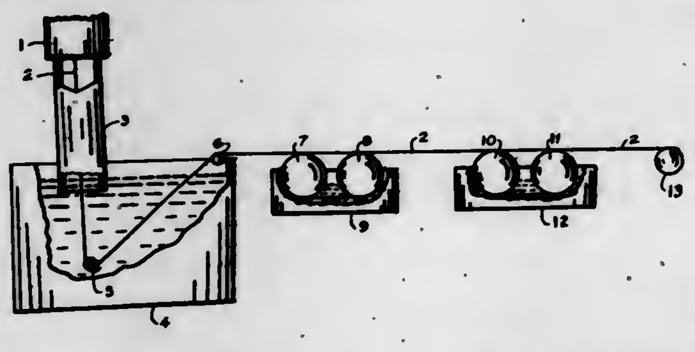
3,724,672
ASYMMETRIC HOLLOW FIBER MEMBRANES AND METHOD OF FABRICATION

Richard Lloyd Leonard, 111 Dunedin Ct., Cary, N.C., and John Darrell Bashaw, 317 Wesley Dr., Chapel Hill, N.C.

Filed July 27, 1970, Ser. No. 58,509

Int. Cl. B01d *39/00*

U.S. Cl. 210—500 **4 Claims**



This invention is directed to hollow filament membranes derived from esters of cellulose and characterized by a density gradient in the filament wall structure. When employed in reverse osmosis operations the filaments exhibit extraordinary flux and rejection properties. A continuous fabricating method is also provided which comprises continuously extruding filaments into a controlled evaporation zone thence directing the filaments into a cold water coagulation bath, thereafter passing the same to a wash bath and finally to an annealing zone.

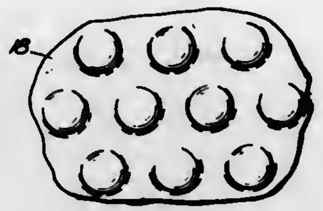
3,724,673
TEXTURED MEMBRANES FOR BLOOD DIALYZERS OXYGENATORS AND THE LIKE

David M. Ryon, Scotia, N.Y., assignor to General Electric Company

Filed Aug. 28, 1970, Ser. No. 67,753

Int. Cl. B01d *31/00*

U.S. Cl. 210—500 **9 Claims**



A myriad of small undulations or projections are formed permanently in a thin membrane to give it a textured surface. The membrane may be permselective for use in fluid exchange devices such as blood oxygenators and artificial kidneys or dialyzers. When such membranes are superposed on each other, a thin film of blood or other fluid flowing between them is gently agitated by the textured surface to enhance the absorption of a gas such as oxygen which is transported through the membrane. The textured surface prevents adjacent membrane layers from adhering. The textured surface is created by heating, vacuum forming and cooling on a suitable die.

3,724,674
HEADS FOR HYDROCYCLONIC SEPARATORS

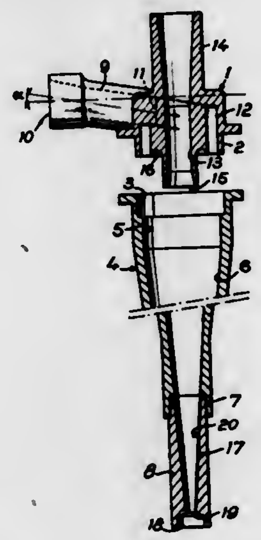
Robert Loison, 15 Allee du Colombier Domaine de Grandchamp, Le Peco, France

Filed June 30, 1970, Ser. No. 51,294

Claims priority, application France, July 3, 1969, 6922521

Int. Cl. B01d *21/26;* **B04c** *3/06*

U.S. Cl. 210—512 **5 Claims**



This invention relates to improvements in hydrocyclonic separators for separating or concentrating solid particles suspended in a liquid, wherein it has a head comprising an inlet nozzle for the liquid to be treated, an outlet nozzle for the treated liquid and means for guiding the liquid to the inlet, said head being able to receive bodies of hydrocyclonic separators of different conicities and shapes.

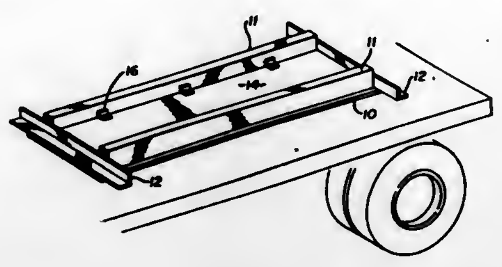
3,724,675
HOT COIL RACK

Jerry L. Stoneburner, P. O. Box 277, North Jackson, Ohio

Filed June 9, 1971, Ser. No. 151,180

Int. Cl. A47f *7/00*

U.S. Cl. 211—13 **4 Claims**



A hot coil rack having a pair of spaced parallel hollow box frame members positioned on a base plate and having a plurality of secondary frame members positioned therebetween on said base plate along with a blanket of ceramic fiber insulation, transversely positioned angle members are positioned at each of the ends of the spaced parallel box frame members and a covering sheet is applied to the insulating material between the parallel hollow box frame members.

3,724,676
STAND FOR A WRITING POINT, ESPECIALLY FOR TUBULAR PENS

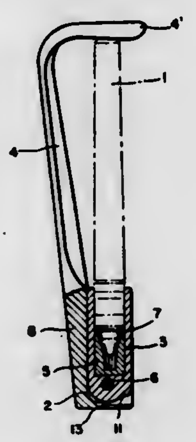
Gerold Anderka, Hamburg, Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed March 12, 1971, Ser. No. 123,745

Claims priority, application Germany, May 5, 1970, G 70 16 831.9

Int. Cl. B43k *31/00*

U.S. Cl. 211—69.7 **2 Claims**



A tiltable stand or holder for a tubular writing instrument, including a pivotable socket for retaining the writing instrument point and an upper horizontally extending bar, engaging the upper end of the writing pen.

3,724,677
PORTABLE GARMENT RACK AND BLANK THEREFOR

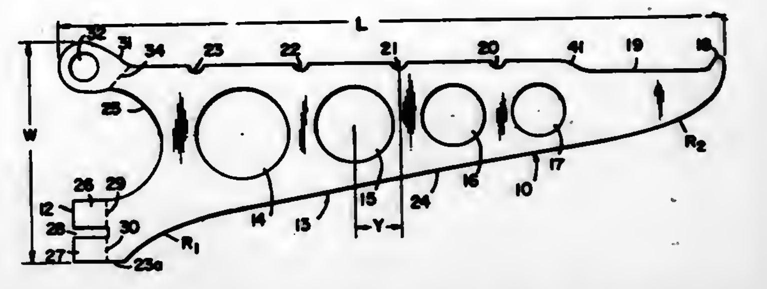
Fred W. Vogelhuber; Heather Vogelhuber, and Gilman C. McMillan, all of San Jose, Calif., assignors to Fred W. Vogelhuber; Heather Vogelhuber and Gene D. Moss, part interest to each

Filed Aug. 25, 1971, Ser. No. 174,713

Int. Cl. A47f *5/08*

U.S. Cl. 211—96 **14 Claims**

A portable garment rack is disclosed which can be stamped from a blank, bent into shape and releasably mounted on the hinge pin of a door hinge. The rack is a rigid unitary planar body generally in the form of an elongated right triangle. A recess is disposed in the long side of the right angle forming the triangle and extends from a point near the outer apex of the triangle to a point along the long side spaced from the short side of the triangle. Hinge pin engaging means is associated with the short side of the triangle for engaging the hinge pin of the door hinge and maintaining the rack in a fixed position relative thereto with the plane of the body extending in a direction generally normal to the longitudinal axis of the pin. Aperture means are formed in the body of a shape and size so as to provide continuous flat rigid body portions of substantial width along the long side and hypotenuse of the triangle connected by rigid flat body portions of substantial width parallel to the short side of the triangle.



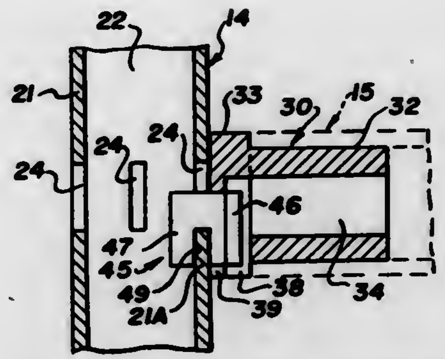
3,724,678
FRAME CONSTRUCTION

Herbert Challier, 5930 Falcon Road, West Vancouver, British Columbia, Canada

Filed Jan. 20, 1972, Ser. No. 219,309

Int. Cl. A47f *5/01;* **F16b** *7/04, 9/02*

U.S. Cl. 211—148 **9 Claims**



Construction providing a frame for a display stand or the like and utilizing frame members formed of square plastic tubing having slotted side walls. A connector clip attachable to an upright frame member cooperates with a slotted plug enterable into an end of a horizontal frame member to provide means for joining one member to another. The construction includes hanger clips for shelves carried by the frame and support clips for vertically disposed side wall panels enclosing parts of the frame with both of these clips being received in side wall slots of the frame members. The frame construction includes reinforcing rods which can be inserted into the plastic frame members to strengthen them where required.

3,724,679
INDICATOR OR CONTROL FOR CRANES

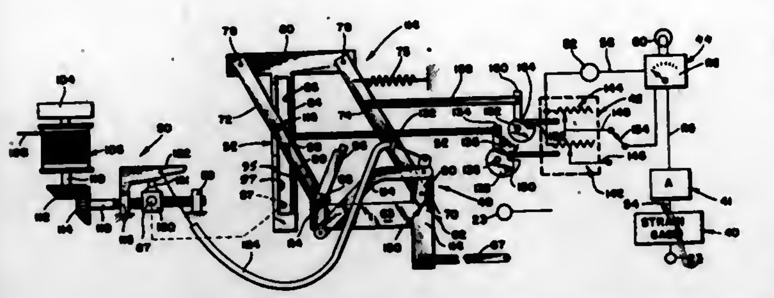
Roy D. Brownell, Aurora, and Richard E. Rogers, Oswego, both of Ill., assignors to Clark Equipment Company, Buchanan, Mich.

Continuation-in-part of Ser. No. 799,739, Feb. 17, 1969, abandoned. This application Feb. 19, 1971, Ser. No. 116,994

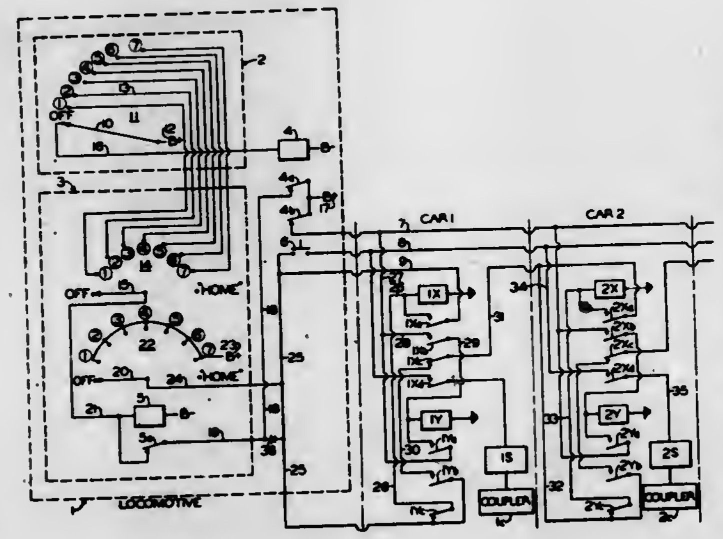
Int. Cl. B66c *13/48*

U.S. Cl. 212—39 MS **4 Claims**

A safe load indicator for a mobile crane including an extensible boom, the indicator including a strain gage means to provide an electrical signal reflecting total load moment about the boom horizontal pivot axis and linkage means moveable in accordance with boom movement to modify the signal according to boom vertical angle and length. To achieve an accurate indication of maximum permissible load moment throughout the full operational range of the boom, linkage movement modifying means is provided to interrupt or reverse linkage movement responsive to departure of the boom from an operational range wherein crane stability is critical and entry into an operational range wherein structural strength of the crane components is critical.

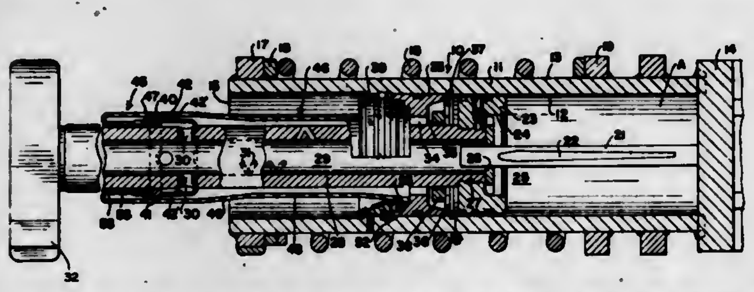


3,724,680
REMOTE CONTROL SYSTEM FOR AUTOMATIC CAR UNCOUPLING DEVICE
Claude M. Hines, 111 Foxglove Lane, Columbia, S.C.
Filed Dec. 16, 1970, Ser. No. 98,603
Int. Cl. B61g *1/08, 1/16, 3/08*
U.S. Cl. 213—212 **3 Claims**



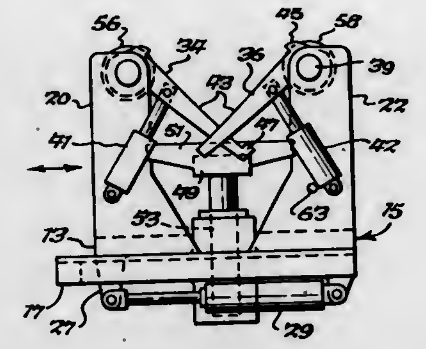
An electrical scheme utilizing circuitry including relays and contacts thereof selectively energized under the control of stepping switches to individually energize solenoid valves throughout a train to perform localized control functions such as car uncoupling operations.

3,724,681
HYDRAULIC CUSHIONING UNIT WITH BOOT TYPE ACCUMULATOR
Steven A. Anderson, Elwood, Ill.; Eugene C. Barker, and Tung Han Yang, both of Munster, Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed March 26, 1971, Ser. No. 128,289
Int. Cl. B61g *9/08, 9/16*
U.S. Cl. 213—43 **5 Claims**



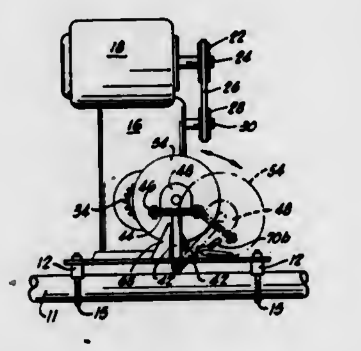
A hydraulic cushioning unit for railway cars includes a cylinder with a piston and piston rod assembly reciprocable therein and which during cushioning operation provides for the flow of fluid between chambers and through an orifice and through the piston rod to a low pressure reservoir. The reservoir or accumulator is a flexible boot type having one end connected to the cylinder and the other end secured to the piston rod. Fluid is directed from the piston rod through a deflector against an inner cylindrical surface of the boot type reservoir. The reservoir is shaped to provide for an optimum in efficiency and wearability.

3,724,682
APPARATUS FOR MANIPULATING A WORKPIECE
John L. Parris, Knoxville, Tenn., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed June 25, 1971, Ser. No. 156,770
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 QG **20 Claims**



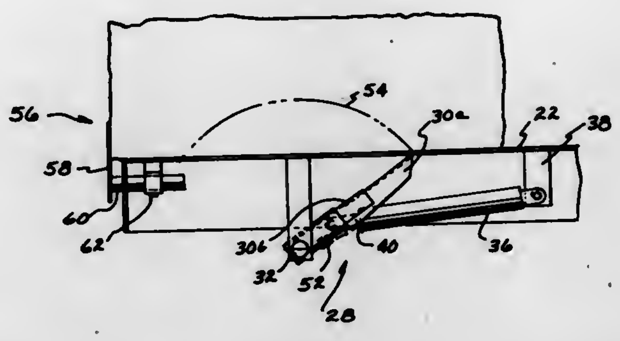
In an apparatus for manipulating workpieces, especially billets of various sizes and shapes, a first frame includes a plurality of arms pivotably mounted for movement about a first axis and a second frame includes a plurality of arms pivotably mounted for movement about a second axis which is substantially parallel to and spaced from the first axis. The second frame is movable toward and away from the first frame so that workpieces of various sizes are accommodated. A supporting surface intermediate the first and second frame which may be raised or lowered is utilized for supporting slabs during turning thereof. At least two rollers are rotatably mounted on each frame for turning cylindrically-shaped workpieces.

3,724,683
APPARATUS FOR LANDING PIPE
Donald R. Boyd, P. O. Box 141, Texola, Okla.
Filed Oct. 1, 1970, Ser. No. 77,127
Int. Cl. E21b *19/14*
U.S. Cl. 214—2.5 **13 Claims**



Apparatus for landing pipe stands during the pulling of a drill string from bore holes, such apparatus comprising a prime mover connected through a kinematic chain to a drive shaft having a drive gear keyed thereto and adapted to be mounted on the monkey board of an oil well derrick. Also adapted to be mounted on the monkey board in proximity to the drive shaft with the gear keyed thereto is a winch assembly which is pivotally mounted for oscillatory movement about a horizontal axis. The winch assembly includes a winch drum which is keyed to a shaft which is rotatably journaled and carries at one end, a gear which is aligned, and adapted to mate, with the drive gear carried by the drive shaft. A cable rope is deadended to the winch. A pivoted stop arm assembly may be used to retain the winch assembly in a position in which the driven gear is in meshing engagement with the drive gear on the drive shaft, and also functions in part as a stop against which the winch assembly rests when it is pivoted to a position of non-engagement with the gear on the drive shaft.

3,724,684
BALE RELOCATOR MECHANISM FOR A BALE WAGON
Gene R. Butler, and Gary L. Sipe, both of Kingsburg, Calif., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Dec. 22, 1971, Ser. No. 210,731
Int. Cl. B65g *57/32*
U.S. Cl. 214—6 B **20 Claims**



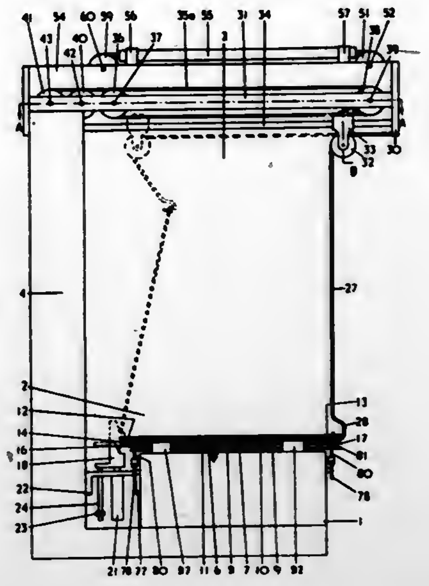
A bale relocator mechanism for engaging and repositioning selected bales on a bale wagon. The bale relocator mechanism of the present invention is disclosed in the form of two species, each species being adapted for employment within a bale wagon having a first receiving table adapted to receive bales and transfer the bales received to a rearwardly disposed transfer table where the bales are accumulated into a tier, at which point the transfer table functions to transfer each tier to a rearwardly disposed load bed to form a stack of side-by-side tiers thereon.

The first species comprises a hydraulically powered finger structure pivotally mounted about a longitudinally extending axis beneath the transfer table of the bale wagon and operative to move through an opening therein for engaging and laterally repositioning an overlying bale. A fence structure is situated along one side of said transfer table in spaced apart relationship to said finger structure to limit the lateral movement of the bale being repositioned.

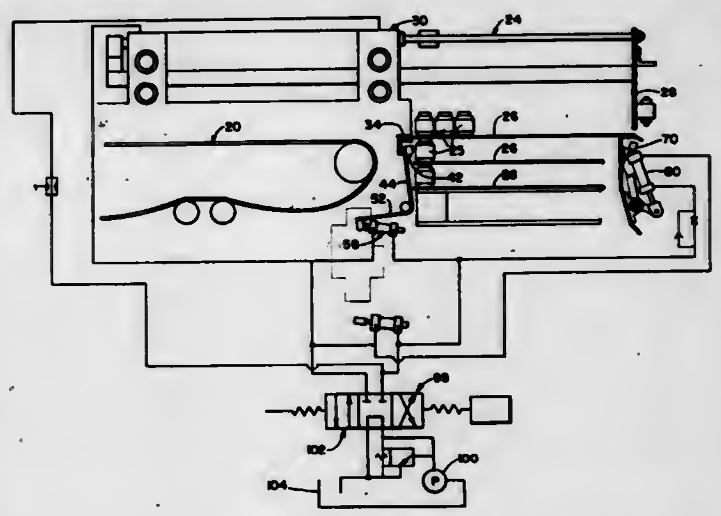
The second species comprises a mechanically actuated finger structure that is associated with the receiving table of the bale wagon. The finger structure of the second species is carried by a laterally extending connecting rod, the fingers of the finger structure being pivotally mounted thereon and aligned for engagement with a series of cams. The connecting rod is moved laterally, causing said fingers to contact said cams and move upwardly engaging and repositioning a bale thereover, by a bell crank engaging a trap door as said receiving table is pivoted upwardly to deposit bales thereon on said transfer table. As with the first species, a fence structure is provided along one side of said transfer table to maintain the outer ends of the bales repositioned within limits.

3,724,685
SHEET HANDLING
Ronald Bevan, Welwyn Garden City, Hertfordshire, England, assignor to Imperial Chemical Industries Limited, London, England
Division of Ser. No. 32,154, April 27, 1970, Pat. No. 3,610,451. This application July 1, 1971, Ser. No. 158,964
Claims priority, application Great Britain, May 7, 1969, 3377/69
Int. Cl. B65g *60/00*
U.S. Cl. 214—8.5 R **6 Claims**

Apparatus and a method for dismantling and reassembling cells e.g., for press loads in which the sheets are pivoted about one side to expose workpieces which are then removed, and fresh workpieces are inserted in their place on lowering of the sheets.



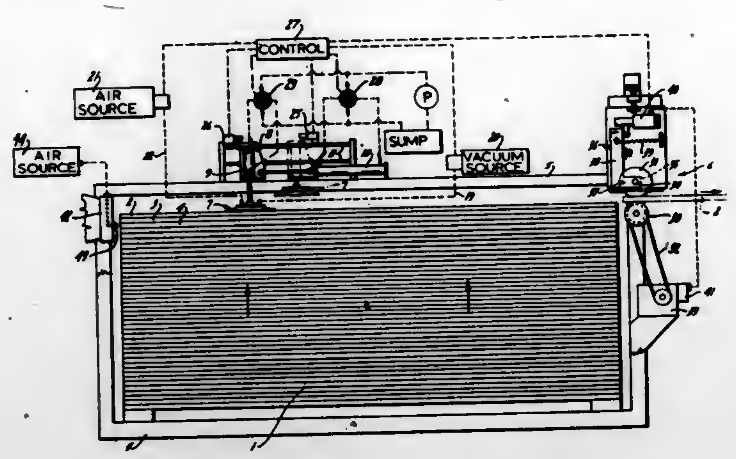
3,724,686
GLASS JAR HANDLING SYSTEM
Lloyd A. Nelson, Fremont, Mich., assignor to Gerber Products Company, Freemont, Mich.
Filed Aug. 23, 1971, Ser. No. 173,887
Int. Cl. B65g *59/02*
U.S. Cl. 214—8.5 A **14 Claims**



A system for use in depalletizing glass jars disposed in groups in a vertical stack wherein the groups of jars are successively moved laterally off the top of the stack and onto a lateral conveyor. The jars are supported on flat panels and a sensor is provided to sense the uppermost panel and to control the elevation of the stack, whereby the elevation will stop when the upper group of jars is aligned with the conveyor. Means is provided to push the jars away from alignment with the sensor so that it will engage the uppermost jar-supporting panel rather than the jars themselves. Means is also provided to push the upper panel laterally to assure that it will be in position to engage the sensor.

3,724,687
PANEL BOARD FEEDING APPARATUS
Carl R. Marschke, and Richard H. Thomas, both of Phillips, Wis., assignors to Marquip, Inc., Phillips, Wis.
Filed March 26, 1971, Ser. No. 128,359
Int. Cl. B65g *59/04*
U.S. Cl. 214—8.5 D **7 Claims**

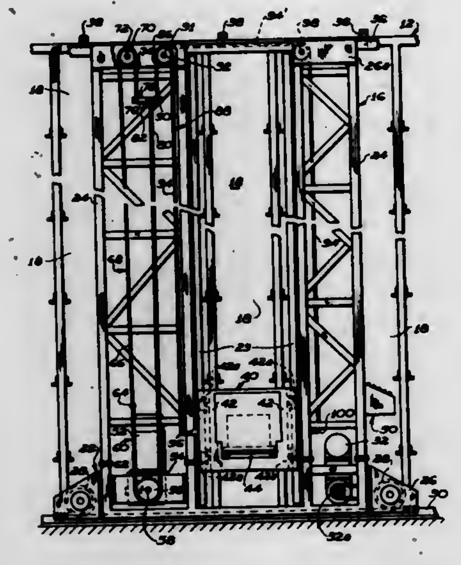
A panel board feeding apparatus wherein a vacuum head having a convex board-engaging surface picks up the top board in a stack, causing the board to flex convexly so that it does not stick to the next adjacent board. The head is supplied with pressurized air as well as vacuum, which breaks any residual vacuum below the top when porous boards are used,



and also sets up vibrations in the stack. The head feeds a board into a nip and, if more than one board is fed, the board drive automatically reverses and kicks them rearwardly where they engage a stop with high impact. The stop also includes an air jet which impinges on the stack edges.

3,724,688
HOISTING MECHANISM FOR AUTOMATIC WAREHOUSING SYSTEM

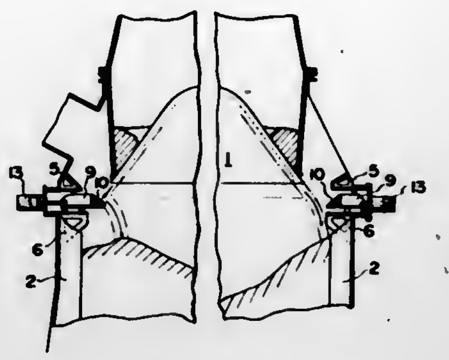
Wayne G. Atwater, Willoughby, Ohio, assignor to The Triax Company, Cleveland, Ohio
Filed April 6, 1971, Ser. No. 131,664
Int. Cl. B65g *47/10*
U.S. Cl. 214—16.4 A 10 Claims



An automatic warehousing system comprising a plurality of load support cubicles for storing loads and a mechanized load carrier comprising a horizontally movable conveyor portion, a vertically movable elevator portion mounted on the conveyor portion and a laterally extensible load handling or extractor portion, mounted on the elevator portion, for inserting loads into and removing loads from selected of the storage cubicles. The lift motor for the elevator portion is mounted adjacent the lower end of the conveyor portion and is coupled to the elevator portion by flexible support means, such as, for instance, roller chain coacting with the lift motor and reeved about idler sprockets mounted on the upper end of the conveyor portion, and then extending downwardly to be anchored to the elevator portion. Automatic tensioning means coacts with the flexible support means for maintaining the flexible support means taut irrespective of the vertical position of the elevator portion with respect to the horizontally movable conveyor portion.

3,724,689
CHARGE DISTRIBUTING APPARATUS FOR BLAST FURNACES

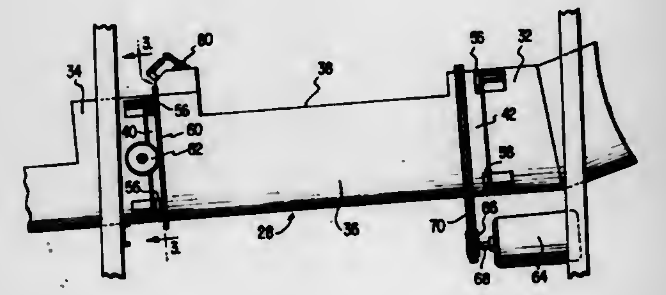
Tsunenori Sugawara, and Jiro Mase, Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed May 18, 1971, Ser. No. 144,537
Claims priority, application Japan, May 22, 1970, 45/43603
Int. Cl. F27b *11/12*
U.S. Cl. 214—36 28 Claims



The charge distributing apparatus for blast furnaces comprises a charge distributing plate which is located below the lower bell and above the surface of the deposited charge and which is slanted at a predetermined angle, a guiding member to guide said distributing plate horizontally which is securely fixed to the blast furnace wall, and a driving system to drive said distributing plate back and forth along said guiding member. The distributing plate of the apparatus facilitates to shifting the position of charge disposal in a blast furnace, so that the surface of the deposited charge will be even.

3,724,690
UNLOADING DEVICE FOR A CAPSULE-TRANSPORT PIPELINE SYSTEM

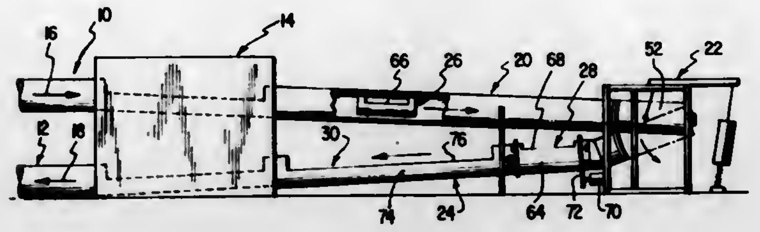
Homer J. Bates, Roswell, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.
Continuation-in-part of Ser. Nos. 856,566, Sept. 10, 1969, abandoned, and Ser. No. 140,071, May 3, 1971. This application Oct. 28, 1971, Ser. No. 193,378
Int. Cl. B65g *67/50, 51/24*
U.S. Cl. 214—52 C 6 Claims



A pipeline transportation system for vehicles in which the motive force is low pressure air traveling at a velocity substantially at which the vehicles are swept along includes an arrangement for returning the vehicles to a transfer duct and, in their return, to be stopped and dumped by inverting and then righting them.

3,724,691
DEVICE TO STOP AND TO CHANGE DIRECTION OF VEHICLES IN A CAPSULE-TRANSPORT PIPELINE

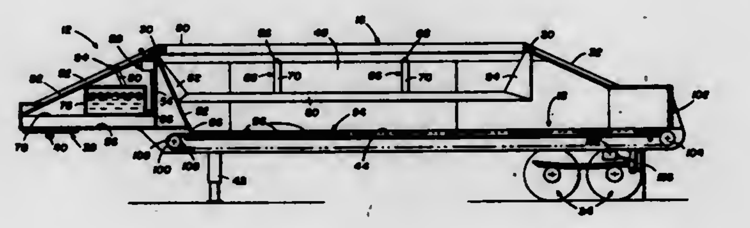
Marion R. Carstens, Atlanta, and Homer J. Bates, Roswell, both of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.
Continuation-in-part of Ser. Nos. 856,566, Sept. 10, 1969, abandoned, and Ser. No. 140,071, May 4, 1971. This application Oct. 28, 1971, Ser. No. 193,377
Int. Cl. B65g *67/50, 51/24*
U.S. Cl. 214—52 C 18 Claims



A pipeline transportation system for vehicles in which the motive force is low pressure air traveling at a velocity substantially at which the vehicles are swept along includes a first pipeline which leads to a transfer duct and a second pipeline which leads away from the transfer duct. A guiding pipeline extends beyond the transfer duct as a continuation or extension of that pipeline in which air flows into the transfer duct and an extension of the other pipeline also leads from the transfer duct, the two guide extensions having free end portions disposed in close adjacency to each other. A dead-end chamber is swingably mounted for movement between positions aligned with the respective free end portions of the two guide extensions and in the return guide extension there is an unloading station whereat the vehicle may be inverted and then righted and beyond this there is a loading station so that the vehicle can be loaded, returned to the transfer duct and then conveyed to some distant region through the other pipeline.

3,724,692
MATERIAL DELIVERY SYSTEM

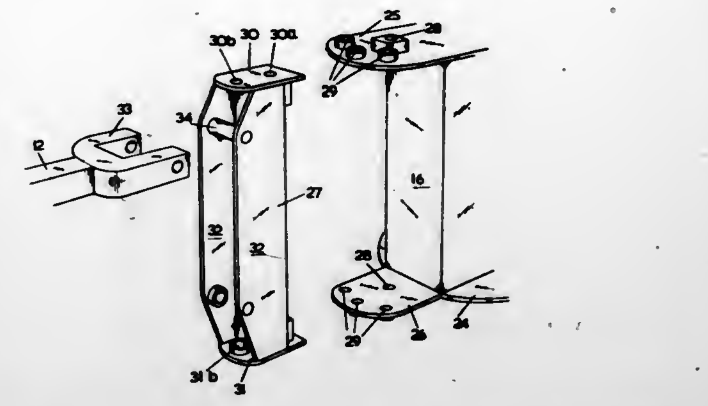
John H. Holland, Norman, Okla., assignor to Arkansas Rock and Gravel Co., Murfreesboro, Ark.
Division of Ser. No. 852,345, Aug. 22, 1969, Pat. No. 3,647,096. This application Oct. 6, 1971, Ser. No. 187,161
Int. Cl. B60p *1/38*
U.S. Cl. 214—83.36 7 Claims



A delivery system for hot asphalt includes a plurality of semi-trailers. Each trailer includes a V-shaped hopper having an asphalt supporting beam extending longitudinally through it. A tube extends around the hopper for use in spraying lubricating oil into the hopper prior to the loading of asphalt. Each trailer further includes a conveyor for unloading asphalt from the hopper into a paving machine. The conveyor is driven by a hydraulic motor that is controlled by a valve. The valve is mounted in the trailer for activation by a prod mounted on the paving machine so that the operation of the conveyor is controlled from the paving machine.

3,724,693
EXCAVATING AND/OR LOADING DEVICES

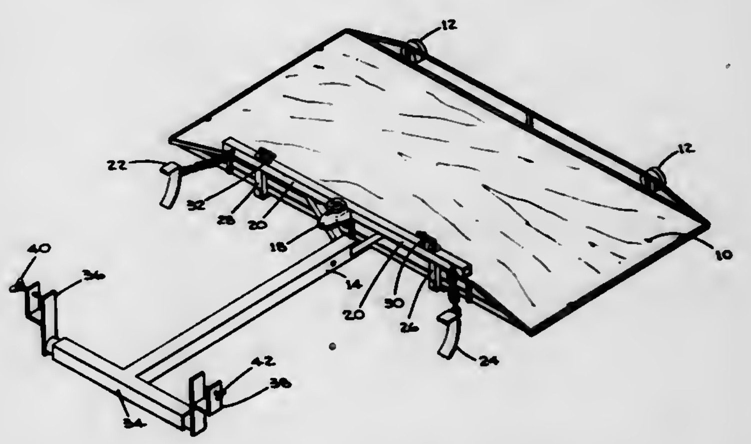
Richard Smalley, Sleaford, England, assignor to Richard Smalley (Engineering) Limited, Osbournby, Sleaford, England
Filed Jan. 14, 1971, Ser. No. 106,372
Claims priority, application Great Britain, Aug. 1, 1970, 37,259/70
Int. Cl. E02f *3/04*
U.S. Cl. 214—138 C 4 Claims



A load-moving device, particularly an excavator, having a turntable swivellable about a vertical axis and which carries a jib capable, of being pivotally raised and lowered, a load-moving appliance being mounted on the jib, the jib being pivotally mounted on a support member, which, in turn, is pivotally mounted on the turntable about a vertical axis offset from the swivel axis and is capable of being locked in a selected one of a plurality of angular positions. The jib can therefore, be positioned to extend generally tangentially of the turntable, when desired, thereby enabling the device to operate close to a wall or other obstacle.

3,724,694
WHEEL-LESS TRAILER

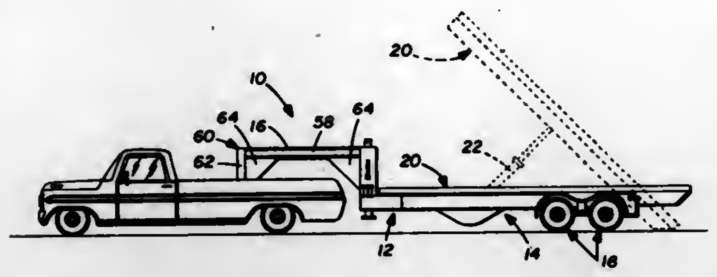
Lynn E. Wilson, 724 Pine St., N., North Hudson, Wis.
Filed Aug. 30, 1971, Ser. No. 175,972
Int. Cl. B06r *9/00*
U.S. Cl. 214—450 5 Claims



The invention relates to a load carrying attachment designed for mounting on the rear of a motor vehicle in a cantilevered fashion, supported at one point by a standard trailer hitch, preferably having ball hitch attachment and at points located underneath the vehicle preferably at opposite sides of the spring, there being a centrally pivotable load carrying platform which can be tilted to either side to permit loading and unloading of the device, there being a lateral supporting means affixed to the supporting frame and to points at opposite sides of the rear of the vehicle bumper, the opposite sides of the platform being releasably attached to the supporting means to permit tilting of the platform about the central pivot.

3,724,695
SELF-CONTAINED GOOSENECK DUMPING TRAILER

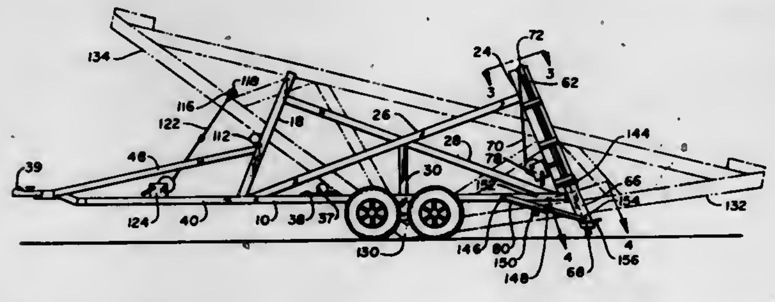
Robert S. Taylor, 2526 Cartwright, Dallas, Tex.
Filed April 21, 1971, Ser. No. 135,936
Int. Cl. B60p *1/28*
U.S. Cl. 214—505 9 Claims



A trailer includes a frame, wheel assemblies for supporting the frame on a surface, a gooseneck assembly mounted at the front of the frame, and a bed pivotally attached to the rear of the frame. Part of the bed extends rearwardly beyond the rear of the frame, and hydraulic cylinders are provided for pivoting the bed between a horizontal position and an inclined position in which the rear of the bed engages the surface. A hydraulic winch is mounted on the frame and a cable extends from the winch first rearwardly to a pulley mounted at the rear of the frame, then forwardly to a pulley mounted at the front of the bed and finally rearwardly along the top of the bed. An engine and a hydraulic pump are mounted within the gooseneck assembly and function to supply pressurized hydraulic fluid for operating the cylinders and the winch.

3,724,696
TRUSS TRANSPORTING BODY

Charles G. Leeper, 1021 Wataguast, Kingsport, Tenn.
Filed July 1, 1971, Ser. No. 158,739
Int. Cl. B60p *1/54*
U.S. Cl. 214—512 8 Claims

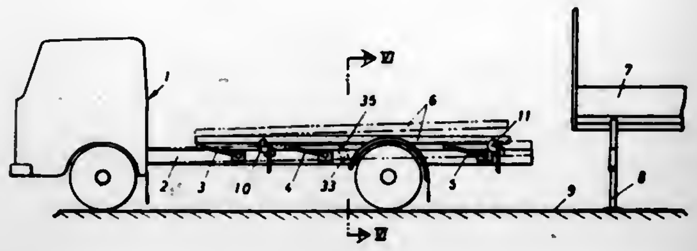


A truss transporting body is disclosed which is essentially self- loading and unloading and comprises a wheeled bed of metal framing or the like wherein a substantial portion of the bed is framed to provide an open bay at the rear thereof to longitudinally accommodate a truss bundle, and wherein a self-loading and unloading structure is provided at the rear of the sides of the bed, said structure being a movable lift bar which is insertable into guides after the inverted truss bundle has been tipped forward on its apex, and means are provided for elevating the lift bar, such as pulley means, to raise the truss bundle off of the ground to a transportable position.

3,724,697
TRUCK HAVING A VERTICALLY DISPLACEABLE CARRYING FRAME

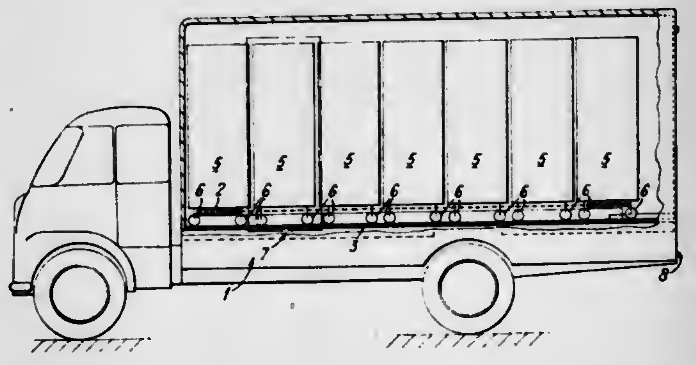
Carl-Eric Arvidsson, Laholm, Sweden, assignor to Lagaholm AB, Laholm, Sweden
Filed June 1, 1971, Ser. No. 148,783
Claims priority, application Sweden, June 15, 1970, 8288/70
Int. Cl. B60p *1/64*
U.S. Cl. 214—515 5 Claims

An arrangement in loading trucks having a support frame which is movable relatively the truck chassis, and a detachable loading platform supported on said frame. The invention comprises traction means by means of which the support frame is connected to the truck chassis in such a way that the springs of the rear axle are compressed at the raising of the support frame, resulting in levelling of the truck chassis at the rear, and also locking means ensuring that the compression is retained independently of the movements of the support frame, and means for releasing such locking when the support frame is in an upper position.



3,724,698
GOODS VEHICLES

William A. Weston, Crawford, England, assignor to N. V. Foco, Nederland, Bedum, Netherlands
Filed Oct. 12, 1970, Ser. No. 79,802
Claims priority, application Great Britain, April 27, 1967, 19,366/67; May 26, 1967, 24,498/67; Nov. 3, 1967, 50,061/67; March 27, 1968, 14,831/68. The portion of the term of this patent subsequent to Feb. 2, 1988, has been disclaimed.
Int. Cl. B60p *1/44*
U.S. Cl. 214—518 12 Claims

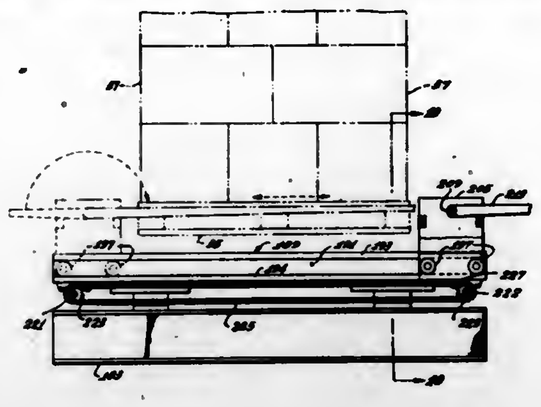


The base of a load-carrying system supports a horizontal conveyor having an endless member with side-by-side runs, and having wheeled load receptacles running on the base, and the sides of the receptacles adjacent the endless member directly overlie the latter, so that substantially the whole load space is utilized in a direction transverse to the runs.

3,724,699
HORIZONTALLY PIVOTED FORKLIFT APPARATUS

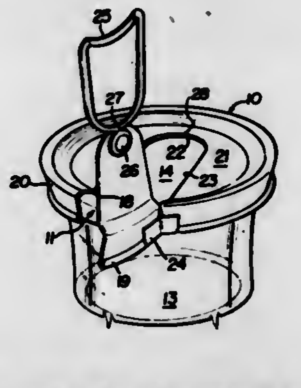
David C. Weston, Culver City, Calif., assignor to Interstate Restaurant Supply Company, Inc., Los Angeles, Calif.
Division of Ser. No. 823,762, May 12, 1969, Pat. No. 3,606,039. This application July 30, 1971, Ser. No. 167,602
Int. Cl. B66f *9/14*
U.S. Cl. 214—730 9 Claims

Fork lift apparatus for depositing and retrieving pallets on opposite sides of a narrow aisle and including a fork frame carried on support means movable longitudinally in the aisle and formed with transversely extending truck tracks. Transversely shiftable trucks are mounted on the tracks and have one end of elongated tine means pivotably connected therewith. Fork flip means is provided for selectively rotating the tines through 180° to extend to one side or the other of the fork frame.



3,724,700
CONVENIENCE OPENING CLOSURE

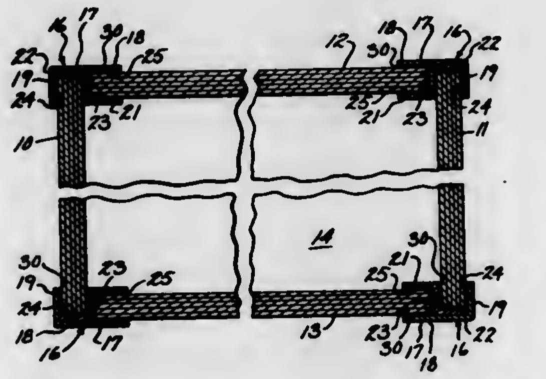
Vernon C. Heffran, Perrysburg, Ohio, assignor to Owens-Illinois Inc., Toledo, Ohio
Filed Feb. 22, 1971, Ser. No. 117,426
Int. Cl. B65d *43/02*
U.S. Cl. 215—46 A 10 Claims



The invention disclosed is related to scored tear strips in convenience type ("Easy-open") bottle closures. To prevent complete tear out of the tear strip on removal of the cap, the present invention halts the tearing of one of the side scores so that the closure and tear strip remain in one piece and are removable from the container as a unit. In the path of one of the legs of the tear strip is an obstruction, i.e., a folded tab integral with the skirt, which stops the tearing action in the one leg while the other opposite leg continues to tear through the edge of the skirt.

3,724,701
WOODEN SHIPPING CONTAINERS

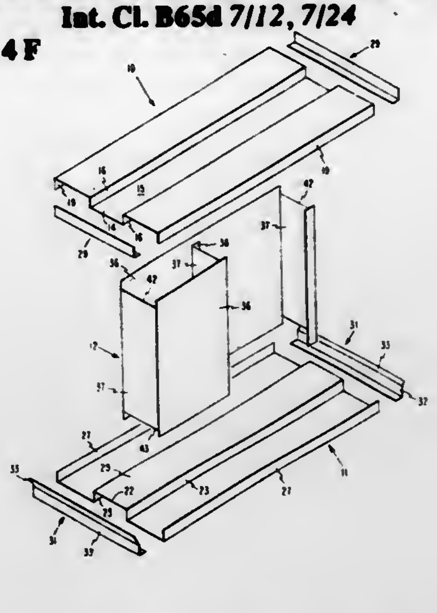
August G. Barkow, 2230 South 43rd Street, Milwaukee, Wis.
Filed Oct. 2, 1970, Ser. No. 77,665
Int. Cl. B65d *9/34*
U.S. Cl. 217—65 1 Claim



A wooden shipping container has the edges of its walls adhesively secured in channels formed in metal corner pieces, each corner piece extending substantially the length of the edges received therein and presenting a pair of channels which face at an angle to one another, at least one of said channels having a reinforced base in certain embodiments.

3,724,702
EQUIPMENT ENCLOSURE

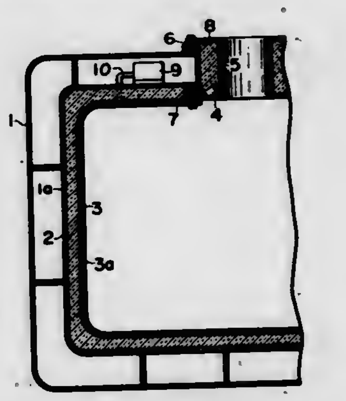
Robert C. Kay, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed March 2, 1971, Ser. No. 120,238
Int. Cl. B65d *7/12*, *7/24*
U.S. Cl. 220—4 F 6 Claims



This invention provides an enclosure in which the principle structural support is provided by a pair of generally horizontal sheet metal planes separated by a central column with each of the members being formed of a continuous piece of sheet metal. The central column cooperates with the top and bottom structural members, not only to support, but to provide alignment and gauging functions and may further simultaneously provide for shielding, compartmentalization and ducting functions. The enclosure is completed by top and side covers supported from the principle structural elements.

3,724,703
LOW TEMPERATURE LIQUEFIED GAS STORAGE TANK AND TANKER

Katsuro Yamamoto, Tokyo, Japan, assignor to Bridestone Liquefied Gas Company Limited, Tokyo, Japan
Filed Oct. 28, 1971, Ser. No. 193,344
Claims priority, application Japan, Oct. 31, 1970, 45/95630
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 LG 9 Claims

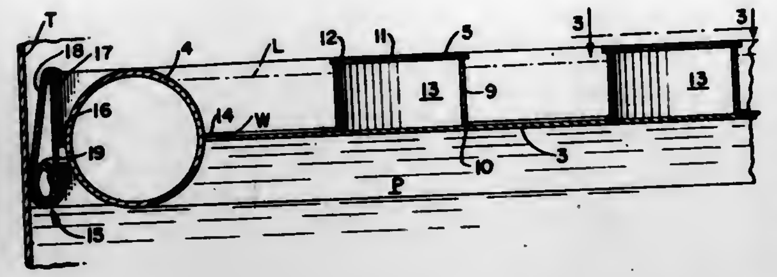


A storage container constructed either as a tank or a tanker for storage of low-temperature liquids such as liquefied gases. The container is constructed as an outer vessel with a thermal insulation lining and an inner membrane structure consisting of two thin metallic membrane tanks one interiorly of the other. The innermost tank or vessel is thinner than the other inner tank and maintains the fluid-tightness of the container. A vacuum pump applies a vacuum to the space between the two inner tanks to detect leaks and maintains the innermost vessel from collapsing in a non-loaded condition.

3,724,704
FLOATING ROOF HAVING UNIFORMLY DISTRIBUTED BUOYANCY MEANS

Norman W. Edwards, Sewickley; Vincent H. Derr, Coraopolis, and Richard A. Mattson, Sewickley, all of Pa., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed April 13, 1971, Ser. No. 133,557
Int. Cl. B65d *87/18*
U.S. Cl. 220—26 R **25 Claims**

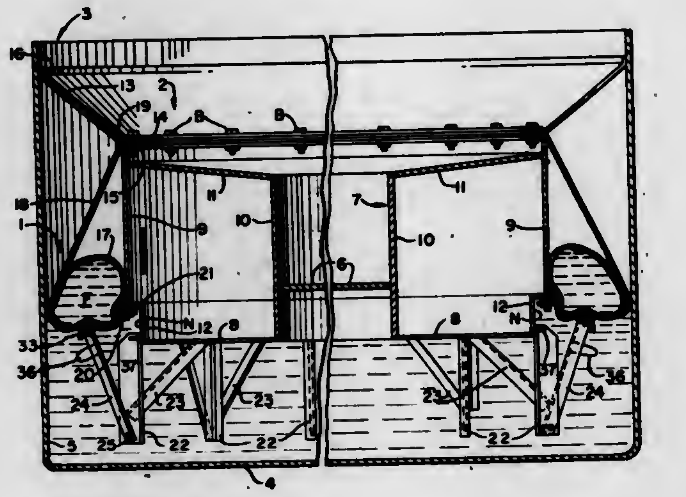


A Floating roof for covering liquid products stored in storage tanks or the like wherein the roof has an upper surface and a lower surface, with the lower surface in substantially continuous contact with the stored product. Buoyancy means are connected to the floating roof and are substantially uniformly distributed with respect thereto to float the roof on the stored product in the event the stored product leaks onto the surface of the floating roof, and to prevent sinking thereof beyond a predetermined amount and to minimize uneven settling of the roof in the stored product.

3,724,705
EXPANDING TUBE SEAL FOR FLOATING ROOF STRUCTURES

Dean K. McKibbin, Warren, Pa., assignor to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed May 4, 1971, Ser. No. 140,055
Int. Cl. B65d *87/18*
U.S. Cl. 220—26 R **25 Claims**

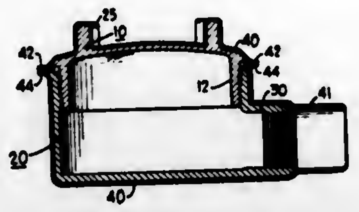


An expanding tube seal for floating roof structures wherein a tube is enclosed within and protected by a scuff band supporting the tube from the roof structure, said expanding tube seal being capable of sealing the rim space between the floating roof structure and the wall of a storage tank or the like within predetermined limits of maximum and minimum rim spaces, and mechanical means engaging with the undersurface of said tube seal to prevent excessive sag of said tube and thereby increase the horizontal reach of said tube seal.

3,724,706
EXPLOSION PROOF JUNCTION BOX

Fred H. Slocum, Pittsburgh, Pa., assignor to Robroy Industries, Verona, Pa.

Filed Aug. 30, 1971, Ser. No. 175,916
Int. Cl. Ho2g *3/08*; **B65d** *51/16*; **H02g** *3/18*
U.S. Cl. 220—3.8 **7 Claims**

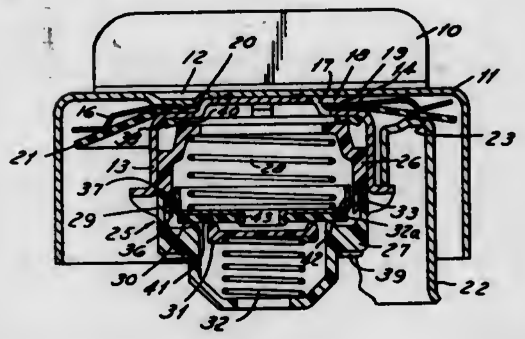


An explosion-proof and corrosion resistant junction box for electrical connection junctures and the like including a cap portion having a downwardly extending external screw portion, and a body portion having an internal screw portion. Both cap and body portions have a resilient, moisture resistant, polymeric coating bonded to the metal substrate. The cap and base portion coatings terminate in downward and upwardly extending relatively flexible flanges around their respective peripheries. The respective coated portions are adapted to threadably engage whereby the flange portions come into contact to provide an effective one-way vapor seal, and whereby the screw portions provide a path for gases from within to without the junction box. Hot gases under pressure within the junction box may pass along the path in said screw portions and through said one-way vapor seal, and, in so doing, become cooled to thereby prevent ignition or explosion of atmospheric gases near the junction box. The flange portions provide an effective moisture and vapor seal whereby corrosive vapors are prevented from corroding the outside surfaces or entering the junction box.

3,724,707
PRESSURE-VACUUM RELIEF FUEL FILLER CAP

Ronald R. Burgess, Flushing, Mich., assignor to F & E Manufacturing Company, Flint, Mich.

Filed May 5, 1971, Ser. No. 140,422
Int. Cl. B65d *51/16*
U.S. Cl. 220—44 R **11 Claims**



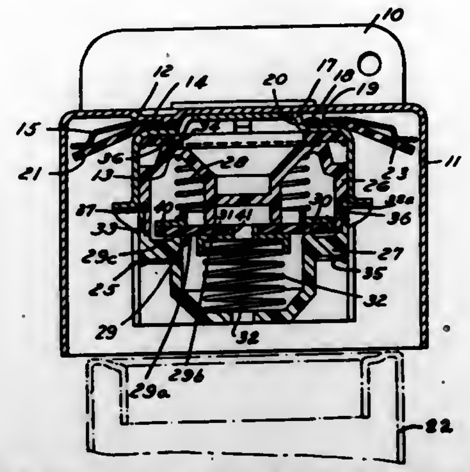
A pressure-vacuum relief fuel filler cap assembly comprising a cover, a locking cup fixed to said cover, and a valve assembly fixed on said locking cup. The valve assembly comprises interfitting upper and lower valve body members made of plastic. A pressure relief valve and associated seat and a vacuum relief valve and associated seat are provided within the valve assembly.

3,724,708
PRESSURE-VACUUM RELIEF FUEL FILLER CAP

Ronald R. Burgess, Flushing, Mich., assignor to F & E Manufacturing Company, Flint, Mich.

Filed Aug. 25, 1971, Ser. No. 174,667
Int. Cl. B65d *51/16*
U.S. Cl. 220—44 R **12 Claims**

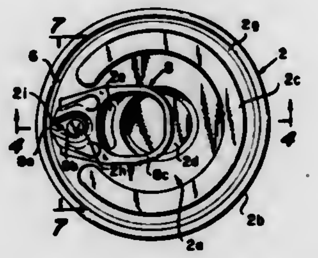
A pressure-vacuum relief fuel filler cap assembly comprising a cover, a locking cup fixed to said cover, and a valve assembly fixed on said locking cup. The valve assembly comprises interfitting upper and lower valve body members made of plastic. A pressure relief valve and associated seat and a vacuum relief valve and associated seat are provided within the valve assembly. The pressure relief valve and vacuum relief valve include a common valve member.



3,724,709
PULL TAB ARRANGEMENT FOR AN EASY OPEN END

Teddy M. Westphal, Chesterfield, Mo., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 19, 1972, Ser. No. 219,013
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 **5 Claims**

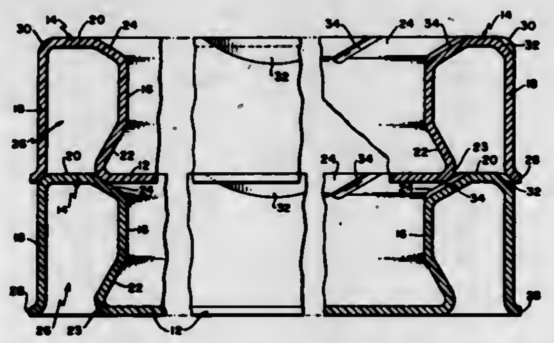


An improved pull tab arrangement for an easy open end closure member, characterized by the provision of improved pull tab positioning means for positively maintaining the pull tab in a desired orientation relative to the panel-defining scoreline not only during the initial opening period when the pull tab is listed to effect rupturing of the scoreline, but also during the subsequent opening period when a pulling force is applied to the pull tab to tear the removable panel from the end member along the scoreline. To this end, the retaining means are arranged solely between the free extremity of the pull tab nose portion and the rivet means that secures the tab to the end closure member.

3,724,710
CONTAINER LID

Paul Davis, Swampscott, Mass., assigner to Sweetheart Plastics Inc., Wilmington, Md.

Filed Nov. 5, 1970, Ser. No. 87,090
Int. Cl. B65d *43/10, 21/00*
U.S. Cl. 220—60 R **2 Claims**

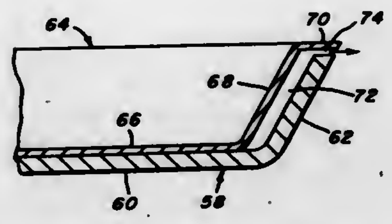


A plastic container lid is adapted for use in high speed automated packing techniques in which a number of lids are loaded in stacked configuration and are drawn from the bottom of the stack in succession to cap successively presented containers. The region of each lid which engages the next uppermost adjacent lid in the stack is provided with specially formed surfaces to communicate the region between the stacked lids with the atmosphere. This avoids any tendency for a plurality of lids to stick together when drawn from the stack.

3,724,711
COOKING UTENSIL ASSEMBLY

Daniel J. George, Lower Burrell, and William C. Patterson, Turtle Creek, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 20, 1971, Ser. No. 173,655
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 R **8 Claims**

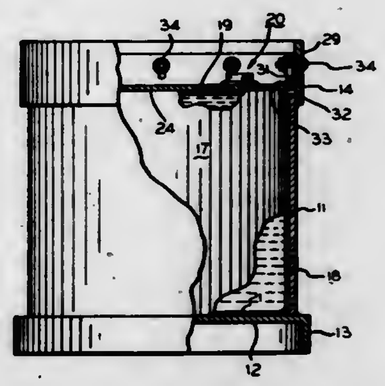


A cooking utensil assembly including an outer metal container having a continuous base portion and a continuous generally upwardly directed annular sidewall. An inner metal container secured within the outer container and having a continuous bottom wall and a generally upwardly directed annular lateral wall. At least one venting passageway defined between an outwardly open venting channel positioned in the inner container lateral wall and the adjacent portion of the outer container sidewall. Venting conduits may be provided between radially disposed downwardly open venting channels in the inner container bottom wall and the underlying adjacent outer container base portion.

3,724,712
CONTAINER FOR BULK SHIPMENT OF CORROSIVE LIQUIDS OR THE LIKE

Anthony J. Starr, and Gerald D. Spence, both of Wilmington, Del., assignors to Container Corporation of America, Chicago, Ill.

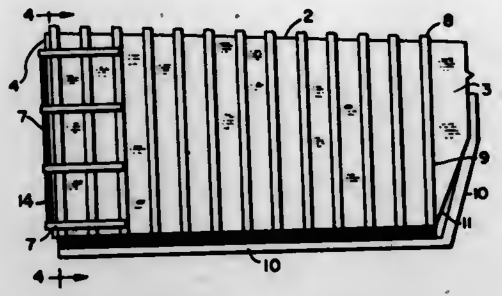
Filed Feb. 19, 1971, Ser. No. 117,007
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 R **3 Claims**



A container for bulk shipment is comprised of an outer rigid shell with an inner flexible hollow container liner resistant to most corrosive liquids. The liner is composed of a plastomer such as low density polyethylene or other thermoplastic having the property of cold flow when loaded, as well as compressibility under loads. The liner is provided with a filler neck and closure, and when empty it somewhat loosely fills the shell. As the liner is loaded it conforms to the inside of the shell both by elastic and plastic deformation. The top of the shell is provided with a plurality of apertures having a plurality of fastening elements extending therethrough in fastening engagement with a locking member disposed atop a shell closure resting on the loaded elastomer liner. The locking member has apertures aligned with the apertures in the shell, and the fastening members extend through both sets of apertures. One set of such apertures is elongated to provide for movement of the shell closure with the liner before the fastening means is secured. The shell closure is provided with structure for securing the same to the filler neck of the container liner, so that the liner and the shell closure may move together within the outer shell as the container liner is filled. After filling, the shell closure is secured to the locking member by the fastening elements to make a rigid structure with the filled liner secured in place.

3,724,713
MATERIAL DISPOSAL ASSEMBLY

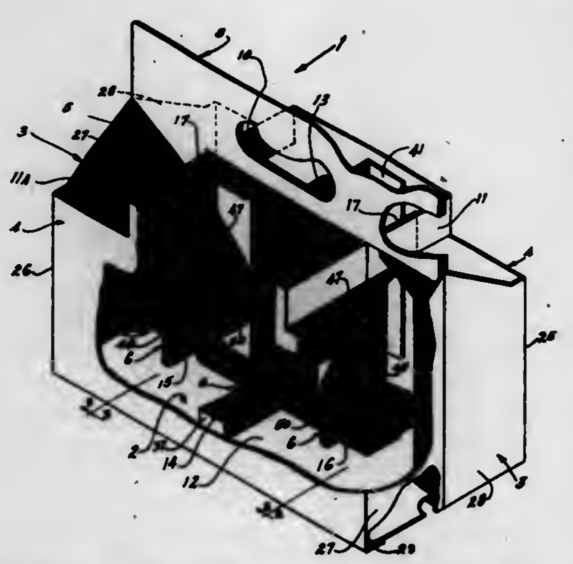
Harry Coren, 1444 McKinley Street, Philadelphia, Pa.
Filed Aug. 31, 1970, Ser. No. 68,430
Int. Cl. B65d *7/44, 87/24*
U.S. Cl. 220—71 **3 Claims**



A material disposal assembly to store compacted material in a high density, easily transportable system. The assembly forms a totally enclosed chamber with provision for insertion of the material. Compression of the refuse or material within the unit is aided by the declination and tapering of the enclosing walls in a longitudinal direction. Tapering of the side walls in an upward and outward direction further provides for full utilization of the enclosed chamber thereby providing a high unit density of material within the allowable chamber volume. The assembly further includes provisions for attachment to a moveable vehicle for transportation of the compacted material to a remote site.

3,724,714
BEVERAGE BOTTLE CARRIER

William H. Wright, Cincinnati, Ohio, assignor to The C. W. Zumbrel Company, Cincinnati, Ohio
Filed April 28, 1971, Ser. No. 138,050
Int. Cl. B65d *75/00*
U.S. Cl. 220—113 **7 Claims**

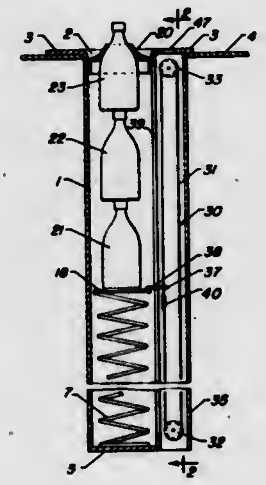


A bottle carrier formed from a one-piece paperboard sheet blank in which the bottles are segregated and confined in individual cells to prevent them from contacting one another during transport and handling. The carrier, in general, comprises an open container having a longitudinal centralized partition, rising from its bottom and including an upstanding hand grip portion. The carrier body or container, in which the bottles are confined, includes a central toggle separator which subdivides and reinforces the carrier transversely. Transverse straps extend from opposite sides of the longitudinal partition outwardly to the side walls, with cantilever separators connected to the straps.

The carrier may be furnished in assembled flat condition, the several components being joined by adhesive or the like, with the side walls folded inwardly against the longitudinal partition and with the transverse components folded between the longitudinal partition and side walls for compactness during shipment. Upon assembly, the toggle separator, transverse straps and cantilever separators hingedly swing to the right angular position as the side walls separate, thereby completing the erection of the carrier, such that the carrier is in a condition to be loaded with the bottles for use in handling and transport.

3,724,715
DISPENSER WITH METERING SYSTEM

Nicholas A. Auriemma, Miami, Fla., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Sept. 24, 1970, Ser. No. 75,016
Int. Cl. B65g *1/16*
U.S. Cl. 221—4 **3 Claims**

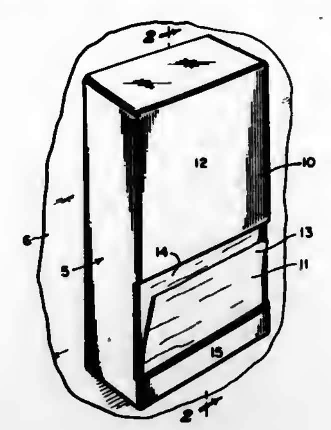


A dispenser for storing and dispensing a plurality of stacked articles having a metering system for determining the amount of articles remaining within the dispenser. The dispenser includes a tubular member having an open end and a spring means which urges the articles through the open end. A stopping means temporarily prevents the articles from passing through the open end and permits the removal of the uppermost article. A movable indexed tape means connects to the movable end portion of the spring means, its movement being in direct relationship to the movement of the end portion of the spring means. A reference means is located adjacent a portion of the indexed tape means to gauge the position of the indexed tape means and thus to gauge the amount of stacked articles remaining within the tubular member.

3,724,716
BAG DISPENSER

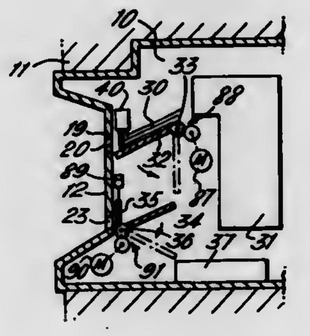
William V. Baraconi, and Peter J. LaFranca, both of Rockford, Ill., assignors to William V. Baraconi, Rockford, Ill.
Filed Feb. 24, 1971, Ser. No. 118,421
Int. Cl. A47k *10/24*
U.S. Cl. 221—47 **2 Claims**

The generally rectangular case, in which the folded bags are placed with their folded bottom portions exposed in a generally rectangular opening in the lower portion of the front wall of the case, is detachably secured to a back plate that is fastened to the wall or any other suitable support. The back plate fits inside the open back of the case and has a lug at one end entered in a slot in the abutting end wall of the case, while a wedge shaped catch projection on the other end wall of the case is engaged over the adjacent end of the back plate, the connections at both ends being held intact under light balanced spring pressure by virtue of the inwardly arched end walls of the case bearing against the opposite ends of the back plate when the case is assembled thereon.



3,724,717
ARTICLE DISPENSING WHICH ARRANGES ARTICLES SO THAT SEVERAL MAY BE VIEWED AT ONE TIME FOR SIMULTANEOUS APPROVAL OF THE OPERATOR

Hideyuki Goto, Osaka, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan
Filed May 14, 1971, Ser. No. 143,491
Claims priority, application Japan, May 27, 1970, 45/45817
Int. Cl. G07f *7/02*
U.S. Cl. 221—155 **13 Claims**

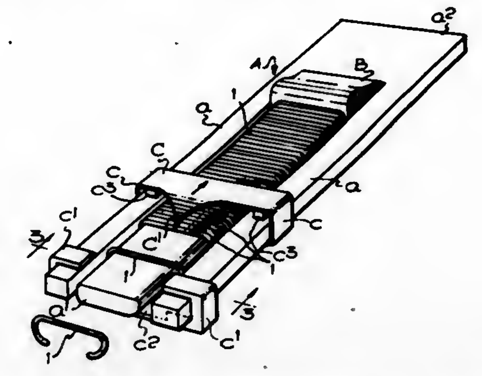


Apparatus for dispensing articles such as bills or envelopes containing money or other articles, wherein the articles to be dispensed are temporarily positioned inside a window formed in the front panel of the apparatus so that they can be looked at and checked from outside for confirmation by the user of the apparatus before they are dispensed.

3,724,718
DEVICES FOR HOLDING TRAVELLERS FOR USE ON RINGS OF RING SPINNING, TWISTING, DOUBLING AND LIKE FRAMES

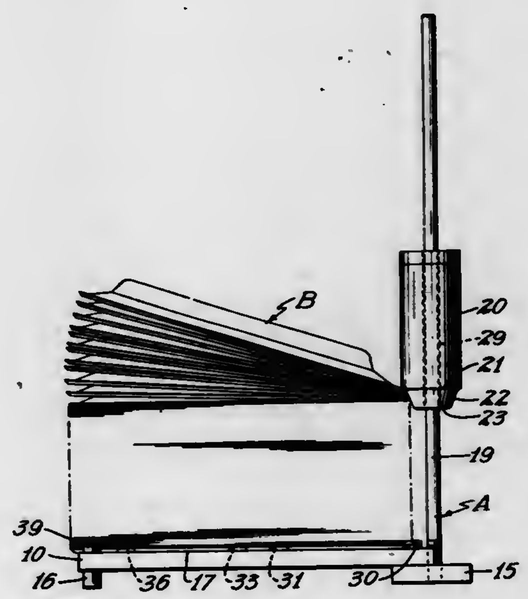
William MacArthur Gillies, Glasgow, Scotland, assignor to Eadie Bros. & Company Limited, Paisley, Scotland
Filed Feb. 7, 1972, Ser. No. 223,943
Int. Cl. B65h *3/00*
U.S. Cl. 221—267 **3 Claims**

A device for storage and dispensing travellers for use on the rings of ring spinning, twisting and doubling frames comprises and E shaped frame having two outer legs and a central leg to receive the travellers, a yieldable pointer and pointer body of channel shape slidably mounted on the outer legs to dispense travellers one at a time as the pointer is moved over the travellers or as the travellers are pushed under the pointer by a push slide channel shaped stops being provided on the outer legs adjacent their free ends to limit the movement of the slide body.



3,724,719
PLATE DISPENSER

Joseph P. Engler, St. Paul, and Glen E. Paulsen, Minneapolis, both of Minn., assignors to T. O. Plastics, Inc., Minneapolis, Minn.
Filed Feb. 16, 1971, Ser. No. 115,243
Int. Cl. A47f *1/06*
U.S. Cl. 221—279 **10 Claims**

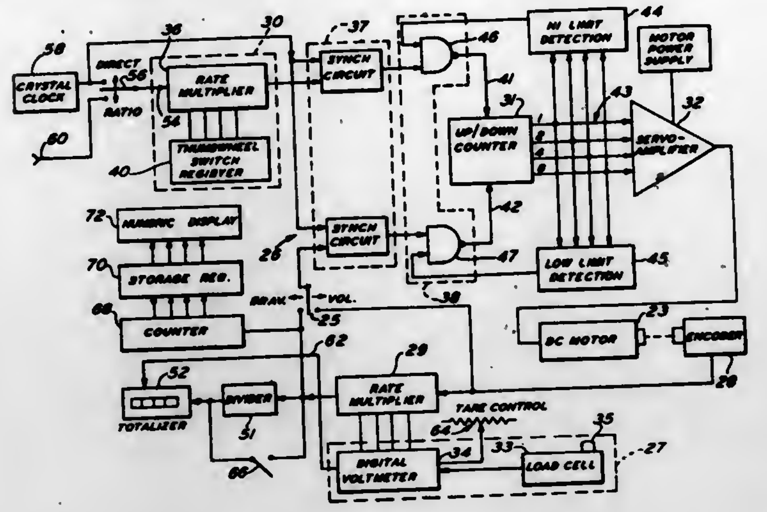


A plate dispenser for nested stacked concave-convex plates acts to position the uppermost inverted plates in position where they can be individually grapsed and removed. A standard extends upwardly along the stack of inverted plates and slidably supports a weight designed to apply downward and inward pressure to the periphery of the stack, causing the diametrically opposed areas of the uppermost plates to fan out so as to be accessible for removal from the stack.

3,724,720
DIGITAL MASS FLOW CONTROL SYSTEM

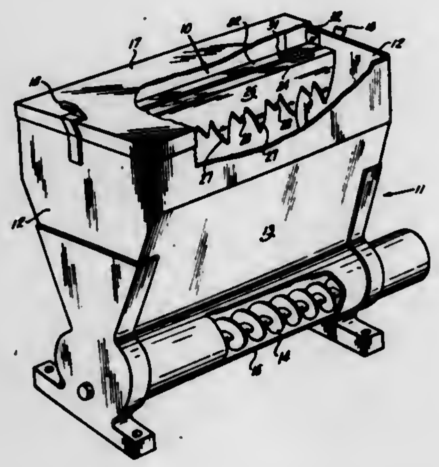
Kenneth W. Bullivant, Glassboro, N.J., assignor to K-Tron Corporation, Glassboro, N.J.
Filed Aug. 5, 1971, Ser. No. 169,398
Int. Cl. G01g *11/12*
U.S. Cl. 222—55 **25 Claims**

The throughput of a conveyor belt is controlled by a motor whose speed is established by the instantaneous state of an up/down counter. The counter is incremented upwardly by setpoint pulses representative of the desired mass flow rate, and downwardly by feedback pulses from a rate multiplier representative of the actual mass flow rate. When the actual mass flow rate is equal to the setpoint flow rate, the average number of setpoint pulses will equal the average number of feedback pulses with the result that the state of the counter will be stable with time. Speed control means for the motor maintains the belt speed at a level dependent upon the state of the counter. A variation between the actual and desired mass flow rates is manifested by a change in the average number of feedback pulses which results in a change in the state of the counter. The resultant change in the motor speed and hence the belt speed restores the average number of feedback pulses to equality with the setpoint pulses thus restoring stability to the counter and restoring the actual mass flow rate to the setpoint rate.



3,724,721
SACK CUTTING ATTACHMENT FOR A MATERIAL RECEIVING HOPPER

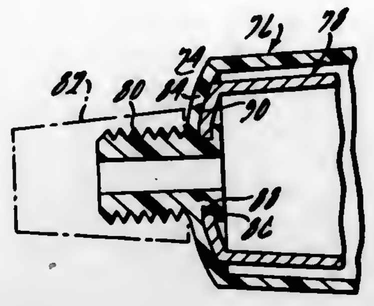
Floyd A. Barr, Route 1, Kellogg, Iowa
Filed April 7, 1971, Ser. No. 131,939
Int. Cl. B67b *7/28*
U.S. Cl. 222—83.5 **1 Claim**



The attachment comprises a cutting member formed along one side with a series of alternately arranged large and small teeth or serrations. The apex portions of adjacent large teeth are inclined upwardly and outwardly in opposite directions laterally of the cutting member. With the cutting member supported between opposite side walls of a hopper and the serrations projected upwardly from the hopper, a sack, with the transverse dimension thereof extended longitudinally of the cutting member is dropped onto the cutting member, whereby the underside of the sack is cut transversely. The opposite ends of the sack are then manually grasped and moved upwardly and inwardly toward each other to empty the contents thereof into the hopper.

3,724,722
CONTAINER CONSTRUCTION

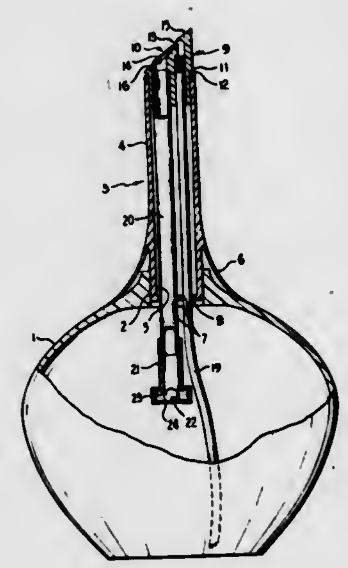
Frank Ballo, 12442 Sidonie, Warren, Mich.
Filed June 3, 1971, Ser. No. 149,547
Int. Cl. B65d *35/56*
U.S. Cl. 222—105 **2 Claims**



A container for toothpaste and other substances having a permanently deformable inside dispenser for containing the substance, a resiliently deformable surrounding housing which protects the dispenser, a nozzle on the dispenser or the housing which is adapted to mate with a cap, and a portion on each of the housing and the dispenser which is securely engaged with the other portion for positively restraining relative motion between the housing and dispenser independently of the cap.

3,724,723
SPRAY DEVICES FOR HAIR LACQUER

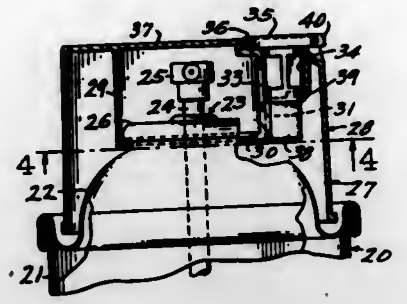
Antony Slavinski, 5 Avondale Drive, Holcombe Brook, Bury, England
Filed July 24, 1970, Ser. No. 58,073
Int. Cl. B67d *1/16*
U.S. Cl. 222—110 **1 Claim**



A squeeze bottle for lacquer includes a spray head having an upper sloping face, stepped to form a vertical shoulder, and a generally horizontally directed air and liquid spray outlet in the shoulder, connected to a dip tube which is free of valves. A combined air and liquid drip inlet recess is located in the sloped face below the horizontal outlet and in the path of drippings therefrom, there being a separate drip tube connecting the same to a one way valve located centrally of the bottle. Pressure closes the valve and suction opens it to draw drippings back into the container.

3,724,724
TAMPERPROOF AND CHILDPROOF OVERCAP FOR AN AEROSOL CAN

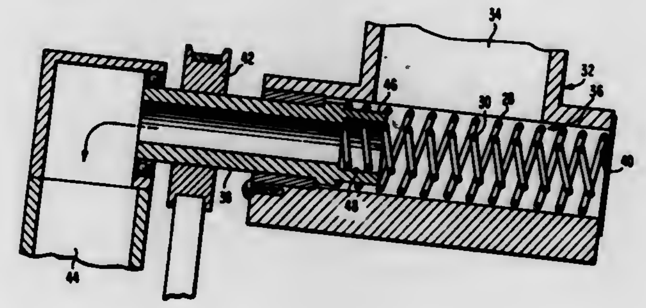
Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.
Filed Jan. 27, 1972, Ser. No. 221,292
Int. Cl. B67b *5/00*
U.S. Cl. 222—153 **6 Claims**



A substantially tamperproof and childproof replaceable overcap for an aerosol spray can or the like which has a central dispensing valve at one end with an annular collar surrounding the dispensing valve. The cap is molded from a resilient material and has an inverted, cup-shaped, outer wall and an inner concentric skirt. The inner skirt is vertically slotted and has an inwardly turned retaining lip at its lower edge. The resiliency of the skirt biases the lip inwardly to engage beneath the collar of the can in order to retain the cap in place. A locking element which is manually rotatable between "Open" and "Locked" positions is mounted in an opening in the cap and extends downwardly between the cap wall and inner skirt to a position adjacent the lower end of the inner skirt. Engagement lugs are located on the outer side of the skirt at opposite sides of the slot in the skirt and near the bottom of the skirt. The lower end of the locking element extends between the engagement lugs on the skirt and is so shaped that rotation of the element to "Open" spreads the lower end of the skirt to reduce the degree of engagement of the retaining lip beneath the can collar so the cap can be removed. The upper end of the locking element extends upwardly through the top of the cap where it has a manually engageable head. A frangible tab on the upper end of the locking element is initially engaged in a recess in the body of the cap and prevents rotation of the locking element from "Locked" to "Open" position until it has been broken off.

3,724,725
ELECTROSCOPIC POWDER FEEDING APPARATUS UTILIZING ROTATING HELICAL MEMBERS

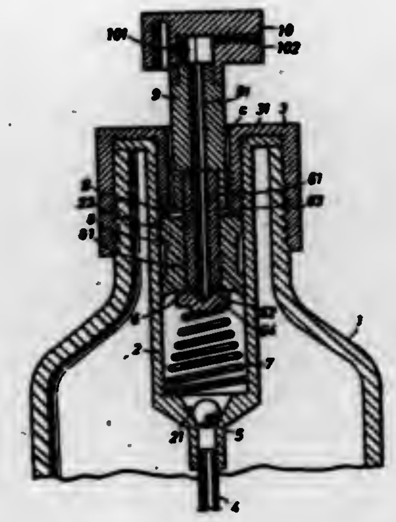
Russell A. Stauffer, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed March 30, 1971, Ser. No. 129,432
Int. Cl. B67d *23/00*
U.S. Cl. 222—240 **11 Claims**



The toner feed apparatus comprises two oppositely wound spring members which are concentrically mounted. The spring members are driven so that the pitch of the outside spring conveys the toner toward a perforated end plate which feeds toner into the developer system. The inside spring is wound in the opposite direction so that contaminating material which does not pass through the perforated end plate is conveyed back and out of the toner feed apparatus for collection.

3,724,726
PUMP FOR SPRAYING

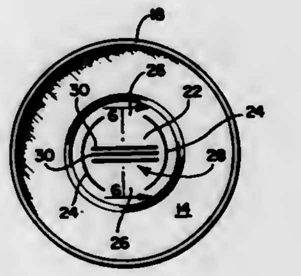
Rinnosuke Susuki, Tokyo; Hiroshi Hoshi, Narashino; Shinichi Araki, Funabashi, and Shinzo Miyamoto, Soka, all of Japan, assignors to Raion Yushi Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 12,825, Feb. 19, 1970. This application Jan. 5, 1972, Ser. No. 215,634
Int. Cl. B67d *5/40*
U.S. Cl. 222—385 **2 Claims**



A pump fixed to the opening of a liquid container in which both of a suction port and a liquid discharge passage are firmly opened and closed in response to the movement of a piston which has a considerable axial length so as not to deform itself upon its downward movement in a cylinder for exerting pressure on the liquid therein. Spraying operation is effective; leakage of liquid from the container is prevented even when the container is turned upside down; and the pump may be comprised of a lesser number of parts, which are fabricated at less costs.

3,724,727
AEROSOL SAFETY CAN

Arthur P. Zundel, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.
Filed June 12, 1972, Ser. No. 262,050
Int. Cl. B65d *83/14*
U.S. Cl. 222—397 **8 Claims**



This invention relates to a safety vent for pressurized containers in which a distinctive pattern of weakened lines forms a vent means for the controlled release of pressurized fluid from a container which is subject to pressure above a predetermined safe limit such as by over heating or crushing.

3,724,728

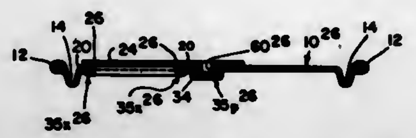
CAN END WITH BONDED SEAL SLIDE

Donald L. Douty, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 146,945, May 26, 1971, which is a division of Ser. No. 61,384, Aug. 5, 1970, Pat. No. 3,622,055. This application Jan. 31, 1972, Ser. No. 222,070

Int. Cl. B65d *47/10*

U.S. Cl. 222—541 22 Claims



A can end is provided with a pour opening. The can end has a can end lapping portion adjacent the pour opening. A slide has a pivot on the can end and has a slide lapping portion and a slide sealing portion adjacent the slide lapping portion. The slide lapping portion is adapted to register with the can end lapping portion. A pull tab has a connection to the slide. Engaging means engage the can end lapping portion to press the can end lapping portion into intimate contact with the slide lapping portion. A pressure barrier material seals the can end lapping portion at a first predetermined shear strength and the slide sealing portion at a second predetermined shear strength less than the first predetermined shear strength. The slide is rotatable by the pull tab about the pivot to break the bond between the slide sealing portion and the pressure barrier material adjacent the can end lapping portion to uncover the pour opening.

3,724,729

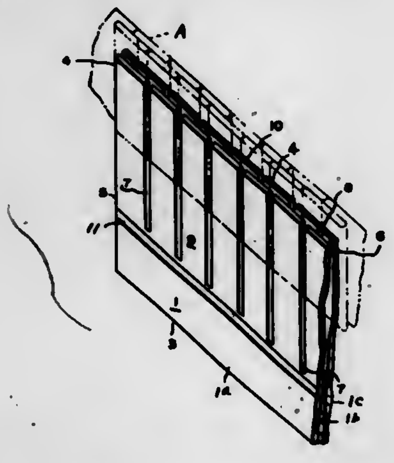
DEVICE FOR FORMING BOX PLEATS

Kenneth O. Sitts, 23129 Grove St., St. Clair Shores, Mich.

Filed May 15, 1972, Ser. No. 253,559

Int. Cl. A41h *43/00;* D06j *1/00*

U.S. Cl. 223—35 2 Claims



An elongated base member of flat material, such as plastic, formed to have spaced, parallel webs extending from said base member and of a dimension thinner than the base member. Each said web is divided into a plurality of teeth of uniform dimensions by the formation of equally spaced slots extending through the webs to their juncture with the base member. Each such slot is so disposed in said web, as to open upon the longitudinal center of a tooth formed in the opposing web. That is, the slots are so staggered in the respective webs as to create teeth having a staggered relationship to the opposite teeth of said respective webs. Cloth or other sheet material to be pleated is drawn or positioned between the opposed webs, and drawn or "threaded" inwardly and outwardly through the slots forming said teeth, whereby said sheet material encases each tooth to a predetermined length thereof, and after such sheet material has been predisposed as desired, a stitch or seam is made parallel to the ends of said teeth to fix the pleat as formed.

3,724,730

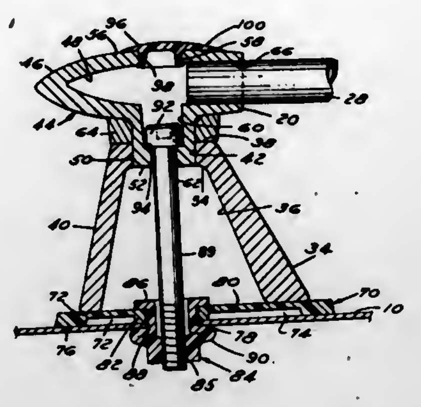
CAR TOP LUGGAGE CARRIER

Harry C. Olsen, Farmington; Ludwig J. Tischler, Huntington Woods, and Heinz C. Wernecke, Southfield, all of Mich., assignors to F. L. Jacobs Co., Southfield, Mich.

Filed June 23, 1971, Ser. No. 155,734

Int. Cl. B60r *9/00*

U.S. Cl. 224—42.1 D 13 Claims



The vehicle top carrier comprises two pairs of rail support assemblies which are mounted at the corners of an imaginary rectangle on the roof of the vehicle. Each support assembly comprises a hollow post including a top wall having an opening therein. A generally hollow closure element or rail fitting is mounted on the post and is provided with a stem which extends into the opening in the top wall. The closure element is provided with one or more openings each defining a collar. Each collar of a support assembly is spaced from and is located opposite a collar of an adjacent support assembly. A resilient adapter base engages the bottom surface of the post and is adapted to engage and to conform to the shape of the roof of the vehicle. Fastening means extend through the hollow closure element, post and adapter base and is secured in the roof of the vehicle. Rails extend between adjacent rail support assemblies, with the rails having opposite ends received in the collars of the closure elements. The rails and support assemblies may be arranged in a "U" shape or in a rectangular configuration on the roof of the vehicle.

3,724,731

SPARE-WHEEL CARRIERS FOR VEHICLES

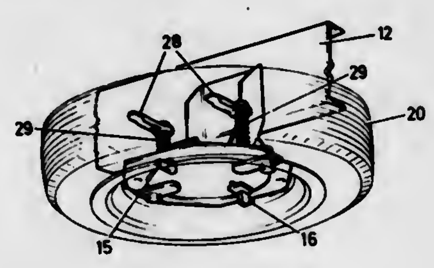
Marilyn Jean Potgieter, and Maurice Stephen Potgieter, both of Randburg, Republic of South Africa, assignors to Wheel Carrier Holdings (Proprietary) Limited

Filed March 3, 1971, Ser. No. 120,622

Claims priority, application South Africa, March 4, 1970, 70/1448

Int. Cl. B62d *43/00*

U.S. Cl. 224—42.23 4 Claims



A vehicle spare wheel carrier comprising a plate adapted to be suspended from the chassis of the vehicle and provided with a fixed hook and a movable hook. The periphery of the central opening in the wheel is engaged with the fixed hook and the wheel is then pivoted about the fixed hook until the periphery of the central opening clicks into engagement with the movable hook to support the wheel from the plate. The movable hook is guided for rectilinear movement towards and away from the fixed hook to facilitate positive engagement of

the periphery of the central opening with the movable hook. A handle is provided on the movable hook to facilitate disengagement of the movable hook with the periphery of the central opening when the wheel is to be removed from the carrier and to manipulate the movable hook in case it does not properly engage the periphery of the central opening.

3,724,732

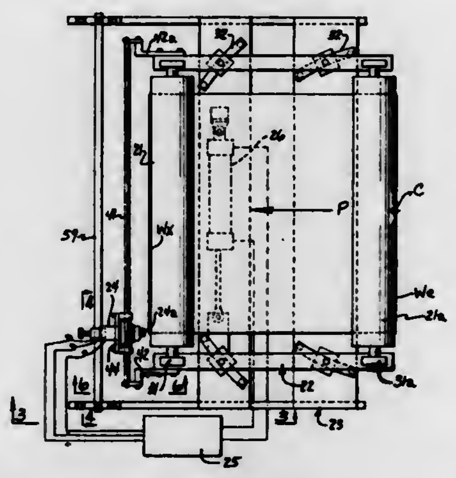
WEB SENSING AND GUIDING APPARATUS

William A. Bonner, Rockford, Ill., assignor to Rockford Servo Corporation, Rockford, Ill.

Filed March 1, 1972, Ser. No. 230,576

Int. Cl. B65h *25/26*

U.S. Cl. 226—21 12 Claims



A web sensing and guiding apparatus in which a web position sensor is provided to sense the lateral position of a web as it exits from a web guide roller in an exiting plane. The sensor is mounted for movement along a crosswise guideway that moves with the exiting roller to maintain the web position sensor at a preselected spacing and attitude in relation to the exiting plane of the web, and the sensor is operatively connected to a stationary structure in a manner to maintain the sensor at a preselected location laterally of the path of web travel while accommodating movement of the sensor angularly and longitudinally relative to the path of web travel.

3,724,733

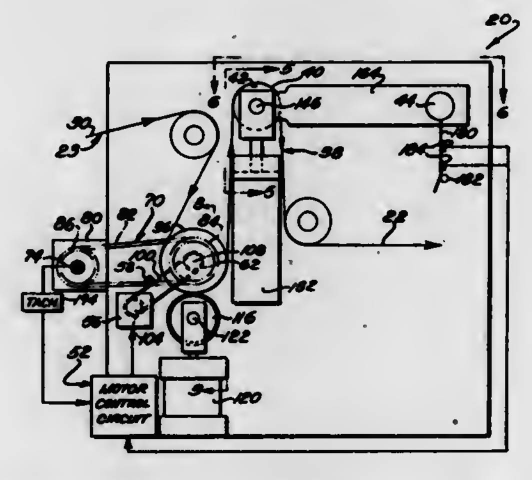
WEB INFEED MECHANISM

Robert H. Schaffer, Mystic, and James N. Crum, Stonington, both of Conn., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Feb. 3, 1972, Ser. No. 223,187

Int. Cl. B65h *23/18*

U.S. Cl. 226—25 15 Claims



An improved web infeed mechanism feeds a web of material to receiving rolls of a printing press and includes a web drive roll which is driven from the main press driveline through a chain drive assembly and harmonic drive unit. A hollow dancer roll is pivotally mounted on a pair of support arms and is pressed with a constant pressure against a bight portion of a U-shaped loop in the web by a pair of air cylinders. Upon movement of the hollow dancer roll from an initial position, a resilient member is flexed to change the resistance of a plurality of strain gauges on the resilient member. This results in a change in an output signal from a circuit containing the strain gauges and which signal is utilized to activate control apparatus to vary the peripheral speed of the web drive roll. This control apparatus includes a reversible permanent magnet control motor which is connected by a belt drive to a wave generator in the harmonic drive unit. To provide for an accurate response at different press speeds, the control apparatus also includes a tachometer which provides a signal which is directly proportional to the speed of rotation of the receiving rolls. This signal is multiplied by the signal from the strain gauges to provide an output signal which is utilized to energize the permanent magnet motor and vary the peripheral speed of the web drive roll upon movement of the dancer roll or a change in press speed.

3,724,734

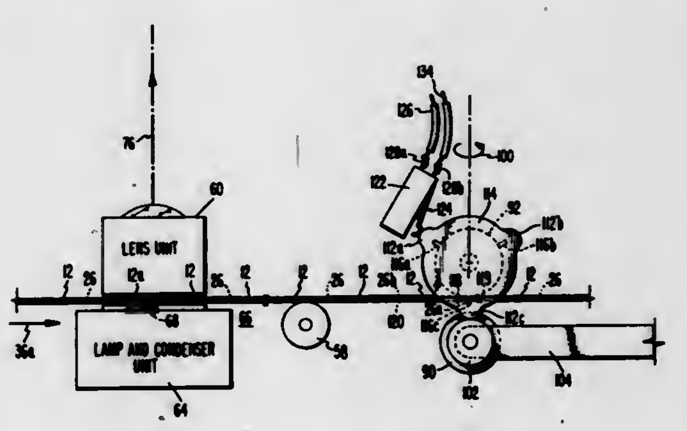
WEB TRANSPORT

Carl Lawrence Sachtleben, Haddonfield, N.J., and Erich Hans Steiner, Morrisville, Pa., assignors to RCA Corporation, New York, N.Y.

Filed March 29, 1972, Ser. No. 239,091

Int. Cl. G03b *1/28*

U.S. Cl. 226—57 9 Claims



A transport for film, tape, or other type of web having registration holes. The web is guided in a substantially straight path between a drive capstan and a pinch roller which normally urges the web into contact with the capstan. At least one registration pin extends radially from the capstan and is dimensioned and circumferentially positioned to freely enter registration holes in the web. When a registration pin is in a registration hole, the pinch roller is momentarily urged away from the web and the web is pulled forward, causing the trailing edge of the registration hole to engage the registration pin, whereby the web is accurately positioned. The speed of the web does not vary with respect to that of the capstan except during the short registration periods.

3,724,735

SYSTEM FOR DRIVING OR BRAKING A STRIP

Pierre Gay, La Tour-en-Jarez, France, assignor to Creusot-Loire Enterprises, Paris, France

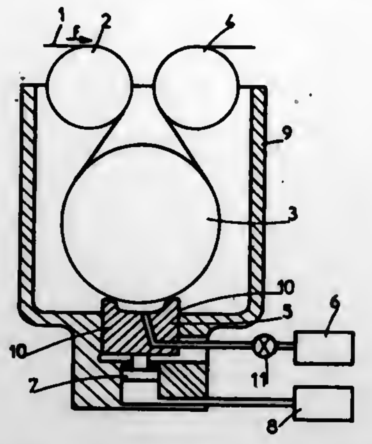
Filed April 7, 1971, Ser. No. 131,925

Claims priority, application France, March 8, 1970, 70/6777; July 17, 1970, 7026343

Int. Cl. B65h *23/24*

U.S. Cl. 226—95 2 Claims

A system to apply a strip to a roller including a shoe movable radially toward the roller in the region where the strip will engage the roller, a jack to move the shoe and means to inject



a fluid between the shoe and strip to transfer the force of the jack to the strip while keeping the shoe clear of the strip.

3,724,736

APPARATUS FOR THE RAPID, STEPWISE TRANSPORT OF A STRIP

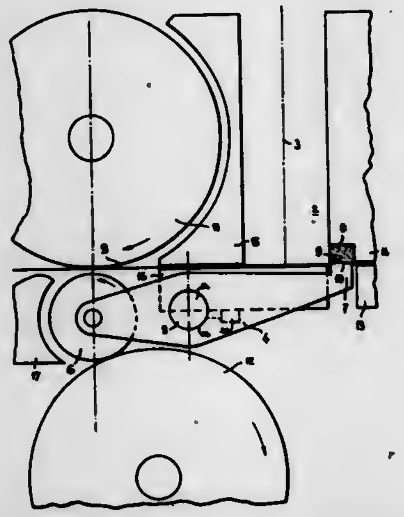
Guy Warnez, Lucerne, Switzerland, assignor to Establissement Microfilm Automatic Data Processing, Vanduz, Liechtenstein

Filed July 28, 1971, Ser. No. 166,708

Claims priority, application Switzerland, Aug. 4, 1970, 11768/70

Int. Cl. B65h *17/44*

U.S. Cl. 226—145 4 Claims



An apparatus for the rapid, stepwise transport of a strip, comprising a yoke carrying at one end a roller and at its other end a rapidly responsive braking element. Means are provided for controlling the tilting of the yoke, the yoke being arranged such that in one of its tilted positions it transports of feeds the strip through the action of the roller and in its other tilted position it blocks the strip owing to the action of its braking element.

3,724,737

SPREADER FOR SLIT WEB MATERIAL

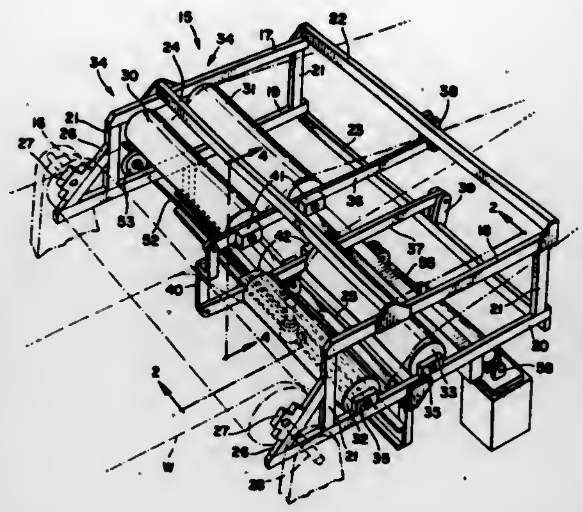
Ernest Robert Bednar, 29 Blackdown Crescent, Islington, Ontario, Canada

Filed Oct. 6, 1971, Ser. No. 187,100

Int. Cl. B65h *23/32*

U.S. Cl. 226—199 7 Claims

A web spreader assembly having two pairs of web spreader rolls and associated with a predetermined pass line roll, by means of which the slit webs are maintained in predetermined orientation relative to the first of each of the pairs of spreader rolls, and in which the spreader rolls are mounted on a movable frame work which is swingable upwardly and downwardly so as to align the same in any desired positional relationship with relation to the rewind mandrel. The pairs of spreader rolls are preferably mounted within such a swingable framework with their outboard ends fastened to portions of the framework, and with a movable central framework, the in-



board ends of the pairs of rolls being fastened to the movable inner framework, and means being provided whereby the movable inner framework can be swung upwardly and downwardly relative to the main framework so as to swing such pairs of rolls into any desired angular relationship relative to the plane of the web.

3,724,738

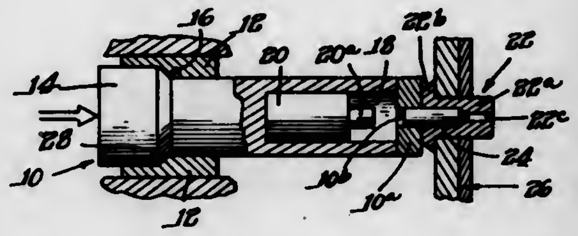
RIVET SETTING APPARATUS

Thomas P. Hurst, Wayne, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 19, 1970, Ser. No. 65,206

Int. Cl. B25c *7/00*

U.S. Cl. 227—147 5 Claims



The present invention relates generally to improvements in apparatus and methods for driving and setting a work piercing fastener rivet, and more particularly to simplified and very practical apparatus and methods for driving and setting rivets of the type comprising a shank expanding pin member associated with a headed rivet shank having an expandable entering extremity. The embodiment of the invention disclosed herein includes an elongate shiftable driving tool for causing a rivet to pierce a workpiece. A longitudinal chamber within the tool communicates at one extremity with a pin accommodating aperture. Abutment means spaced axially from said aperture is adapted to engage a pin driving member freely shiftable longitudinally within the chamber. Kinetic energy resulting from sudden interruption of the driving movement of the tool upon complete insertion of the rivet member within the workpiece serves to cause the rivet expanding pin to move forwardly and expand the entering extremity of the rivet member.

3,724,739

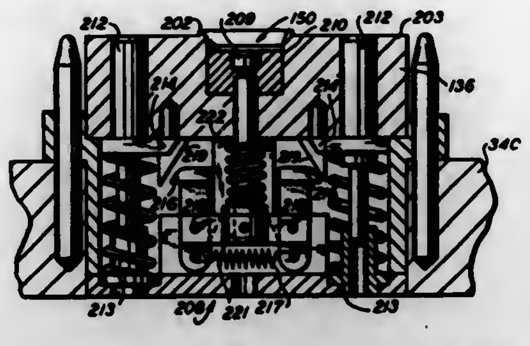
APPARATUS FOR FREQUENCY ADJUSTING AND ASSEMBLING MONOLITHIC CRYSTAL FILTERS

Albin R. Anderson, Lowell; John D. Jennings, Andover, and Walter E. Killerby, Lowell, all of Mass., assignors to Western Electric Company, New York, N.Y.

Division of Ser. No. 80,093, Oct. 12, 1970, Pat. No. 3,696,986. This application June 15, 1972, Ser. No. 263,077

Int. Cl. B23k *21/00*

U.S. Cl. 228—3 6 Claims



Sealed piezoelectric crystal devices with desired frequency response characteristics are manufactured by treating and sealing each crystal in a vacuum environment within a common apparatus housing. Vapor deposition treatment is utilized, with treating material replenishing mechanisms being positioned within the vacuum environment in order to avoid disturbing the vacuum environment during replenishing operations. Sealing is performed by cold weld sealing a pair of covers about each treated crystal device. The arrangement is designed to minimize alterations in the crystal frequency response characteristics subsequent to the vapor deposition treatment.

A die stripping device for ejecting each sealed article from two article-forming, cold weld sealing dies is incorporated entirely into the dies. An ejector on a bottom die is activated during sealing by an actuator of a top die. Ejection of the article from the bottom die then occurs upon die separation. The apparatus also includes a pair of turntables which overlap peripherally at a sealing station within the housing. A loading and unloading station, for introducing top covers and crystals into upper sealing dies and removing sealed crystal filter assemblies from the apparatus, and a vapor deposition crystal treating station are arrayed about one turntable. Manual and automatic loading stations for loading bottom covers into lower sealing dies are arrayed about the other turntable. Also included in the apparatus are various loading and unloading mechanisms and associated air-lock arrangements at the different stations.

3,724,740

ASSEMBLING DEVICE

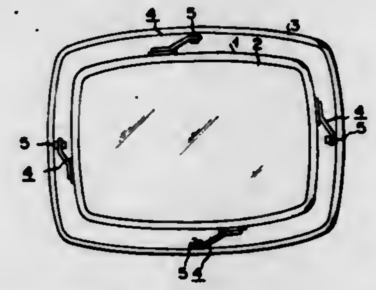
Hitoshi Imamura, Kanagawa, and Keiji Katakura, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation of Ser. No. 41,185, May 28, 1970, abandoned. This application May 5, 1972, Ser. No. 250,507

Claims priority, application Japan, May 31, 1969, 44/42060

Int. Cl. B23k *1/00, 5/00*

U.S. Cl. 228—6 10 Claims



A device for accurately fixing an elastic support member having a certain length to a base body which comprises means for causing one end of an elastic support member to contact the base body, means for contracting the other end of the elastic member under pressure toward the base body without allowing the other end thereof to contact the base body and means for fixing that part of the elastic member which contacts the base body, whereby the elastic member is accurately bonded to the base body in the position for said base body to be attached to another base body by means of the elastic support member.

3,724,741

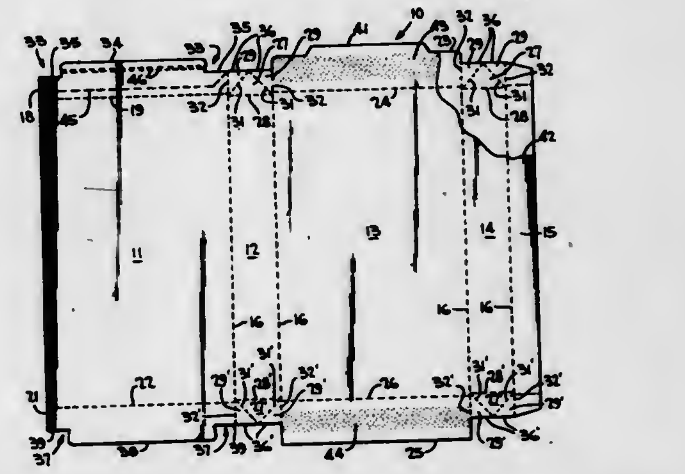
SEALABLE CARTON

Leonard P. Jacobson, North Tonawanda, N.Y., assignor to F. N. Burt Company, Inc., Buffalo, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,408

Int. Cl. B65d *5/08*

U.S. Cl. 229—38 6 Claims



A foldable carton capable of being completely sealed by means of inner end flaps which are notched for transferring adhesive from outer end flaps during closing to the edges of fold-back panels between the flaps.

3,724,742

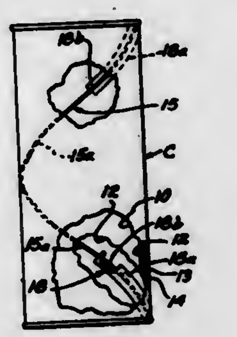
PRESSURIZED DOUGH CONTAINER AND METHOD OF OPENING THE SAME

James R. Henderson, 2408 Branning Rd., Louisville, Ky.

Continuation of Ser. No. 818,020, April 21, 1969, which is a continuation of Ser. No. 585,801, Oct. 11, 1966. This application Nov. 26, 1971, Ser. No. 202,182

Int. Cl. B65d *5/54, 17/00*

U.S. Cl. 229—51 BP 5 Claims



This disclosure embodies a generally cylindrical container having a body wall formed from spirally wound laminated material constructed to hold pressurized dough products such as pre-leavened dough and the like wherein the spirally formed laminations are permanently adhered together in a manner to provide sufficient body wall stiffness to rupture along a pre-determined spiral rupture line upon application of only a moderate indenting force against the body wall, the spiral rupture line in the specific embodiment disclosed being positively reinforced with the edges thereof connected to provide spaced apart circumferentially continuous sections only at the end portions of the container, the unreinforced spiral line of weakness between said reinforced end portions forming the rupture line along which the pressurized dough package can be ruptured by applying only moderate indenting force against a portion of said weakness line without peeling off any portion of any of the laminations.

3,724,743

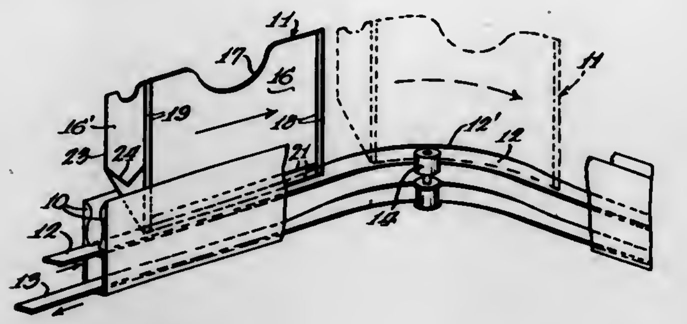
DOCUMENT CARRIER ENVELOPE CONSTRUCTION

Charles W. Tomlinson, Orange, Va., assignor to Acme Visible Records Inc., Crozet, Va.

Filed March 17, 1971, Ser. No. 125,176

Int. Cl. B65d *33/02, 31/12*

U.S. Cl. 229—55 **2 Claims**



A document carrier adapted to be carried on its bottom edge on a conveyor belt disposed at the base of a pair of defining walls of lesser height than said carrier and further adapted to be flexed about and between upstanding roller means and said belt in angular movement of said belt from between said first defining walls and adjacent similar defining walls. The carrier is composed of opposed faces sealed together at their leading and trailing edges in double spaced lines of vertical seal. Flexible stiffening ribs are disposed in the pockets formed by each of said double lines of seal whereby to prevent undesired flexing of said pocket into similar pockets traveling on carrier belts in adjacent paths formed by adjacent walls. A spaced double line of seals at the bottom edge of said carrier receives a flexible stiffening rib disposed in the pocket formed therebetween to provide the carrier with a controlled amount of lengthwise stiffness and a surface to be frictionally engaged between the conveyor belt and upstanding roller for limited flexing and providing frictional engagement requisite to freely negotiate said turns.

3,724,744

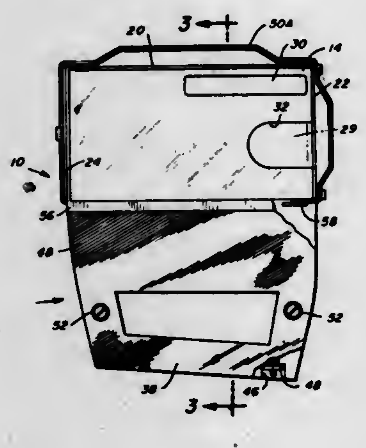
CARD HOLDER FOR METER READERS

William M. Carnahan, 1004 Maple, Sand Springs, Okla.

Filed Nov. 26, 1971, Ser. No. 202,141

Int. Cl. B68b *11/00*

U.S. Cl. 231—2 E **4 Claims**



An improved card holder for meter readers including a housing having a portion thereof of dimensions to hold a stack of meter cards, the top of the housing having openings therein through which the user may write upon the upmost card in stack, a metallic member affixed to a portion of the exterior of the housing, a battery carried within the housing, high voltage producing means within the housing connected to the metallic member, and a switch connected between the battery and the high voltage means such that when the switch is turned on high voltage is applied to the metallic member to thereby enable the user to ward off an attacking animal.

3,724,745

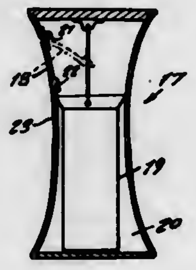
COMBINATION OF BAR STOOL AND REFUSE CONTAINER

Joseph K. Brown, 2138 E. 10th Avenue, Honolulu, Hawaii

Filed June 28, 1971, Ser. No. 157,458

Int. Cl. B65d *91/00*

U.S. Cl. 232—43.2 **2 Claims**



A stool for a bar, the stool consisting of a decoratively contoured hollow cylinder made of rigid plastic and which has a circular foot rest ring secured around it, the top cushion of the stool being removable so to expose an opening providing access for placement of refuse into a removable refuse pail fitted within the interior of the stool.

3,724,746

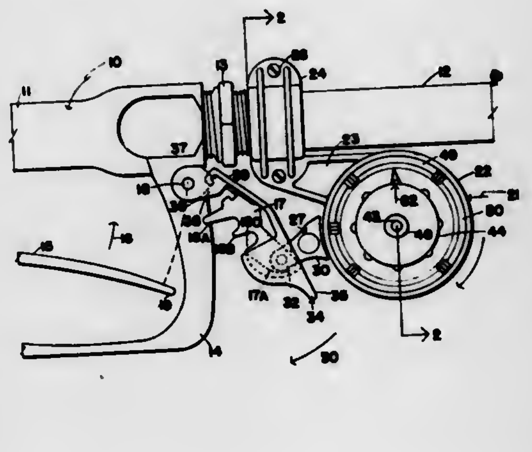
TIMER OPERATED AUTOMATIC SHUT-OFF FOR FLUID DISPENSING PUMPS

William Heinz, 2425 Bowness Rd., N. W., 42 Alberta, Canada

Continuation-in-part of Ser. No. 8,332, Feb. 3, 1970, abandoned. This application July 26, 1971, Ser. No. 166,231

Int. Cl. B67d *5/08*

U.S. Cl. 222—70 **17 Claims**



A mechanical timer is attached to a pump nozzle which can be set to shut off when a predetermined amount of fluid such as gasoline has been dispensed. The settings can be either by dollar value or by gallonage as desired.

3,724,747

CENTRIFUGE APPARATUS WITH MEANS FOR MOVING MATERIAL

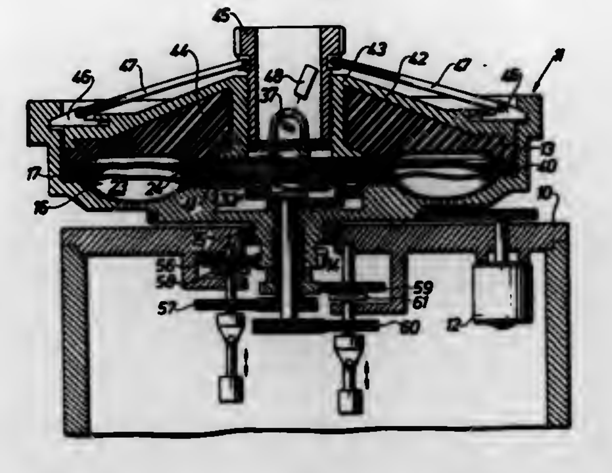
Hans Peter Olof Unger, Lidingo; Eric J. H. Westberg, Stockholm, and Stephan L. Schwartz, Lidingo, all of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed March 10, 1972, Ser. No. 233,538

Claims priority, application Sweden, March 15, 1971, 3309/71; March 15, 1971, 3310/71

Int. Cl. B04b *1/00*

U.S. Cl. 233—3 **5 Claims**



A centrifuge for batch treatment of a liquid, particularly blood, such as for separating blood into fractions of different densities and/or for washing blood cells suspended in a liquid, comprises closed collapsible containers in the centrifuge rotor. Resilient tubing interconnects the containers and a peristaltic pump member mounted on and rotating with the centrifuge rotor acts on the resilient tubing to selectively move liquid therethrough from one container to another and prevent liquid flow through the resilient tubing.

3,724,748

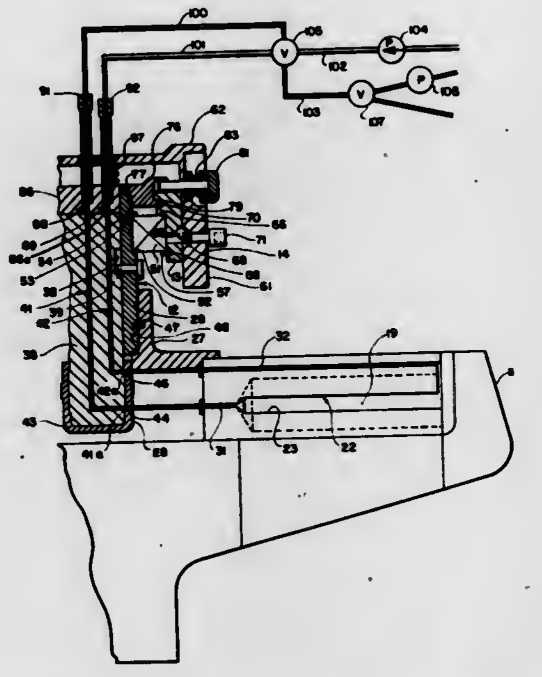
CENTRIFUGE INDEXING SEAL HEAD ASSEMBLY AND METHOD

Kenneth E. Jacobson, Fremont, Calif., assignor to Beckman Instruments Inc., Fullerton, Calif.

Filed Feb. 26, 1970, Ser. No. 14,487

Int. Cl. B04b *11/00*

U.S. Cl. 233—21 **20 Claims**



An indexing seal head assembly and method for selectively loading and unloading one or more cells in a multi-cell centrifuge rotor while the rotor is spinning.

3,724,749

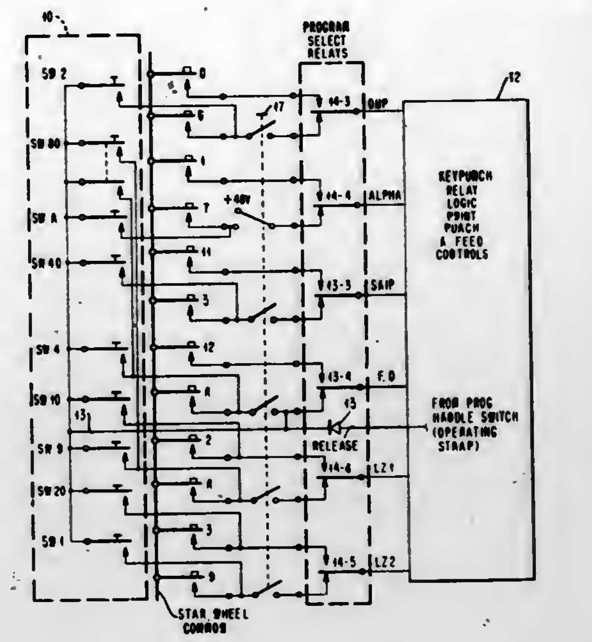
KEY PUNCH FEATURE

William F. Beausoleil, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 15, 1971, Ser. No. 134,252

Int. Cl. G06k *1/08*

U.S. Cl. 234—18 **5 Claims**



A high-speed column locate feature whereby a keypunch operator may select at random any predetermined column location on a unit record card and control the card punching to either automatically duplicate or skip at high speed to the selected column. A prepunched program card is provided in conjunction with auxiliary column-select keys. The program card has pre-punched coded patterns which are selectable by the column-select keys. By the appropriate choice of column-select keys and the wiring of the keys, a field definition is impressed upon keypunch field definition logic. When the SKIP or DUP control key is depressed, the card being fed automatically feeds the length of the field defined by the field impressed upon the field definition logic.

3,724,750

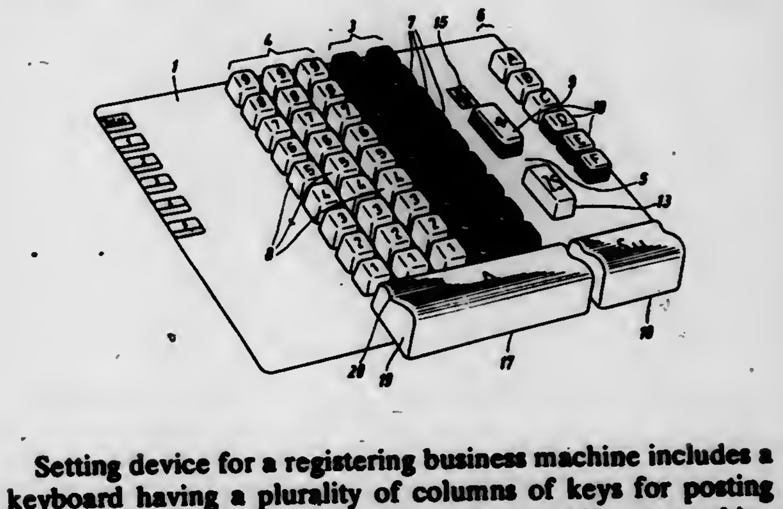
DEVICE FOR REGISTERING BUSINESS MACHINES

Alfred Hecker, Bielefeld, Germany, assignor to Anker-Werke Aktiengesellschaft, Bielefeld, Germany

Continuation of Ser. No. 809,055, March 20, 1969, abandoned. This application April 6, 1971, Ser. No. 131,811

Int. Cl. G06c *7/02*

U.S. Cl. 235—145 R **9 Claims**



Setting device for a registering business machine includes a keyboard having a plurality of columns of keys for posting transactions, a plurality of keys for selecting different machine runs and a plurality of control keys, at least one of the machine run-selecting keys and the control keys being located on the keyboard below the transaction-posting keys and having a key head formed with a profile approximating the curvature of the ball of the hand of a person operating the business machine, the key head extending transversely to the columns of transaction-posting keys over a width corresponding to the width of at least three of the columns of transaction-posting keys.

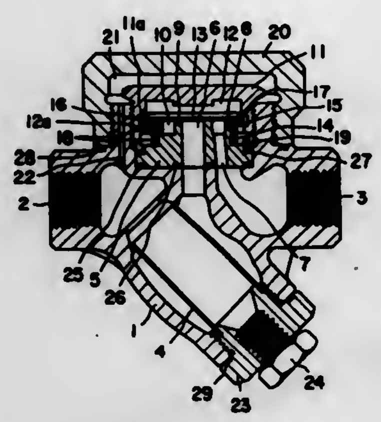
3,724,751
DISC-TYPE STEAM TRAP

Katsuji Fujiwara, No. 191, Nishitani, Hiraoka-cho, Kakogawa, Japan

Filed Feb. 22, 1971, Ser. No. 117,416

Int. Cl. F16t *1/04*

U.S. Cl. 236—59 **8 Claims**



A disc type steam trap having a disc valve floatingly arranged within a pressure chamber which is formed by a valve seat and an inner cover, wherein a bimetallic member to be expanded and contracted due to temperature change, an annular member having a conical or inverted conical slanted face on its lower side, an overhanging portion, a valve seat provided with a conical or inverted conical slanted face, a flat annular member, and annular grooves are provided in pertinent combinations to assure high performance of the trap.

3,724,752
CONTROL DEVICE FOR CONTROLLING HEATING AND AIR-CONDITIONING INSTALLATIONS IN MOTOR VEHICLES

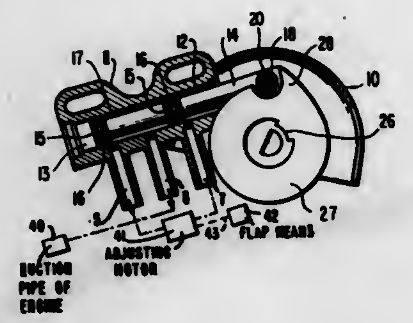
Rudolf Andres; Albert Stolz, both of Sindelfingen, and Hermann Moller, Aidlingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 4, 1970, Ser. No. 69,721

Claims priority, application Germany, Sept. 6, 1969, P 19 45 232.5

Int. Cl. B60h *1/02*

U.S. Cl. 236—86 **31 Claims**



A control device for controlling heating and air-conditioning installations in motor vehicles, particularly in passenger motor vehicles, which controls by means of vacuum, an adjusting motor actuating the fresh or warm air flaps; the control device includes a flap control switch and a temperature switch whereby the flap control switch, which selectively controls the adjusting motor, is adjusted by a rotary knob into a preselected condition of either "air-conditioning off" or "air-conditioning on"; the two switches are preferably arranged in a common housing and the temperature switch is adjustable within an angular range of less than 330° without changing a shifting rod controlling the actuation of the adjusting motor from its position "air-conditioning."

3,724,753
VALVE ACTUATING MEANS

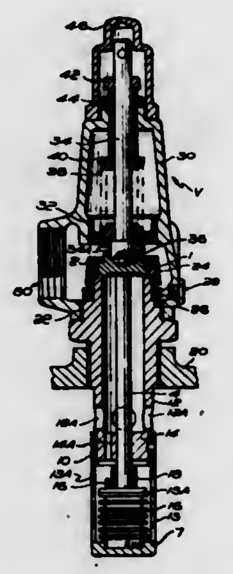
Brian Thornton, Huddersfield, England, assignor to Samuel Birkett Limited, Heckmondwike, Yorkshire, England

Filed Feb. 4, 1971, Ser. No. 112,640

Claims priority, application Great Britain, Feb. 5, 1970, 5,581/70

Int. Cl. G05d *27/00*

U.S. Cl. 236—92 C **2 Claims**



A pressure and temperature relief comprising an upper and lower hollow bodies secured together with the lower body containing a temperature responsive bellows assembly being adapted for insertion into a boiler or other hot water storage vessel and having an inlet into the lower body. The upper attached hollow body has an outlet and a pressure relief valve which simultaneously functions as a temperature relief valve through the agency of an actuating rod connected to the bellows.

3,724,754
ANCHORAGES FOR TRACK RAILS

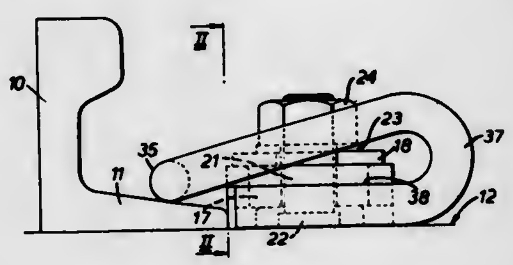
George Molyneux, and George Walter Molyneux, both of Eastbrook Road, Gloucester, England

Filed Feb. 18, 1971, Ser. No. 116,340

Claims priority, application Great Britain, Feb. 20, 1970, 8,276/70

Int. Cl. E01b *9/30*

U.S. Cl. 238—349 **8 Claims**



An adjustable anchorage for locating a flange track rail on a support surface, including a mounting block with a central aperture receiving an eccentric cam plug fitting over a stud fixed in position, for example by welding to the base surface. The cam plug has an octagonal head so that by rotating the plug the block can be moved towards and away from the track rail, and locked by a nut on the stem. A specially shaped resilient steel clip has a pair of lower limbs fitting in grooves along opposite sides of the base, the two limbs extending away from the rail and having lower parts which curve upwards and forward so a central bite which bears down on the flange of the rail. The grooves for the lower limbs of the clip are specially shaped so that if the clip is displaced away from the rail it tends to exert an increased pressure.

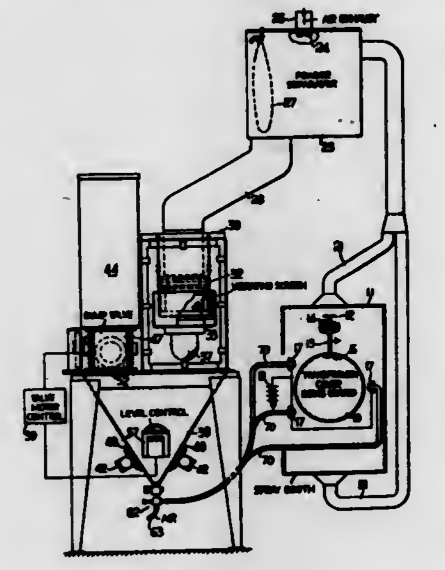
3,724,755
POWDER-AIR VENTURI FOR ELECTROSTATIC SPRAY COATING SYSTEM

Harold G. Diamond, Wexford, and Floyd L. Gustine, Pittsburgh, both of Pa., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 722,078, April 17, 1968, abandoned, and a continuation-in-part of Ser. No. 728,253, May 10, 1968, abandoned, and a continuation-in-part of Ser. No. 41,229, May 28, 1970. This application Sept. 27, 1971, Ser. No. 183,939

Int. Cl. B05b *5/02*

U.S. Cl. 239—15 **4 Claims**



In an electrostatic powder spray system wherein resin powder is fed from a supply hopper to a powder dispensing venturi and is propelled therefrom by pressurized air through a conduit to a spray gun, the venturi housing is constructed of insulating material so that resin powder particles electrostatically charged by the triboelectric effect are not attracted to the venturi housing walls and do not clog the venturi.

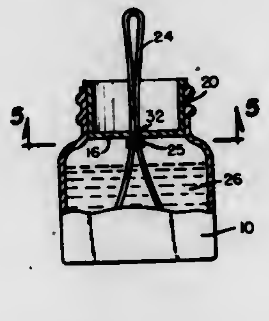
3,724,756
WICK SUPPORT AND STORAGE MEANS FOR NON-SPILLABLE SAFETY WICK DISPENSER BOTTLES

Martin S. Maltenfort, Blue Ball Road, Route 3, P.O. Box 33, Newark, Del.

Filed June 14, 1971, Ser. No. 152,803

Int. Cl. A24f *25/00*

U.S. Cl. 239—47 **11 Claims**



A cup-shaped insert engaged in the neck of a wick dispenser bottle for supporting a generally non-stiffened wick in dispensing position generally outwardly of the dispenser bottle. The cup-shaped member includes means sealingly engaging the wick for precluding spillage of liquid from the container and the cup-shaped member includes means for storage of the dispenser wick in a nonuse position beneath a closure engaged over the neck of the dispenser bottle.

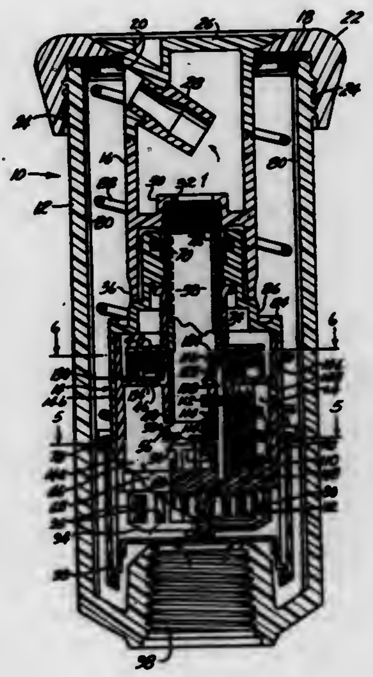
3,724,757
ROTARY POP-UP SPRINKLER

Edwin J. Hunter, Riverside, Calif., assignor to Moist O'Matic Division of Toro Manufacturing, Minneapolis, Minn.

Filed July 27, 1971, Ser. No. 166,347

Int. Cl. B05b *15/10*

U.S. Cl. 239—205 **10 Claims**



A sprinkler is provided with a pop-up nozzle rotatably supported on a housing keyed to a casing for axial nonrotatable movement between positions in which the nozzle is retracted or extended. The housing contains a water actuated motor coupled by gearing to the nozzle for rotation thereof. A seal is fixed to one end of the casing and sealingly surrounds the nozzle when the nozzle is retracted and stationary. When the nozzle is extended and rotating, the seal is disengaged therefrom and sealingly surrounds a part of the housing in stationary relation. The gearing has an internal seal which is protected by the nozzle and is located above the casing in the extended position of the nozzle to obviate flooding of the internal seal. This minimizes drag on rotation of the nozzle and reduces wear on the seals. The gearing coupling the motor and nozzle is alterable to obtain a predetermined arc of rotation of the nozzle.

3,724,758
BOOM IRRIGATION SYSTEM

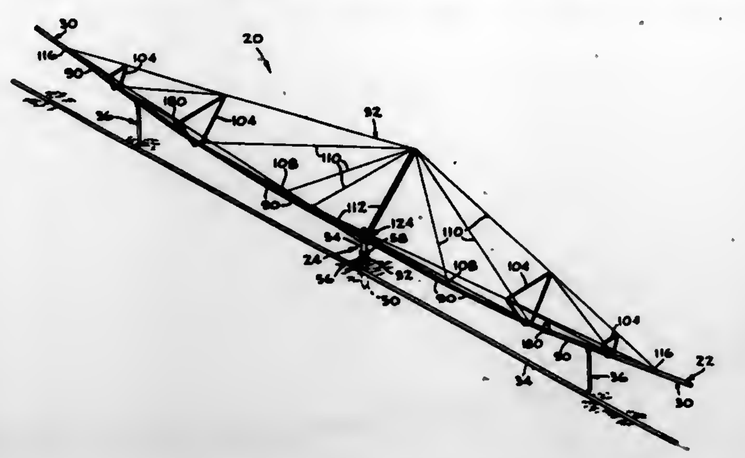
Richard W. Fizmaurice, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 6, 1971, Ser. No. 204,973

Int. Cl. B05b *3/06*

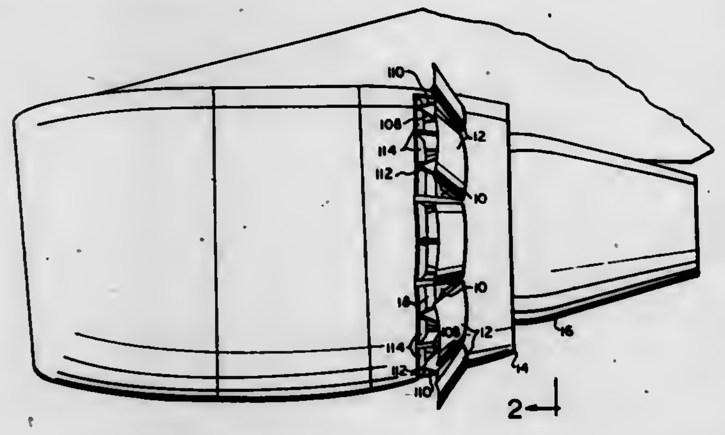
U.S. Cl. 239—251 **19 Claims**

A low application rate boom type irrigation system permanently placed in a field includes two upwardly bowed wings supported by guy wires and rotated about a vertical axis. The boom is rotated by water being discharged in opposite directions from spray nozzles on the two wings aided by wind engaging flaps pivotally supported by each wing. Each boom includes an outer structural tube and an inner water carrying tube which inner tubes are connected to a water supply source through a screen housing having a plurality of commonly directed chevron seals for simplifying assembly and cleaning. A pair of boom aligning stands stop the wings in positions parallel with the water supply line when the system is not in operation to provide clearance for cultivation, and hydraulically releases the boom for rotation in response to water pressure in the system equal to that required for irrigation.



3,724,759
DRIVE MECHANISM

Peter H. Ellis, Chula Vista, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.
Division of Ser. No. 6,739, Jan. 29, 1970, abandoned. This application Dec. 2, 1971, Ser. No. 204,387
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.29 **1 Claim**

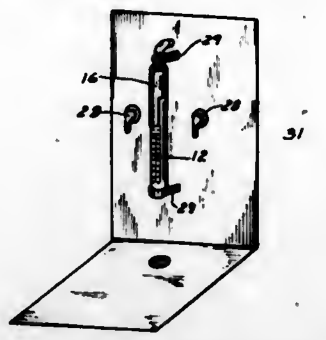


An input shaft is rotatably mounted within a tubular casing and has an eccentric double-gear pinion rotatably mounted thereon. When input shaft rotates, one of the pinion gears rolls epicyclicly around an internal spur gear fixedly attached to inner side of the casing and the other pinion gear rolls epicyclicly around an internal spur gear fixed to one end of an output shaft which supports one end of the input shaft and which is itself journalled within the casing for rotation about the axis of said input shaft. A lever arm is connected to the output shaft and extends through an aperture in the side wall of the casing. Meshed pairs of the pinion gears and spur gears have different numbers of teeth, and cause output shaft to rotate at much lower speed than input shaft.

3,724,760
ADJUSTABLE SHOWER FIXTURE

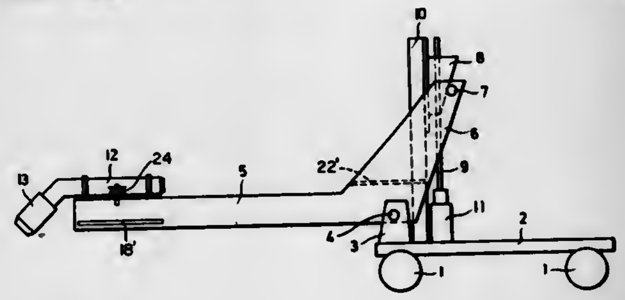
Earl W. Smith, 716 North "A" Street, Lake Worth, Fla.
Continuation-in-part of Ser. No. 18,931, March 12, 1970, abandoned. This application July 14, 1971, Ser. No. 165,417
Int. Cl. B05b *15/06*
U.S. Cl. 239—282 **3 Claims**

A water distributing device for use in a shower, bath or the like in which a vertical pipe with spray apertures is surrounded by a moveable, water-tight sleeve having predetermined cut out areas which provide for turning on and off the spray as a function of relative vertical height by rotating the sleeve a predetermined angular distance.



3,724,761
DEVICE FOR FLAME TREATING SURFACE

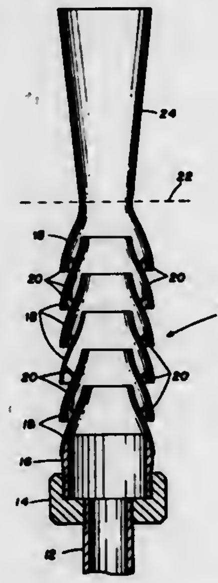
Siegfried Stadler, Vercinsstr. 14, 565 Solingen, Germany
Filed June 10, 1971, Ser. No. 151,710
Claims priority, application Germany, June 10, 1970, P 20 28 516.9
Int. Cl. B05b *15/08*
U.S. Cl. 239—286 **7 Claims**



This invention relates to a device for flame treating surfaces wherein there is arranged at one end of an arm which can be displaced across the surface to be worked two or more nozzle tubes with associated nozzle heads inclined downwardly. At least one of the nozzle tubes can be swivelled about an axis parallel with and spaced from the axis of the nozzle tubes.

3,724,762
FLUID DISCHARGE SYSTEM

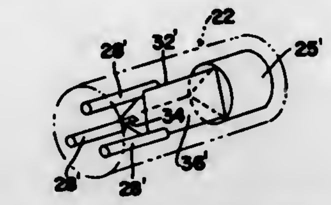
Kenneth D. Freshour, 2908 Pelham, and John C. Van Dyk, 824 N.W. 15th St., both of Oklahoma City, Okla.
Continuation of Ser. No. 814,716, April 9, 1969, abandoned. This application Feb. 8, 1971, Ser. No. 113,608
Int. Cl. B05b *7/00*
U.S. Cl. 239—427.3 **4 Claims**



A fluid discharge system for use both as a nozzle and as a fluid oxidizer. The system includes a plurality of identical cup-shaped converging members positioned at equally spaced points. A stream of water is directed through all of the converging members and is discharged from the last member. Each converging member acts as a venturi to add air to the water. The air both oxidizes impurities in the water and increases the discharge distance of the stream.

3,724,763
SPRAY DEVICE

Arthur R. Braun, 209 East Mildred, Cary, Ill.
Filed April 5, 1971, Ser. No. 130,919
Int. Cl. B05b *1/34*
U.S. Cl. 239—490 **3 Claims**

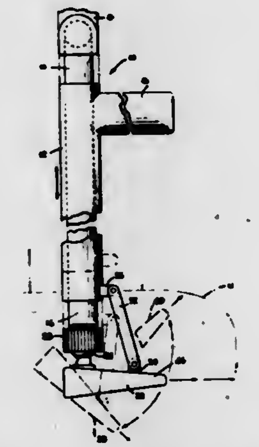


A spray head for discharging a spray pattern in which the entire inner portion of the pattern has liquid atomized therein. A plurality of orifice channels receive fluid radially from a relatively large central supply channel.

Preferred embodiments are disclosed in which the spray head is a unitary molded component having no moving parts. Other preferred embodiments are disclosed in which the spray head includes an adjustment feature whereby a two-part molded head provides a desirable cone-shaped spray pattern at either relatively high or relatively low through-puts, thereby eliminating "dribble" at relatively low through-puts.

3,724,764
HYDRAULIC HOE- METHOD AND MEANS

Homer Hall, 3910 Emerald Avenue, Apt. 111, Torrance, Calif.
Filed May 10, 1971, Ser. No. 141,573
Int. Cl. B05b *15/08*
U.S. Cl. 239—587 **3 Claims**

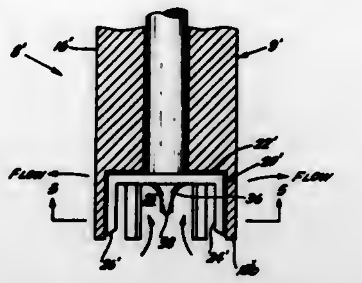


A portable, manually operated nozzle functions in the manner of a hoe by directing a planar jet stream of water to dislodge residual sludge in a substantially closed container by making a thin elongate impact area of high force concentration thereagainst. A universal joint connects the nozzle outlet with an elongate conduit for directing high pressure flow against the sludge layer.

3,724,765
TABLET DISRUPTOR DEVICE

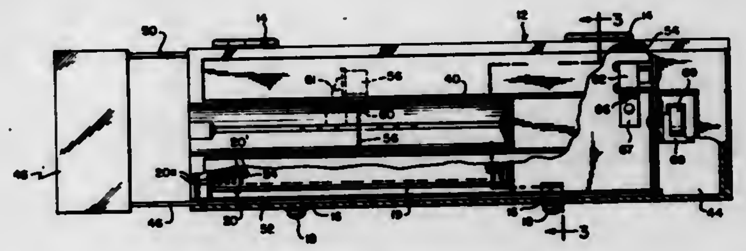
Donald G. Rohrbaugh, Santa Ana, and Everett J. Petersen, Jr., Glendora, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Filed Sept. 3, 1971, Ser. No. 177,555
Int. Cl. B02c *18/10, 13/18*
U.S. Cl. 241—46.06 **6 Claims**

A disruptor device particularly suited for rapidly grinding up pharmaceutical tablets in a liquid and agitating the mixture to dissolve the active ingredients of the tablets in the liquid for subsequent chemical analysis. The device comprises a rotatable shaft extending through a hollow member which is formed at its lower end with a series of circularly arranged spaced teeth. The shaft carries at its lower end a rotor provided with a plurality of teeth which are surrounded by the teeth on the hollow member. Rotation of the rotor draws the tablet and liquid upward into the rotor and propels the mixture radially outward through the teeth in the hollow member whereby the tablet will be severed and broken into pieces by the shearing action between the two sets of teeth. Some of the teeth on the outer hollow member are shorter than the other teeth thereon so as to provide entrance openings for large particles to enter the head of the device. An inverted conical shaped deflector is provided on the bottom of the rotor to eliminate stagnant eddy currents within the rotor.



3,724,766
SHREDDER

James M. Bosland, Wayne, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 14, 1971, Ser. No. 143,651
Int. Cl. B02c *19/12*
U.S. Cl. 241—100 **4 Claims**

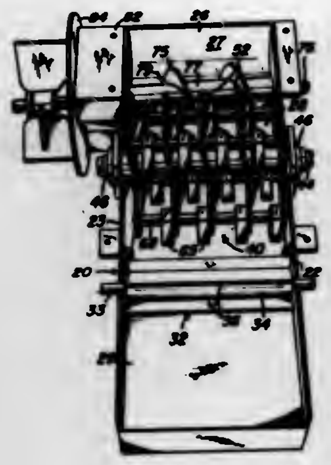


A paper shredder comprises a housing containing rotatable shredder blades, a driving motor and suitable reduction gears. A cover member containing a paper chute is hingedly supported on the housing. The cover member includes a retaining portion at one end which is adapted to fit on the top of a wastepaper basket. At the other end of the cover member a second retaining portion is secured to slide rails which are adjustable relative to the cover. By moving the retainer member, the relative distance between the two retaining portions can be adjusted to accommodate different-sized wastepaper baskets. A suitable limit switch operated by a sensing wire is secured within the cover member to actuate the motor which controls the shredder blades.

3,724,767
SHREDDER-GRINDER MACHINE HAVING AN IMPROVED ROTOR

John D. Scarbrough, Piqua, Ohio, assignor to Piqua Engineering Inc., Piqua, Ohio
Filed Oct. 7, 1971, Ser. No. 187,395
Int. Cl. B02c *13/04, 13/28*
U.S. Cl. 241—186 R **12 Claims**

A mobile chipper includes a housing which supports a feed roll positioned above a guide chute extending to a rotor having a series of axially spaced circular rotor plates rigidly secured to a driven rotor shaft. Each of the rotor plates is formed of a heavy gauge sheet metal and has a first segment which is integrally connected by a transverse portion to an axially offset second segment extending parallel to the first segment. A series of peripherally spaced shaft members extend axially through a segments of the rotor plates, and a plurality of hammer elements are mounted on each shaft member between the rotor plates for full 360° rotation. One of the hammer elements is positioned adjacent the first segment of

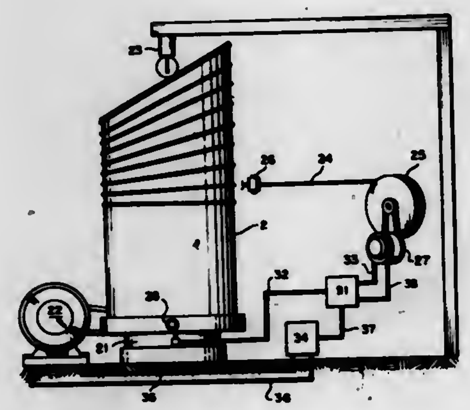


each rotor plate in radial alignment with the second segment, and another hammer element is positioned adjacent the second segment of each rotor plate in radial alignment with the first segment. These hammer elements cooperate with other hammer elements so that the rotary paths of all of the hammer elements are continuous and uninterrupted across the width of the guide chute. Shredded material is discharged from the housing by the cooperation of a driven screw which extends to a centrifugal blower.

3,724,768
METHOD OF MAKING WRAPPED TUBULAR CONCRETE

Thomas K. Breitfuss, Tustin; Floyd L. Wallace, La Habra, and Joseph P. Zicaro, Tustin, all of Calif., assignors to Hydro Conduit Corporation, Orange, Calif.

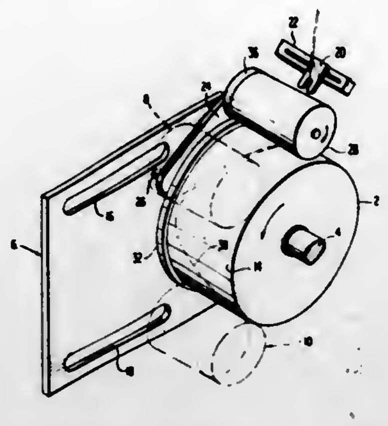
Division of Ser. No. 696,402, Jan. 8, 1968, Pat. No. 3,587,659.
This application June 16, 1970, Ser. No. 57,846
Int. Cl. B65h *54/00, 81/08*
U.S. Cl. 242—7.02 **4 Claims**



Method of making reinforced concrete inclusive of hollow concrete body of tubular shape having beveled end and reinforcing member wrapped on exterior surface of length of concrete body at beveled end in progression of wraps to form continuous helical assembly. Reinforcing assembly under lesser tension extends along shorter side portion than longer side portion to provide more nearly equal stress in concrete body. Means associated with concrete body onto which reinforcing member is wrapped is utilized for holding reinforcing member against circumferential movement to maintain said preselected tension in reinforcing member.

3,724,769
YARN TAKE-UP

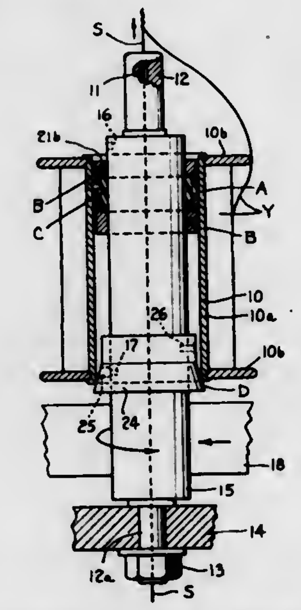
Kenneth Brooks, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.
Filed Dec. 2, 1970, Ser. No. 94,395
Int. Cl. B65h *54/42*
U.S. Cl. 242—18 DD **4 Claims**



Yarn take-up for winding cheese-type packages in which a large diameter drive roll imparts rotation to one, two or more yarn packages mounted on bobbins spaced apart around the periphery of the drive roll. Yarn is conducted through a traverse guide and a small diameter roll serves as a print roll between the traverse guide and the surface of the drive roll. The print roll is driven by the drive roll and preferably the yarn passes from the print roll around the front side of the drive roll where it is wound on the respective bobbins.

3,724,770
BOBBIN ADAPTER

Robert L. Carroll, 408 McIver St., Greenville, S.C.
Filed Nov. 2, 1970, Ser. No. 86,034
Int. Cl. B65h *75/30, 79/00*
U.S. Cl. 242—46.6 **2 Claims**

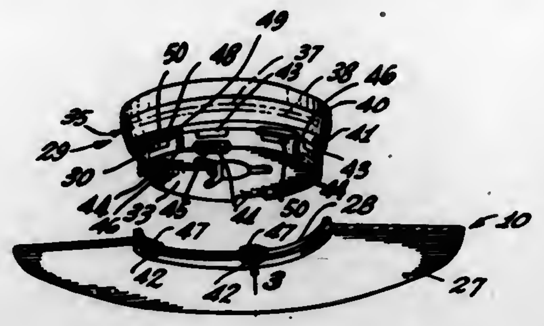


An annular body portion, carried by the spindle, has spaced protuberances mounted on the periphery thereof extending into engagement with the barrel of the bobbin when placed thereon.

3,724,771
HUB-PLATFORM ASSEMBLY AND LOOP-SIZING METHOD

Darrell W. Zielke, Valencia, Calif., assignor to Superscope, Inc., Sun Valley, Calif.
Filed March 12, 1971, Ser. No. 123,689
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **23 Claims**

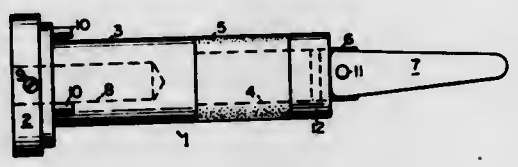
A hub-platform assembly for a continuous loop magnetic tape cartridge in which the hub is mounted on the platform for indexing between angularly spaced winding and stripping positions and for axial movement through a preselected movement as a result of said indexing, initially being held releasably in the winding position for loading with a tape pancake which is wound around a conical surface tapering toward the platform. When the hub is indexed to the stripping position, the conical



surface is shifted axially to move the larger section thereof, which determined the inside diameter of the pancake, out of the pancake, thereby forming a gap between the hub and the inside diameter permitting the tape to be wound down around the hub by pulling the opposite ends of the tape away from the pancake. The gap size is calculated to produce a loop of predetermined length as this is done.

3,724,772
REEL SPINDLE

George S. Hager, Anaheim; Eugene E. Keech, Costa Mesa, and Lawrence S. Dossett, Orange, all of Calif., assignors to Electronic Engineering Co. of Calif., Santa Ana, Calif.
Filed Nov. 11, 1971, Ser. No. 197,779
Int. Cl. B65h *19/02*
U.S. Cl. 242—68.3 **7 Claims**

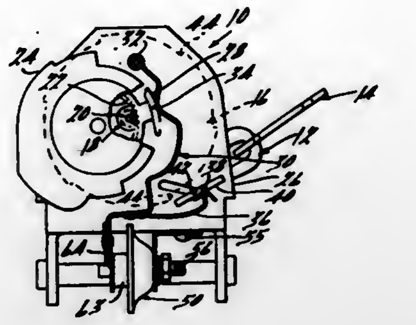


A spindle for rotatably supporting a reel having both positive and frictional engagement between the spindle and the reel. The positive engagement is made at one end of the spindle, as by means of plural pins which engage plural recesses in the reel. The frictional engagement is made at the other end of the spindle and is provided by a radially expansible elastomer which is expanded by a locking arm. This dual engagement advantageously holds two-piece reels together as well as to the spindle.

3,724,773
SEAT BELT RETRACTOR

Robert C. Fisher, 580 East Long Lake Road, Bloomfield Hills, Mich.
Filed May 6, 1971, Ser. No. 140,675
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **5 Claims**

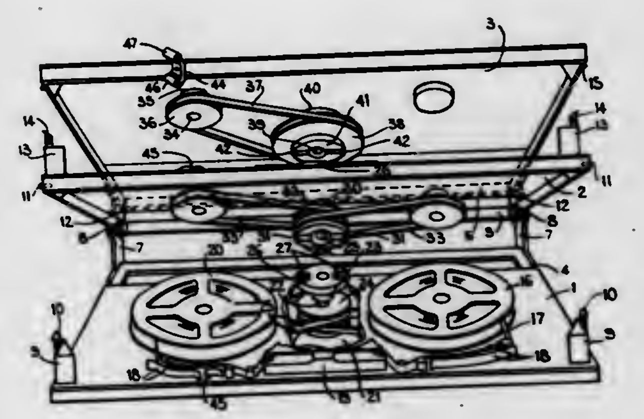
The disclosure relates to a seat belt retractor comprising a toothed spool having a seat belt wound thereon and a pawl member adapted to engage a tooth on the spool for limiting



the rotation thereof after a predetermined time interval after the protraction of the belt.

3,724,774
TAPE HANDLING APPARATUS

John Hamilton-Fey, Letchworth, England, assignor to International Computers Limited, London, England
Filed May 21, 1971, Ser. No. 145,686
Claims priority, application Great Britain, June 16, 1970, 29,065/70
Int. Cl. G03b *1/04*; **G11b** *15/32*
U.S. Cl. 242—180 **4 Claims**

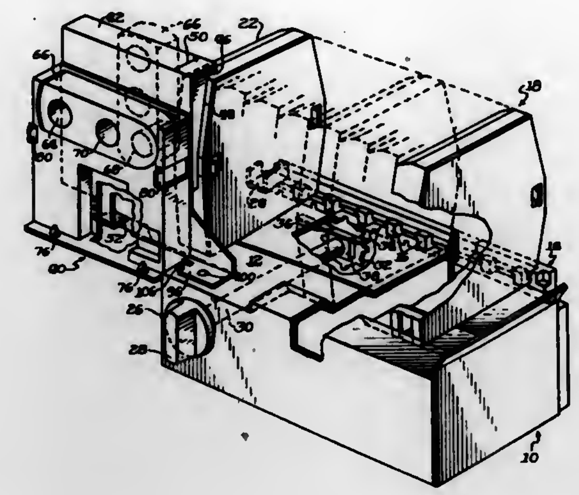


Tape handling apparatus includes two or more decks arranged in spaced overlapping relationship, each deck including a tape processing arrangement, and means for driving the processing arrangement extending though the overlapping portions of the decks. The drive means include clutch elements which provide drive connections between adjacent decks, so that all of the tape processing arrangements, can be driven from a single source of drive. Where more than two decks are provided they can be hinged together so that the adjacent decks can be easily separated without breaking the drive between other decks.

3,724,775
FILM REEL SUPPORT ASSEMBLY FOR PROJECTORS

Arthur E. Nupnau, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed April 13, 1970, Ser. No. 27,551
Int. Cl. G03b *1/04*; **G11b** *15/32*
U.S. Cl. 242—180 **5 Claims**

A support assembly adaptable for supporting varying sized reels of film at a projection station on a motion picture projector. The support assembly includes a gate member having a first position to permit projecting any one of a plurality of like sized reels of film supported on the projector and having a second position to permit projecting a selected one of varying sized reels of film.



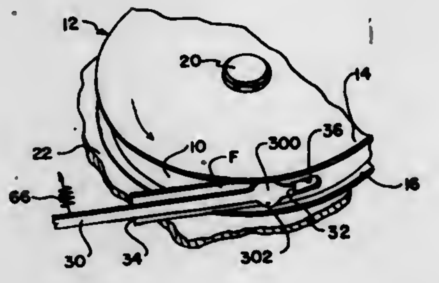
3,724,776
FILM FEEDING APPARATUS

Edward S. McKee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 9, 1971, Ser. No. 113,922

Int. Cl. G03b *1/02, 1/58*

U.S. Cl. 242—195 **6 Claims**



Film feeding apparatus for a motion picture projector includes guide members cooperating with a hook-like member for guiding the hook member into a position in close proximity to a rotating roll of film or the like for engaging the film through an opening in a leading end portion of the film. In the illustrated embodiment the guide members are on the hook member and cooperate with flanges of a film reel for accurately positioning the hook with respect to the leading end portion of the film, thereby assuring engagement between the hook and the film and minimizing the size of the opening in the film that is required for high reliability of operation.

3,724,777
MOTION PICTURE PROJECTOR APPARATUS

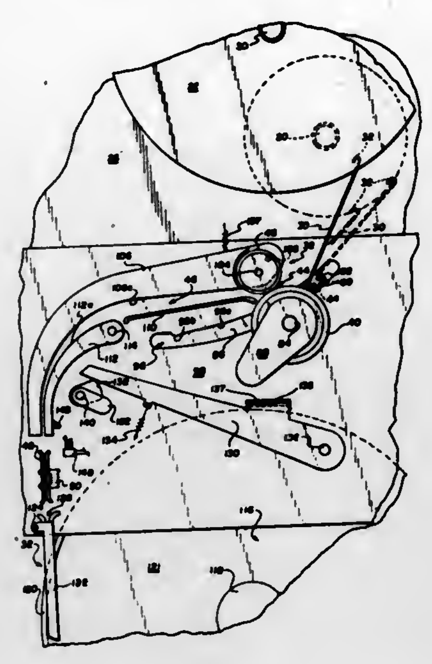
William A. Martin, and John Q. Saint Clair, II, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 5, 1970, Ser. No. 77,959

Int. Cl. G03b *1/04, 1/58*

U.S. Cl. 242—195 **7 Claims**

Motion picture projector apparatus includes a hook-like member that is adapted to be moved into close proximity to a rotating roll of film or the like for engaging the film through an opening in a leading end portion of the film. The hook member then delivers the leading end portion of the film to self threading apparatus of the projector, and the hook is automatically disengaged from the film. The projector apparatus disclosed provides for automatic rewind of film, and for review or manual rewind of film.



3,724,778
OPERATING APPARATUS FOR A CARTRIDGE TAPE RECORDER

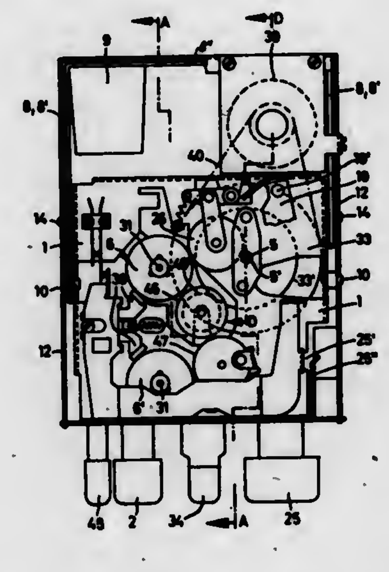
Dieter Kuhnlein, Nurnberg; Reinhold Emmert, Furth/Bayern, and Georg Haag, Nurnberg, all of Germany, assignors to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig, Furth-Bayern, Germany

Filed Sept. 13, 1971, Ser. No. 179,981

Claims priority, application Germany, Sept. 12, 1970, P 20 45 230.6

Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*

U.S. Cl. 242—198 **12 Claims**



The carrier of the operating means for a tape cartridge, is mounted for rectilinear movement between an inoperative position and an operative position in which the operating means are inserted into the cartridge for operating the tape. Double armed lever means support at one end the carrier, and are at the other end loaded by a weight so that the carrier and the operating means thereon, are counter-balanced and can be moved by a small force to and from the operative position.

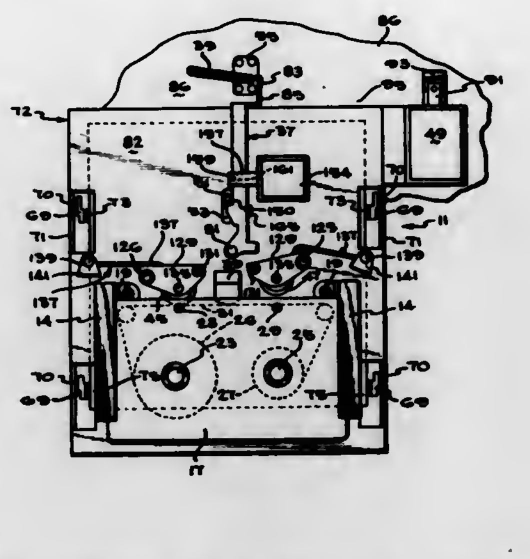
3,724,779
CASSETTE PLAYBACK AND/OR RECORDING APPARATUS WITH LOADING EASE FEATURE

Robert J. Fanella, Villa Park; Donald W. Marcinkus, Arlington Heights, and Glenn E. Sterly, Carol Stream, all of Ill., assignors to Ampex Corporation, Redwood City, Calif.

Filed Dec. 23, 1970, Ser. No. 100,872

Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*

U.S. Cl. 242—198 **7 Claims**



A significant reduction in the amount of manual force required to insert a cassette into operative position within a tape playback and/or recording apparatus is achieved by means sensing the inward movement of the cassette and a carriage movable thereby and means operated by the sensing means to shift some of the operating mechanisms in the apparatus against spring forces and friction forces. The means for sensing the inward movement of the cassette and carriage may be in the form of a cam surface on a pawl or lever which is pivoted to operate a switch to cause operation of means including a "repeat" solenoid to shift the tape transporting means to place a forward feed pinch roller in operative and the reverse feed pinch roller in an inoperative position independently of the manual force inserting the cassette and moving the carriage.

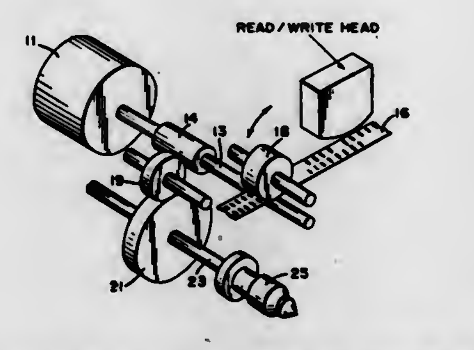
3,724,780
CASSETTE LOADING MAGNETIC TAPE DRIVER

Richard N. Wolf, North Billerica, Mass., assignor to Memodyne Corporation, Newton, Mass.

Filed July 23, 1971, Ser. No. 165,663

Int. Cl. B11b *15/32*; **G03b** *1/04*

U.S. Cl. 242—206 **4 Claims**



A cassette loading magnetic tape drive system utilizing a stepping motor directly coupled to a capstan shaft which cooperates with a pinch roller to provide tape drive. The same stepping motor drives a slip clutch through a transfer roller, the slip clutch providing controlled torque to a cassette reel and controlled tension on the tape through a resilient driver hub which engages all splines of the cassette reel. Stepping motion is transferred from the motor only when the entire system is in operation.

3,724,781
SPIN-STABILISED ROCKET PROJECTILE

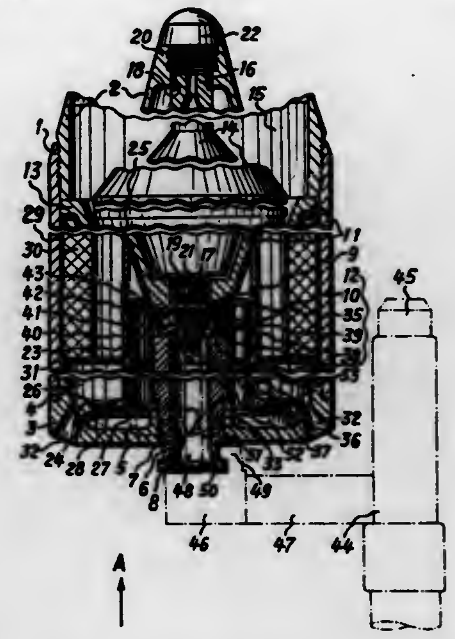
Abraham Makow, Ramat Gan, Israel, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle, A.G., Zurich, Switzerland

Filed Feb. 10, 1971, Ser. No. 114,321

Claims priority, application Switzerland, Feb. 27, 1970, 2897/70

Int. Cl. F42b *13/24, 11/04*

U.S. Cl. 244—3.23 **8 Claims**



A spin-stabilized rocket projectile of the type containing a propellant grain and nozzles for the generation of propulsive thrust and spin, said nozzles being disposed in a common nozzle. Propellant grains are provided for providing thrust for spin. A spin generating nozzle is disposed between each pair of adjacent propulsion nozzles. This arrangement allows rotation to be imparted to the projectile before it leaves its guide to improve stability during flight by allowing spin to be generated separately from forward propulsion.

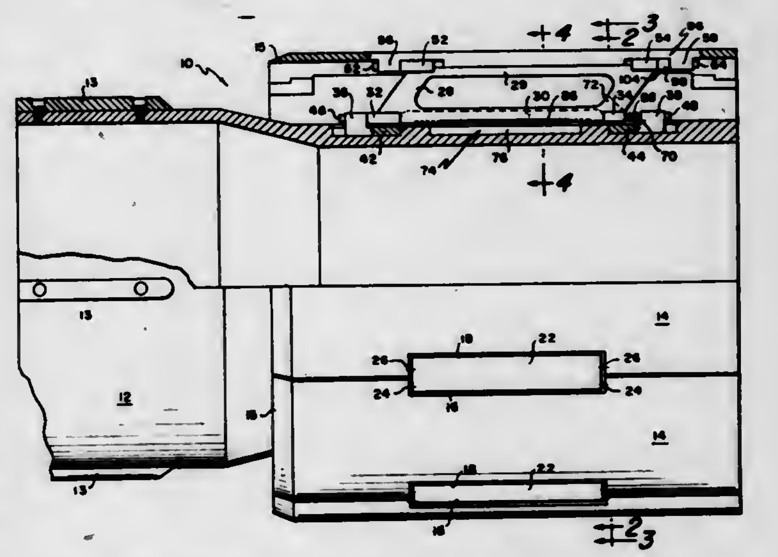
3,724,782
DEPLOYABLE AERODYNAMIC RING STABILIZER

Harry J. Gauzza, Silver Spring, and Eugene V. Horanoff, Clarksville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 22, 1971, Ser. No. 165,240

Int. Cl. F42b *25/06, 25/02*

U.S. Cl. 244—3.27 **7 Claims**

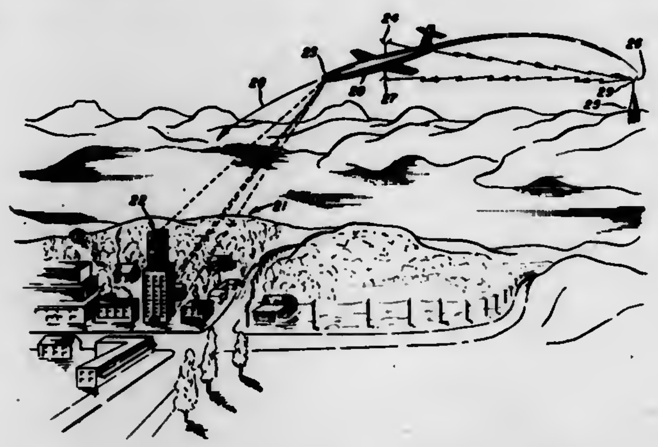


A foldable ring assembly for the aerodynamic stabilization of missiles. The ring assembly includes a plurality of arcuate segments pivotally interconnected by hinges between adjacent segments. Each segment is supported on the missile by a radial strut which is pivotally connected to both the missile and the segment. When in a missile launch tube, the struts are held in positions tangential to the missile and the interleaved segments partially overlap one another in close proximity to the missile case. Upon exit from the tube, torsion springs rotate the struts into radial positions causing the arcuate segments to unfold into a complete ring concentrically positioned around the missile.

3,724,783
DISCRIMINATORY MISSILE GUIDANCE SYSTEM

William J. Nolan, Jr., and Frederick C. Alpers, both of Corona, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 1, 1952, Ser. No. 296,773
Int. Cl. F41g *9/00*; **G01s** *7/10, 7/62*
U.S. Cl. 244—3.15 **12 Claims**

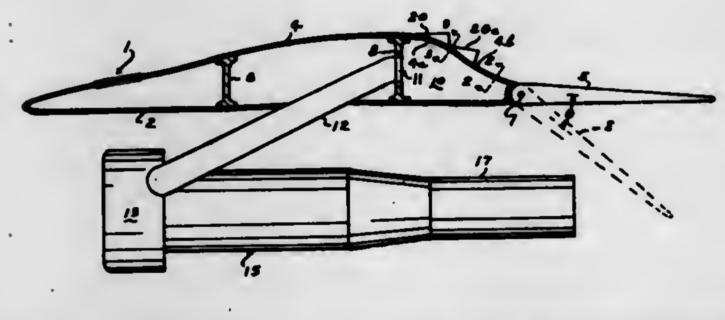


1. In a discriminatory guidance system for self-directing an aircraft to home on a selected target disposed within a group of similar targets, a screen for receiving the target image, a first and second cyclically operating generating means cooperatively performing to convert the received screen image into a series of sequential electrical image signals, pulse producing means actuated by the first generating means for providing a tracking pulse at a given time during selected cycles of the first generating means, gating means responsive to the pulse producing means and jointly controlled by both generating means to allow tracking pulse passage during a given portion of the second generated cycle, and coincident measuring means energized by the electrical image signals and the gated tracking pulses to provide error signals proportional thereto, said error signals fed back to the pulse producing means for controlling the time during the cycle of the first generating means at which the tracking pulse is generated.

3,724,784
WING WITH THRUST AUGMENTOR

Hans J. P. von Ohain, and William S. Campbell, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 10, 1971, Ser. No. 179,520
Int. Cl. B64c *9/38*
U.S. Cl. 244—42 CC **8 Claims**

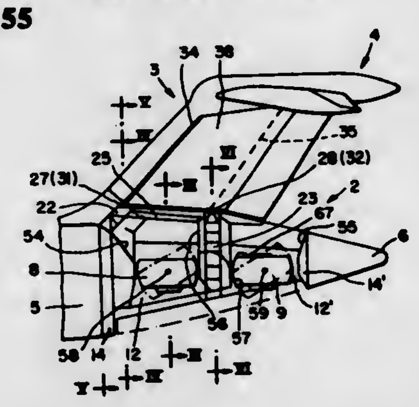


The invention relates to a propulsion and sustension system for aircraft in which a wing is provided having an extended laminar flow airfoil section with the maximum thickness aft of the 70 percent chord point. The wing has at least one surface having a convex portion extending aft of the point of maximum thickness and coupled to a concave section extending to the trailing edge of the airfoil section or faired into the surface of a flap extending beyond the airfoil trailing edge. The wing is provided in the vicinity of the aforementioned convex section with a plurality of nozzles connected to a primary source of air under pressure. The nozzle assemblies extend spanwise in closely spaced relation and inject high velocity jets of air into the airflow over the wing in the zones over the convex portion and induce a secondary flow including the boundary layer to mix therewith and to be accelerated in the zones adjacent the convex section. The mixed flow is decelerated with an accompanying pressure rise in the zones adjacent the concave section. This action augments the thrust which would be produced by the primary jets of air if acting alone. By means of a simple flap arrangement it is possible to vector the thrust to produce a lift component.

3,724,785
ARRANGEMENT OF JET LIFT ENGINES IN AIRCRAFT

Anton Buchstaller, Friedrichshafen, Germany, assignor to Dornier A.G., Friedrichshafen/Bodensee, Germany

Filed April 28, 1971, Ser. No. 138,248
Claims priority, application Germany, July 4, 1970, P 20 33 218.7
Int. Cl. B64d *29/04*
U.S. Cl. 244—55 **10 Claims**

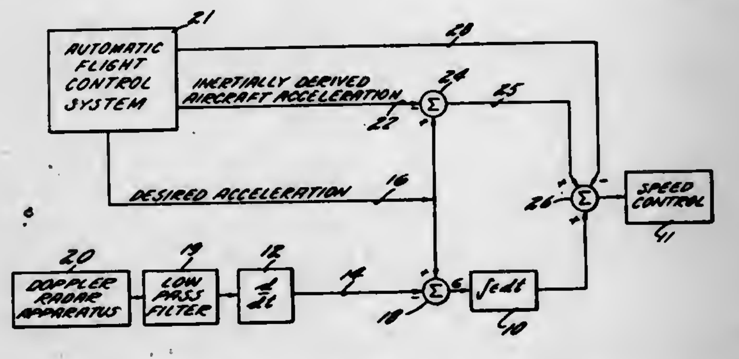


The disclosure is of an arrangement of a jet lift engine in an aircraft, the engine being positioned in a substantially vertically-extending bay in the aircraft fuselage at least partially in the area of the rudder assembly. There are means for supporting the rudder assembly above the bay, and air inlet openings leading into the bay on both sides of the rudder assembly, the openings terminating in a common mixing chamber above the engine.

3,724,786
AIRCRAFT GROUND SPEED CONTROL SYSTEM

Don L. Adams, Fairfield, and Louis S. Cotton, Monroe, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 20, 1971, Ser. No. 146,575
Int. Cl. B64c *13/50*
U.S. Cl. 244—77 G **2 Claims**

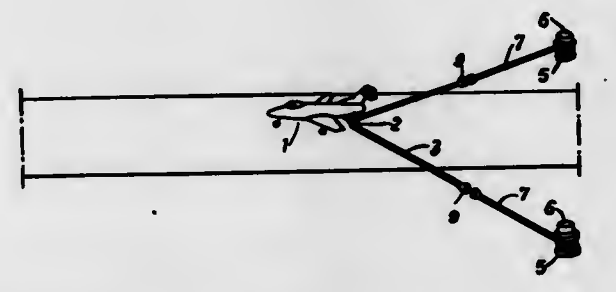


An integration of the difference between a desired aircraft acceleration and the actual aircraft acceleration provides a signal which is compared with an aircraft speed dependent parameter for generating a signal used to cause the aircraft to alter its acceleration to the desired value. The actual acceleration of the aircraft is determined by differentiating a signal proportional to the aircraft ground speed, which is provided by a doppler radar apparatus.

3,724,787
LINE OR BAND FOR ARRESTING AIRCRAFT

Per Borje Fonden, and Karl Ove T. Walander, both of Linkoping, Sweden, assignors to Borgs Fabriks AB, Norrkoping, Sweden

Filed May 21, 1971, Ser. No. 145,702
Claims priority, application Sweden, May 22, 1970, 7037
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 A **3 Claims**

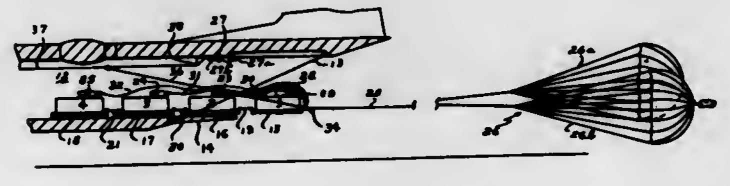


An aircraft arresting apparatus having a line, band or cable for engagement by a landing aircraft, the line, band or cable being composed of a plurality of lengths or sections of different tensile strength, the lengths being suitably united or joined together in endwise relationship.

3,724,788
RAPID EXTRACTION SYSTEM

Gene A. Petry, Conover, and Michael H. Reagan, Dayton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force

Filed June 3, 1971, Ser. No. 149,493
Int. Cl. B64d *9/00, 1/00*
U.S. Cl. 244—137 R **4 Claims**



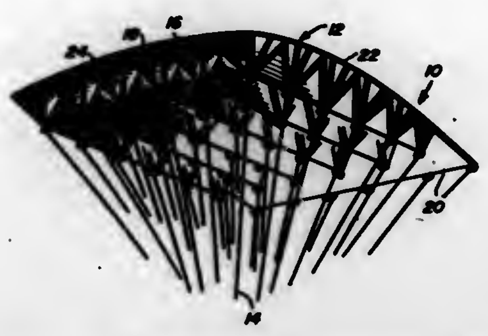
Rapid extraction means for extracting a series of interconnected cargo loads from the cargo space of a delivery aircraft, in which a force-transfer mechanism is utilized to initially apply the extraction force of an extraction parachute assembly directly to the leading cargo load, and thereafter automatically transfer the continued extraction force being exerted to a series of static-deployment lines interconnected with a recovery parachute assembled to each cargo load.

3,724,789
RAM AIR GLIDE PARACHUTE

Stephen L. Snyder, 331 Cherry Hill Boulevard, Cherry Hill, N.J.

Filed Feb. 2, 1970, Ser. No. 7,687
Int. Cl. B64d *17/20*
U.S. Cl. 244—145 **16 Claims**

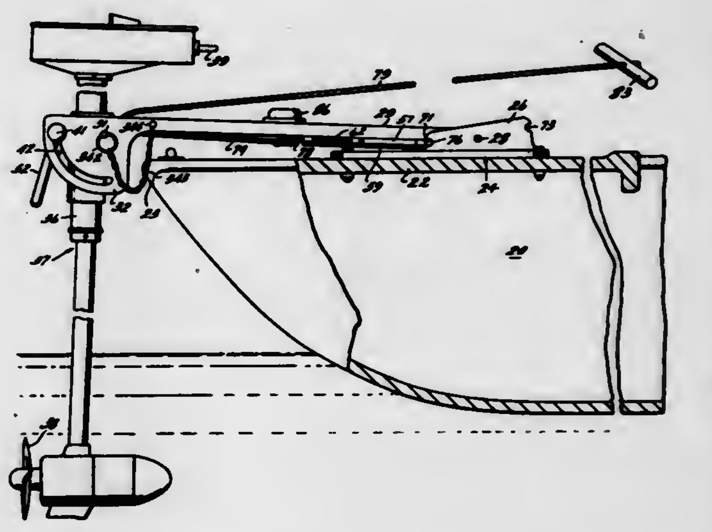
An airfoil-shaped parachute having airflow channels formed below a top flexible canopy between ribs extending from the leading edge of the canopy toward its trailing edge. Suspension lines are secured to the lower edges of the ribs for supporting a payload. The airflow through the channels and the distribution of stress applied from the suspension lines, maintains the airfoil shape of the inflated parachute to sustain a controlled glide path for the payload.



3,724,790
MOTOR MOUNTING STRUCTURE

Garrett H. Harris, Jackson; Edward A. Dutt, and Billy J. Savage, both of Starkville, all of Miss., assignors to The Herschede Hall Clock Company, Starkville, Miss., by said Dutt and Savage

Filed April 23, 1971, Ser. No. 136,755
Int. Cl. F16m *1/02*
U.S. Cl. 248—4 **5 Claims**



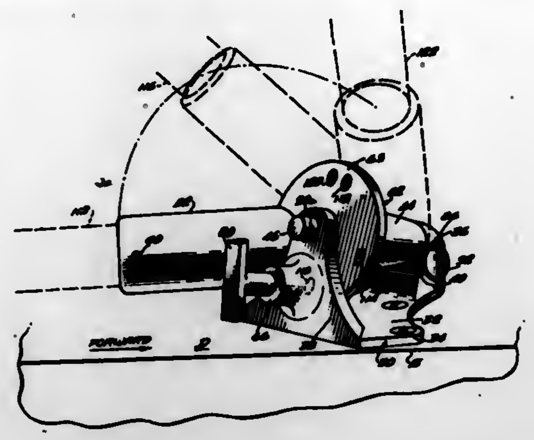
A motor mounting structure for supporting an outboard motor on a boat which includes a bracket mounted on the boat, a link pivotally mounted on the bracket and a clamp pivotally mounted between flanges at a free end of the link. The clamp engages and supports a housing of the motor. The flanges are drawn together to grip the clamp and hold the clamp in selected angular positions. The link swings through an arc of approximately 180 degrees between an operative position for supporting the motor in upright position outboard of the boat and a retracted position for supporting the motor in substantially horizontal position inboard of the boat.

3,724,791
OUTRIGGER MOUNT FOR FISHING BOATS

Paul A. Mason, 25 Middle Road, Palm Beach, Fla.

Filed April 26, 1971, Ser. No. 137,203
Int. Cl. A01k *97/10*
U.S. Cl. 248—42 **10 Claims**

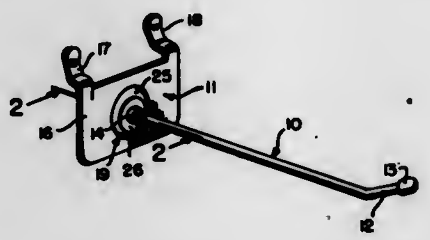
The present invention provides an outrigger mount which includes a tubular socket for the reception of the butt end of an outrigger pole, the tubular socket being pivotally mounted on a bracket which is adapted for horizontal mounting, generally required on open type fishing boats, as well as for vertical mounting on boats with deck houses. The tubular socket is angled relative to the pivot which is in turn angled relative to the mounting surface to provide a compound angular relationship between the socket and the mounting surface.



Indexing and detent means are provided whereby the outrigger pole may be selectively rotated to and locked in a raised or "stowed" position, extended or "fishing" positions and a lowered position for passing under bridges or the like.

3,724,792
APERTURED PANEL HOOK AND METHOD FOR MANUFACTURE

David R. Thalenfeld, 162-41 Powell's Cove Boulevard, Beachurst, N.Y.
Filed Aug. 10, 1970, Ser. No. 62,271
Int. Cl. A47g *23/02*
U.S. Cl. 248—223 9 Claims



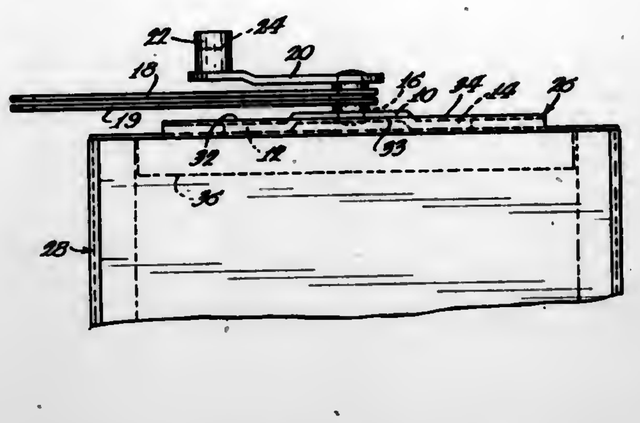
The invention relates to a new apertured panel display hook and to a method of manufacturing the hook. The new hook is characterized particularly by the construction of its principal components, a base member and a hook member, and the manner in which these two components are secured together. The base member is stamped and formed of sheet or strip metal stock to provide a cylindrical walled opening. The base member is given a surfaCe plating treatment subsequent to its formation but prior to assembly with the hook member. The hook member is formed of pre-plated wire stock, which is cut to length, shouldered and headed, and then inserted into the walled opening of the base member. The base and hook members are then locked together by mechanical deformation of one or both parts.

The new constructional technique enables extra ordinary reductions in manufacturing cost to be realized while, at the same time, providing an end product which is actually far superior to the conventional product.

3,724,793
MOUNTING MEANS FOR CARRIER

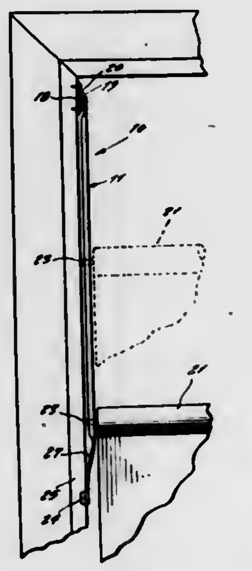
Hamilton L. Wood, Charlottesville, Va., assignor to Acme Visible Records, Inc., Crozet, Va.
Filed Sept. 14, 1971, Ser. No. 180,358
Int. Cl. A47b *96/06*
U.S. Cl. 248—247 6 Claims

A horizontal tray or other carrier is supported at its ends by spaced hanger brackets which overhang spaced projecting arms of a support. The brackets may comprise detent projections locking against the bottom surface of the arms. The brackets facilitate mounting and dismounting of the tray, and the detent projections serve to releasably lock the hanger in position.



3,724,794
WINDOW SHADE BRACKET EXTENSION

William R. Anderson, 603 White Horse Pike, Haddon Heights, N.J.
Filed April 19, 1971, Ser. No. 135,190
Int. Cl. A47h *1/13*
U.S. Cl. 248—264 1 Claim

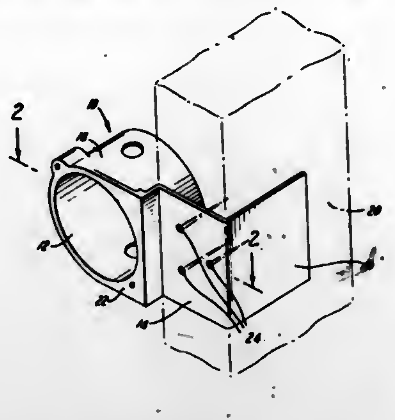


A pair of extensions attachable to the conventional brackets that are used to support a window shade along the top of a window, the extensions hanging downward and the lower ends being adaptable to support the window shades at a lower elevation, so that the upper portion of the window area is not blocked by the shade, thus allowing air to circulate from the out-of-doors and into the room when the upper window sash is lowered.

3,724,795
SELF-MOUNTING ELECTRICAL CONNECTION BOXES

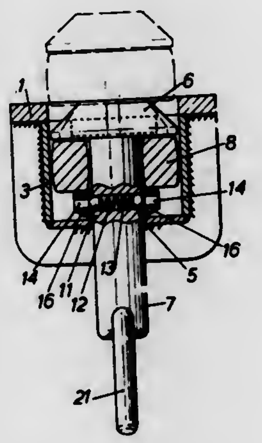
Joseph R. Callanan, 382 Homeland Drive, Whitman, Mass.
Filed Nov. 12, 1970, Ser. No. 88,587
Int. Cl. F16m *13/00*
U.S. Cl. 248—360 7 Claims

Electrical connection boxes having an alignment arm member extending from the box to align it on a building wall member, and a holding leg member extending from the arm to hold the box on the building wall member for permanent fastening.



3,724,796
MEANS FOR MOUNTING FREIGHT CONTAINERS ON TRAILERS AND OTHER VEHICLES

John Charles Hawkins, Walsall, and William Waite, Wednesbury, both of England, assignors to Rubery, Owen & Co. Limited, Darlaston, Wednesburey, Staffordshire, England
Filed March 11, 1971, Ser. No. 123,261
Claims priority, application Great Britain, Jan. 30, 1970, 4,514/70; March 14, 1970, 12,388/70
Int. Cl. B65j *1/22*
U.S. Cl. 248—361 R 6 Claims

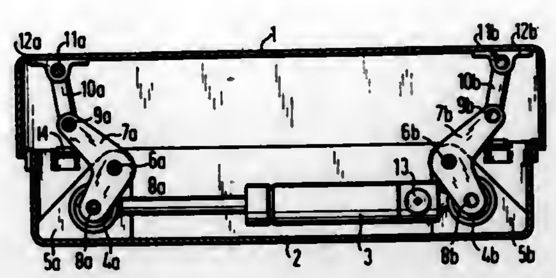


In means for securing a freight container to the platform of a vehicle a Tee-headed spindle axially movable between projected and retracted positions in a housing and angularly movable between fastening and releasing positions passes through an element mounted on the spindle for axial movement therewith and movable with the spindle into and out of a position in which it holds the spindle in the projected position, the spindle being movable angularly independently of the said element between the fastening and releasing positions.

3,724,797
RESILIENT SEAT

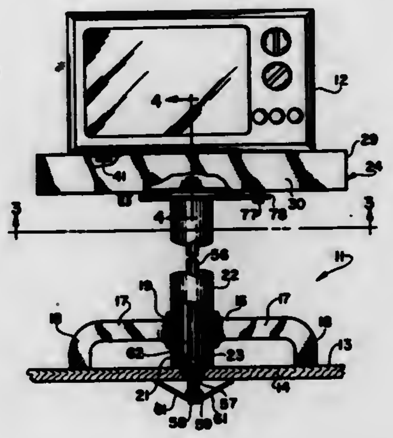
Herbert Freitag, Koblenz-Lutzel, and Wilhelm Westerteiger, Oberlahnstein, both of Germany, assignors to Stabilus Industrie und Handelsqesellschaft mbH, Koblenz-Neuendorf, Germany
Filed Feb. 4, 1971, Ser. No. 112,552
Claims priority, application Germany, Feb. 17, 1970, P 20 07 140.3
Int. Cl. F16m *13/00*
U.S. Cl. 248—400 12 Claims

The seat for a chair or vehicle has two box-shaped portions which telescopically engage each other for vertical expansion and contraction of the seat. A pneumatic spring mounted in the space enclosed by the boxes biases the boxes apart by means of levers carrying links or rollers or by means of cams and rollers. The spring axis is horizontal so that the minimum height of the seat is very small.



3,724,798
STAND FOR SUPPORTING AN APPLIANCE

Joseph A. Lucasey, 2950 Northwood Drive, Alameda, Calif.
Filed March 22, 1971, Ser. No. 126,584
Int. Cl. A47g *29/00*
U.S. Cl. 248—418 9 Claims

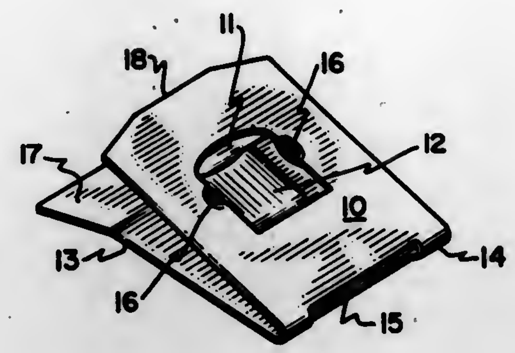


An antitheft stand for a television receiver or other applicance placed in a guest room of a motel or the like to prevent unauthorized removal of the appliance therefrom. The stand includes a base supported upon the floor of such room, a post extending upwardly from the base, and a platform structure mounted on the post and composed of two separable sections one of which is an underlying closure or receptacle secured to the post. A tie rod extends from the inside of the closure through the post and base and is fixedly attached to the floor of the room to hold the components of the stand together as well as to secure the same to the floor. A lock releasably secures the platform plate section and closure section to each other and thereby prevents access to the means used to fasten the plate to the television receiver and therefore prevents removal of the receiver from the stand and from the floor to which it is attached.

3,724,799
RING DISPLAY DEVICE

George L. Dotson, Bliss, Idaho, assignor to Datson and Evans, Inc., Bliss, Idaho
Filed April 19, 1971, Ser. No. 135,167
Int. Cl. A47b *97/04*
U.S. Cl. 248—450 1 Claim

A spring-clip device for displaying ring-type jewelry is disclosed. The device comprises a single flat strip of material such as metal folded to form a top member and a bottom member wherein the top member is disposed above the bottom member at an angle of about 60° or less. A tongue projecting above the bottom member has a flat portion which passes through an opening in the top member when the top member is depressed, the opening in the top member being larger in area than the flat portion of the tongue. A ring, bracelet or other ring-type display device is held in position between the upper surface of the top member and the lower surface of the tongue. Also disclosed are means of assembling these spring-clip devices together to provide a large display for a plurality of rings, bracelets, etc.



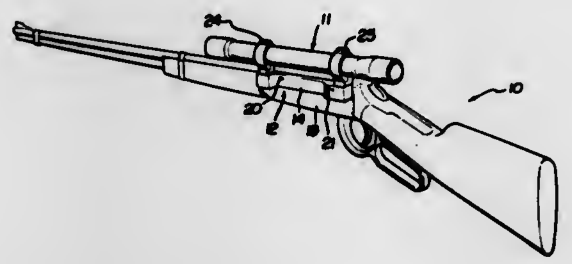
3,724,800
TELESCOPIC SIGHT MOUNTING

Irving N. Rubin, 21781 Straford, Oak Park, Mich., and Ivan Jimenez, 1780 Ouster Lane Drive, Ypsilanti, Mich.

Filed Oct. 8, 1971, Ser. No. 187,628

Int. Cl. F41g *1/38*

U.S. Cl. 248—205 R **5 Claims**



A telescopic sight mounting formed of a mounting bar for fastening upon the side of a rifle, and a pair of ring-type scope holding clamps fastened upon the upper edge of the bar, with the forward clamp being pivotable about a vertical axis, and a rear clamp being arcuately movable in a horizontal plane for horizontally adjusting the angle of the scope relative to the rifle, and with the means for holding and moving the rear clamp being normally concealed by the clamp itself.

3,724,801
COLUMN FORM AND CLAMP ASSEMBLY

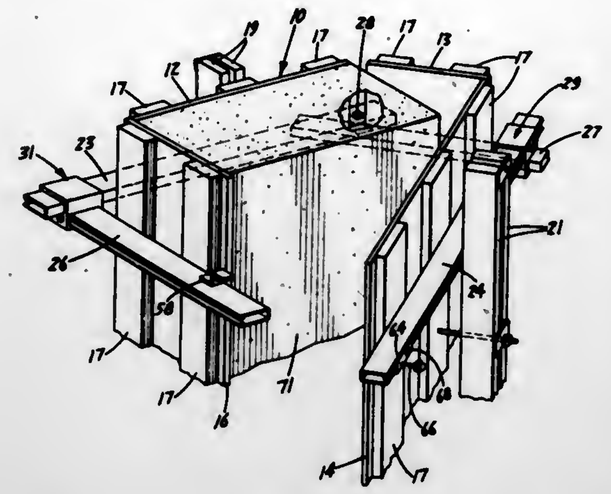
Wally O. Sels, and Alfred L. Paul, both of Minneapolis, Minn., assignors to Breck-White Co., Minneapolis, Minn.

Filed May 20, 1971, Ser. No. 145,333

Int. Cl. E04g *13/02*

U.S. Cl. 249—48 **17 Claims**

A form usable to construct a concrete column is held in a closed position by a number of clamp assemblies surrounding the form. Each clamp assembly has two pairs of channel bars held in adjustable right angle relationship with a corner bracket unit. A single pivot joins one bar of each pair of bars together. A quick release connector holds the other bars of each pair of bars together.



3,724,802
PLASTICS MOULDING PRESSES

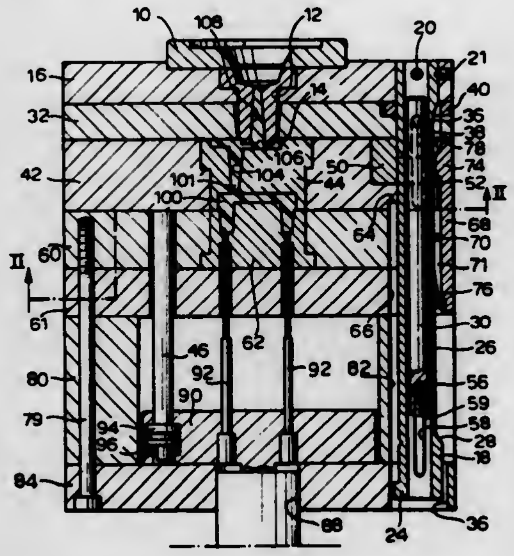
Giovanni Bessolo Veneria, Ivrea, Italy, assignor to Ing. C. Olivetti & C.S.P.A., Ivrea, Italy

Filed Sept. 3, 1971, Ser. No. 177,607

Claims priority, application Italy, Sept. 18, 1970, 70145 A/70

Int. Cl. B28b *7/10*

U.S. Cl. 249—67 **4 Claims**



A moulding press has a series of hollow guide bolts, each connected at one end to a plate of the press and having a head defining the maximum distance of another plate that slides on the bolt. A pin is contained slidably in the bolt and has transverse spikes protruding through longitudinal slots in the wall of the bolt. The spikes engage certain plates of the press to define their maximum movements.

3,724,803
GEAR MOLDING DEVICE

Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif.

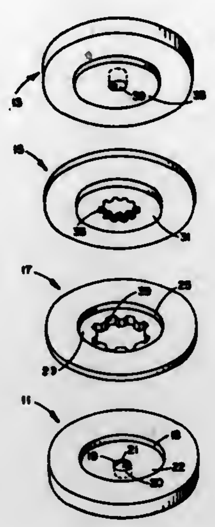
Filed Sept. 29, 1970, Ser. No. 76,452

Int. Cl. F16k *51/00*

U.S. Cl. 249—102 **7 Claims**

A device useful for molding gears of plastic or other material and particularly for molding multiple gears, which device comprises first and second opposed end plates, the first end plate preferably having a removable insert therein for selectively controlling the hub dimensions for molded gears, and

the second end plate preferably having at least an opening therein for admitting the molding material. Disposed between the end plates is at least one additional plate containing the configuration of a gear to be molded. By stacking additional plates having configurations of additional gears one on top of another between the two end plates, a plurality of multiple integrally-formed gears of selected dimensions and pitch, and with selected hub and shaft holes can be readily formed.



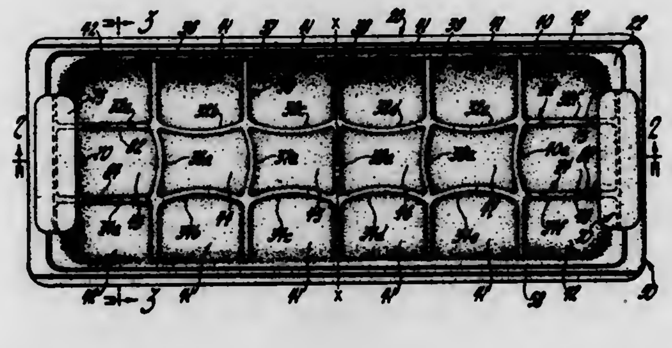
3,724,804
FLEXIBLE GRID FOR FREEZING TRAYS

Lewis B. Campbell, Miamisburg, and Joe P. Pietrzak, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 4, 1971, Ser. No. 168,978

Int. Cl. F25c *1/24*

U.S. Cl. 249—128 **6 Claims**



Integrally molded palm hold handles are located at either end of a resilient grid for use with a freezing tray. The handles are formed such that the grid can be readily twisted in combination with the tray during a primary ice release operation and after removal of the grid the handles allow a secondary ice release operation in cooperation with certain of the ice cube compartment wall segments formed in lobed fashion enabling the grid to be flexed and twisted thereby readily releasing the ice cubes therefrom.

3,724,805
SLAB CASTING APPARATUS

Armin Kleiber, Mozartstrasse 5, and Wilfred Schmidt, Rennbergstrasse 4, both of 75 Karlsruhe, Germany

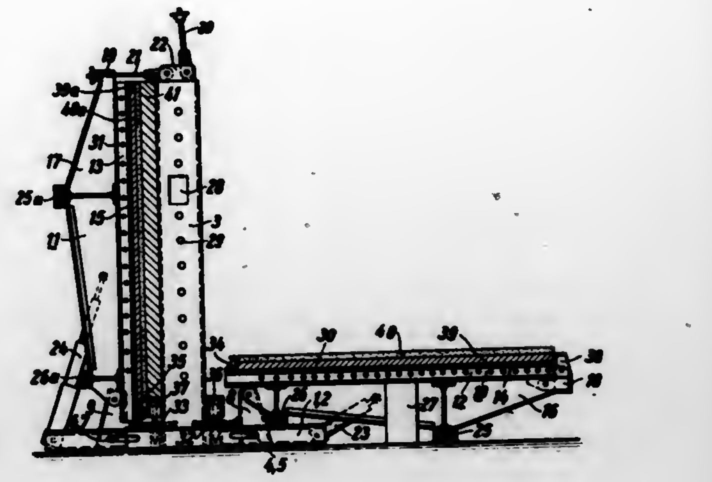
Filed Nov. 23, 1970, Ser. No. 91,789

Claims priority, application Germany, Jan. 16, 1970, P 20 01 825.1

Int. Cl. B28b *7/22*

U.S. Cl. 249—171 **3 Claims**

A vertical mould for casting concrete or other hardenable material in which one side of the mould can be lowered into a horizontal position to permit the preforming of certain layers and the positioning of fittings and reinforcement before being raised and secured for the main casting operation.



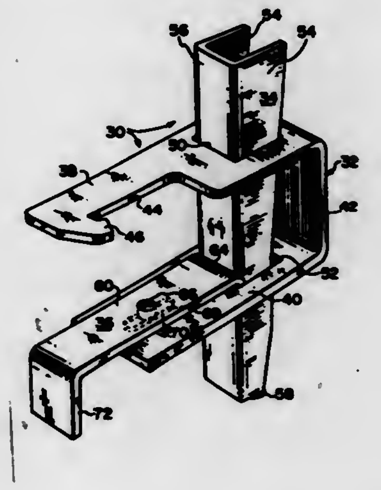
3,724,806
SELF-CONTAINED WALER CLAMP FOR CONCRETE WALL FORM

James C. Shoemaker, Hampshire, Ill., assigner to Symons Corporation, Des Plaines, Ill.

Division of Ser. No. 79,235, Oct. 8, 1970, Pat. No. 3,655,162. This application Sept. 24, 1971, Ser. No. 183,369

Int. Cl. E04g *17/00*

U.S. Cl. 249—219 W **2 Claims**



An inseparable waler clamp assembly for convenient manual application to the protruding end of a tie rod for securely clamping either a single or a dual waler hard against the outer side of a series of upstanding and edge-to-edge wall form panels. In one form of the waler clamp assembly, the design is such as to accommodate attachment to a cylindrical tie rod or tie wire having a button-like enlargement on one end thereof.

3,724,807
PINCH VALVE SLEEVE

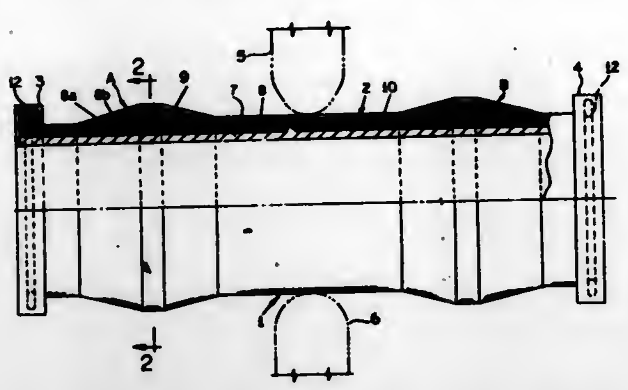
Lawrence D. A. Jackson, Montreal, Quebec, Canada, assignor to Lawjack Equipment Limited, Montreal, Quebec, Canada

Filed Dec. 23, 1970, Ser. No. 100,895

Int. Cl. F16k *7/06;* **F16l** *11/08*

U.S. Cl. 251—7 **4 Claims**

A pinch valve sleeve having an inner wall of elastomeric material and reinforcing outer wall of fabric and a pair of circumferential reinforcing members built into the outer wall of



fabric, the reinforcing members being located adjacent the end portions of the valve sleeve.

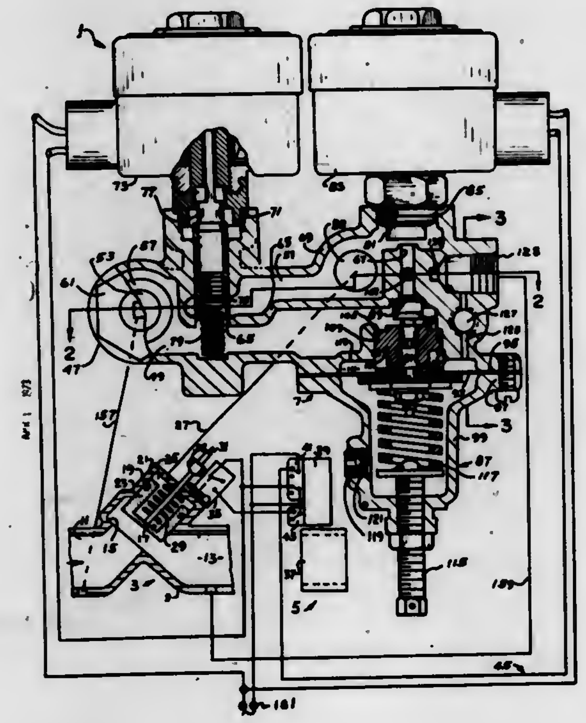
ERRATUM

For Class 251—9 see:
Patent No. 3,724,818

3,724,808
TWO STAGE FLOW CONTROL SYSTEM AND PILOT

Harry Sugden, Jr., Statesboro, Ga., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 10, 1972, Ser. No. 216,604
Int. Cl. F16k *15/00*; F16k *31/12*
U.S. Cl. 251—30 **15 Claims**



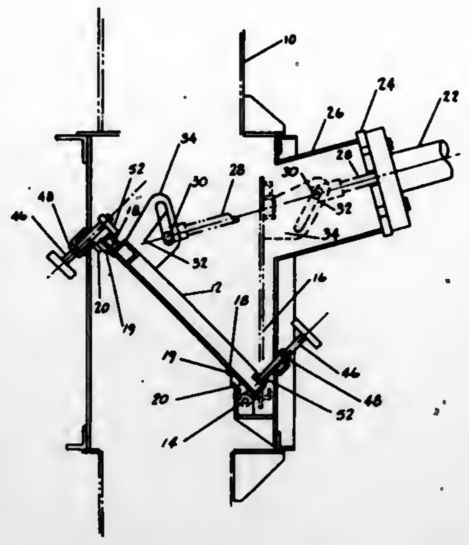
A compound pilot of multiple function provides a greatly simplified two stage flow control valve and flow regulator.

3,724,809
SHUT-OFF DAMPER

Salvatore J. Reale, Wayne, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Nov. 1, 1971, Ser. No. 194,211
Int. Cl. F16k *31/16*
U.S. Cl. 251—58 **4 Claims**

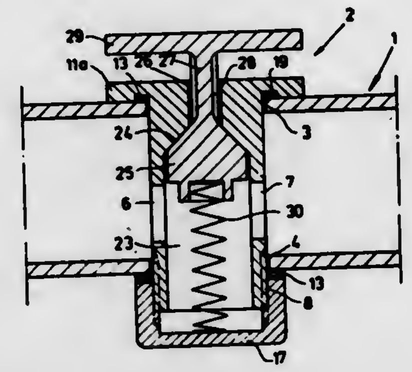
A shut-off damper which can be actuated by an air cylinder and closed so that there is substantially no leakage passed it. A bearing surface on the damper is urged against a seating surface on the duct sufficiently to form a hermetic seal.



3,724,810
VALVED PIPE LINE CONNECTION

Rune Siqvard Andersson, Ossjo 43, Angelholm, Sweden

Filed Jan. 14, 1971, Ser. No. 106,322
Claims priority, application Sweden, Feb. 18, 1970, 2052/70
Int. Cl. F16k *51/00*; F16l *41/00*
U.S. Cl. 251—145 **7 Claims**



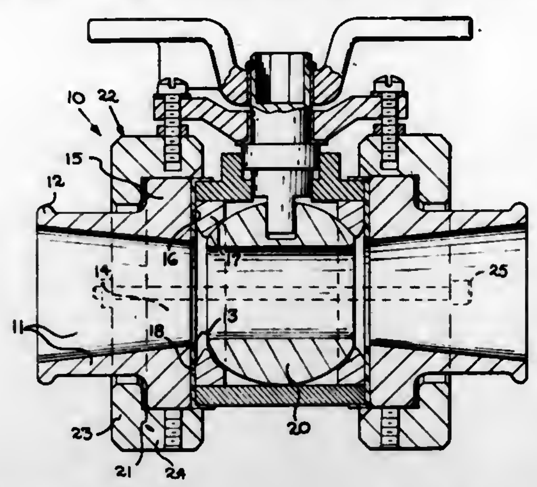
A method for obtaining a connection between a feed pipe line and a branch pipe line, wherein an opening is made in the envelope surfaces of each line whereupon the branch pipe line, which has been provided with at least one annular sealing element is introduced through the openings of the feed pipe line until the opening in the branch pipe line is situated within the feed pipe line and until the sealing element for sealing the opening in the envelope surface of the feed pipe line under pressure contacts said envelope surface, so that the branch pipe line is permanently fixed.

3,724,811
CERAMIC PIPE COUPLING DEVICE

William E. Price, Sylvania, and Paul W. Dullabaun, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 23, 1970, Ser. No. 83,529
Int. Cl. F16l *9/10, 23/00*
U.S. Cl. 251—148 **1 Claim**

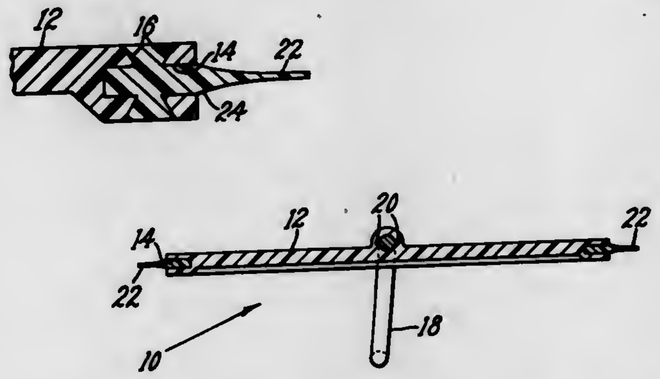
A device for connecting piping parts, such as a pipe section, to a ball valve, in a piping system. The invention comprises, in combination, a glass-ceramic connector having a radially-extending peripheral flange at one end, and a retaining ring of a slightly greater diameter than the connector, the ring having a converse mating portion with the flange, the ceramic connector placed in an abutting relationship with another portion of the piping system, such as a ball valve. The retaining ring is positioned about the peripheral flange of the glass-ceramic connector; a similar connector and ring are positioned on the other end of the piping system, such as a ball valve, and means pressing the ring against the flange portion of the connector so as to hold the ring against a gasket interposed between the ring and the flange of the valve. A peripheral bead at the other end of the connector provides a means for joining the connector to the other parts of a piping system, providing a glass-ceramic path for fluid flows.



3,724,812
DAMPER ASSEMBLY

Donald C. Richardson, Clarkston, Mich., assignor to Warren Fastener Corporation, Mount Clemens, Mich.

Filed Nov. 17, 1971, Ser. No. 199,627
Int. Cl. F16k *1/26*
U.S. Cl. 251—306 **5 Claims**

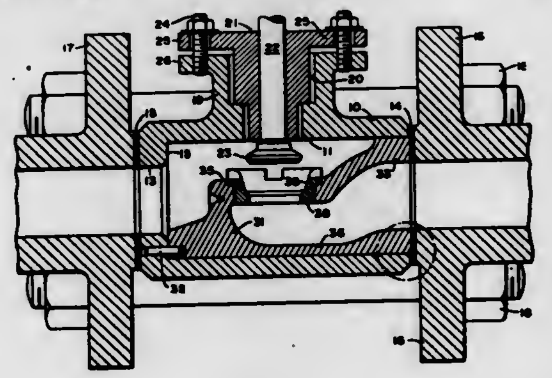


A tough, light weight and economical damper assembly is provided by molding a flexible plastic sealing margin into the slotted locking rim of a relatively rigid plastic main body.

3,724,813
VALVE WITH REMOVABLE SEATING MEANS

Hans D. Baumann, Foxboro, Mass., assignor to Masoneilan International, Inc., Norwood, Mass.

Filed May 7, 1971, Ser. No. 141,204
Int. Cl. F16k *51/00*
U.S. Cl. 251—360 **17 Claims**

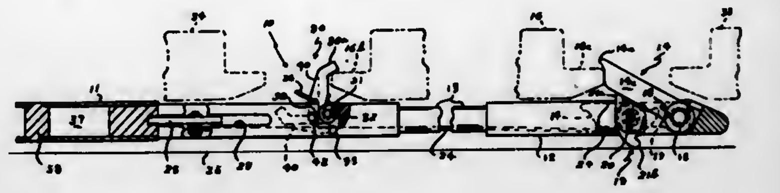


Control valve with integral bonnet and endwise removable insert providing the valve seat means. Provision for valve plug means larger or smaller than the bonnet opening, and, where larger, for removal of the plug end-wise of the valve body upon withdrawal of the insert.

3,724,814
ASSEMBLY OF A PALLET TOWING BRIDLE AND METHOD OF USE

Roger H. Walton, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 1, 1971, Ser. No. 203,693
Int. Cl. B66f *3/00*
U.S. Cl. 254—133 **10 Claims**

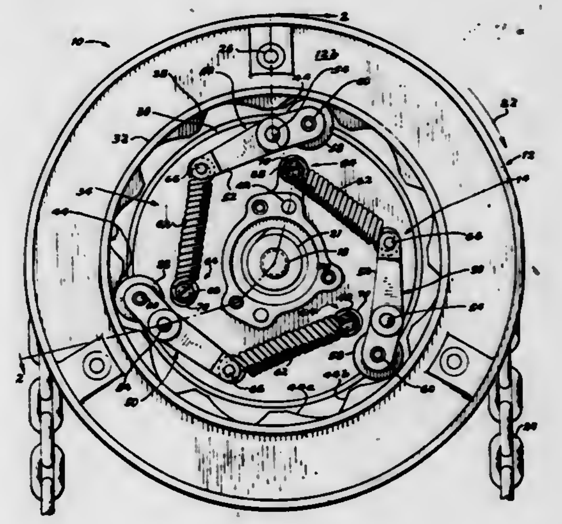


An aircraft cargo pallet-towing bridle in which a framework assembly, incorporating a front body portion, a rear nose portion and an elongated tube rigidly interconnected therebetween, pivotally mounts a rear pawl member and a front latch member each independently movable between retracted and extended positions in respective locking engagement with oppositely-disposed side lip portions on the pellet to be towed.

3,724,815
HOIST OPERATING HAND WHEEL INCORPORATING AN OVERLOAD PROTECTION MECHANISM

Harold V. Hawkins; Ralph A. Dick, both of Williamsville, and Alfred M. Parslow, Tonawanda, all of N.Y., assignors to Columbus KcKinnon Corporation, Tonawanda, N.Y.

Filed June 3, 1971, Ser. No. 149,705
Int. Cl. B66d *1/00*
U.S. Cl. 254—169 **5 Claims**



A hoist operating hand wheel including concentric hub and rim portions; the hub portion pivotally supporting three dog-leg shaped arms carrying rollers normally biased by adjustable tension springs into engagement with roller receiving recesses formed in a radially inwardly facing surface of the rim portion. When an attempt is made to raise a load in excess of desired hoist capacity, the rollers are forced to ride out of their associated recesses against the return bias of the tension springs, thereby permitting rotation of the rim portion relative to the hub portion. A single removable cover plate carried by the hub portion affords access for adjusting the tension springs and normally retains the arms and rim portion in assembled position on the hub portion.

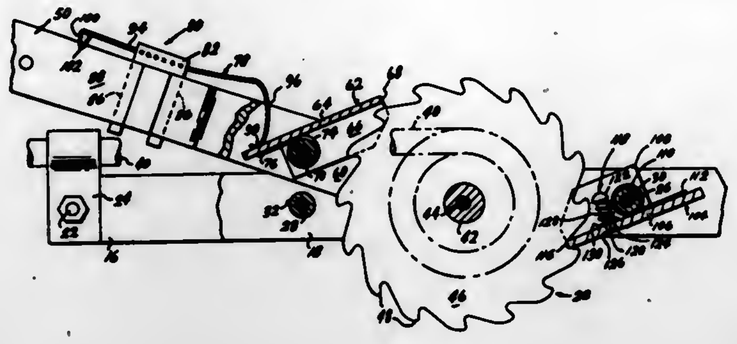
3,724,816
ECONOMY HOIST

Robert L. Cain, West Lafayette, Ind., and James S. Rothrock, Des Plaines, Ill., assignors to The American Gage & Manufacturing Co., Wauseon, Ohio

Filed March 1, 1971, Ser. No. 122,756

Int. Cl. A63b *61/04*

U.S. Cl. 254—164 **4 Claims**



A hoist or power unit characterized by its economy of construction utilizing a symmetrically formed frame including spaced elements at the central region thereof between which a rotatable ratchet drum is mounted having a tension member wound thereon. The lever arm upon which the ratchet catch is mounted, the catch, drum ratchet pawl and frame are all constructed of sheet metal, and the configuration of the components is such as to produce high strength with a minimum of material and a substantially uniform distribution of forces within the hoist during tensioning of the tension member. Catch and pawl operating components are of a simplified nature, the catch release being linearally shifted in the release direction and including a leaf spring whose influence is overcome during release of the drum by an abutment mounted upon the pawl.

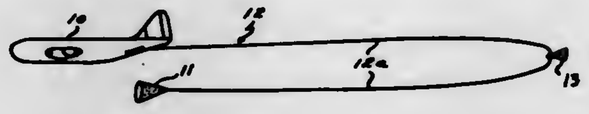
3,724,817
LONG LINE LOITER TECHNIQUE

John C. Simons, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 10, 1970, Ser. No. 97,413

Int. Cl. B64d *1/00*

U.S. Cl. 258—1.4 **5 Claims**



A unique technique for remotely locating a mass tethered by means of a tow-line to a fixed wing aircraft in a loiter position over, or on a selected target by initially forming the tethered tow line into a long loop preferably by use of a high drag device, while the mass is held within the aircraft, and subsequently free falling the mass from the aircraft to its remote, loiter position on target, while the aircraft is engaged in an on-pylon circling maneuver to thereby stall the line.

3,724,818
VALVE CLAMP FOR ELASTICALLY DEFORMABLE TUBES

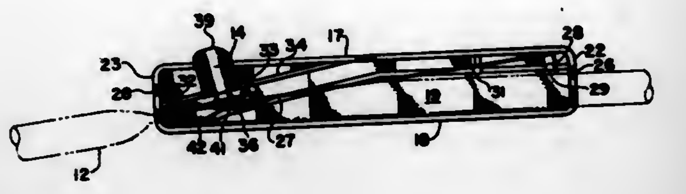
Albert J. Reger, 5200 E. 12th Street, Oakland, Calif.

Filed March 10, 1971, Ser. No. 122,779

Int. Cl. F16k *7/06*

U.S. Cl. 251—9 **4 Claims**

A clamp for use with an elastically deformable tube to provide a valve therefor operative to selectively meter or stop the flow of fluid therethrough. The clamp includes an elongated hollow housing having openings in its opposite end walls defining a passageway through which such tube extends. An elongated leaf spring defining a valve element extends longitudinally within the housing along one side of the passageway and is normally biased outwardly therefrom toward a completely open position in which it does not appreciably deform or crimp the tube. A slide forming a control element is mounted within the housing for reciprocable longitudinal displacement generally along the spring through a path of movement which is angularly disposed with respect to the passageway and converges therewith in one direction. Movement of the slide in the direction toward the passageway forces the spring into engagement with any tube therein and causes the same to deform and thereby progressively restrict the fluid flow therethrough until complete stoppage occurs in the fully closed position of the spring.



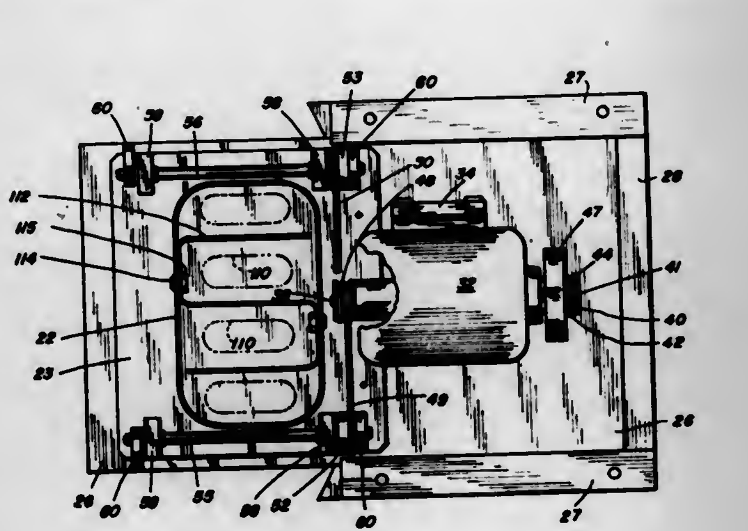
3,724,819
APPARATUS AND METHOD FOR THE VIBRATORY FEEDING OF PULVERULENT AND GRANULAR MATERIALS

Gordon D. Varnum, and Charles D. Meylan, both of New Providence, N.J., assignors to Fred S. Garver, Menomonee Falls, Wis., by said Meylan

Filed Nov. 24, 1971, Ser. No. 201,742

Int. Cl. B01h *15/02*

U.S. Cl. 259—29 **12 Claims**



An apparatus and method are disclosed for the feeding of pulverulent and granular materials to and through defined apertures to receiving or collecting means. In particular, pulverulent or powdered material which has a tendency to pack in customary discharge chutes is caused to be vibrated in a hopper to a fluidized condition by apparatus in which two eccentrically weighted shafts are driven by a power train insuring that said shafts and eccentric weights are rotated at different speeds. Power is provided by a variable speed motor permitting the vibrations rate to be increased or decreased to accommodate or as required by the flow characteristics of the particular pulverulent material being discharged.

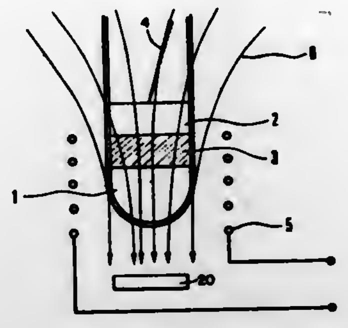
3,724,820
METHOD FOR BRINGING A NUMBER OF SUBSTANCES TOGETHER BY REMOTE CONTROL AND A DEVICE FOR CARRYING OUT SAID METHOD

Emmanuel Bonjour, Grenoble, and Michel Couach, Lyon, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed April 7, 1971, Ser. No. 131,866

Int. Cl. B01f *13/08, 3/20;* **G01n** *33/00*

U.S. Cl. 259—114 **8 Claims**



The substances to be brought together are placed in a vertical cell, at least that substance which is placed at the bottom of the cell being in the liquid state at the moment of contacting. A hydraulic seal consisting of a liquid having a density of higher value than the liquid-state density of the substance which is located immediately beneath said liquid is pierced by means of a perforator and caused to tilt downwards. The entire seal thus reaches the bottom of the cell and the reactants are thus brought together. The perforator is formed from magnetic material and set in motion as a result of the force produced by a magnetic induction gradient which is created by external means.

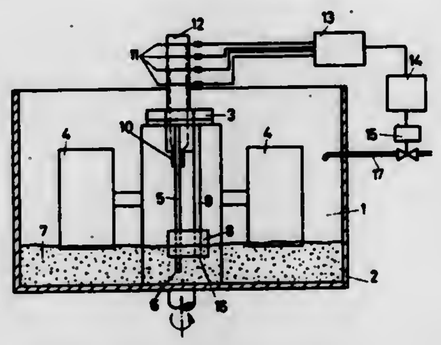
3,724,821
APPARATUS FOR AUTOMATIC REGULATION OF THE MOISTURE CONTENT OF GRANULAR MATERIAL

Franz Szatmari, and Max Wernli, both of Schaffhausen, Switzerland, assignors to George Fisher Aktiengesellschaft, Schaffhausen, Switzerland

Filed Dec. 1, 1971, Ser. No. 203,514

Int. Cl. B28c *7/04*

U.S. Cl. 259—149 **15 Claims**



Apparatus for automatic regulation of the moisture content of granular material, such as molding sand, concrete, or the like, includes an elastically yieldable rod, one end of which is securely fixed and the other end of which extends into the granular material. The rod is moved relative to the granular material and a sensing means detects the amount of elastic deflection of the rod caused by the reaction thereof with the granular material during relative movement. The deflection of the rod is a function of the consistency of the granular material and the output of the sensing means is fed to a controllable valve to control the addition of moistening means to the granular material as a function of the elastic deflection of the rod. A plurality of rods may be provided.

3,724,822
INTAKE AIR CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE OF FUEL INJECTION TYPE

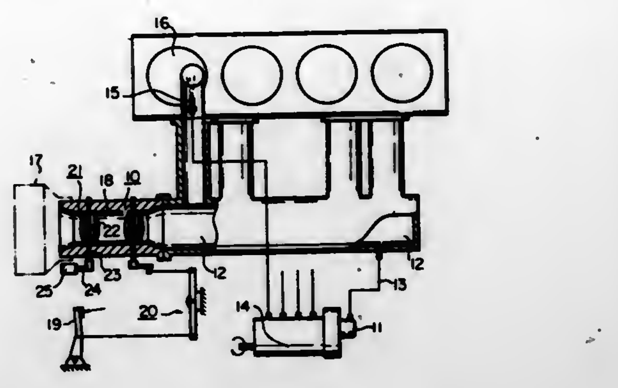
Shyuya Nambu, Yokohama, and Shigeo Aono, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama, Japan

Filed Oct. 2, 1970, Ser. No. 77,535

Claims priority, application Japan, Oct. 6, 1969, 44/79757

Int. Cl. F02m *69/00*

U.S. Cl. 261—43 **1 Claim**



An intake air control device adapted for use in an internal combustion engine of fuel injection type. One embodiment comprises a butterfly type control valve provided in an intake air passage upstream or downstream of a throttle valve mounted therein. The control valve includes a flap member rotatable about a shaft secured thereto slightly off the center of the air passage. Thus, upon actuation of an acceleration control member, the control valve is opened by the flow of intake air after a predetermined time lapse from the moment the acceleration control member is actuated, thereby gradually increasing the amount of the intake air. Another embodiment employs a Venturi type piston valve to serve the same purposes.

3,724,823
FUEL INJECTION SYSTEMS

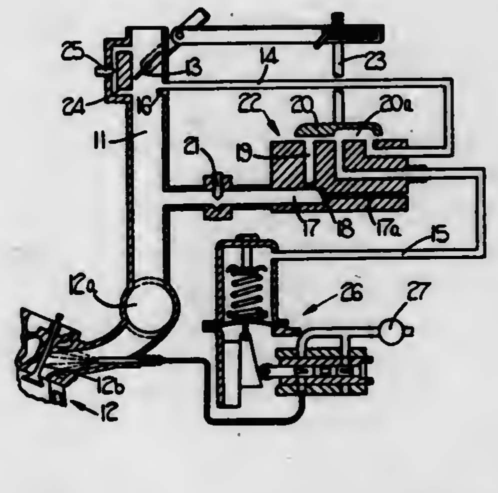
Herbert James Littlehales, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 13, 1970, Ser. No. 54,134

Claims priority, application Great Britain, July 21, 1969, 36,546/69

Int. Cl. F02m *3/00*

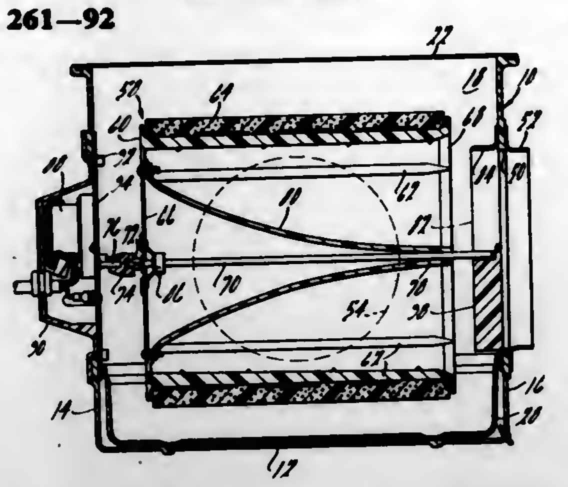
U.S. Cl. 261—69 R **8 Claims**



A fuel injection system for an engine has a metering unit controlled by one of a pair of pressure signals, the signals being selected by a valve arrangement so that when the engine throttle is shut, the signal applied to the metering unit has a predetermined value.

3,724,824
HUMIDIFIER

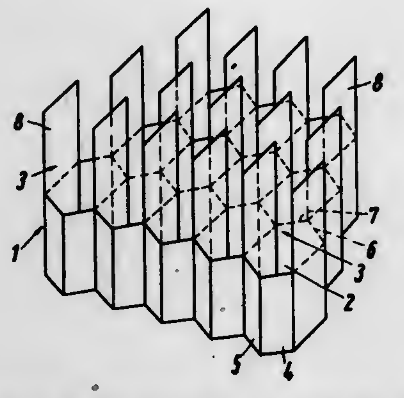
Stephen R. Mitich, Walled Lake, Mich., assignor to Masco Corporation, Taylor, Mich.
Filed Oct. 22, 1970, Ser. No. 82,966
Int. Cl. B01f *3/04*
U.S. Cl. 261—92 **2 Claims**



A drum type humidifier in which the evaporating medium consists of a rotating sleeve of porous material disposed within a housing having an air inlet and an air outlet. The incoming air is directed by a diverter means at the air inlet into one end of the drum and passes through the evaporating material to the air outlet. An air distributing cone is disposed within the drum and has a large diameter end at the inner end of the drum and tapers to a smaller end disposed at the inlet end of the drum. The cone is shaped to control the air flow to cause a relatively uniform flow through all portions of the evaporating material, thereby greatly increasing the efficiency of the humidifier.

3,724,825
INSERT FOR TREATING FLUIDS AND GASES

Friedrich Streck, Bad Homburg, Germany, assignor to Rigips-Stempel GmbH & Co. KG, Dietzenbach, Germany
Filed Sept. 24, 1970, Ser. No. 75,108
Int. Cl. B01f *3/04*
U.S. Cl. 261—95 **4 Claims**

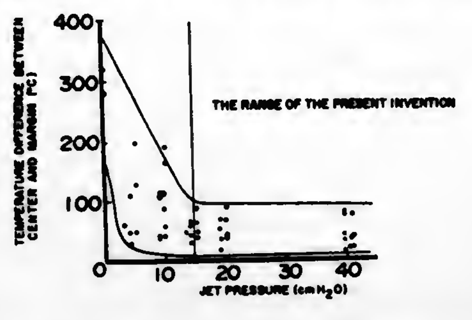


Insert body for contact tower for fluids and gases comprising honeycombed channels separated by walls formed with recesses for cross flow of fluid or gaseous streams.

3,724,826
METHOD AND APPARATUS FOR WATER QUENCHING METAL STRIPS

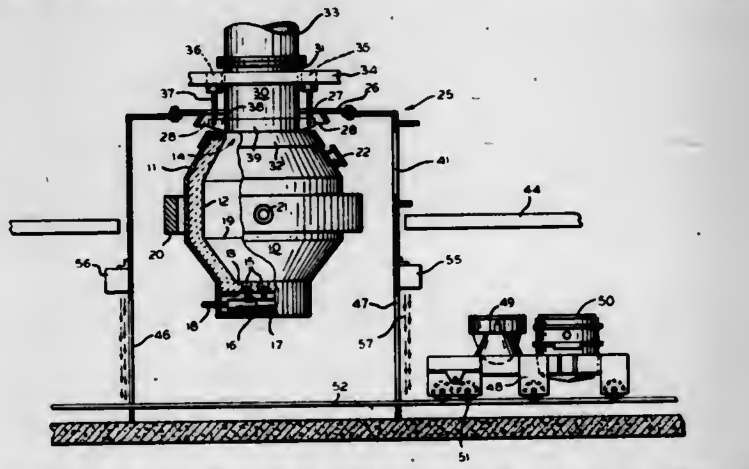
Haruo Kubotera; Kazuhide Nakaoka; Kenji Araki, and Takao Kurihara, all of Kawasaki-shi, Kanagawa-ken, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed July 1, 1971, Ser. No. 158,968
Claims priority, application Japan, July 3, 1970, 45/57977
Int. Cl. C21d *9/56*
U.S. Cl. 266—3 R **6 Claims**

In a continuous annealing of low carbon steel strip, the said strip is water cooled to a temperature below 500° C at a position not immersed in water by jetting the quenching water from both sides at an impact pressure of 15 cm water. The apparatus comprises spaced nozzle plates between which the strip is passed, spaced transverse slits being formed in the nozzle plates. Quenching water is jetted through the slits.



3,724,827
ANTI-POLLUTION DEVICE FOR A METALLURGICAL VESSEL

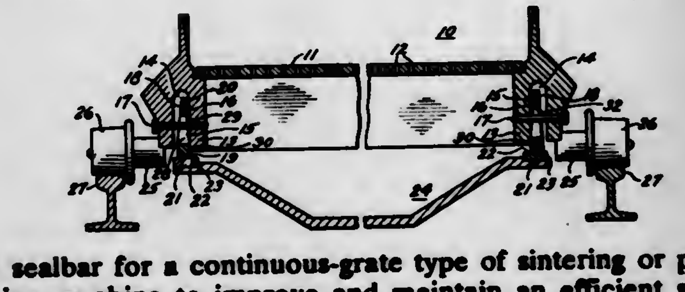
Alexander T. Dortenzo, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.
Filed Oct. 20, 1971, Ser. No. 190,790
Int. Cl. C21c *5/38*
U.S. Cl. 266—15 **9 Claims**



A vessel for converting molten ferrous metal to steel is mounted for pivoting about a horizontal axis and has bottom tuyeres which permit blowing of oxygen, other gases and powdered materials upwardly through molten metal inside of the vessel. A smoke hood is engaged with the open mouth of the vessel when it is untilted and is disengaged when the vessel is tilted for discharging or charging it. An enclosure at least partially surrounds the vessel. Devices for producing air curtains are situated adjacent certain openings in the enclosure to prevent influx of air into the enclosure and thereby maintain subatmospheric pressure within it so that smoke is drawn from the enclosure by an exhaust system connected to the hood instead of being released to the atmosphere.

3,724,828
SEALBAR FOR CONTINUOUS GRATE SINTERING MACHINES

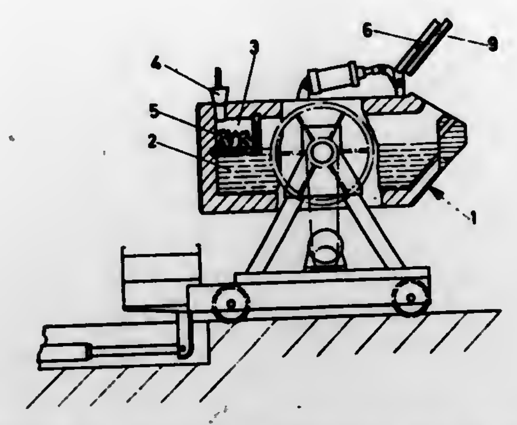
Cyril Bradwell, R.D. No. 3, Honeysuckle Road, Bethlehem, Pa., and Robert C. Pope, R.D. No. 3, P.O. Box 302, Quakertown, Pa.
Filed Oct. 26, 1971, Ser. No. 192,407
Int. Cl. F27b *21/06*
U.S. Cl. 266—21 **6 Claims**



A sealbar for a continuous-grate type of sintering or pelletizing machine to improve and maintain an efficient seal between the sides of the moving pallets and windboxes.

3,724,829
APPARATUS FOR THE INTRODUCTION OF VOLATILE ADDITIVES INTO A MELT

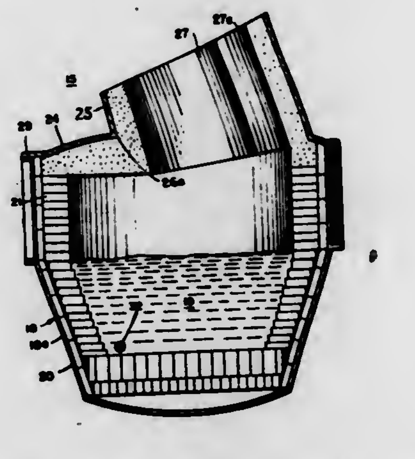
Anton Alt, Mettmann, Germany, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland
Division of Ser. No. 793,065, Jan. 22, 1969, Pat. No. 3,666,449. This application Dec. 15, 1971, Ser. No. 208,074
Claims priority, application Switzerland, Jan. 26, 1968, 1274/68; Dec. 3, 1968, 17961/68
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 T **15 Claims**



Introduction of vaporizable additives, such as magnesium, into an iron melt in which the vaporization is initiated by a tilting movement of a treatment vessel. The vaporizable material is contained in a separate compartment which can be externally charged and which, in one position of the vessel segregates the additive from the melt, but on tilting the vessel, permits communication with the melt through openings located at different levels. The vapor bubbles formed ascend through the melt with such a size and in such a number that at least a portion of the bubbles escape from the surface of the melt. The vapor bubbles have a great surface area to provide, for example with magnesium, a yield of at least 30 percent and preferably more than 40 percent of the additive in the melt while the velocity of the ascending vapor bubbles is such as to produce a flushing action on the melt resulting in a reduction of the reaction products and residual undesirable impurities in the melt.

3,724,830
MOLTEN METAL REACTOR VESSEL

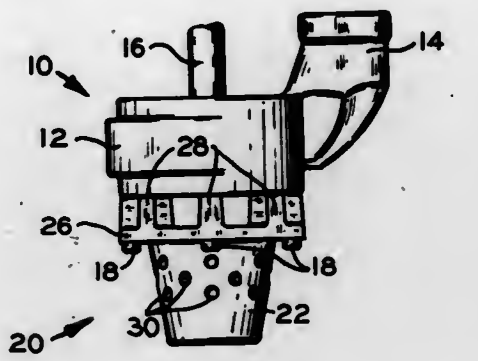
Joseph M. Saccomano, and John D. Ellis, Jr., both of Fort Wayne, Ind., assignors to Joslyn Mfg. and Supply Co., Chicago, Ill.
Division of Ser. No. 850,358, Aug. 15, 1969. This application Dec. 2, 1970, Ser. No. 94,623
Int. Cl. C21c *5/48*
U.S. Cl. 266—36 P **2 Claims**



There is provided an improved reactor for the refining of molten metals, including an improved reaction vessel generally circular in cross section for holding a charge of molten metal, and having a lower side wall portion of the container sloping inwardly. A cover is provided on the container having edge areas projecting abruptly inwardly and having an elongated pouring spout radially inwardly of the edge areas. The reaction vessel is provided with an improved tuyere formed generally of concentric tubes of constant cross section so that the cross section of the tuyere remains constant as the tuyere erodes away with the erosion of the inner lining during successive heats of refined metal.

3,724,831
MOLTEN METAL STRAINER

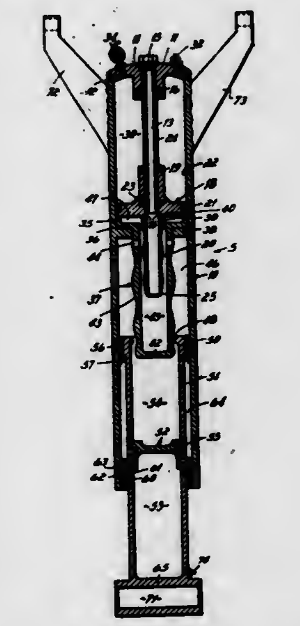
Richard D. Huffman, Toledo, Ohio, assignor to Gerity-Schultz Corporation, Toledo, Ohio
Filed Nov. 24, 1971, Ser. No. 201,793
Int. Cl. C21b *7/14*
U.S. Cl. 266—38 **14 Claims**



A shaped strainer for the inlet of a molten metal pump to be immersed in the molten metal reservoir of a metal furnace. The end of the strainer adjacent the pump inlet is spaced by bosses from the pump inlet to define a plurality of openings for the flow of molten metal from the reservoir to the pump. Additional apertures are provided in the main body of the strainer and function to militate against the passage of foreign matter, such as for example, dross, from entering the pump upon initial insertion of the pump into the furnace and during operation thereof.

3,724,832
OLEO-PNEUMATIC SHOCK ABSORBER

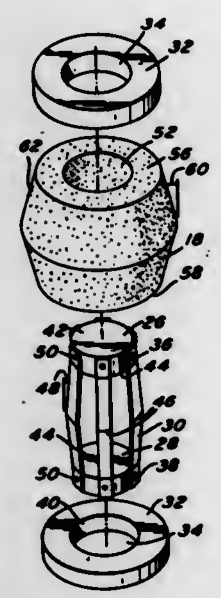
Frank Z. Ceska, Montreal, Canada, assignor to Menasco Manufacturing of Canada, Ltd., Quebec, Canada
Filed March 9, 1971, Ser. No. 122,421
Int. Cl. F16f *9/06*
U.S. Cl. 267—64 R **12 Claims**



A two-stage oleo-pneumatic shock absorber incorporating two pneumatic (air) pressure chambers, a high air pressure chamber and a low pressure (air) chamber, separated by a hydraulic fluid (oil) pressure chamber. The oil chamber contains an orifice and metering pin, which orifice and metering pin control the rate of collapse of the low pressure air chamber. It also contains a second orifice and metering pin which control the rate of collapse of the high pressure air chamber. Both metering pins are preprogrammed so as to interact with each other and effect a nearly constant load throughout the stroke of the shock absorber, even under transient loading conditions.

3,724,833
REVERSIBLE ENERGY ABSORBING BUMPER SYSTEM

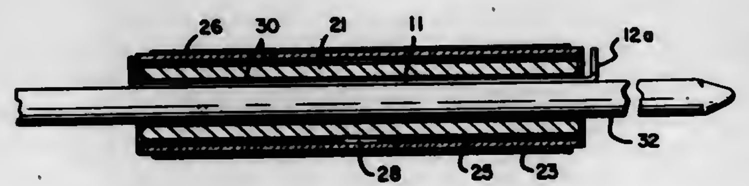
Dimitry B. Sergay, 427 Dorothy Drive, King of Prussia, Pa.
Filed March 12, 1971, Ser. No. 123,759
Int. Cl. F16f *7/00*
U.S. Cl. 267—140 **20 Claims**



An energy absorbing, reusable and reversible system for absorbing substantially longitudinal impact forces and dissipating the impact energy therefrom. The bumper system includes an impact frame having pre-contoured rib members which are distended in a radial direction when the impact forces are applied to the system. A resilient sleeve surrounds the impact frame to absorb energy and force the rib members to their initial unloaded contour. Energy absorption is accomplished through a combination of loading the rib members into or near the plastic stress region and the resiliency of the surrounding sleeve.

3,724,834
CONTACT SPRING

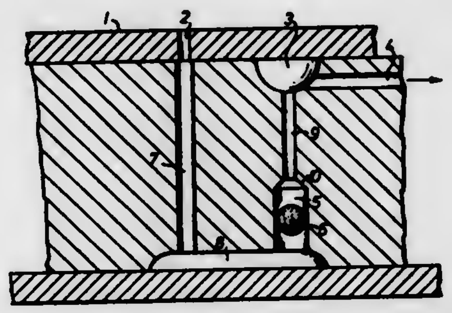
Ferdinand William Schor, Altadena, and Rolland R. Roup, Alhambra, both of Calif., assignors to AMP Domestic Inc., Harrisburg, Pa.
Division of Ser. No. 861,299, Sept. 26, 1969. This application Feb. 8, 1971, Ser. No. 113,707
Int. Cl. F16c *1/26*
U.S. Cl. 267—159 **3 Claims**



A filter connector assembly is disclosed which features an electrically conductive contact spring composed of beryllium copper or the like material and having a thin, elongated, and curved central portion of uniform cross-section together with latching tabs or lugs at each end of the central portion. These latching tabs are integral with the central portion of the spring and assume a bent-up position so as to be substantially perpendicular to the plane of the corresponding end part. The connector assembly includes a tubular shaped filter mounted in the assembly; a connector contact pin which is inserted in and may be removed from the central bore of the tubular filter and which may have an external lead connected thereto in any desired manner; and the aforementioned contact spring permanently retained or captivated within the tubular filter after its initial insertion therein. The filter itself takes the form of an inner ferrite tube and an outer ceramic tube closely surrounding the ferrite tube, with appropriately located conductive coatings applied to the surfaces of both tubes. The filter may be of any desired type to give whatever filtering effect is required in a particular application, such as blocking interference signals, modifying pulse waveforms, establishing or changing pass bands for applied signals, etc. The contact spring disclosed herein serves the dual functions of (a) making a stable and constant electrical contact between the conductive coating on the inner wall of the ferrite tube and the contact pin and (b) mechanically holding or securing the contact pin within the central bore of the ferrite tube. Another feature is that the latching tabs or lugs are so shaped and dimensioned as to fit within the ferrite tube bore with a clearance just sufficient to permit initial insertion of the contact spring, the latching tabs then serving to permanently retain the contact spring captive within the filter.

3,724,835
DEVICE FOR TEMPORARILY HOLDING ARTICLES OF DIFFERENT SIZES

Bernhard Gnoth, 7900 Ulm/Donau, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Filed Oct. 26, 1970, Ser. No. 83,978
Claims priority, application Germany, Oct. 25, 1969, P 19 53 900.5
Int. Cl. B25b *11/00*
U.S. Cl. 269—21 **3 Claims**

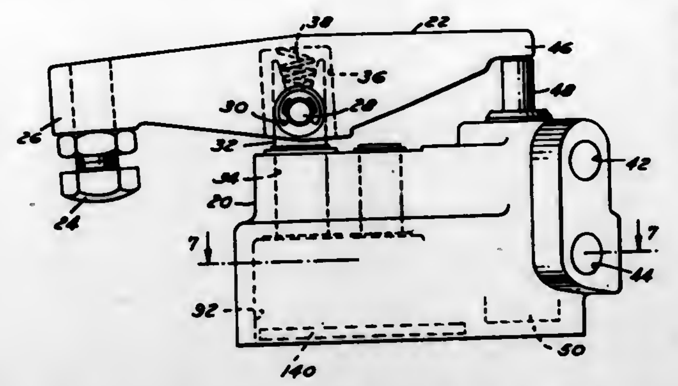


A device for temporarily holding articles of different sizes has a receiving surface with apertures therein connected by passages to a source of suction, means being provided for reducing the suction to those apertures which are not covered or insufficiently covered by the article to be held.

3,724,836
POWER OPERATED SWING CLAMP

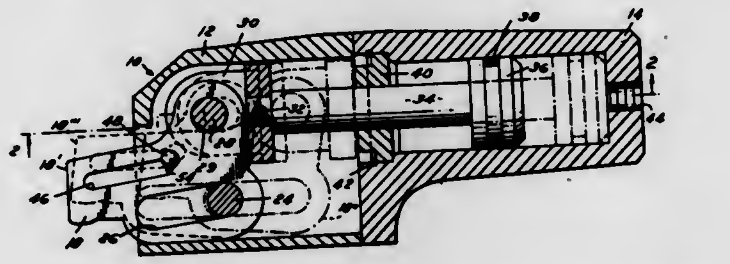
Jack J. Sendoykas, Grosse Pointe Park, and Alexander W. McPherson, Farmington, both of Mich., assignors to Dover Corporation De-Sta-Co. (Division), Detroit, Mich.
Filed July 12, 1971, Ser. No. 161,474
Int. Cl. B23q *3/08*; B25b *5/06*
U.S. Cl. 269—32 **11 Claims**

A power operated swing clamp for clamping a work piece to a bed plate having a cam and bell crank mechanism for rotating the clamping arm into and out of operable clamping position. The cam is connected to the piston of the clamping cylinder thereby eliminating the need for separate power means to rotate the clamping arm into position prior to clamping actuation. The bell crank includes lost motion spring means to prevent damage to the clamp in the event that the clamping arm strikes an object in its path of swing toward operable clamping position.



3,724,837
RETRACTING CLAMP

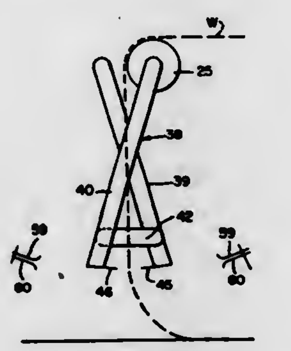
Alexander W. McPherson, Farmington, Mich., assignor to Dover Corporation De-Sta-C-Division, Detroit, Mich.
Filed Sept. 2, 1970, Ser. No. 69,013
Int. Cl. B23q *3/08*
U.S. Cl. 269—32 **5 Claims**



A retracting clamp for firmly holding work pieces on the bed of a machine tool or the like and incorporating a clamping arm which pivotally releases and linearly retracts inside the body guided by a ball detent in the body which engages a groove in the clamping arm.

3,724,838
SHEET FOLDING APPARATUS AND METHOD

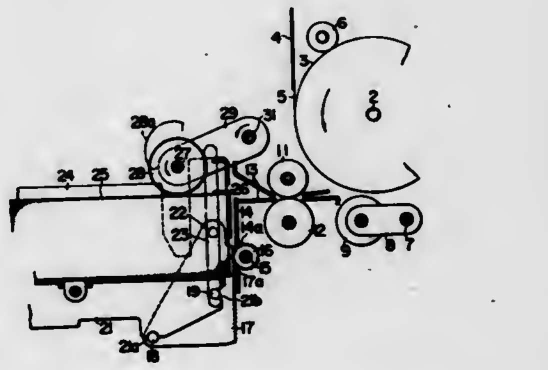
Vladimir W. Orlovsky, 691 High St., Bath, Maine
Filed July 31, 1970, Ser. No. 59,984
Int. Cl. B65h *45/20*
U.S. Cl. 270—79 **12 Claims**



In a semi-automatic sequence, paper sheets from a horizontal supply on top of the apparatus are manually advanced to a power-operated feed mechanism where each sheet is fed downwardly between a pair of vertical guides. While between these guides, the leading edge of each sheet engages a sensing switch to activate time delay means. The sheet continues to be fed between tucker or folder elements until a proper length of paper corresponding to the pre-established fold length has been fed past the tuckers. The time delay period is now terminated. Feeding of the sheet is interrupted and the vertical sheet is held by light tension at the start of the folding cycle. The automatic folding sequence continues until the trailing edge of the paper disengages the sensing switch, whereupon the tuckers cease to operate and resume a normal neutral position and the feed mechanism again becomes active for feeding the next sheet. The folded sheet drops onto a storage tray at the bottom of the apparatus for manual removal periodically.

3,724,839
COPY SHEET FEED TRAY RAISING AND LOWERING DEVICE FOR DUPLICATOR OR THE LIKE

Minoru Suzuki, Yokohama, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan
Filed Dec. 20, 1971, Ser. No. 209,642
Claims priority, application Japan, Dec. 28, 1970, 45/129418
Int. Cl. B65h *1/14*
U.S. Cl. 271—39 **10 Claims**

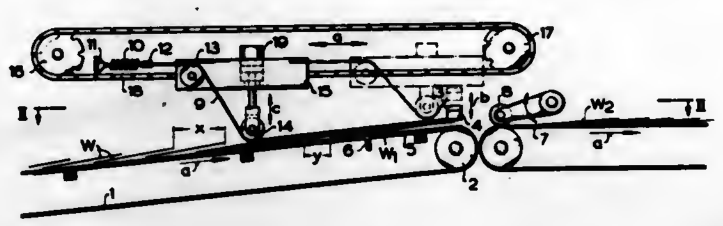


A copy sheet feed tray operating device comprising an operation lever, pivotally supported by a side plate of the duplicating machine in which it is incorporated and movable from a first position to second and third positions, and suitable operating mechanisms whereby pivoting of the operation lever from the first position to the second position moves the copy sheet feed tray downwardly and the copy sheet feed roller upwardly, thereby permitting the placing of a predetermined number of copy sheets on the tray. Shifting of the operation lever from the second position to the third position moves the copy sheet feed tray upwardly so as to bring the top of a new stack of copy sheets on the tray into pressing engagement with the copy sheet feed roller. The force with which the copy sheet feed roller presses against the stack of copy sheets on the tray is automatically adjusted to an optimum level so that it is possible to feed each copy sheet under optimum conditions without requiring further adjustments. When the operation lever is released, it automatically returns to the first position.

3,724,840
STACKING APPARATUS FOR SHEET ARTICLES FED IN OVERLAPPING FORMATION ON A CONTINUOUSLY MOVING CONVEYOR TOWARDS A STACKING STATION

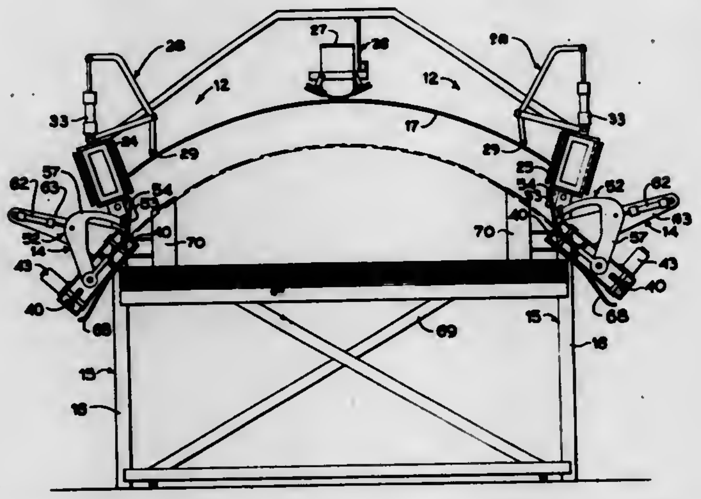
Gustav Kuckhermann, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Westphalia, Germany
Filed April 29, 1971, Ser. No. 138,549
Int. Cl. B65h *29/66*
U.S. Cl. 271—46 **6 Claims**

A stacking apparatus for sheet articles fed in overlapping formation on a continuously moving conveyor towards a stacking station, wherein the lowermost article of each intended stack is temporarily held stationary on the conveyor so that succeeding articles destined for the same stack bank up and their degree of overlap is increased before the lowermost article is released again. A braking device is progressively applied to the succeeding articles in an upstream direction at a speed so that their leading edges become held at uniform spacings from one another and is released from all the articles when the lowermost article is also released.



3,724,841
SHEET DISCHARGE MECHANISM

Leonard L. Hayes, Lewiston, Idaho, assignor to Potlatch Forests, Inc., San Francisco, Calif.
Filed Dec. 27, 1971, Ser. No. 212,112
Int. Cl. B65h *29/70*
U.S. Cl. 271—68 **7 Claims**

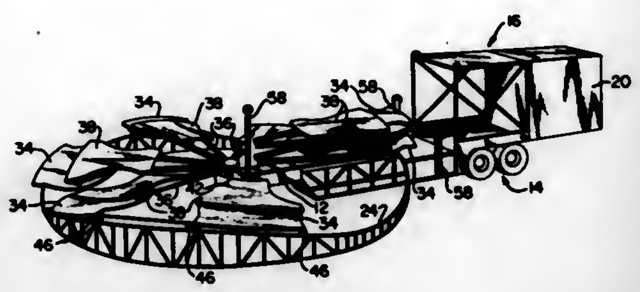


A conveyor discharge mechanism and method for receiving, controlling the motion of, and stacking self-supported sheets of resilient sheet material, particularly veneer. Plural discharge mechanisms are disposed successively at respective stacking stations along a longitudinal, continuously operating initial sheet material conveyor. The initial conveyor moves the sheets in an upward, self-supporting arched configuration. Each discharge mechanism is utilized to receive sheets of specific width. Each mechanism includes guides to maintain the arched configuration of each arched sheet as it falls from a release station. The guides direct the side edges of the sheet to edge engaging surfaces of the mechanism. The initial velocity of the sheet is reversed by the surfaces to move the sheet back to a stop. A discharge means is then activated to again release the sheet along guides to a flat vertical stack below.

3,724,842
TRAILER MOUNTED ROUNDABOUT AMUSEMENT DEVICE

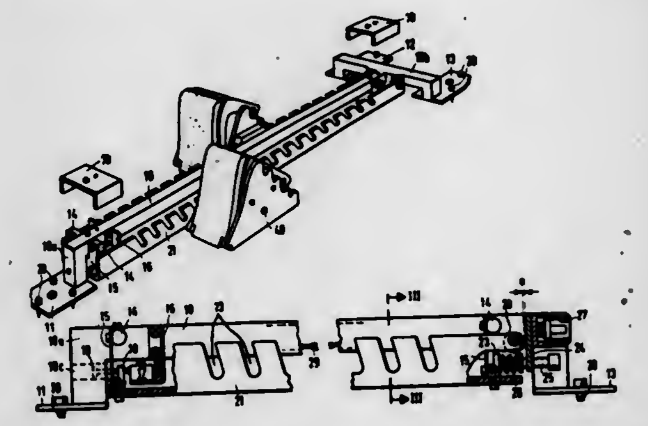
Gerald F. Wisdom, 337 Delaware, Sterling, Colo.
Filed Feb. 8, 1971, Ser. No. 113,326
Int. Cl. A63g *1/08, 1/34*
U.S. Cl. 272—29 **7 Claims**

Portable amusement device, commonly known as "Tilt-a-Whirl", characterized by a trailer forming operative and other parts of the device, including hoisting apparatus employed during assembly and disassembly. It is designed to stow the various parts on the trailer in compact manner to facilitate transportation thereof. After disconnecting the trailer from a tractor-type truck its frame is lowered to the ground, forming a rigid central support about which the device may rotate. An entrance compartment to the assembled device is utilized to stow parts of same and, when optionally employed, a pivoted box adjacent the entrance, also employed as storage space, may be elevated to provide an advertizing or identification of the particular type of device or "ride".



3,724,843
STARTING CONTROL DEVICE FOR RUNNING EVENTS

Walter Fichter, Schiltach; Otto Armbruster, Hornberg, and Friedrich Assmus, Schramberg, all of Germany, assignors to Firma Gebruder Junghans GmbH, Schramberg, Germany
Filed Jan. 22, 1971, Ser. No. 108,719
Claims priority, application Germany, Jan. 28, 1970, P 20 03 845.3
Int. Cl. A63b *69/00*
U.S. Cl. 272—59 A **19 Claims**



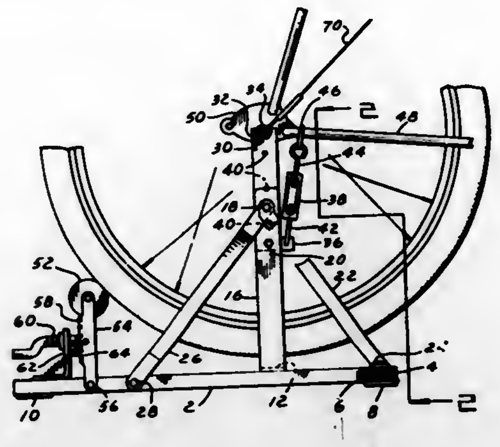
A track mountable starting control device for running events wherein a central rail is resiliently suspended from a stationary support rail. The support rail is detachably secured to the running track by the use of a spiked base. The central rail surrounds the support rail and has laterally formed apertures therein for receiving starting blocks. The starting blocks may be positioned in any of the apertures, on either side of the central rail, according to the requirements of the particular runner using the device. A contact device is provided on the support rail so that the movement of the central rail, which occurs when the runner is leaving the blocks, will signal the start of the event.

3,724,844
EXERCISE STAND FOR BICYCLES

Frederick S. Olmstead, deceased, late of 347 Williams St., Longmeadow, Mass.; Claire G. Olmsted, executrix, West Springfield, Mass., and Hartford National Bank and Trust Company, executor, Hartford, Conn.
Filed May 1, 1972, Ser. No. 249,415
Int. Cl. A63b *69/16, 23/04, 21/00*
U.S. Cl. 272—73 **1 Claim**

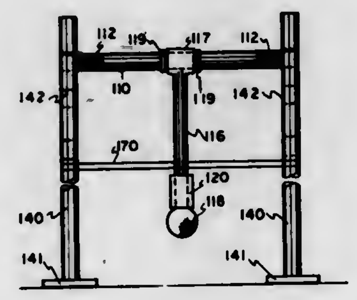
An exercise stand adjustable to accommodate standard size bicycles and pedalling in a stationary position. The base is T-shaped and has a U-shaped bracket with opposed upright arms seated on the leg of the base. Attached to the bracket are fore and aft angled braces supporting the arms. Vertical plates for rear axle support are anchored to and extend upwardly of the arms and carry at their lower ends turnbuckle-operated hook devices to releasably engage rear fork tube frame members of a bicycle and thereby clamp the wheel of the bicycle in an

elevated position. The plates can be mounted at selected elevations for different size bicycles. Mounted adjacent the rear of the leg of the base is a lever carrying a tire presser roll to adjust resistance to pedalling.



3,724,845
IMPACT RECEIVING EXERCISE DEVICE

James E. Irby, Route 3, Box 145, Spartanburg, S.C.
Filed March 18, 1971, Ser. No. 125,593
Int. Cl. A63b *69/20*
U.S. Cl. 272—76 **13 Claims**

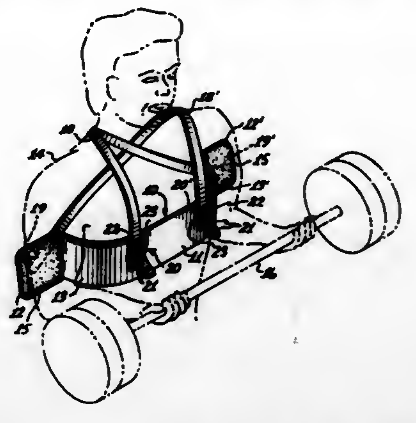


A device is disclosed that is suitable for use in practicing karate and exercising in a limited space. The present exercise device comprises a horizontal member to which is attached a vertical member, wherein the vertical member has an impact member adjacent a lower end thereof and a cushioning member along its length. When kicked or otherwise struck by the user at the impact member, the vertical member will move upwardly making a complete circle or will be biased by a resilient element to return to its original position thus permitting the user to ward off or block the return of the vertical member by contact at the cushioning member or a further blow at the impact member. The vertical member moves around an axis defined by the horizontal member either through a pivotal connection with the horizontal member or in conjunction with the horizontal member when the horizontal member is journaled for rotation on a support frame or has gripping devices rotatably received thereon.

3,724,846
LIFTING YOKE AND HARNESS

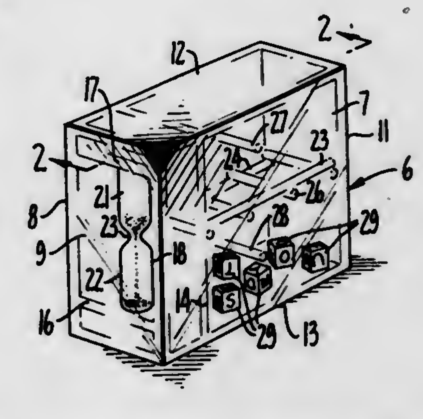
Walter E. Perrine, P. O. Box 66, Navajo, Ariz.
Filed June 19, 1972, Ser. No. 264,145
Int. Cl. A63b *13/00*
U.S. Cl. 272—84 **5 Claims**

A weight lifting yoke supported by the shoulders of a human for positioning the biceps and triceps muscles of the arms in a substantially vertical position when the forearms assume a substantially horizontal position during a weight lifting operation.



3,724,847
DICE TUMBLING CHAMBER WITH TIMER

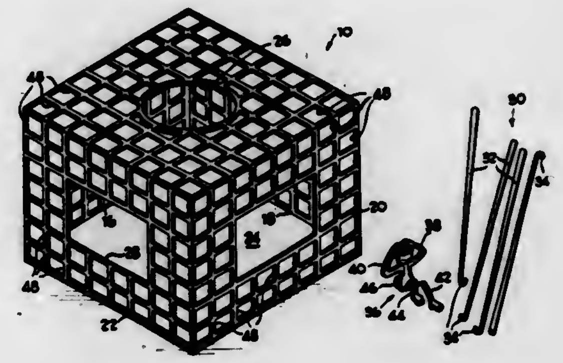
Donald M. Compton, P.O. Box 525, Aromas, Calif.
Filed Nov. 15, 1971, Ser. No. 198,730
Int. Cl. A63f *9/04*
U.S. Cl. 273—1 R **2 Claims**



A rectangular chamber having opposite planar walls has a timing glass in a vertical position at one end with a plurality of dice in the chamber. Each die has a letter of the alphabet on each face thereof. A plurality of bar members extend between opposite side walls of the chamber at different elevations. On reversing the chamber, the timer is actuated and the dice are tumbled by striking the bar members. As many words as possible as determined by the upturned faces of the dice are scored in the time alloted by the timing glass.

3,724,848
OPPOSING PULLING ACTION GAME

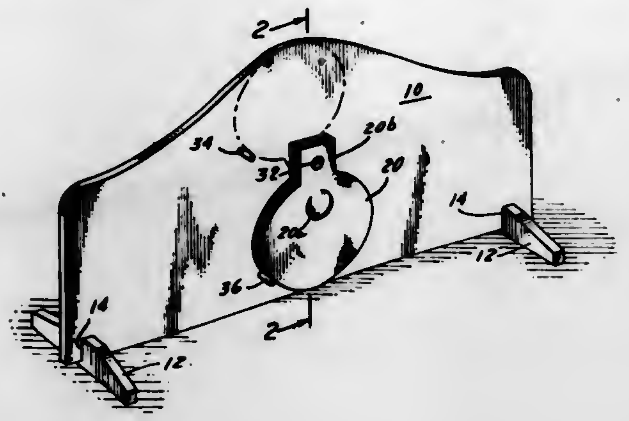
Marvin I. Glass, 815 North La Salle Street, and Jeffrey D. Breslow, 1819 West Thome, both of Chicago, Ill.
Filed Oct. 19, 1970, Ser. No. 81,924
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **1 Claim**



A generally cubic enclosure having foraminous side walls and top. A prize object is positioned in the enclosure and players attempt to remove it from the enclosure in a tug-of-war type action by grasping it with members having yieldable hook ends.

3,724,849
BILLIARD TRAINING APPARATUS

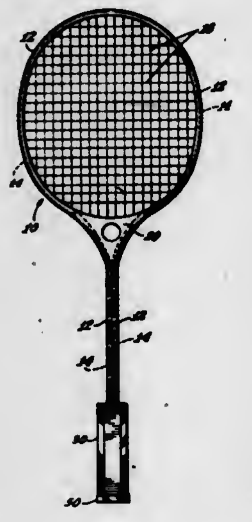
Louis D. Pierce, Lakewood, Calif., assignor to Ivey Franklin Mimbs, La Mirada, Calif., a part interest
Filed March 24, 1971, Ser. No. 127,552
Int. Cl. G09b *19/22*; A63d *15/00*
U.S. Cl. 273—2 **5 Claims**



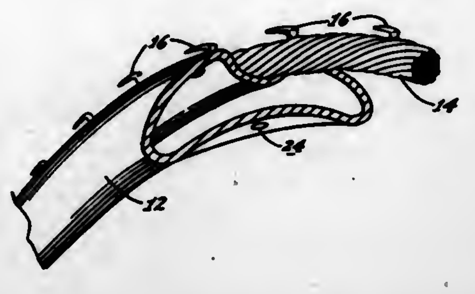
Billiard training apparatus having a vertical panel, with an opening therein slightly smaller in diameter than the diameter of a cue ball, and a plurality of discs pivotally mounted on the panel to be aligned with the hole, the discs being of somewhat greater diameter than the opening and each disc having a cue guide hole therein, each cue guide hole having a different orientation on its respective disc than any other cue guide hole has on its respective disc. One of the discs has a central guide hole that is in axial alignment with the hole in the panel, when in operative position, while the other discs have holes, respectively, to each side of and above and below the center of the hole in the panel. The discs not in use are positioned out of the way of the hole in the panel, while each disc may be pivoted into alignment with the hole in the panel, so that the player uses the cue guide hole to practice a particular shot. The cue guide holes are adapted to slidably receive a forward end portion of a cue.

3,724,850
RACKET WITH STRING TENSION ADJUSTING MEANS

Robert Stevens, 16671 Greenview Lane, Huntington Beach, Calif.
Filed April 12, 1971, Ser. No. 133,305
Int. Cl. A63b *51/12*
U.S. Cl. 273—73 E **5 Claims**



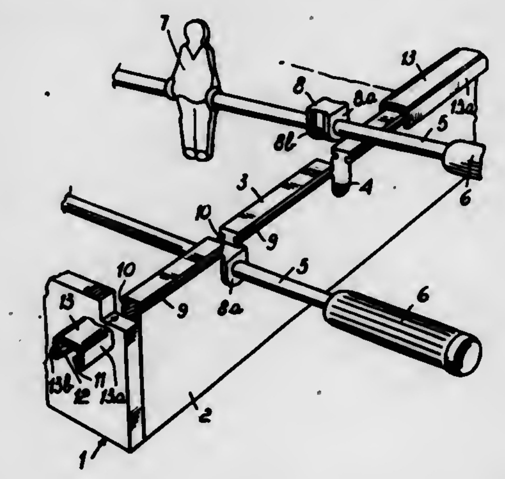
An improved game racket is provided, for tennis and other games, which incorporates means for adjusting the strings of the racket so that they may always be maintained at proper tension when the racket is in use, thereby obviating the need for repeated re-stringing of the racket. When the racket is not in use, the tension may be relaxed. The embodiment of the invention to be described includes a tubular frame, and a cable extending around the outer periphery of the frame. A plurality of hooks are attached to the cable, and the racket is strung so



that the strings extend around the cables and beneath the hooks. The cable enters the interior of the frame at the base of the racket head and the ends of the cable extend down through the neck of the racket frame to the base of the handle. The cable ends are attached to either side of a bolt which extends through a metal plate and which is threaded through a nut. Adjustment of the nut provides the desired string tautness to the racket.

3,724,851
TABLE SOCCER OR FOOTBALL GAME STRUCTURE

Claudio Cecchetti, Via Verdi 50, Cernusco, Italy
Filed March 1, 1971, Ser. No. 119,692
Int. Cl. A63f *7/06*; F16c *35/02*
U.S. Cl. 273—85 D **1 Claim**



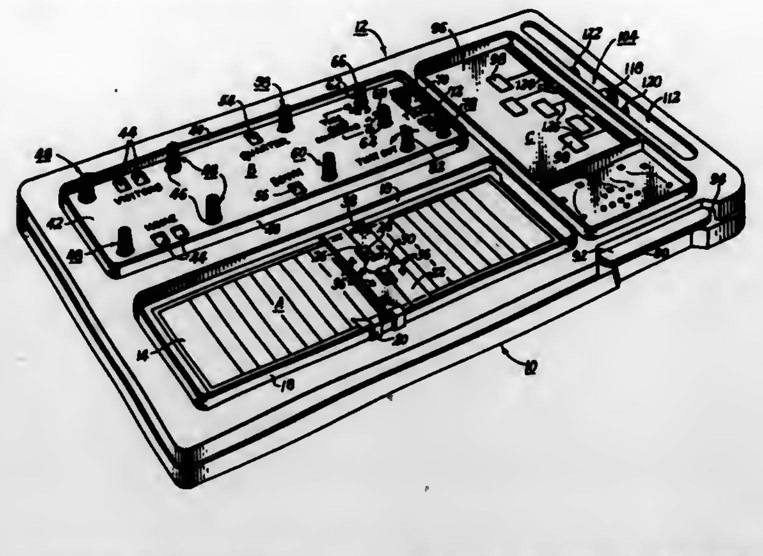
A table football or soccer game structure including a table with sides having an upper edge including seats therein providing slidable support for miniature dummy player carrying rods extending crosswise to the table. The rods are slidably received within bearing blocks insertable inside the seats and the bearing blocks are retained inside the seats by means of a strip member having a U-shaped cross section and slidably mounted astride of the upper edges of the sides. The strip member has internal longitudinal ribs for sliding engagement within longitudinal grooves provided on the side of the table.

3,724,852
PARLOR-TYPE FOOTBALL BOARD GAME AND ASSOCIATED APPARATUS

Calvin L. Payne, Jr., Hastings-on-Hudson, N.Y., assignor to Tudor Metal Products Corporation, Brooklyn, N.Y.
Filed Nov. 9, 1970, Ser. No. 87,804
Int. Cl. A63f *7/06*
U.S. Cl. 273—94 R **2 Claims**

The application discloses a parlor-type football board game with a simulated field and a simulated football positionable in

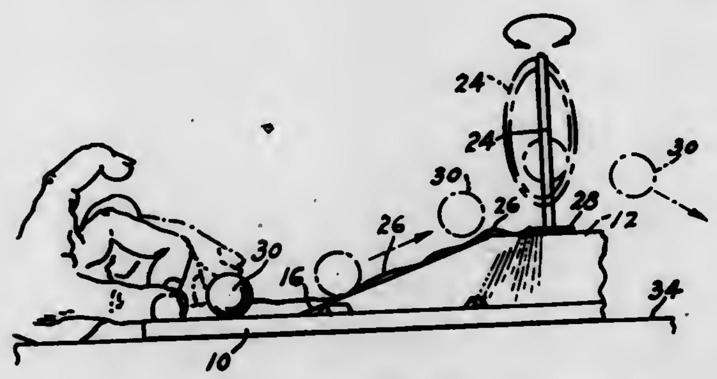
three selected locations across the field and longitudinally thereof in accordance with the throw of a spring-operated indicator relative to yards gained and lost markings represented on a preselected play card. Diagrams on the card afford a visual indication of the play that the player believes is most ap-



propriate in accordance with his judgment and knowledge of football strategy. The card also functions on insertion adjacent the indicator to operate a minute and second timer varying according to the time which the selected play would normally require. A time out mechanism is arranged to disable the timer as provided by the rules of play.

3,724,853
TETHERED PROJECTILE HAVING LOOP AND POCKETED TARGETS

William E. Crowder, R.D. No. 1, Mount Wolf, Pa.
Filed Oct. 18, 1971, Ser. No. 190,047
Int. Cl. A63b *71/02*
U.S. Cl. 273—98 **10 Claims**

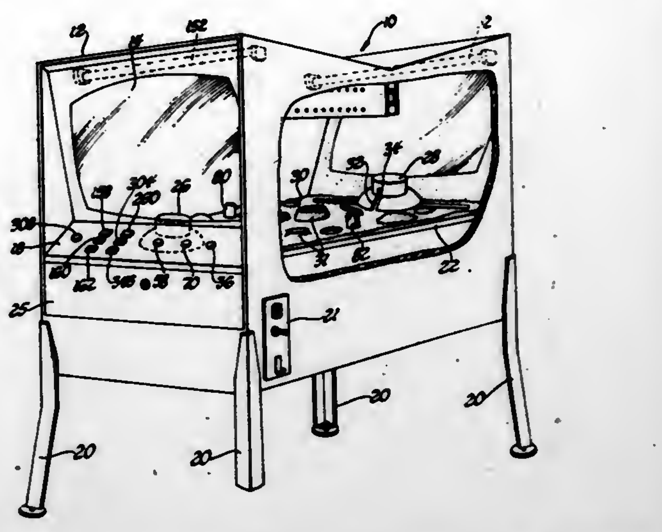


Game apparatus having an open-end ring target supported by a shaft in a central bearing within a base having peripheral score-indicating indicia thereon, and a flexible tether has a small ring connector on one end which moves freely around said open-end ring target and shaft thereof. A projectile on the other end of the tether is of smaller diameter than said open-end ring target and is adapted to be projected through said ring target and into scoring position relative to said score-indicating indicia.

3,724,854
LIGHT RESPONSIVE AND DIRECTING EXTRATERRESTRIAL VEHICLES

Howard A. Brooks, Ann Arbor, and Vernon J. Burzan, Dexter, both of Mich., assignors to Leisure-Tron Corporation, Ann Arbor, Mich.
Filed July 6, 1970, Ser. No. 52,531
Int. Cl. A63f *9/00*
U.S. Cl. 273—101.1 **35 Claims**

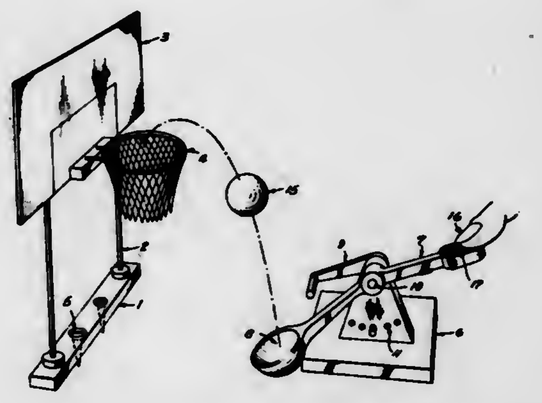
An amusement device including an enclosed housing having viewing windows at each end, a simulated lunar surface extending longitudinally between the ends of the housing and operator-controlled movable objects in the shape of extraterrestrial vehicles for directing and responding to laser beams



such that a laser beam duel may be simulated. A dramatic effect is introduced by causing the laser beam to sweep outwardly across the lunar surface to simulate the firing of the laser gun.

3,724,855
BASKETBALL GAME

Kwang Yup Chu, 14505 Cimarron Drive, Mesquite, Tex.
Filed Aug. 20, 1971, Ser. No. 173,568
Int. Cl. A63f *71/02*
U.S. Cl. 273—101 **3 Claims**

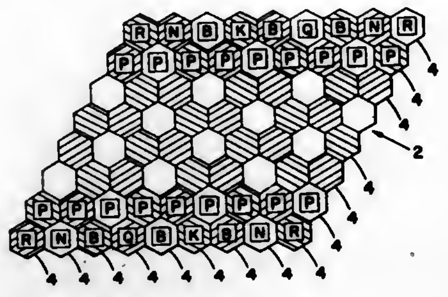


A basketball game including a stand bearing a backboard and a net, a basketball, and a catapult. The ball fits in a cup at one end of the catapult lever. The lever pivots on a pin so that when one end of the lever is depressed the other end of the lever bearing the cup is elevated imparting upward and outward motion to the ball. An adjustable stop arm regulates the upward motion of the cup and hence the angle and height of motion of the ball, and the upward and downward position of the stop arm is adjusted by moving the arm so that a hole in a downward extending portion of the adjustable stop arm is aligned with the desired one of a series of holes in an upward extending portion of the catapult base, enabling a pin to be inserted through the aligned holes for interlocking.

3,724,856
BOARD GAME APPARATUS

Albert B. Welch, 3920 Centenary Drive, Dallas, Tex.
Filed March 17, 1971, Ser. No. 125,062
Int. Cl. A63f *3/02*
U.S. Cl. 273—131 AB **6 Claims**

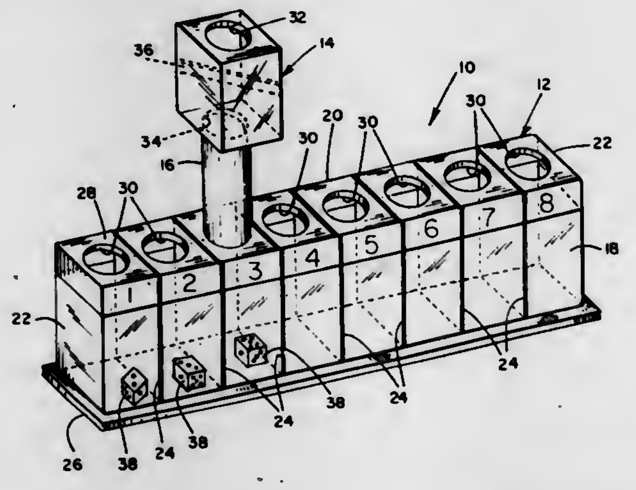
A chess-type game comprising a game board of generally parallellogram configuration having the three-color pattern shown in FIG. 1 and formed of an even number of rows each containing nine hexagonal playing spaces disposed in continuous relation, and two sets of playing pieces each including three bishops and nine pawns. A checker-type game is also disclosed comprising the same game board and two sets of playing pieces each having nine men.



3,724,857

DICE TUMBLER

Albert J. Marino, 7818 12th Avenue, Brooklyn, N.Y.
Filed May 28, 1971, Ser. No. 148,095
Int. Cl. A63f *9/04*
U.S. Cl. 273—145 B **8 Claims**



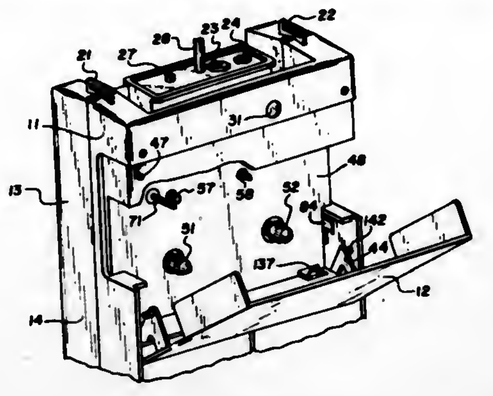
A dice tumbler comprising a housing and a plurality of spaced partitions for dividing the housing into a plurality of adjoining, yet isolated, compartments respectively, each of the compartments having an access opening through which a die is insertable. The housing is generally transparent for permitting observation of die disposition. Associated with the housing is an auxiliary tumbler housing, the latter including a laterally extending member for initially altering, in abrupt fashion, the disposition of the die as the latter is in free-fall. The auxiliary tumbler housing may be detachably connected to each access opening of the compartments respectively in a successive manner so as to permit a plurality of dice to be successively cast into each of the compartments respectively.

3,724,858

TAPE RECORDER APPARATUS

William A. Martin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 22, 1970, Ser. No. 57,264
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 **3 Claims**

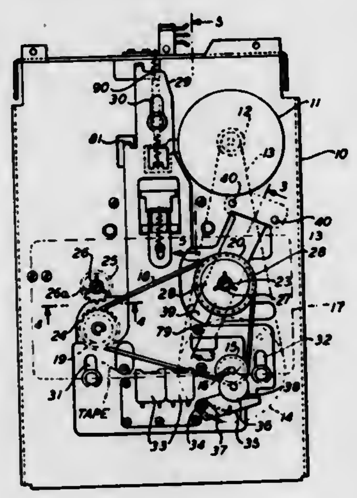
A magnetic tape recorder for use in conjunction with a motion picture camera is provided with a compact portable housing having a door which may be opened to permit insertion of, or removal of, a tape cassette or cartridge. A cam mechanism operates in conjunction with the door whereby, when the door is opened, the record heads and a pressure roller which cooperates with the tape driving capstan are automatically withdrawn from their normal positions for easy removal or insertion of the cassette. The recorder is provided with an interlock system to prevent operation of an associated cine camera unless a cassette is received in the recorder and the door has been closed.



3,724,859

CASSETTE MAGNETIC TAPE RECORDER

Richard Kobler, 6300 Zug, Switzerland; William F. Fagan, Rochelle Park, and Edward Feldman, Teaneck, both of N.J., assignors to McGraw-Edison Company, Elgin, Ill.
Filed Nov. 15, 1971, Ser. No. 198,875
Int. Cl. G11b *15/24*
U.S. Cl. 274—4 D **16 Claims**



A tape recorder using a cassette type magazine is electrically controlled from a remote station with provision of suitable interlocks in the electrical control system to enable the user to select normal forward drive in recording or reproducing, fast (scan) rewind drive or fast-forward drive.

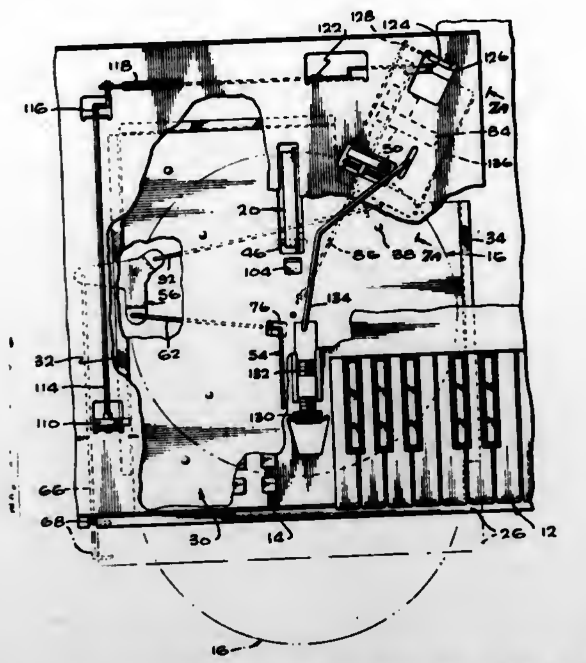
3,724,860

OPTICAL DISC DRIVE FOR ORGAN

John H. Northrop, La Canada; Eugene C. Jones, Long Beach; George W. Sioles, Palos Verdes Estates, and Gary W. Mellette, Hermosa Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 10, 1970, Ser. No. 96,813
Int. Cl. G11b *17/04, 1/00*
U.S. Cl. 274—9 B **8 Claims**

An electronic organ of a type that utilizes an optical disc record to generate sounds, which is constructed to allow rapid and easy installation and removal of disc records, including an organ housing with a doorway through which disc records can be installed and removed and a spindle for projecting through the central hole of the disc record to locate it while it revolves. The doorway opens to a pan with side walls and an end wall that are spaced from the spindle by distances slightly larger than the radius of the disc record, so that a record pushed in until it hits the rear wall and then released will automatically fall onto the tapered spindle. A door which can cover the

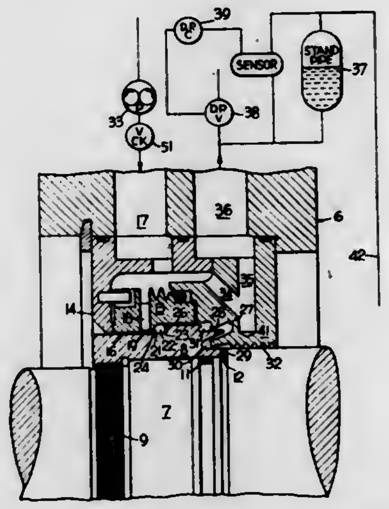
doorway, raises a record lifting member when the door is open to guide an inserted disc over the top of the spindle, and then lowers the record lifting member when the door is closed to allow the disc to fall onto the spindle. The disc is driven by a drive wheel which rotates on a movable axle, and a link coupled to the door deflects the axle when the door is opened to move the drive wheel away from a disc record. The movable axle also operates an on-off switch.



3,724,861

NEW TRAPPED BUSHING SEAL

Gerald Lesiecki, Greendale, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 27, 1970, Ser. No. 84,296
Int. Cl. F16j *15/16*
U.S. Cl. 277—25 **4 Claims**

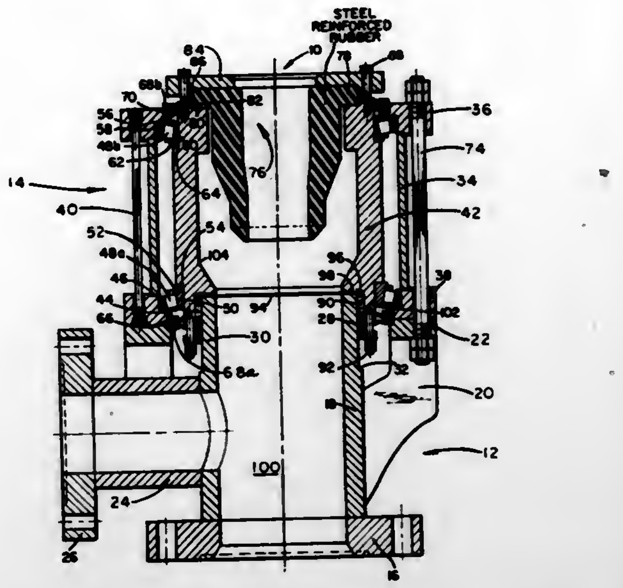


A rotary shaft seal is provided with a sealing fluid to seal a process fluid. The sealing fluid is admitted at a pressure just slightly higher than the pressure of the process fluid to provide a seal when the shaft is stationary and means are provided in the seal to increase this pressure as a function of rotation, with centrifugal force, to a sufficiently higher pressure than that of the process fluid pressure to prevent entrainment of the process fluid within the sealing fluid. A stable sealing fluid pressure decreasing means is provided in the seal which is also a function of rotation and which decreases the sealing fluid pressure with centrifugal force from the pressure in the high pressure area to the pressure of the process fluid at the process fluid-sealing fluid interface.

3,724,862

DRILL HEAD AND SEALING APPARATUS THEREFORE

Morris S. Biffle, P.O. Box 332, Vermilion, Ohio
Filed Aug. 26, 1971, Ser. No. 175,153
Int. Cl. F16j *15/16;* **E21b** *33/00*
U.S. Cl. 277—31 **17 Claims**

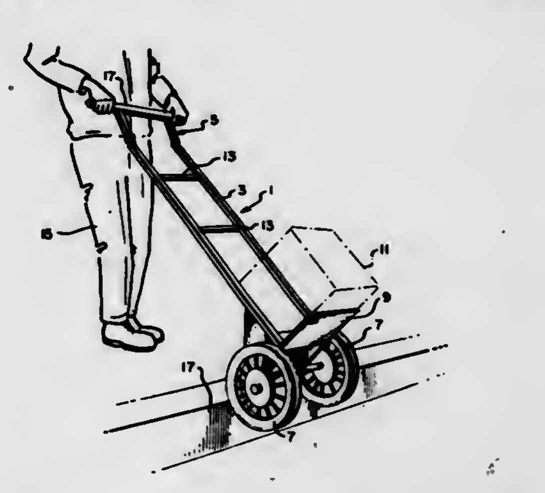


A drill head assembly for use in oil drilling operations in which there is provided a rotatable packing means for preventing abrasive well fluids or vapors from contacting the bearing surfaces of the rotatable portion of the drilling head and for preventing the escape of well fluids or vapors into the atmosphere. The packing means is constructed such that packing becomes tighter as the well pressure increases, thereby performing the function of a final control in the event of a blowout and is also constructed such that repacking may be performed externally to the drilling head without disassembly of the drill head or any of the rotatable parts therein.

3,724,863

CART WITH AUTOMATIC POSITIONING HANDLE AND INDEPENDENTLY POSITIONABLE WHEELS

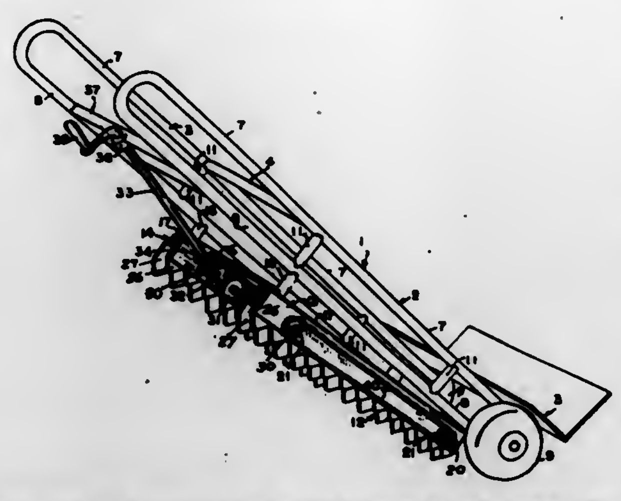
Rudolph Talamantez, 11548 Stewart Lane, Silver Spring, Md.
Filed Jan. 18, 1971, Ser. No. 107,221
Int. Cl. B62b *3/22*
U.S. Cl. 280—5.2 **3 Claims**



The disclosure relates to a cart or pick-up truck capable of transporting a load on level ground, hills and inclines and up stairways and the like wherein the operator thereof is capable of maintaining a constant erect position during operation, regardless of the contour of the terrain over which the cart is driven. The cart includes a frame having a rotatable upward handle portion, the handle portion being rotatable in a direction away from and toward the operator and having a stop when rotated in a direction toward the operator so that the rotatable portion of the handle is never rotated to the point where it is coaxial with the remaining portion of the frame. The cart also includes a pair of individually rotatable wheels, each wheel having a rotatable shaft whereby the wheels individually seek their own level, depending upon the terrain over which the cart is pulled or pushed.

3,724,864
CRAWLER TYPE LOAD TRANSPORTING DEVICE

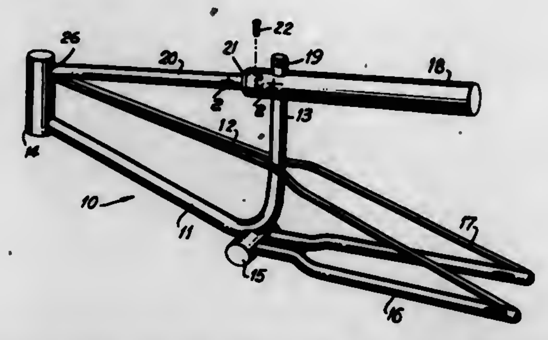
Vernon L. Balsbaugh, Route 2, Box 68, Dallas, Oreg.
Filed Dec. 23, 1971, Ser. No. 211,188
Int. Cl. B62b *5/02*
U.S. Cl. 280—5.28 **1 Claim**



A combination hand truck and a manual or power driven propulsion unit including means for removably securing the propulsion unit to the body of the hand truck. The hand truck is of conventional type wherein the body is preferably, though not restrictively, made of metal tubing or the like, supported by two forward ground-engaging wheels.

3,724,865
CONVERTIBLE BICYCLE

Martin Cristie, Brooklyn, N.Y., assignor to Stelber Industries Inc., Valley Stream, N.Y.
Filed Feb. 22, 1971, Ser. No. 117,604
Int. Cl. B62k *13/08*
U.S. Cl. 280—7.11 **6 Claims**

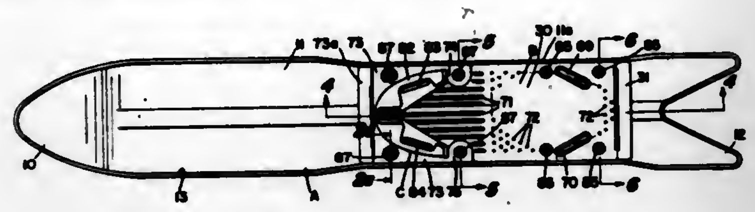


A bicycle which can be converted to a boys or girls bicycle design by means of a joiner unit providing for a removable horizontal tube between the seat support area and the head tube of the bicycle. The joiner unit preferably takes the form of a plastic bushing, adapted to receive a removable frame tube, which may be locked in place in the bushing element by means of a screw.

3,724,866
SKI ESPECIALLY ADAPTED FOR USE BY SKIERS TOWED BY A SNOWMOBILE OR THE LIKE

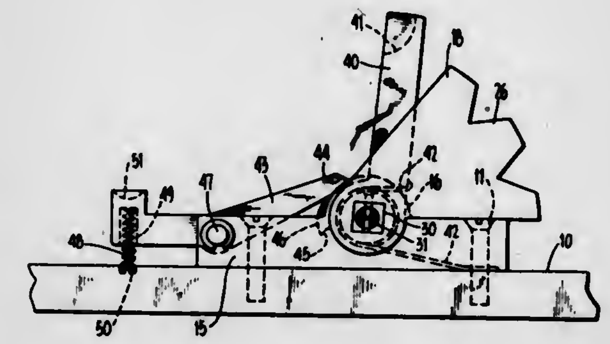
Irving Leonard Kaplan, Cleveland Heights, Ohio, assignor to Skijor Manufacturing Company, Cleveland, Ohio
Filed June 4, 1971, Ser. No. 150,034
Int. Cl. A63c *5/00*
U.S. Cl. 280—11.13 W **12 Claims**

A ski is provided which is of lightweight rugged construction, consisting of parts which are molded of suitable fiberglass reinforced resins and easily and quickly assembled. The ski is so designed as to make it especially adapted for use in the sport of skijoring in which the skier is towed by a horse or vehicle, and more particularly, by a snowmobile. The design and construction are such as to enable the skier to achieve easy maneuverability and control of direction of the ski while being thus towed.



3,724,867
SKI SPURS

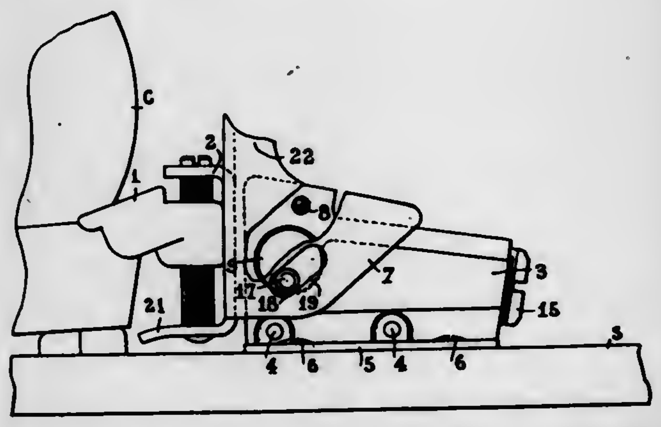
Nathaniel F. Hawthorne, 855 Cedar Street, Alameda, Calif.
Filed May 20, 1971, Ser. No. 145,126
Int. Cl. A63c *7/10*
U.S. Cl. 280—11.13 C **4 Claims**



This invention relates to a ski spur, or non-skid device for skis which, in a retracted and non-operative position, lies on top of the respective skis; and in a projected and operative condition, provides spurs, or projections, which extend downwardly from the side of the ski to enable the wearer to climb icy or slippery slopes with extreme ease.

3,724,868
HEEL HOLD-DOWN DEVICE FOR SKI BOOT

Jean Joseph Alfred Beyl, 202 Boulevard Victor Hugo, Nevers, France
Filed March 2, 1971, Ser. No. 120,236
Claims priority, application France, March 5, 1970, 7007888
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **7 Claims**

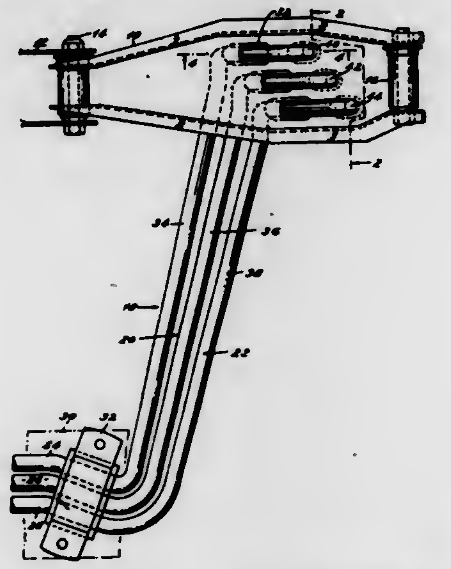


This heel hold-down device for resiliently and releasably retaining the heel of a ski boot in a position of engagement with the ski surface comprises a resilient mechanism housed within the base member of the device and comprising a coil compression spring acting upon a transverse rotary shaft carrying at either ends eccentric trunnions engaging cam elements provided on said pivoting jaw or on the supporting bracket thereof, the contour of said cam elements being such that when said shaft is locked in its operative position by said spring said gripping jaw is also retained in its normal, lower position, the upward movement of said jaw causing the rotation of said transverse rotary shaft about its axis against the resistance of the spring.

Said cam element may consist of apertures formed in a pair of flanges extending on either side of said base member and each formed with a cam-forming aperture engaged by an eccentric trunnion carried by the corresponding end of the rotary shaft. A control lever is secured to said bracket or to said shaft to permit a quick release of the heel.

3,724,869
TORSION SPRING ATTACHMENT CONSTRUCTION

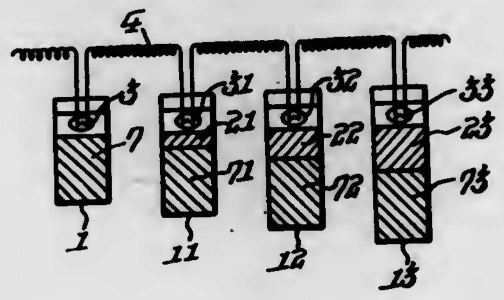
William D. Allison, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 21, 1970, Ser. No. 99,861
Int. Cl. B60g *21/04*
U.S. Cl. 280—124 B **7 Claims**



A torsion bar attachment construction in which a torsion bar has a hook-shaped end that passes through an aperture in a suspension arm and engages a recessed spring seat formed in the arm. The torsion bar is stressed to maintain it in engagement with the suspension arm.

3,724,870
GAS-PRODUCING DEVICE FOR AN INFLATABLE BODY-PROTECTING BAG ON A HIGH-SPEED VEHICLE

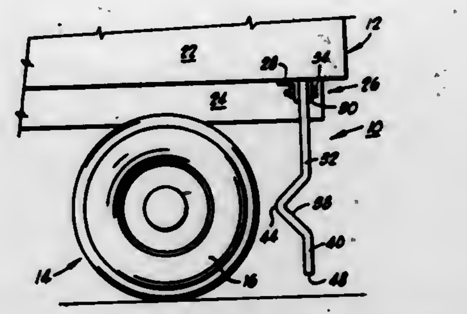
Isao Kurokawa; Nobuyuki Izawa, and Shunji Orita, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Feb. 16, 1971, Ser. No. 115,332
Claims priority, application Japan, Feb. 18, 1970, 45/13458; May 20, 1970, 45/42388; May 20, 1970, 45/42389
Int. Cl. B60r *21/08, 21/10*
U.S. Cl. 280—150 AB **6 Claims**



A gas-producing device is provided which includes a number of gas-producing tubes containing gas-producing composite material including an explosive and/or a combustible compound. The tubes, having different time durations of combustion are cooperable so as to inflate the body-protecting bag within at most 50 msec and to maintain it in its inflated state for a definite period of time, for example, 500 msec. The gas-producing device also includes improvements effective to stabilize the operation of the gas-producing tubes and the inflation of the body-protecting bag associated therewith.

3,724,871
MUD FLAPS

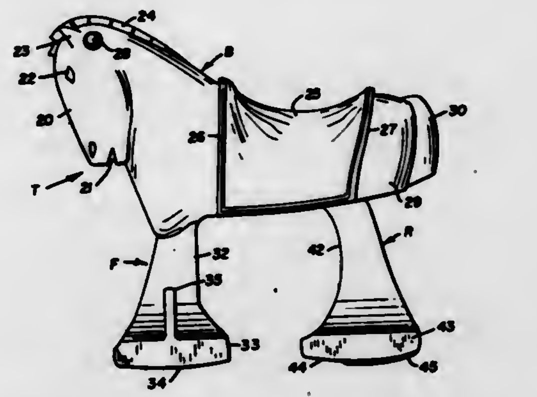
James P. Evans, 3233 Southwest 23rd Street, Oklahoma City, Okla.
Filed April 14, 1971, Ser. No. 133,832
Int. Cl. B62d *25/16*
U.S. Cl. 280—154.5 R **8 Claims**



A mud flap device which is particularly adapted for use with truck trailers, the device consisting of a longitudinally reinforced guard member which includes securing means across the top edge thereof and, further, which is formed with a forwardly protruding portion for alignment generally with a vehicle tire such that the protruding portion of the guard member will maintain the lower portion of the guard member displaced by a predetermined amount from the tire.

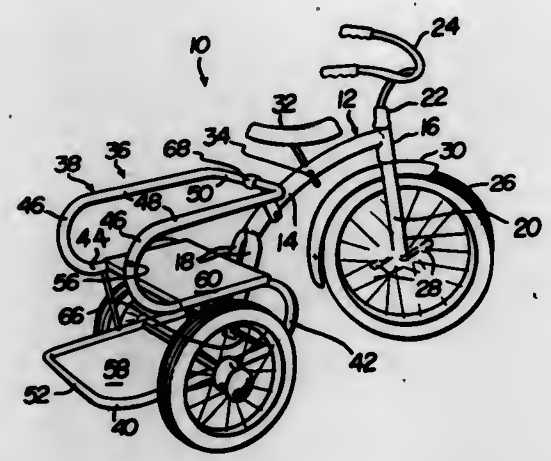
3,724,872
WALKING TOY

Rudy R. Proctor, Arvada, and Denver L. Proctor, Wheat Ridge, both of Colo., assignors to Jet-X Corporation, Denver, Colo.
Filed Feb. 1, 1971, Ser. No. 111,487
Int. Cl. A63f *19/00*
U.S. Cl. 280—1.177 **5 Claims**



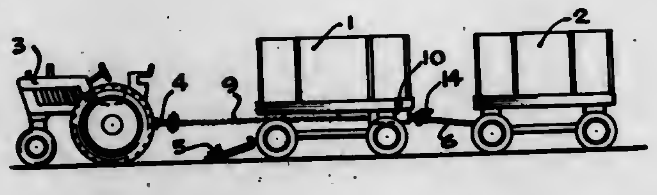
A walking toy for a child which may simulate a horse and which includes a body having a seat for the child which may simulate a saddle, with a front pedestal depending from the front of the body and a rear pedestal pivotally connected to the body at a pivot point underneath the seat, but extending rearwardly and downwardly to a laterally extended base under the rear of the body. The front pedestal also has a laterally extending base, and each base is longitudinally convex, so that the child may shift his weight forwardly onto the front pedestal to cause the rear pedestal to swing forwardly toward the front pedestal, and shift his weight rearwardly substantially upon the rear pedestal, to cause the front pedestal and body to move forwardly and away from the rear pedestal. An accessory for the walking toy may be a flat board having a rear, depending strut, with a lower, concave notch to fit on the body just forwardly of the front rim of the saddle, and a pair of front, depending ears, each having a notch to fit upon a handle which extends from the opposite sides of the simulated horse head.

3,724,873
THREE-WHEELED VEHICLE
Stanley L. Glamb, deceased, late of Garden City, Mich., and by Robert V. Glamb, administrator, Ann Arbor, Mich., assignor to Helen D. Glamb, Widow, Garden City, Mich.
Filed March 26, 1971, Ser. No. 128,314
Int. Cl. B62k *27/02*
U.S. Cl. 280—203 **5 Claims**



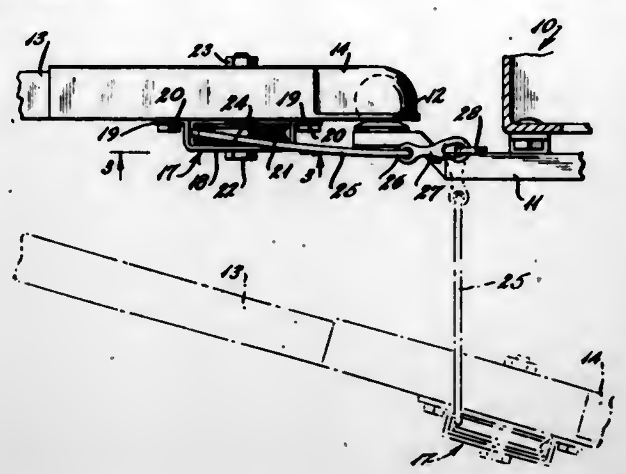
A vehicle having interchangeable and reversible parts with which it can be converted into a number of different types of vehicles. The parts of the vehicle include a frame, having a forked rear, a mounted fork at the front of the frame for rotational movement about a substantially vertical axis, to which is attached a front wheel, a handlebar attached to the fork, a seat attached to the frame, and an auxiliary seat assembly attached to the rear of the frame supported by a pair of rear wheels. The auxiliary seat assembly is reversible and removable.

3,724,874
VEHICLE DRAWBAR ASSEMBLY
Glenn Simpson, Pocahontas, Iowa
Filed July 30, 1971, Ser. No. 167,776
Int. Cl. B60d *1/18*; **B62d** *53/00*
U.S. Cl. 280—408 **4 Claims**



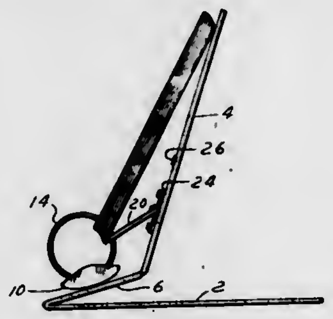
A drawbar assembly for hitching two trailers together is composed of the following combination: (1) a hollow, rectangular, drawbar receiver for attaching to the rear axle of the first trailer; (2) a portable drawbar attachable to the tongue of the second trailer and movable into the receiver; and (3) a flexible dragline attachable at one end to the drawbar, thence running through the receiver and under the first trailer and attachable at the other end to a tractor for pulling the drawbar into the receiver; the combination having stopping and locking means for holding the drawbar in the receiver.

3,724,875
SAFETY CABLE FOR TRAILER HITCH
Arnold R. Hillman, 25821 Telegraph Rd., Flat Rock, Mich.
Filed Dec. 30, 1971, Ser. No. 214,356
Int. Cl. B60d *1/12*
U.S. Cl. 280—457 **5 Claims**



Safety auxiliary apparatus for connecting a towed vehicle to a propelling vehicle in which the primary connection is a conventional trailer hitch. The safety auxiliary apparatus includes means on the trailer tongue providing a connection to the propelling vehicle so that the trailer will remain under control in the event that the primary hitch becomes disengaged.

3,724,876
LOOSE LEAF RING BINDER EASEL STRUCTURE
Albert P. Krikorian, Longmeadow, Morocco, assignor to National Blank Book Company, Inc., Holyoke, Mass.
Filed July 12, 1971, Ser. No. 161,725
Int. Cl. A47b *23/00*
U.S. Cl. 281—33 **9 Claims**

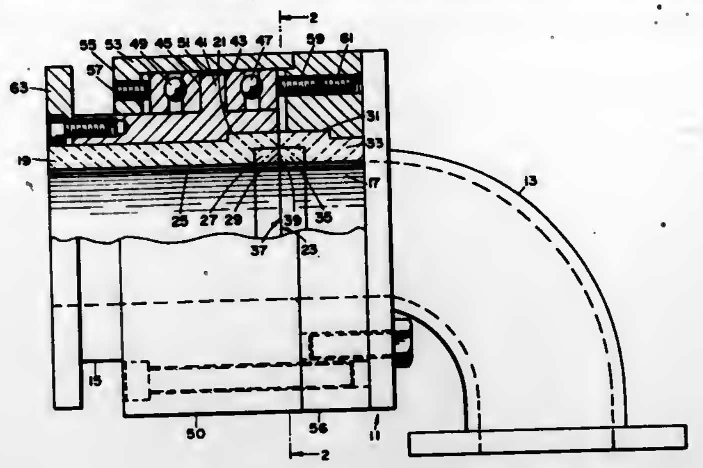


Loose leaf ring binder easel structure having outer cover panels, an intermediate back cover panel pivotally hinged therebetween and ring wire sheet holding mechanism mounted on the back panel, one of the outer covers having an easel support secured thereto and extending from the inside cover surface for engaging the ring wires and holding the cover to an outer limit of pivotal movement at an oblique angular relation to the back panel, the second outer cover panel being free to swing into a back to back relation with the back cover panel. When the second cover panel rests on a platform surface the back panel is horizontal and the easel support holds the first cover panel at the upright angle for turning sheets on the ring wires to and from an inclined easel position against the cover.

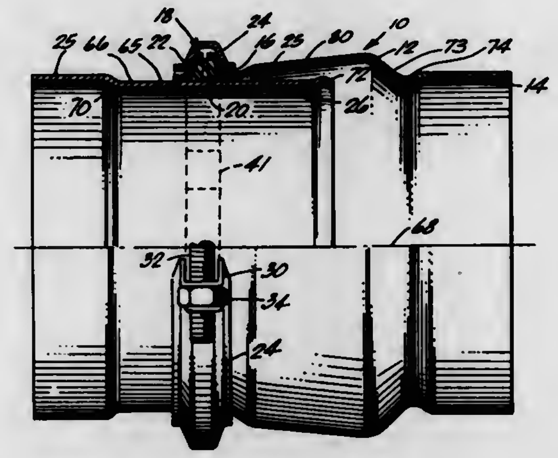
3,724,877
SWIVEL JOINT ASSEMBLY
Bruno H. Thut, Mentor, Ohio, assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed July 16, 1971, Ser. No. 163,226
Int. Cl. F16l *39/04*
U.S. Cl. 285—55 **9 Claims**

In a swivel joint assembly, a housing is rotatably mounted on an open end of a fixed tube. A passage within the housing

communicates with the tube for the flow of fluid. Both the passage of the housing and the tube are lined with an inorganic fiber. A ring seal supported in the passage engages another ring seal in the tube for sealing the junction between the tube and the passage.



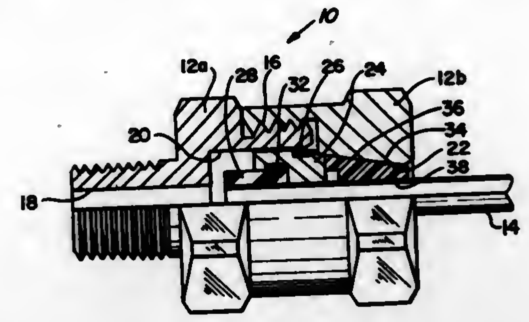
3,724,878
FLEXIBLE CONNECTOR
John A. Ford, 543 Landfair Avenue, Los Angeles, Calif.
Filed March 24, 1971, Ser. No. 127,601
Int. Cl. F16l *21/06*
U.S. Cl. 285—93 **7 Claims**



A connector for joining two hollow members intended for the transport of fluid and/or gas medium where axial, rotational and/or angular relative movement may be present between the hollow members. The connector includes a bell-housing member adapted for rigid attachment to one of the hollow members. The bell-housing member forms the desired flexible connection to the other hollow member by means of a gasket which is retained and pressed thereagainst by a gasket hood formed by the flared end of the bell-housing member, a retaining ring, and a clamping ring which surrounds the hood. The gasket is specially shaped to have desirable deformation and sealing characteristics.

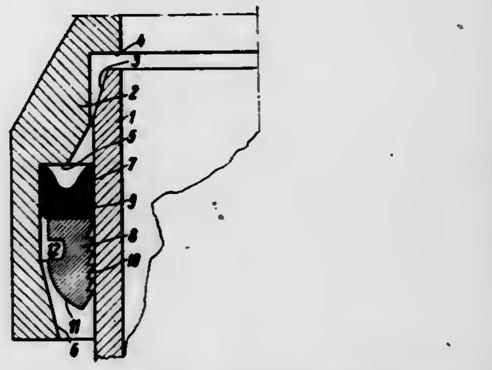
3,724,879
TUBING COUPLING
Clifford H. Snyder, Jr., 103 Cherry Tree Place, Coraopolis, Pa.
Filed Nov. 22, 1971, Ser. No. 201,014
Int. Cl. F16l *17/00*
U.S. Cl. 285—101 **4 Claims**

A coupling is provided which sealingly connects a section of smooth cylindrical tubing to a fluid passage. The coupling includes a rigid housing with a deformable initial seal and a deformable secondary seal. The deformable secondary seal is frusto-conical in shape and abuts a frusto-conical surface within the housing. An annular piston is disposed within the housing in contact with the frusto-conical secondary seal. Line pressure directed against the piston by the initial seal causes the secondary seal to be deformed within the frusto-conical



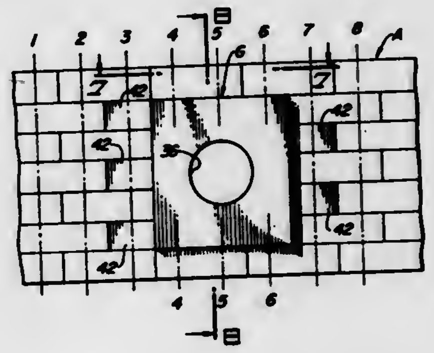
chamber of the housing to thereby tightly grip the outer surface of the tubing.

3,724,880
THRUST SAFETY IN SOCKET CONNECTIONS OF PIPES
Georg Seiler, Pachmayrplatz 11, Munich, Germany
Filed May 20, 1971, Ser. No. 145,328
Claims priority, application Germany, July 10, 1970, P 20 34 325.3
Int. Cl. F16l *17/02*
U.S. Cl. 285—105 **15 Claims**



The invention relates to a thrust safety in socket connections of pipes, in particular pressure pipes, for the supply networks of cities or the like, made of malleable iron or plastic, with a sealing ring to seal the gap between the socket and the pipe end, the inside surface of the socket tapering down slightly under a predetermined inclination towards the socket end and serving to receive a clamping ring.

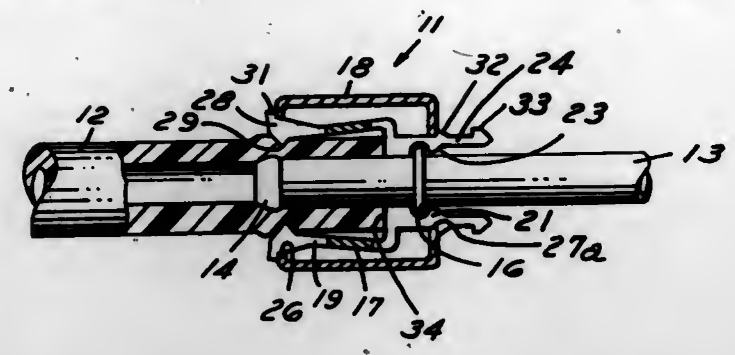
3,724,881
PRESSURE VESSEL WITH CONNECTOR FITTING
Alexander Zeitlin, 18 Macy Avenue, White Plains, N.Y.
Filed Feb. 18, 1972, Ser. No. 227,471
Int. Cl. E04h *7/02*; **F16l** *41/00*
U.S. Cl. 52—192 **10 Claims**



A segmented high pressure vessel has a special connector fitting incorporated in its peripheral wall for connecting a pipe thereto.

3,724,882
TUBE-TO-HOSE CONNECTION

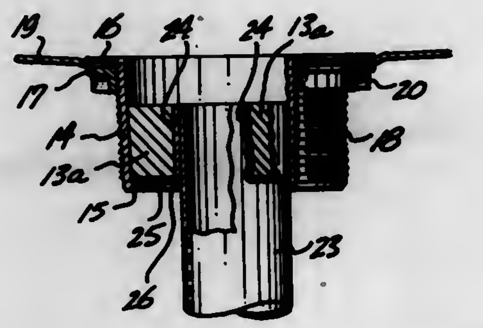
David C. Dehar, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed May 10, 1971, Ser. No. 141,878
Int. Cl. F16l *21/06*
U.S. Cl. 285—243 **6 Claims**



A nonthreaded coupler for connecting a flexible hose to a relatively rigid tube or nipple. The coupler includes an inner sleeve or clamp member positioned about and secured to the tube near its end. The clamp member has a plurality of axially extending fingers that form a cage to receive the end of the hose. An outer sleeve, positioned about the inner sleeve, is axially movable relative to and engagable with the inner sleeve to constrict the opening of the cage and to compress the hose wall between the clamp member fingers and the tube.

3,724,883
PRELEADED DRAINPIPE CONNECTOR

John M. Dennis, Jr., Renton, Wash., assignor to Charles Shane, Renton, Wash.
Filed Jan. 18, 1971, Ser. No. 107,339
Int. Cl. F16l *13/00*
U.S. Cl. 285—291 **4 Claims**

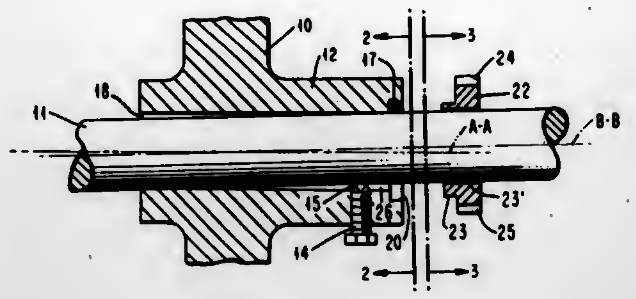


A lead caulking collar adapted to seat in a drainfitting thimble is precast around an adaptor or stub for connection to a drainpipe.

3,724,884
DRIVEN MEMBER LOCKING DEVICE

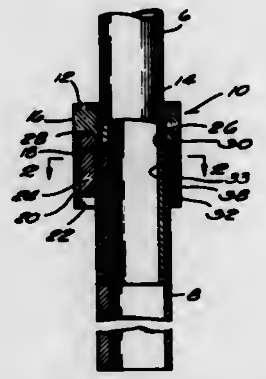
Richard Harden Roider, Poughkeepsie, N.Y., assignor to Lundquist Tool and Manufacturing Co., Inc., Worcester, Mass.
Filed Jan. 26, 1972, Ser. No. 220,975
U.S. Cl. 287—52.08 **3 Claims**

The hub of a driven member is provided with a longitudinal bore therethrough having a slide fit with the drive shaft on which it is mounted and is further provided with a set screw arranged perpendicularly to the drive shaft and having a hardened serrated shank end set in tight engagement with the drive shaft. In addition, the driven member hub is provided with an eccentric counterbore at one end thereof and the counter bore is undercut to form a sharp edge. The device also includes a locking ring or collar that is likewise provided with a bore therethrough having a slide fit to the drive shaft. The collar also has an eccentric shoulder formed on an end face thereof, the shoulder being complementary to the eccentric counterbore in the hub and receivable therein. The collar is also provided with means through which the collar may be rotated while the complementary eccentric surfaces are in engagement thereby to rock the driven member axially relative to the drive shaft and drive the set screw serrations into the body of the drive shaft. While the collar is being rotated, the sharp edge formed by the undercutting of the hub eccentric bore cuts a crude thread form in the surface of the collar's eccentric shoulder thus firmly securing the shoulder within the hub counterbore.



3,724,885
LOCKING DEVICE FOR EXTENSIBLE TUBES

Gordon D. Becker, Rt. 1, Larsen, Wis.
Filed Jan. 7, 1972, Ser. No. 216,142
Int. Cl. F16b *7/14*
U.S. Cl. 287—58 CT **2 Claims**



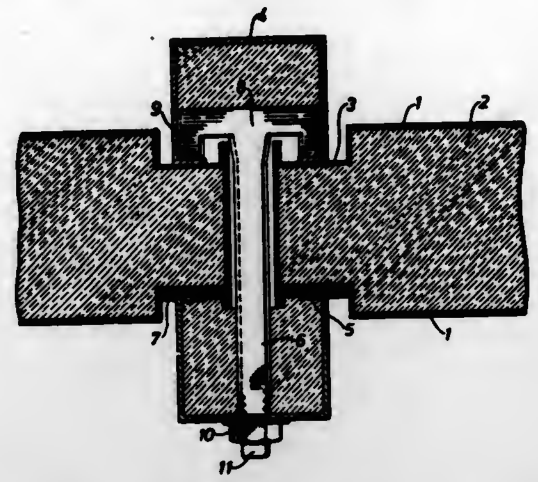
Elastomeric annular parts preferably made of synthetic resin such as nylon include at least two sleeves which are eccentrically interlocked and relatively rotatable to develop torque which effects lateral binding pressure to lock together telescopically associated tubes engaged with such parts, whereby two tubes may be fixed in different over-all lengths.

The same principle is applied in an alternative embodiment to tubes which have annular collars to effect the lock but are themselves square or rectangular in cross section.

3,724,886
JOINT BETWEEN FIREPROOF AND PRESSURETIGHT WALL AND CEILING ELEMENTS

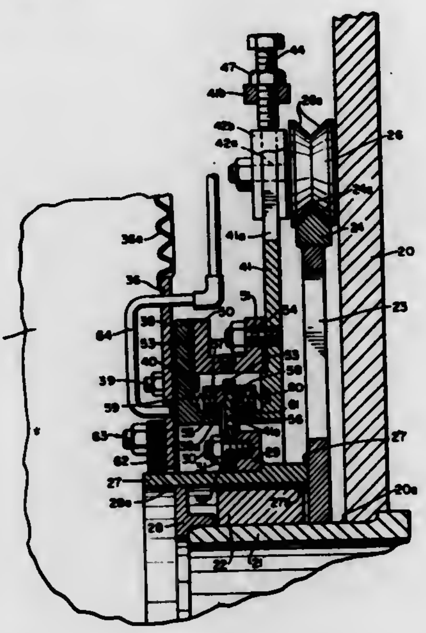
Lennart Widerby, Jonkoping, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden
Filed May 14, 1971, Ser. No. 143,555
Int. Cl. F16b *5/02*
U.S. Cl. 287—189.36 D **1 Claim**

A joint between fireproof and pressuretight elements consisting of sheet metal covers enclosing an insulating filler and having U-shaped slots at their joining ends and being joined together by two U-shaped clamping sections pressed against the slots by bolts, which are T-shaped and flat, the head of which resting against the inside of the outer section and being somewhat wider than said section internally, whereby the bolt can be inserted from the inside of said elements and during the screwing-on of a nut on the bolt be brought into contact with the inner walls of the section.



3,724,887
KILN SEAL

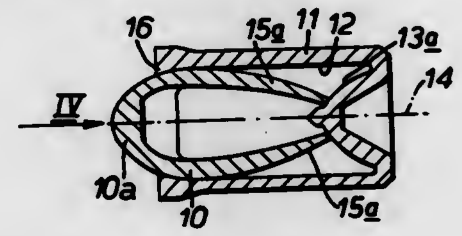
Edward S. Roberts, New York, N.Y., assignor to Treadwell Corporation, New York, N.Y.
Filed May 18, 1971, Ser. No. 144,461
Int. Cl. F27b 7/24
U.S. Cl. 287—189.36 **6 Claims**



An end seal for a rotary kiln having axial-reference centering means.

3,724,888
SPRING-BIASED LATCHING DETENT

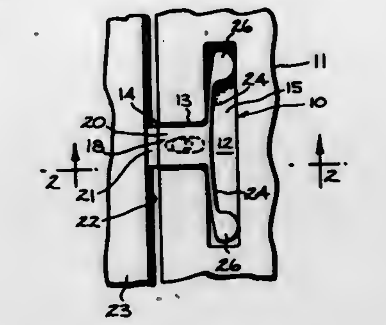
Michael Joseph James, Cheltenham, England, assignor to Micro & Precision Mouldings (Cheltenham) Limited, Cheltenham, England
Filed March 24, 1971, Ser. No. 127,641
Claims priority, application Great Britain, March 24, 1970, 14058/70
Int. Cl. E05c *19/02*
U.S. Cl. 292—74 **3 Claims**



An assembly such as a door catch has two relatively movable members, one of the members having a projecting resilient arm and the other having a ramp-like surface along which the arm travels. The result is that the resilient arm deflects during relative movement of the members in one direction and the flexing of the arm produces a return force acting between the members and in the opposite direction.

3,724,889
LATCHING DEVICE

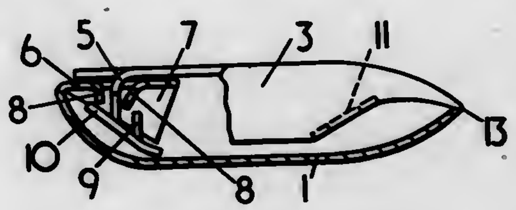
Eddie W. Dooley, Jeffersonville, Ind., assignor to General Electric Company
Filed Oct. 12, 1971, Ser. No. 188,124
Int. Cl. E05c *1/10*
U.S. Cl. 292—87 **5 Claims**



A one-piece self biasing plastic latch member for retaining a movable closure member to a stationary member having a bolt member with integrally formed flexible arms adapted to bias the bolt member to an operative position for engagement by the stationary member. The latch may include a handle formed integral with the bolt member.

3,724,890
SECURITY SEALING DEVICE

Donald Adamson, Warlingham, and Frank Henry Arthur, Chelsfield, both of England, assignors to Envopak Limited, Sidcup, Kent, England
Filed April 26, 1971, Ser. No. 137,214
Claims priority, application Great Britain, April 27, 1970, 20,145/70
Int. Cl. B65d *33/34, 55/06*
U.S. Cl. 292—322 **2 Claims**

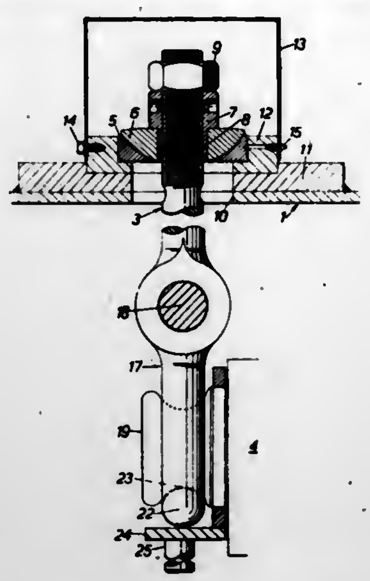


An improved security sealing device comprises a pair of hingedly connected metal jaws of which one has a tongue insertable through a slot in the other. The slot has inward facing lips while the tongue has catch tabs which, after insertion of the tongue through the slot, move to positions on opposite sides of the tongue such that by engagement with the lips of the slot they thereafter prevent opening movement of the jaws. By this arrangement it is virtually impossible to manipulate the jaw locking parts without visibly damaging the sealing device.

3,724,891
SUSPENSION MEANS FOR LOAD HANDLING EQUIPMENT

Terence Brickley, Cannock, England, assignor to Rubery, Owen & Co., Limited, Darlaston, Wednesbury, England
Filed April 14, 1971, Ser. No. 133,893
Claims priority, application Great Britain, April 21, 1970, 18,906/70
Int. Cl. B66c *5/02*
U.S. Cl. 294—67 R **3 Claims**

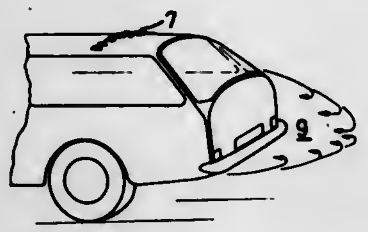
A freight container is handled by a crane or carrier by means of a spreader frame engaging with the container. The spreader frame is suspended from the carrier by vertical links which can swivel relative to the carrier and can be easily detached from the spreader frame. Hydraulic jacks move the spreader frame relative to the carrier to align it with the container.



3,724,892
VEHICLE, ESPECIALLY A STATION WAGON, HAVING A VORTEX GENERATOR FOR PRODUCING AN ATTACHED FLOW OVER THE REAR WINDOW

Georg Sven-Olof Ridder, Fregattvagen 12, Lidingo, and Hans Goran Lorinder, Vattentornsvagen 1, Osterskar, both of Sweden

Filed Feb. 8, 1971, Ser. No. 113,239
Claims priority, application Sweden, Feb. 17, 1970, 2014/70
Int. Cl. B62d *35/00*
U.S. Cl. 296—1 S **3 Claims**



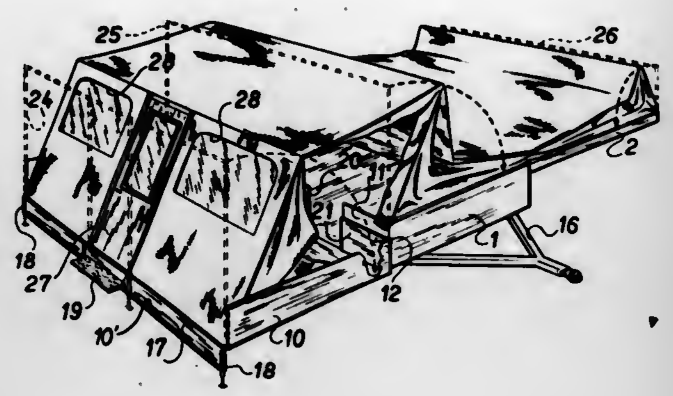
The present invention relates to a vehicle, particularly a station wagon, having vortex generators for producing an attached flow over the rear window and/or tailgate in order to overcome the problem of the vehicle's own tires throwing up slush which quickly covers the rear section of the vehicle, and the front part of vehicles following behind, with a layer of dirt. The vortex generators are designed to reduce the boundary layer of the air flow along the vehicle's rearward roof surface, gently curved shoulder surface and an obliquely slanted first surface so that separation is prevented over these surfaces and so that an attached flow can be maintained over same. In this way, the turbulent recirculation flow (base flow) will occur only outside of and downstream of a vertical second boundary surface. The vortex generators are a row of substantially rectangular sheets substantially perpendicular to the vehicle roof surface and disposed in pairs that are rearwardly alternately inclined with each sheet forming an angle of no more than 30° with the longitudinal direction of the vehicle.

3,724,893
FOLDABLE TENT CAMPING UNIT

Pierre R. Giroux, 3156 de Francheville St., Three Rivers, Quebec, Canada

Filed Sept. 13, 1971, Ser. No. 179,972
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 R **15 Claims**

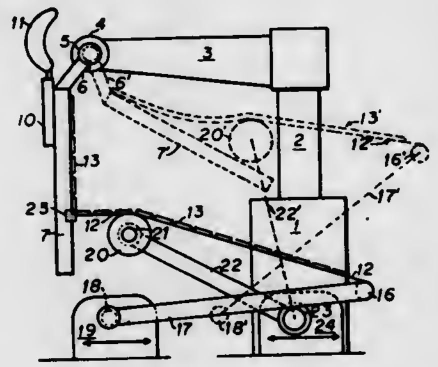
A foldable tent camping unit particularly conceived for making a tent trailer, arranged when unfolded to cover about three times the ground surface covered by the same when folded, and using a convenient linkage and spring arrangement to produce spring assisted folding and unfolding. A tent trailer including a main platform section and one or two extension platform sections hinged to the former and of approximately the same size thereof, an elbow shape lever pivotally connected to the main platform section and to a corresponding extension platform section to pivot with the latter and a spring counteracting the weight of the corresponding extension platform section to assist folding and unfolding thereof. A tent material arranged to stay permanently fixed peripherally to the platform sections and erectable frames pivoted to the latter under said tent material and collapsibly supporting the latter.



3,724,894
DENTAL OPERATING CHAIR

Richard W. Page, P. O. Box 258B, Chatham, Mass.

Filed April 20, 1971, Ser. No. 135,634
Int. Cl. A47c *3/00*
U.S. Cl. 297—284 **9 Claims**

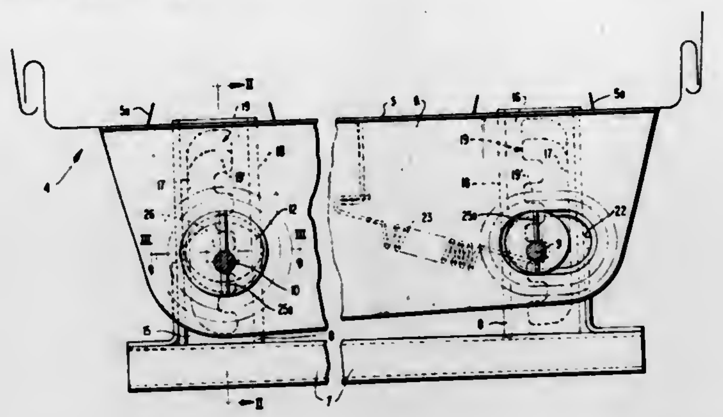


The dental chair has a longitudinally flexible webbing slung between supports at its ends for supporting the patient and also supported intermediate its ends and under the knees of the patient. The foot end support and intermediate support adjust relative to the head end support to conform to patients of different heights and body proportions, and also to adjust for attitude, between an upright sitting position and a substantially horizontal or supine position. The head end support pivots around a point or axis located at the mouth of the patient and the adjustment of other elements provides for pivoting around this axis. The head end pivotal axis is vertically adjustable to accommodate different working positions for the dentist.

3,724,895
MECHANISM FOR ADJUSTING THE HEIGHT OF SEATS, ESPECIALLY OF MOTOR VEHICLES

Oskar Brand, Darmsheim, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Oct. 26, 1971, Ser. No. 192,527
Claims priority, application Germany, Oct. 31, 1970, P 20 53 665.6
Int. Cl. A49b *1/00*
U.S. Cl. 297—348 **16 Claims**

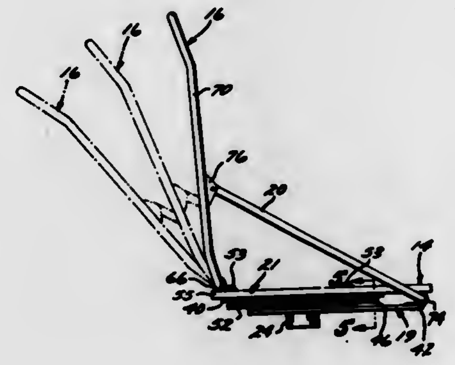


An installation for adjusting the inclination and height of a seat, especially of a motor vehicle seat, supported on a shaft which itself is supported in two side walls secured at the seat; the shaft is provided with cranked portions which engage in toothed rows arranged mutually offset as regards the height thereof, of which two serve alternately as bearing means for the associated cranked portions during the rotation of the shaft.

3,724,896
RECLINER CHAIR

Earl H. Belk, 2438 San Francisco Avenue, Long Beach, Calif.

Filed Oct. 4, 1971, Ser. No. 185,941
Int. Cl. B60n *1/02;* **A47c** *1/026*
U.S. Cl. 297—369 **4 Claims**

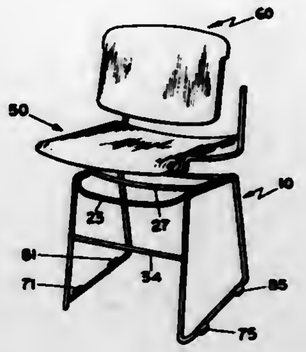


A recliner chair particularly adapted for use in recreational vehicles. The recliner includes a mount for attachment to fixed structure of the vehicle and for rotatably mounting a bottom frame to permit the chair to be swiveled about a generally vertical axis. A back frame is pivotally mounted to a relatively fixed portion of the bottom frame, and braces are attached between the back frame and a relatively movable portion of the bottom frame. A seat lock mechanism locks the fixed and movable portions of the bottom frame in any position of recline or tilt of the back frame to prevent movement of the seat back during a vehicle accident or the like.

3,724,897
WIRE ROD CHAIR

Frederick S. Falks, Comstock Park, and Randall P. Buhk, Wyoming, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Feb. 1, 1971, Ser. No. 111,429
Int. Cl. A47c *1/12*
U.S. Cl. 297—446 **15 Claims**

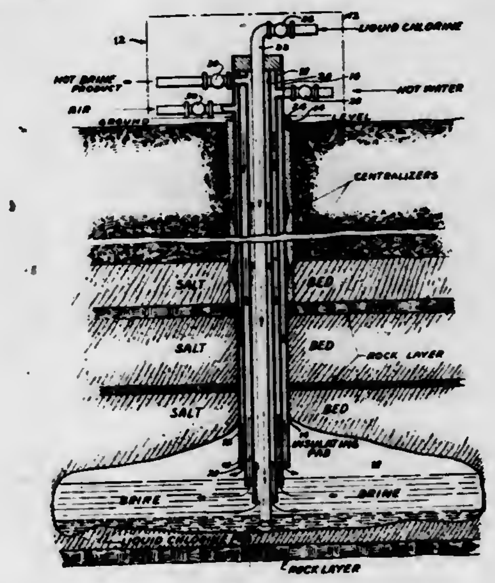


The specification discloses a chair having a seat, back and wire rod frame. The frame includes five wire rods and a stretcher welded together to provide an integral seat support, leg assembly and back support. Three of the five rods are welded together in endwise abutment to provide the frame with a continuous, uninterrupted appearance. The two wire rods at the rear extend upwardly forming rear legs, then diverge inwardly along the rear of the seat. They meet and extend upwardly together, rigidly joined to form an upright portion. The rods then diverge outwardly and upwardly to provide a U-shaped back support. The seat includes downwardly depending tabs at either side which mate with flanges on the sides of the seat support portion of the frame. The front of the seat comprises a lip which curls over a front rod of the seat support. The chair rests on four glides, all of which have fastening intelligence such that the chairs of this invention can be ganged together. The glides on one runner have facing fastening intelligence while those on the other runner have fastening intelligence facing away from one another, such that fore and aft and lateral movements of joined chairs are eliminated.

3,724,898
SOLUTION MINING OF SALT AND STORAGE OF INDUSTRIAL FLUIDS

Charles H. Jacoby, Dalton, Pa., assignor to International Salt Company, Clarks Summit, Pa.

Filed March 29, 1971, Ser. No. 128,768
Int. Cl. E21b *43/28*
U.S. Cl. 299—5 **12 Claims**



A system for solution mining a salt deposit and simultaneously storing an industrial fluid, while conserving system heat input and minimizing earth surface polluting impurity extractions from an underground salt deposit. The invention provides an improved method for conserving system input heat, and utilizing it to improve a solution mining operation in an underground salt mineral deposit; whereby to produce a purified brine at reduced cost. The majority of the mineral deposit impurities are left underground, thereby reducing the recovery plant earth surface polluting effluent problem. Incidentally, the system provides an improved underground storage system for industrial fluid commodities such as liquid chlorine; carbon tetrachloride; carbon bisulfide, and the like.

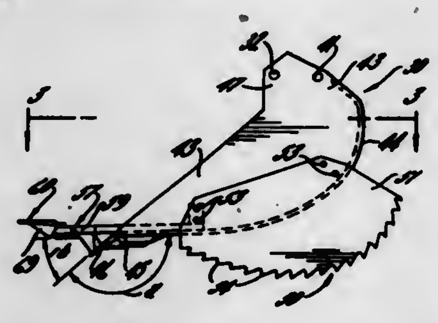
3,724,899
TOOTH FOR BACKHOE BUCKET

Harry C. Clark, 226 W. Perry St., Belvidere, Ill.

Filed May 14, 1971, Ser. No. 143,388

Int. Cl. E02f *3/32*

U.S. Cl. 299—26 **8 Claims**



A backhoe type excavator includes a digging bucket adapted to dig through frozen earth, limestone and the like by the operation of the normal actuators of the excavator. Detachable saws are mounted on the two side panels of the bucket to cut through the frozen earth during back and forth movement of the bucket. A ripper tooth on the lower lip of the bucket then is pulled across the earth between the two resulting cuts or kerfs to break loose the frozen earth, and the tooth thereby coacts with the saws to excavate an initial hole of predetermined size through the frost line. As the initial hole is enlarged to form a trench or the like, new kerfs are cut in the frozen earth at the edge of the initial hole and the tooth is driven in between the lower ends of the kerfs to break loose a relatively large chunk of frozen earth which thereby falls into the bucket for subsequent removal. To facilitate digging through limestone, the ripper tooth extends forwardly of the lower lip at a substantial angle inclined relative to a row of teeth fixed to the lip. When digging, the bucket is drawn repeatedly across the surface of the limestone with the tooth and teeth on successive passes alternately positioned to dig into and rip loose the limestone to form the trench.

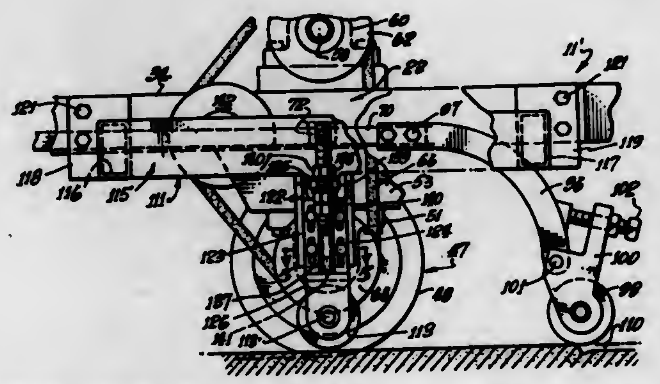
3,724,900
CONCRETE PAVEMENT CUTTING MACHINE

Cecil W. Hatcher, West Covina, and Gene Warner, Whittier, both of Calif., assignors to Pavement Grooving Ideas, Ltd., Pasadena, Calif.

Filed Dec. 17, 1971, Ser. No. 209,118

Int. Cl. E01c *23/09*

U.S. Cl. 299—39 **7 Claims**



Pavement cutting machine with a carriage frame having a cutter for cutting grooves in a pavement. The carriage frame has front wheels in front of the cutter and rear wheels at the rear of the cutter, an auxiliary wheel being provided with a support which retains the bottom of its periphery above and out of contact with the pavement in the absence of an abrupt drop in the level of the pavement. The auxiliary wheel contacts the pavement to limit the depth of cut of the cutter when the wheel in front of the cutter encounters an abrupt drop in the level of the pavement.

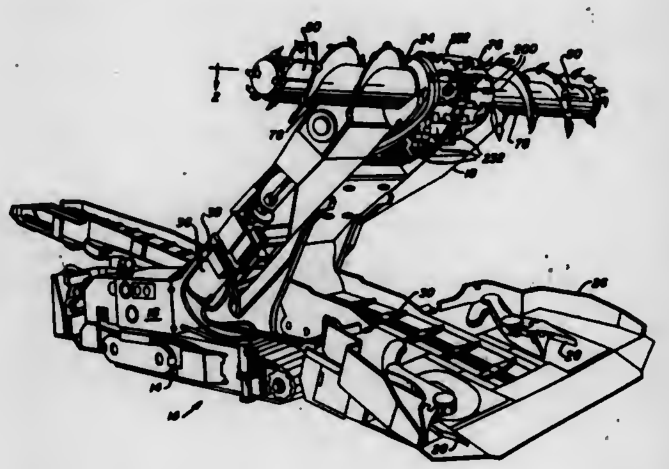
3,724,901
CUTTER CHAIN HAVING INCREASED CONVEYING ABILITY

Lester G. Rollins, 650 Forest Lane, Franklin, Pa.

Continuation-in-part of Ser. No. 786,649, June 24, 1968, abandoned. This application June 2, 1971, Ser. No. 149,263

Int. Cl. E21c *25/34, 35/20*

U.S. Cl. 299—84 **10 Claims**



A cutter chain and support means therefor and more particularly a mining apparatus cutter chain having a plurality of lug portions integral with links of such a cutter chain for substantially increasing the conveying ability of the chain over the natural conveying ability thereof.

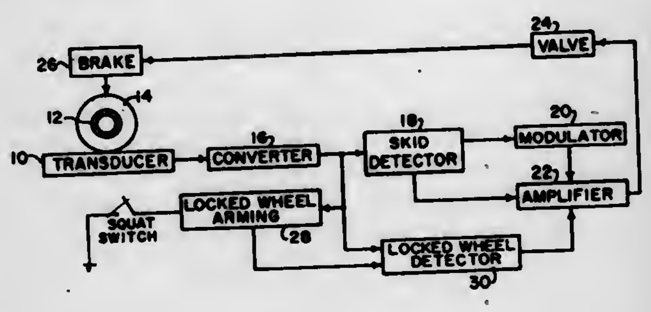
3,724,902
SKID DETECTOR CIRCUIT

Edgar J. Ruof, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 13, 1970, Ser. No. 36,936

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 CG **3 Claims**



A skid detecting circuit for use in a brake control system which has two outputs, the first of which is produced whenever a slight skid occurs and is applied to the modulator section of the brake control circuit to provide a slight reduction in brake pressure. The second output is produced only when a major skid occurs and is applied directly to the amplifier of the brake valve control circuit to cause rapid dumping of the brake pressure. The circuit employs a pair of amplifiers connected in a balanced bridge network. One of the amplifiers is connected to a more sensitive point in the network and is thus responsive to any skid signal. The second amplifier is responsive only to skid indicating signals above a certain higher magnitude.

3,724,903
ANTI-SKID CONTROL SYSTEM FOR VEHICLES

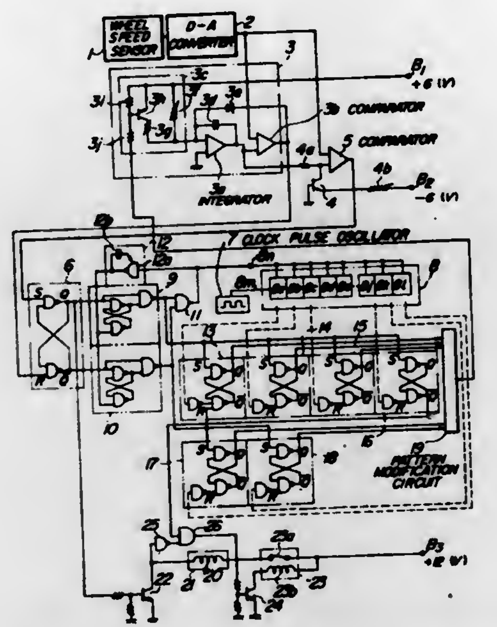
Atsutoshi Okamoto, Toyohashi, and Akio Sugiura, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Aichi-ken, Japan

Filed Sept. 29, 1971, Ser. No. 184,671

Claims priority, application Japan, Nov. 16, 1970, 45/100935

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 P **1 Claim**



An anti-skid control system for vehicles, wherein a plurality of timer circuits comprise a counter circuit for counting clock pulses having a fixed frequency and a plurality of flip-flop circuits for detecting predetermined finite time durations from the output signals of the counter circuit.

3,724,904
WHEEL BALANCING DEVICE

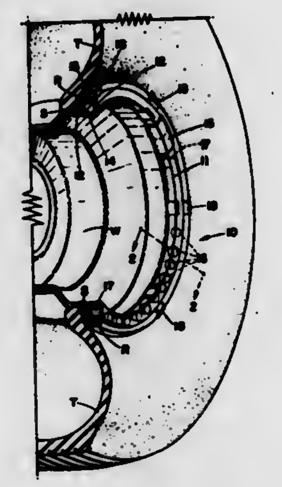
Charles Roy Nixon, and Anton Gasafi, both of Downsview, Ontario, Canada, assignors to Charles Roy Nixon, Downsview, Ontario, Canada

Filed March 8, 1971, Ser. No. 121,739

Claims priority, application Canada, March 26, 1970, 078470

Int. Cl. B60b *13/00*

U.S. Cl. 301—5 BA **3 Claims**



An annular tube of rectangular cross-section, extruded into a predetermined shape corresponding to the interior profile of the vehicle wheel rim, and further comprising a plurality of movable weights in the shape of cylindrical discs or rollers of somewhat reduced cross-sectional dimension in relation to the interior cross-section of the tube so as to roll freely therearound, and a certain predetermined quantity of damping liquid such as oil or the like to damp the movement of the weights. A number of attachment clips are spaced around the annular tube so as to both fasten the same firmly into position in the vehicle wheel, and also to locate the same in a predetermined location spaced from the vehicle wheel rim so as to hold the tube out of contact with the rim. The design and shape of the tube is such that it is possessed of very great inherent resistance to distortion, and the wear on the interior of the tube is greatly reduced by the use of cylindrical rollers as opposed to spherical balls.

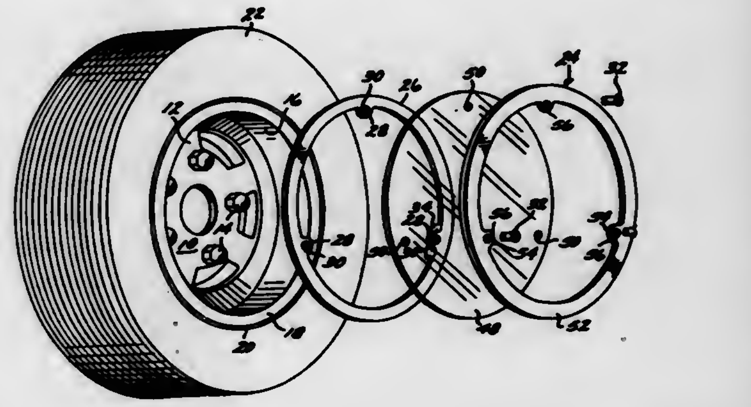
3,724,905
WHEEL COVER ASSEMBLY

Robert S. Kachler, 1047 Pine Avenue, Long Beach, Calif.

Filed Feb. 19, 1971, Ser. No. 116,902

Int. Cl. B60b *7/06*

U.S. Cl. 301—37 P **3 Claims**



A wheel cover assembly for mounting to a wheel structure of the type which includes a tire rim which circumscribes the central lug nut area of the wheel. The wheel assembly includes a flat circular wheel cover made of transparent plastic material which overlies the central lug nut area of the wheel and affords a means for inspection of the lug nut area, the wheel cover being removably secured in position by cooperating fastener and mounting means. The transparent wheel cover is particularly suited for use with sculptured or decorative aluminum alloy or magnesium wheels, and the wheel cover may be tinted to further enhance the decorative appearance of the wheel.

3,724,906
WHEEL COVER

Raymond A. McCarroll, 1725 Newcastle, Grosse Pointe Woods, Mich.

Filed Jan. 25, 1972, Ser. No. 220,630

Int. Cl. B60b *7/06*

U.S. Cl. 301—37 R **13 Claims**

A vehicle wheel cover disposed over the side of a wheel having a drop center type rim, said cover including a disk portion with an axially inwardly extending annular flange that is telescoped into an axial flange of the drop center rim. The annular flange has mounted thereon a radially expansible and contractible annulus which when expanded will center and lock the cover in place on the wheel. The disk and annular flange portions of the cover are formed by molding of plastic or non-ferrous materials or by die casting of non-ferrous metals such as aluminum and zinc alloys, or ferrous alloys by suitable forming operations.

3,724,907
WHEEL HUB

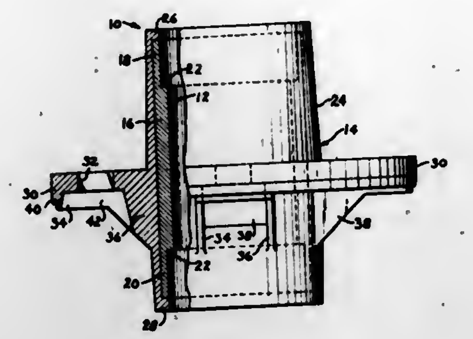
John R. Heusel, Cherryvale, Kans., assignor to Heusel-Miller, Inc., Cherryvale, Kans.

Filed Feb. 17, 1971, Ser. No. 116,074

Int. Cl. B60b *27/02*

U.S. Cl. 301—105 R **3 Claims**

A hub for mounting a wheel on an axle utilizes a steel sleeve for forming an axle bushing and a bearing housing. The steel sleeve is surrounded by an aluminum casting which forms the remainder of the hub and includes a circumscribing flange for securing a wheel. A plurality of openings in the hub flange receive lug bolts for fastening the wheel. The openings in the wheel hub are of polygonal configuration for receiving complementally configured shafts of the lug bolts to distribute torque between the wheel and the hub. The lug bolts are provided with relatively large heads and a socket is formed by the hub for receiving the head of each lug bolt. The socket is provided by a plurality of gusset plates which are integral with the hub flange and present a large surface area for contact with the bolt head to further maximize torque distribution between the wheel and hub.

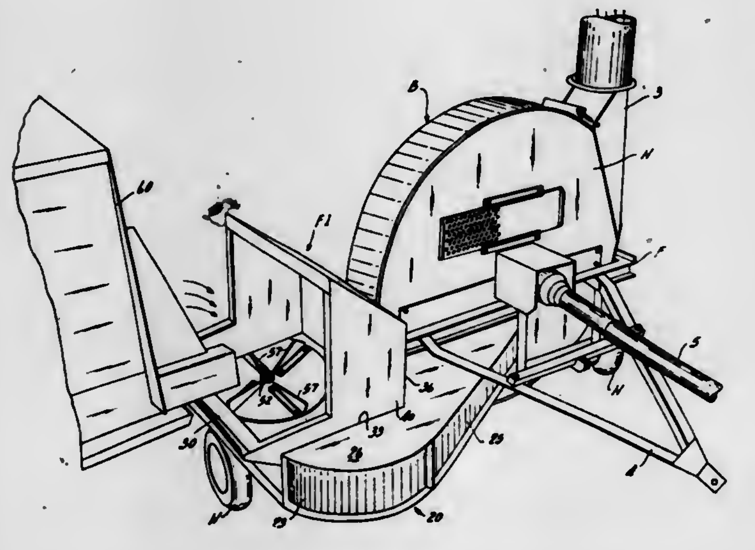


3,724,908
FEED MATERIAL HANDLING APPARATUS

Donald E. Burrough; David R. Scheffler, and Dean E. Seefeld, all of West Bend, Wis., assignors to Gehl Company, West Bend, Wis.

Filed Oct. 22, 1971, Ser. No. 191,946
Int. Cl. B65g *53/40*

U.S. Cl. 302—37 **8 Claims**



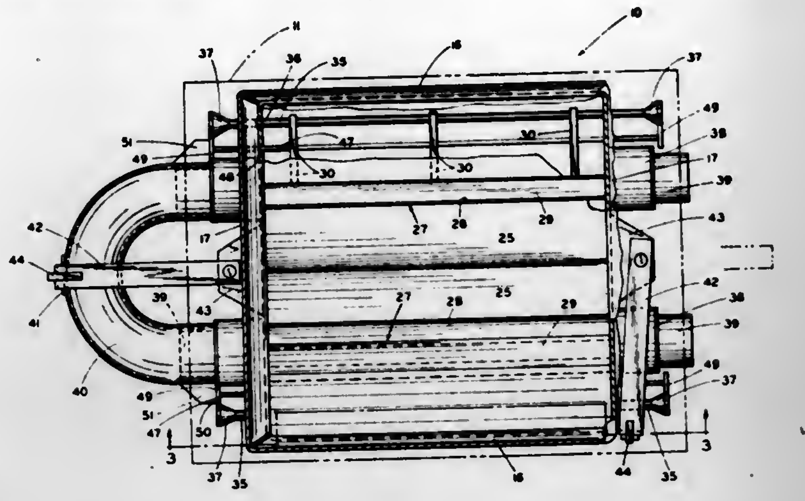
A material handling apparatus for handling silage, for example, and blowing it upwardly into the top of a silo. The apparatus includes a vertically disposed blower having a single rotor which, with the casing of the blower, defines two separate compartments, each of which are fed separately from opposite sides of the blower. The rotor of the blower has paddles for each of the compartments, the paddles for one of the compartments being staggered circumferentially in respect to the paddles in the other compartment. The apparatus also includes novel feeding means for the blower which comprises a pair of whirling horizontal rotors that evenly distribute the material to opposite sides of the blower.

3,724,909
DISCHARGE ARRANGEMENT FOR RAILWAY HOPPER CARS

Franklin P. Adler, Michigan City, Ind., assignor to Pullman Transport Leasing Company, Chicago, Ill.

Filed Dec. 13, 1971, Ser. No. 207,505
Int. Cl. B65g *53/40*

U.S. Cl. 302—52 **10 Claims**



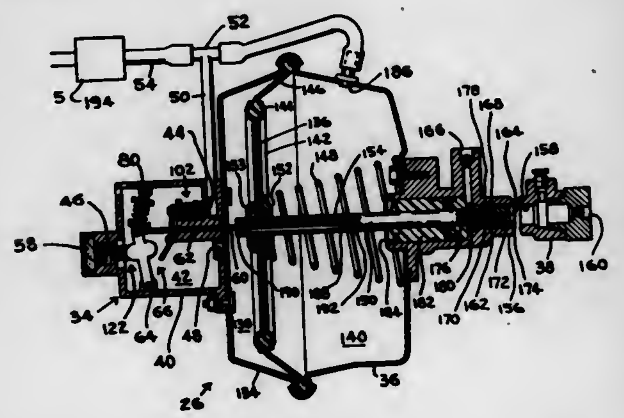
A discharge arrangement for railway hopper cars includes a housing having a plurality of discharge openings and discharge troughs opening outwardly at opposite ends of said housing. The discharge troughs are adapted to be connected to a suitable pneumatic source for discharging materials. The troughs are closed at opposite ends by a single U-shaped conduit which communicates with the adjacent ends of the trough, each of the U-shaped conduits being removable from one side of a railway car for attachment to a pneumatic discharge arrangement.

3,724,910
CAM OPERATED CONTROL

Louis P. Rossigno, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Sept. 29, 1971, Ser. No. 184,768
Int. Cl. B60t *13/50*

U.S. Cl. 303—12 **10 Claims**



A control for positively regulating the alternate flow of partial vacuum from a source of air at atmospheric pressure to operate a pressure differential pump.

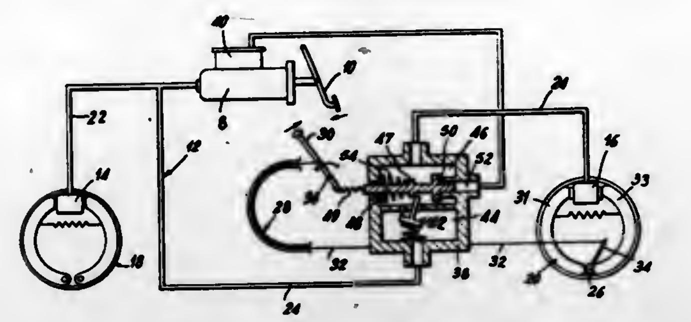
3,724,911
BRAKING CONTROL SYSTEM

Gerard Chevreux, Bois-Colombes, France, assignor to Societe Anonyme D.B.A., Clichy, France

Filed July 24, 1970, Ser. No. 62,001
Claims priority, application France, Aug. 1, 1969, 6926486
Int. Cl. B60t *15/16*

U.S. Cl. 303—13 **4 Claims**

A vehicle braking system is disclosed in which the brakes are hydraulically actuated by the conventional master cylinder and optionally may be mechanically actuated by the usual lever arrangement. A valve is disposed in the fluid conduit interconnecting the master cylinder and the brake and the master cylinder reservoir. The valve is responsive to actuation of the mechanical actuator to shift from a first position preventing communication to the reservoir to a second position preventing communication from the master cylinder into the valve and venting the brakes to the reservoir.

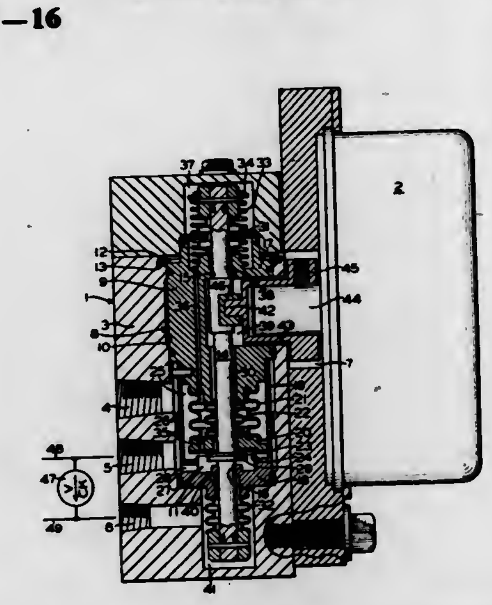


3,724,912
APPARATUS FOR REGULATING BRAKE CONTROL PRESSURE

Richard F. Balukin, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jan. 25, 1972, Ser. No. 220,620
Int. Cl. B60t *15/08*

U.S. Cl. 303—16 **6 Claims**



Apparatus for use with vehicle electro-pneumatic brake systems, said apparatus being characterized by a friction-free self-lapping valve device responsive to opposing control forces reflecting the degree of electrical dynamic braking and the degree of fluid pressure controlling the pneumatic friction braking for automatically maintaining the called-for overall braking effect of the dynamic and friction braking combined, said valve device being operable responsively to variation of dynamic braking effort for automatically maintaining the called-for electro-pneumatic braking relationship by compensatingly varying the degree of delivery fluid pressure for the pneumatic braking system.

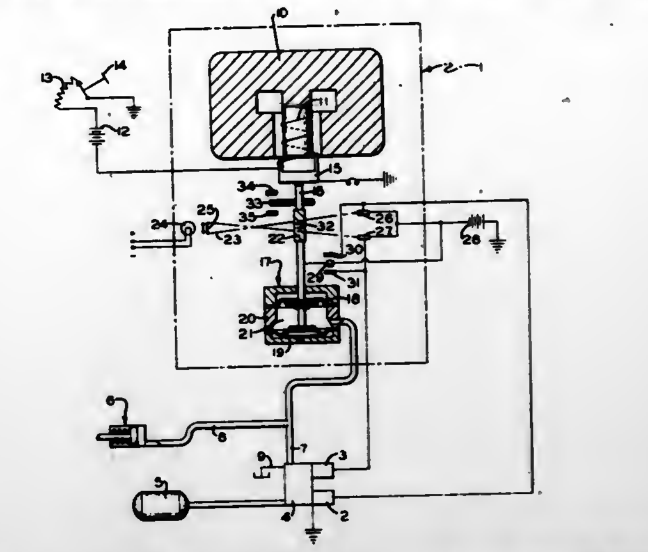
3,724,913
ELECTRODYNAMIC SELF-LAPPING VALVE

Jose Levy, Paris, France, assignor to Compagnie des Freins et Signaux Westinghouse, Freinville-Sevran, France

Filed March 18, 1971, Ser. No. 125,627
Claims priority, application France, March 26, 1970, 7011014
Int. Cl. B60t *15/02, 13/68*

U.S. Cl. 303—20 **7 Claims**

Electrodynamic self-lapping valve apparatus for controlling supply and release of fluid pressure for a fluid pressure operable device by electromagnetically selectively positioning a light shield between a source of light and a selected one of a plurality of light responsive sensors, said apparatus also including pressure differential means responsive to the degree of fluid pressure supplied or released for restoring the light shield to a neutral position to effect a lap condition of the apparatus.

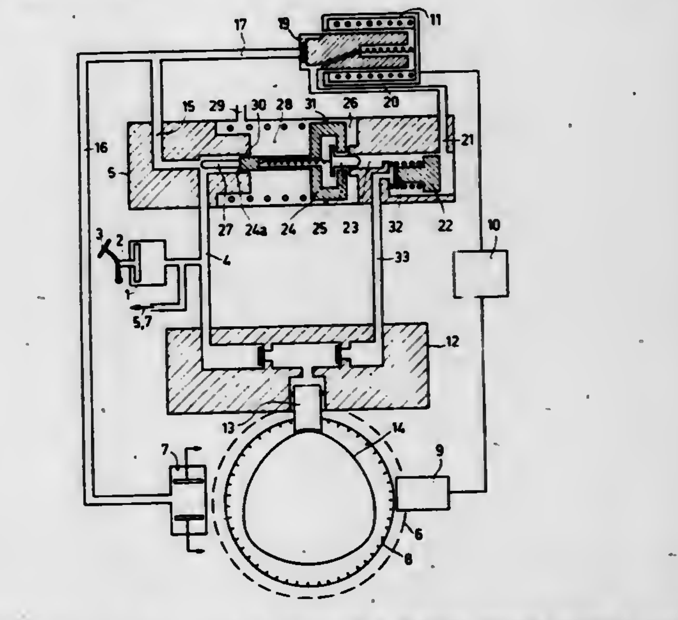


3,724,914
ANTI-LOCK BRAKE SYSTEMS

Derek Robert Skoyles, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 881,460, Dec. 2, 1969. This application Jan. 5, 1972, Ser. No. 215,622
Claims priority, application Great Britain, Dec. 13, 1968, 59,524/68
Int. Cl. B60t *8/02*

U.S. Cl. 303—21 F **14 Claims**



An anti-lock brake system having a wheel speed sensor and related electrical control unit for energizing a solenoid valve to divert brake fluid to a reservoir in response to wheel deceleration in excess of a predetermined value. The diverted fluid displaces a plunger and restrictor member attached thereto; the restrictor being extended into a section of the pressure line to restrict flow therethrough.

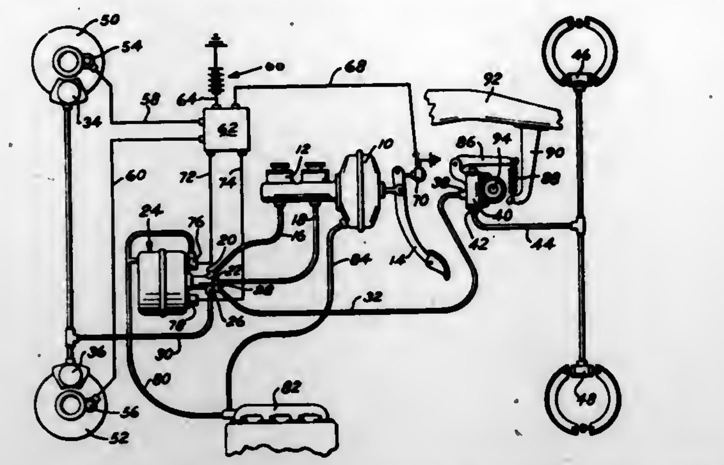
3,724,915
HYDRAULIC PRESSURE MODULATOR

Stanley Irving MacDuff, Magdalen Islands, Quebec, Canada, assignor to The Bendix Corporation, South Bend, Ind.

Division of Ser. No. 763,742, Sept. 30, 1968, Pat. No. 3,556,609. This application Sept. 16, 1970, Ser. No. 72,738
Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **12 Claims**

An anti-skid braking system which includes a modulator for controlling communication between the master cylinder and the brakes. The modulator allows normal communication until a skid condition is sensed. Upon sensing the skid condition, the modulator releases fluid pressure from the brakes



until the skid condition no longer exists and, thereafter, reapplies the fluid pressure to the brakes. This cycle is repeated as many times as the skid condition is sensed.

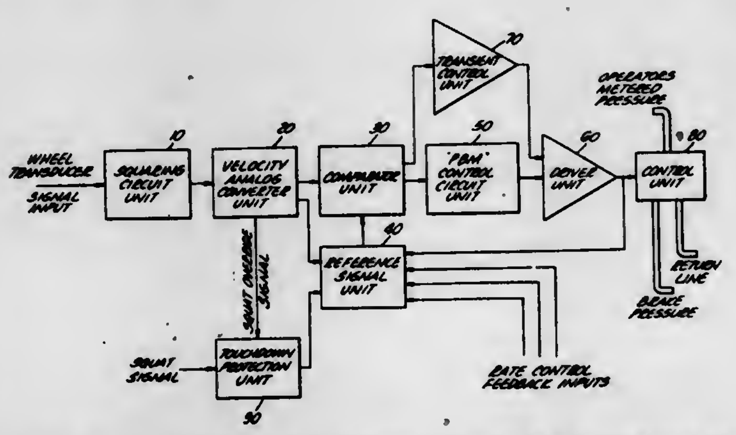
3,724,916
CONTROLLED WHEEL BRAKING SYSTEM

Edgar A. Hirzel, Granada Hills, Calif., assignor to Crane Co., Chicago, Ill.

Division of Ser. No. 871,439, Oct. 22, 1969, abandoned, which is a continuation-in-part of Ser. No. 665,072, Sept. 1, 1967, abandoned. This application June 21, 1971, Ser. No. 154,990

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 BE 17 Claims



A brake control is provided with a system for modifying the action of the brake application device for the wheel of a vehicle. Information obtained from the rotation of the wheel is used to derive an analog signal indicating the braking condition. If the analog signal exceeds a first threshold level, a first brake control signal is produced including the time integral function of the analog signal. If the analog signal exceeds a second threshold level, which is greater than the first threshold level, a second brake control signal is produced. The second brake control signal is substantially a linear function of the analog signal. The first and second brake control signals are continuously summed to produce a composite brake control signal for modifying the level of brake pressure exerted by the brake application device. The system also may include a lag compensating for summation with the first and second brake control signals in forming the composite brake control signal.

3,724,917
PILLOW BLOCKS AND FLANGE CARTRIDGES

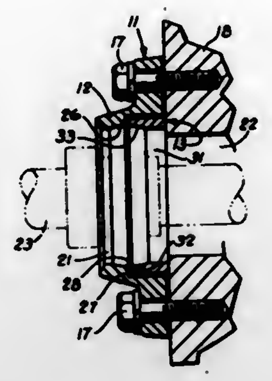
Pete Pakulak, 290 9th Street, San Francisco, Calif.

Filed April 26, 1971, Ser. No. 137,149

Int. Cl. F16c *23/00, 43/06*

U.S. Cl. 308—72 4 Claims

Self adjusting ball bearing support housings of two sections exemplified in pillow blocks and flange cartridges. Each of said sections comprises complementary inner spherical seats for the reception of the spherical outer race of a supported bearing, and an inner shoulder on one of said sections defining



an annular space between the two sections to accomodate the self adjustment of the other section in relation to said one section and the self seating of the other section in relation to the outer race of a supported bearing.

3,724,918
BEARING

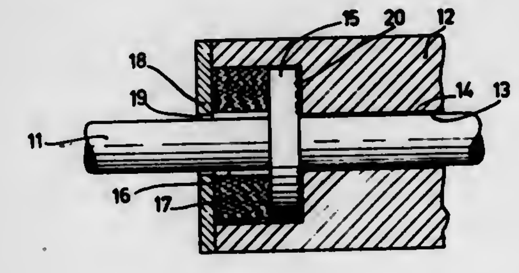
Jacobus Pieter Reinhoudt, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 23,303, March 27, 1970, abandoned. This application Oct. 1, 1971, Ser. No. 185,838

Claims priority, application Netherlands, April 5, 1969, 6905357

Int. Cl. F16c *33/66*

U.S. Cl. 308—109 7 Claims



A bearing comprising a shaft and a bush one of which forms a rotatable bearing member. A chamber for a lubricant is situated in the rotatable bearing member and the lubricant is forced to the bearing gap under the influence of centrifugal force. The part of the storage chamber facing the center line of the shaft is in open communication with the outside of the bearing so as to prevent negative pressure in the storage chamber when lubricant is transported to the bearing gap.

3,724,919
LOW FRICTION SEAWATER LUBRICATED BEARING JOURNAL ARRANGEMENT

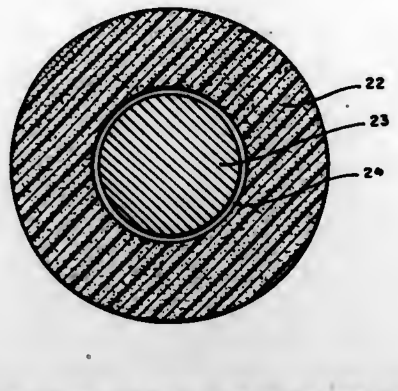
Paul Lagally, and Robert P. Nagy, both of Annapolis, Md., assignors to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of Ser. No. 6,186, Jan. 27, 1970, abandoned. This application Dec. 28, 1971, Ser. No. 213,212

Int. Cl. F16c *33/20*

U.S. Cl. 308—238 4 Claims

A new type of low friction bearing-journal arrangement which can be lubricated by seawater wherein the rubbing surface of a titanium journal in combination with a high density of polyethylene bearing is protected against scuffing or galling



by a small concentration of iodine which may be absorbed at the bearing surface or be present as a water-soluble iodine salt or complex.

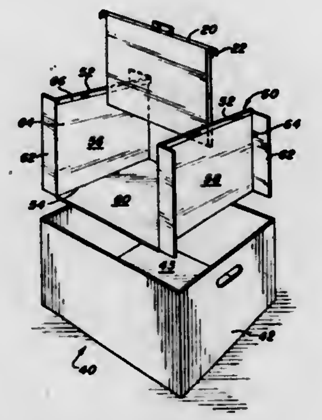
3,724,920
STORAGE BOX FOR STORING HANGING FILE FOLDERS

Robert E. Beck, Chicago, Ill., assignor to Follower Manufacturing Company, Franklin Park, Ill.

Filed March 17, 1971, Ser. No. 125,146

Int. Cl. B65d *5/58, 85/00*

U.S. Cl. 312—184 7 Claims



There is disclosed an insert structure for use in combination with a conventional storage box having a first pair of walls, a second pair of walls, and a bottom connected thereto. The insert means is constructed from a single piece of stiff, foldable material and is adapted for insertion into the storage box to enable the storage of at least one hanging file folder. The insert means has a pair of parallel edges and a pair of folds parallel to the pair of parallel edges. The folds segment the insert means into three sections, whereby the first and second sections are adapted to form a plane parallel to the first pair of walls of the storage box, thereby enabling the pair of parallel edges to support the hanging file folder.

3,724,921
DOOR MOUNTED, DOOR OPERATED HOLDER FOR COLLAPSIBLE LIMP BAGS

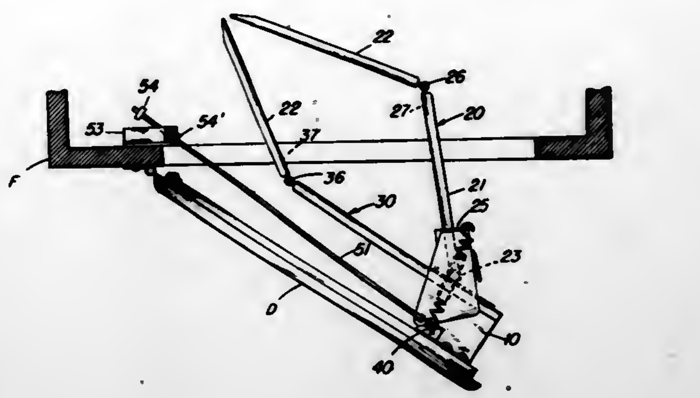
Connie Lake, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,475

Int. Cl. A47b *83/00, 81/00;* B65b *67/04*

U.S. Cl. 312—237 8 Claims

A support bracket holds one end, each, of a pair of arms which are arranged to have a refuse bag threaded over the open ends. The bracket is adapted to be mounted on a kitchen cabinet door, for example on an under-sink cabinet door. The movable arm is pivoted, and the arms are held either together, or spread apart, by a spring travelling over the pivot point. The arms are spread apart by an operating member, such as a rod having an end secured to the kitchen sink frame so that, upon opening the door, the mouth of the bag will be spread apart by the arms, for placing of refuse therein, and, upon closing of



the door, the spring will snap the arms together to hold the bag within the cabinet with its mouth resiliently closed.

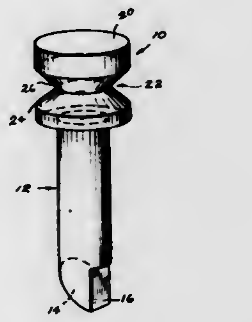
3,724,922
SCOPE FOR VIEWING THE INTERNAL SURFACE OF A BORE OF SIMILAR CAVITY

Ira David Jones, 1023 S. Main Street, South Bend, Ind.

Filed Dec. 17, 1970, Ser. No. 99,153

Int. Cl. G02b *5/14*

U.S. Cl. 350—96 R 8 Claims



A scope for viewing the internal surfaces of bores or similar cavities which includes a rod of optically clear material having a viewing end and an image transmitting end. The transmitting end of the rod includes two optical surfaces which have an included angle of 45° therebetween and which serve to direct image producing light transmitted internally through the rod onto the internal surface to be viewed and to thereafter transmit the image of the internal surface to the viewing end of the rod. The rod includes an annular light gathering surface which is positioned between the viewing and transmitting ends of the rod and which serves to transmit light from an external source internally through the rod to the transmitting end thereof for the purpose of illuminating the internal surface.

3,724,923
DIGITAL CORRELATION PATTERN TRACKER

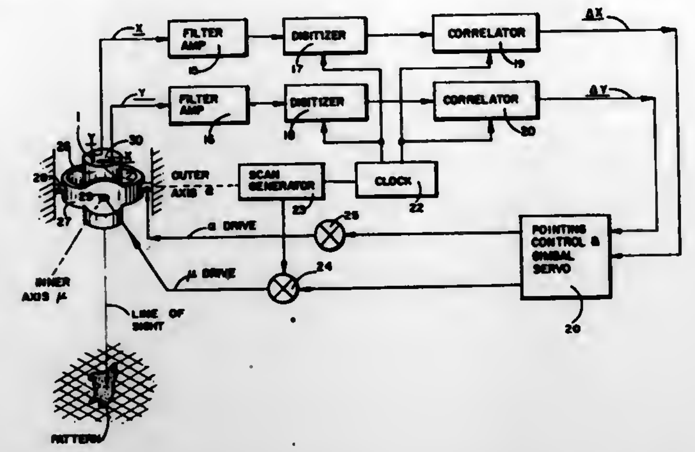
John J. Fischer, Fullerton, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed April 4, 1968, Ser. No. 720,435

Int. Cl. G05b *1/00*

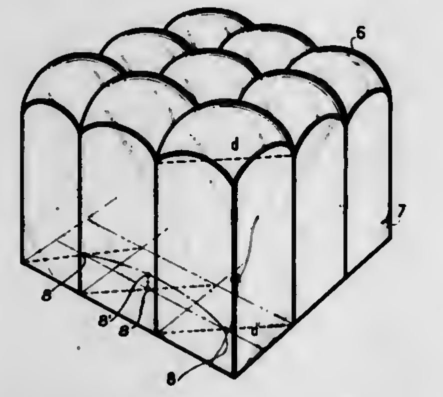
U.S. Cl. 356—158 15 Claims

A pattern tracker which utilizes orthogonal photosensor strips fixed in the image plane of a tracking telescope. The telescope is alternately dithered to cause first the one and then the other photosensor strip to scan the pattern producing a line scan in one coordinate alternated with a line scanned in a perpendicular coordinate. Each photosensor's output is divided into time increments and each such increment is digitized by comparison to some threshold value thus producing a digital word describing the light intensity silhouette of the pattern scanned in each of two orthogonal coordinates. The above process is repeated at a later time, the digital words produced from the latter scan are correlated with those from the prior scan to determine pattern movement between scans.



3,724,924
MULTIPLE FOCUSING DEVICE

Rene Lenfant, 91-Paray-Vieille-Poste, and Guy Petitjean, 92-Clamart, both of France, assignors to Compagnie Generale d'Electricite, Paris, France
Continuation-in-part of Ser. No. 886,898, Dec. 22, 1969, abandoned. This application Dec. 23, 1970, Ser. No. 101,080
Int. Cl. G02b *27/00*
U.S. Cl. 350—167 **8 Claims**



A multiple focusing device for radiation made up of a plurality of right prisms each having a corresponding end or base cut and polished to form a spherical cap producing a focal point for the incident radiation, the plurality of prisms being grouped so that the focal points produced thereby fall within a plane transverse to the incident radiation.

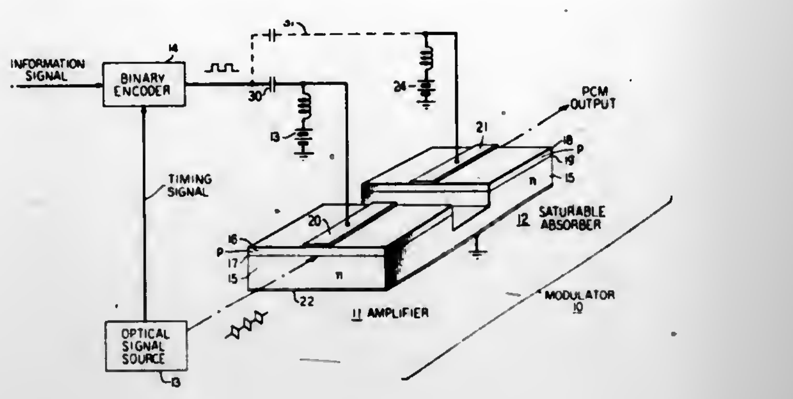
3,724,925

Patent Not Issued For This Number

3,724,926
OPTICAL PULSE MODULATOR

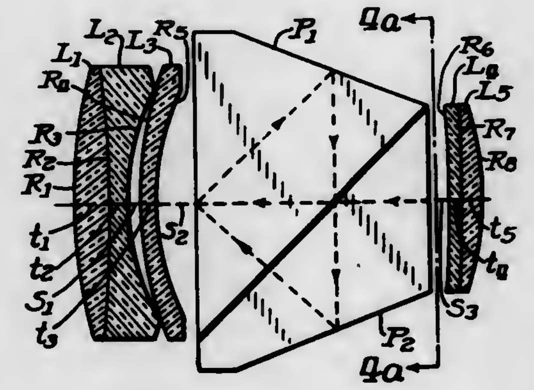
Tien Pei Lee, Middletown, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.
Filed Aug. 9, 1971, Ser. No. 140,127
Int. Cl. G02f *1/36*
U.S. Cl. 350—160 R **7 Claims**

A high speed optical modulator, in accordance with the present disclosure, comprises a pair of p-n junction diodes, one of which is an amplifier, and the other of which is a saturable absorber. A constant current initially forward-biases the amplifier to approximately unity gain. A pulse-encoded information signal is superimpressed upon this constant bias such that incident optical pulses are transmitted at unity gain for one binary state of the information signal and at a greater gain for the other binary state. The power ratio of the optical pulses for the two binary states is then increased by the saturable absorber which attenuates the smaller optical signal to a much greater extent than it attenuates the larger signal.



3,724,927
OPTICAL ZOOM AND IMAGE-ROTATING SYSTEM

Arthur Cox, Park Ridge, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Division of Ser. No. 750,612, Aug. 6, 1968. Pat. No. 3,582,203. This application March 30, 1971, Ser. No. 129,618
Int. Cl. G02b *17/08*
U.S. Cl. 350—203 **2 Claims**

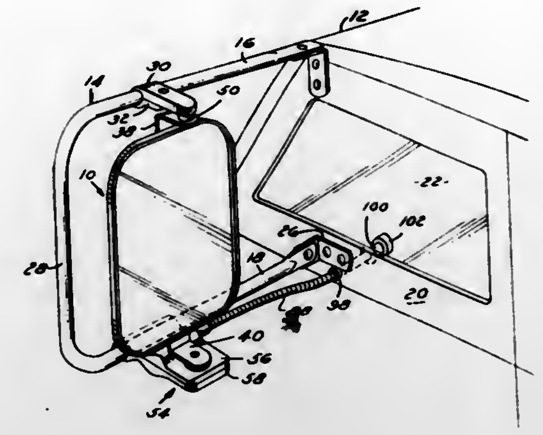


Optical systems for microfilm readers or the like having image rotation capabilities and zoom lens means for selectively varying the image magnification. The optical systems include an aperture stop positioned remote from the microfilm and substantially adjacent the projection screen for maintaining constant screen brightness through a broad range of magnification.

3,724,928
MANUALLY OPERATED REMOTE CONTROL TRUCK MIRROR

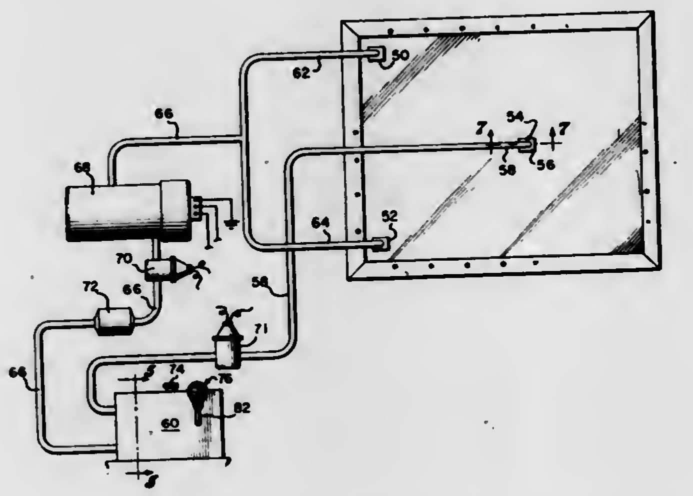
Harry C. Olsen, Farmington; Ludwig J. Tischler, Huntington Woods; Heinz C. Wernecke, Southfield, all of Mich., assignors to F. L. Jacobs Co., Southfield, Mich.
Filed Nov. 30, 1971, Ser. No. 203,128
Int. Cl. G02b *5/08*
U.S. Cl. 350—289 **1 Claim**

A rear view mirror assembly for mounting on the side of a vehicle is provided. The assembly includes upper and lower support arms secured to the vehicle. A mirror is attached to the support arms by means of upper and lower support structures. The support structures each include pivotal means for pivotal mounting of the mirror. One of the support structures serves the dual purpose of securing the mirror to a support arm and housing an actuating mechanism for powered mirror adjustment from a remote location. A flexible shaft extends from the actuating mechanism to the interior of a vehicle cab for manual rotation of the mirror at a remote location.



3,724,929
AIR-FREE LIQUID VARIABLE LIGHT FILTER SYSTEM

Mount L. Lacy, Jacksonville, Fla., assignor to Mount Lacey Enterprises, Inc., Salt Lake City, Utah
Continuation of Ser. No. 628,984, April 6, 1967, abandoned. This application Jan. 12, 1971, Ser. No. 105,985
Int. Cl. G02b *5/24*
U.S. Cl. 350—312 **23 Claims**

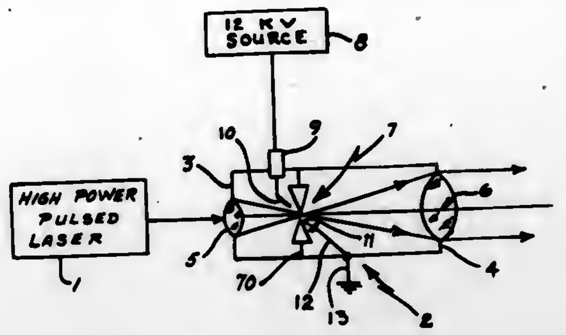


A hermetically sealed, air-free system for screening and filtering electromagnetic ray energy from the sun, having a means within the system for changing from one degree of screening and filtering to another by the use of two or more immiscible liquids in a light transmission cavity, said liquids having different specific gravities so as to maintain separate liquid bodies while stationary within the system and while being changed.

3,724,930
METHOD OF FORMING AND COOLING PINHOLE SPATIAL FILTER FOR HIGH POWER LASER

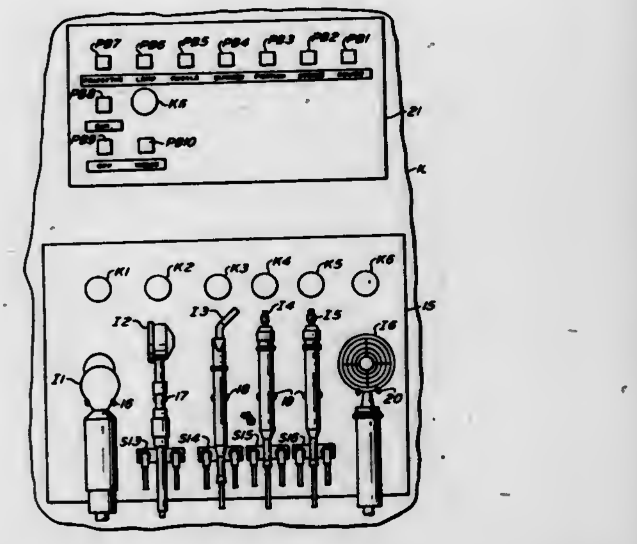
William M. Farmer, Tullahoma, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force
Division of Ser. No. 96,819, Dec. 10, 1970. This application July 21, 1972, Ser. No. 274,031
Int. Cl. G02b *27/30*
U.S. Cl. 350—320 **1 Claim**

An electrostatically cooled spatial filter for high powered pulsed lasers wherein the filter comprises a first lens which focuses a laser beam on a pinhole, and a second lens positioned behind the pinhole to receive the beam. To prevent the laser beam from destroying the pinhole an electric field is applied across the pinhole. This field cools the pinhole and as a result the size of the pinhole is preserved.



3,724,931
LIGHTING SYSTEM CONTROL FOR OPHTHALMIC EXAMINATIONS

Herbert J. Nevyas, 2101 Walnut Street, Apt. 1301, Philadelphia, Pa., and Wilfred Klein, 511 Rock Glen Drive, Wynnewood, Pa.
Filed April 28, 1971, Ser. No. 138,225
Int. Cl. A61b *3/00*; H05b *37/02*; F21v *33/00*
U.S. Cl. 351—1 **10 Claims**

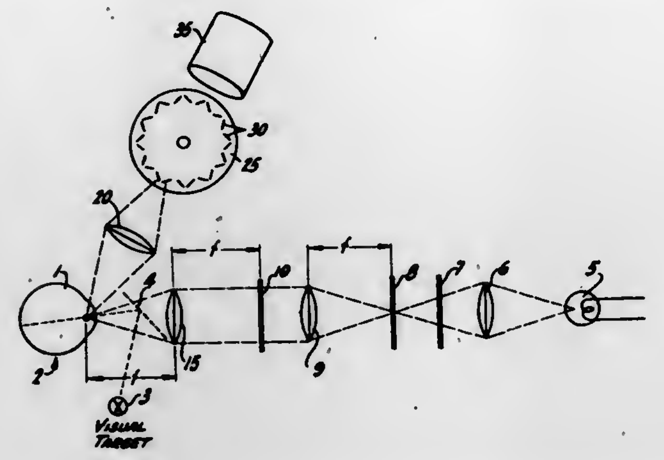


A control system coordinates fixture lighting in an ophthalmic examination room with the selection by a physician of a particular ophthalmic instrument with which a patient is to be examined. Selection of a portable instrument operates the necessary switches to automatically power the instrument and establish the optimum ambient conditions of room light for conducting the examination with the instrument selected.

3,724,932
EYE TRACKER AND METHOD

Tom N. Cornsweet, Atherton, and Hewitt D. Crane, Portola Valley, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Filed April 9, 1971, Ser. No. 132,747
Int. Cl. A61b *3/10*
U.S. Cl. 351—7 **16 Claims**

A technique and apparatus for two dimensional tracking of eye position. An infrared pattern is projected into the eye and measurements taken of the spatial separation of the first and fourth Purkinje reflections, the reflections from the cornea and the back of the eye lens, respectively. Because the centers of curvature of the surfaces of the cornea and lens lie at different distances from the center of rotation of the eye, these reflections move in opposite directions under eye rotation, in either the vertical or the horizontal direction. During translation of the eye in either the vertical or the horizontal direction the spacing or separation between the two Purkinje images does not change. In one embodiment, a rotating scanning disc having a plurality of spaced orthogonal slits is provided and imaging means are provided for imaging the first and fourth Purkinje images of the light source through the orthogonal slits of the scanning disc onto a photomultiplier tube. The time period between pulse outputs of the photomultiplier tube is proportional to the separation of the first and fourth Purkinje images. In another embodiment the two Purkinje images are deflected so as to be incident on photodetectors. The photodetectors and deflecting means are movable so that the two Purkinje images are kept centered on their respective photodetectors. By monitoring the position of the photodetectors and deflecting means an indication is obtained of the separation of the Purkinje images which gives an indication of the orientation of the optic axis of the eye.



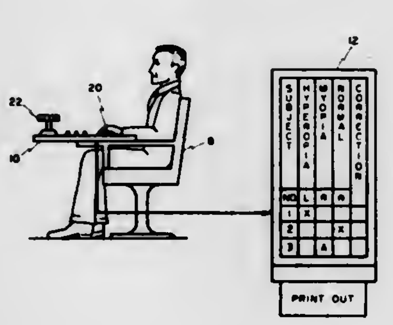
3,724,933
LASER SPECKLE VISUAL TESTER

Windell N. Mohon, Winter Park, and Alfred N. Rodemann, Maitland, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 8, 1971, Ser. No. 178,584

Int. Cl. A61b *3/02*

U.S. Cl. 351—36 **1 Claim**



Large groups of persons may be simultaneously tested for nearsightedness and farsightedness by use of a laser speckle pattern formed by projecting a laser beam onto a surface. A speckle pattern is projected on a surface and either the surface or the beam is moved with respect to the other. The direction of apparent motion of the pattern observed by a subject indicates the presence of myopia or hyperopia.

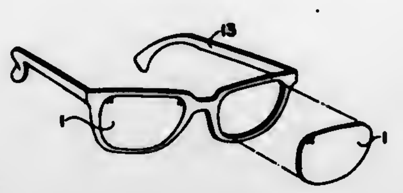
3,724,934
SUNGLASSES HAVING NOVEL PLASTIC OPTICAL ELEMENT FOR LENSES

Stanley M. Bloom, Waban, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

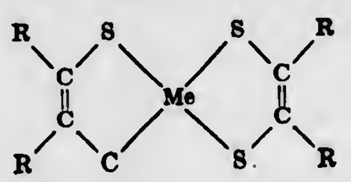
Division of Ser. No. 60,982, July 6, 1970, which is a division of Ser. No. 577,576, Sept. 2, 1966, Pat. No. 3,588,216. This application Dec. 27, 1971, Ser. No. 212,650

Int. Cl. G02c *7/10*

U.S. Cl. 351—44 **10 Claims**



An element for filtering infrared light useful for example, as an optical lens. A metal complex is advantageously employed as an infrared absorber in elements of the type described. The infrared absorbers can be represented by the following formula:



where Me is a metal of the first, second or third transition metal series which will provide a complex that is an effective infrared absorber and which is effectively transparent to light in the visible region of the spectrum and each R is selected from the group consisting of hydrogen, alkyl, aromatic, heterocyclic, nuclearly substituted aromatic rings and nuclearly substituted heterocyclic rings.

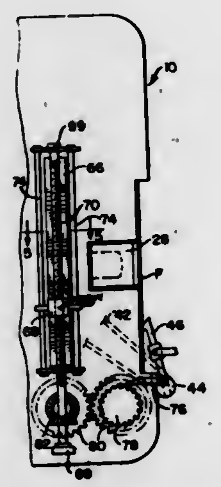
3,724,935
METHOD AND APPARATUS FOR EDITING MOTION PICTURE FILM

John F. Batter, Jr., Lincoln, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 17, 1970, Ser. No. 55,735

Int. Cl. G03b *21/48*

U.S. Cl. 352—38 **11 Claims**



A motion picture film editing method and apparatus by which film portions to be deleted during projection are indicated by signals recorded on a fixed record track attached to a cassette housing the film. A scanning transducing head is provided in the projector and advanced in synchronism with the film advance mechanism to sense the recorded signals and control film advance speed in a manner such that the portions of the film to be deleted are fed at high speeds past the projector light path whereas those to be viewed are fed at normal speeds. Also, the light path is blocked during passage of the deleted film portions therethrough.

3,724,936
MOTION PICTURE CAMERA

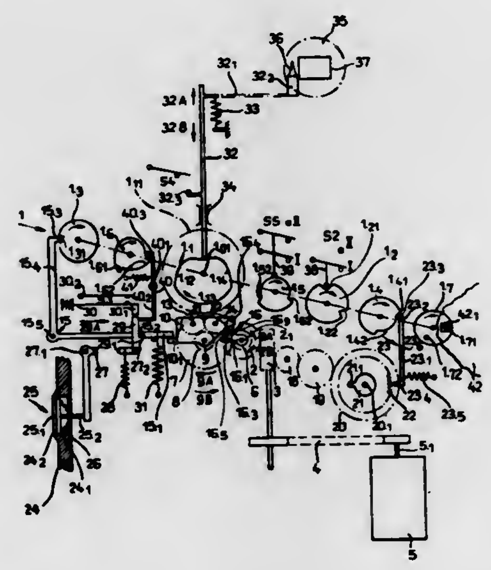
Rudolf Leistner, Munich; Johann Roth, Schwabhausen, and Alfred Reandorfer, Munich, all of Germany, assignors to Niezoldi & Kramer GmbH, Munchen-Allach, Germany

Filed Nov. 12, 1970, Ser. No. 88,631

Claims priority, application Germany, Nov. 22, 1969, P 19 58 682.4

Int. Cl. G03b *21/36*

U.S. Cl. 352—91 **19 Claims**



A motion picture camera having a diaphragm, a winding spool, a fade-over device for fading-over two film scenes including a device for measuring off the same length of film for fading-out a film section and for subsequently fading-over the same film section, and a reversible electric motor for driving the camera, comprising a a control device drivingly connected to the electric motor such that the control device rotates always in the same direction and that it carries out during one single complete revolution the following fade-over phases necessary for a complete fade-over of the film scene: a first phase coupling exposing first the film section with the diaphragm closing in a continuous manner, a second phase coupling rewinding the film section with the diaphragm closed, and stopping the electric motor, and a third phase coupling re-exposing the film section with the diaphragm opening in a continuous manner.

3,724,937
MOTION PICTURE CAMERA DRIVE MECHANISM

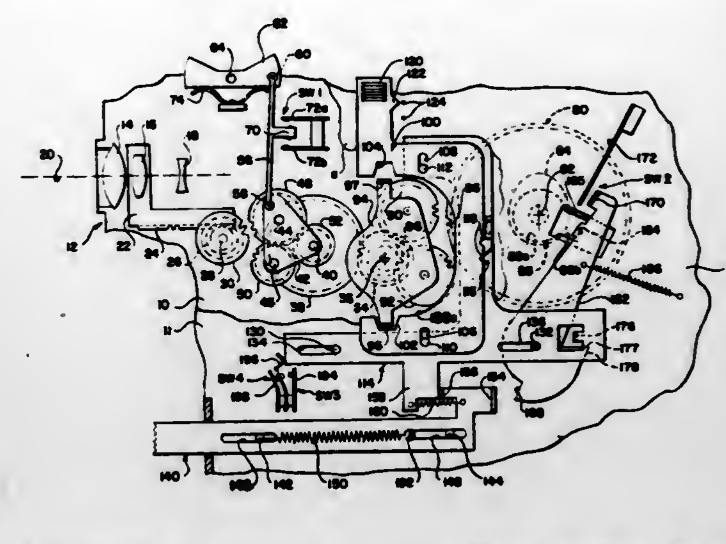
Gerald L. Jenkins; Vernon H. Jungjohann; Edgar S. Marvin, all of Rochester, and Neil G. Seely, Brockport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,221

Int. Cl. G03b *3/10*

U.S. Cl. 352—140 **7 Claims**

A motion picture camera drive mechanism includes a single motor which is used for driving (separately or simultaneously) a film pull down mechanism which advances film past an exposure aperture and a mechanism for adjusting at least one lens element in a zoom lens system. When the camera drive mechanism is to be energized, provision is made for first energizing a circuit to an automatic exposure control system and then operating the film pull down mechanism, thereby effecting correct exposure of the first frame of film.



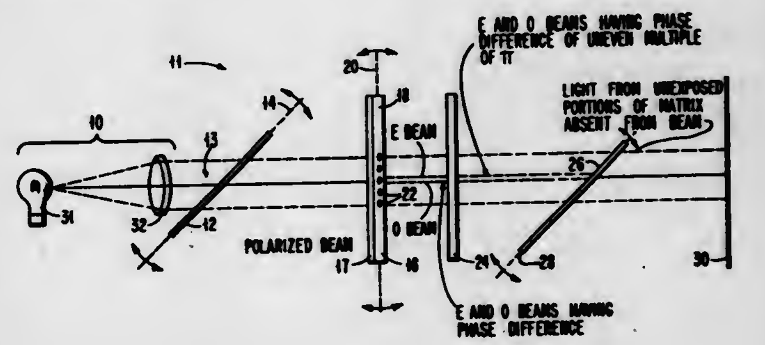
3,724,938
VARIABLE CONTRAST IMAGE PROJECTION

Daniel A. Nepela, 18960 Fernbrook Court, Saratoga, Calif.

Filed Nov. 28, 1969, Ser. No. 880,774

Int. Cl. G03b *21/14*; G02b *21/14, 1/24*

U.S. Cl. 353—20 **27 Claims**

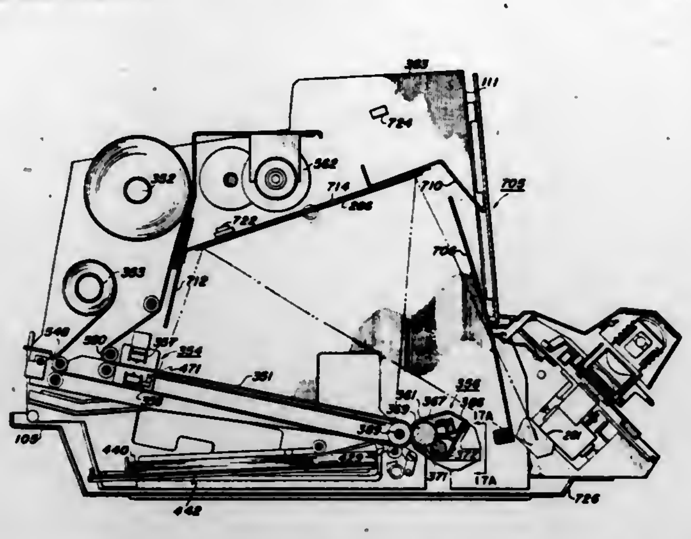

E AND O BEAMS HAVING PHASE DIFFERENCE OF UNEVEN MULTIPLE OF π
11
20
18
14
10
13
E BEAM
LIGHT FROM UNEXPOSED PORTIONS OF MATRIX ABSENT FROM BEAM
26
22
31
32
12
O BEAM
POLARIZED BEAM
17
16
24
28
30
E AND O BEAMS HAVING PHASE DIFFERENCE

A system for controlling the contrast of projected images includes a polarizer, phase plate, analyzer, and image matrix comprising an exposed and developed photographic film defining an original image having light and dark portions. A beam of polarized light of a selected frequency is directed through the system and onto a screen. The polarizer, phase plate, and analyzer are adjustable to vary the contrast of the projected image through partial or complete extinction, by destructive interference, only of light passing to the projected image from the unexposed portions of the film. For light of a given intensity incident upon the film, the contrast, i.e., the pattern of light intensities, in the projected image, is different from that of the original image. This occurs because the intensity of light in the projected image passing thereto from the unexposed film portions is diminished through at least partial extinction. The background dark level, however, of the original image defined by the intensity of light passing from the exposed matrix portions is substantially unchanged in the projected image, relatively little extinction of such light occurring. Contrast in the projected image may be converted from intensity to color by using a projected beam of light with a mixture of different frequencies and adjusting the polarizing and phase plate elements to extinguish partially or completely light of a particular frequency. The image matrix comprises an exposed and developed film having a non-birefringent substrate and a superposed partially birefringent composition containing metallic silver and oriented fatty acid silver salt crystals.

3,724,939
PHOTORECEPTOR LOADING SYSTEM

James R. Cassano, and Frank J. Sanza, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 18, 1970, Ser. No. 73,565
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **15 Claims**

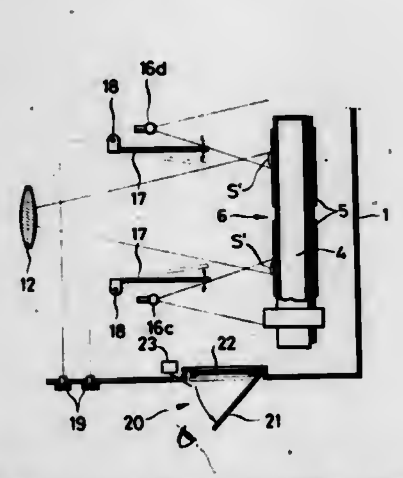


Combination viewing and printing apparatus characterized by the capability of: producing a positive print from either a negative or a positive input film; printing on plain sheet paper which is fed from the apparatus at an optimum location; selecting the information to be printed from a microfilm transported by means of a differential drive arrangement which optimizes the film movement; accommodating various types of recording media, for example roll microfilm and microfiche; and presenting a plurality of image formats to the viewing screen and a recording media in a predetermined orientation convenient for viewing and printing.

3,724,940
ELECTROPHOTOGRAPHIC COPYING APPARATUS WITH MEANS FOR ERASING MARGINAL IMAGES

Yutaka Koizumi, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1971, Ser. No. 201,654
Claims priority, application Japan, Dec. 7, 1970, 45/107647; Dec. 15, 1970, 45/111172
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 R **5 Claims**

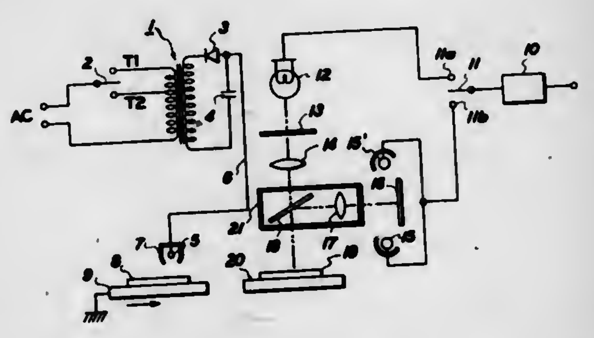


Electrophotographic copying apparatus, such as electrophotographic duplicators, electrophotographic plate making machines and the like, in which an image of an original is formed on a photosensitive sheet, said apparatus provided with means for erasing undesirable images formed on selected marginal areas of the photosensitive sheet. Eraser light sources are provided for illuminating the marginal areas of a photosensitive sheet for the purpose of preventing the formation of undesirable images on said marginal areas. Manually adjustable intercepting plates are interposed between the eraser light sources and the photosensitive sheet for the purpose of selecting the particular marginal portions of the photosensitive sheet which are to be illuminated by the eraser light sources. The photosensitive sheet is transported to an exposing position by means of conveyer belts and is held against said conveyer belts by means of a suction box. A plurality of concentric frames may be drawn on the suction box, and the conveyer belts may be made of transparent material, such that an operator looking through a viewing window before a photosensitive sheet is transported to the exposing position may adjust the intercepting plates to allow illumination of the marginal area outside a selected frame by said eraser light sources, and may adjust the position of the original to make sure its image falls within a selected frame on the suction box.

3,724,941
ELECTROPHOTOGRAPHIC APPARATUS

Satoru Honjo; Seiji Matsumoto, and Masaaki Takimoto, all of Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 16, 1971, Ser. No. 181,022
Claims priority, application Japan, July 22, 1970, 45/63531
Int. Cl. G03g *15/02*
U.S. Cl. 355—3 **4 Claims**

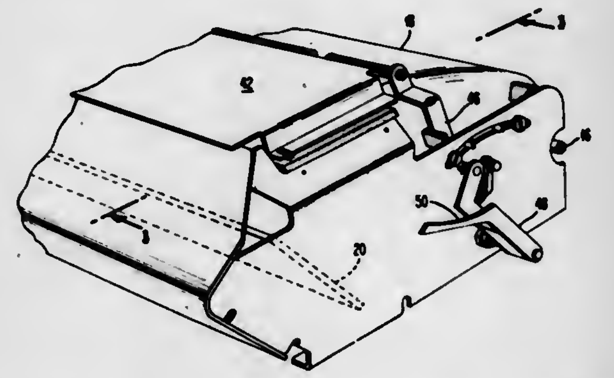


Electrophotographic reproduction systems in which the contrast may be suitably varied in accordance with the particular type of original image which is to be reproduced by varying the amount or degree of electrostatic charge applied to a photoreceptive surface during uniform charging thereof.

3,724,942
PHOTOCONDUCTOR DISCHARGE SHUTTER ASSEMBLY

David K. Gibson, and Frederick W. Johnson, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed April 12, 1972, Ser. No. 243,137
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **7 Claims**

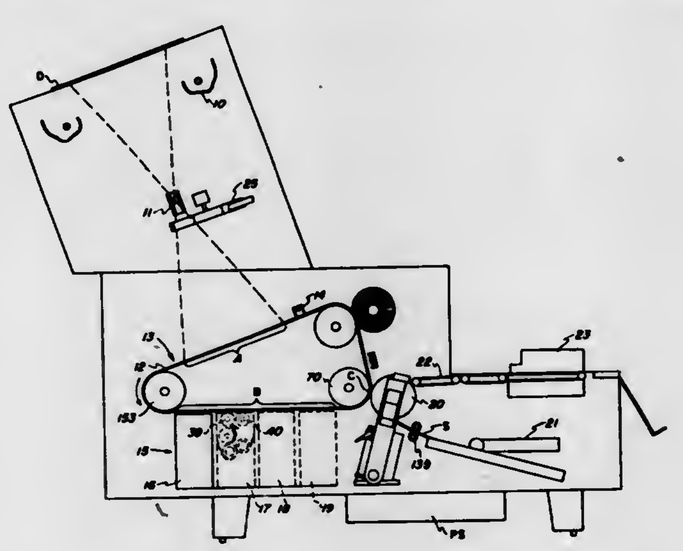


A shutter arrangement is disclosed which at pre-selected intervals opens and closes to either permit light to illuminate a document plane or reflect light to the photoconductor of an electrostatic copying machine having the capability of half tone development, thus preventing the toning of unexposed areas of the photoconductor which bear no relation to the document being copied. The control arrangement opens the shutter during the normal scanning portion when a document is exposed to the illumination light and closes the shutter at a point corresponding approximately to the end of the document scan thus reflecting light to the photoconductor as if the photoconductor was receiving light from a white document, to discharge the unused portion of the photoconductor. This prevents excessive toning and the associated cleaning problems since this portion of the photoconductor will not have the toner transferred from it to a copy sheet.

3,724,943
COLOR REPRODUCTION APPARATUS

Valdevutis C. Draugelis; William R. Hartman, Jr., both of Rochester; Michael J. Langdon, Webster, and Alan F. McCarroll, Rochester, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed June 4, 1969, Ser. No. 830,280
Int. Cl. G03g *15/00*
U.S. Cl. 355—4 **5 Claims**

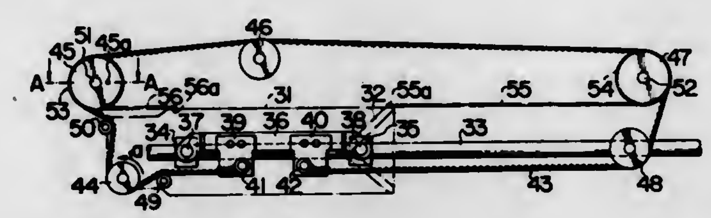


A multi-color electrostatic printing machine having processing components adapted to produce an image for each color of an original being copied, individual color developing units for effecting developed of the corresponding images and a program arrangement for coordinating in timed sequence the operation of the processing components and the transfer of each developed image in superimposed relationship upon sheets of paper.

3,724,944
LIGHT INTERCEPTING SCREEN WINDING AND PAYING-OUT DEVICE FOR COPYING MACHINES

Keiji Sugita; Hideaki Mochimaru, and Toshio Watanabe, all of Ohta-ku, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 1, 1971, Ser. No. 185,589
Int. Cl. G03b *27/72*
U.S. Cl. 355—18 **6 Claims**

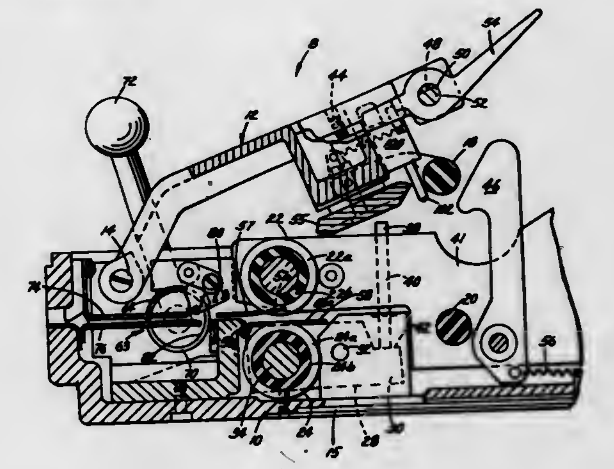


The device includes a movable optical system mounted for reciprocation between, and along a travel path parallel to, an original, to be duplicated, and a photosensitive sheet arranged in spaced parallel relation to each other to expose the sheet progressively to an optical image of the original. A pair of screen winding rollers are rotatably mounted in parallel relation to each other at respective ends of the travel path and extend transversely of the travel path, and a pair of light intercepting screens have first ends connected to respective ends of the optical system and second ends connected to respective rollers. An endless belt type of driving means is operatively connected to the optical system and to both rollers, and is operable to reciprocate the optical system while rotating one roller in the winding direction and the other roller in the paying-out direction. The driving means may be connected to the respective rollers through torsion springs allowing some angular displacement between each roller and the driving means to compensate for the thickness of screen wound on a roller.

3,724,945
SHEET FEEDING AND CUTTING DEVICE

Felix R. Masiello, Parsippany, N.J., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed June 14, 1971, Ser. No. 152,835
Int. Cl. G03b *29/00*
U.S. Cl. 355—29 **18 Claims**



An improved apparatus for processing web material is advantageously associated with a film magazine of a photocomposer and includes a guide assembly which prevents jamming of web material in the magazine. This guide assembly includes a guide element which is movable between an inactive position disposed to one side of a path of movement of a cutter edge in a shear assembly and an active position disposed in the path of movement of the cutter edge. The guide element is moved from the inactive position to the active position upon movement of the cutter edge through the path of movement of the sheet material. The web material is moved in a step-by-step manner past an exposure window by a pair of feed rollers to expose incremental portions of the web material to an original at the exposure window. To enable the extent of movement of the sheet material to be adjusted, at least one of the feed rollers is made of a resiliently yieldable elastomeric material so that the surface of the feed roller is deformable to greater and lesser extents. To facilitate loading of the web material in the magazine, a loading gate is movable from a closed position blocking access to the feed rollers to an open position.

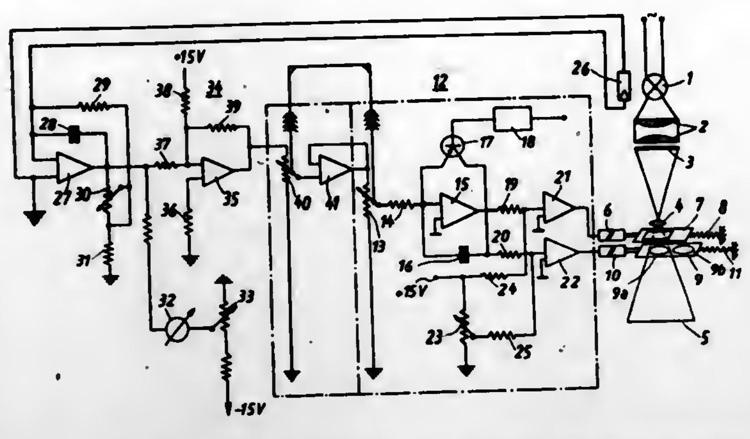
3,724,946
PHOTOGRAPHIC PRINTING ARRANGEMENT

Walter Knapp, and Othmar Schneider, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 20, 1971, Ser. No. 181,885
Claims priority, application Germany, Sept. 23, 1970, P 20 46 887.5
Int. Cl. G03b *27/78*
U.S. Cl. 355—36 **7 Claims**

Photographic arrangement for copying an original which includes illuminating means for illuminating the original and timing means for terminating the illumination after a preadjustable time interval corresponding to the density of the original. This photographic arrangement also includes photoelectric transducing means furnishing an illumination signal corresponding to the lighting impinging thereon.

Finally, the photographic arrangement also includes energizing means interconnecting the photoelectric transducing



means with the timing means so as to vary the energization signal in correspondence with the variations of the illumination signal.

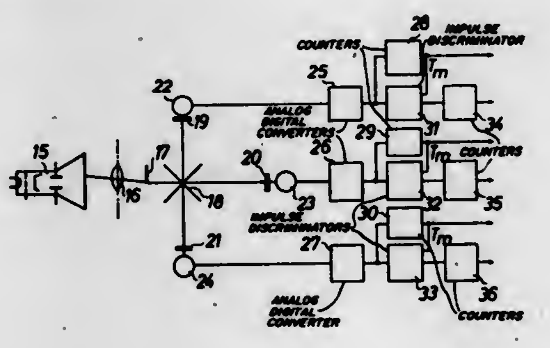
3,724,947
APPRATUS FOR DETERMINATION OF EXPOSURE VALUES FOR COLOR PRINTING

Rudolf Paulus, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 740,262, June 26, 1968, Pat. No. 3,582,325. This application Sept. 2, 1970, Ser. No. 68,854

Int. Cl. G03b *27/78*

U.S. Cl. 355—38 **13 Claims**



Prints of color photographic negatives are obtained by scanning a finite number of unit areas on a negative to determine certain of its criteria for blue, green and red colors. Such criteria are compared with sets of reference criteria which are stored in a memory unit together with empirically determined optimum correction factors for each set of reference criteria. The comparison is made for the purpose of locating or selecting those correction factors which are best suited for adjustment of the exposure control in an automatic printer. The thus obtained information is fed to the exposure control not later than when the freshly scanned negative enters the printing station.

3,724,948
OVERHEAD RAIL SUPPORTING STRUCTURE FOR PHOTOGRAPHIC APPARATUS

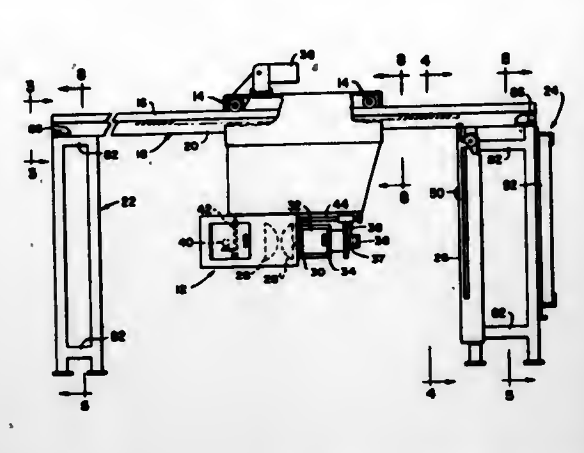
Joseph H. Wally, Jr., and Samuel E. Wilson, both of Shawnee, Mission, Kans., assignors to Western Blue Print Co., Kansas City, Mo.

Filed May 28, 1971, Ser. No. 147,762

Int. Cl. G03b *27/52*

U.S. Cl. 355—55 **18 Claims**

In photographic apparatus, spatial adjustments of its optical head to a subject holder obtain along overhead rails which are supported on a long spanning member embodying interfitted channel members of folded heavy gauge sheet metal. Said spanning member rests at its opposed ends on two piers each comprising four spaced posts joined by cross beams adjacent their top and base. The composite structure affords a rigid and stable support for the head such that its film platen and lenses remain coaxially aligned with the subject holder through said spatial adjustments.



3,724,949
ELECTROPHOTOGRAPHIC COPYING APPARATUS PROVIDED WITH AN AUTOMATIC ELEVATIONAL ORIGINAL KEEP-PLATE

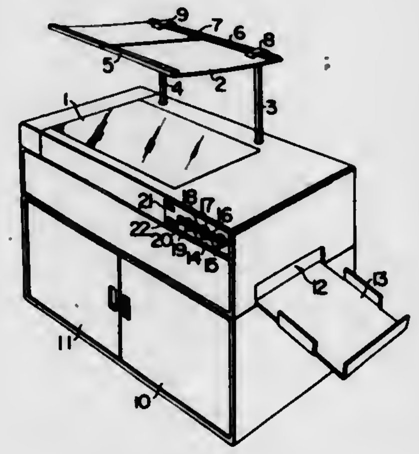
Tadaaki Kanno, Isoga-ku, Yokohama-shi, Kanagawa-ken, and Minoru Iwamoto, Shinagawa-ku, Tokyo, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1971, Ser. No. 204,575

Claims priority, application Japan, Dec. 7, 1970, 45/108252

Int. Cl. G03b *27/62*

U.S. Cl. 355—75 **10 Claims**



A copying apparatus having an automatically elevatable original keep-plate which is normally maintained in contact with the original-receiving exposure surface when the apparatus is inoperative but which is moved upwardly to an upper position when the power switch is actuated to permit an original to be placed on the exposure surface. Actuation of the print switch moves the keep-plate downwardly to its lower position where it holds down the original and permits initiation of duplication. A change-over member is provided for switching the elevational movement of the keep-plate between manual and automatic operation, whereby during manual operation, the keep-plate moves in an elevational motion only once while one or a number of duplication cycles may take place with a single original; and during automatic operation, the keep-plate moves in elevational motion and dwells for a predetermined time interval in its upper position each times a series of duplication cycles is performed to permit the old original on the exposure surface to be replaced by a new original prior to beginning the next series of duplication cycles thus producing a predetermined number of duplicates of a plurality of originals. Suitable mechanism and circuitry are disclosed for achieving the desired operations.

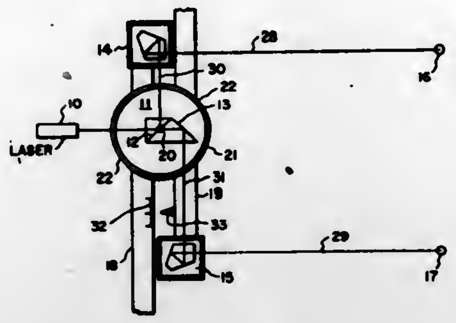
3,724,950
OPTICAL INSTRUMENT FOR DETERMINING THE DISTANCE BETWEEN TWO MEASURING POINTS

Erik Niss, Lidingo, Sweden, assignor to Aga Aktiebolag, Lidingo, Sweden

Filed May 21, 1971, Ser. No. 145,799

Int. Cl. G01c *3/00*

U.S. Cl. 356—3 **3 Claims**



An improvement in an optical measuring instrument intended for the determination of the distance between two measuring points projected onto a basel plane. The basic device comprises a central optical element with a semi-transparent surface and a totally reflecting surface at a right angle thereto. The device also comprises an outer optical element, such as a mirror or a pentagonal prism, arranged in each beam path between the central optical element and each measuring point, which deflects each respective beam path at a right angle. According to the invention, the central optical element is rotatable about an axis which is parallel to the semi-transparent surface as well as to the totally reflecting surface. By rotating the central optical element one beam will sweep in a plane in space which is defined by the parallel beam paths from the outer optical elements to the measuring points. The device is therefore capable of being employed to determine the location of a random point relative to that plane.

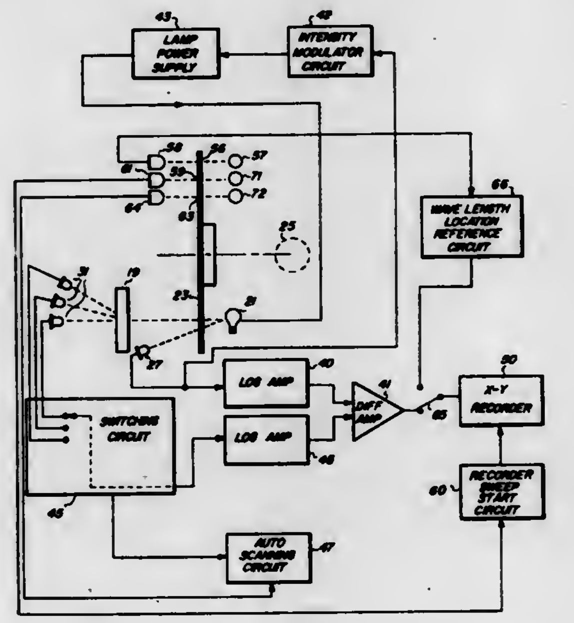
3,724,951
METHOD AND APPARATUS FOR DETERMINING RADIATION TRANSMISSION CHARACTERISTICS OF A GENERALLY TRANSPARENT MEDIUM

David C. Seelbinder, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,492

Int. Cl. G01n *15/02, 21/00, 21/26*

U.S. Cl. 356—102 **15 Claims**


LAMP POWER SUPPLY
INTENSITY MODULATOR CIRCUIT
WAVE LENGTH LOCATION REFERENCE CIRCUIT
LOG AMP
LOG AMP
DIFF AMP
X-Y RECORDER
SWITCHING CIRCUIT
RECORDER SWEEP START CIRCUIT
AUTO SCANNING CIRCUIT

A device for determining the spectral radiation transmission characteristics and size-frequency distribution of very small particles dispersed in a generally transparent liquid medium comprises a transparent sampling cell through which the liquid medium is moved at a desired rate and subjected to a beam of radiation by a suitable optical system. The optical system, which includes a rotatable, spectrally variable filter and a suitable mask limits the beam of radiation incident on one side of the cell to a narrow band, the peak wavelength of which is a function of angular displacement. On the opposite side of the sampling cell, a plurality of photosensitive detectors are arranged for generating an electrical signal from the radiation incident thereon that is in accordance with the amount of radiation emitted from the cell at various angles relative to the axis of the beam of radiation. A photosensitive detector is also arranged relative to the one side of the cell and the transmittance side of the filter to detect the radiation incident on the one side of the cell so as to provide a reference signal for relative measurement of the radiation emitted by the cell on the other side thereof. The signals derived from the plurality of detectors and from the reference detector are amplified and by suitable circuitry generate an analog output signal that corresponds to the spectral transmission characteristics of the liquid medium moving through the cell.

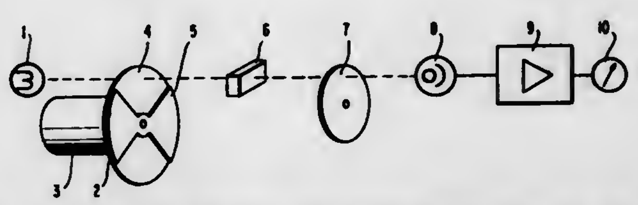
3,724,952
METHOD FOR POLARIMETRIC ANALYSIS

Carl A. Vossberg, P.O. Box 6, Umatilla, Fla.

Filed June 14, 1971, Ser. No. 152,729

Int. Cl. G01n *21/40*

U.S. Cl. 356—114 **13 Claims**



An apparatus and method for determining physical properties and/or composition of a test specimen by passing a beam of polarized radiation therethrough and measuring the effects of the specimen on the beam. The effects measured are rotation of the polarization of the beam, absorption of the beam, and depolarization of the beam, all of which can be measured separately or simultaneously.

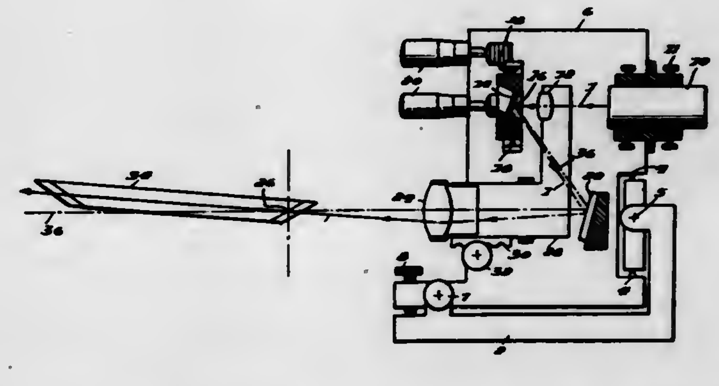
3,724,953
OPTICAL ALIGNMENT DEVICE PROVIDING A VIRTUAL PIVOTING LASER BEAM

Thomas F. Johnston, Jr., Ithaca, N.Y., assignor to Lansing Research Corporation, Ithaca, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,036

Int. Cl. G01b *11/26*

U.S. Cl. 356—153 **16 Claims**



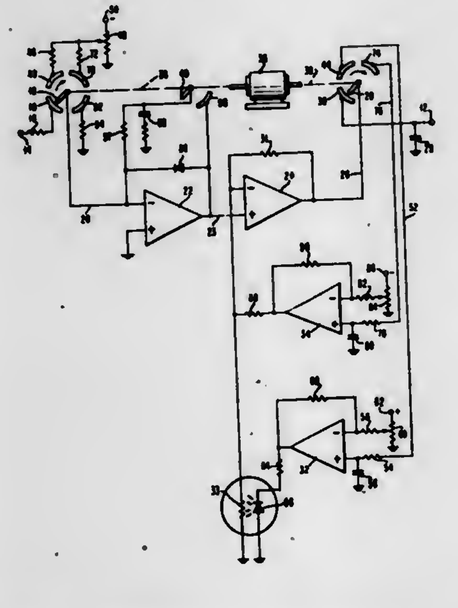
A device, which incorporates a laser producing a beam useful in orienting optical elements, includes a pivoting mirror mounted for rotational adjustment at the point of intersection (the real pivot point) of two intersecting, orthogonal, rotational axes. The beam from the laser passes through a first lens (used for control of the spreading of the beam) and impinges on the mirror at the real pivot point. The reflected beam emerges from this stationary pivot point at a variable angle as rotational adjustments to the mirror are made. The reflected beam passes through a second (output) lens, which forms an image, the virtual pivot point, of the real pivot point at a distance in front of the output lens given by the lens maker's formula. The stationariness of the beam at the real pivot point is transferred to its image, the virtual pivot point, where the input aperture of the optical system to be aligned is located. This makes it possible to vary the angle of the beam as desired in putting the beam along the optical axis of the system being aligned, while the beam always passes through the virtual pivot point. Adjustments are also provided in the device for positioning the virtual pivot point on the system input aperture, by focussing the output lens (for bringing the virtual pivot into the plane of the input aperture, along the beam direction) and by adjustments in height and lateral position, for centering the virtual pivot transversely, in the plane of the input aperture.

ERRATUM

For Class 356—158 see:
Patent No. 3,724,923

3,724,954
LOGARITHMIC CIRCUIT WITH AUTOMATIC COMPENSATION FOR VARIATIONS IN CONDITIONS OF OPERATIONS

Alex W. Dreyfoos, Jr., Palm Beach, Fla., assignor to Photo Electronics Corporation, West Palm Beach, Fla.
Filed Jan. 14, 1972, Ser. No. 217,775
Int. Cl. G01j ***3/46*****; G06g** ***7/24*****; G03b** ***27/78***
U.S. Cl. 356—175 **39 Claims**

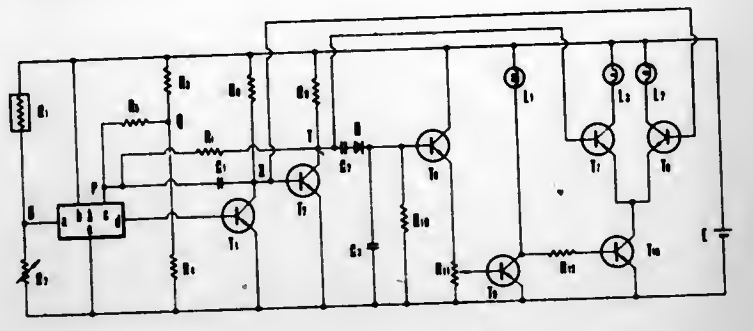


An amplifier is connected in combination with a logarithmic function electrical device to compensate the operation of the combination by adjustment of a bias on the amplifier and by adjustment of the gain of the amplifier to provide a true logarithmic function despite variations in conditions of operation.

3,724,955
DISCRIMINATION CIRCUIT OF PHYSICAL QUANTITIES

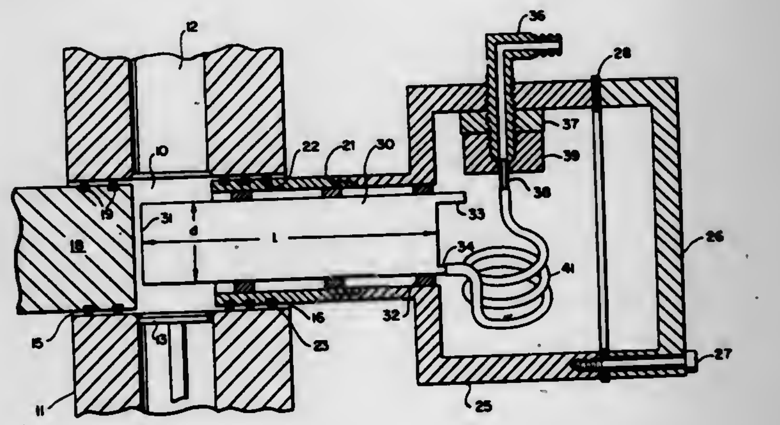
Makoto Takahashi, Sagamihara, and Takao Hashimoto, Kawasaki, both of Japan, assignors to Yashica Company, Ltd., Japan
Filed July 6, 1971, Ser. No. 159,682
Claims priority, application Japan, July 7, 1970, 45/58956; July 7, 1970, 45/58957
Int. Cl. G01j ***1/42, 1/44***
U.S. Cl. 356—227 **10 Claims**

A discrimination circuit of physical quantities comprises a converter element for converting a physical quantity to an electrical quantity which is compared with a reference potential in a differential amplifier. The output terminal of the differential amplifier is connected to the input terminal of a first switching device and the output terminal thereof is connected to the input terminal of a second switching device. A feedback circuit including a capacitor and a resistor is provided between each output terminal of the first and second switching devices and one input terminal of the differential amplifier. The differential amplifier produces an output only when the converted electrical quantity exceeds the reference potential (defined, for example, by the resistance of a potentiometer), and the first and second switching devices are brought into three discriminative states in accordance with the value of the first input signal of the differential amplifier which is a function of the converted electrical quantity. That is, the discriminative stages correspond to when the physical quantity is in the allowable region and over and under the allowable region. The first and second switching devices oscillate while the physical quantity is in the allowable region, the region being determined by a variable resistor and the oscillation frequency being determined by a capacitor in a feedback circuit. One or the other of the switching devices are ON when either of the two states discriminative states exist.



3,724,956
DEMOUNTABLE SAMPLE CELL HOLDER AND CELL FOR LIQUID SCINTILLATION COUNTERS

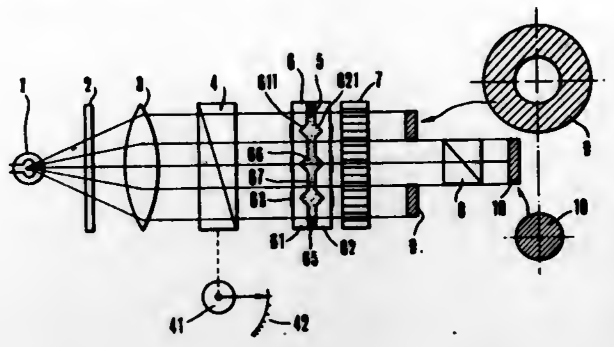
Michael P. Neary, Newport Beach, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Nov. 27, 1970, Ser. No. 93,253
Int. Cl. G01n ***1/10***
U.S. Cl. 356—246 **9 Claims**



A demountable sample cell holder and cell is provided to adapt liquid scintillation counters for chemiluminescence measurements. The cell holder is cylindrical and mounts in one of the photomultiplier apertures. A sample cell is mounted within the cylinder by pliable spacers and is connected to inlet and outlet fillings on the cell holder by coiled black tubing. The cell is aluminized to enhance photon transfer efficiency and painted black. The holder is formed into two sections which may be unscrewed so that differing size cells may be utilized.

3,724,957
CONCENTRATION MEASURING APPARATUS

Tokutaro Tamate; Hirokazu Habuchi, and Tsutomu Hirayama, all of Tokyo, Japan, assignors to Yokogawa Electric Works Limited, Tokyo, Japan
Filed March 4, 1971, Ser. No. 121,071
Int. Cl. G01n ***21/40***
U.S. Cl. 356—116 **7 Claims**

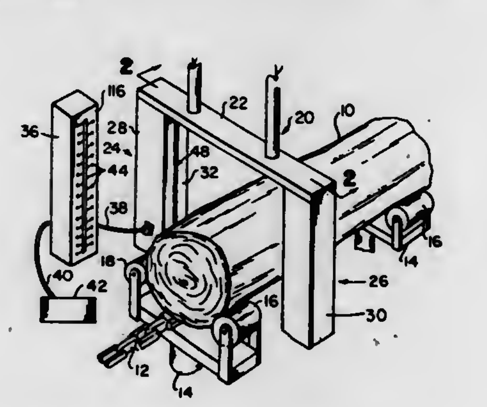


There are provided a sample cell containing a solution containing an optically active substance between a polarizer and an analyzer of a Nicol system, a first photoelectric detector disposed to receive the light activated in accordance with the concentration of the optically active substance, a second photoelectric detector disposed to receive the light transmitted through the solution independently of the optical activity, and means for determining the ratio of the outputs of the first and second photoelectric detectors.

Where the concentration measuring apparatus is used to independently measure the concentrations of pulp and clay in a solution used in a paper making process, said means for determining the ratio of the outputs of the first and second photoelectric detectors determines the concentration of the pulp. In this case, there is further provided a transmission and scattering type concentration meter including a third photoelectric detector for receiving the light transmitted by the pulp and clay, a fourth photoelectric detector for receiving the light scattered by the pulp and clay, second means responsive to the outputs of the third and fourth photoelectric detectors to provide an output corresponding to the concentrations of the pulp and clay and means responsive to the outputs of the first and second means for determining the concentration of the clay.

3,724,958
SCANNING AND CONTROL APPARATUS

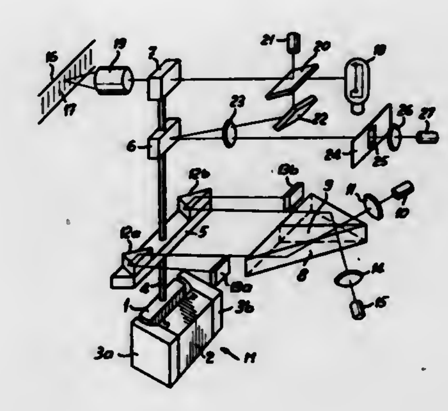
John G. Callan, Sharon, Mass., assignor to Knox, Inc., South Walpole, Mass.
Filed March 9, 1970, Ser. No. 17,735
Int. Cl. G01b ***11/10***
U.S. Cl. 356—160 **5 Claims**



Apparatus for measuring differences in a dimension of objects and actuating equipment responsive to a plurality of magnitudes of the dimension employs a plurality of first electrical circuits, each having first and second states of energization and corresponding to a particular magnitude of the dimension, and a plurality of second electrical circuits, respectively corresponding to one of the first circuits and arranged when energized to actuate the equipment in accordance with one of the plurality of magnitudes of the dimension. The second circuit corresponding to a particular magnitude is energized when the corresponding first circuit has its first state of energization and the first circuit corresponding to the next magnitude greater than the particular magnitude has its second state of energization.

3,724,959
HIGH PRECISION PHOTOELECTRIC MICROSCOPE FOR READING THE MARK OF A PRECISION RULER

Maurice Koulicovitch, Geneva, Switzerland, assignor to Societe Genevoise D'Instruments De Physique, Geneva, Switzerland
Filed June 7, 1971, Ser. No. 150,641
Claims priority, application Switzerland, June 29, 1970, 9765/70
Int. Cl. G01b ***11/04***
U.S. Cl. 356—170 **9 Claims**

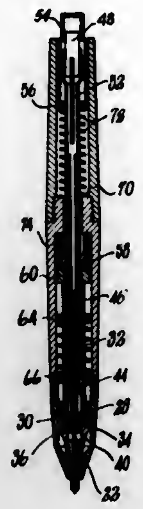


This invention concerns a high precision photoelectric microscope for reading the stroke of a precision ruler, comprising an optical sighting device, a deflector causing a pencil of luminous rays to oscillate periodically from one side to the other of a median position, and a photoelectric cell capturing the luminous pencil reflected by the surface of the precision ruler and controlling an electronic device for indicating the eccentricity of the mark aimed at. This apparatus is characterized in that it comprises a deflection member, attached to the oscillating deflector, which receives a portion of the incident rays and returns them through a fixed mask, onto a second photoelectric cell. It comprises further an interferometer, the mobile portion of which is attached to the deflector, and the photoelectric cell of which emits counting impulses. And finally it comprises an auxiliary electronic device supplied by the second photoelectric cell as well as by the photoelectric cell of the interferometer, this auxiliary device sending to the electronic indication device counting impulses distributed over a field of measurement determined by said fixed mask.

3,724,960
EVER-SHARP PENCIL WITH RETRACTABLE CORE PIPE

Yasuyuki Hashimoto, Nishinomiya, and Osamu Torii, Kyoto, both of Japan, assignors to Mitsubishi Pencil Co., Ltd., Tokyo, and Ancos Co., Ltd., Osaka, both of Japan
Filed Jan. 11, 1971, Ser. No. 105,292
Claims priority, application Japan, Jan. 10, 1970, 45/3034
Int. Cl. B43k ***21/22, 21/20***
U.S. Cl. 401—67 **4 Claims**

In an ever-sharp pencil comprising two coupled body casings having a cap nozzle and a push means, a lead tube means is retractably arranged in the cap nozzle and selectively operated by a release mechanism arranged in the middle of

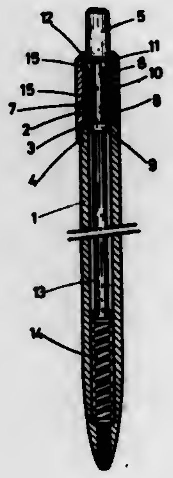


the body casing without entailing any undesired extension of the lead.

3,724,961

WRITING DEVICE HAVING A RETRACTABLE WRITING ELEMENT

Jacques Levoin, Paradiso, Switzerland, assignor to Plastica Sudamericana, Buenos-Aires, Argentina
Filed Oct. 7, 1970, Ser. No. 78,867
Claims priority, application France, Oct. 10, 1969, 6934874
Int. Cl. B43k *5/16*
U.S. Cl. 401—110 **15 Claims**

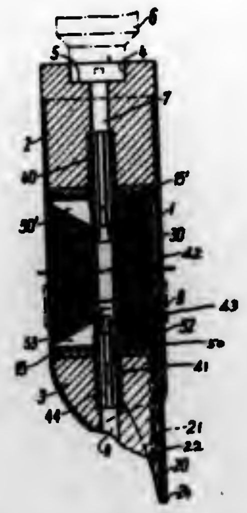


A writing device comprising a retractable writing element equipped with a co-axial release spring and housed in a sheath topped with a push rod adapted to act directly on the upper end of the writing element. The sheath is formed by injection molding with an upper ring provided with a click tongue, the sheath and tongue being joined by a single breakable sprue of material the point of injection. The sheath is formed at its upper end with a cylindrical portion having a diameter smaller than that of the sheath but equal to the inner diameter of the ring. The device is provided with a push rod formed integral with diametrically opposed locking members adapted to cooperate with other locking member, also diametrically opposed, which are provided on the inner face of the small diameter portion at the upper end of the sheath, the locking members on one of the elements having two diametrically opposed stubs, formed on elastic tongues, which can be recessed and the locking members on the other element comprising two shaped cuts adapted to receive said stubs.

3,724,962

FOUNTAIN PEN

Heinz Gunther Herrnring, Hamburg-Fuhlsbuttel, Germany, assignor to Montblanc-Simplo GmbH, Hamburg, Germany
Filed March 15, 1971, Ser. No. 123,953
Claims priority, application Germany, March 14, 1970, P 20 12 266.1
Int. Cl. B43k *5/02*
U.S. Cl. 401—223 **22 Claims**

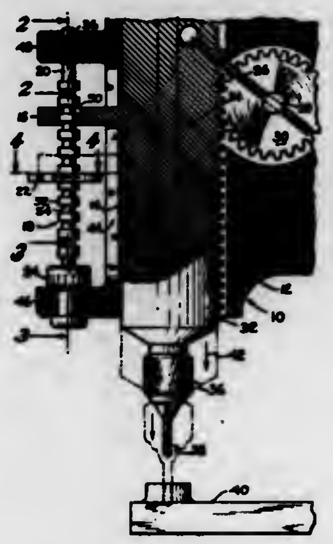


A fountain pen, in which the barrel of the pen includes an ink holding body in the form of a coiled up strip having webs on one face to hold the convolutions of the coiled up strip apart to create capillary passages. Ink can be supplied to the body from the pen end thereof or from the opposite end thereof. The body is held in the barrel of the pen between ink conducting bodies which interconnect the capillary spaces in the body and one of which communicates with the pen to supply ink thereto.

3,724,963

QUILL STOP AND GAUGE THEREFOR

Malcolm L. Stadtmiller, 1457 Ferguson Way, San Jose, Calif.
Filed Sept. 20, 1971, Ser. No. 181,963
Int. Cl. B23b *47/00*
U.S. Cl. 408—14 **7 Claims**

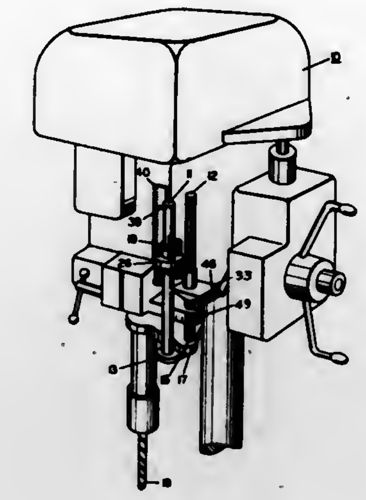


The disclosed embodiment of the present invention is a tool travel gauge which permits setting of one extreme limit of tool travel with respect to a workpiece. The gauge generally includes a member having a plurality of retaining surfaces thereon and spaced from one another along a longitudinal axis parallel to the tool feeding axis. A stop in the form of a clip is disposed for being received on any one of the retaining surfaces and is disposed for being engaged by an abutment mounted on the quill of the machine tool. Fine adjustment is provided by a micrometer screw which is adapted to move the member along its longitudinal axis with respect to the housing of the machine tool.

3,724,964

MULTIPLE STOP FOR POWER TOOLS

Andrew W. Needham, Jr., 141 E. 3350 S., Salt Lake City, Utah
Filed Jan. 22, 1971, Ser. No. 108,776
Int. Cl. B23b *49/00*
U.S. Cl. 408—14 **15 Claims**

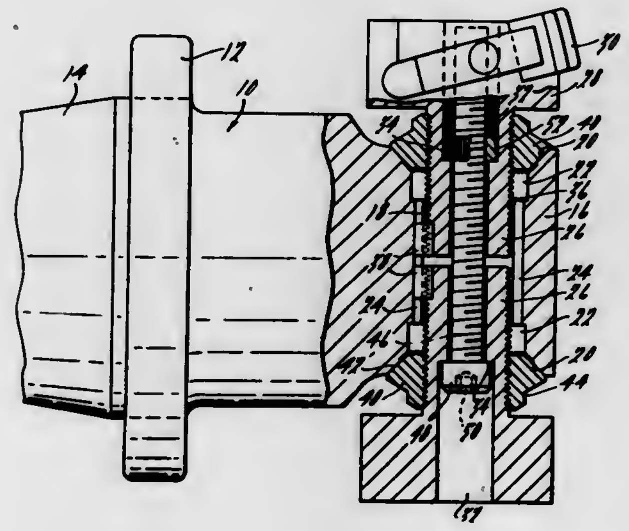


A shaft having a rotatable stop collar carrying adjustable stops is provided for a power tool, such as a drill press; it moves with the cutting tool, the stops being selectively registrable, optionally through an intermediate actuator, to bear against a stationary portion of the machine and/or an electrical limit switch for regulating depth of cut produced by the cutting tool.

3,724,965

DOUBLE BLADED CUTTING TOOL

George C. Green, Royal Oak, Mich., assignor to Devlieg Machine Company, Royal Oak, Mich.
Filed Aug. 25, 1971, Ser. No. 174,723
Int. Cl. B23b *29/02*
U.S. Cl. 408—183 **8 Claims**

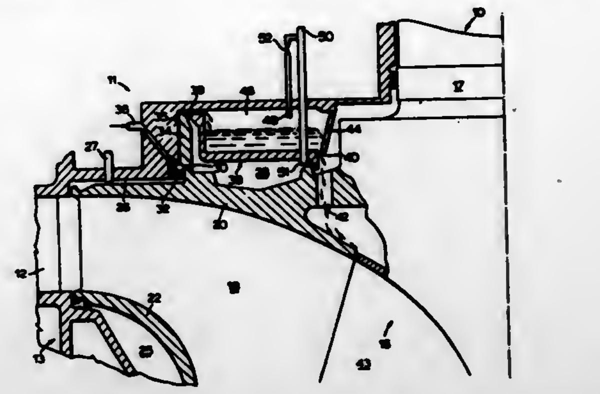


A tool holder having a pair of adjustable cutting blades. The blades are mounted on supports which project from the opposite ends of a transverse bore in the tool holder. The supports are individually adjustable in a direction radially of the tool rotational axis. A single screw holds both cutters in their adjusted positions.

3,724,966

HYDRAULIC MACHINE CROWN AERATION

Robert Stanley Sproule, Montreal, Quebec, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada
Filed June 14, 1971, Ser. No. 152,568
Claims priority, application Canada, July 29, 1970, 89425
Int. Cl. F03b *3/06*
U.S. Cl. 415—1 **9 Claims**

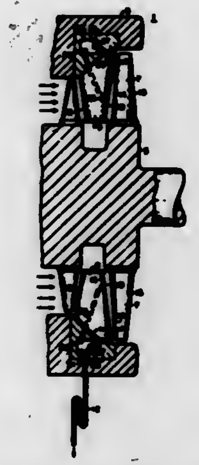


An aerated turbo-machine such as a Francis turbine utilizes a seal water receiving reservoir to separate air entrained with the seal water, for re-use in machine aeration.

3,724,967

MOISTURE REMOVAL DEVICE FOR A STEAM TURBINE

Frederick K. Fischer, Wawa, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 28, 1971, Ser. No. 193,345
Int. Cl. F01d *25/32, 15/00*
U.S. Cl. 415—168 **8 Claims**



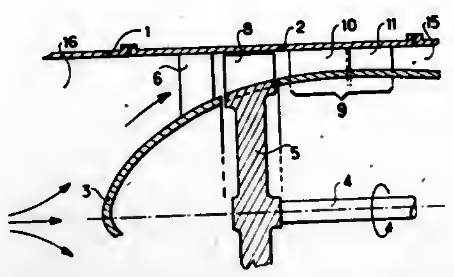
A row of stationary blades of the steam turbine having interconnecting cavities in the base portions thereof to form an annular chamber which cooperates with inlet and outlet ports disposed adjacent the trailing edges of these blades and adjacent the casing and rotor respectively to remove water and steam from the stationary blades, to separate the water and steam, and to direct the steam toward an adjacent row of rotating blades and the water to a drain.

3,724,968

AXIAL SUPERSONIC COMPRESSOR

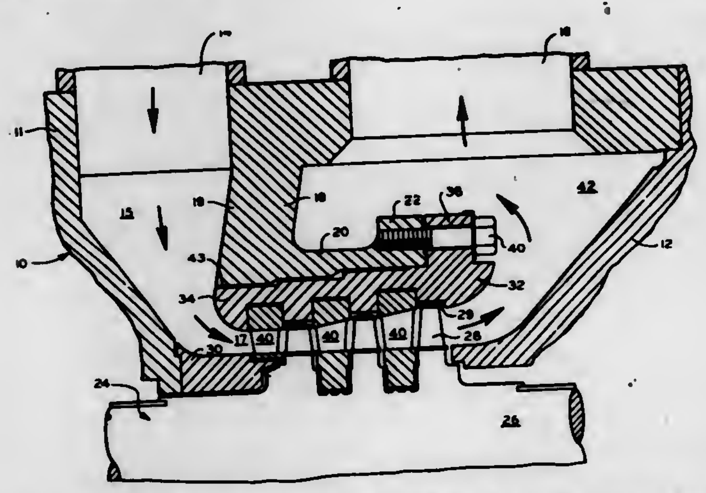
Jean-Marie Friberg, Bourg-la-Reine; Pierre Maginot, Paris, and Jean-Marie Merigoux, Palaiseau, all of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France
Filed March 23, 1971, Ser. No. 127,095
Claims priority, application France, March 23, 1970, 7010383
Int. Cl. F04d *21/00, 29/44*
U.S. Cl. 415—181 **9 Claims**

An axial supersonic fluid compressor has ducts incorporating both mobile and fixed blades that are designed to receive essentially normal shock waves. This is accomplished by having the angles of incidence upstream from the fixed and mobile blades relatively small; the passage cross sections of the ducts between the blades of the mobile wheel convergent; the passage cross sections of the ducts between the fixed blades divergent, and the profile of the leading edges of the fixed and mobile blades rounded off with a small radius of curvature.



3,724,969
TURBINE CONSTRUCTION

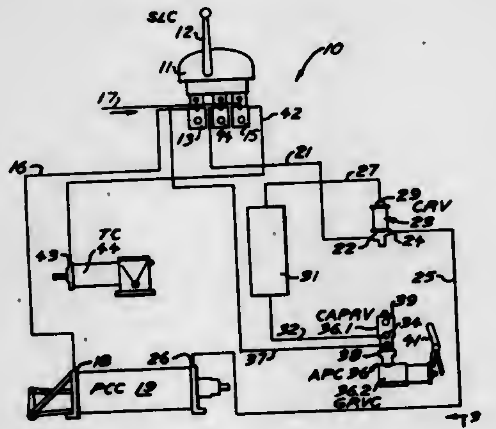
Charles Shulock, Jeannette, Pa., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 1, 1971, Ser. No. 194,163
Int. Cl. F01d *1/02, 25/24, 25/26*
U.S. Cl. 415—190 **2 Claims**



A turbine having a casing provided with an inwardly projecting partition equipped in turn with a rearwardly extending section terminating in a flange, a shroud ring having a forwardly extending portion underlying the rearward section of the partition is equipped with a flange at its rearward end for connection to the flange on the partition.

3,724,970
APPARATUS FOR AUTOMATIC PITCH COMPENSATION IN MARINE VESSELS

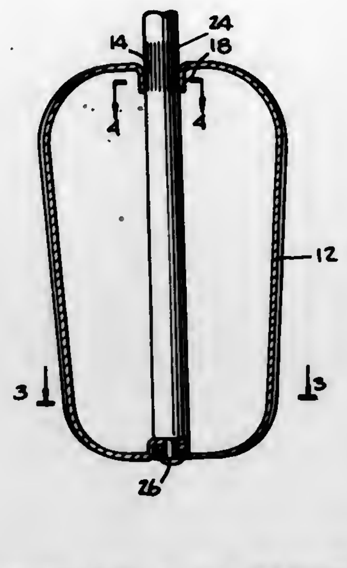
Jack R. Kobelt, 6110 Oak Street, Vancouver 13, British Columbia, Canada
Filed Feb. 23, 1971, Ser. No. 117,962
Int. Cl. B63h *3/10*
U.S. Cl. 416—27 **11 Claims**



Pneumatic control circuit for marine vessel having controllable pitch propeller. Manual pneumatic signals of pitch and throttle are modified by automatic pitch compensator coupled to engine governor output, which senses changes in governor throttle demand, changes being a measure of change in engine load condition. Particular embodiments of automatic pitch compensators can be coupled to governor having output shaft of relatively high torque, or relatively low torque, or governor with hydraulic pressure ports.

3,724,971
BEATER AND METHOD FOR MAKING SAME

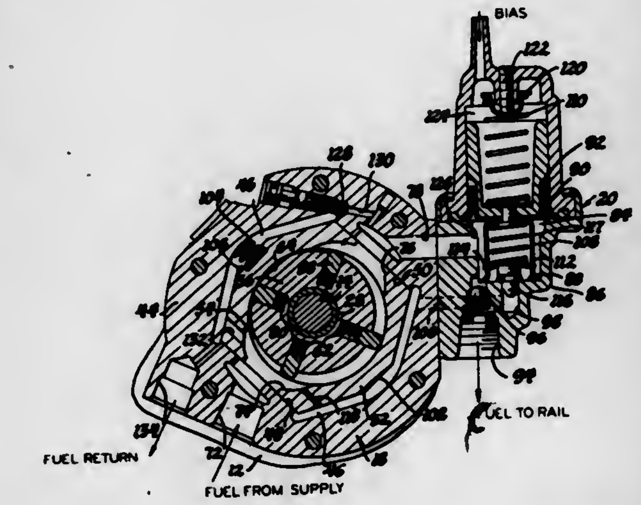
Hiroshi Yazawa, 1-14 Hokuryo-cho, Ohta-ku, Tokyo, Japan
Filed Oct. 20, 1971, Ser. No. 190,781
Int. Cl. B01f *7/24*
U.S. Cl. 416—227 **5 Claims**



An improved beater for home use and a method for making it are disclosed. A cross-like piece is formed with an opening through its hub and slipped over and attached between the ends of a thin shaft. The elongated arms of the cross-like piece form the blades which are bent and attached at the bottom of the shaft.

3,724,972
FUEL INJECTION PUMP

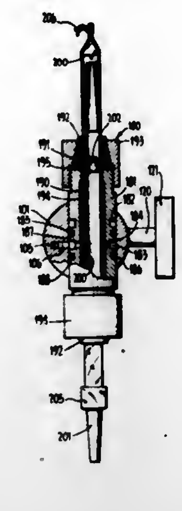
Donald G. Guetersloh, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 27, 1971, Ser. No. 211,934
Int. Cl. F04b *49/08*
U.S. Cl. 417—220 **7 Claims**



A fuel injection pump is located in a distributor housing which also contains a magnetic pickup for controlling fuel injection, a magnetic pickup for controlling ignition, and other ignition system components. The fuel injection pump is a variable displacement vane pump and has an accumulator and pressure regulator unit which maintains the fuel supplied to the injection nozzles at a constant pressure.

3,724,973
SURGICAL PUMP

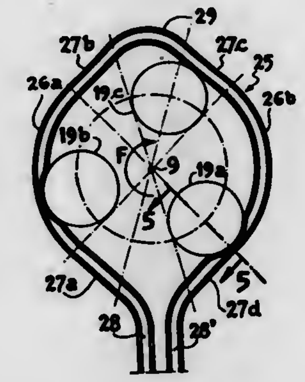
Karl Shill, 38171 Asford Way, Fremont, Calif.
Filed Oct. 21, 1971, Ser. No. 191,207
Int. Cl. F04b *35/02*
U.S. Cl. 417—326 **14 Claims**



This invention relates to a surgical pump primarily designed for the pumping of blood, as in open-heart surgery or for pumping blood through a "kidney machine," but also particularly adapted for other surgical uses, such as pumping dialycate in a "kidney machine," or the like; and is characterized by the fact that it provides direct and continuous volumetric adjustment from 0 to the maximum size of the pump even while in use; is small in size and light-weight; is readily adjustable as to the force applied to the liquid being pumped, and has independently adjustable timing of the diastole and sistole portions of a pumping cycle.

3,724,974
PERISTALTIC PUMP

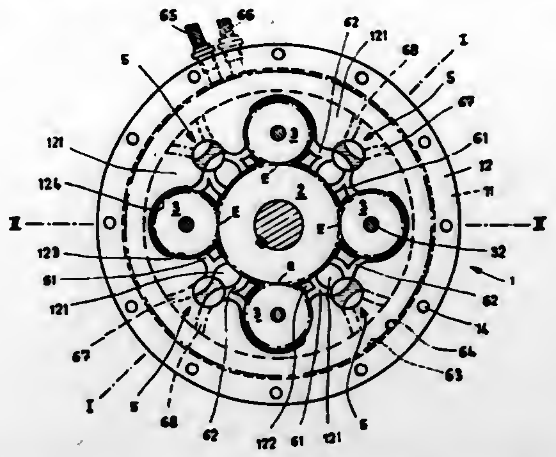
Robert Molimard, Chevilly-Larue, France, assignor to Laboratories Jacques Logeais, Issy Les Moulineaux, France
Filed Aug. 28, 1971, Ser. No. 175,129
Claims priority, application France, Aug. 28, 1970, 7031474
Int. Cl. F04b *43/08, 45/06*
U.S. Cl. 417—477 **10 Claims**



Peristaltic pump having an elastically yieldable pipe having a fixed configuration imparted thereto by a support ramp abutting the pipe. At least three rotatable rollers mounted on a rotor are made to travel in a closed path and alternately cause compression of the pipe against the support and decompression of the pipe. The path of the rollers, the spacing between the rollers and the configuration of the pipe are such that, when the downstream roller moves away from the pipe an upstream element already closes the pipe and causes the fluid to progress as the downstream roller causes a decompression of the pipe. The intermediate roller progressively compresses the pipe so as to ensure an exact volumetric compensation at each instant of the decompression due to the downstream roller by the compression due to the intermediate roller.

3,724,975
GEAR MOTOR OR PUMP

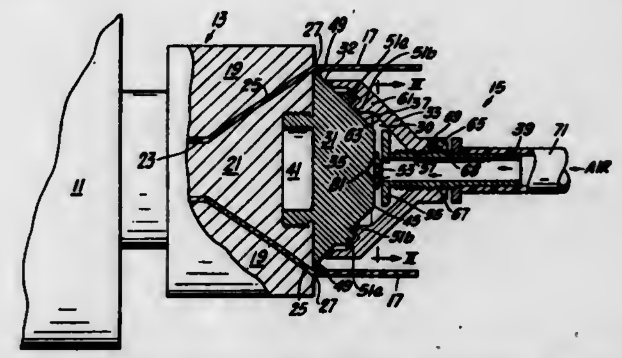
Konrad Bachorer, Wolfratshausen, Germany, assignor to Friedrich Deckel Aktiengesellschaft, Munich, Germany
Filed April 19, 1971, Ser. No. 135,075
Claims priority, application Austria, April 27, 1970, 3834
Int. Cl. F01c *1/08*; **F03c** *3/00*; **F04c** *1/04*
U.S. Cl. 418—10 **6 Claims**



A multi-stage gear motor or pump utilizing a single central gear common to all stages and individual gears each cooperating with the central gear to provide the several stages. The individual gears are arranged equi-distantly from each other around and in engagement with the central gear. Portions of the housing extend between the individual gears to points close to the central gear to provide operating chambers adjacent each of the gear mesh points. Valving is arranged, preferably within the housing, to connect the operating chambers as desired, serially, parallel, by-passed or partially one and partially another. Where rotary valves are used, simple means can be provided for operating the valves simultaneously or successively from a single control.

3,724,976
FLUID DISTRIBUTOR FOR USE IN EXTRUDING FOAMED POLYMERIC MATERIALS

D. John Rode, Coraopolis, Pa., assignor to Sinclair-Koppers Company, Pittsburgh, Pa.
Filed Dec. 1, 1970, Ser. No. 94,000
Int. Cl. B29d *23/04*
U.S. Cl. 425—72 **5 Claims**



A distributor for directing a fluid onto the inside surface of a tubular extrudate of foamed polymeric material as the extrudate emerges from an annular die orifice of a conventional extruder to form a skin of unfoamed polymeric material thereon comprises a first member that is adjacent to and in coaxial alignment with the annular die orifice and a second member that is adjustably connected to the first member for axial movement therealong. Portions of the first and second members define an opening through which the fluid passes onto the inside surface of the tubular extrudate. Means for introducing the fluid from a source of supply to the opening is provided. The opening has impeding means disposed therein to create a fluid back pressure whereby an even pressure and an even flow of fluid is directed against the inside surface of the tubular extrudate.

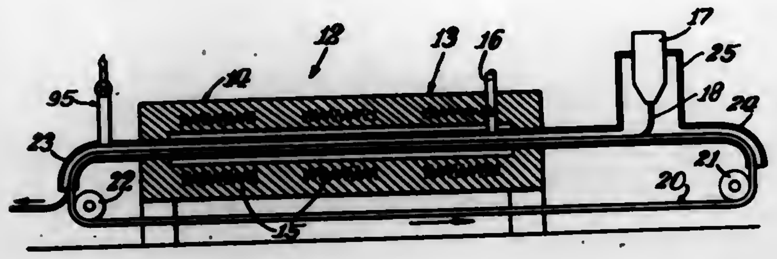
3,724,977
REDUCING AND SINTERING FURNACE MEANS

Ernest U. Lang, Niles, Mich., assignor to National-Standard Company, Niles, Mich.

Continuation-in-part of Ser. No. 858,792, Sept. 17, 1969, abandoned. This application April 29, 1971, Ser. No. 138,694

Int. Cl. F27b *5/00, 9/28*

U.S. Cl. 425—72 **15 Claims**



Apparatus for processing an elongated continuous green metal component, such as an extrusion, characterized by requiring sintering or reducing and sintering embodying conveyor means for receiving the continuous elongated component having an upper run for supporting the continuous elongated component without imparting force of a character to substantially change the configuration thereof as discharged from an extruder or other means for forming elongated continuous components for conveying through furnace means for sintering or reducing and sintering the elongated component and muffle means encasing the conveyor means affording atmospheric sealing of the protective gas for sintering or the reducing gas for reducing and sintering the elongated component.

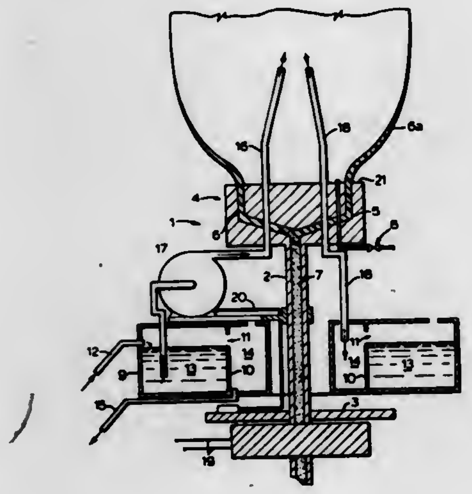
3,724,978
ROTATABLE EXTRUSION APPARATUS

Raitis Lauge, Point Claire, Quebec, and Edward Raymond Hart, Pointe-aux-Trembles, Quebec, both of Canada, assignors to Union Carbide Canada Limited, Toronto, Ontario, Canada

Filed Oct. 27, 1971, Ser. No. 192,969

Int. Cl. B28b *21/36*

U.S. Cl. 425—86 **3 Claims**



An apparatus for extruding thermoplastic film is disclosed which includes a fully rotational die and an internal cooling means. The die and internal cooling means is rotatable relative to a reservoir for cooling liquid positioned below the die and coaxial therewith. As the die rotates, inlet and outlet conduits of the internal cooling means trace a circular path through the reservoir.

3,724,979
INSTALLATION FOR MANUFACTURING CERAMIC BATHROOM PIECES

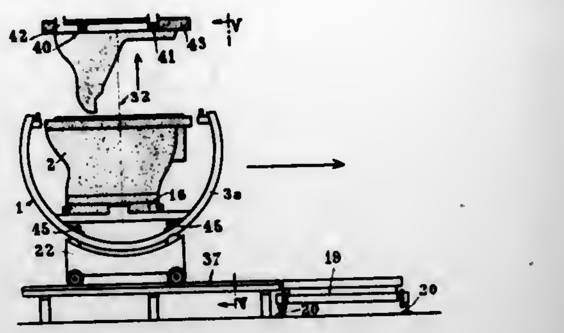
Robert Maringer, and Claude Cordelle, both of La Ferte Gaucher, France, assignors to Villeroy & Boch S.A., La Ferte Gaucher, France

Filed Dec. 23, 1971, Ser. No. 211,548

Claims priority, application France, Dec. 31, 1970, 7047573

Int. Cl. B28b *1/28, 15/00*

U.S. Cl. 425—88 **5 Claims**



In an installation for the mass production of bathroom pieces such as toilets and bidets, of the type utilizing mould mounts comprising two wheels rotatably mounted in two parallel vertical planes, each wheel consisting of two unequal segments of which the minor one is adapted to be removed when said wheels have been rotated for causing the major segment thereof to bear on a cradle supporting the mount and slidably mounted in the direction of he planes of said wheels on a base plate provided with rollers enabling this plate to travel on a track perpendicular to the plane of said wheels, the piston of the mould, at the piston-release station, is lifted by a fork, rotated about one of its two pairs of pivot studs and deposited as a consequence of a downward movement of the fork upon a lateral conveyor directing the assembly to a waiting position close to the stripping station.

3,724,980
APPARATUS FOR CUTTING OUT FORMS FROM A RIBBON OF DOUGH

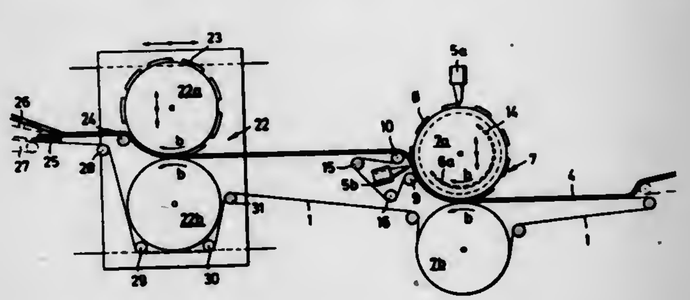
Heribert Lassmann, and Rudolf Woog, both of Kempen, Germany, assignors to Maschinenfabrik Briem-Hengler & Cronemeyer K.G., Krefeld, Germany

Filed Aug. 11, 1971, Ser. No. 170,825

Claims priority, application Germany, Dec. 19, 1970, P 20 62 745.6

Int. Cl. B29c *17/10*

U.S. Cl. 425—102 **17 Claims**



Apparatus for cutting out dough forms having inner cutouts from a ribbon of traveling dough. Parts of the apparatus include a first pair of rollers, a second pair of rollers spaced apart from the first pair and an endless carrier belt which supports the ribbon of dough and conveys it between each of the pairs of rollers. Each of the pairs of rollers is made up of a cutting roller, with punching elements around its periphery, and a contact pressure roller. The punching elements on the cutting roller of the first pair of rollers cut out the inner cutouts of the dough forms from the traveling ribbon of dough and the punching elements on the cutting roller of the second pair of rollers cut out the outer shapes of the dough forms.

When the carrier belt conveys the ribbon of dough between each pair of rollers, the contact pressure roller is in pressure contact with the cutting edges of the punching elements of the cutting roller of that pair. The punching elements on the cutting roller of the first pair of rollers retain the inner cutouts of the dough forms as they roll away from contact with the ribbon of dough, and a blower positioned adjacent that roller blows these inner cutouts into the interior of the roller through openings in the roller wall. A trough shaped conveyor belt in the roller removes the inner cutouts as they accumulate during operation of the apparatus.

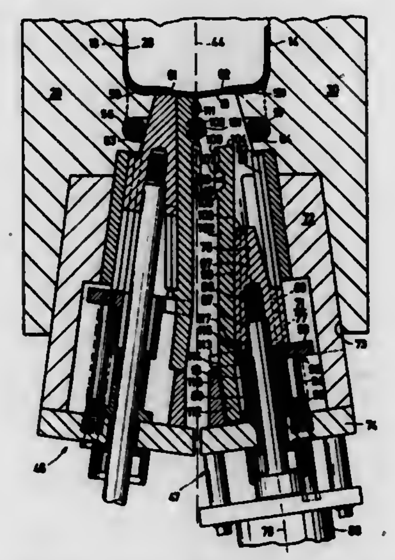
3,724,981
APPARATUS FOR MAKING A CONTAINER OF PLASTIC MATERIAL

Wolfram Schiemann, Eugen-Nagele Strasse 17, 714 Ludwigsburg, Germany

Filed Nov. 16, 1971, Ser. No. 199,279

Int. Cl. B29d *23/03*

U.S. Cl. 425—109 **8 Claims**



The apparatus makes a blow-moulded plastic container having three handles. Blow-moulding dies have open-edged recesses which are not undercut in the direction of the dividing plane between the dies. A separately moulded outer handle is insertable in each recess and becomes permanently welded to the container walls. Two sliding devices below the dies have recesses for forming the central handle and are movable towards each other and towards the dies, closing off central recesses therein.

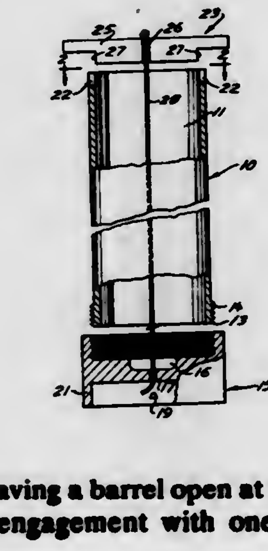
3,724,982
CANDLE MOULD

Walter F. Davis, 4364 West Broadway, Vancouver, B.C., Canada

Filed May 17, 1971, Ser. No. 144,133

Int. Cl. B29d *31/00*

U.S. Cl. 425—117 **3 Claims**



A candle mould having a barrel open at each end and a base having a threaded engagement with one end of the barrel forming a receptacle into which wax can be poured, the base having a central opening through which a wick can be threaded and a plug for sealing the opening. The barrel has diametrically opposed notches formed at its upper end serving as seats for holding a wick holder The wick holder has a central passage through which the wick can be threaded and maintained in position extending axially of the barrel while wax is poured therein.

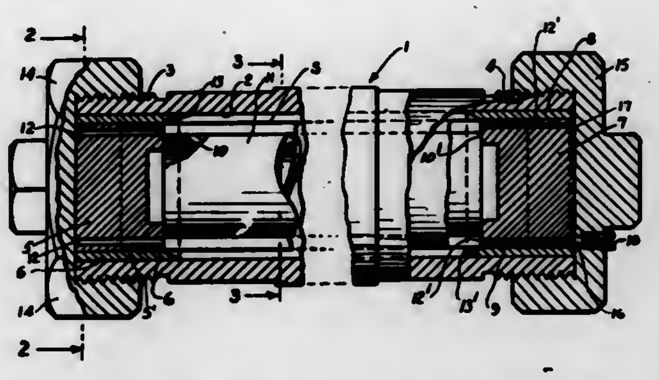
3,724,983
APPARATUS FOR MAKING ROLLS

William B. Nelson, Sparta, N.J., assignor to Ames Rubber Corporation, Hamburg, N.J.

Filed Feb. 19, 1971, Ser. No. 116,883

Int. Cl. B29f *1/00*

U.S. Cl. 425—129 **7 Claims**



In the manufacture of metal cored elastomeric rolls having an outside protection sleeve, an extruded tubular sleeve of suitable material is placed in a mold having a cylindrical cavity of an inside diameter considerably in excess of the outside diameter of the sleeve, one end of the sleeve being anchored and the other end being free to move longitudinally. A cylindrical metal core is placed inside the sleeve and elastomeric material is then injected under pressure into the space between the core and the sleeve. The pressure stretches and expands the sleeve, forcing it into contact with the mold wall. The mold is then capped and heated to cure the elastomeric material.

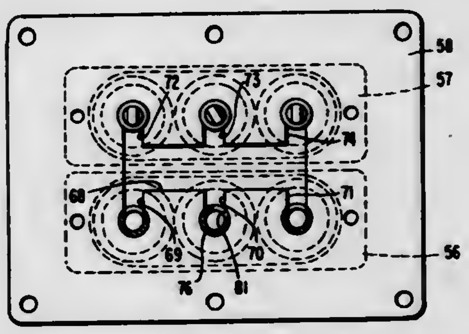
3,724,984
EXTRUDER NOZZLE DISTRIBUTION PLATE WITH A PLURALITY OF VALVE CONTROLLED GROOVES

Thomas L. Jernigan, Center Cross, Va., assignor to Eskimo Pie Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 820,168, April 29, 1969, abandoned. This application Sept. 22, 1970, Ser. No. 74,329

Int. Cl. A23g *5/00*

U.S. Cl. 425—131 **4 Claims**



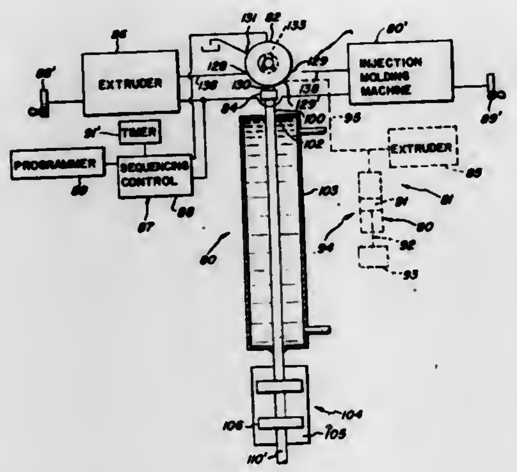
A method and nozzle assembly for producing confection bars severed from lengths of the confection in a plastic state that are extruded from a multiple compartmented nozzle assembly in which a distribution plate is fitted between the feed tube or tubes supplying the confection and nozzle assembly. The distribution plate contains passages which each lead from beneath the outlet end of the feed tube and extend across the plane of the plate to an aperture passing through the bottom of the plate into communication with each of the different nozzle compartments with the passage configured to control to the desired degree the amount of confection that flows to each of the multiple nozzle compartments.

3,724,985
EXTRUDING APPARATUS

Norbert W. Burlis, University City, Mo., and Joseph H. Corbett, Glens Falls, N.Y., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Jan. 18, 1971, Ser. No. 107,117
Int. Cl. B29d *23/04*

U.S. Cl. 425—132 **7 Claims**



An extruding apparatus for producing tubing having different characteristics, e.g. physical, chemical and the like, along its axial length including two or more molten plastic material producers that feed different molten materials to an extruding die, one molten plastic material producer being an injection molding machine or an extruder in combination with an accumulator injector. The two molten plastic producers are controlled so that when one producer is delivering molten material to the die producing a first section of the tubing, the other producer is either not injecting or exhausting to reclaimable waste.

A selectively operable valve is provided for delivering the molten materials to the die from one of the two sources having a fast cut-off characteristic effected by providing the inlets to the valve, connected to each of the molten material sources, and the valve outlet, connected to the extruding die, on one diametral side of the valve to minimize the required valve movement in switching from one material source to the other. The valve is also provided with an exhaust for one of the inlets permitting that material to be reclaimed.

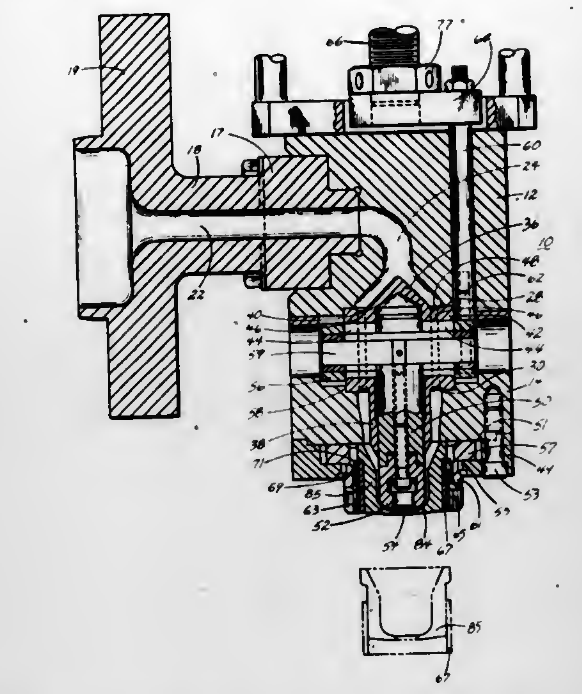
Also provided in another embodiment is an extruding apparatus having two extruders that feed different molten plastic materials to a die, there being provided an accumulator-injector in each of the conduits interconnecting the extruders with the die arranged and controlled so that when one extruder is delivering molten material to the die producing a first section of tubing, the first accumulator-injector in the conduit connecting the other extruder with the die withdraws molten plastic from that conduit. Thereafter, the first accumulator-injector injects the previously withdrawn molten material into the die, eliminating waste, while the second accumulator-injector withdraws the molten material emanating from its associated extruder. This cycle is reversed periodically to produce a tube having sections of different material without requiring a valve for draining the molten material from one of the extruders while the other feeds the die.

3,724,986
APPARATUS FOR PROTECTING AN EXTRUSION HEAD FROM OVER PRESSURE

Clayton A. Wheeler, Plainville, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 7, 1970, Ser. No. 78,741
Int. Cl. B29f *3/04*; **B29d** *23/04*

U.S. Cl. 425—154 **6 Claims**



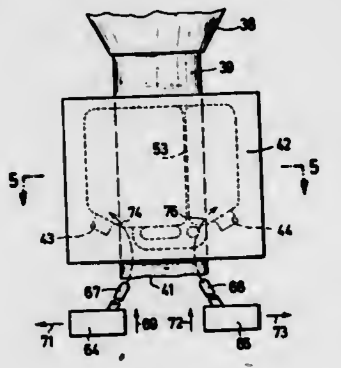
Means for automatically relieving excess pressure in an extrusion head of the type which includes a spider member therein.

3,724,987
APPARATUS FOR THE BLOWING OF A TWO-COMPARTMENT CAN

Wolfram Schiemann, Eugen-Nagele Strasse 17, 714 Ludwigsburg, Germany

Filed Nov. 12, 1971, Ser. No. 198,298
Int. Cl. B29d *23/03*

U.S. Cl. 425—326 **3 Claims**



An apparatus for the blowing of a two-compartment can of the type comprising two compartments, interconnected back-to-back in the area of their walls and facing one another in which there is at least one handle on the top side of the can and one radially inclined spout each on the top side of the compartments. Below an extruder extruding a single tube of hot thermoplastic material and laterally thereto there are provided two blow-mold sections adapted to be moved horizontally toward and away from one another and in closed condition to form the blow mold for the complete can. In each blow-mold section there is a separating wall with interior cooling, the wall corresponding in position and dimension to the slot between the compartments and being spaced in accordance with the thickness of the connecting strip between the compartments. In the plane of junction two inclined spindle sleeves extend in accordance with the bisected apertures for the spouts in the blow-mold sections. The upper portions of the spindle sleeves are, in their position of closest proximity, closer to one another than the inner diameter of the tube and are positioned directly under the lower edge of the tube. The spindle sleeves are adapted to be moved outwardly and upwardly, pulling the extruded tube along, without the thus oppositely placed inner sides of the tube touching one another. The lower edge then extends to a length corresponding to approximately half the circumference of the tube and the upper portions of the spindle sleeves are placed in position for the bisected holes for the spouts and the apparatus in fully closed position of the blow-mold sections is then ready for blowing.

3,724,988
PRESSURE MOULDING MACHINE

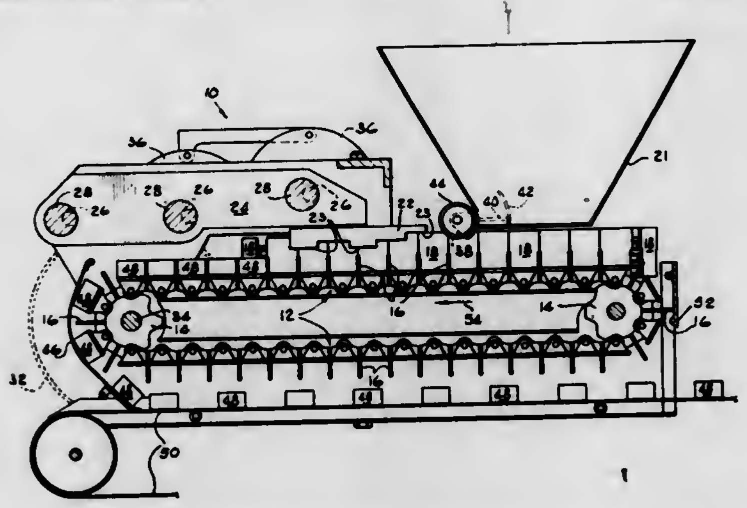
Wentzel Christoffel Gouws, 342 Main Reef Road. Wentworth Park, Krugersdorp, Republic of South Africa

Filed Oct. 4, 1971, Ser. No. 185,944

Claims priority, application South Africa, Oct. 7, 1970, 70/6842

Int. Cl. B30b *11/14*

U.S. Cl. 425—348 **9 Claims**



A pressure moulding machine which includes a plurality of open ended moulds each defined by a plurality of side and end walls relatively displaceable with respect to each other between one position being an article moulding position and another position being a moulded article discharge position. Each side wall of the mould is mounted on a driven carrier adapted to effect displacement of the side wall. Material charging means are provided for charging mouldable material into the open end of each mould. The machine also includes a cyclically operable ram member arranged to obturate the open end of each mould in succession thereby to compress the material charged into the moulds.

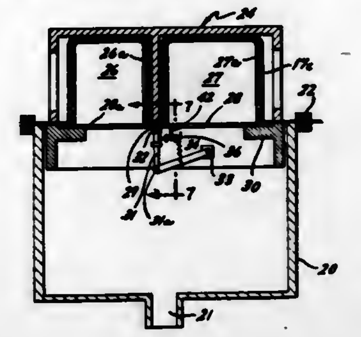
3,724,989
APPARATUS FOR FORMING ARTICLES COMPRISING A PAIR OF ADJACENT WALLED STRUCTURES UNIDIRECTIONALLY PRESENTED OPENINGS

Norman F. Houghton, Connersville, Ind., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Division of Ser. No. 73,761, Sept. 21, 1970. This application Dec. 16, 1971, Ser. No. 208,962
Int. Cl. B29c *17/04*

U.S. Cl. 425—388 **6 Claims**

In a vacuum-forming operation, a pair of adjacent, side-by-side compartment liners are formed from a single sheet of thermoplastic material. A pair of adjacent molds, each having the desired shape of the inside surface of the corresponding liner to be formed, are mounted along their base portions on frame structure hinged in the region of adjacency of the mold base portions, to provide for pivotation of the base portions so that confronting surfaces of the molds are movable angularly toward and away from one another. A sheet of thermoplastic material is disposed to extend over the molds, and is heated, causing it to soften while the molds are held in pivoted position in which the confronting surfaces are substantially spaced from one another. Mold assist-plugs and the molds are then moved, relative to one another, to urge the sheet into general close conformity with the molds. While the sheet of material is still soft the assist-plugs further are caused to engage the mold frame structure, through the intermediacy of the sheet, pivoting the frame structure and causing adjacent wall portions of the molds to move toward one another and assume their closely spaced position. Air entrapped between the heated sheet and the walls of the molds is then evacuated through a number of small ports or vents in the walls, thereby forming the desired liners which are cooled and stripped from the molds.

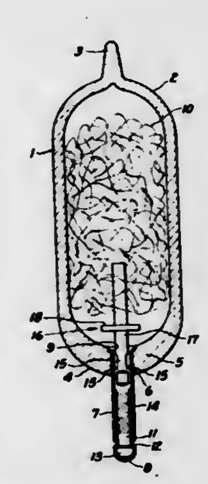


3,724,990
PHOTOFLASH LAMP

Lewis J. Schupp, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,587
Int. Cl. F21k *5/02*

U.S. Cl. 431—93 **10 Claims**



A percussion-ignitable type flashlamp is disclosed which includes an improved primer material that is more stable in handling during lamp manufacture and improves performance of the lamp in operation. Said primer material comprises a mixture in percentages by weight of 4–50 percent phosphorus, 10–25 percent potassium chlorate, 4–10 percent sodium chlorate, and the remainder being titanium, which mixture can be bonded to form a unitary mass with a polyvinyl alcohol binder. A slurry of the primer material in an aqueous solution of 87–89 percent hydrolyzed polyvinyl alcohol remains substantially gel-free for long time periods and provides a tough and adherent coating in the lamp.

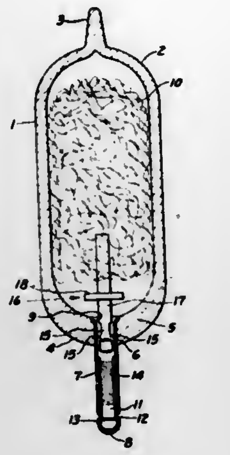
3,724,991
PHOTOFLASH LAMP

Lewis J. Schupp, Chesterland, Ohio, assignor to General Electric Company

Filed Nov. 15, 1971, Ser. No. 198,547
Int. Cl. F21k *5/02*

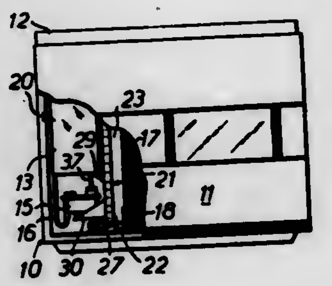
U.S. Cl. 431—93 **10 Claims**

A percussion-ignitable type flashlamp is disclosed which includes an improved primer material that is more stable in handling during manufacture of the lamp and improves performance of the lamp in operation. Said primer material comprises a mixture in percentages by weight of 4–50 percent phosphorus, 3–8 percent potassium chlorate, 6–30 percent potassium perchlorate, and the remainder being titanium,



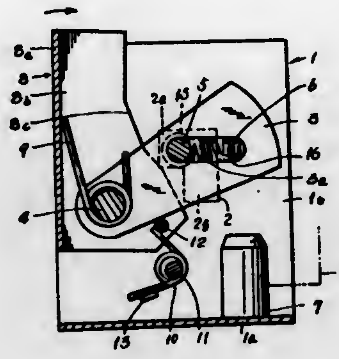
which mixture can be bonded to form a unitary mass with a polyvinyl alcohol binder. A slurry of the primer material in an aqueous solution of 87–89 percent hydrolyzed polyvinyl alcohol remains substantially gel-free for long time periods and provides a tough and adherent coating in the lamp.

3,724,992
HEATING APPARATUS USING LIQUID FUEL
Jean-Jacques Camps, 51 Marcilly-sur-Seine, France
Filed Feb. 17, 1971, Ser. No. 116,020
Claims priority, application France, Feb. 17, 1970, 7005533
Int. Cl. F23d *11/36*
U.S. Cl. 431—154 **8 Claims**



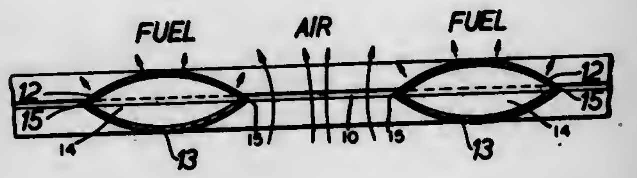
A heating apparatus using liquid fuel, of the kind comprising a frame, a source of fuel such as a reservoir, a pump or a fuel intake, and a combustion chamber supplied with fuel through the intermediary of a constant-level tank, in which the source and the tank conjointly form a supply unit removably mounted in the frame, separable coupling means being provided between the supply unit and at least one pipe mounted on the said frame. The modified apparatus lends itself very rapidly to a standard replacement.

3,724,993
IMPACTING MECHANISM FOR IMPACTING A PIEZOELECTRIC BODY
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaishya, Kawaguchi-shi, Saitama, Japan
Continuation of Ser. No. 85,328, Oct. 30, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,452
Int. Cl. F23q *3/01*
U.S. Cl. 431—255 **14 Claims**



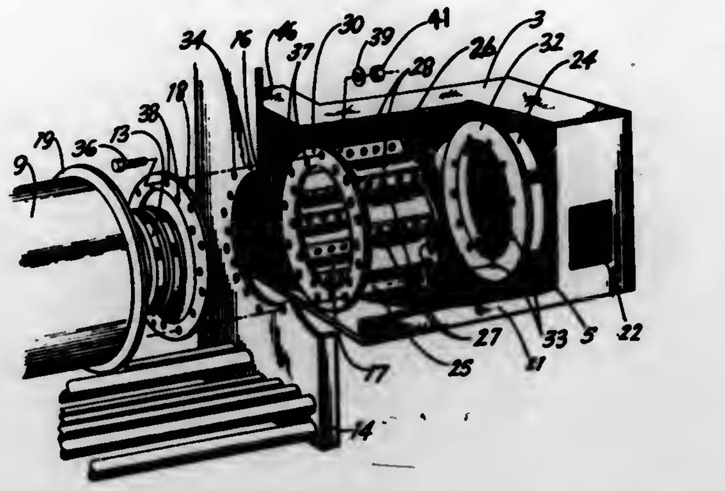
An impacting mechanism for impacting a piezoelectric body in a piezoelectric ignition device including a spring loaded hammer having a track-like opening therein which contains a spring loaded pin which engages a pair of opposing openings formed in an enclosure, and a manipulator adapted to engage the pin during depression thereof to operate the spring loaded hammer.

3,724,994
BURNER
Denis Henry Desty, Weybridge, England, assignor to The British Petroleum Company Limited, London, England
Filed May 1, 1970, Ser. No. 33,672
Claims priority, application Great Britain, May 19, 1969, 25,419/69
Int. Cl. F23d *13/12*
U.S. Cl. 431—328 **5 Claims**



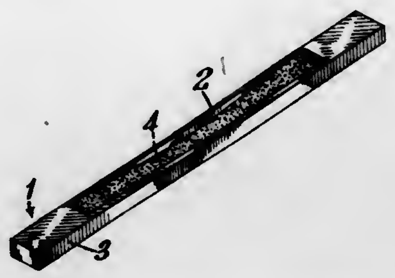
A burner for gaseous fuels, e.g. methane or hydrogen, has a porous exit sheet adjacent to a base plate. The two sheets are perforated to allow the passage of air, and fuel gas circulates between the sheets and around the perforations. The fuel passes through the porous sheet to burn with air passing through the perforations.

3,724,995
BURNER ASSEMBLY
Paul A. Mutchler, University City, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Nov. 24, 1971, Ser. No. 201,879
Int. Cl. F23d *13/40*
U.S. Cl. 431—352 **5 Claims**



A gas-fired furnace including a heat exchanger mounted in a housing in heat transfer relation with flowing air passing over the heat transfer surface of the heat exchanger and a gas burner assembly; the heat exchanger having a centrally disposed burner tube communicating with a rear tube sheet at one end and the gas burner assembly at the opposite end, and a plurality of return tubes disposed about the burner tube and affixed to the rear tube sheet at one end and a flue gas collector at the opposite end.

3,724,996
BORON NITRIDE CONTAINING VESSEL HAVING A SURFACE COATING OF ZIRCONIUM SILICON
Lionel C. Montgomery, North Olmsted, Ohio, assignor to Union Carbide Corporation, New York, N.Y.
Filed March 12, 1971, Ser. No. 123,552
Int. Cl. F27d *5/00*; F27b *21/04*
U.S. Cl. 432—264 **10 Claims**



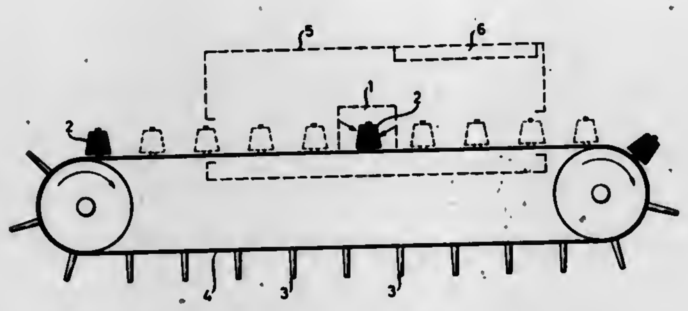
A boron nitride containing vessel having at least a portion of its surface coated with a zirconium silicon base alloy so as to render such surface readily wettable by molten metals such as aluminum.

CHEMICAL

3,724,997

PROCESS AND APPARATUS FOR SPACE-DYEING OF POLYESTER OR POLYAMIDE FIBRES OR THREADS

Hans-Ulrich von der Eltz, Frankfurt am Main, and Richard Gross, Munich, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed Feb. 10, 1970, Ser. No. 9,680
Claims priority, application Germany, Feb. 12, 1969, P 19 06 840.7
Int. Cl. D06p *5/00*
U.S. Cl. 8—14 **4 Claims**



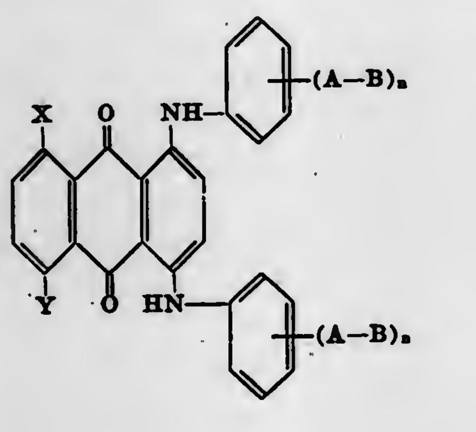
Process for the space-dyeing of wound-up polyester or polyamide fibres or threads by injection into the bobbins, being located on heated transporting equipment, disperse dyestuffs and/or organic pigment dyestuffs dissolved or dispersed in an organic solvent, at a temperature of from 160° to 230° C., and subsequently allowing the dyestuffs to take effect upon the textile material at the said temperature during 15 to 180 seconds to achieve fixation, and apparatus for carrying out said process.

3,724,998

CONTINUOUS DYEING OF POLYESTER FIBERS WITH WATER IMMISCIBLE ORGANIC SOLVENTS AND HYDROXY-PHENOL AMINO ANTHRAQUINONES

Gunter Gehrke and Volker Hederich, Cologne, Rutger Neeff, Leverkusen, and Peter Wegner, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Oct. 1, 1970, Ser. No. 77,342
Claims priority, application Germany, Oct. 8, 1969, P 19 50 679.7
Int. Cl. C09b *1/02;* **D06p** *1/20*
U.S. Cl. 8—39 **8 Claims**

The invention comprises a process for the continuous dyeing of synthetic fibre materials, e.g. polyester, polyamides, polyolefins and cellulose triacetate, from organic solvents. The fibre materials are impregnated with dyeliquors which contain anthraquinone dyestuffs of the formula



in which A represents a C—C bond or an oxygen atom, B stands for a C_1–C_9 alkyl, cycloalkyl or aralkyl radical, *n* is a number from 0 to 3, X denotes a hydrogen atom or a hydroxyl group, and Y stands for a hydrogen atom, a hydroxyl, a nitro, amino or an acylamino group RCONH—, and subsequently subjected to a heat treatment.

3,724,999

FAT-LIQUORING AGENTS FOR LEATHER AND SKINS

Werner Stein, Erkrath-Unterbach, and Jurgen Plapper and Wolf-Dieter Willmund, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany
No Drawing. Filed Sept. 8, 1970, Ser. No. 70,526
Claims priority, application Germany, Sept. 16, 1969, P 19 46 723.3
Int. Cl. C14c *9/02*
U.S. Cl. 8—94.23 **10 Claims**

A fat-liquoring agent for leather and skins containing as an active substance at least 10% by weight, of total active substances, of a chlorination product of an ester of a higher fatty acid having from 8 to 24 carbon atoms, said chlorination product having a chlorine content of from 10% to 40% by weight and having substantially no free double bonds. The method of fat-liquoring and the fat-liquored leather and skins are also a part of the invention. The fat-liquoring agents of the invention have a good absorption on leather fibers as well as an excellent resistance to light and oxidation.

3,725,000

SPANDEX FIBER REACTED WITH ISOCYANATO GROUP CONTAINING SILOXANE

James K. Campbell and Martin C. Musolf, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
Continuation-in-part of abandoned application Ser. No. 548,387, May 11, 1966. This application Mar. 22, 1971, Ser. No. 127,034
Int. Cl. D06m *3/26;* **D06c** *29/00*
U.S. Cl. 8—115.6 **14 Claims**

Spandex fibers are disclosed which have reacted therewith a lubricating finish which is a siloxane having the average general formula

$$R_n(CH_3)_{3-n}Si\{OSi(CH_3)_2\}_x\{OSi(CH_3)R\}_yOSi(CH_3)_{3-n}R_n$$

wherein R is a radical attached to the silicon atom via a non-hydrolyzable bond and contains at least one substituent that is reactive with the spandex fiber, each *n* is zero or one, *x* and *y* are integers, and the ratio of solely methyl substituted silicon atoms to R substituted silicon atoms is in the range of 15–300:1. These spandex fibers have a permanent finish which is not harmful to the physical properties of the fiber, which will not migrate, and which has a significantly reduced tendency to discolor the fiber.

3,725,001

PHOSPHINIDYNETRIMETHANOL TRIACETATE AND ITS APPLICATION TO CELLULOSIC MATERIALS

Sigred B. Lanoux, Lafayette, Samuel E. Ellzey, Jr., New Orleans, and George L. Drake, Jr., and Wilson A. Reeves, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Aug. 21, 1970, Ser. No. 66,084
Int. Cl. D06m *13/34*
U.S. Cl. 8—189 **5 Claims**

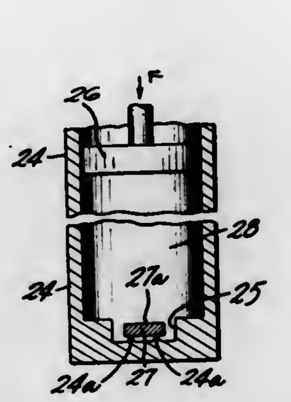
Phosphinidynetrimethanol triacetate was prepared by reacting tetrakis(hydroxymethyl)phosphonium chloride

with acetic anhydride in pyridine at room temperature. Cotton and other cellulosic textiles were treated with the product produced by the new process and found flame retardant.

3,725,002

METHOD FOR STERILIZATION

James M. Wolf, Ann Arbor, Mich., assignor to Chemotronics, Incorporated, Ann Arbor, Mich.
Original application May 2, 1969, Ser. No. 821,276, now Patent No. 3,606,996. Divided and this application Mar. 18, 1971, Ser. No. 125,863
Int. Cl. A61l *1/00*
U.S. Cl. 21—2 **4 Claims**



A method for the sterilization of surfaces utilizing essentially instantaneous and transient thermal pulses generated in a gaseous medium in contact with the surfaces by means of ignition of an explosive gas mixture or by adiabatic compression. The thermal pulses have a duration of less than about one second so that the surface is not damaged. The surface to be treated is substantially free of liquid material so that the thermal pulse acts directly upon the microorganisms.

3,725,003

METHOD OF STERILE PACKAGING

Francis C. Moore and Leon R. Perkinson, Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.
No Drawing. Continuation-in-part of application Ser. No. 873,786, Nov. 4, 1969, now Patent No. 3,618,283. This application Feb. 4, 1971, Ser. No. 112,762
Int. Cl. A61l *13/00*
U.S. Cl. 21—58 **28 Claims**

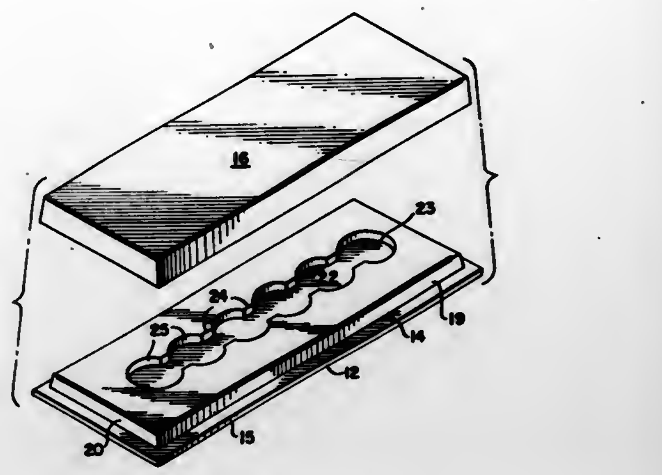
A method of sterile packaging which involves the steps of partially filling a container with any of a number of anti-bacterial agents in liquid or semi-liquid form, then sealing the container so that an air space is formed above the liquid within the container, and finally heating the container and its contents (which may include a solid object to be sterilized immersed or partially immersed in the liquid) to a temperature substantially below the boiling point of the liquid, and at a pressure of about one atmosphere, until the interior surfaces of the container above and below the liquid level, and the entire contents of such container, are sterilized.

3,725,004

GEL DIFFUSION DEVICE

Stanley R. Johnson, Fountain Valley, and Sheldon H. Forel, Redondo Beach, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Dec. 21, 1970, Ser. No. 99,797
Int. Cl. C12k *1/04;* **G01n** *31/02, 33/16*
U.S. Cl. 23—230 B **16 Claims**

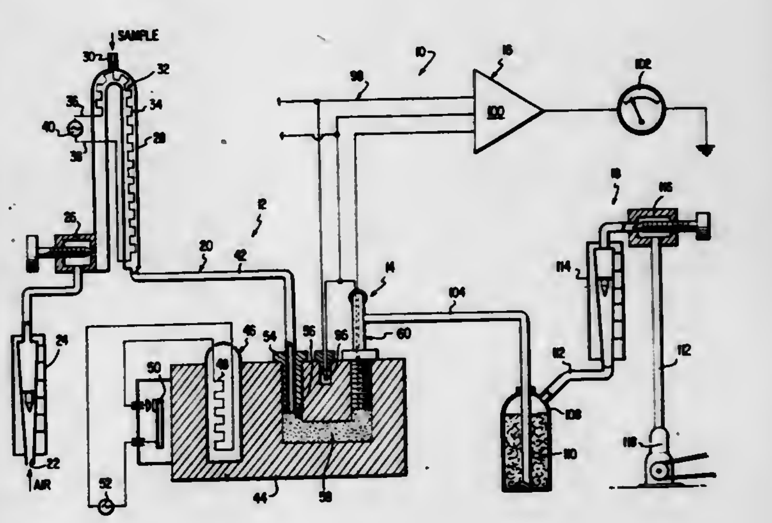
A shallow receptacle having at least one recess therein for holding a gel medium for performing biochemical determinations by a technique known as radial gel diffusion. The sidewalls of the recess possess arcuate indentations to provide a series of bay-like areas. The shallow receptacle is provided with a cover which has a top that is displaced from the top surface of the shallow receptacle when the cover is placed over the shallow receptacle.



3,725,005

ANALYSIS OF REACTIVE MATERIALS IN GAS STREAMS

William B. Innes, 724 Kilbourne Drive, Upland, Calif. 91786
Continuation-in-part of applications Ser. No. 658,786, Aug. 7, 1967, and Ser. No. 748,109, June 3, 1968, now Patent No. 3,537,823. This application Nov. 3, 1970, Ser. No. 86,481
The portion of the term of the patent subsequent to Nov. 3, 1987, has been disclaimed
Int. Cl. G01n *31/10, 31/12, 33/22*
U.S. Cl. 23—232 E **12 Claims**



A method and apparatus for determining the amount of reactive constituents in a gas sample is disclosed. Air is mixed with a sample and passed through a suitable oxidation catalyst for oxidizing the constituent. The temperature rise in the catalyst is proportional to the concentration of the constituent in the sample and is measured immediately adjacent the inlet to the bed. The temperature of the air and sample is maintained above the dew point thereof to prevent condensation of water and absorption of reactable components therein. Provisions are made to prevent sorption of reactable components in the inlet line upstream of the reactive bed.

3,725,006

METHOD FOR QUANTITATIVE DETERMINATION OF ANIONS

Arne Elof Brandstrom, Goteborg, Klas Ragnar Gustavii, Molndal, Ulf Krister Junggren, Pixbo, and Kerstin Kylberg, Molndal, Sweden, assignors to Aktiebolaget Hassle, Goteborg, Sweden

No Drawing. Filed June 3, 1971, Ser. No. 149,766

Claims priority, application Sweden, June 4, 1970, 7,790/70

Int. Cl. B01d ***11/04;*** **C02b** ***1/60;*** **G01n** ***31/04***

U.S. Cl. 23—230 R **17 Claims**

A method for the determination of anions in solution by means of ion exchange comprising adding to a solution, preferably an aqueous solution containing an anion in unknown quantity to be analyzed, a compound selected from the group consisting of quaternary aliphatic ammonium picrates having a total of at least 30 carbon atoms, preferably dissolved in an immiscible organic solvent, thereby to form by ion exchange the corresponding quaternary ammonium compound of said anion to be analyzed and to release a corresponding amount of picrate anion. Suitably two layers are formed upon mixing and the quaternary ammonium compound of said unknown anion becomes dissolved in the organic solvent, while said released picrate ion becomes dissolved in the aqueous phase. Known techniques such as optical methods are employed to determine the amount of released picrate ion, which is a measure of the amount of original unknown anion to be analyzed.

3,725,007

TEST TUBE FOR THE QUANTITATIVE DETECTION OF THE ALCOHOLIC STRENGTH OF RESPIRATORY AIR AND METHOD FOR THE PREPARATION OF SAID TUBE

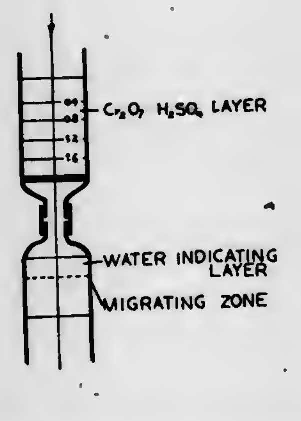
Erwin F. Kral and Dieter Eschrich, Bad Lanpeusaka, Germany, assignors to VEB Jenapharm, Jena, Germany

Filed Jan. 28, 1971, Ser. No. 110,548

Claims priority, application Germany, Feb. 17, 1970, P 42 11 455.6

Int. Cl. G01n ***31/22***

U.S. Cl. 23—254 R **5 Claims**



A test tube for the quantitative detection of the alcohol content of breath by means of bichromate-sulphuric acid. The test tube contains a carrier material consisting of silica-gel powder bonded to glass particles and saturated with a reagent for indicating the alcohol content. The test tube is provided with a scale in the region of the reagent for indicating the alcohol content for the determination by linear colorimetric means of the amount of alcohol contained in the breath.

3,725,008

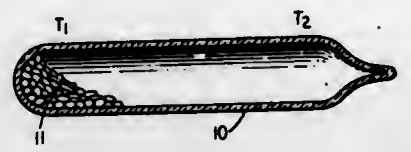
METHOD OF REGROWING CRYSTALS OF CADMIUM SULPHIDE FOR SCINTILLATION COUNTERS

Robert Michael Mikulyak, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed May 18, 1970, Ser. No. 38,344

Int. Cl. B01d ***7/00;*** **C01g** ***11/00***

U.S. Cl. 23—294 **7 Claims**



In order to regrow a mass of small crystals of cadmium sulphide, they are placed at one end of a sealed evacuated tube (10^{-5} torr typically). This end of the tube is held at a temperature which is approximately equal to or slightly greater than the sublimation temperature of the cadmium sulphide crystals, while the other end of the tube is held at a still higher temperature. Thereby, the mass of small crystals is regrown at the same tube site under conditions of solid-vapor equilibrium, and in effect coalesced into larger crystals which are useful as scintillation phosphors to detect gamma rays of the order of 100 kilovolt or more.

3,725,009

DETECTION OF TRACE GASES UTILIZING AN ELECTRON CAPTURE DETECTOR

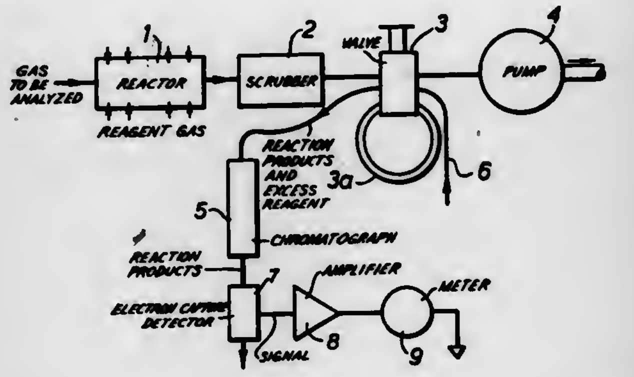
James Ephraim Lovelock, Bowerchalke, near Salisbury, England

Filed June 23, 1969, Ser. No. 835,346

Claims priority, application Great Britain, June 24, 1968, 30,079/68; June 4, 1969, 28,314/69

Int. Cl. G01n ***23/12***

U.S. Cl. 23—232 C **18 Claims**



Method and apparatus for the detection of trace gases, such as for example atmospheric contaminants. A gas sample suspected of containing a contaminant is introduced into a reactor containing a reagent which converts the contaminant into an electron absorber. The presence of the contaminant is detected by passing the effluent from the reactor through an electron capture detector. If the gas sample contains oxygen then it is desirable to separate the oxygen from the stream entering the detector.

3,725,010

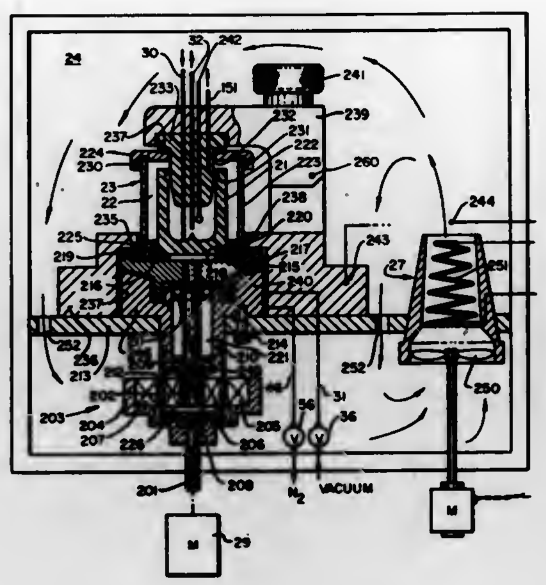
APPARATUS FOR AUTOMATICALLY PERFORMING CHEMICAL PROCESSES

Harry A. Penhasi, Cupertino, Calif., assignor to Beckman Instruments, Inc.

Continuation of abandoned application Ser. No. 814,425, Apr. 8, 1969. This application Aug. 23, 1971, Ser. No. 174,211

Int. Cl. G01n ***1/18, 9/30***

U.S. Cl. 23—253 R **16 Claims**



An automatic protein-peptide sequenator for determining the amino acid sequence in proteins and/or peptides containing N number of amino acid units including: an easily accessible reaction cell disposed within a reaction chamber having a minimum volume and rotationally driven by a variable or multiple speed motor through a magnetic coupling drive unit, air-circulating heating means, a constant pressure and uniform delivery system including vacuum and solenoid actuated valve assemblies, a regulated inert gas supply system, an evacuated fraction collector, and a programming control unit which may be automatically or manually manipulated.

3,725,011

AUTOMATIC FIRE ALARM WITH AT LEAST ONE MEASURING CHAMBER

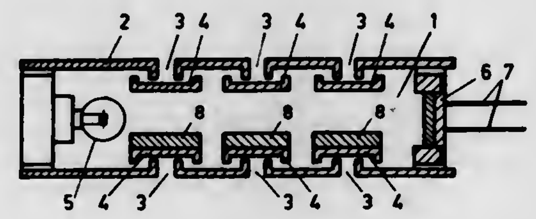
Gustav A. Purt, Rapperswil, and Walter Bosshard, Stafa, Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland

Filed Mar. 13, 1970, Ser. No. 19,244

Claims priority, application Switzerland, Mar. 28, 1969, 4,747/69

Int. Cl. G01n ***21/26, 23/12;*** **G08b** ***21/00***

U.S. Cl. 23—254 E **16 Claims**



An automatic fire alarm possessing at least one measuring chamber accessible to the surrounding air and constructed such that it can deliver by means of an electric circuit an alarm signal when combustion products, in the form of combustion aerosols or smoke, penetrate the measuring chamber. According to the invention the measuring chamber contains a solid or liquid substance which, in the course of time, gives off a gaseous reaction agent suitable for forming with hydrogen halide vapors condensation products in the form of aerosols.

3,725,012

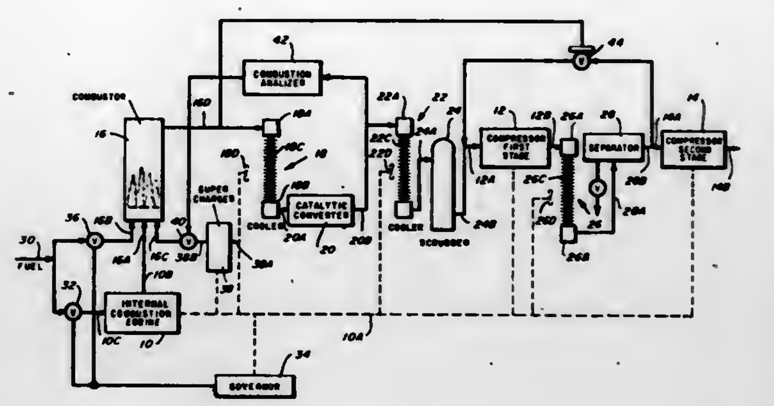
APPARATUS FOR MANUFACTURING HIGH PRESSURE INERT GAS

George H. Gower, 6120 S. Kingston, Tulsa, Okla. 74135

Filed Jan. 27, 1971, Ser. No. 110,028

Int. Cl. B01j ***7/00***

U.S. Cl. 23—281 **6 Claims**



An internal combustion engine, at least one compressor attached to and driven by the engine, a combustor to which the exhaust of the engine is conducted along with gas and air which is burned in the combustor, a high temperature air cooled heat exchanger having an inlet header, an outlet header, and finned tube communicating between the headers, the gas outlet from the combustor passing through the heat exchanger, a fan for passing ambient air between the finned tube for cooling the gas output of the combustor, a catalytic converter through which the gas is passed before passing to the compressor, high pressure inert gas being delivered at the compressor outlet.

3,725,013

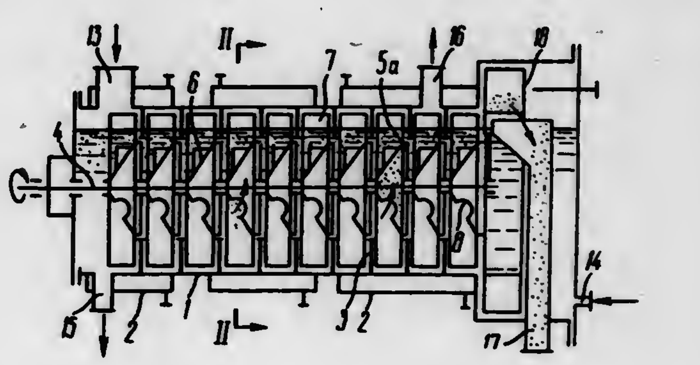
MULTISECTION APPARATUS WITH CONVEYING MEANS FOR CARRYING OUT MASS-EXCHANGE PROCESSES IN SOLID-LIQUID SYSTEMS

Alexandr Alexandrovich Kavepa; Anatoly Anatolievich Nitkovskikh, both of Krasnodar; Vladimir Andreevich Grigoriev, Moscow; Arkady Borisovich Pashkov, Moscow, and Yakov Vulfovich Epshtein, Moscow, all of U.S.S.R., assignors to Proektno-Konstruk-torskoe Bjuro po Proektirovani ju Oborudovania dlya Proizvodstva Plasticheskikh Mass i, Moscow, U.S.S.R.

Filed Nov. 9, 1970, Ser. No. 87,945

Int. Cl. C08g ***35/00;*** **B01j** ***1/08***

U.S. Cl. 23—285 **4 Claims**



An apparatus, which comprises a cylindrical casing divided by partitions into sections and accommodating a shaft with mixing devices, said devices being made as dishes that are rigidly fixed on said shaft and arranged within each said section, buckets being attached to the outside of said dishes; each of said dishes being provided with at least one aperture in the space defined by one of said buckets, and at least one of the other of said buckets having an aperture in the bottom portion thereof.

3,725,014
SODIUM CARBONATE CRYSTALLIZATION PROCESS WITH FOAM PREVENTION

Rustom Pestonji Poncha, Camillus, Norman Rutledge Garofano, Geddes, and Alan Brian Gancy, Syracuse, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,182

Int. Cl. B01d *9/02;* **C01d** *7/24*

U.S. Cl. 23—300 **20 Claims**

Invention relates to the preparation of sodium carbonate precursor crystals, such as sodium bicarbonate, sodium sesquicarbonate, anhydrous sodium carbonate, and sodium carbonate monohydrate by a crystallization process which involves crystallizing said precursor crystals from a carbonate process solution in the presence of an antifoaming effective amount of a cationic surface active agent and separating the crystals formed from the mother liquor.

3,725,015
PROCESS FOR FORMING HIGH DENSITY REFRACTORY SHAPES AND THE PRODUCTS RESULTING THEREFROM

Gerald Q. Weaver, Princeton, Mass., assignor to Norton Company, Worcester, Mass.

No Drawing. Filed June 8, 1970, Ser. No. 44,624

Int. Cl. B22f *3/26*

U.S. Cl. 29—182.1 **9 Claims**

A process for fabricating low porosity, essentially defect free, composite refractory shapes of novel composition. A powdered refractory material is mixed with a carbon containing substance and the mixture is cold formed into a desired shape; the preformed shape is then heat treated to convert the carbon containing substance to carbon. A molten metal bath is prepared, comprised of at least two metals, at least one of which is capable of reacting with the carbon in the preformed shape, and the combination of which results in a metallic mixture greater than that of the refractory material making up the matrix of the preformed shape. The perform is then heated and impregnated with the molten metal which results in sintering of the refractory material matrix, and the reaction of at least one of the metals with the carbon contained in the interstices formed by the particulate refractory material, to form metal carbide(s) therein. The composite shape is then removed from the molten metal bath and cooled. Because the coefficient of thermal expansion of the mixture of metals is close to or slightly greater than that of the refractory matrix, the composite shape cools to room temperature essentially free of cracks and residual stress.

3,725,016
TITANIUM CARBIDE HARD-FACING STEEL-BASE COMPOSITION

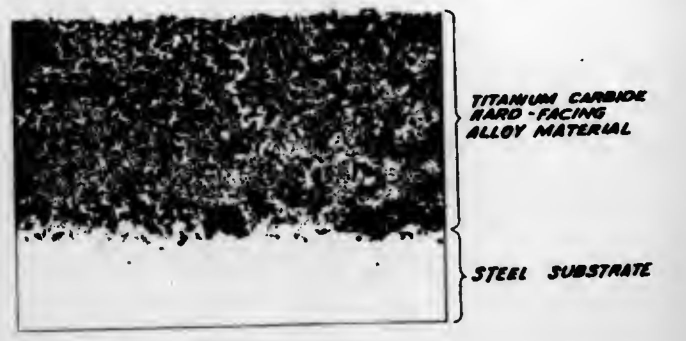
M. Kumar Mal, Nanuet, and Stuart E. Tarkan, Monsey, N.Y., assignors to Chromalloy American Corporation

Filed Jan. 24, 1972, Ser. No. 220,074

Int. Cl. B22f *1/00*

U.S. Cl. 29—182.3 **7 Claims**

A titanium carbide hard-facing steel-base composition is provided consisting essentially by weight of about 10% to 75% titanium carbide, and steel-forming matrix ingredients making up essentially the balance, the matrix being formed of up to about 20% chromium, about 1% to 5% boron, about 2% to 8% silicon, about 1.5% to 5% carbon, up to about 5% molybdenum, and the balance essentially iron.



3,725,017
COATED NERVOUS SUBSTRATE

Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, both of Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Filed Jan. 7, 1970, Ser. No. 1,187

Int. Cl. B32b *15/18*

U.S. Cl. 29—196.6 **8 Claims**

This invention relates to an alloy useful as a hard facing material. The alloy comprises a matrix such as a nickel-chromium matrix containing a separate interstitially boron-hardened tungsten phase. The alloy is used as a facing or coating for a number of base materials, and in particular as a piston ring facing. The invention is also concerned with a method of making said alloy by utilizing a plasma jet spray technique.

3,725,018
FORM COKE COATED WITH GLANZ CARBON AND METHODS OF PRODUCTION

Robert T. Joseph, Richboro, Pa., assignor to FMC Corporation, New York, N.Y.

Filed Apr. 19, 1971, Ser. No. 134,982

Int. Cl. C10l *5/00, 5/36*

U.S. Cl. 44—10 R **4 Claims**

Form coke, coated with a film of glanz carbon which fills the micropores on the surface, is described, together with methods for producing the film during the production of the coke.

3,725,019
COATING OF REACTIVE FORM COKE BY CATALYTIC DEPOSITION OF GLANZ CARBON

Anthony P. Zanpirri, Oreland, Pa., Jack Trechock, Woodbury Heights, N.J., and Robert T. Joseph, Richboro, Pa., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,379

Int. Cl. C10l *5/00, 5/36*

U.S. Cl. 44—10 R **5 Claims**

Form coke, coated with a uniform film of glanz carbon, is described, together with methods for producing the film during the production of the coke by the catalytic action of transition metals, especially tin and zinc.

3,725,020
FUEL COMPOSITION FOR PRODUCING SYNTHESIS GAS OR FUEL GAS

William L. Slater, La Habra, and John C. Ahlborn, Pomona, Calif., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 719,229, Apr. 5, 1968. This application Aug. 5, 1970, Ser. No. 61,396

Int. Cl. C10l *1/00, 1/18*

U.S. Cl. 44—50 **1 Claim**

Improved fuel composition comprising about 1 to 80 weight percent of an oxygenated hydrocarbonaceous organic material containing about 5 to 60 weight percent of combined oxygen and a carboniferous fuel in the amount of about 20 to 99 weight percent. The subject fuel composition is especially suitable as feedstock for a partial oxidation gas generator for producing synthesis gas or fuel gas.

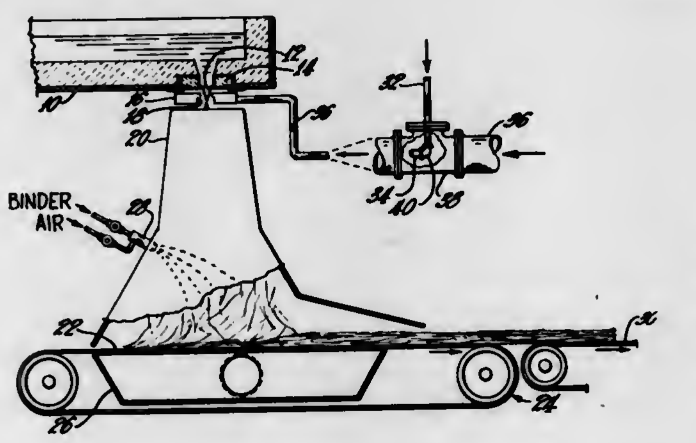
3,725,021
METHOD OF PRODUCING GLASS FIBERS

Robert G. Trout, Prairie Village, Kans., and Charles J. Stalego, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation

Continuation of abandoned application Ser. No. 837,528, June 30, 1969. This application Oct. 20, 1971, Ser. No. 190,999

Int. Cl. C03b *33/06*

U.S. Cl. 65—3 **7 Claims**



Method and apparatus for producing mats of glass fibers that are attenuated by high velocity gases and wherein a mist of a water solution of water soluble glass lubricant such as ethylene glycol, is applied to the fibers, either during their attenuation by the high velocity gases, or prior thereto.

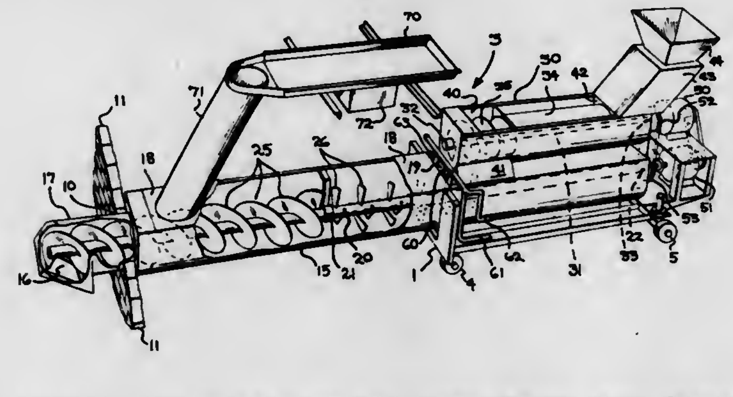
3,725,022
METHOD OF FEEDING GLASS BATCH

Harry N. Mills, Toledo, Ohio, and Henry E. Roll, Waco, Tex., assignors to Owens-Illinois, Inc.

Filed Feb. 12, 1971, Ser. No. 114,917

Int. Cl. C03b *3/00*

U.S. Cl. 65—27 **7 Claims**



Method and apparatus for controllably and homogeneously combining and controllably feeding preselected amounts of a homogeneous blended mass of liquid and dry glass batch materials into a glass melting furnace. The foregoing is effected by the use of a mixing and feeding device which employs a paddle blade mixing and conveying device which communicates with a screw conveyor device in a common chamber into which the liquid and dry materials are independently introduced.

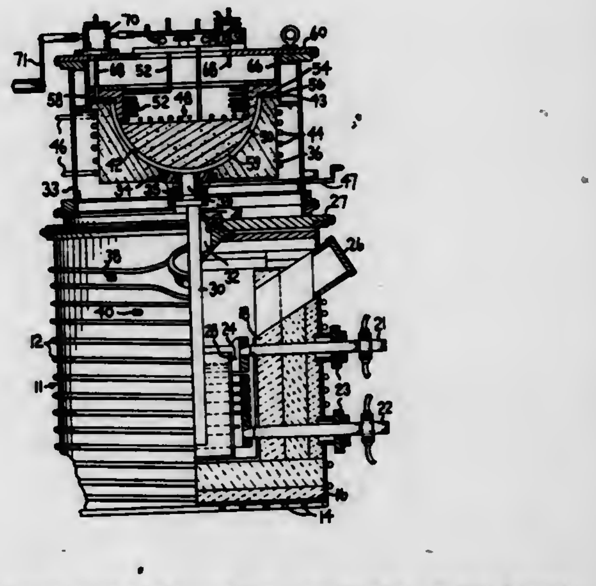
3,725,023
PRESSURE MOLDING OF GLASS ARTICLES

Joseph N. Parris, Irwin, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 21, 1970, Ser. No. 82,768

Int. Cl. C03b *7/00*

U.S. Cl. 65—72 **8 Claims**



Pressure forming glass sheets, in particular solid hemispheres, by casting molten glass upward under superatmosphere pressure between graphite molds while the molds are maintained within a desired temperature range below a temperature at which molten glass adheres to graphite and above a temperature at which the molds cause chill cracking and optical defects in the surfaces of the cast glass.

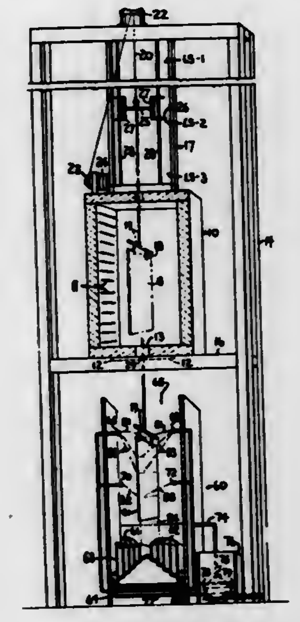
3,725,024
TEMPERING GLASS SHEETS WITH LIQUID FLOWS

Lowell L. Sperry, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 21, 1971, Ser. No. 108,661

Int. Cl. C03b *27/00*

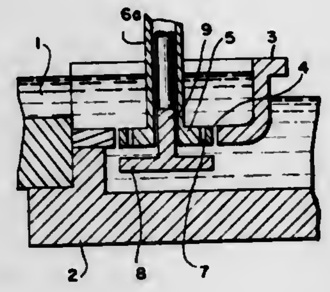
U.S. Cl. 65—114 **16 Claims**



Thermal treatment of glass sheets, particularly to impart a controlled thermal temper that is approximately unchanging from sheet to sheet, on a high speed, mass production basis in such a manner that each glass sheet so treated has acceptable optical properties. The present invention obtains this desired result by a so-called flood quenching, which comprises applying a plurality of continuous or approximately continuous flows of a liquid selected for its heat exchange properties across the entire surface of the sheet and removing the flows of liquid from contact with the sheet after the liquid has moved across the surface of the sheet and has cooled the sheet sufficiently to impart a thermal temper of the desired magnitude. A novel type of glass gripping tongs is provided to minimize any interference with free movement of the liquid flows that would be expected from using tongs. Means is provided to avoid top edge breakage and means is provided to minimize bubbles entrapped within the tempering liquid when the latter is applied to a glass surface.

3,725,025
METHOD FOR HOMOGENIZATION OF MOLTEN GLASS AND ADDITIVES

German Artigas Gimenez, Aviles, Oviedo, Spain, assignor to Saint-Gobain, Neuilly-sur-Seine, France
Filed May 13, 1970, Ser. No. 22,254
Claims priority, application France, Mar. 25, 1969, 6908758
Int. Cl. C03b *5/16, 5/18*
U.S. Cl. 65—134 **5 Claims**



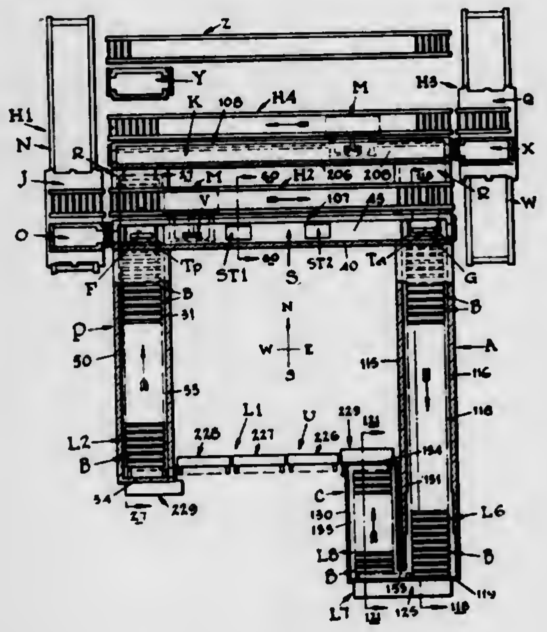
Method and apparatus for the homogenization of molten glass and additives thereto, flowing in the feeder channel of a glass-melting furnace. The glass flow is broken up into a multiplicity of small vertical streams or filaments which are then re-combined by and between two closely-spaced horizontal superposed surfaces. The upper surface may be a disk rotating about a vertical axis and comprising a multiplicity of apertures through which the molten glass flows. The lower surface may be fixed, or a disk rotatable as a unit with the upper disk, or independently but coaxially in the opposite direction, or in the same direction but at speed different from the upper disk.

3,725,026
APPARATUS FOR PRODUCING ALL-GLASS MULTIPLE SHEET GLAZING UNITS

Robert P. Roetter, Perrysburg, and Alfred H. Miller and John D. Quinn, Toledo, Ohio, and John M. Crosman, Jr., Mason City, Iowa, assignors to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Apr. 27, 1970, Ser. No. 32,320
Int. Cl. C03c *27/00*
U.S. Cl. 65—156 **29 Claims**

Apparatus for producing all-glass multiple sheet glazing units including a preheating section, a sealing section and annealing and cooling sections. The preheating section and the annealing and cooling sections are located in spaced, substantially parallel relation to one another with the exit end of the preheating section and the entry end of the annealing section being in open communication with opposite end areas of the sealing section. One conveyor system provides a horizontal, substantially continuous rectangular path of movement for carrying a plurality of support means for glass sheets through the preheating section to raise the temperature of the glass sheets above the point of strain. Each support means is then carried to an area in which it is positioned to receive a completed glazing unit to convey the same through the annealing and cooling sections to an unloading area where the glazing unit is removed from the support means. Another pair of sheets to be formed into a glazing unit are then placed on the support means and moved into the entry end of the preheating section.

A second conveyor system provides a second horizontal, substantially continuous rectangular path of movement in a plane in parallel with and above the first conveyor system for moving a plurality of carrier means for the glass sheets through the sealing section, to form them into a completed glazing unit, with means for then transferring each empty carrier means for movement along a return section arranged in spaced parallel relation to the sealing section. The return section includes transfer means to deliver the carrier means to the entry end of the sealing section.



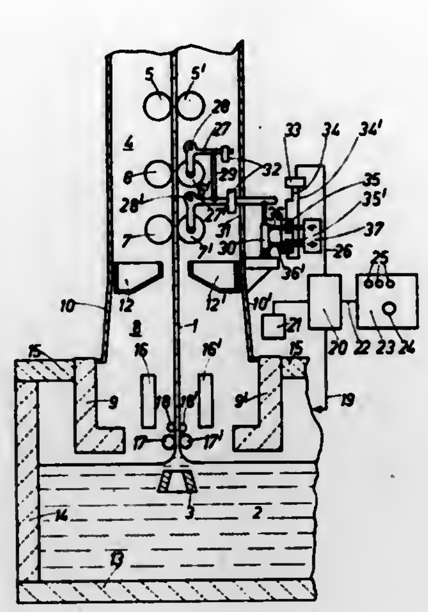
As herein provided, the sequences of movement of the sheet support means and of the carrier means are automatically controlled and interlocked to also effect vertical lifting of a pair of sheets from a support means to a carrier means positioned thereabove and eventual vertical lowering of a finished glazing unit from the carrier means to a supporting means therebeneath.

3,725,027
APPARATUS FOR MONITORING THE CONFIGURATION OF A RIBBON OF MATERIAL

Robert Toussaint, and Elzo Mulder, both of Tiel, Netherlands, assignors to Glaverbel S.A., Brussels, Belgium
Filed Sept. 10, 1970, Ser. No. 71,029
Claims priority, application Great Britain, Sept. 10, 1969, 44,650/69; July 29, 1970, 36,764/70
Int. Cl. C03b *15/02*
U.S. Cl. 65—158 **11 Claims**

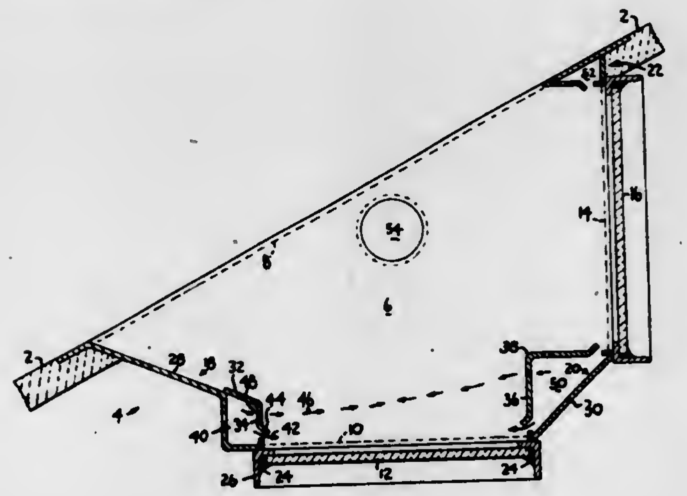
In the processing of sheet material by drawing a ribbon of the material upwardly, a method and apparatus for monitoring deflections experienced by the material out of the vertical plane along which it is normally drawn by providing sensing components near, and normally out of contact with, opposite

faces of the ribbon and by arranging the components to produce an output indication in response to a change in a physical condition of the region adjacent the component due to such deflection.



3,725,028
WINDOW STRUCTURE

Deane G. Cramer, Festus, Mo., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Oct. 1, 1971, Ser. No. 185,499
Int. Cl. C03b *18/00*
U.S. Cl. 65—182 R **4 Claims**



Disclosed is a float-bath window structure that yields long-term clear viewing upbath and downbath from its location. The structure comprises first and second panes set at about 90 degrees with respect to each other, first sets of gas-outlet slots near the panes having vanes to direct gas against the glass, and second sets of slot outlets for gas to create second sets of gas curtains parallel to the glass of the panes.

3,725,029
PREPARATION OF AMMONIUM SULFATE FERTILIZER CONSTITUENT

Kenneth A. E. Blackmore, Bellingham, Wash., assignor to Georgia-Pacific Corporation, Portland, Oreg.
No Drawing. Filed Sept. 27, 1971, Ser. No. 184,296
Int. Cl. C05c *9/00*
U.S. Cl. 71—28 **9 Claims**

A fertilizer constituent of ammonium sulfate for dried fertilizer blending is prepared by granulating the ammonium sulfate in a drum granulator using a concentrated lignosulfonate solution as a binder, coating the granulated particles of ammonium sulfate with molten urea to have the urea solidify upon the surface of the ammonium sulfate particles, and contacting the coated particles with a dry powder as an anti-caking agent.

3,725,030
LIMITING PLANT GROWTH WITH HETEROCYCLIC ALKYLTHIOCYANATE AND ISOTHIOCYANATE

Peter E. Newallis, Leawood, Kans.; Albert J. Poje, Grandview, Mo., and Peter F. Epstein, Prairie Village, Kans., assignors to Chemagro Corporation, Kansas City, Mo.
Filed Nov. 20, 1970, Ser. No. 91,541
Int. Cl. A01n *5/00*
U.S. Cl. 71—76 **5 Claims**

Plant growth limiting compositions and methods of limiting vegetative growth with non-phytotoxic concentrations using certain alkylthiocyanates and isothiocyanates.

3,725,031
HERBICIDAL COMPOSITIONS AND METHODS OF PREPARING THEM

Leslie L. Balassa, Blooming Grove, N.Y., assignor to Balchem Corporation, Slate Hill, N.Y.
No Drawing. Filed Jan. 24, 1969, Ser. No. 793,912
Int. Cl. A01n *5/00*
U.S. Cl. 71—105 **4 Claims**

The combination of certain resinous and/or wax-like materials with various agricultural herbicides in an inert, porous carrier reduces the leaching of the herbicide from the upper 10 cm. of soil and losses of herbicide due to volatilization and thus increases the effective field life of the herbicide.

3,725,032
METHOD FOR AGGLOMERATING ORE CONCENTRATE AND RESULTANT PRODUCT

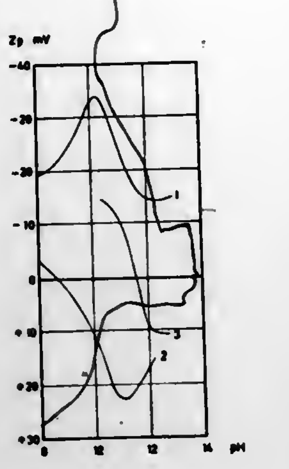
Per Gudmar Kihlstedt, Bromma, Sweden, assignor to AB Cold Bound Pellets, Djursholm, Sweden
Filed Dec. 16, 1969, Ser. No. 885,614
Claims priority, application Sweden, Dec. 20, 1968, 17614/68
Int. Cl. C21b *1/24*
U.S. Cl. 75—3 **7 Claims**

A method for agglomerating finely-divided starting material containing at least one chemically bound metal which is to be reduced out in a metallurgical process in which there is used a slag whose silicon content is higher than that of the slag forming components of the starting material, wherein the starting material is mixed with a finely-divided binder, consisting mainly of silica, and the mixture is formed into agglomerates which are maintained for from 1 to 48 hours in an atmosphere consisting mainly of steam at a temperature of 160° – 230°C and a pressure of 10 – 70 atmospheres above atmospheric.

3,725,033
AGGLOMERATING MOIST PARTICULATE MATERIAL BY ADJUSTING THE ZETA-POTENTIAL TO ZERO

Per Gudmar Kihlstedt, Bromma, Sweden, assignor to AB Cold Bound Pellets, Belestigen, Djursholm, Sweden
Filed May 19, 1970, Ser. No. 38,856
Claims priority, application Sweden, May 27, 1969, 7,391/69
Int. Cl. C21b *1/08;* **C22b** *1/28;* **B01l** *1/02*
U.S. Cl. 75—3 **7 Claims**

A method in pelletizing processes for agglomerating moist particulate material, the method comprising the steps of neutralizing or removing the electric charge of individual constituent particles to prevent the repulsion of said particles by each other, thereby to provide a firmly packed agglomerate.



3,725,034
METHOD OF PRODUCING CARBON AND IRON-CONTAINING BRIQUETTES

Robert T. Joseph, Richboro, Pa., and Josiah Work, Harlingen, Tex., assignors to FMC Corporation, New York, N.Y.
Filed Nov. 1, 1971, Ser. No. 194,559
Int. Cl. C21b *1/28*; **C22b** *1/24*

U.S. Cl. 75—4 **4 Claims**

A novel composite briquette useful in producing iron is made by briquetting a reactive coal calcinate made as described in Work et al. U.S. Pat. Nos. 3,140,241 and 3,140,242, and iron oxide, with a bituminous binder, using proportions to insure at least 50 percent carbon plus hydrogen by weight, then curing the briquettes in the presence of a gas containing at least 5 percent of oxygen at briquette temperature of 450° to 575°F, and then further heating the cured briquettes at 1600° to 1800°F, whereby at least 90 percent of the iron is reduced. The briquette is distinguished by consisting of iron particles embedded and evenly distributed through a uniform solid carbonaceous structure.

3,725,035
PROCESS FOR MAKING GOLD POWDER

Oliver A. Short, and Richard V. Weaver, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 15,212, Feb. 27, 1970, abandoned. This application July 2, 1971, Ser. No. 159,486
Int. Cl. C22b *11/04*

U.S. Cl. 75—.5 A **19 Claims**

A process for producing precipitated gold powder comprised of gold flakes, gold spheres or mixtures thereof by reducing a gold salt solution with selected reducing agents, in the presence of a protective colloid, at an elevated temperature. The process parameters provide a means for controlling the size and shape of the precipitated gold powder which has specific applications in the decorative and/or electronics industries (i.e., metallizing compositions).

3,725,036
PROCESS FOR MAKING SMALL PARTICLES

John E. Ehrreich, Wayland, and Adrian R. Reti, Cambridge, Mass., assignors to Graham Magnetics, Inc., Graham, Tex.
No Drawing. Filed Mar. 24, 1971, Ser. No. 127,850
Int. Cl. B22f *9/00*; **H01f** *1/06, 1/09*

U.S. Cl. 75—.5 A **15 Claims**

A process for making metallic particles of sub-micron particle size wherein a soluble metallic salt is reacted with a strong reducing agent in a solvent medium which, in addition to the aforesaid reactants, comprises a silane solute which has a strong chemical affinity for the newly-formed metallic surface. The invention also encompasses products formed by the aforesaid process, e.g. iron and cobalt powders characterized by a surprisingly high bulk density when compared to metal particles prepared by somewhat similar processes.

3,725,037
FOAMED ALUMINUM

Currie B. Berry, Jr., and Alex R. Valdo, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.
No Drawing. Filed Feb. 25, 1971, Ser. No. 118,973
Int. Cl. C22c *1/06, 21/00*

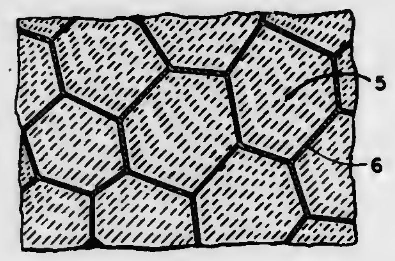
U.S. Cl. 75—20 F **7 Claims**

A method of making foamed aluminum having increased strength wherein a portion of the aluminum used in the foaming process is scrap foamed aluminum.

3,725,038
PROCESS FOR MAKING POLYGON COKE IN COKING CHAMBERS AND COKE SO PRODUCED

Werner Wenzel, Hermann Schenck, and Heinrich-Wilhelm Gudenau, all of Aachen, Germany, assignors to said Wenzel and Schenck, by said Gudenau
Filed Jan. 18, 1971, Ser. No. 107,231
Claims priority, application Germany, April 14, 1970, P 20 17 816.9
Int. Cl. C21b *1/10*; **B01j** *2/12*; **C22b** *1/14*

U.S. Cl. 75—46 CA **2 Claims**



A process for producing coke in polygonal shape in indirectly heated coke oven chambers which comprises applying to shaped pieces of fine-grained, including pelletized or briquetted, coal, an intimate mixture of coal and iron ore, both of fine grain-size, thereby forming a shell on said pieces before subjecting them to the coking operation. Preferably, the grain size of the coal and the iron ore are below 1 mm, the ratio of coal to iron ore in the shell 33% by weight: 67 percent by weight. The invention also comprises the polygonal coke made by the process.

3,725,039
RECOVERY OF NICKEL CONCENTRATES FROM LATERITE ORES

Tage L. B. Jepsen, Gabbs, Nev., assignor to Basic Incorporated, Cleveland, Ohio
No Drawing. Filed Dec. 10, 1970, Ser. No. 96,951
Int. Cl. C22b *1/08*

U.S. Cl. 75—2 **11 Claims**

A process is disclosed for the recovery of nickel concentrates from laterite ores by segregation roasting wherein the ore after drying for removal of at least part of the free water is mixed with a chloridizing agent and a carbonaceous reductant, such as coal or coke, before roasting. This mixture is heated to temperatures of 900° to 1050° C. while maintaining a slightly reducing atmosphere. Preferred chloridizing agent is a mixture of sodium chloride and calcium oxide. The resulting sinter is subjected to suitable concentration for final nickel recovery.

3,725,040
METHOD OF OPERATING A VARIABLE FLAME OXY-FUEL BURNER

Robert D. Jones, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Original application May 28, 1968, Ser. No. 733,100, now Patent No. 3,578,793, dated May 18, 1971. Divided and this application July 23, 1970, Ser. No. 63,995
Int. Cl. C21c *7/00*

U.S. Cl. 75—60 **4 Claims**

An oxy-fuel burner for use in a metallurgical furnace is disclosed which can be controlled to regulate the configuration of the burner flame to provide a flame shape varying from a wide "umbrella" shaped flame to a narrow "pencil" shaped flame. Several methods of using such burners in metallurgical furnaces are also disclosed.

3,725,041
DEOXIDIZING METAL

Sundaresan Ramachandran, Natrona Heights, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Sept. 25, 1970, Ser. No. 75,738
Int. Cl. C21c *7/06*

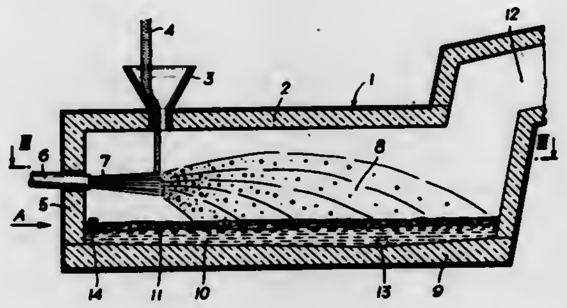
U.S. Cl. 75—60 **10 Claims**

A method of deoxidizing metal while maintaining the carbon content of the metal at a level about equal to or lower than the level prior to deoxidizing. It comprises the steps of introducing hydrocarbon deoxidizer and diluent gas into a vessel containing molten metal, determining the effect of the hydrocarbon deoxidizer and diluent gas upon the carbon content of the metal and controlling the proportion of hydrocarbon deoxidizer to diluent gas so that the average rate of carbon leaving the vessel is about equal to or greater than the average rate of carbon being introduced into the vessel.

3,725,042
METHOD FOR IMPROVING THE LIFE OF THE REFRACTORY LINING OF THE REFINING VESSEL OF A SPRAY REFINING PLANT

Alois Hager, Linz, Austria, assignor to Vereinigte Octerreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Feb. 17, 1971, Ser. No. 116,118
Claims priority, application Austria, Feb. 20, 1970, 1,555/70
Int. Cl. C21c *7/00*

U.S. Cl. 75—60 **4 Claims**

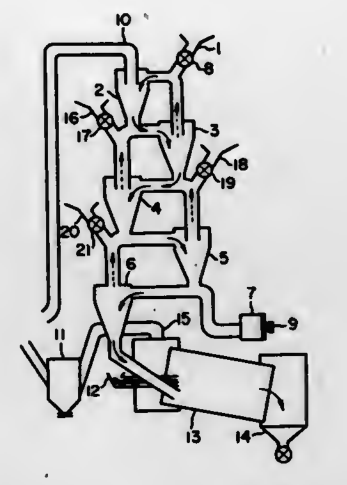


The invention relates to a method for improving the life of a refractory lining of a refining vessel of a spray-refining plant in which a pig iron stream running in vertical direction into the refining vessel designed as a hearth of long extension is atomized by at least one refining gas jet which is blown in about horizontally under formation of a spraying cone, comprising introducing cooling air on both sides of the spraying cone along both side walls of the refining vessel. By this provision the spraying cone is kept away from the side walls of the refining vessel. Further advantages gained are that the refining gas consumption is reduced and that the course of the reaction progresses more calmly because the occurrence of whirls in the area of the spraying cone is prevented.

3,725,043
METHOD FOR SEGREGATING METALS CONTAINED IN THE OXIDE ORES THEREOF

Tadashi Kawai and Hideaki Kenma, Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan
Filed Feb. 26, 1971, Ser. No. 119,101
Claims priority, application Japan, May 26, 1970, 45/44,492
Int. Cl. C21c *7/00*

U.S. Cl. 75—72 **9 Claims**



A method for obtaining a concentrated metal-containing product from metal oxide ore wherein the oxide ore is preheated in a preheating zone and the preheated ore is contacted with a halogenating agent and a reducing agent in a reaction zone to react therewith, in which oxide ore is flowed through a preheating zone consisting of at least two cyclones connected in series, parallel or combinations thereof, passing a hot gas free of any exhaust gas from the reaction zone in surface contact with said oxide ores in the preheating zone, flowing continuously the thus preheated ores into the reaction zone while substantially preventing the atmosphere of the preheating zone from entering the reaction zone and withdrawing the exhaust gas generated in the reaction zone therefrom.

3,725,044
METHOD OF CONTINUOUS PROCESSING OF SULFIDE ORES

Toshikazu Morisaki, and Kazuo Tachimoto, both of Tokyo-to, Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Dec. 1, 1969, Ser. No. 881,226
Claims priority, application Japan, Dec. 7, 1968, 43/89818
Int. Cl. C22b *15/06, 15/14*

U.S. Cl. 75—74 **4 Claims**

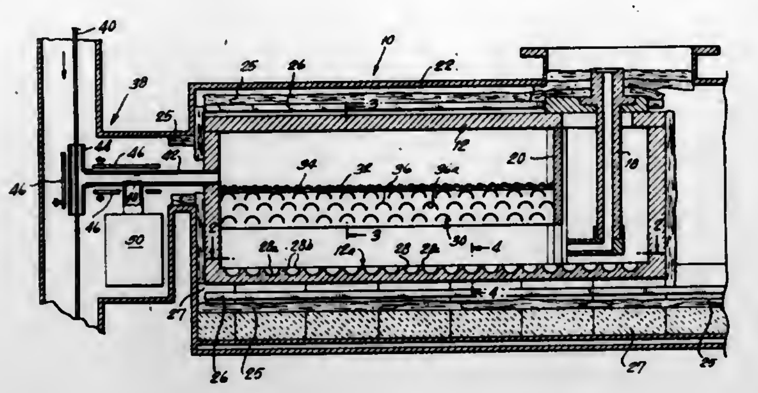
A continuous processing of sulfide ores in utilization of a combination of smelting, slagging, and blister furnaces, or of smelting and blister furnaces.

3,725,045
APPARATUS AND METHOD FOR VAPORIZING MOLTEN METAL

John M. Roblin, Cleveland, and Frank J. Cole, Parma, Ohio, and James G. Bourne, Winchester, Mass., assignors to Republic Steel Corporation, Cleveland, Ohio
Filed June 24, 1970, Ser. No. 49,370
Int. Cl. C22b *7/00, 9/00, 19/04*

U.S. Cl. 75—93 **28 Claims**

Apparatus and method for vaporizing molten metal without entrainment of liquid droplets includes providing a pool of molten metal in a chamber having plural parallel elongated grooves forming a scalloped bottom portion, the bottom and sides of each groove being rounded. The top of the pool of molten metal is maintained at a level just above or below the tops of the grooves. The metal in the grooves is heated to generate vapor. To remove any droplets from the metal vapor it is passed through a baffle defining a tortuous path and then through a filter made of a felt material that is non-reactive with the metal vapor. When the metal vapor is zinc, the felt material is graphite felt. The vaporized metal is then removed from the chamber and deposited as a coating on a substrate.



3,725,046

SOLVENT EXTRACTION PROCESS FOR THE RECOVERY OF COPPER VALUES

James Albert Hartlage, Burnsville, and Alvin Dale Cronberg, Bloomington, both of Minn., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 22, 1971, Ser. No. 117,826

Int. Cl. C22b ***15/08***

U.S. Cl. 75—101 BE **7 Claims**

The coalescence rate of an aqueous/liquid hydrocarbon emulsion system is enhanced by the presence of an alkylated phenol as a minor part of the organic phase. Such hydrocarbon solutions further containing a chelation metal collector can be advantageously employed in the liquid ion exchange process for the extractive recovery of metal values from dilute aqueous solutions thereof.

3,725,047

RECOVERY OF NOBLE METALS

Michael Schneider, Munich, Germany, assignor to Girdler-Sudchemie Katalysator G.m.b.H., Munich, Germany

No Drawing. Filed June 2, 1971, Ser. No. 149,374

Claims priority, application Germany, June 4, 1970, P 20 27 477.5

Int. Cl. C22b ***61/00***

U.S. Cl. 75—108 **5 Claims**

Noble metals, particularly metals of the platinum group and gold are separated from other materials in aqueous acidic solution by precipitation in elemental form by reaction with an alkene or other compound containing a C—C double bond, in the presence of an oxidizing agent such as oxygen.

3,725,048

VALVE SEAT MATERIAL FOR AN INTERNAL COMBUSTION ENGINE

Soichiro Honda, Tokyo, Yoshitoshi Hagiwara, Yamato-machi, and Kenya Motoyoshi, Itami-shi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, and Sumitomo Denki Kogyo Kabushiki Kaisha, Higashi-ku, Osaka-shi, Japan

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,467

Claims priority, application Japan, Sept. 15, 1970, 45/80,841

Int. Cl. C22b ***9/00;*** **C22c** ***39/54***

U.S. Cl. 75—122 **3 Claims**

A valve seat of an internal combustion engine is composed of an alloy of 0.3–20% by weight of lead, 5–45% by weight of copper or copper oxide, 0.2–4% by weight of carbon, the balance being iron.

3,725,049

SEMI-SKILLED HIGH TENSILE STRENGTH STEELS

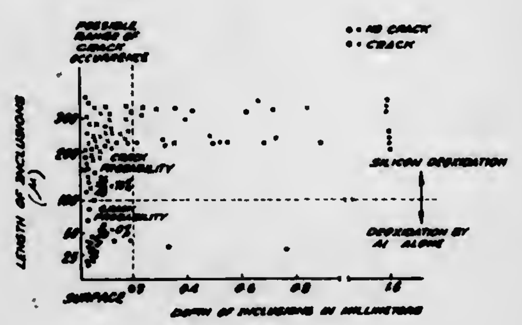
Susumu Satoh, Muroran, Hideki Tanaka, Tokyo, and Shujiro Ono and Hiroshi Horiguchi, Muroran, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 617,112, Feb. 20, 1967. This application Aug. 12, 1970, Ser. No. 63,307

Claims priority, application Japan, Mar. 11, 1966, 41/15,060; July 21, 1966, 41/47,892

Int. Cl. C22c ***39/26, 39/54***

U.S. Cl. 75—123 D **5 Claims**



Semi-killed steel composition exhibiting high tensile strength and containing manganese and at least one of the metals columbium and vanadium while being devoid of large non-metallic inclusions. The semi-killed steel composition is characterized in that it has been deoxidized by aluminum alone whereby the formation of inclusions of manganese silicate larger than 100μ is avoided. Further, the alumina inclusions formed by the aluminum deoxidation are not larger than 100μ. There is little tendency toward crack formation in articles manufactured from the instant steel composition.

3,725,050

COLD WORK DIE STEEL

John Y. Riedel, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Filed Mar. 2, 1970, Ser. No. 15,482

Int. Cl. C22c ***39/14***

U.S. Cl. 75—126 **2 Claims**

A malleable cold work die steel containing large amounts of titanium carbides in a matrix of tempered martensite.

3,725,051

METHOD OF PURIFYING LOW-CARBON FERROCHROME

Cecil George Chadwick, Lewiston, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 14, 1970, Ser. No. 80,811

Int. Cl. C22c ***1/06, 39/14***

U.S. Cl. 75—130.5 **1 Claim**

Method for lowering the nitrogen, carbon and oxygen content of ferrochromium alloy by heating the alloy under vacuum.

3,725,052

NON-MAGNETIC RESILIENT MANGANESE-COPPER ALLOY HAVING A SUBSTANTIALLY TEMPERATURE-FREE ELASTIC MODULUS

Hakaru Masumoto, Shohachi Sawaya, and Michio Kikuchi, Sendai, Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai, Japan

Filed Sept. 10, 1970, Ser. No. 71,189

Claims priority, application Japan, Sept. 13, 1969, 44/72,548, 44/72,549; Mar. 13, 1970, 45/20,805; Aug. 18, 1970, 45/71,724

Int. Cl. C22c ***33/00, 39/00***

U.S. Cl. 75—134 M **24 Claims**

Non-magnetic resilient manganese-copper alloys having a temperature coefficient of Young's modulus in a range of -20×10^{-5} to $+20\times10^{-5}$, essentially consisting of 30 to 95 wt. percent of manganese, less than 70 wt. percent of copper, and 0 to 38 wt. percent of one or more optional sub-ingredients selected from the group consisting of 0 to 38 wt. percent of iron, molybdenum, tungsten, indium, and titanium, 0 to 30 wt. percent of nickel, 0 to 27 wt. percent of vanadium, gold, silver, and tantalum, 0 to 25 wt. percent of cobalt, 0 to 24 wt. percent of zirconium, palladium, cadmium, germanium, chromium, selenium, bismuth, samarium, niobium, antimony, aluminum, silicon, tin, tellurium, and gadolinium, and 0 to 10 wt. percent of zinc, beryllium, and boron.

3,725,053

NON-MAGNETIC RESILIENT MANGANESE-NICKEL ALLOY HAVING A SMALL TEMPERATURE COEFFICIENT OF ELASTIC MODULUS AND METHOD FOR MANUFACTURING THE SAME

Hakaru Masumoto, Shohachi Sawaya, and Michio Kikuchi, Sendai, Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Sendai, Japan

Filed Sept. 10, 1970, Ser. No. 71,190

Claims priority, application Japan, Sept. 13, 1969; 44/72,547; Nov. 18, 1969, 44/91,904; Mar. 11, 1970, 45/20,349; Aug. 7, 1970, 45/68,625

Int. Cl. C22c ***33/00, 39/00***

U.S. Cl. 75—134 M **25 Claims**

Non-magnetic resilient manganese-nickel alloys having a temperature coefficient of Young's modulus in a range of -20×10^{-5} to $+20\times10^{-5}$, essentially consisting of 40 to 95 wt. percent of manganese, less than 40 wt. percent, preferably 5 to 40 wt. percent of nickel, and 0 to 32 wt. percent in total of optional subingredient or subingredients selected from the group consisting of 0 to 32 wt. percent of chromium, 0 to 30 wt. percent of iron, molybdenum, tungsten, indium, and titanium, 0 to 20 wt. percent of cobalt, vanadium, gold, silver, tantalum, zirconium, palladium, cadmium, germanium, selenium, bismuth, samarium, niobium, antimony, aluminum, silicon, tin, tellurium, and gadolinium, and 0 to 10 wt. percent of zinc, beryllium, and boron.

3,725,054

ALUMINUM-MOLYBDENUM-TITANIUM MASTER ALLOY

Frederick H. Perfect, Wyomissing, Pa., assignor to Reading Alloys, Inc., Robesonia, Pa.

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,322

Int. Cl. C22c ***21/00***

U.S. Cl. 75—134 F **1 Claim**

This invention relates to master alloys containing about 35 to 50% molybdenum, about 6.5 to 15% titanium, balance aluminum, and not more than about 0.1%, by weight, oxygen, which are used in preparing titanium base alloys.

3,725,055

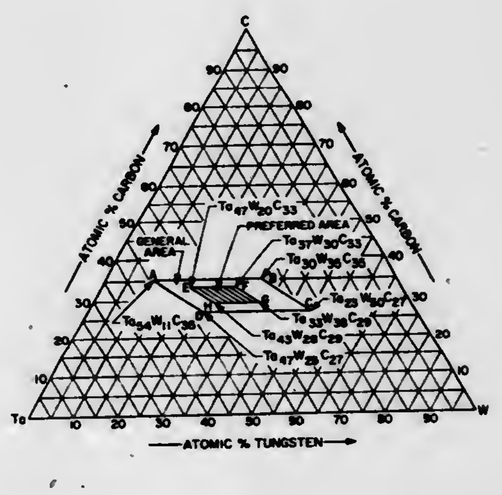
CARBIDE-METAL COMPOSITES

Erwin Rudy, Beaverton, Oreg., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed July 29, 1970, Ser. No. 59,064

Int. Cl. C22c ***29/00***

U.S. Cl. 75—134 F **23 Claims**



This patent describes a refractory metal-bonded carbide alloy for use in cutting tools and in other applications where high hardness and abrasion resistance are required. The desired fine-grained composite structure is obtained by the disproportionation of a precursor $(Ta,W)_2C$-based subcarbide phase into a monocarbide and a metal alloy phase. The precursor subcarbide phase originates from ternary or higher order alloys of refractory transition metals and carbon. Consolidation of the composites can be accomplished by melting and casting or powder metallurgy techniques.

3,725,056

ALUMINUM BRONZE ALLOY HAVING IMPROVED MECHANICAL PROPERTIES AT ELEVATED TEMPERATURES

Quentin F. Ingerson, Wauwatosa, Wis., assignor to Ampco-Pittsburgh Corp., Milwaukee, Wis.

No Drawing. Filed Feb. 25, 1971, Ser. No. 119,001

Int. Cl. C22c ***9/00***

U.S. Cl. 75—154 **4 Claims**

An aluminum bronze alloy having high resistance to intergranular oxidation and improved ductility at elevated temperatures. The alloy comprises from 5 to 8% by weight of aluminum, from 1.6 to 2.9% by weight of iron, from 0.005 to 0.69% by weight of tin, silver or mixtures thereof, from 0.02 to 0.14% vanadium, from 0.05 to 0.5% by weight of zirconium and the balance copper. In the alloy composition the vanadium and zirconium cooperate to provide improved ductility as well as strength at elevated temperatures.

3,725,057

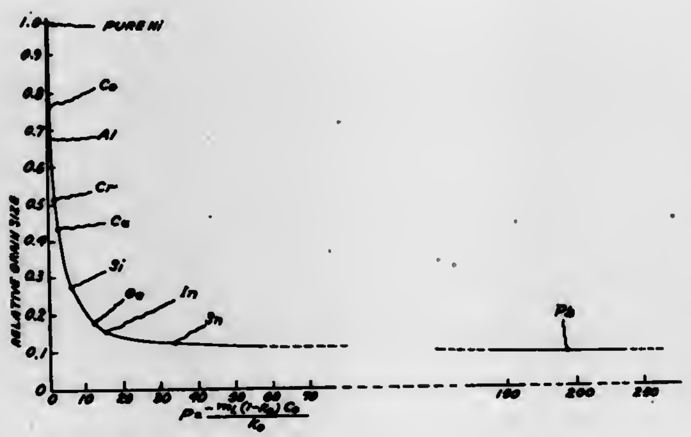
GRAIN SIZE OF METAL CASTINGS

Lemuel A. Tarshis, Latham, and James L. Walker, Schenectady, N.Y., assignors to General Electric Company

Continuation-in-part of application Ser. No. 882,512, Dec. 5, 1969. This application Sept. 21, 1971, Ser. No. 182,406

Int. Cl. C22c *1/02*

U.S. Cl. 75—170 **6 Claims**



Method of producing a fine-grained or changed grain size alloy casting. A definite relationship is disclosed between cast grain size and a parameter which is obtainable from existing phase diagram information. This parameter is

$$P=\frac{-(m_L)(1-K_o)C_o}{K_o}$$

wherein m_L is the liquidus line slope, K_o is the solute distribution coefficient, and C_o is the bulk composition in terms of atomic percent of the grain size refining additive.

3,725,058

DUAL LAYERED PHOTORECEPTOR EMPLOYING SELENIUM SENSITIZER

Yoshiki Hayashi, and Masanaru Hasegawa, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 30, 1969, Ser. No. 889,118

Int. Cl. G03g *5/02*

U.S. Cl. 96—1.5 **13 Claims**

An electrophotographic photosensitive plate is composed of an electrically conducting plate having adjacent thereto a vitreous selenium layer, said layer having adjacent thereto a layer of organic photoconductive insulating material which is substantially non-light sensitive in the visible ray region.

3,725,059

METHOD OF CLEANING AN ELECTROSTATO-GRAPHIC IMAGING SURFACE

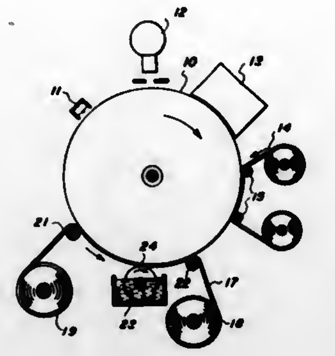
Richard J. Komp, Bowling Green, Ky., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 19, 1969, Ser. No. 886,634

Int. Cl. G03g *13/14, 13/22*

U.S. Cl. 96—1.4 **10 Claims**

An electrostatographic imaging system wherein the imaging surface is cyclically cleaned of residual nonaqueous liquid developer by contacting the imaging surface with a cleaning liquid which is miscible with the nonaqueous liquid developer to dissolve substantially all residual liquid developer. Removal of the miscible cleaning liquid and dissolved liquid developer from the imaging surface may be accomplished with a thin film of liquid being permitted to remain on the imaging surface for every cycle.



3,725,060

HEMATEIN OR HEMATOXYLIN-CONTAINING ZINC OXIDE PHOTOCONDUCTIVE LAYERS

Masaaki Taimoto, and Satoru Honjo, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 24, 1971, Ser. No. 183,706

Int. Cl. G03g *5/08*

U.S. Cl. 96—1.7 **4 Claims**

An electrophotographic layer composed of a zinc oxide photoconductor, a resinous binder and at least one compound selected from hematein and hematoxylin.

3,725,061

METHOD OF PRODUCING AND USING A PHOTO-CONDUCTIVE RECORDING MEDIUM

Karel Verhille, Mortsel-Antwerp, and André Jan Conix, Antwerp, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Continuation-in-part of application Ser. No. 872,424, Oct. 29, 1969, which is a continuation of application Ser. No. 560,844, June 27, 1966, both now abandoned. This application June 11, 1971, Ser. No. 152,442

Claims priority, application Great Britain, June 25, 1965, 27,129/65

Int. Cl. G03g *5/08*

U.S. Cl. 96—1.8 **6 Claims**

A method of producing an electrophotographic recording material, which comprises

(1) dissolving in an aqueous medium
  (a) a melamine-formaldehyde having free methylol groups and selected from a melamine-formaldehyde resin, a urea-formaldehyde resin and mixtures thereof, and
  (b) a water-soluble salt of a volatile base and a copolymer of vinyl acetate and an α,β-ethylenically unsaturated compound containing a carboxylic acid group, having *a/b* varying in parts by weight from $^{5}/_{95}$ to $^{60}/_{40}$,
(2) dispersing photoconductive particles in said medium,
(3) coating said medium on a conductive support, and
(4) curing the coated photoconductive layer on drying.

The photoconductive substance is preferably photoconductive zinc oxide and the mixture of binding agents preferably consists of (a) melamine-formaldehyde resin and (b) a salt of ammonia and a copoly(vinylacetate/crotonic acid) which contains at least 90 mol percent of vinyl acetate groups in a ratio of *a/b* varying in parts by weight from $^{5}/_{95}$ to $^{60}/_{40}$.

3,725,062

COLOR DIFFUSION PROCESSES UTILIZING HYDROQUINONES WHICH PROVIDE DYE IMAGE MATERIALS UPON OXIDATION IN ALKALINE CONDITIONS

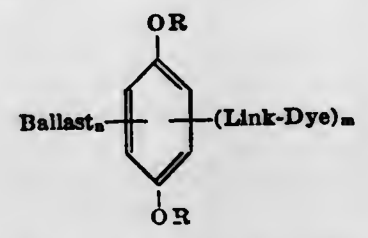
Albert E. Anderson, Penfield, and Kin Kwong Lum, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 6, 1971, Ser. No. 160,062

Int. Cl. G03c *5/54, 1/40, 7/00*

U.S. Cl. 96—3 **11 Claims**

Color diffusion transfer processes are described which employ dye image-providing materials which are alkali-cleavable upon oxidation to release a dye or dye precursor which diffuses to a dye image-receiving layer. The compounds have the formula:



wherein Link is S or O, R is H or a hydrolyzable entity, *n* is 1 to 3 and *m* is 1 to 3.

3,725,063

DEVELOPER SCAVENGERS FOR IMAGE TRANSFER SYSTEMS

Eugene F. Wolfarth, Pittsford; Donald A. Smith, Rochester; Charles F. Farran, Pittsford, and Glen M. Dappen, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 13, 1971, Ser. No. 106,281

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 D **16 Claims**

A developer scavenger layer comprising an isocyanate-bisulfite addition product and a polymeric binder is useful for reducing background stain in a dye image-receiving element of a color diffusion transfer system utilizing immobile couplers which form diffusible dyes.

3,725,064

PHOTOSENSITIVE PROPARGYL POLYMER COMPOSITION AND METHOD OF USING

Nathan D. Field, Allentown, and Harlan B. Freyermuth, Easton, both of Pa., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 35,551, May 7, 1970, Pat. No. 3,657,197. This application Nov. 8, 1971, Ser. No. 196,777

Int. Cl. G03c *1/68, 1/70*

U.S. Cl. 96—35.1 **8 Claims**

A light-sensitive solvent soluble film-forming polymer containing a propargyl group is disclosed. The propargyl group-containing polymers can be used as a photoresist with or without a sensitizer. In another aspect of the disclosure, a sensitizer-stabilizer comprising a xanthen-9-one or a thioxanthen-9-one is disclosed.

3,725,065

METHOD FOR MAKING A KINESCOPE COMPRISING A COLOR SELECTION MASK WITH TEMPORARY CORRIDORS

Glenn Roland Fadner, Jr., Landisville, Pa., assignor to RCA Corporation

Filed Sept. 30, 1970, Ser. No. 76,907

Int. Cl. G03c *5/00*

U.S. Cl. 96—36.1 **9 Claims**

Method for producing a color kinescope by steps comprising the provision of a perforated etch-resistant layer on a substrate and providing apertures in the substrate, which apertures are in substantial register with and individually larger than the openings of the perforated layer; providing a heat-resistant layer on the exposed surface of the perforated etch-resistant layer to produce a workpiece; heating the workpiece to an elevated temperature (e.g., to the annealing temperature) and shaping the substrate-heat resistant layer assembly to produce a temporary mask; producing an image screen with the temporary mask; removing the heat-resistant layer and any remains of the etch-resistant layer from the apertured substrate to produce a color-selection mask; and incorporating the color-selection mask and the image screen in a kinescope.

3,725,066

DIAZO-TYPE MULTICOLOR REPRODUCTION PROCESS

Kouzi Nihyakumen, Toshihiro Kouchi, and Taizo Yokoyama, Osaka, Yasuo Ueda, Kobe, and Yasutoki Kamezawa and Tatsuo Aizawa, Osaka, Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

No Drawing. Filed Aug. 31, 1970, Ser. No. 68,518

Claims priority, application Japan, Sept. 1, 1969, 44/68,938

Int. Cl. G03c *5/34, 1/58*

U.S. Cl. 96—49 **8 Claims**

A coloring material in use for the diazo-type multicolor reproduction which comprises a thermovolatile or thermosublimative acid addition salt of a thermovolatile or themosublimative azo coupling component having an amino group, and a diazo-type multicolor reproduction process using such coloring material.

3,725,067

SILVER HALIDE EMULSION CONTAINING 1-H-PYRAZOLO[3,2-c]-s-TRIAZOLE COLOR COUPLERS

Joseph Bailey, Harrow Middlesex, and Edward B. Knott, Bushey Heath, England, and Peter A. Marr, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 778,329, Nov. 22, 1968. This application Jan. 15, 1971, Ser. No. 106,892

Claims priority, application Great Britain, Jan. 15, 1970, 1,957/70

Int. Cl. G03c *7/00, 7/40*

U.S. Cl. 96—56.5 **7 Claims**

1-H-pyrazolo[3,2-c]-s-triazoles having utility as photographic color couplers possessing good coupling activity and forming dyes of good spectral absorption characteristics and also utility as precursors in the formation of various methine sensitizing dyes.

3,725,068

PROCESS FOR THE PHOTOGRAPHIC DEVELOPMENT OF SILVER SALTS

Max Meier, Fribourg, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,483

Claims priority, application Switzerland, Apr. 17, 1970, 5,796/70

Int. Cl. G03c *5/30*

U.S. Cl. 96—66 HD **7 Claims**

The present process for the photographic development of silver salts is carried out with 1,4-diazine compounds reduced at most to the dihydro stage. The latter are produced from the 1,4-diazines by reduction in situ in an acid medium.

3,725,069

DIAZO LITHOGRAPHIC COMPOSITION AND ARTICLE

Oswyn K. Hammond, Westbrook, Maine, assignor to Scott Paper Company, Delaware County, Pa.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,067

Int. Cl. G03c *1/54;* **G03f** *7/08*

U.S. Cl. 96—75 **4 Claims**

Photosensitive compositions comprising a copolymer of styrene and allyl alcohol and a lithographic diazo compound.

3,725,070

PHOTOGRAPHIC ELEMENT COMPRISING FILM FORMING POLYMERIC SUPPORT

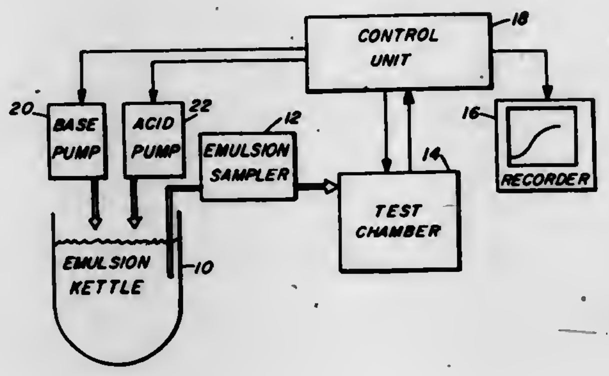
Frederick L. Hamb and John C. Wilson, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed May 7, 1971, Ser. No. 141,445
Int. Cl. G03c *1/78*
U.S. Cl. 96—87 R **5 Claims**

Novel high molecular weight polymers of 1,1′-spirobi [indan] diols or diamines, dicarboxylic acids of four or more carbon atoms and other diols which are useful in the preparation of photographic film bases.

3,725,071

METHOD AND APPARATUS FOR CONTROLLING CHARACTERISTICS OF FOGGED SILVER HALIDE EMULSIONS

David C. Seelbinder and Clinton S. Ballard, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of abandoned application Ser. No. 771,925, Oct. 30, 1968. This application Mar. 29, 1971, Ser. No. 129,259
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 **8 Claims**



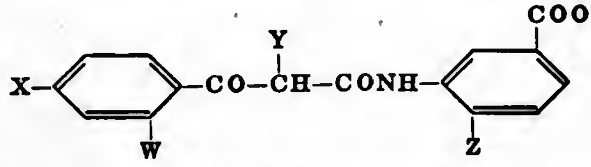
Method and apparatus for maintaining optimum fog levels in fogged silver halide emulsions by controlling the development rate characteristics thereof. A developing agent is added to a sample of the liquid emulsion prior to its coating on a substrate, and the density of the developing sample is measured at first and second time intervals following the addition of the developer. The ratio of the two density measurements is then compared with a predetermined value representing optimum development rate characteristics, and the pH of the emulsion is altered in the event the measured density ratio differs from the predetermined value, the pH being increased in the event the density ratio is less than the predetermined value, and decreased if the density ratio is greater than the predetermined value. The pH of the emulsion is held at this higher or lower value for such time as is required to bring the density ratio of the emulsion to approximately the predetermined value representative of optimum fog level just prior to coating.

3,725,072

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS CONTAINING A NOVEL YELLOW-FORMING COUPLER

Makoto Yoshida, Momotoshi Tsuda, Yasushi Oishi, and Kiyoshi Nakazyo, Ashigara-machi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 19, 1970, Ser. No. 81,939
Claims priority, application Japan, Oct. 17, 1969, 44/83,029
Int. Cl. G03c *7/60*
U.S. Cl. 96—55 **44 Claims**

A light-sensitive material for producing a colored image comprising a support and a silver-halide emulsion layer containing a yellow-forming coupler having the formula:



wherein R represents an aliphatic radical containing from 8 to 20 carbon atoms, W and X each represents a member selected from the group consisting of a hydrogen atom and a lower alkoxy group, wherein at least one of W and X represents an alkoxy group, Y represents a member selected from the group consisting of a hydrogen atom and a halogen atom, and Z represents a halogen atom, and process for preparing same is disclosed.

3,725,073

LIGHT DEVELOPABLE, DIRECT WRITING, SILVER HALIDE EMULSIONS CONTAINING GOLD, IODINE, LEAD AND COPPER

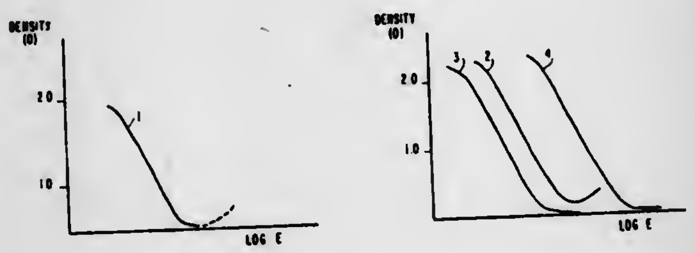
Robert E. Heeks, Penfield, and Donald P. Sullivan, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
No Drawing. Filed May 25, 1967, Ser. No. 641,135
Int. Cl. G03c *1/28*
U.S. Cl. 96—108 **1 Claim**

A photographic emulsion of the silver chlorobromide print-out type, may be sensitized with a soluble iodide salt and a soluble gold salt. Optimum results may be obtained by also including a soluble lead salt, a soluble copper salt and certain spectral sensitizing dyes.

3,725,074

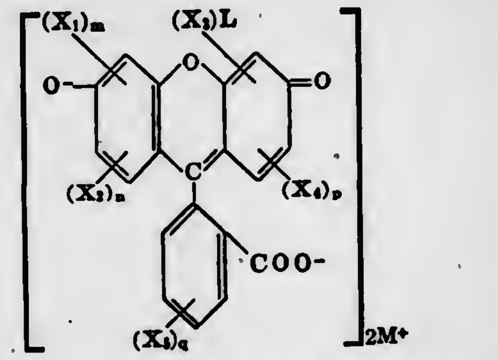
FOGGED, DIRECT POSITIVE SILVER HALIDE EMULSIONS CONTAINING HYDROXYPHTHALEIN DYES AND SULFONATED COMPOUNDS

Keisuke Shiba, Masanao Hinata, Koutaro Yamasue, and Tokiharu Kondo, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 19, 1971, Ser. No. 125,992
Claims priority, application Japan, Mar. 19, 1970, 45/23,343
Int. Cl. G03c *1/08*
U.S. Cl. 96—122 **14 Claims**



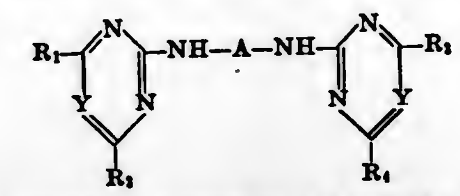
A direct positive silver halide photographic emulsion containing at least one dye represented by the general formula:

(I)

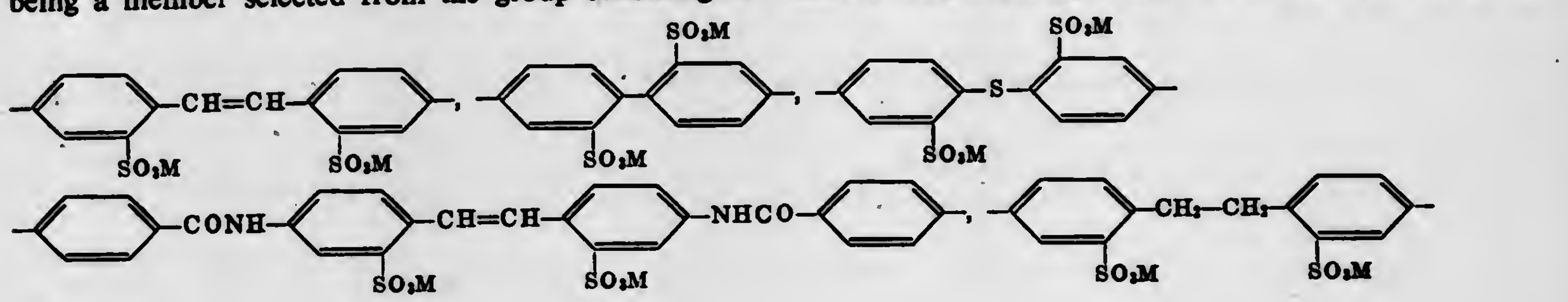


wherein X_1, X_2, X_3, X_4 and X_5 each represents a halogen atom; *m*, *n*, L, and *p* represent 0 or 1; *q* represents 0, 1, 2, 3 or 4; providing that when said *m*, *n*, L, *p* and *q* are 0, said X_1, X_2, X_3, X_4 and X_5 each represents a hydrogen atom; and M represents a member selected from the group consisting of a hydrogen atom, an alkali metal atom, NH_4, and an alkaline earth metal; together with at least one compound represented by the general formula:

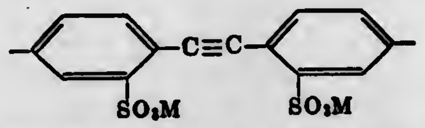
(II)



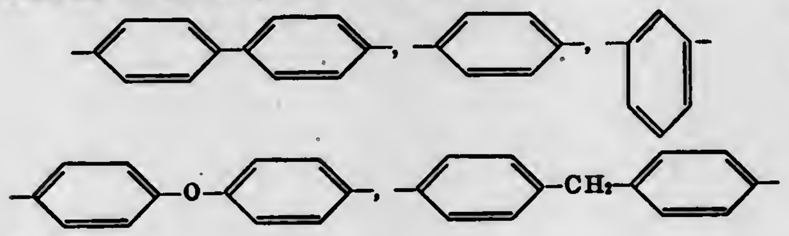
wherein Y represents a member selected from the group consisting of =CH— and =N—; R_1, R_2, R_3, and R_4 each represents a member selected from the group consisting of a hydrogen atom, a hydroxyl group, an alkoxyl group, an aryloxyl group, a halogen atom, a heterocyclic nucleus, an alkylthio group, a heterocyclylthio group, an arylthio group, an amino group, an alkylamino group, a substituted alkylamino group, an arylamino group, a substituted arylamino group, a heterocyclylamino group, an aryl group and a mercapto group; and —A— represents at least one member defined as A_1 and A_2, said A_1 being a member selected from the group consisting of:



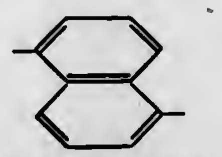
and



wherein M represents a member selected from the group consisting of a hydrogen atom and a cation giving water solubility to said compound; and said A_2 being a member selected from the group consisting of:



and



providing that when A is A_2, at least one of said R_1, R_2, R_3 and R_4 is a substitutent containing $—SO_3M$, wherein M is the same as defined above; and a silver halide photohalide photographic emulsion.

3,725,075

METHOD OF RECOVERING PROTEINS FROM MICROBIAL CELLS

Tadashi Muroi, Yoshitaka Oguri, and Masahiko Ishida, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 28, 1971, Ser. No. 193,490
Claims priority, application Japan, Oct. 28, 1970, 45/94,348
Int. Cl. A23j *1/00, 1/18*
U.S. Cl. 99—14 **14 Claims**

A method of recovering proteins from microbial cells which comprises preparing an extract containing proteins and separating the proteins by isoelectric point precipitation from the extract, said isoelectric point precipitation being performed in the presence of a water soluble salt selected from the group consisting of alkali metal salts and ammonium salts in such an amount that the ionic strength of the salt ranges between 0.002 and 0.2 whereby precipitates of proteins aggregate to grow in size and the precipitates can be separated easily to increase a yield of protein recovery.

3,725,076

COFFEE OF IMPROVED AROMA AND FRESHNESS RETENTION

Arthur Stefanucci, Clifton, N.J., and Douglas R. Harnisch, Riverdale, Joseph E. Coogan III, Tarrytown, and Edward L. Scarsella, Bedford Hills, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,374
Int. Cl. A23f *1/02*
U.S. Cl. 99—68 **3 Claims**

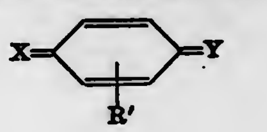
Roasted coffee comprising a blend of non-high grade coffee which has been intermittently quenched prior to completion of the roast and high grade coffee quenched with cold water upon completion of the roast, is subjected to freezing and ground in the frozen state to produce a roasted and ground product characterized by improved aroma retention and freshness after storage under non-refrigerated conditions.

3,725,077

SILVER HALIDE EMULSIONS STABILIZED WITH NITROSO DERIVATIVES OF PHENOLS

Karl Kuffner, Unterhaching, and Ernst Proeschel, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 28, 1971, Ser. No. 138,292
Claims priority, application Germany, Apr. 29, 1970, P 20 20 943.2
Int. Cl. G03c *1/34*
U.S. Cl. 96—109 **4 Claims**

The stabilization of a photographic silver halide emulsion with a compound of the general formula



wherein

X=O, N—OR;
Y=N—OR;
R=H, alkyl group with 1–4 carbon atoms, acyl;
R′=H, halogen, alkyl group with 1–4 carbon atoms.

3,725,078

BORANES AS PHOTOGRAPHIC STABILIZERS

John Howard Bigelow, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 30, 1971, Ser. No. 176,308
Int. Cl. G03c *1/34*
U.S. Cl. 96—109 **14 Claims**

Silver halide photographic emulsions containing boranes as stabilizers and antifoggants.

3,725,079

COATING FORMULATIONS CONTAINING PHOSPHATE ESTERS OF GLYCIDOL POLYETHERS

E. Scudder Mackey, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 641,482, May 26, 1967. This application Nov. 23, 1970, Ser. No. 92,146

Int. Cl. G03c *1/38*

U.S. Cl. 96—114.5 **10 Claims**

Coating aids for water-permeable colloid coating compositions comprising phosphate ester products of a glycidol polyether.

3,725,080

COATING FORMULATIONS CONTAINING THE REACTION PRODUCT OF GLYCIDOL POLYETHERS AND SULFATING AGENTS

E. Scudder Mackey, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 641,451, May 26, 1967. This application Feb. 1, 1971, Ser. No. 111,747

Int. Cl. G03c *1/38*

U.S. Cl. 96—114.5 **10 Claims**

Coating aids for water-permeable colloid coating compositions comprising sulfate ester products of a glycidol polyether.

3,725,081

METHOD OF CHEMICAL TREATMENT OF CEREAL GRAINS TO MAKE THEM MORE RESPONSIVE TO VARIOUS GRAIN PROCESSES

Harold N. Barham, 3205 46th St., Lubbock, Tex. 79413, and Harold N. Barham, Jr., 511 W. 11th St., Plainview, Tex. 79072

No Drawing. Filed July 26, 1968, Ser. No. 754,138

Int. Cl. A23k *1/00*

U.S. Cl. 99—2 R **11 Claims**

A method for treating cereal grains to locate small molecules in depth, to promote desirable change in available kernel tissues, to make more effective enzymic, oxidative, reductive, hydrolytic, and other chemical changes for the purpose of rendering a major portion of the kernel more useful for various purposes, the method comprising contacting the grain with a gas under vacuum, such as sulfur dioxide or other gas, in the absence of substantial dehydration, to adsorb the gas ubiquitously by the internal structure of the grain, the gas being subjected to the grain at a rate greater than the rate of adsorption.

3,725,082

CENTRIFUGAL COFFEE ROASTING

Joseph Giacone, New Hyde Park, and Marvin Schulman, Monroe, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed May 6, 1971, Ser. No. 140,944

Int. Cl. A23f *1/02*

U.S. Cl. 99—68 **4 Claims**

Blends of coffee are roasted at elevated temperatures in a centrifugating vessel rotating at speeds sufficient to remove coffee oils, which are characterized by improved purity and clarity.

3,725,083

PROCESS FOR THE PRODUCTION OF NATURALLY OCCURRING COLORING MATERIAL FROM CITRUS FRUIT AND THE PRODUCT THEREOF

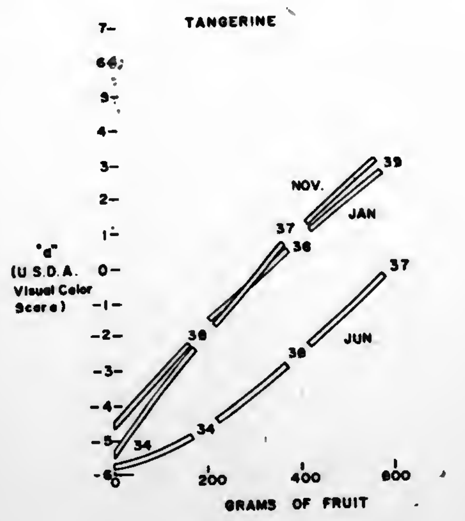
Rodger W. Barron, Lake Alfred, Paul J. Fellers, Winter Haven, and Richard L. Huggart, Lake Wales, Fla., assignors to State of Florida, Department of Citrus

Filed Aug. 5, 1970, Ser. No. 61,385

Int. Cl. A23l *1/26*

U.S. Cl. 99—105 **7 Claims**

Naturally occurring coloring material is produced from citrus fruit by extracting the juice from the fruit, filtering the juice, centrifuging the filtered juice and separating as solid matter the coloring material which can be added to juices and other beverages to enhance the natural color thereof.



3,725,084

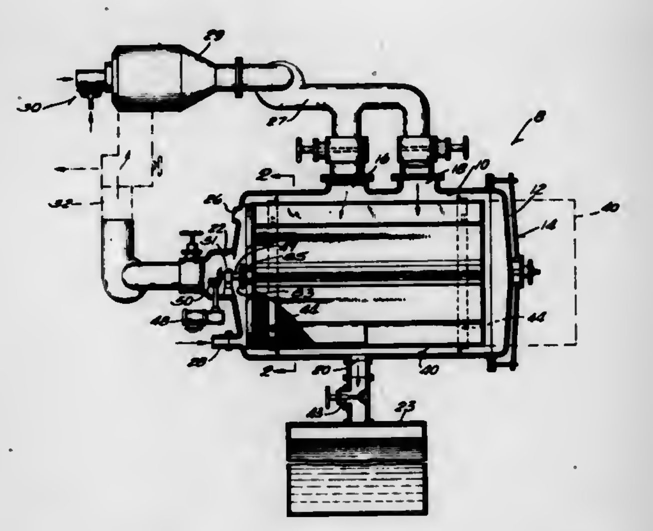
METHOD OF PREPARING PUFFABLE FOOD PELLETS FROM PORK SKINS

Roman R. Rydeski, 1505 Manistique Ave., South Milwaukee, Wis. 53172, and Richard F. Conway, 1503 NW. 7th St., Austin, Minn. 55912

Filed Dec. 28, 1970, Ser. No. 101,874

Int. Cl. A22c *18/00*

U.S. Cl. 99—107 **6 Claims**



Disclosed herein is a method and apparatus for preparing puffable food pellets from food materials such as green pork skins. Discrete units of the raw food material are subjected to steam at temperatures and pressures sufficient to uniformly introduce and distribute water molecules throughout the food. This step is followed by the steps of rinsing the food portions to remove the melted fat and drying the portions with heated air to encase the added moisture and form crisp pellets which can be substantially expanded in volume or puffed by rapid high temperature cooking.

3,725,085

FLAVOR ENHANCEMENT OF ALLIUM PRODUCTS

Sigmund Schwimmer, Berkeley, Calif., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed July 9, 1971, Ser. No. 161,311

Int. Cl. A23l *1/26*

U.S. Cl. 99—140 R **14 Claims**

The flavor of onion, garlic, and the like is enhanced by the addition of gamma-glutamyl transpeptidase.

3,725,086

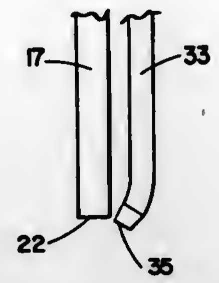
METHOD OF PACKAGING CONSUMABLE LIQUIDS

Robert D. Horner, Upland, Calif., assignor to Tahitian Products Co., Inc.

Filed Sept. 24, 1970, Ser. No. 74,960

Int. Cl. B65b *31/00, 1/04*

U.S. Cl. 99—189 **4 Claims**



In a method of packing consumable liquid food matter within sealable, pliable packets wherein the liquid is injected into a preformed packet prior to sealing the packet, the improvement which comprises, concurrently injecting and mixing with the liquid an inert gas such as nitrogen during the filling of the pliable packet.

3,725,087

DEHYDRATED POTATO PIECES

Paul G. Miller, Hsinchu, Taiwan, and Francis C. Griffith, Idaho Falls, Idaho, assignors to Rogers Brothers Company, Idaho Falls, Idaho

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,200

Int. Cl. A23l *1/12*

U.S. Cl. 99—207 **14 Claims**

Process for producing dehydrated potato pieces for making hash brown potatoes. A low mash temperature of 160–179° F. is coupled with a final drying at a temperature of 90–210° F. and a high humidity of at least 20% for at least 25% of the total final drying time to a moisture content not greater than 8% and at a relative humidity of at least 10% for the remainder of the drying period. A multiple stage final drying is optional.

3,725,088

COMPOSITION FOR WATERPROOFING CONCRETE AND AGGREGATE AND IMPROVING BONDING AND STRENGTH OF AGGREGATE

Edward Penne; Mary Penne, and Athol Currie Wright, all of P.O. Box 278, Nakusp, British Columbia, Canada

Filed June 29, 1971, Ser. No. 158,057

Int. Cl. C09k *3/00*

U.S. Cl. 102—12 **2 Claims**

This invention relates to the composition for waterproofing concrete and aggregate and for improving the bonding and strength of aggregate. The composition is largely composed of an aqueous solution of calcium chloride, $CaCl_2$, and water in the approximate proportions of 1:4, admixed with an aluminum sulphate, $Al_2(SO_4)_3 \cdot 18H_2O$ water solution, a copper II sulphate $CuSO_4 \cdot 5H_2O$ and water solution, and a caustic potash KOH, and water solution admixed with the aforesaid calcium chloride solution in the order mentioned. The total proportion is approximately calcium chloride, $CaCl_2$, 20 percent, aluminum sulphate, $Al_2(SO_4)_2 \cdot 18H_2O$, 1.2 percent copper II sulphate, $CuSO_4 \cdot 5H_2O$, 0.6 percent, caustic potash KOH, 1.0 percent and the remainder about 78 percent water. The commercial flake calcium chloride contains from approximately 77 percent to approximately 80 percent calcium chloride, the balance being largely water of crystallization. This calcium chloride also contains approximately 0.5 percent sodium chromate Na_2CrO_4. The flake calcium chloride also contains about 0.1 percent calcium hydroxide $Ca(OH)_2$ (which gives slight alkalinity to the chromate treated calcium chloride solution). The flake calcium chloride also contains a maximum of 2 percent sodium chloride NaCl and much less than 0.5 percent magnesium chloride $MgCl_2$.

3,725,089

SMALL PARTICLE DISPERSION COATING COMPOSITION

John C. Zola, 2662 10th Ave., Arcadia, Calif. 91006

No Drawing. Continuation of abandoned application Ser. No. 836,227, June 23, 1969, which is a continuation-in-part of application Ser. No. 609,769, Jan. 17, 1967, now Patent No. 3,458,329, dated July 29, 1969, and application Ser. No. 609,789, Jan. 17, 1967, being a continuation-in-part of application Ser. No. 104,211, Apr. 20, 1961, now abandoned. This application Jan. 19, 1971, Ser. No. 107,865

Int. Cl. B01f *3/08;* **C09d** *5/18*

U.S. Cl. 106—15 FP **11 Claims**

A substantially odor-free coating composition that produces thicker coatings of greater power of concealment in one-coat applications than heretofore has been possible, without the coatings so applied sagging on vertical surfaces or wrinkling on horizontal surfaces. The coating composition of the present invention includes a plurality of colored particles of an aqueous film former, the major portion of which particles are less than 25 microns in size, dispersed in an aqueous dispersing phase. This coating composition may be intermixed with:

(1) dispersions of another color to produce richer color effects than possible with conventional prior art coating compositions,
(2) dispersions of larger particle sizes to produce visible multicolor effects, and

the composition may be dried and applied to a desired surface in that form, or the dried composition may be reconstituted by the addition of water thereto.

3,725,090

METHOD OF PREPARING A LIQUID MIXTURE FOR THE PRODUCTION OF FOUNDRY CORES AND MOULDS

Abram Moiseevich Lyass, Sharikopodshipnikovskaya ulitsa 2, kv. 146; Lidia Dorofeevna Saulova, Sharikopodshipnikovskaya ulitsa 2, kv. 125; Pavel Afanasievich Borsuk, Nizhne-Pervomaiskaya ulitsa 59, kv. 125; Anna Ivanovna Tsyruleva, Serpovpereulok 3/5, kv. 8; and Sergei Dmitrievich Teplyakov, Seleznevskaya ulitsa 13, kv. 3, all of Moscow, U.S.S.R.

No Drawing. Filed July 27, 1971, Ser. No. 166,646

Int. Cl. B28b *7/34*

U.S. Cl. 106—38.35 **9 Claims**

A method of producing foundry molds and cores comprising the steps of preparing a mixture consisting of foundry sand, pulverulent calcium sulfate hemihydrate (α-modification), a component selected from the group consisting of alkali metal, alkaline earth metal and ammonium lignosulfonates, mixtures thereof and thermopolymers thereof, a foaming agent and water. Molds and cores are formed from said mixture and allowed to harden in air.

3,725,091

GLASS-CERAMIC METAL CERMETS AND METHOD

Chi-Kwun Chyung, Elmira, and Hermann L. Rittler, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed April 12, 1971, Ser. No. 133,289

Int. Cl. B22f *1/00*

U.S. Cl. 106—39 DV **12 Claims**

A glass-ceramic metal cermet comprising a glass-ceramic phase consisting essentially of crystals of β-quartz, cordierite, mullite, or calcium aluminate uniformly distributed throughout a glassy matrix and a metal phase consisting essentially of a metal selected from the group consisting of W, Mo, W-Mo alloys and W-Mo-Cr alloys.

3,725,092

ASTERIATED SYNTHETIC CORUNDUM GEM STONES

George A. Keig, El Cajon, Calif., James C. Smith, Indianapolis, Ind., and John M. J. Watts, Poway, Calif., assignors to Union Carbide Corporation, New York, N.Y.

Original application Dec. 31, 1968, Ser. No. 788,255. Divided and this application Jan. 10, 1972, Ser. No. 216,620

Int. Cl. C04b *35/10;* **A44c** *17/00*

U.S. Cl. 106—42 **3 Claims**

Asteriated synthetic corundum gem stones are provided which have their asteriating compounds as well as coloring compounds uniformly distributed throughout the body which are free of the heavy banding characterizing previously made synthetic asteriated corundum gem stones. Method and apparatus for the production of these gem stones is also provided.

3,725,093

HIGH LEAD CONTENT GLASS COMPOSITION FOR TELEVISION NECK TUBES

Richard D. Sanner, Sylvania, Ohio, assignor to Owens-Illinois, Inc.

No Drawing. Filed June 19, 1970, Ser. No. 47,870

Int. Cl. C03c *3/10, 3/04, 3/30*

U.S. Cl. 106—53 **8 Claims**

Lead glass compositions which can be used for the manufacture of the neck portion of the television tube which exhibit high X-ray absorption characteristics. These lead glasses have desirable high and low temperature viscosity properties, as a result of which they can be readily drawn and worked and are compatible with existing glass compositions used for making other components of the television picture tube.

3,725,094

DOPED ALUMINA POWDER

Newton Levy, Jr., Ellicott City, Md., David Griffith Wirth, Jr., Golden, Colo., and Richard Raymond Rettew, Laurel, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 6,563, Jan. 28, 1970. This application Sept. 20, 1971, Ser. No. 182,230

Int. Cl. C04b *35/10*

U.S. Cl. 106—62 **2 Claims**

A process for preparing aluminas containing about 10 parts per million to about 5% of a second inorganic component by mixing a solution or melt of a decomposable salt of aluminum with a salt of the desired inorganic additive and decomposing the resultant mixture in a fluid energy mill. If desired, the resultant powder can be calcined to an alpha-alumina having a crystallite size of less than 2000 angstroms with each ultimate crystallite containing the correct amount of the second component in solid solution or homogeneously dispersed within the alumina.

3,725,095

FOAMED ALKALI SILICATE BINDER COMPOSITIONS

Verne Wesley Weidman and Paul C. Yates, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 779,275, Nov. 26, 1968. This application Apr. 1, 1971, Ser. No. 130,469

Int. Cl. C04b *35/16*

U.S. Cl. 106—75 **19 Claims**

This invention relates to stable shapeable aqueous siliceous foams prepared from an alkaline ionic silicate, e.g., sodium silicate, a cationic surface active nitrogen-containing "onium" compound and optionally colloidal amorphous silica sols. The foam can contain a filler material such as perlite and can also contain a latent gelling agent such as formamide which hydrolyzes to aid in setting the foam. The foam can also be contacted with an acidic acting gas, e.g., carbon dioxide which aids in the foam setting mechanism.

3,725,096

ADHESIVE COMPOSITION

Joseph G. Stanke, 1220 2nd St. N., Wisconsin Rapids, Wis. 54494

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,260

Int. Cl. C04b *7/02*

U.S. Cl. 106—90 **13 Claims**

An adhesive composition comprising the combination of crude tall oil, cement and an aqueous solution of ammonium hydroxide. The cement is used in the ratio of 1 to 3 parts per part of tall oil and the ammonium hydroxide solution is used in the ratio of 1 part to 6 to 10 parts by weight of the cement. The composition cures or sets to provide an infusible product which can be used as an adhesive, a surface coating or a binder for reinforcing materials.

3,725,097

CEMENT COMPOSITIONS AND THE PREPARATION THEREOF

Richard B. Peppler and Philip A. Rosskopf, South Euclid, Ohio, assignors to Martin Marietta Corporation, New York, N.Y.

No Drawing. Filed June 10, 1971, Ser. No. 151,896

Int. Cl. C04b *7/02*

U.S. Cl. 106—90 **36 Claims**

The water content of hydraulic cement mixes for a given plasticity is reduced, and the strength of the hardened concrete produced therefrom is increased by the incorporation of inositol in said mixes. Early strength is increased, and the retardation of the rate of set is less than that normally encountered in obtaining the desired advantages in the properties of the mixes. The inositol is employed in an amount within the range of from about 0.005% to about 0.75% by weight, preferably from about 0.10% to about 0.25% by weight of cement. Set accelerators can also be incorporated in the cement mix, the properties of the accelerators and said inositol being additive so that an increase in the compressive strength of the hardened mix is achieved while, at the same time, increasing the rate of set of the mix including said inositol and accelerators.

3,725,098

HEAT-SEALABLE COATINGS OF IMPROVED WETTABILITY AND METHODS OF PRODUCING THE SAME

Pierre Hullot, 12 Rue de Celestins, 78 Limay, France

No Drawing. Continuation-in-part of application Ser. No. 808,297, Mar. 18, 1969. This application Oct. 18, 1971, Ser. No. 189,831

Claims priority, application France, June 21, 1968, 155,993

Int. Cl. C08h *27/60*

U.S. Cl. 106—180 **4 Claims**

A heat-sealable coating of improved wettability by water and improved adhesion through aqueous glues comprising a conventional heat-sealable coating, e.g., a nitrocellulose varnish having incorporated therein one or more waxes, having an average hydroxyl number between 150 and 400, preferably between 200 and 300. The waxes are preferably incorporated into the coating in an amount of between 0.5% and 5% by weight, the improved heat-sealable coating preferably being applied to a regenerated cellulose film.

3,725,099

WHITE SILICON CARBIDE SOSOLOIDS

Arthur Jack Nozik, Westport, and Samuel Tribit, Hawthorne, N.Y., and Ferd E. Williams, Newark, Del., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,197

Int. Cl. C08h *17/02;* **C04b** *35/14*

U.S. Cl. 106—288 B **4 Claims**

Pigmentary silicon carbide sosoloids of exceptional whiteness are achieved by a solid solution of silicon carbide and from 0.10 to 25% by weight of a compound having an optical band gap in excess of five electron volts, e.g., aluminum nitride and boron phosphide. The sosoloids are prepared by heating a source of silicon intimately admixed with a Group III element with a source of carbon at a temperature above 1350° C. in the presence of hydrogen and a Group V element.

3,725,100

METHOD FOR PROCESSING KAOLIN CLAY COATING PIGMENT AND IMPROVED PRODUCT THEREOF

William E. Zentz, Jr., Iselin, N.J., assignor to Engelhard Minerals and Chemicals Corporation, Woodbridge, N.J.

No Drawing. Continuation-in-part of applications Ser. No. 813,277, Apr. 3, 1969, and Ser. No. 887,384, Dec. 22, 1969. This application Feb. 17, 1971, Ser. No. 116,219

Int. Cl. C08h *17/06;* **C08k** *1/12*

U.S. Cl. 106—288 B **19 Claims**

A small amount of boric acid or an acid-soluble borate salt is added to acidic, bleached kaolin clay in the presence of zinc ion before deflocculating an aqueous suspension of the clay with a sodium condensed phosphate salt.

3,725,101

MONOAZO PIGMENT MIXTURES AND PROCESS FOR THEIR PREPARATION

Rudolf Kuhne, Frankfurt am Main, Heinrich Hamal, Schwalbach, Taunus, and Thilo Thilenius, Sulzbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,818

Claims priority, application Germany, Mar. 14, 1970, P 20 12 153.3

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q **7 Claims**

Mixtures of monoazo dyestuffs obtained by coupling diazotized aniline, which may be substituted by lower alkyl, lower alkoxy, halogen or nitro with a mixture of one or two polar coupling components of the acetoacetylamino benzene, 1-arylpyrazolone-(5) or naphthol series containing 1 or 2 carboxylic acid, sulfonic acid, carboxamido or sulfonamido groups and another mixture consisting of one or two unpolar coupling components of the acetoacetylaminobenzene, 1-arylpyrazolone-(5) or naphthol- series without any solubilizing group. The dyestuff mixtures show improved rheological properties and an improved tinctorial strength. Moreover, they yield purer shades and have an increased transparency.

3,725,102

INORGANIC PIGMENTS

Floyd A. Hummel, State College, Pa., and James F. Sarver, Jr., Lyndhurst, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 664,337, Aug. 30, 1967, which is a continuation-in-part of application Ser. No. 344,363, Feb. 12, 1964. This application July 18, 1969, Ser. No. 843,164

Int. Cl. C09c *1/00*

U.S. Cl. 106—288 B **18 Claims**

A bluish-pink pigmented work product deriving its bluish-pink color from a calcined pigment composed of about 10 to 55 parts by weight of CoO, about 1 to 35 parts by weight Li_2O and about 40 to 72 parts by weight P_2O_5.

3,725,103

CARBON BLACK PIGMENTS

Merrill E. Jordan, Walpole, William G. Burbine, Whitman, and Frank R. Williams, Quincy, Mass., assignors to Cabot Corporation, Boston, Mass.

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,081

Int. Cl. C08h *17/08*

U.S. Cl. 106—307 **10 Claims**

A family of new and novel carbon black products having unusually high tint which are suitable for use in the preparation of reinforced rubber systems.

3,725,104

METHOD OF PROVIDING AND DEVELOPING HIDDEN ENTRIES

Robert D. Fraik, Lincoln Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 822,287, May 6, 1969. This application Mar. 26, 1970, Ser. No. 23,036

Int. Cl. B41m *5/12, 5/18*

U.S. Cl. 117—1.7 **5 Claims**

The discolored paper-based feedback systems employ thermographic processes which transfer a pattern of vaporized reactant material selected from the group consisting of: dithiooxamide, the N,N^1-disubstituted derivatives of dithiooxamide, and an iron-complexing compound having a benzene ring and at least two hydroxyl groups substituted in adjacent positions on said ring to a treated or untreated paper-like receptor sheet to form a storable latent image, i.e. a hidden entry, on the sheet. The latent image can be developed weeks or months later with a coreactant metal salt.

3,725,105

ADHERENT RESIN WITH RELEASE SURFACE

Raymond Burt Chase, 2549 Midland Road, Midland, Mich.

Continuation-in-part of Ser. No. 842,405, July 16, 1969, abandoned, which is a continuation-in-part of Ser. No. 535,324, March 18, 1966, abandoned. This application March 19, 1971, Ser. No. 126,284

Int. Cl. C03c *17/00;* **B32b** *15/08*

U.S. Cl. 117—2 R **8 Claims**

Cured epoxy resin containing finely powdered silicone resin as filler adheres to a surface but does not conduce to formation of adherent deposits upon its own surface; the silicone is a poly-approximately-mono-substituted siloxane. The product is useful as a repair or lining or coating material for vessels upon the walls of which accumulation of deposits of adherent material is contraindicated.

3,725,106

METHOD AND APPARATUS OF MAKING COLOR CATHODE RAY TUBE

Kakuichiro Hosokoshi, Neyagawa, Japan, assignor to Matsushita Electronics Corporation

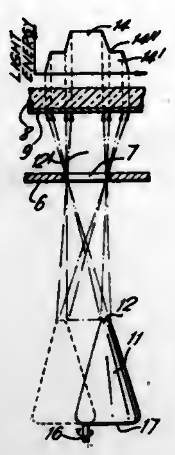
Filed Oct. 30, 1970, Ser. No. 85,337

Int. Cl. B44d *1/02;* **C03c** *17/00;* **H01j** *1/54*

Claims priority, application Japan, Oct. 30, 1969, 44/87363

U.S. Cl. 117—33.5 CM **2 Claims**

In order to avoid undesirable loss of color disparity in the performance of a cathode ray tube of the multi-beam, multicolor, shadow mask type, it is preferable to limit the diameter of each color dot on the phosphor screen. In the process of fixing phosphor dots on a phosphor screen inside a face plate of the cathode ray tube during the fabrication thereof, a specially shaped light-emitting source is employed, in order to limit the diameter of each phosphor dot to no larger than that of each aperture in the shadow mask through which ultraviolet rays strike the screen to fix said dot. The light-emitting source has a small light-emitting point on the top of the transparent light conduit, which conduit is provided eccentrically on a shaft so that it rotates around in a small circle in a plane parallel with the face plate.



3,725,107
COPYING SHEET

Fritz Opderbeck, Buederich near Dusseldorf; Theodor Ploetz, Hoesel, Kries Nettmann, and Herbert Wistuba, Viersen, all of Germany, assignors to Feldmuhle Anlagen-Und Produktionsgesellschaft mit beschrankter Haftung, Duesseldorf-Oberkassel, Germany

Continuation of Ser. No. 809,949, March 24, 1969, abandoned. This application June 14, 1971, Ser. No. 153,025

Claims priority, application Germany, March 23, 1968, P 17 71 031.5

Int. Cl. B41m *5/16, 5/18*

U.S. Cl. 117—36.7 **5 Claims**

The invention relates to a copying sheet consisting of a base material or substrate having pressure or heat sensitive, opaque coatings of synthetic dispersions and softeners, preferably in combination with at least one stearate, wherein either the base material or the coating contains dyes or colored pigments that, on application of heat and/or pressure, make the characters impressed on the sheet readable.

3,725,108
CHEMICAL REDUCTION METAL PLATED DIALLYLPHTHALATE POLYMER AND PREPARATION PROCESS

Edward B. Saubestre, Hamden, Conn., and Lawrence J. Durney, North Caldwell, N.J., assignors to Enthone, Incorporated, West Haven, Conn.

Division of Ser. No. 804,713, March 5, 1969, Pat. No. 3,595,761, which is a continuation-in-part of Ser. No. 433,775, Feb. 18, 1965, abandoned. This application Feb. 16, 1971, Ser. No. 115,759

Int. Cl. B44d *1/094;* **C23c** *17/02*

U.S. Cl. 117—47 A **9 Claims**

This invention is concerned with chemical reduction metal-plated diallylphthalate polymers wherein a thin, substantially non-porous, continuous metal layer of fine grain size and consisting essentially of chemical reduction metal is firmly adhered to the polymer surface by a bond strength equivalent to a Pull Test result of at least 5 pounds per inch. One or more metal electroplate layers may be deposited over the chemical reduction metal layer. The invention is also concerned with the preparation of metal-plated diallylphthalate polymers involving the contacting of the polymer surface destined to be metal plated with an alkaline aqueous solution containing about 5 to 45 weight percent of methyl Carbitol and about 5 to 30 weight percent of sodium hydroxide or potassium hydroxide until the polymer surface is converted to a gelled and hydrophilic polymer surface, followed by contacting the gelled hydrophilic surface with a chromic acid- and/or surfuric acid- containing aqueous acid etchant solution until the polymer surface is converted to a surface readily bondable to electroless metal plating by a firmly adherent bond. The thus-treated polymer surface is then activated and electrolessly metal plated by contact with a chemical reduction metal plating solution until the polymer surface is converted to an electrically conductive surface. The thus-obtained conductive surface can then be electroplated, if desired, with one or more metal electroplate layers.

3,725,109
METHOD OF PREPARING SULFONATED STYRENE POLYMER PHOTOGRAPHIC FILMS

Gerald L. Schulz, Midland, and Robert J. Calola, Saginaw, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of abandoned application Ser. No. 839,069, July 3, 1969. This application Oct. 21, 1971, Ser. No. 191,350

Int. Cl. G03c *1/78*

U.S. Cl. 117—47 A **6 Claims**

Photographic films are made from styrene polymers as the film base without the necessity of using subbing coats between the film base and the photosensitive layer by sulfonating the styrene polymer film base so that it contains a high concentration of sulfonic acid groups. Good adhesion between the layer and the base is obtained.

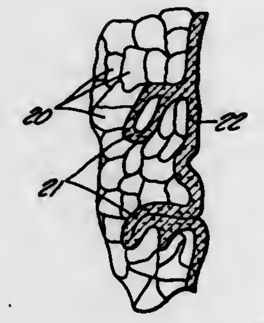
3,725,110
PROCESS OF COATING ARTICLES WITH PYROLYTIC GRAPHITE AND COATED ARTICLES MADE IN ACCORDANCE WITH THE PROCESS

John T. Rodgers, Long Beach, Richard M. Williams, Montclair, and Richard J. Larsen, Alhambra, Calif., assignors to Ducommun Incorporated, Vernon, Calif.

Continuation of abandoned application Ser. No. 559,781, June 23, 1966. This application Nov. 13, 1969, Ser. No. 871,761

Int. Cl. C23c *11/00, 11/10;* **C01b** *31/07*

U.S. Cl. 117—46 CG **5 Claims**



A process of producing a pyrolytic graphite coating on a substrate which will not peel off, said coating being deposited in a two (2) step process wherein first there is deposited a coating of pyrolytic graphite or pyrolytic carbon at temperatures of between 900° and 1350° C. and subsequently depositing a second pyrolytic graphite coating at temperatures between 1500° and 1900° C. The pyrolytic graphite or pyrolytic carbon coated product is produced by the above process.

3,725,111
METHOD OF COATING GLASS BEADS WITH A LOW CROSS-LINKED POLYMER

Csaba Horvath, Orange, and Seymour R. Lipsky, Woodbridge, Conn., assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 14,182, Feb. 25, 1970. This application Dec. 21, 1970, Ser. No. 100,368

Int. Cl. C03c *17/30, 17/32*

U.S. Cl. 117—54 **4 Claims**

A support medium consisting of a highly swellable polymer resin coated on a fluid impervious, shaped core material is described. In specific embodiments, glass beads are provided with a coating of a highly swellable low-cross linked polymer such as polystyrene. Reactive groups, such as the chloromethyl group, are introduced into the polymer coating. The aforesaid support medium is useful in the solid phase synthesis of complex molecules such as polypeptides, polynucleotides, polysaccharides, proteins, polyamides and the like.

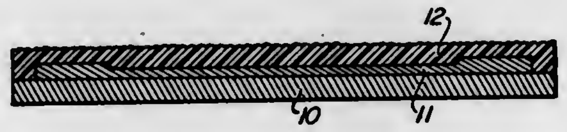
3,725,112
NOVEL DISPLAY DEVICE

Lindsey B. Hansen, 2367 Porter Ave., Ogden, Utah 84401

Filed Dec. 4, 1970, Ser. No. 95,101

Int. Cl. B32b *33/00;* **G09f** *7/00*

U.S. Cl. 117—75 **10 Claims**



A novel display device comprising a substrate, a decorative surface on said substrate and a protective, low-gloss, uniformly textured, transparent, polymeric, organic coating adherent thereon and a process for making same has now been invented. Display devices, especially outdoor displays such as road signs, billboards, and the like are protected and made more readable by application of an adherent, transparent, polymeric organic coating which has a smooth, fine, uniform surface texture to provide a low-gloss finish. The display device is formed by applying to the decorative surface a resinous material which cures to a clear, transparent film having a fine uniformly textured surface. One manner of obtaining a clear, transparent, textured film comprises adding to a polymerizable organic material a component which initiates polymerization, continuing polymerization to attain a resinous mixture having a predetermined ratio of polymerized material to polymerizable material, applying the resinous mixture to a substrate having a decorative surface thereon to form a substantially continuous film of protective coating, and curing the resinous mixture to obtain a uniformly textured, transparent, polymeric, organic coating on said substrate.

3,725,113
BLOOD COMPATIBLE MICROENCAPSULATED DETOXICANTS AND METHOD FOR MAKING

Thomas M. S. Chang, Montreal, Quebec, Canada, assignor to Research Corporation, New York, N.Y.

Filed Dec. 17, 1970, Ser. No. 99,269

Int. Cl. A61k *23/02;* **G01n** *31/06*

U.S. Cl. 117—82 **4 Claims**

Blood compatible microencapsulated detoxicants suitable for the detoxification of blood in an extracorporeal shunt are made by coating a solid detoxicant with a semipermeable polymer membrane and then coating the membrane with a non-interfering layer of a blood compatible protein.

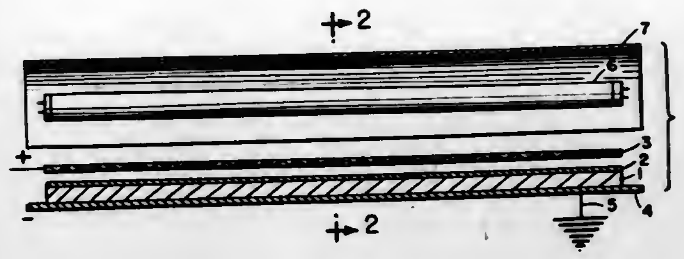
3,725,114
CURING PHOTOPOLYMERIZABLE FILM-FORMING POLYMER COATINGS

Carl J. Warneke, deceased, by Mabel P. Warneke, administrator, Chicago, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed May 28, 1971, Ser. No. 148,024

Int. Cl. B44d *1/50;* **C08f** *1/22*

U.S. Cl. 117—93.1 CD **4 Claims**



Photopolymerizable film-forming polymer coatings are cured by subjecting them to light waves within the range of 1850 to 4000 angstroms in the presence of an electrostatic field.

3,725,115
PRESSURE-SENSITIVE ADHESIVE ARTICLES AND METHOD OF MAKING SAME

Roger M. Christenson and Carl C. Anderson, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed June 18, 1970, Ser. No. 47,557

Int. Cl. B44d *1/50*

U.S. Cl. 117—93.31 **13 Claims**

A pressure-sensitive adhesive having excellent properties is formed by heating a solid radiation-sensitive hot-melt composition of tacky low molecular weight polymers which are capable of forming pressure-sensitive adhesives to a temperature sufficiently above its melting point and applying the hot-melt composition to a backing and subjecting the hot-melt composition to ionizing irradiation. The resulting material is a strong pressure-sensitive adhesive.

3,725,116
METHOD OF COATING WITH ACRYLOXY ESTERS OF ANHYDRIDES

Gordon M. Parker, Lower Burrell, Marco Wismer, Gibsonia, and Ernest A. Hahn, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 840,524, July 9, 1969. This application Nov. 18, 1970, Ser. No. 90,842

Int. Cl. B44d *1/50*

U.S. Cl. 117—93.31 **16 Claims**

This invention relates to acryloxy(or methacryloxy) alkyl(or alkyloxyalkyl) acryloxy(or methacryloxy) hydroxyalkyl organic polycarboxlic esters prepared by reacting an organic acid anhydride selected from the group consisting of trimellitic anhydride and pyromellitic anhydride with a hydroxyalkyl acrylate or methacrylate and then reacting this half-ester with a glycidyl acrylate or methacrylate. These compounds are useful in coating compositions and particularly coating compositions curable by radiation.

3,725,117
CHROMIUM OXIDE COATING FOR SILICEOUS ARTICLES

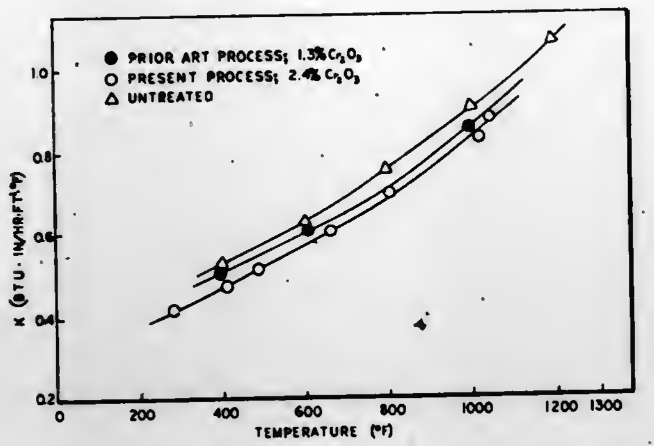
Bernard E. Caruso, Upland, Calif., assignor to Hitco, Gardena, Calif.

Filed Sept. 3, 1970, Ser. No. 69,288

Int. Cl. C03c *25/02*

U.S. Cl. 117—100 S **18 Claims**

An improved treatment for providing a chromium oxide coating on siliceous articles, particularly, high silica content fibers, and articles comprised thereof, by applying a solution of a Werner complex of an organic dicarboxylic acid and a dichromate, particularly ammonium dioxalatodiaquochromate, to the article and heating the article to pyrolitically decompose the complex to form said coating.



3,725,118
COATED CARRIER PARTICLES WITH MAGNITUDE OF TRIBOELECTRIC CHARGE CONTROLLED AND METHOD OF MAKING SAME

Sterritt R. Fuller, Jr., and Howard E. Munzel, Lexington, and Kenneth D. Woosley, Winchester, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed June 23, 1971, Ser. No. 156,060

Int. Cl. G03g *13/08;* **B32b** *15/08*

U.S. Cl. 117—100 M **5 Claims**

An electrophotographic development carrier comprising core particles coated with a carboxylated polyethylene ionomer. When utilized with appropriate electroscopic toner materials, the carrier, which is coated with a carboxylated polyethylene ionomer is effective in producing a desired polarity and magnitude of the triboelectric charge on the toner ptrticles. Control of the polarity and magnitude of the triboelectric charge characteristic of the carrier, which has its particles coated with the carboxylated polyethylene ionomer is obtained by controlling the curing temperature of the carboxylated polyethylene ionomer.

3,725,119
METHOD FOR DECORATING SURFACES

Charles A. Coffey and Michael J. Catena, Tampa, Fla., assignors to Harris Paint Company, Tampa, Fla.

No Drawing. Continuation-in-part of application Ser. No. 44,590, June 8, 1970. This application Feb. 8, 1971, Ser. No. 113,729

Int. Cl. B44d *1/08*

U.S. Cl. 117—104 R **10 Claims**

A method for giving solid and porous surfaces sparkling brilliance by the application thereto of a vehicle to which solid, highly reflectant, colored or uncolored particles have been added, which comprises: applying to the surface to be coated a spray of a composition comprising solid particles which may be solely solid polyester resin or polyester resin blended with other particles capable of effecting brilliance such as metallic or glass particles, a vehicle for said particles which may contain colorants such as opaque or transparent pigments or dyes, and a means of propelling the composition such as an aerosol propellant or other pressure systems to spray aforementioned composition, thereby providing various mono or multi-colored reflective effects. Silk screening as well as conventional spray is included.

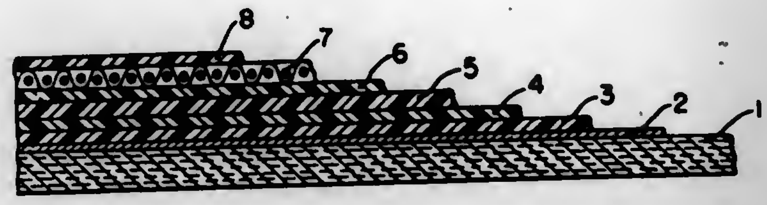
3,725,120
POLYURETHANE CONTAINER

Charles A. Suter, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 1,984, Jan. 12, 1970, which is a continuation of application Ser. No. 579,570, Sept. 14, 1966. This application Dec. 13, 1971, Ser. No. 207,639

Int. Cl. B44d *1/02*

U.S. Cl. 117—104 R **9 Claims**



A composite structure and method of preparation comprising essentially a layer of a cured polyurethane adhered to a layer of a hydrocarbon barrier. It is preferred that the barrier layer be applied in a solution with a solvent comprising at least one liquid ketone to a partially cured polyurethane following which the polyurethane is further cured, the said barrier layer comprising a polymer of from about 50 to about 100 mole percent of vinylidene chloride and correspondingly of up to about 50 mole percent of a material selected from the group consisting of vinyl chloride and acrylonitrile. The composite structure and method of preparation have particular utility in the fabrication of hydrocarbon containers such as fuel tanks.

3,725,121
THERMALLY STABLE PRESSURE-SENSITIVE ADHESIVE TAPE WITH POLYPROPYLENE BACKING

Albert Anthony Fournier, Bridgewater, N.J., assignor to Johnson & Johnson

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,879

Int. Cl. C09j *7/02*

U.S. Cl. 117—122 PF **6 Claims**

A heat resistant polypropylene backed acrylate pressure-sensitive adhesive tape wherein the acrylate adhesive is modified by the addition of 5–25 percent of a phenol formaldehyde resin prior to coating on the polypropylene backing.

3,725,122
PRESSURE-SENSITIVE ADHESIVE COATED ARTICLES HAVING A POLYACRYLATE ADHESIVE COATING

Hans Reinhard, Limburgerhof, Alfred Mueller, Biblis, and Bernhard Dotbauer, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Mar. 3, 1970, Ser. No. 16,224

Claims priority, application Germany, Mar. 6, 1969, P 19 11 306.5

Int. Cl. C09j *7/02*

U.S. Cl. 117—122 P **2 Claims**

Pressure-sensitive adhesive coated articles having at least one adhesive coating comprising a copolymer of

(a) from 55 to 90% by weight of acrylic and/or methacrylic esters of primary and/or secondary alkanols having 4 to 12 carbon atoms, of which at least 25% are derived from alkanols having 6 to 12 carbon atoms;
(b) from 10 to 40% by weight of acrylic and/or methacrylic esters of tertiary alkanols having 4 to 12 carbon atoms; and
(c) from 3 to 12% by weight of polymerizable heterocyclic N-vinyl compounds and/or other olefinically unsaturated monomers containing reactive groups.

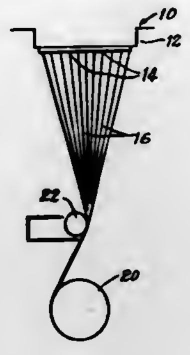
3,725,123
GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi and David E. Leary, Cumberland, R.I., assignors to Owens-Corning Fiberglas Corporation

Filed Dec. 21, 1970, Ser. No. 99,792

Int. Cl. C03c *25/00*

U.S. Cl. 117—126 GE **13 Claims**



This invention is addressed to the improvement in the bonding relationship between glass fibers and elastomeric materials with which the glass fibers are combined in the manufacturer of glass fiber reinforced elastomeric products wherein the bonding relationship between the glass fiber surfaces and the elatomer is improved by coating individual glass fibers, or impregnating bundles of glass fibers, with a resorcinol aldehyde latex system formulated to include a low molecular weight component, preferably in the form of an alkanolyl donor compound which is believed to migrate toward the glass fiber surfaces to enhance the bonding relationship between the glass fibers and the elastomeric material.

3,725,124
POLYMERIC FILM COATED WITH VINYL ACETATE/ETHYLENE COPOLYMER ADHESIVE

Bert S. Gorton, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 1, 1968, Ser. No. 764,333

Int. Cl. B32b *21/08, 27/30*

U.S. Cl. 117—138.8 UA **7 Claims**

A polymeric film, e.g., polyvinyl chloride, is disclosed which has, as a heat sealable coating on a surface thereof, a vinylacetatae/ethylene copolymer containing either iminated carboxylic acid groups or N-methylol amide groups. The film is particularly useful in a decorative film/board laminate prepared by a vacuum forming technique.

3,725,125
FABRICS SIZED WITH COPOLYMERS OF SULFUR DIOXIDE AND ALLYL EPOXYALKANE ETHERS

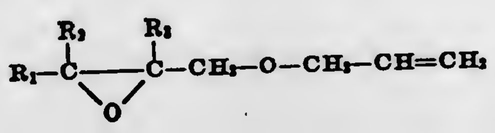
William Ross Moore and Ralph Rolland Langner, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Nov. 4, 1970, Ser. No. 86,940. Divided and this application July 22, 1971, Ser. No. 165,327

Int. Cl. C08j *1/44*

U.S. Cl. 117—139.5 A **3 Claims**

Natural and synthetic fabrics are sized with copolymers of sulfur dioxide and compounds of the formula



$$\underset{\diagdown\ O\ \diagup}{R_1-\overset{R_2}{\overset{|}{C}}-\overset{R_3}{\overset{|}{C}}}-CH_2-O-CH_2-CH=CH_2$$

wherein R_1, R_2 and R_3 are independently hydrogen or methyl groups.

3,725,126
MAGNETIC RECORDING TAPE

Willis D. Haller, St. Paul, and Raymond M. Colline, Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of applications Ser. No. 706,401, Feb. 19, 1968, now Patent No. 3,573,980, and Ser. No. 32,919, Apr. 29, 1970, now abandoned. This application Dec. 28, 1970, Ser. No. 102,029

Int. Cl. C04b *35/26;* **G11b** *5/78*

U.S. Cl. 117—235 **8 Claims**

Magnetic recording tape having a coating of oriented magnetizable particles in a binder affording superior ability to store high frequency information by virtue of oriented magnetizable acicular iron oxide particles modified with small amounts of cobalt oxide, which iron oxide particles comprise gamma-Fe_2O_3. At approximately two parts by weight per one part of binder and physically aligned, the novel particles provide in the aligned direction a coercivity H_c exceeding 350 oersteds and a B_r exceeding 800 gauss. Higher coercivity may be attained by controlling the heating steps in making the novel particles to provide up to about 25% FeO by weight of the total iron oxide.

3,725,127
METHOD AND SYSTEM FOR CONTROLLING A CRYSTALLIZATION INSTALLATION

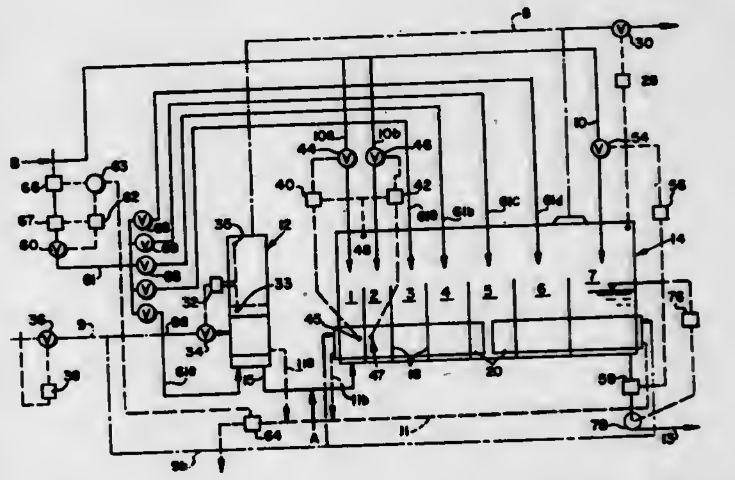
Roger Retali, Saint Cloud, Francis Dambrine, Marcq en Baroeul, Jean Claude Giorgi, Courbevoie, and Georges Windal, Roubaix, France, assignors to Societe Fives Lille-Cail, Paris, France

Filed Mar. 16, 1971, Ser. No. 124,731

Claims priority, application France, Mar. 19, 1970, 9,797

Int. Cl. B01d *1/00, 9/02*

U.S. Cl. 127—16 **15 Claims**



Sugar is crystallized out of sugar juice by passing the juice through a succession of steam-heated crystallization cells. Diluted sugar juice is supplied to the intermediate and last cells. The input of the dilute sugar juice supplied to the last cell is controlled to maintain a constant concentration of the crystallized sugar in the last cell, and the total input of the dilute sugar juice introduced into the intermediate cells is maintained at a control value which is a function of the heating vapor consumed in the cells and the concentration of the dilute sugar juice entering the installation whereby the concentration of the crystallized sugar removed from the last cell is determined.

3,725,128

RECHARGEABLE ELECTROCHEMICAL CELL HAVING COMPLEX METAL FLUORIDE ELECTROLYTE

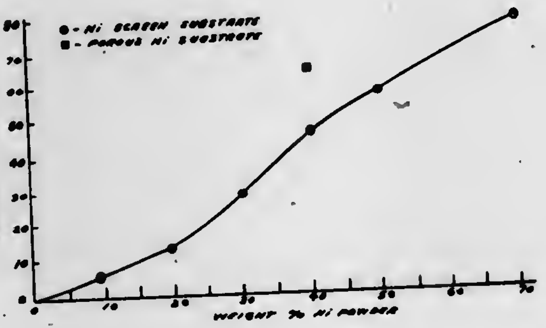
Seymour Senderoff, Fairview Park, Ohio, assignor to Union Carbide Corporation, New York, N.Y.
Filed Mar. 12, 1971, Ser. No. 123,570
Int. Cl. H01m *36/00*
U.S. Cl. 136—6 **21 Claims**

Rechargeable electrochemical cells are disclosed having complex metal fluoride electrolytes comprising an alkali metal fluoberyllate or fluozirconate. In the charged condition, the anode is a metal not greater in activity in the electromotive series than beryllium or zirconium, respectively, and the cathode is the fluoride of a metal less active in the electromotive series than the metal of the anode. A preferred cell has, in the charged condition, a beryllium anode, a nickel fluoride or silver fluoride cathode, and an alkali metal fluoberyllate electrolyte.

3,725,129

METHOD FOR PREPARING PASTED NICKEL HYDROXIDE ELECTRODE

Joseph G. Ruzzo, Jr., Schenectady, N.Y., assignor to the United States of America as represented by the Secretary of the Air Force
Filed Feb. 14, 1972, Ser. No. 226,023
Int. Cl. H01m *43/04*
U.S. Cl. 136—29 **6 Claims**



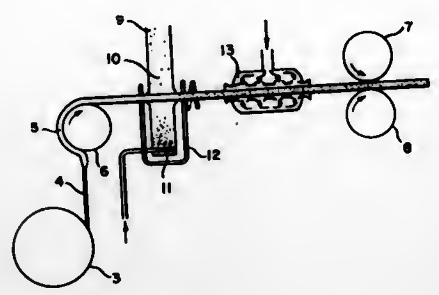
A method for preparing nickel hydroxide ($NiOH_2$) electrodes is provided by applying to a metallic substrate a layer of an aqueous paste of nickel hydroxide, nickel powder and a binder; compressing the substrate with its applied layer of paste to remove excess water; drying the paste; and compressing the substrate and dried paste at a pressure sufficient to achieve intimate nickel hydroxide-nickel metal interfacial contact. The electrodes so prepared are particularly useful for electrical storage batteries although they can be employed in electrolytic cells generally.

3,725,130

METHOD OF MAKING TUBULAR BATTERY ELECTRODE

Johan B. Andersson, Lilla Edet, and Karl E. E. Lindbergh, Nol, Sweden, assignors to Aktiebolaget Tudor, Stockholm, Sweden
Filed Apr. 12, 1971, Ser. No. 132,978
Claims priority, application Sweden, Apr. 16, 1970, 5,182/70
Int. Cl. H01m *3/02*
U.S. Cl. 136—63 **4 Claims**

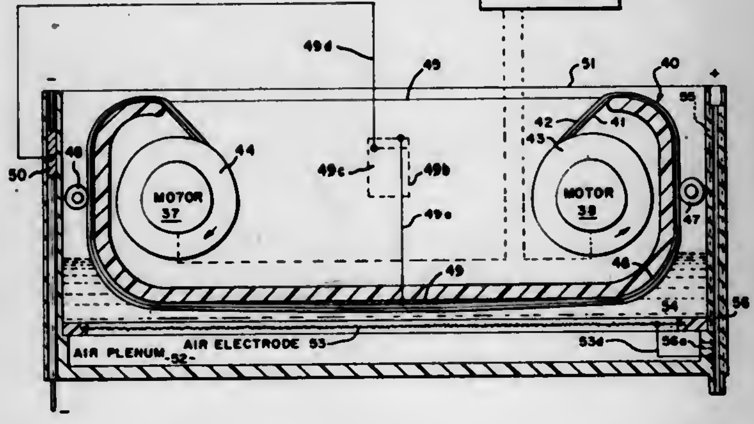
Lead-acid storage battery electrode of the tube plate type having a novel sheath of a glass fiber fabric wherein the yarns are held against slippage by islands of a thermoplastic material. The sheath is made by passing a tube made of glass fiber yarns over a mandrel which extends through a chamber containing pulverized particles of plastic material. The particles are blown on the glass fiber tube while heated and form small islands of plastic material when cooled which impart the necessary mechanical strength to the sheath without substantial reduction in porosity.



3,725,131

RECHARGEABLE MOVING TAPE CELL

Clifford Harold Pountney and Edward Francis Miller, Harrisburg, Pa., assignors to AMP Domestic Inc.
Original application Apr. 28, 1969, Ser. No. 819,548, now Patent No. 3,577,281, dated May 4, 1971. Divided and this application Sept. 30, 1970, Ser. No. 76,945
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 A **19 Claims**



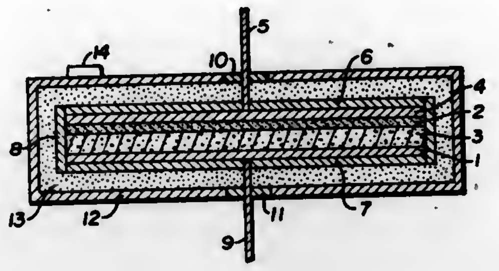
A rechargeable cell comprising, in a charged state, a bulk aqueous electrolyte of potassium hydroxide saturated with zinc oxide; a cathode; and an anode comprising a long steel tape coated with zinc on its active surface. The tape is driven from a storage reel through a region in the electrolyte adjacent to the cathode, and onto a takeup reel, at speeds dependent on the load current or voltage, or both. During charging, the tape is driven in the opposite direction. The cathode may be a stationary air permeable electrode; or it may comprise a tape similar to the anode tape and similarly driven, coated with silver oxide on its active surface.

3,725,132

SOLID STATE THERMALLY ACTIVE BATTERY

James R. Moser, New Freedom, Pa., and Alan A. Schneider, Baltimore, Md., assignors to Catalyst Research Corporation, Baltimore, Md.
Filed Sept. 14, 1970, Ser. No. 71,765
Int. Cl. H01m *11/00*
U.S. Cl. 136—90 **3 Claims**

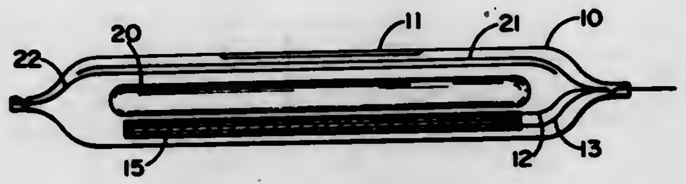
A solid state battery activated on heating, suitably by an integral combustible chemical charge, has a silver or copper anode, a depolarizer cathode and a solid salt electrolyte that is substantially non-conductive at normal ambient temperature but that becomes ionically conductive when heated.



3,725,133

ELECTRIC CURRENT PRODUCING CELL

Michael J. Pollack, Lansdale, and Evert C. Weidner, Philadelphia, Pa., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 29, 1970, Ser. No. 85,122
Int. Cl. H01m *21/00*
U.S. Cl. 136—114 **1 Claim**

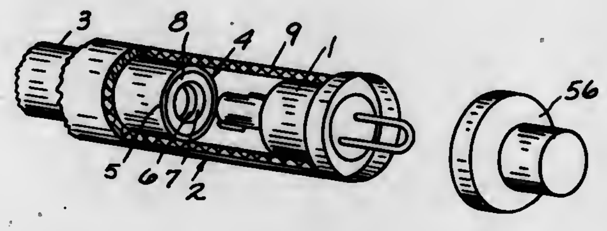


An inexpensive and simply constructed battery, having good storage properties prior to use. The battery is comprised of an anode, cathode, and a separator located within a first plastic pouch. Also within the first pouch is a second inner pouch containing a solution of electrolyte chemicals. For activation of the battery the inner pouch is ruptured, thereby bringing the electrolyte into contact with the remaining active elements of the battery. A portion of the outside pouch is formed of a gas permeable membrane to allow dissipation of gas and thereby prevent bursting of the battery. To prevent or minimize the likelihood of direct contact by the liquid electrolyte with the permeable membrane, a labyrinth comprised of a pair of overlapping baffles is interposed between the battery and the permeable membrane.

3,725,134

EXPENDABLE IMMERSION THERMOCOUPLE UNIT

Richard W. Gessner, Massillon, and Roy E. Davies, Terrace Park, both of Ohio, assignors to Massillon Measurement, Inc., Massillon, Ohio
Filed April 23, 1970, Ser. No. 31,080
Int. Cl. H01v *1/02*
U.S. Cl. 136—234 **15 Claims**

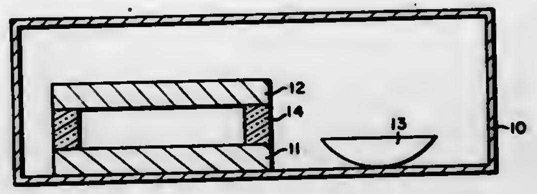


An expendable immersion thermocouple in which the thermocouple and its support and the plug are separate assemblies which may be assembled and tested before mounting in the protective housing.

3,725,135

PROCESS FOR PREPARING EPITAXIAL LAYERS OF $HG_{1-x}CD_xTE$

Robert J. Hager; Maurice L. Hitchell, both of Minneapolis, and Obert N. Tufte, Hopkins, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 9, 1968, Ser. No. 766,260
Int. Cl. H01l *3/20*
U.S. Cl. 148—1.5 **23 Claims**

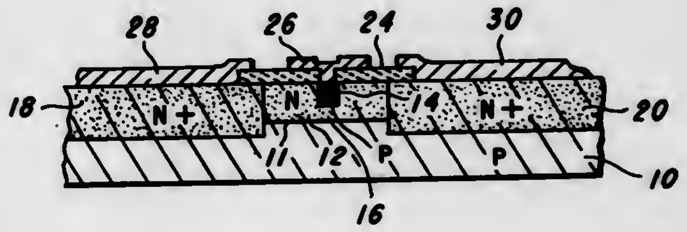


An isothermal process for preparing epitaxial layers of Hg_{1-x}CdbxTe in an excess mercury vapor environment. In a preferred embodiment the process provides layers having a predetermined *x* value within the $Hg_{1-x}Cd_xTe$ alloy system by the selection of a predetermined mercury vapor pressure during processing.

3,725,136

JUNCTION FIELD EFFECT TRANSISTOR AND METHOD OF FABRICATION

Ian H. Morgan, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed June 1, 1971, Ser. No. 148,764
Int. Cl. H01l *11/14, 7/54*
U.S. Cl. 148—1.5 **8 Claims**



A junction field effect transistor is fabricated in an intrinsic silicon substrate. Using ion implantation is utilized to control the impurity profile of the channel and electron beam pattern definition provides an extremely narrow gate region providing a JFET having near optimum characteristics.

3,725,137

METHOD FOR THE BLACKENING OF ALUMINUM ALLOYS

Cesar Adrianus Boose, Hague; Maarten Johan Reidt, Voorburg, and Evert Hermanus Lodewijk Derksen, Weesp, all of Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands
Filed March 10, 1971, Ser. No. 123,051
Int. Cl. C23f *7/26*
U.S. Cl. 148—6.2 **6 Claims**

An even, tenacious black coating is applied to the surface of copper-containing aluminum alloys by immersion of the alloy

into an aqueous bath containing from 10-20 g/l of an alkali, metal bichromate and from 8-50 g/l of an alkali metal hydroxide for a period up to 1.5 minutes according to the disclosed process. Preferably the aqueous bath also contains from 30-40 g/l of an alkali metal carbonate.

3,725,138

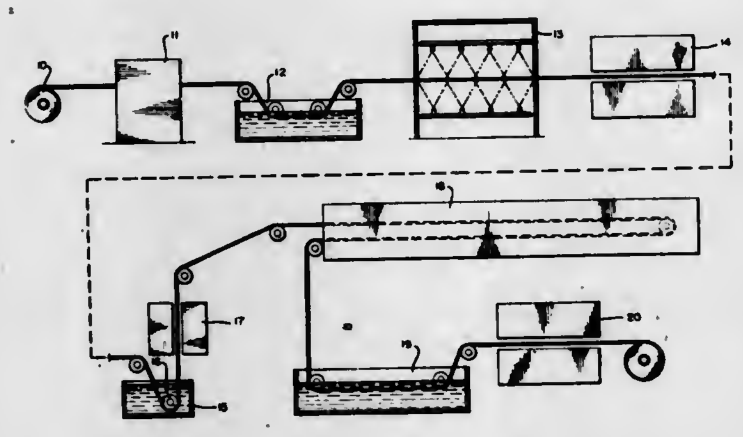
PRODUCTION OF SYNTHETIC PATINA

Ronald B. L. Jones, Watertown, Conn., assignor to Anaconda American Brass Company, Waterbury, Conn.

Continuation-in-part of abandoned application Ser. No. 762,925, Sept. 26, 1968. This application Mar. 15, 1971, Ser. No. 124,480

Int. Cl. C23f *7/00*

U.S. Cl. 148—6.14 **15 Claims**



A decorative synthetic patina is produced on a cupreous surface by coating the surface with an aqueous acid solution containing salts in about the following weight percent, dry basis, 10–20% iron sulfate, 13–21% sulfamic acid, and the balance ammonium sulfate, the required strength of the bath being a function of the withdrawal rate of the cupreous surface. The salts thus applied are dried forming a reactant coating on the cupreous surface. These salts are then reacted with the cupreous surface under controlled temperature and humidity to form an adherent corrosion product. Finally, the soluble parts of the coating are dissolved out, developing the color of natural patina on the surface. The color produced may be controlled closely by varying the total amount, and the ferric-ferrous ratio, of the iron salts included in the aqueous acidic solution.

An article colored by the process has a natural patina appearance having a corrosion product with about the following percentages by weight: 47–54% copper, 17–23% sulfate, approximately 1% sulfamate, 0.7–2% iron, water less than 3% and the remainder hydroxide.

3,725,139

METHOD FOR IMPROVING PERFORMANCE OF HIGH FREQUENCY CABLE

Alfred Staschewski, Langenhagen, Rudolf Pflaum and Helmut Martin, Hannover, and Helmut Hildebrand, Langenhagen, Germany, assignors to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,460

Claims priority, application Germany, Feb. 26, 1970, P 20 08 895.3

Int. Cl. C23f *1/24;* **H01b** *7/34*

U.S. Cl. 148—6.31 **5 Claims**

A high frequency cable with gaseous e.g. air space insulation between an inner and an outer conductor is improved by temporarily exposing the conductors to layer forming corrosion.

3,725,140

METHOD FOR INCREASING THE HEATING RATE IN CONTINUOUS ANNEALING PROCESSES

Edward J. Patula, Monroeville Borough, William L. Roberts, Franklin Township, Westmoreland County, and Robert R. Somers, Penn Hills Borough, Pa., assignors to United States Steel Corporation

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,183

Int. Cl. C21d *7/00*

U.S. Cl. 148—12.1 **1 Claim**

In the continuous annealing of steel strands, the hot rolled coil is passed to a high speed tandem mill where it is cold reduced. A water soluble rolling lubricant is employed to both reduce the rolling forces and to subsequently act as an emissivity increasing film. The steel strand, with the film of lubricant (0.5 to 10.0 microinches thick) adhering to its surfaces, is passed to a radiant heating, annealing furnace. Subsequent to annealing, the strand is cooled and the lubricant removed by well-known means.

3,725,141

ANNEALING STEEL PRODUCTS

Uno T. Hill, Gary, Ind., assignor to Inland Steel Company, Chicago, Ill.

No Drawing. Filed Nov. 10, 1971, Ser. No. 197,317

Int. Cl. C21d *1/76*

U.S. Cl. 148—16 **15 Claims**

Carbon deposition is avoided in a process for annealing steel products with residual lubricants thereon, by introducing a lower alkyl alcohol into the annealing chamber during the early stages of the heating processes. Catalysts such as HCl also may be used.

3,725,142

ATOMIZED STEEL POWDER HAVING IMPROVED HARDENABILITY

Robert A. Huseby, Milwaukee, Wis., assignor to A. O. Smith-Inland Inc., Milwaukee, Wis.

Filed Aug. 23, 1971, Ser. No. 174,159

Int. Cl. B22f *3/24, 1/00*

U.S. Cl. 148—16 **11 Claims**

Atomized steel powder having improved hardenability by the addition of boron. The powder is produced by atomizing a molten stream of steel containing 0.06 to 0.12 percent carbon and 0.005 to 0.100 percent boron. Following the atomization, the particles are annealed at a temperature of about 1500° to 2100° F. to soften the steel, as well as reducing the carbon content to a value below 0.05 percent. The annealed steel contains about 0.001 to 0.012 percent boron. After annealing, the cake-like structure is broken up to restore the as-atomized particle size and the particles are subsequently compacted into the shape of the desired part, sintered and heat treated to develop the desired hardness. The addition of boron aids in improving the hardenability of the part during heat treatment.

3,725,143

AGING RESISTANT COLD ROLLED SHEET PRODUCTS

Harry M. Alworth, Monroeville Borough, and Sumner H. Kalin, Wilkinsburg Borough, Pa., assignors to United States Steel Corporation

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,444

Int. Cl. C22c *39/00*

U.S. Cl. 148—36 **7 Claims**

A steel composition capable of being continuously cast and further processed to produce drawing-quality sheet steel having substantial resistance to aging comprising: 0.01–0.08% carbon, 0.20–0.60% manganese, 0.03–0.08% silicon, up to 0.015% aluminum, less than 0.01% boron and other usual steelmaking impurities such as nitrogen and oxygen. It is essential that sufficient boron be included to provide a boron to nitrogen ratio of 1.4 to 2.5

when the oxygen content exceeds 150 p.p.m., or a ratio of 1.0 to 1.4 when the oxygen content is less than 150 p.p.m. In further processing the steel to sheet products, it is essential that the hot rolled product be coiled at a temperature above 1100° F.

3,725,144

HEAT TREATABLE CREEP RESISTANT SOLDER

Douglas J. Harvey, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

No Drawing. Original application Apr. 16, 1968, Ser. No. 721,597, now Patent No. 3,600,164, dated Aug. 17, 1971. Divided and this application Feb. 4, 1971, Ser. No. 112,763

Int. Cl. C22f *1/12*

U.S. Cl. 148—127 **3 Claims**

The creep resistance of an alloy consisting essentially of 10% to 20% bismuth, 0% to 5% tin, 0% to 0.2% of an element taken from the group of indium, cadmium and copper, and the balance lead can be improved by heating the alloy, preferably at about 300° to 400° F. for about one hour, and then cooling the alloy to normal room temperature.

3,725,145

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICES

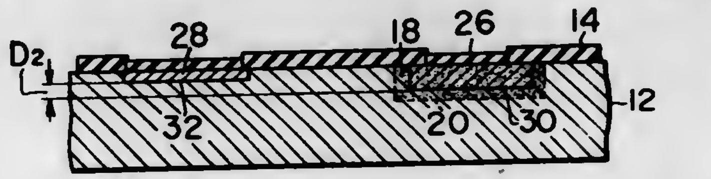
Michiyoshi Maki, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 27, 1970, Ser. No. 23,235

Claims priority, application Japan, Mar. 28, 1969, 44/23,108

Int. Cl. H01l *7/44*

U.S. Cl. 148—175 **2 Claims**



Semiconductor devices containing two diffused regions with different depths formed in a common semiconductor substrate are made by, for example, first selectively diffusing germanium into the surface of an N-type silicon crystalline substrate and, thereafter, selectively diffusing boron into the region containing then diffused germanium as well as into another surface portion of the substrate where the germanium has not been diffused.

3,725,146

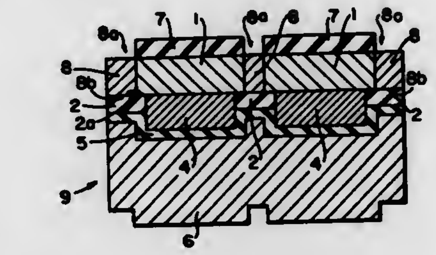
FABRICATION OF INTEGRATED MICROCIRCUITS UTILIZING DIELECTRIC-P-N JUNCTION ISOLATION

Manfred Roder, Dresden, Germany, assignor to Arbeitsstelle fur Molekularelektronik, Dresden, Germany

Continuation-in-part of application Ser. No. 14,794, Mar. 2, 1970, which is a continuation of application Ser. No. 703,756, Feb. 7, 1968, both now abandoned. This application Nov. 12, 1970, Ser. No. 88,963

Int. Cl. H01l *5/00, 7/00, 19/00*

U.S. Cl. 148—175 **3 Claims**



A semiconductor device for integrated microcircuits having a number of functional elements, includes a semiconductor substratum, a dielectric insulation layer disposed on the substratum, low-ohmic highly doped semiconductive layers located in the regions of respective functional elements. A dielectric insulation layer coats the bottom and side surfaces of the low-ohmic layers, with the thickness of the dielectric insulation layer being greater in the regions between the low-ohmic layer. Semiconductive body layers adjoin the open upper surface of the low-ohmic layers and overlap the periphery of the top surface of the side portions of the dielectric insulation layer. The semiconductive body layers have the same type of conductivity as the low-ohmic layers. P-N junctions disposed on the dielectric insulation layer form lateral insulation frames around respective semiconductive body layers. Third insulating layers are provided on the upper surface of respective functional elements.

3,725,147

METHOD OF ALLOYING A MONOCRYSTAL OF A SEMICONDUCTOR

Natan Moiseevich Roizin, Leninsky prospekt 89, kv. 408; Igor Naumovich Larionav, Kalanchevskaya ulitsa 63, kv. 11; and Alvina Grigorievna Kolesova, ulitsa Pravdy 17/19, kv. 49, all of Moscow, U.S.S.R.

Original application Nov. 17, 1967, Ser. No. 684,039. Divided and this application Aug. 25, 1970, Ser. No. 66,907

Int. Cl. H01l *7/48*

U.S. Cl. 148—183 **6 Claims**

A method of alloying the crystallographic oriented surface of a monocrystal of an electrically conductive body, making it possible to obtain an alloyed region in the form of a straight prism. In the case of a monocrystal body having a diamond-type lattic and a crystallographic surface oriented in the plane (110), an alloyed region is obtained in the form of a straight trihedral prism, whose two side faces coincide with the planes (111), and the third face coincides with the surface of the initial monocrystal, the prism axis coinciding with the direction <110>. Alloying is effected by movement of the molten zone of alloying material which is caused by passing direct current through the crystal so that the density vector of the electric current is parallel to the crystal surface to be alloyed, which is oriented in the plane (110) and coincides with the direction <110>, parallel to the surface being alloyed. This direction is an intersection line of the planes (111) of maximum atom packing which shape a "guide groove" in which the molten region of the alloying material is caused to move. When monocrystal germanium is alloyed by the aforesaid method, a strip recrystallization layer is obtained from the melt containing gallium and antimony in the shape of a straight trihedral prism oriented in the above manner.

3,725,148

INDIVIDUAL DEVICE TUNING USING LOCALIZED SOLID-STATE REACTIONS

Don Leslie Kendall, 608 Kirby, Richardson, Tex.

Filed Aug. 31, 1970, Ser. No. 68,099

Int. Cl. H01l *7/34*

U.S. Cl. 148—186 **10 Claims**

The characteristic parameters of an individual semiconductor device in an array or circuit are tuned by localized heat treatment causing solid-state reactions. Neighboring devices, if adequately separated, would be little affected. As a result, devices in an array for example can either be very closely matched or adjusted in an arbitrary or step function fashion from device to device. In an array of diodes fabricated from oxygen doped silicon, for example, current is passed (reverse or forward) through a single diode in an array. If the whole array were at 300° C. and a single p^+n diode was biased to a local temperature of 500° C., the diode would become more n-type, thereby lowering its breakdown voltage. Conversely, an n^+p diode would become less p-type, thereby raising its breakdown voltage.

3,725,149

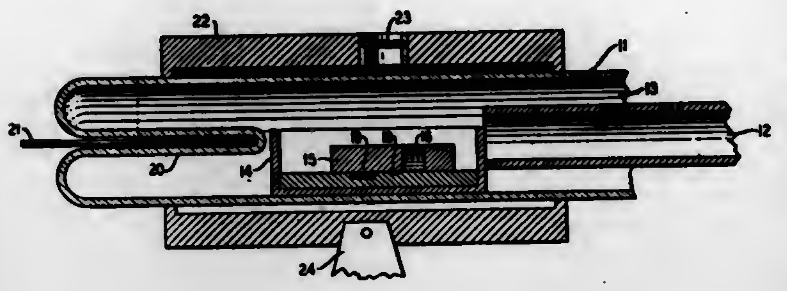
LIQUID PHASE DIFFUSION TECHNIQUE

Marc Ilegems, Madison, and Morton B. Panish, Springfield, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Oct. 28, 1970, Ser. No. 84,790

Int. Cl. H01l *7/34, 7/38*

U.S. Cl. 148—186 **12 Claims**



Impurities are diffused into a substrate by placing the impurities into a solution saturated with respect to the substrate material at the diffusion temperature. The solvent is subsequently brought into intimate contact with the substrate, a constant temperature being maintained during diffusion. Among others, the diffusion of Group II impurities into Group III–V compounds is described in detail.

3,725,150

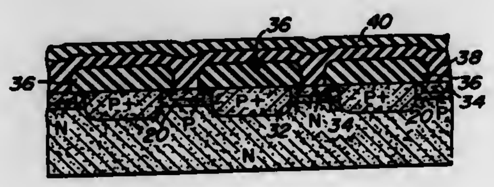
PROCESS FOR MAKING A FINE GEOMETRY, SELF-ALIGNED DEVICE STRUCTURE

William L. George, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 29, 1971, Ser. No. 193,853

Int. Cl. H01l 7/44

U.S. Cl. 148—187 **2 Claims**



A fine geometry, self-aligned device structure is fabricated by interspersing diffusion and pattern steps, including preferential etching, by which line widths of one micron, and pattern repeat distances of five microns in transistors, are easily attained.

3,725,151

METHOD OF MAKING AN IGFET DEVICE WITH REDUCED GATE-TO-DRAIN OVERLAP CAPACITANCE

Demir S. Zoroglu, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 29, 1971, Ser. No. 193,961

Int. Cl. H01l 7/44

U.S. Cl. 148—187 **3 Claims**

The disclosure teaches a method for producing an IGFET device characterized by an extremely narrow gate area with no overlapping of the source and drain regions. A controlled etch is used to form a pattern in a first layer over the substrate to precisely define the gate width. The substrate is subsequently oxidized so that the material covering the gate area can be preferentially etched away, thereby creating a window precisely defining the gate electrode. The need for precisely registering masks is avoided. A superior IGFET with greater speed of response and other concomitant advantages results.

3,725,152

POLYMERIC BINDERS FOR USE IN HYBRID ROCKET PROPELLENTS

Earl T. Niles, Midland, and Don L. Stevens, Sanford, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 3, 1971, Ser. No. 139,821

Int. Cl. C06d *5/10*

U.S. Cl. 149—19 **6 Claims**

Disclosed is a novel binder system suitable for use in a hybrid rocket propellent. The binder involves the copolymeric reaction product of a polyethylene imine and an epoxy terminated polypropylene oxide. The amine hydrogen/epoxide functionality ratio is sufficiently high to provide a polymer rich in nitrogen.

3,725,153

MASS WHICH AFTER IGNITION SUPPLIES HEAT FOR SOME TIME AS A RESULT OF A REACTION AMONG SEVERAL CONSTITUENTS OF THE MASS

Johann Schröder, Aachen, Germany, and Roland Anton Johan Otto van Witteveen, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 27, 1971, Ser. No. 175,466

Claims priority, application Netherlands, Aug. 29, 1970, 7012828

Int. Cl. C06b *15/00, 21/02;* **F24l** *1/04*

U.S. Cl. 149—19 **4 Claims**

A mass was found which can supply heat for some time after ignition. The mass consists of materials which mutually react chemically while developing heat, such as lithium and a halogen compound and one or more fluorides which serve for temporarily storing the developed heat, for example, in the form of melting heat.

3,725,154

MESA BURNING GAS GENERATOR PROPELLANT

Charles R. McCulloch and Bertram K. Moy, Shalimar, Fla., and Thomas C. Randle, Oxon Hill, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed June 23, 1972, Ser. No. 265,938

Int. Cl. C06b *11/00*

U.S. Cl. 149—21 **10 Claims**

A gas generating composite propellant having plateau and mesa burning characteristics, and containing a primary oxidizer which can vary in size from about 5 microns to about 20 microns and a coolant oxidizer which can vary in size from about 40 microns to about 600 microns.

3,725,155

METHOD OF PREPARING FULMINATING MATERIAL FOR PHOTOFLASH LAMP

Thomas B. McDonough, Allenwood, Pa., assignor to Sylvania Electric Products Inc.

Original application Nov. 20, 1970, Ser. No. 91,252. Divided and this application Nov. 22, 1971, Ser. No. 201,226

Int. Cl. C06f *3/06*

U.S. Cl. 149—31 **6 Claims**

A percussive-type photoflash lamp having a primer of the type comprising a wire anvil partially coated with fulminating material and coaxially supported within a tube in a manner providing a clearance between the coating of fulminating material and the inner wall of the tube. The fulminating material contains sodium chlorate as the oxidizer and is prepared by mixing an aqueous slurry containing red phosphorus with an aqueous solution of dissolved sodium chlorate.

3,725,156

IGNITION COMPOSITION INITIATED BY WATER

Tommy Lewis Thompson, Melbourne, Fla., assignor to Life Support, Inc., Melbourne, Fla.

Filed April 28, 1971, Ser. No. 138,326

Int. Cl. C06b *11/00*

U.S. Cl. 149—81 **11 Claims**

An ignition cone composition including an alkaline metal or alkaline earth metal iodide or oxyiodide in combination with a principal oxidizer consisting of an alkaline metal mono-oxide and usually, an auxiliary oxidizer consisting of one or more alkaline metal and alkaline earth metal peroxides and chlorates which term includes the chlorates and perchlorates. This composition is included as a separate top layer in compressing a chemical oxygen generator composition or other composition to be ignited by the ignition cone compositions. In the preferred form, a water filled fracturable vial is associated with said layer so that upon fracture, the water causes initiation of said ignition cone composition, usually best preformed through the use of an uncompacted or loose powder first fire composition of similar content as said ignition cone composition.

3,725,157

METHOD OF CURING DOUBLE BASE PROPELLANTS

Dominic A. Berta, Wilmington, Del., assignor to the United States of America as represented by the Secretary of the Navy

Filed Feb. 2, 1972, Ser. No. 222,973

Int. Cl. C06b *5/04*

U.S. Cl. 149—97 **10 Claims**

A process for curing plastisol propellant formulations comprising a curing step at about 120°–145° F. for about 2–6 hours followed by a curing step at from about 80°–110° F. until curing is completed, and the product resulting from this process.

3,725,158

MULTI-COMPONENT POWDERLESS ETCHING BATH ADDITIVE

Harold J. Messerschmidt, Jr., Stockholm, Karl Heyman, Montclair, and Bernadou W. Johnsen II, Paterson, N.J., assignors to Mona Industries, Inc., Paterson, N.J.

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,340

Int. Cl. B44n *3/02;* **C23g** *1/26*

U.S. Cl. 156—14 **33 Claims**

Improved powderless etching bath additive compositions, especially for etching magnesium photo-engraving plates, containing:

(a) at least one water-soluble or water-dispersible sulfonated fatty acid of from 8 to 24 carbon atoms, wherein the sulfur atom in the sulfonate group is directly bonded to a carbon atom;
(b) at least one saturated or olefinically unsaturated mono-carboxylic acid of from 8 to 24 carbon atoms;
(c) at least one lower mono-carboxylic acid of from 2 to 6 carbon atoms and/or poly-carboxylic acid of from 2 to 10 carbon atoms;
(d) at least one polyhydric alcohol of from 2 to 10 carbon atoms or an ether derivative thereof, and
(e) at least one alkylaryl sulfonate having from 6 to 12 carbon atoms in the aryl moiety and having from 8 to about 18 carbon atoms in each alkyl moiety,

and etching baths containing such compositions and nitric acid and water, give outstanding etching performance, particularly improved definition of the printable area of the plate, depth of the half-tones, side wall smoothness, and, particularly, control of side wall slope and substantial elimination of hooking at print line points.

3,725,159

POWDERLESS ETCHING BATH COMPOSITIONS

Harold J. Messerschmidt, Stockholm, Karl Heyman, Montclair, and Bernadou W. Johnsen II, Paterson, N.J., assignors to Mona Industries, Inc., Paterson, N.J.

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,385

Int. Cl. B44n *3/02;* **C23g** *1/26*

U.S. Cl. 156—14 **21 Claims**

Improved powderless etching bath additive compositions, especially for etching magnesium photoengraving plates, comprising:

(a) at least one water-soluble or water-dispersible sulfonated fatty acid of from 8 to 24 carbon atoms, wherein the sulfur atom in the sulfonate group is directly bonded to a carbon atom, and
(b) at least one saturated or olefinically unsaturated monocarboxylic acid of from 8 to 24 carbon atoms, and
(c) at least one lower monocarboxylic acid of from 2 to 6 carbon atoms and for polycarboxylic acid of from 2 to 10 carbon atoms;

and etching baths containing such compositions and nitric acid and water, give good etching performance, particularly improved definition of the printable area of the plate, depth of half-tones, and side wall smoothness.

3,725,160

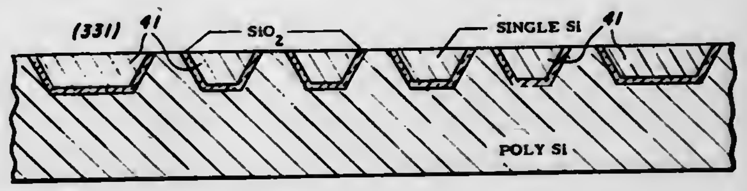
HIGH DENSITY INTEGRATED CIRCUITS

Kenneth E. Bean, Richardson, and Richard L. Yeakley, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1970, Ser. No. 102,585

Int. Cl. H01l *7/00*

U.S. Cl. 156—17 **10 Claims**



Monocrystalline silicon and other cubic crystals are preferentially etched to provide grooves having symmetrical sidewalls sloped at angles of 72.45° or 46.51°. A {100} surface of the crystal is selectively masked to provide apertures aligned with an intersection of a {113} plane located in a <310> direction, or a {331} plane located in a <310> direction. The etched semiconductor crystal is used to fabricate integrated circuits having increased component packing density and/or optimized isolation moat angles for lead metallization.

3,725,161

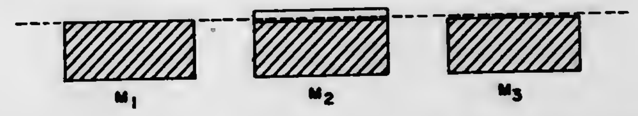
OXIDATION OF SEMICONDUCTIVE ALLOYS AND PRODUCTS OBTAINED THEREBY

Alan B. Kuper, 2265 Delaware Drive,
Cleveland Heights, Ohio 44106

Filed Mar. 3, 1971, Ser. No. 120,448

Int. Cl. B44d *5/12;* **H01l** *11/00*

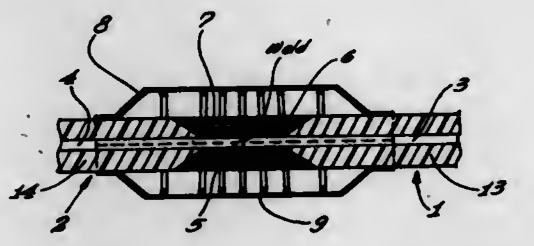
U.S. Cl. 156—17 **14 Claims**



There is provided a process for producing from certain semiconductive alloys, e.g. an alloy of silicon and germanium, with or without dopants, a composite body having an oxidized coating on a bulk body of the alloy, and in which there is an increased concentration of one of the elements, e.g. germanium, at the interface and in the subsurface and whereby the oxide composition is controlled and wherein the bulk body of the alloy is subjected to a predetermined number of operational cycles from 1 to 10 or more, each cycle including oxidation, e.g. thermal oxidation, in a chemically oxidizing environment, e.g. an oxygen-containing or yielding gaseous medium. Following oxidation, etching of the oxide coating may optionally be performed, or an oxidation/etching cycle repeated. Novel semiconductor materials are obtained by this process which afford advantages in fabrication and performance of devices.

3,725,162
METHOD AND EQUIPMENT FOR COMPLETING CONNECTION OF CABLE ENDS

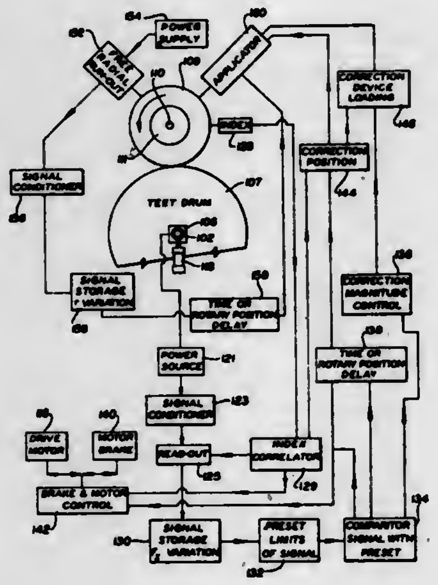
Hans-Dieter Stenzel, Hannover, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed June 2, 1970, Ser. No. 42,752
Claims priority, application Germany, June 14, 1969, P 19 30 303.8
Int. Cl. H01b *13/08*
U.S. Cl. 156—53 **14 Claims**



Insulating tape is wrapped around interconnected conductor ends from which insulation has been removed, and the tape wrapping is welded through non-uniform heat application to obtain gradually sloping temperature drop toward adjoining original insulation, to inhibit local accumulation of chemically active migrating substances.

3,725,163
METHOD OF IMPROVING PERFORMANCE CHARACTERISTICS OF PNEUMATIC TIRES

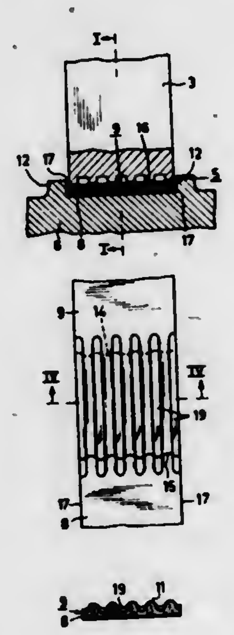
Clarence Hofelt, Jr., Cuyahoga Falls, Ohio, assignor to The General Tire & Rubber Company
Continuation-in-part of application Ser. No. 613,252, Feb. 1, 1967. This application July 21, 1970, Ser. No. 57,384
Int. Cl. F16f *15/00*
U.S. Cl. 156—64 **16 Claims**



Structural nonuniformity in pneumatic tires gives rise to self-excited force variations when the tire is rotated along a surface, such as a roadway. These force variations, when at an unacceptable level, can adversely affect the ride of a vehicle supported by pneumatic tires causing, for example, vehicle shake, noise, roughness, and slight steering disturbances. These variations are reduced to an acceptable level by subjecting the tire to a corrective action comprising applying a small amount of an adhering substance to the tread of the tire at a certain location or locations.

3,725,164
METHOD OF BONDING A LEADER TO MAGNETIC TAPE

Walter Albinger and Karl Heitzer, Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.
Filed June 1, 1971, Ser. No. 148,418
Claims priority, application Austria, June 5, 1970, A 5,053/70
Int. Cl. B29c *27/08;* **G03d** *15/04*
U.S. Cl. 156—73 **14 Claims**

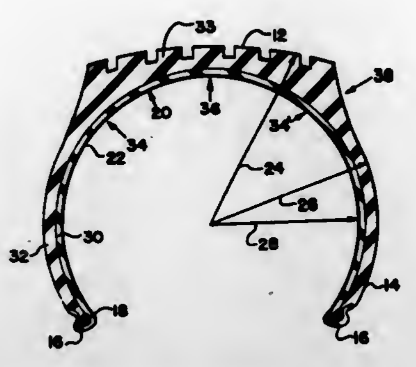


The invention relates to a method and apparatus for bonding an end of a magnetic tape to an end of a thermoplastic leader tape. The magnetic tape has a base of thermoplastic material which is coated on one side. The end of the magnetic tape is placed on the end of the leader tape so as to be an overlapping relationship. An ultrasonic vibration field is applied to the overlapping tapes for a brief period of time and a static pressure is simultaneously exerted on the tapes by the vibrator. The ultrasonic field is concentrated in a strip-shaped area extending in the longitudinal direction of the tapes and is oriented at right angles to the plane of the tapes. The field has a width which is at least equal to the width of the narrower of the tapes and an overall length which is greater than the spacing between the ends of the two overlapping tapes.

3,725,165
METHOD FOR MANUFACTURE OF A MORE UNIFORM PNEUMATIC TIRE

Lawrence R. Sperberg, 6740 Fiesta Drive, El Paso, Tex. 79912
Filed June 19, 1970, Ser. No. 37,054
Int. Cl. B29h *17/26*
U.S. Cl. 156—123 **11 Claims**

A tire which may be a bias, a belted bias, or belted radially constructed tire. After all the elements have been assembled and the tire is ready for vulcanization, it is preheated to a temperature range of 140° to 230° F. while the individual tire cords are simultaneously subjected to a pulse tension. The green unvulcanized tire is first expanded into a configuration approximating that of the final tire shape then preheated by circulating a heating medium through the shaping or curing bag which serves as a source of heat to warm the tire as well as the means for expanding the tire so that the before mentioned tension is applied to the individual tire cords. The internal pressure of the heating medium may be maintained constant, or may be allowed to pulse through



maximum and minimum values in the range of 2% to 10% of the cord tensile strength, thereby altering the tension on the individual tire cords. At the completion of the cord relaxation step the tire is inserted into the curing mold and subjected to the normal cure cycle.

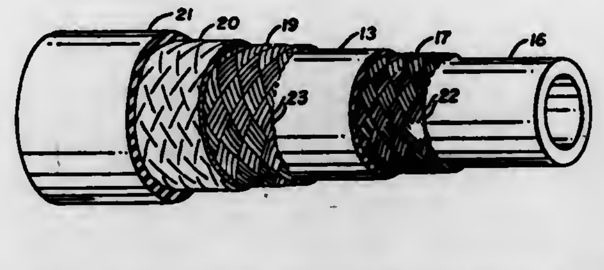
3,725,166
METHOD OF MAKING REVERSIBLE, NONWOVEN MATERIAL

Donald M. McCord, Greenville, S.C., assignor to Phillips Petroleum Company
Filed Apr. 13, 1970, Ser. No. 27,749
Int. Cl. B32b *31/20*
U.S. Cl. 156—148 **3 Claims**

A reversible, nonwoven, fibrous material formed of first and second different colored bats forming said material which has different colored first and second surfaces and the process for making said material.

3,725,167
METHOD OF MAKING WIRE BRAID HYDRAULIC HOSE

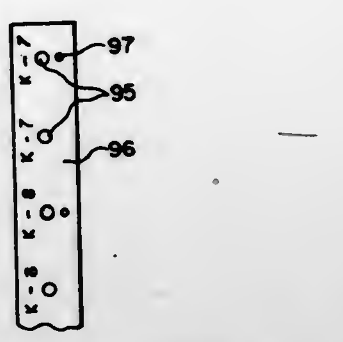
Fred W. Love and William J. Hunt, Youngstown, Ohio, assignors to Aeroquip Corporation, Jackson, Mich.
Continuation-in-part of application Ser. No. 538,488, Mar. 17, 1966, which is a continuation-in-part of application Ser. No. 189,811, Apr. 24, 1962, both now abandoned. This application Nov. 15, 1971, Ser. No. 198,971
Int. Cl. B31c *13/00;* **F16l** *11/10, 11/16*
U.S. Cl. 156—143 **5 Claims**



A method of making a wire braid hydraulic hose which when made according to certain specifications will have a known average burst pressure and a known average life of pressure impulse cycles wherein the hose is subjected, immediately after curing, to an internal pressure of approximately 80 to 95 percent of the known burst pressure, maintaining said pressure momentarily and relieving the same whereby the individual wires of the braid will be realigned and repositioned into a permanent close contact with each other so as to substantially increase the strength of the hose and increase the number of pressure impulse cycles it will withstand well above the known average to thereby increase the life expectancy of the hose.

3,725,168
METHOD OF SPLICING THE TWO ENDS OF FILM STRIPS

Robert S. Rosborough, Jr., Rochester, and Luther M. Wright, Brockport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Original application Sept. 3, 1969, Ser. No. 854,886, now Patent No. 3,634,171. Divided and this application Mar. 18, 1971, Ser. No. 125,841
Int. Cl. B31f *5/00;* **G03d** *15/04;* **G03f** *1/00*
U.S. Cl. 156—157 **1 Claim**

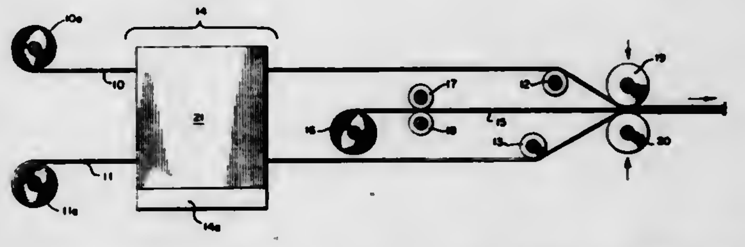


A method and apparatus for splicing and identifying web or film strips comprising the steps of splicing individual lengths of a web into a substantially continuous strip while providing the proper repetition of steps to assure that the web is not mis-identified. The splicing and identification apparatus provides means for accurately aligning and spacing the web to obtain the necessary splice characteristics and includes sequential interlocks which assure the completion of all splicing and identification procedures in the proper order.

The two web ends are aligned and held in splicing relationship at an applicator station. An indicia-bearing member is applied first to a web identifier at the applicator station and then a corresponding indicia-bearing member is applied to the web ends at the applicator station to splice the ends together. Only after both indicia-bearing members have been applied, are the web ends moved from the applicator station.

3,725,169
BIMETALLIC LAMINATE AND METHOD OF MAKING SAME

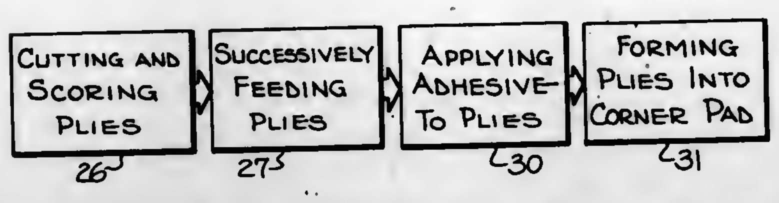
Ralph W. Allen and Richard F. Marsh, Louisville, Ky., assignors to Anaconda Aluminum Company, New York, N.Y.
Continuation of application Ser. No. 696,648, Jan. 9, 1968, which is a continuation-in-part of application Ser. No. 621,258, Mar. 7, 1967. This application June 11, 1971, Ser. No. 152,446
Int. Cl. B31c *13/00*
U.S. Cl. 156—184 **9 Claims**



Two metallic sheets, which may be similar metals or dissimilar metals, such as aluminum and stainless steel, are bonded by an intermediate dry thermoplastic film to form a bimetallic laminate. According to a particularly advantageous embodiment of the invention layers to be laminated are wound onto a common core in a predetermined relationship and the three component assembly is then heated to activate the thermoplastic layer, bonding the layers together.

3,725,170
METHOD OF AND APPARATUS FOR FORMING CORNER PADS

Brendan L. Doll, Patterson, N.C., assignor to Cellu Products Company, Patterson, N.C.
Filed May 11, 1970, Ser. No. 36,332
Int. Cl. B65d *5/44, 25/24*
U.S. Cl. 156—217 **13 Claims**


CUTTING AND SCORING PLIES
SUCCESSIVELY FEEDING PLIES
APPLYING ADHESIVE TO PLIES
FORMING PLIES INTO CORNER PAD
26
27
30
31

A method of and apparatus for forming corner pads utilizing a plurality of plies, each of which is adapted to be folded into a trihedral angle arrangement, wherein the plies are successively fed into juxtaposed relation while adhesive is applied to predetermined surfaces of certain of the plies, and the plies are successively formed into trihedral angle arrangements while being successively placed in contiguous, nesting relationship to secure the nested plies together by the adhesive to maintain the same in a collective trihedral angle arrangement.

3,725,171
PROCESS FOR THE MANUFACTURE OF SYNTHETIC LEATHER MATERIAL

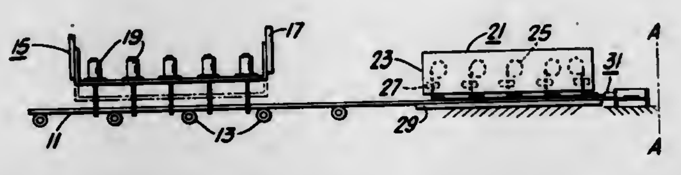
Claude El-Baz Nouchy, 25 Rue Vital, Paris, France
No Drawing. Filed July 7, 1970, Ser. No. 53,019
Int. Cl. B44c *5/00*
U.S. Cl. 156—230 **13 Claims**

This invention relates to a process for the manufacture of synthetic leather particularly for boots vamp, comprising:

(a) impregnating a polyurethane elastomer foam having macroporous structure and communicating pores with a polyurethane elastomer dissolved in a solvent of the elastomer but non solvent of the foam;
(b) eliminating solvent by evaporation;
(c) compressing the impregnated foam cleared of solvent in order to obtain a microporous structure with communicating pores.

3,725,172
METHOD FOR PRODUCING LAMINATES

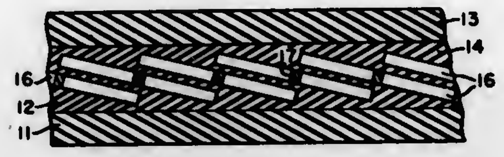
Frank Fekete, Monroeville, Leonard J. Pulman, Pittsburgh, and David J. Thrash, Ruffsdale, Pa., assignors to Koppers Company, Inc.
Continuation of abandoned application Ser. No. 868,094, Oct. 21, 1969. This application Oct. 27, 1971, Ser. No. 193,225
Int. Cl. B32b *31/00;* **B29c** *19/00*
U.S. Cl. 156—252 **4 Claims**



The method for producing continuous lengths of laminates includes forming a plurality of apertures in a substrate and inserting heat curable plastic material in the apertures; thereafter, laminae of heat curable plastic material are applied to opposite surfaces of the substrate and in contact with the plastic material in the apertures. The formed laminate is moved into a press where heat and pressure are applied to cure the plastic material, and then a cut off saw severs the continuous length of laminate into discrete lengths.

3,725,173
METHOD OF MAKING A PROTECTIVE DIVING SUIT

Clarence S. Johnson and Arthur F. Langguth, San Diego, Calif., assignors to the United States of America as represented by the Secretary of the Navy
Filed Jan. 13, 1972, Ser. No. 217,481
Int. Cl. B32b *31/00;* **B63c** *11/04*
U.S. Cl. 156—250 **7 Claims**



A diving suit is fabricated to provide freedom of motion and protection from marine predators including a pair of neoprene sheets sandwiching a fish scale arrangement of overlapping plastic chips. Using a resilient adhesive to bond row after row of interconnected plastic chips onto the inner sheet of neoprene in the overlapping "fish scale like" arrangement provides a protective laminate. Covering the joined rows with the second neoprene sheet holds the suit together and reduces the possibility of snagging the chips' exposed edges. Holes are made in the outer neoprene sheet and a liquid resilient adhesive is injected to coat the chips and fill any voids created between the two sheets. After a sufficient drying time, the laterally arranged rows of plastic chips are bent and flexed along axes perpendicular to the rows to break the small connecting portions between adjacent chips. Thusly resiliently bonded and segmented, the layered diver armor provides protection yet retains a high degree of flexibility to prevent diver fatigue.

3,725,174
THERMOPLASTIC POLYMER FILM-POLYHYDRIC POLYMER FILM LAMINATE

Norman G. Gaylord, New Providence, N.J., assignor to Champion International Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 702,204, Feb. 1, 1968, now Patent No. 3,654,939. This application Jan. 6, 1971, Ser. No. 104,504
Int. Cl. C09j *5/02*
U.S. Cl. 156—305 **7 Claims**

The lamination of at least two layers of normally incompatible polymers is disclosed. One of the polymers is a highly hydrogen bonded polymer, such as cellulose, and the other polymer is a thermoplastic polymer, such as polyethylene. Lamination is accomplished by contacting the opposing surfaces of the layers in the presence of an ethylenically unsaturated carboxylic acid or anhydride, such as maleic anhydride and a free radical initiator. The maleic anhydride thereby reacts with the surfaces and couples the two layers together, forming a bond therebetween.

3,725,175
PROCESS FOR CURING POLYFERROCENYLENES

Norman Bilow, Los Angeles, Calif., and Harold Rosenberg, Dayton, Ohio, assignors to the United States of America as represented by the Secretary of the Air Force
No Drawing. Original application Mar. 6, 1969, Ser. No. 805,009, now Patent No. 3,640,963. Divided and this application Sept. 14, 1971, Ser. No. 180,528
Int. Cl. C09f *5/00*
U.S. Cl. 156—327 **7 Claims**

A method of curing low molecular weight polyferrocenylenes. Low molecular weight polyferrocenylenes are reacted with 1,1′-ferrocenedicarboxaldehyde or a substituted ferrocenedicarboxaldehyde in the presence of a suitable catalyst. This reaction produces a low molecular weight copolymer which, when subjected to heat and pressure, thermosets or cures to a hard, heat-resistant, radiation-resistant resin. The cured products of this invention are useful as resins in the formation of laminated structures.

3,725,176
HIGH TEMPERATURE BIS (EPOXYALKYL) CARBORANE ADHESIVES

Robert L. Barnes, 20 Hillman Street, Clifton, and Daniel Grafstein, 19 Catalpa Road, Morristown, both of N.J.
Division of Ser. No. 762,614, Sept. 25, 1968, Pat. No. 3,669,993. This application Feb. 4, 1971, Ser. No. 112,821
Int. Cl. B32b *27/38*
U.S. Cl. 156—330 **8 Claims**

The process of providing an adhesive junction between two workpieces having opposing smooth surfaces comprising the steps of mixing material selected from the group consisting of bis(epoxybutyl)carborane, bis(epoxypentyl)carborane, and bis(epoxyhexyl)carborane, with a curing agent selected from the group consisting of boron trifluoride ethylamine and 4,4′-diaminodiphenylsulfone, applying said mixture to the opposing surfaces, joining the surfaces and allowing the workpieces with the mixture therebetween to harden under heat and pressure.

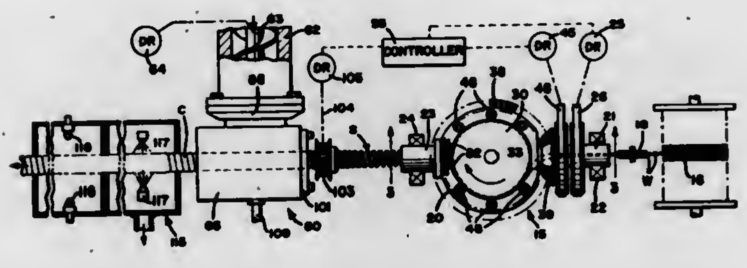
3,725,177
PROCESS FOR BONDING ARTIFICIAL OR SYNTHETIC TEXTILE FIBERS TO RUBBER

Bernardino Vecellio and Fausto Casa, Milan, Italy assignors to Industrie Pirelli, S.p.A., Milan, Italy
No Drawing. Filed Aug. 31, 1971, Ser. No. 176,722
Claims priority, application Italy, Sept. 2, 1970, 29,262/70
Int. Cl. B32b *31/00;* **C09j** *3/12*
U.S. Cl. 156—333 **10 Claims**

A process for improved bonding between artificial or synthetic textile fibers to rubber is disclosed wherein a polymer having double bonds and chlorine in its structure is grafted onto said fibers which are then placed into direct contact with the rubber followed by curing the rubber. No activation treatment is necessary.

3,725,178
APPARATUS FOR CONTINUOUSLY MANUFACTURED FLEXIBLE CONDUIT

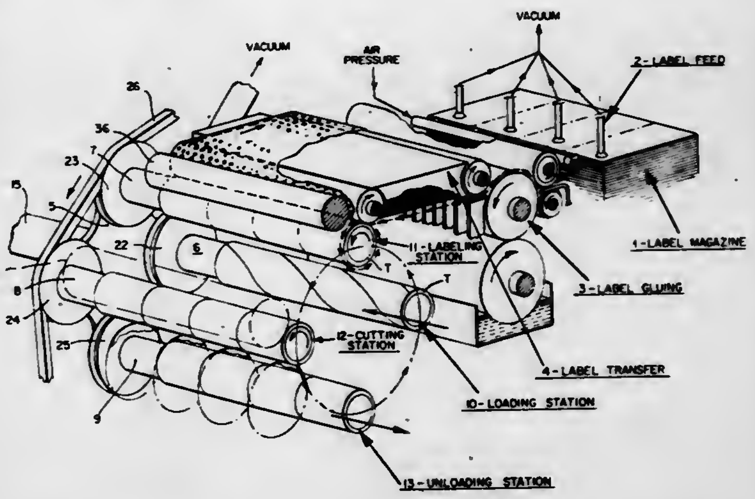
Donald L. Kleykamp, 868 Heincke Drive, West Carollton, Ohio; Ivan Gaster, Ratcliffe Cove, Rte. 3, Waynesville, N.C.; Vernon D. Browning, 401 Avery St., Waynesville, N.C. 28786; and Homer N. Holden, Box 502, Sylva, N.C. 28779
Filed Nov. 13, 1970, Ser. No. 89,333
Int. Cl. B28b *19/00*
U.S. Cl. 156—393 **12 Claims**



A wire is fed from a supply roll to a device which twists the wire on its longitudinal axis and continuously forms the twisted wire into a non-rotating helical coil. The coil is fed directly from the device through a plastic tube extruding head by a rotatable screw which extends within the coil, and a vacuum is created within the tube as it is extruded over the coil to shrink the tube between the turns of the coil. The coil reinforced tube may then be fed through a device which covers the tube with a continuous fabric member, and the covered tube is then fed through another extruder head which extrudes a second tube over the fabric member and shrinks the second tube onto the fabric member and the first tube. The coil feeding screw, the fabric member forming device, the extruders, and the tube feeding devices are driven at speeds correlated with the speeds of twisting and feeding the wire to provide a continuous conduit forming operation.

3,725,179
TUBE LABELING AND CUTTING MACHINE

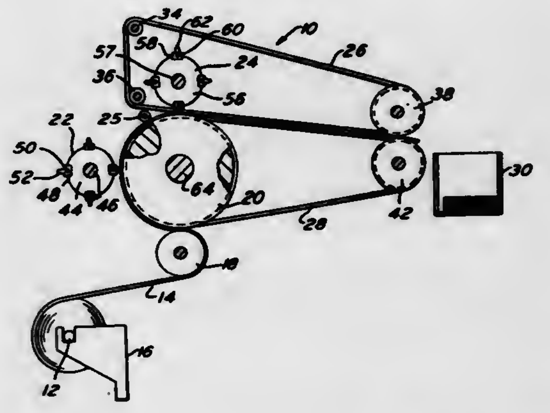
Emil P. Kiss, Philadelphia, Raymond C. Onyx, Ambler, and Richard F. Fegley, Warminster, Pa., assignors to Paco Winders, Inc., Philadelphia, Pa.
Filed Sept. 17, 1971, Ser. No. 181,307
Int. Cl. B65c *9/04*
U.S. Cl. 156—448 **20 Claims**



Machine to attach labels to tubes. A stack of labels are placed in a magazine and machine automatically carries out a sequence of operations. The labels are serially removed from the magazine and glue is applied to one side. The glued label is then wound around a tube. The labeled tube is moved to a cutting station where it is either trimmed or severed into several smaller tubes, each with its own label. The severed or trimmed tube is placed in another station and unloaded.

3,725,180
BAG-MAKING MACHINE FOR THERMOPLASTIC BAGS

Hercules Membrino, 1934 Arch St., Philadelphia, Pa. 19103
Continuation-in-part of application Ser. No. 874,523, Nov. 6, 1969, now Patent No. 3,616,095. This application Apr. 23, 1971, Ser. No. 136,862
Int. Cl. B32b *31/00*
U.S. Cl. 156—515 **12 Claims**

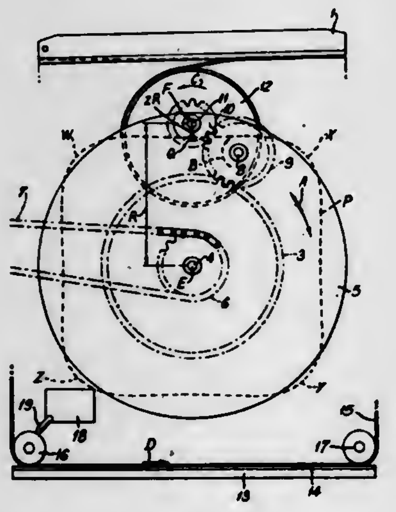


A bag-making machine comprising either a rotatable heat sealing means coacting with an impression roller to simultaneously seal and sever portions of a double ply or tubular thermoplastic strip to form individual bags. The sealing means comprises an assembly including one or more heated knives, which assembly is so constructed that small portions along the length of the knives are prevented from severing the strip, thereby forming connecting means or "nips" between the bags. This is accomplished by forming small recesses in the knives or by providing a masking plate having areas which mask portions of the knives while contact is made with the strip. A rotatable severing means is provided downstream from the heat sealing means and coacts with the impression roller to sever the nips. A conveyor means is provided adjacent the severing means to support the completed and separated bags and to convey them from the machine.

3,725,181

APPARATUS FOR APPLYING TEAR STRIPS TO WRAPPERS

Robert William Davies, London, England, assignor to Molins Limited, London, England
Filed Feb. 5, 1971, Ser. No. 112,918
Claims priority, application Great Britain, Feb. 9, 1970, 6,030/70
Int. Cl. B32b *31/10, 31/12*
U.S. Cl. 156—519 **9 Claims**



Apparatus for applying a tear strip or the like to a wrapper web comprises a sun gear about which a planet carrier is rotated. A first planet gear meshes with the sun gear and also with a second planet gear, both being mounted on the planet carrier. A suction wheel is eccentrically mounted on the second planet gear, which results in the suction wheel rotating about the axis of the second planet gear and at the same time traversing a substantially rectilinear polygonal path as the planet carrier is rotated.

A device for cutting tear strips or the like from a web is positioned adjacent to one side of the polygonal path and as the suction wheel moves along this side the tear strip is wound on to the suction wheel.

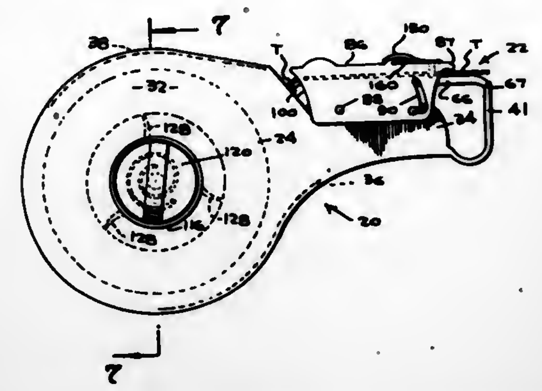
The wrapper web is guided over a platform, having a resilient covering, and has a line of adhesive applied to it. The platform is positioned adjacent to a different side of the polygonal path and while the suction wheel is traversing this side the tear strip contacts the adhesive and is unwound from the suction wheel and deposited on to the wrapper web.

3,725,182

TAPE DISPENSER

James L. Regan, 409 Dunkel St., Fairbanks, Alaska
Filed Aug. 17, 1971, Ser. No. 172,387
Int. Cl. B32b *31/18;* **B26f** *3/02*
U.S. Cl. 156—527 **29 Claims**

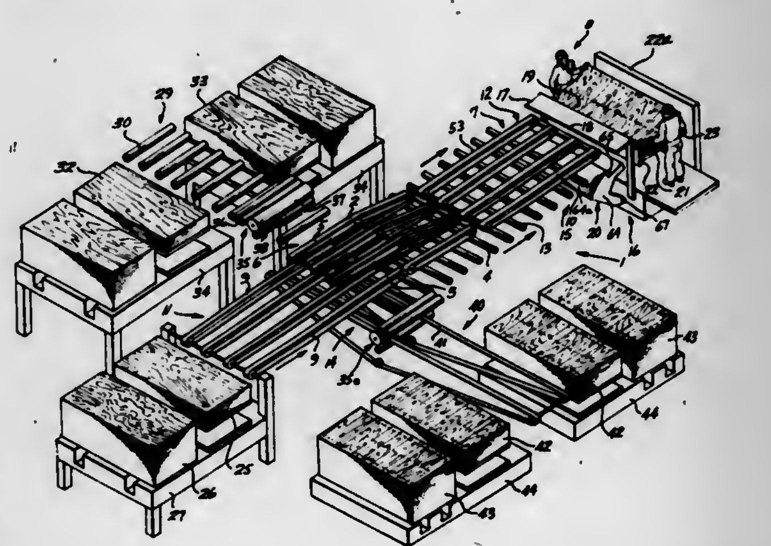
A hand-held tape dispenser is disclosed including a tape guide adjacent a cutting edge for enabling the application of tape into restricted areas such as a corner with the guide being movable to move the tape against the cutting edge following completion of a dispensing application to cut the tape in the innermost extent to which the tape is applied in such restricted areas.



3,725,183

AUTOMATIC PLYWOOD LAYUP MACHINE

Byron B. Brookhyser, Milton, Harold E. Erickson, Federal Way, and Glenn R. Perry, Tacoma, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.
Filed Mar. 29, 1971, Ser. No. 128,780
Int. Cl. B32b *31/04;* **B65g** *57/00*
U.S. Cl. 156—563 **3 Claims**



An automatic plywood layup line is disclosed which is comprised of a plurality of vertically spaced generally horizontal in-line conveyor surfaces, each having an input end and output end. Several conveyor surface loader systems are laterally spaced from the conveyor surfaces and are adapted to spread selected veneer sheets with glue and place them over the input ends of the respective conveyor surfaces. At the output ends of the conveyor surfaces are a pair of sheet positioners which serve to position each individual sheet over a layup station as it is motivated outwardly from the end of the central conveyor system. At the layup station two men may be provided for guiding the veneer sheets onto the stack of forming panels and also to visually scan each individual sheet in order to minimize rejects.

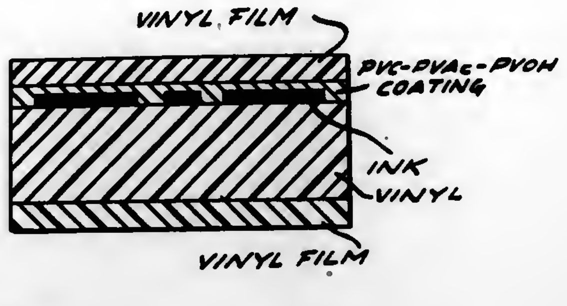
3,725,184

COATED VINYL FILM

Howard A. Scopp, Branford, Conn., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed Feb. 4, 1971, Ser. No. 112,644
Int. Cl. B32b *27/04, 27/30, 31/12*
U.S. Cl. 161—6 **8 Claims**

A laminated article in which a composition containing polyvinyl chloride, polyvinyl acetate and polyvinyl alcohol is

interposed between a vinyl skin and the printing on the surface of a vinyl core to improve the adhesion between the skin and the printing ink.

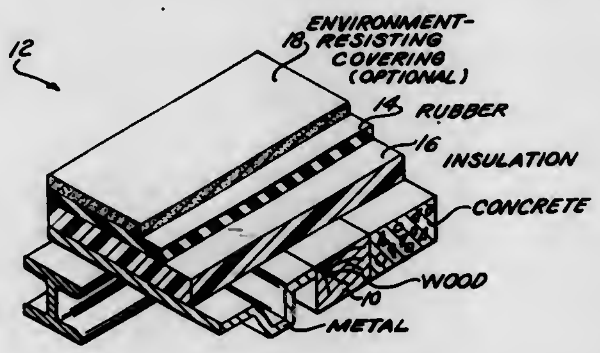


A method of laminating is also claimed.

3,725,185

PROTECTED STRUCTURAL AND CONSTRUCTION MATERIALS

Frank W. Curtis, Chagrin Falls, Ohio, assignor to Lexsuco, Inc., Solon, Ohio
Filed July 16, 1970, Ser. No. 55,447
Int. Cl. B32b *25/10*
U.S. Cl. 161—89 **10 Claims**



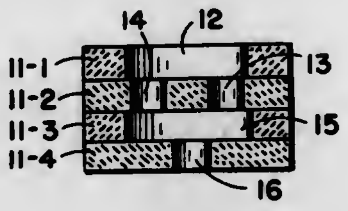
In various protective assemblies or systems for structural and construction materials, a water resistant sheet having a thickness within the range of about 1/100 to about 3/8 inch and being composed of from 50 to 100 wt. percent uncured rubber reclaim, and from 0 to about 50 wt. percent bituminous material.

Specific protective assemblies or systems are described and claimed.

3,725,186

COMPOSITE CERAMIC ARTICLES

John F. Lynch, Oak Ridge, N.J., assignor to National Beryllia Corp., Haskell, N.J.
Filed Nov. 25, 1970, Ser. No. 92,775
Int. Cl. B32b *3/10;* **C04b** *39/00*
U.S. Cl. 161—109 **3 Claims**

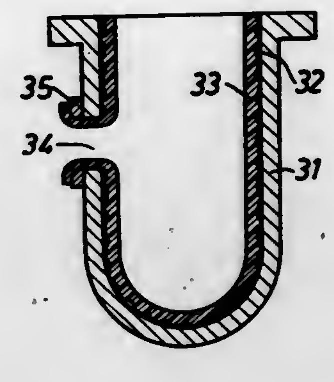


Dense monolithic bodies having complex internal cavities or passageways are made from sinterable powders by mixing the sinterable powders with an organic film-forming resin, forming a tape from the resin, cutting or stamping a multiplicity of disks, plates or chips from the tape which have the peripheral dimensions of the object to be made, stamping or cutting holes in the disks according to a predetermined pattern, laminating the disks to provide an object with the desired internal structure, and finally heat treating to remove the resin binder and sintering the powdered particles together to form a monolithic structure.

3,725,187

ARTICLE COMPRISING POLYTETRAFLUOROETHYLENE AND PROCESS FOR MAKING SAME

Pierre Viennot, Clamart, France, assignor to Societe Anonyme: Produits Chimiques Ugine Kuhlmann, Paris, France
Filed Jan. 26, 1970, Ser. No. 5,485
Claims priority, application France, Jan. 31, 1969, 6902207; Jan. 16, 1970, 7001637
Int. Cl. B32b *15/08, 15/02, 31/20*
U.S. Cl. 161—111 **12 Claims**

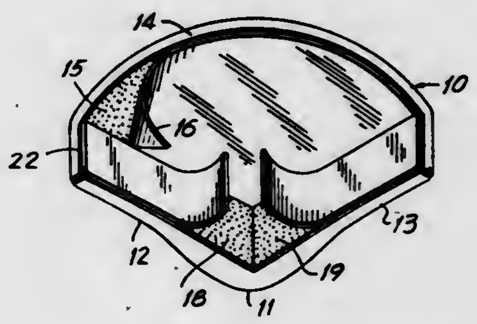


An article according to the invention has a layer or coating of pure PTFE of a certain thickness on one surface thereof, and on the other surface thereof, a thin layer of PTFE at least partially encasing the metal reinforcement. Such an article is perfectly suited to all the uses to which PTFE is normally put, and particularly the manufacture of apparatus and installations resistant to aggressive chemical products. Thus, a pipe of the aforesaid construction has a corrosion-resistant inner surface. Furthermore, the inner layer of PTFE passes through and partially encases the metal reinforcement which, on that account, is anchored in the material comprising PTFE. The article so obtained possesses mechanical resistance and dimensional stability which are very much greater than those of a similar article made of pure PTFE, the combination of a metal reinforcement and PTFE providing the article with mechanical properties similar to those possessed by the metal reinforcement alone.

3,725,188

PROTECTIVE PAD FOR FURNITURE ARTICLES

Bryson R. Kalt, 205 East 85th St., New York, N.Y.
Filed Jan. 8, 1971, Ser. No. 104,891
Int. Cl. B32b *3/00*
U.S. Cl. 161—116 **5 Claims**

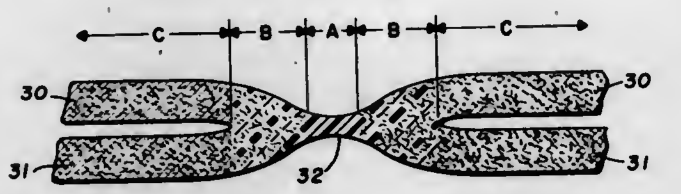


A protective pad which can be detachably secured to corners of furniture articles and the like, so that persons, particularly small children falling against the furniture corners, will not suffer from grevious injury. The pad is cushioned in three directions and is preferably constructed of foam rubber. When the protective pad is applied to the corners of an article of furniture, such as a table, persons falling against the table corner will receive only a minor bruise rather than suffering grevious bodily injury.

3,725,189

NON-TEAR SEAMS PRODUCED BY RADIO FREQUENCY MEANS

Lester Gidge, Nashua, N.H., assignor to Monsanto Company, St. Louis, Mo.
Filed Sept. 11, 1970, Ser. No. 71,554
Int. Cl. D04h *1/04;* **B32b** *31/20;* **B29c** *27/08*
U.S. Cl. 161—146 **2 Claims**

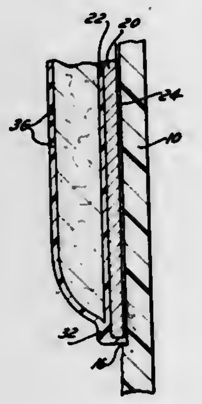


Layers of fabric containing thermoplastic fibers are bonded together by radio frequency means along a seam, the seam being comprised of fused thermoplastic fibers with the intensity of fusion varying from a maximum along a maximum bond area to a minimum along the edge of the seam to prevent the formation of a tear line between the fabric and the seam.

3,725,190

PAD FINGER GRIP FOR ELECTRIC SHAVER CASE

Frank W. Bostick, Lancaster, Pa., assignor to Schick Electric Inc., Lancaster, Pa.
Filed March 31, 1971, Ser. No. 129,754
Int. Cl. B32b *3/26, 5/18*
U.S. Cl. 161—159 **1 Claim**



A pad finger grip for an electric shaver case consisting of a vinyl-metal laminate backing cut to fit a recess in the shaver case, the backing having a foam outer layer with a vinyl cover sealed to its surface and the pad backing constructed to be affixed to the shaver case with a pressure-sensitive adhesive.

3,725,191

FOAM LAMINATES

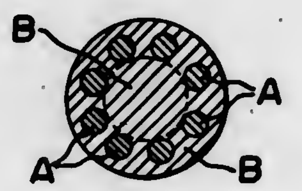
Martin S. Bloom, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Sept. 20, 1971, Ser. No. 182,146
Claims priority, application Great Britain, Oct. 2, 1970, 47,035/70
Int. Cl. B32b *3/26;* **C09j** *7/02*
U.S. Cl. 161—160 **12 Claims**

A foam laminate comprising a rigid layer of a foamed synthetic plastics material confined between two skins wherein the outer face of at least one of the skins is provided with a decorative coating comprising a polymeric material and antimony powder, the exposed face of the decorative coating having laminated thereto a strippable protective film of a synthetic plastics material.

3,725,192

COMPOSITE FILAMENTS AND SPINNERET AND METHOD FOR PRODUCING SAME

Satoshi Ando, Osaka, Masao Matsui, Takatsuki, and Fumimaro Ogata, Nishinomiya, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan, and SNIA Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy
Continuation of application Ser. No. 706,023, Feb. 16, 1968. This application Aug. 31, 1970, Ser. No. 68,506
Claims priority, application Japan, Feb. 25, 1967, 42/11,961, 42/11,962, 42/11,963
Int. Cl. B29f *3/10;* **D02g** *3/00*
U.S. Cl. 161—175 **5 Claims**



Production of a two-component unitary filament having a given uniform cross-sectional configuration and comprising sheath and core portions consisting of a first and a second synthetic polymers respectively, and produced by separately fluidifying said polymers and simultaneously and concurrently feeding both polymers through a common spinneret orifice for extruding therefrom a composite filament, wherein the said second polymers forms a part of its cross-section, said part being both inwardly and outwardly enclosed by said first polymer and its major portion is located outside the concentric ½ similar shape of the cross-section of the filament.

3,725,193

PROCESS AND APPARATUS FOR THE CHEMICAL REACTION BETWEEN A GAS AND A WOOD PULP

Raimbault M. A. T. de Montigny, Baie d'Urfe, Quebec, Norman Liebergott, Laval, Quebec, and Derrick P. W. Pounds, Beaconsfield, Quebec, Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Quebec, Canada
Filed May 27, 1970, Ser. No. 40,961
Claims priority, application Canada, Nov. 26, 1969, 68,411
Int. Cl. D21c *9/00*
U.S. Cl. 162—17 **19 Claims**

Process and apparatus are provided for simultaneously comminuting wood pulp and contacting such comminuted wood pulp with a suitable reagent gas, namely, ClO_2 or NH_3, so that reaction may take place between the wood pulp and the gas, with or without prior heating of the comminuted wood pulp, there being cooperation between the comminuting members in the apparatus comprising a cylindrical housing and a slotted outlet from the apparatus to discharge the reacted wood pulp without restraining the wood pulp while it is being comminuted, a portion of the bottom of said housing which provides said outlet being flattened to represent, in cross-section, the chord of a circle. This minimizes the production of compacted comminuted wood pulp.

3,725,194

TREATMENT OF ALKALINE PULP WITH AN ACIDIC MEDIUM FOLLOWED BY OXYGEN BLEACHING AND DELIGNIFICATION

Leon Smith, Petersfield; David W. Calvert, Westdene, both of Republic of South Africa; Andre Robert, Meylan; Andre Viallet, Grenoble, both of France, and Daniel R. Pauw, Ngodwana, Republic of South Africa, assignors to South African Pulp and Paper Industries, Limited and L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude
Continuation of Ser. No. 738,132, June 19, 1968, abandoned. This application July 9, 1971, Ser. No. 161,954
Int. Cl. D21c *9/10*
U.S. Cl. 162—65 **13 Claims**

A method of delignifying and bleaching alkaline pulp which comprises the steps of pretreating the pulp with an acidic medium having a pH from 1.2 to 4.8, such as an aqueous sulphur dioxide solution or a mineral acid, and thereafter subjecting the pulp in an alkaline medium, preferably sodium hydroxide, to the action of oxygen gas at elevated temperature and pressure. Preferably, the pretreated pulp is subjected to the action of oxygen gas in the alkaline medium in the presence of a protector, such as magnesium carbonate or sodium silicate, which is operative to inhibit degradation of the physical strength properties of the pulp.

3,725,195

PAPERMAKING PROCESS COMPRISING THE INCORPORATION OF A POLYACRYLAMIDE MUCILAGINOUS MATERIAL

Fujio Suyama and Tokuo Yamamoto, Shizuoka, Kenichi Shimono and Hirosi Kuwahara, Fuji, Masao Ishii, Tokyo, and Ichiro Watanabe, Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., and Shizuoka-ken, Shizuoka-shi, Japan
No Drawing. Filed Aug. 10, 1970, Ser. No. 62,703
Claims priority, application Japan, Aug. 11, 1969, 44/62,932; Oct. 31, 1969, 44/86,852; Nov. 12, 1969, 44/90,007
Int. Cl. D21h *3/58*
U.S. Cl. 162—168 **6 Claims**

A process is provided for the preparation of cellulosic paper sheets having a high degree of uniformity. In this process, an improvement has been discovered which comprises (1) sequestering the excess aluminum ion by the addition of a sequestering amount of a member selected from the group consisting of (i) a chelating agent and (ii) an acrylamide-based anionic polymer having a molecular weight of less than 1,000,000; and (2) after sequestering the excess free aluminum ion, then including in said fiber suspension 0.01–2% (based on dry fiber weight) of a polyacrylamide mucilaginous material of a molecular weight of more than 3,000,000 and a hydrolysis degree of 10 to 30%. The process allows the formation of paper sheets of an even texture and quality by obviating the problem of cellulose fiber slippage on the wire mesh and provides a uniform dispersion of the fibers in the vat.

3,725,196

FIBROUS BASE FELT CONTAINING CELLULOSIC FIBERS, 10% TO 50% ASBESTOS FIBERS, AND 1% TO 5% OF WATER SOLUBLE CATIONIC POLYACRYLIC RESIN AS A DRAINAGE AID

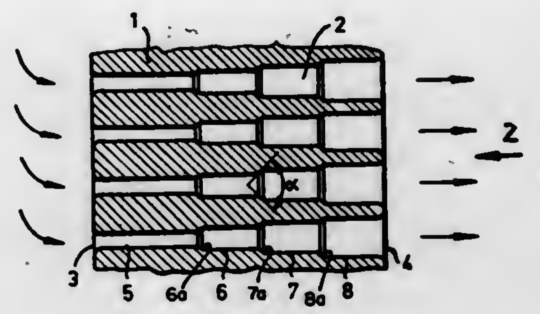
Donald C. Winters, Plainfield, N.J., assignor to Congoleum Industries, Inc., Kearny, N.J.
Filed April 8, 1970, Ser. No. 26,805
Int. Cl. D21h *5/18, 3/38*
U.S. Cl. 162—145 **3 Claims**

A fibrous base felt which includes cellulosic fibers, 10 percent to 50 percent asbestos fibers, and 1 percent to 5 percent of water soluble cationic polyacrylic resin is produced by separately forming a cellulosic fibrous slurry and an asbestos fibrous slurry, adding the polyacrylic resin to the asbestos fibrous slurry, mixing the slurries, and thereafter forming and drying the produced felt. Binders may be employed to saturate the felt subsequent to drying.

3,725,197

HEADBOX FOR A PAPERMAKING MACHINE CONTAINING MULTIPLE PARALLEL DUCTS

Hans Dahl, Ravensburg, and Anton Kurz, Langenargen, Germany, assignors to Escher Wyss GmbH, Ravensburg, Germany
Filed Aug. 11, 1970, Ser. No. 62,840
Claims priority, application Germany, Aug. 14, 1969, P 19 41 424.5; Oct. 22, 1969, P 19 53 086.0
Int. Cl. D21f *1/06*
U.S. Cl. 162—343 **8 Claims**

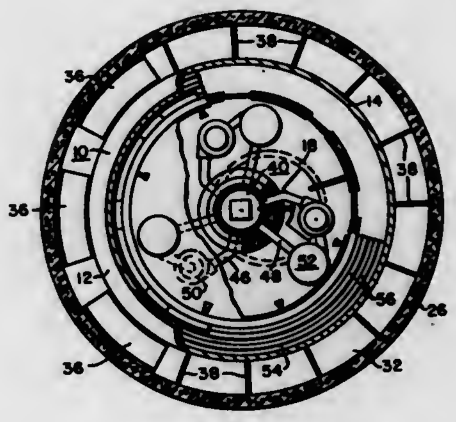


A headbox for a papermaking machine which includes a plate which extends over the width thereof and contains a plurality of parallel ducts, each of which widen in stepwise fashion with the opening angle between each successively larger duct portion being between 100° and 180°. The stock suspension feeds to the headbox plate directly from the supply conduit and is discharged from the parallel ducts to the headbox outlet by an unobstructed flow path.

3,725,198

NUCLEAR CONTAINMENT SYSTEM

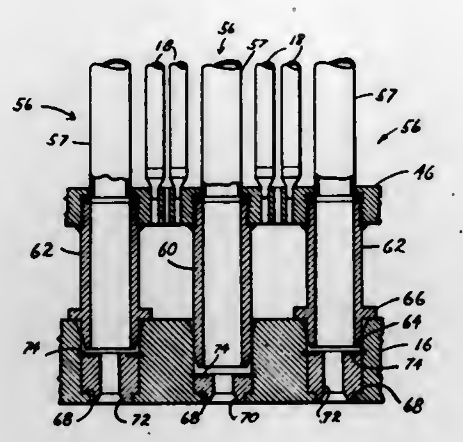
Gunnar A. Harstead, Park Ridge, N.J., and John Locante, Monroeville, and James G. Russell, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 3, 1969, Ser. No. 813,136
Int. Cl. G21c *9/00*
U.S. Cl. 176—37 **4 Claims**



A containment structural system consisting of a sealed inner pressure containing shell, preferably of steel, and an outer cylindrical shell, preferably of concrete, spaced therefrom and built on a common base. The space between the shells is filled with a fluid such as water so that the fluid entirely covers the inner shell to provide radiation shielding and to assist in carrying pressure forces in the event of a loss of coolant accident.

3,725,199
NUCLEAR REACTOR ORGANIZATION AND FUEL ASSEMBLY ARRANGEMENT

Gennaro V. Notari, Simsbury, and Royce J. Rickert, Bloomfield, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Continuation of application Ser. No. 631,090, Apr. 14, 1967. This application Apr. 9, 1969, Ser. No. 817,255
Int. Cl. G21c *15/22, 3/32, 3/14*
U.S. Cl. 176—61 **8 Claims**



A fuel assembly for a nuclear reactor cooled by a moderating fluid. The assembly has flow tubes that extend beyond the inlet of the assembly and provide positioning and support structure when the assembly is mounted in the reactor. Flow is regulated through the flow tubes by orifices upstream of these tubes.

3,725,200
PROCESS FOR FERMENTATIVE PRODUCTION OF YEAST CELLS

Kiyoshi Watanabe, Takasag, Yoshio Shimada, Hajime Kawaharada, and Kenji Suzuki, Kakogawa, and Fumio Tanaka, Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
No Drawing. Filed July 7, 1970, Ser. No. 53,024
Claims priority, application Japan, Mar. 3, 1970, 45/18,562
Int. Cl. C12d *13/06;* **C12b** *1/00*
U.S. Cl. 195—28 R **12 Claims**

Process for producing yeast cells having high protein content in which a novel strain, *Candida novellus* is cultivated under aerobic condition in an aqueous nutrient medium containing n-paraffins or n-paraffin-containing hydrocarbons. The process ensures high yield of yeast cells, high protein content of the cells and increased cell productivity.

3,725,201
MANUFACTURE OF URIDINE-5-DIPHOSPHO-GLUCURONIC ACID

Tsunetake Sugimori and Yoji Tsukada, Kyoto, and Yasuhiko Tazuke, Osaka, Japan, assignors to Marukin Shoyu Company, Limited, Uchinomi-cho, Shozu-gun, Kagawa-ken, Japan
No Drawing. Filed Sept. 8, 1971, Ser. No. 178,781
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N **7 Claims**

A process for manufacturing uridine-5'-diphosphoglucuronic acid which comprises cultivating a strain belonging to the genus Bacillus which is capable of producing uridine-5'-diphosphoglucose dehydrogenase to produce uridine-5'-diphosphoglucose dehydrogenase and reacting the resultant uridine-5'-diphosphoglucose dehydrogenase with uridine-5'-diphosphoglucose to produce uridine-5'-diphosphoglucuronic acid.

3,725,202
ENZYME TREATMENT

William Harold White, Fulton, Ill., and Robert George Dworschack, Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.
No Drawing. Filed July 19, 1971, Ser. No. 164,058
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R **10 Claims**

The disclosure is directed to a method of treating enzyme preparations containing glucoamylase and transglucosidase to substantially reduce the transglucosidase present therein with silver or mercuric ions. The treated enzyme preparations may be used to convert starch to dextrose.

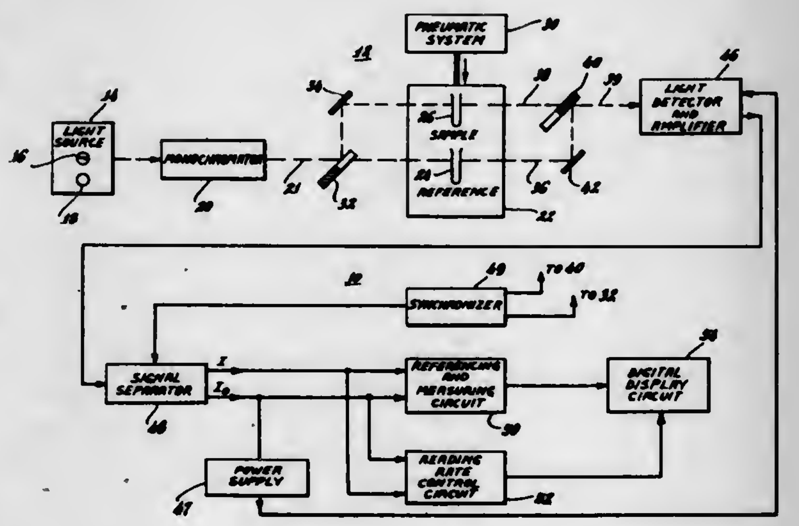
3,725,203
BACTERIA IDENTIFICATION CULTURE MEDIUM

Walter M. Sellers, Jr., San Antonio, Tex., assignor to Media Services, Inc., San Antonio, Tex.
Filed Feb. 5, 1971, Ser. No. 113,095
Int. Cl. C12k *1/00*
U.S. Cl. 195—100 **15 Claims**

A culture medium which provides an environment for positive and nontransient identification of proteus and providence strains of enteric bacteria utilizes a combination of L-tryptophane with ferric ammonium citrate and brom cresol purple with the optional addition of L-phenylalanine in a slightly acid medium. The culture is also provided with a gelling agent such as agar in order to produce a slant and with nutrients for the bacteria. The combination of components may be incorporated into otherwise known culture media as well. When the combination is incorporated into slightly acid screening media such as lysine iron agar, a positive test for proteus and providence bacteria can be effected. When incorporated in other screening media such as Kligler iron agar or triple sugar iron agar which are slightly alkaline, this combination of ingredients improves the screening ability of these culture media although it does not provide a positive test for proteus and providence bacteria.

3,725,204
REACTION DETECTOR

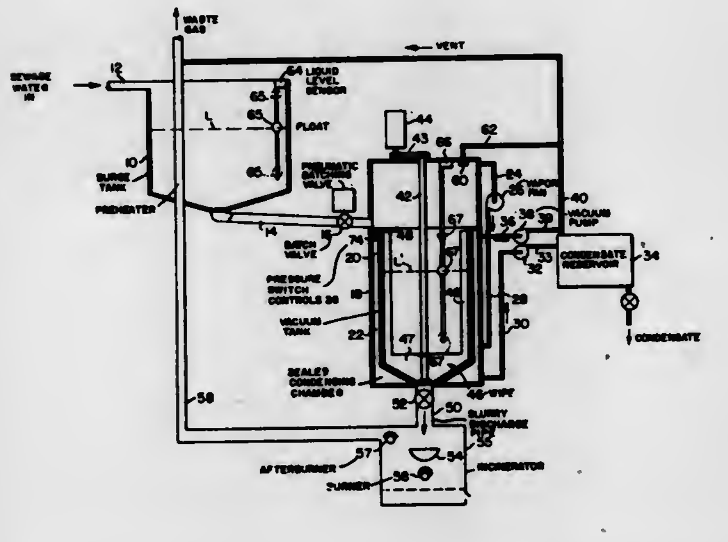
Hamilton W. Marshall, Jr., Norwalk, and John R. Smeaton, Ridgefield, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Aug. 2, 1971, Ser. No. 167,947
Int. Cl. C12k *1/00*
U.S. Cl. 195—127 **7 Claims**



A reaction detector measures the rate of reaction in a substance undergoing a reaction, such as an enzyme-catalyzed chemical reaction, by measuring the rate of change of absorbance in the substance during the reaction. This is accomplished by comparing the intensities of light penetrating through a reference and through the sample substance undergoing the reaction. The difference between the two intensities is measured and this difference is utilized to make the amplitude of a signal derived from the reference substantially equal to the amplitude of the signal derived from the sample substance. The reference signal is kept constant to establish a reference level whereas the sample signal is measured a predetermined time later and such a measurement provides directly the reaction rate. This reaction rate is then automatically transformed into units specifying the concentration of enzymes in the sample substance.

3,725,205
APPARATUS FOR CLEANING SEWAGE WATER

Helge K. Heen, Avon, N.Y., assignor to Adaks Products Incorporated
Filed May 12, 1970, Ser. No. 36,637
Int. Cl. B01d *1/00, 3/00, 3/42*
U.S. Cl. 202—181 **12 Claims**

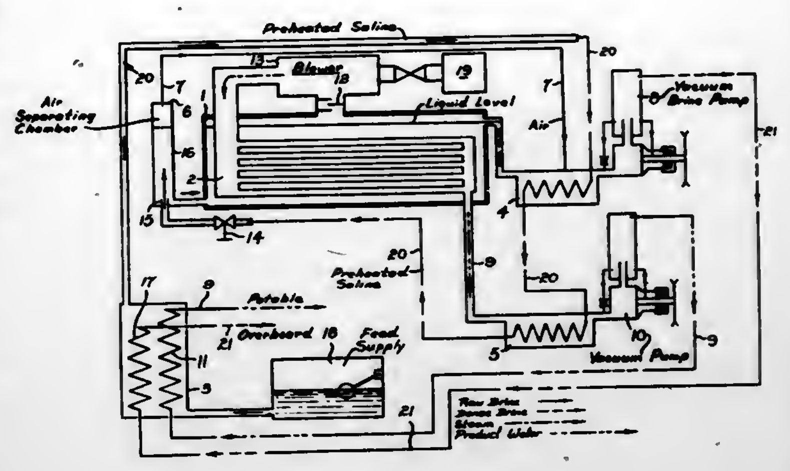


Sewage water is fed to a surge tank, and from there, periodically and in predetermined quantities, through a batching valve to a sealed evaporator tank, which is surrounded adjacent its lower end by a condensing chamber. When the level of the liquid in the evaporator drops to a predetermined low limit, sensing means opens the batching valve momentarily to fill the tank, thereby starting a vacuum pump which reduces the pressure in the tank and chamber approximately to the saturated vapor pressure in the tank. A vapor fan then pumps vapor from the tank to the chamber, where the vapor condenses and transfers heat to the remaining sewage water in the tank. Periodically the slurry in the tank is automatically discharged and incinerated.

3,725,206
DESALINATION PLANT

Norman Leslie Foley, Clovercrest, Modbury, South Australia, Australia, assignor to Auscoteng Pty. Ltd., Wayville, South Australia, Australia
Filed Sept. 9, 1970, Ser. No. 70,816
Claims priority, application Australia, Sept. 11, 1969, 60,784/69
Int. Cl. B01d *1/00, 3/00, 3/10, 3/14, 3/42;* **C02b** *1/04*
U.S. Cl. 202—205 **3 Claims**

A desalination plant to distill water from sea water at ambient temperature without the addition of heat, wherein a condenser is formed in an evaporator in heat exchange relation therewith. A blower evacuates the evaporator and transfers steam to the condenser, and two combined liquid-vacuum pumps are provided, one to remove dense brine and air from the evaporator, the other to remove condensate and air from the condenser.



A high vacuum is thus produced in the evaporator sufficient to cause boiling at ambient temperature.

3,725,207
DISTILLATION OF A HALOALKYL-CYANIDE WITH A NITRILE

Richard L. Golden, Oradell, N.J., assignor to Halcon International, Inc., New York, N.Y.
Filed May 27, 1970, Ser. No. 41,091
Int. Cl. B01d *3/34;* **C07c** *121/06*
U.S. Cl. 203—6 **4 Claims**

Alkylene nitriles having the formula X—CH_2—CHR—CN may be purified by distillation by maintaining a concentration of 1 to 5 mol percent of CH_2=CRCN in the distillation zone during the distillation. R may be hydrogen or a lower alkyl and X a chloro-, iodo- or bromo-group.

3,725,208
PROCESS FOR PURIFICATION OF ACRYLIC ACID FROM ALDEHYDES BY DISTILLATION WITH A REAGENT

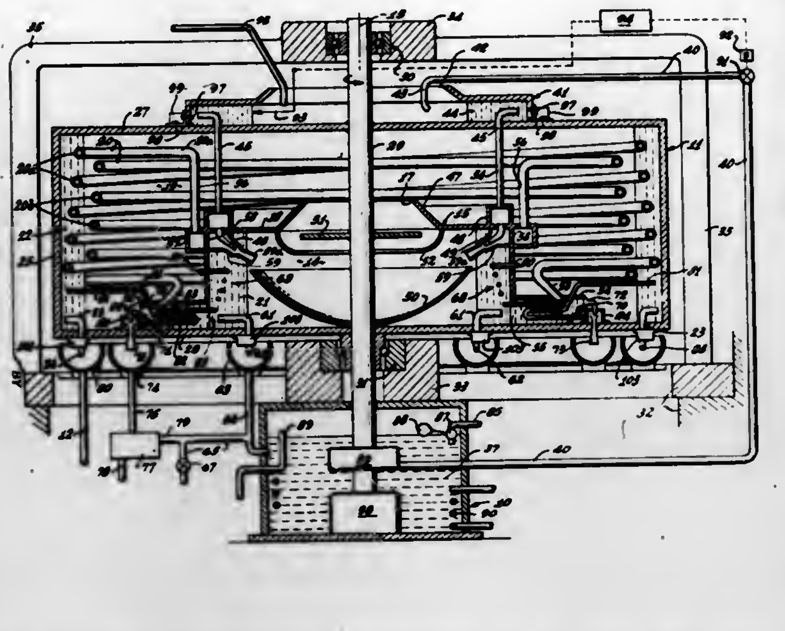
Shiro Maezawa, Hiroshi Yoshikawa, Kenji Sakamoto, and Jun Fujii, Takasaki, and Makoto Hashimoto, Tokyo, Japan, assignors to Nippon Kayaku Company, Ltd., Tokyo, Japan
No Drawing. Filed Aug. 20, 1971, Ser. No. 173,646
Int. Cl. C07c *57/04*
U.S. Cl. 203—8 **9 Claims**

A process for the removal of small amounts of aldehyde impurities from acrylic acid comprises adding to the acrylic acid minor amounts of a compound selected from the group consisting of sulfuric acid, hydrazine, phenylhydrazine, aniline, monoethanolamine, ethylene diamine and glycine, and subjecting the acrylic acid mixture to distillation.

3,725,209
CENTRIFUGAL DISTILLATION SYSTEM

Faust Rosa, Northridge, Calif.
(4977 Battery Lane, Apt. 910, Bethesda, Md. 20014)
Filed Aug. 11, 1970, Ser. No. 62,814
Int. Cl. B01d *3/10*
U.S. Cl. 203—24 **35 Claims**

Distillation of fresh water from seawater by introducing the seawater into an evaporating zone defined in the central portion of a sealed rotary drum to vaporize water into a vapor space within the drum, and confining unevaporated liquid in the evaporating zone while centrifugally compressing vapor in a condensing zone around the evaporating zone and condensing the vapor on heat exchange coils with cooler liquid circulated therethrough. In a one-stage embodiment, collected liquid from the evaporating zone is circulated through the coils, while modified embodiments use similar rotary drums as heat pumps



for preparing liquid for distillation in at least one preliminary stage.

3,725,210

METHOD OF REMOVING UNREACTED MATERIALS REMAINING IN UREA SYNTHESIS EFFLUENT BY PLURAL STAGE DISTILLATION AND CO_2 STRIPPING

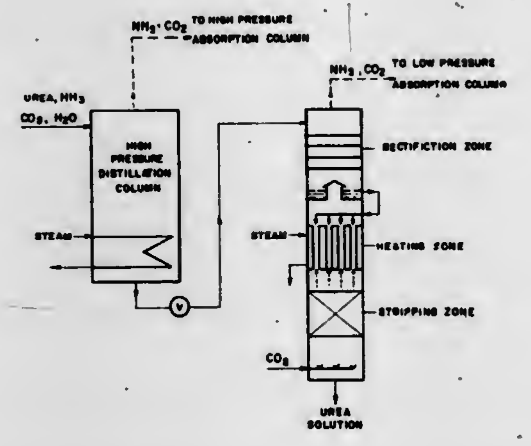
Eiji Otsuka and Kazumichi Kanai, Fujisawa, Shigeru Inoue, Kamakura, and Novuyoshi Hashimoto, Yokohama, Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

Filed Aug. 18, 1970, Ser. No. 64,805

Claims priority, application Japan, Aug. 30, 1969, 44/68,311

Int. Cl. C07c *127/04*

U.S. Cl. 203—42 **10 Claims**


NH₃·CO₂ TO HIGH PRESSURE ABSORPTION COLUMN
UREA, NH₃ CO₂, H₂O
HIGH PRESSURE DISTILLATION COLUMN
NH₃·CO₂ TO LOW PRESSURE ABSORPTION COLUMN
RECTIFICATION ZONE
STEAM
STEAM
HEATING ZONE
STRIPPING ZONE
CO₂
UREA SOLUTION

Urea synthesis effluent from which the major portion of unreacted carbon dioxide and ammonia have been removed, is completely stripped of the remaining unreacted materials by passing the effluent through a column having a rectification zone maintained at a gauge pressure of 0 to 5 kg./cm.² and a head temperature of 60° to 120° C., a heating zone maintained at 100° to 140° C. and a stripping zone wherein carbon dioxide is introduced at the rate of 0.01 to 0.2 mol per mol of urea contained in the effluent, whereby the unreacted materials are completely removed from the urea synthesis effluent.

3,725,211

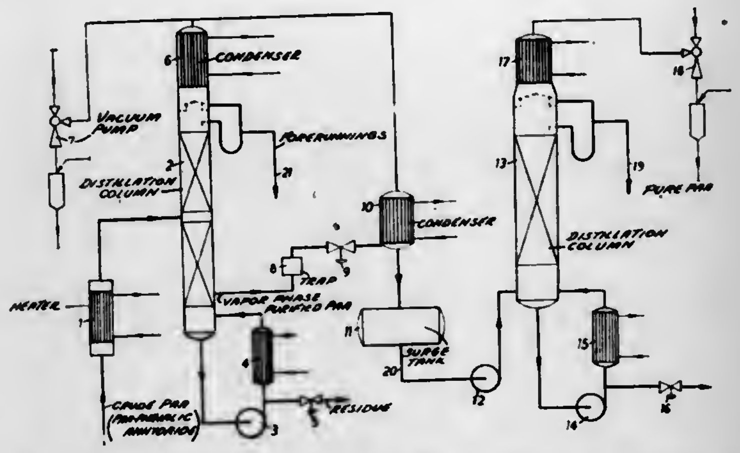
CONTINUOUS DISTILLATION OF PHTHALIC ANHYDRIDE WITH VAPOR SIDE STREAM RECOVERY

Hubert Gehrken, Weiden, Gerd Helms, Junkersdord, Gerhard Keunecke, Geyen, and Herbert Krimphove, Cologne-Muengersdorf, Germany, assignors to Chemiebau Dr. A. Zieren GmbH & Co. KG, Cologne-Muengersdorf, Germany

Continuation-in-part of application Ser. No. 843,871, Apr. 1, 1969. This application Mar. 1, 1972, Ser. No. 231,015

Int. Cl. B01d *3/14;* **C07c** *63/18*

U.S. Cl. 203—74 **12 Claims**



A process for continuous distillation purification of phthalic anhydride wherein preheated phthalic anhydride is fed to the middle section of a distillation column operated under a sump pressure of about 550–800 mm. Hg; forerunnings containing more volatile components are continuously separated at the head of the column; a residue containing higher-boiling contaminates is withdrawn from the sump; and a sidestream of purified phthalic anhydride having a purity of 99.1 to 99.95% by weight is removed in the vapor phase from the lower part of the column stripping section. Further purification may be obtained by passing the purified sidestream product into a small vacuum distillation column.

3,725,212

METHOD FOR TESTING RADIATOR-TUBE-CLOGGING PROPERTY OF ANTIFREEZING COOLANTS

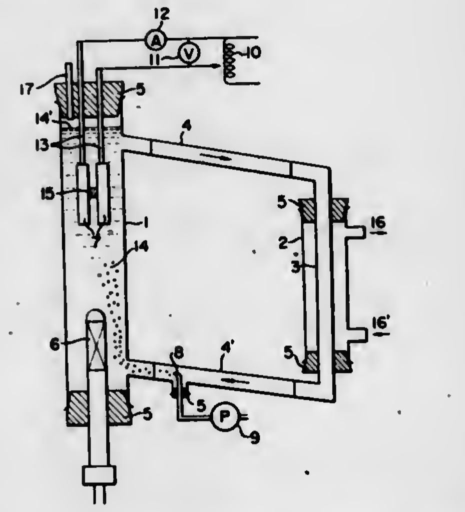
Susumu Kawamoto and Hisao Suzuki, Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1971, Ser. No. 121,055

Claims priority, application Japan, Mar. 7, 1970, 45/19,574

Int. Cl. G01n *27/00*

U.S. Cl. 204—1 T **5 Claims**



A method of rapidly testing radiator tube clogging properties of antifreezing coolants for automotive engines in which the coolant to be tested is circulated through a heating zone and a cooling zone. Metal pieces are inserted in the coolant in the heating zone and a source of electric current is connected to the metal pieces for electrolyzing the same and the amount of material deposited in the cooling zone is measured.

3,725,213

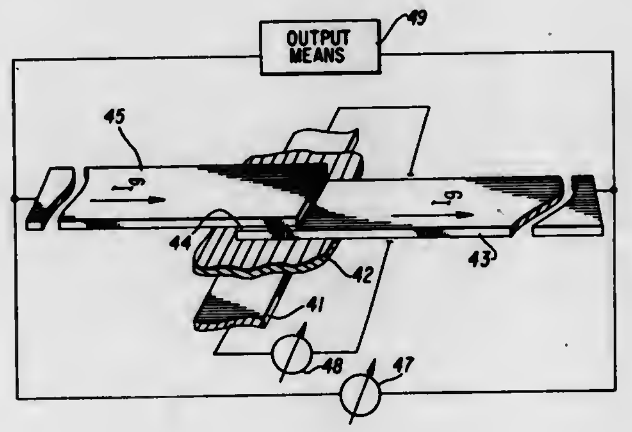
METHOD OF FORMING SUPERCONDUCTIVE BARRIER DEVICES

Joe T. Pierce, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 677,327, Oct. 23, 1967. This application April 13, 1970, Ser. No. 32,491

Int. Cl. C23b *5/48;* **C23f** *17/00;* **B44d** *1/18*

U.S. Cl. 204—15 **4 Claims**



Disclosed are superconductive barrier devices, comprising a gate region with a control line adjacent to the gate, which can perform cryogenic switching and logic functions. According to the various embodiments, the gate region may comprise a relatively thin superconductive layer separated by a very thin insulative layer from a relatively thick superconductive layer, a discontinuous superconductive layer separated by a thin insulative layer from a thick superconductive layer, a pair of superconductors separated by an insulating barrier thin enough to permit electron pair tunneling therethrough, or a granular superconductor wherein the grains are separated by an insulating barrier thin enough to permit electron pair tunneling therethrough. Also disclosed are superconductive barrier devices comprising granular superconductors which may be employed as millimeter or submillimeter radiation generators or detectors.

3,725,214

CHROMIUM PLATING MEDIUM FOR A PORTABLE PLATING DEVICE

John Edwin Bride, Mentor, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 19, 1971, Ser. No. 117,126

Int. Cl. C23b *5/48, 5/06;* **B23p** *1/02*

U.S. Cl. 204—15 **4 Claims**

Desirable electrodeposition of bright chromium plate can be made onto a substrate from a portable plating device having an absorbent mass containing chromic plating medium. The medium contains a complex, water-soluble chromic compound for plating, which compound contains carboxylic acid constituents and halogen constituents. A uniform, bright chromium plate can be readily obtained on the substrate at a desirable current density that avoids the problems accompanying portable plating at elevated temperature.

3,725,215

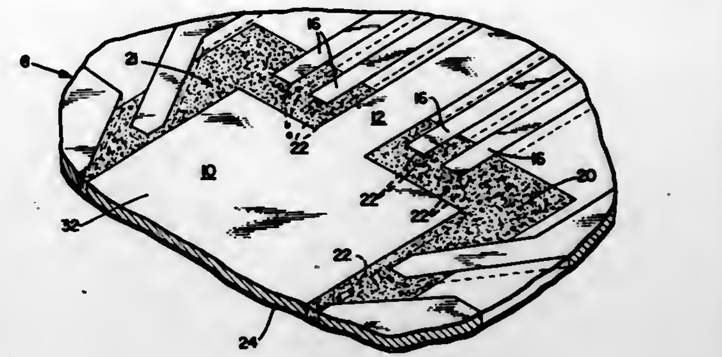
FILLER MASKING OF SMALL APERTURES

Gary Uchytil, Campbell, Calif., assignor to Micro Science Associates, Mountain View, Calif.

Filed Mar. 17, 1971, Ser. No. 125,098

Int. Cl. C23b *5/48;* **G03c** *5/00;* **B44d** *1/18*

U.S. Cl. 204—15 **10 Claims**



Relatively small apertures or passages in a sheet are masked to prevent the plating of the apertures during the electroplating of remaining portions of the sheet by filling the apertures with a readily deformable, photo-hardenable material. A facing is applied to one side of the sheet to retain the deformable material in the apertures until the material has been subjected to radiant energy and thereby hardened. Remaining surface portions of the sheet are then conventionally electroplated and thereafter the sheet is immersed in a dissolving agent to strip the photo-hardenable material and bare the apertures for subsequent use of the sheet.

3,725,216

PLASTIC MOLDING COMPOSITION AND METHOD OF PREPARATION

Michael Ladney, Jr., Grosse Pointe Shores, Mich. (18125 E. Ten Mile Road, East Detroit, Mich. 48021)

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,214

Int. Cl. C23b *5/62*

U.S. Cl. 204—30 **1 Claim**

ABS plastic molding pellets containing a small amount of iso-octly stearate which imparts to the molded part the ability to provide an excellent bond for an electrolytically deposited metal plating.

3,725,217

PLATING TITANIUM AND ZIRCONIUM AND THEIR ALLOYS WITH NICKEL, CHROMIUM AND OTHER HEAVY METALS

Derick S. Hartshorn, Jr., Larchmont, N.Y., assignor to Ionitech Laboratories Incorporated, Chappaqua, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 843,185, July 18, 1969. This application May 15, 1970, Ser. No. 37,843

Int. Cl. C23f *1/00, 17/00*

U.S. Cl. 204—32 R **19 Claims**

A method of plating upon a workpiece of titanium, zirconium, or their alloys with heavy metals which comprises cleaning and lightly pickling without excessive etching or roughening of the surface, which will maintain close tolerance dimensions and surface smoothness in the area of the workpiece to be plated, deoxidizing and coating said area with a conversion coating by immersion in a solution of fluorosilicate or fluoroborate, of which the alkali metal, ammonium, alkaline earth, aluminum and magnesium fluoroborates and fluorosilicates are notable, substantially or wholly removing non-adherent surface layer of conversion film by immersion in an acid, and plating the coated area electrolytically as the cathode in a heavy metal electrolytic plating solution to form a strongly adherent metallic bond. A fluoro film of unknown constitution, which is sometimes so thin as to be invisible even under the electron microscope, joins the chromium or nickel plate firmly to the titanium or zirconium body.

3,725,218

PROCESS FOR PRETREATING DECARBONIZED STEEL TO BE DIRECTLY ENAMELLED

Christian Friedel, Suhl, and Manfred Faethe, Dresden, Germany, assignors to Veb Elektrogeratewerk Suhl, Suhl, Germany

No Drawing. Filed Feb. 11, 1971, Ser. No. 114,705

Int. Cl. C23b *1/04;* **C23f** *17/00*

U.S. Cl. 204—34 **8 Claims**

Process for pretreating decarbonized steel to be directly enamelled and in particular flat pieces of steel to be used as linings for hearths and refrigerators in which following the purification and etching of the steel work piece, an adhesive coating layer is applied comprising the steps of subjecting such steel work piece to a boiling degreasing, then to an electrolytic alkaline degreasing, a rinsing, an electrolytic etching using a sulfuric acid electrolyte, a rinsing an electrolytic application of an adhesive metal coating, a rinsing, neutralization and a drying.

3,725,219

PROCESS FOR PLATING ARTICLES WITH SILVER-PALLADIUM ALLOYS

Henry J. Wesoloski, Milton, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 4, 1965, Ser. No. 453,009

Int. Cl. C23b *5/52*

U.S. Cl. 204—37 R **1 Claim**

A process for plating an article with a silver-palladium alloy comprises the steps of: providing the article with a conventional silver strike; electroplating the article in a silver cyanide solution at a current density of about 10 amperes per square foot for about 20 minutes; electroplating the article in an agitating palladium chloride and ammonium chloride acidic solution at a current density of about 4 amperes per square foot for about 8 hours; and heating the article at a temperature of about 300 to 400° C. for about 8 hours to alloy the silver and palladium thereon.

3,725,220

ELECTRODEPOSITION OF COPPER FROM ACIDIC BATHS

Richard B. Kessler, Jericho, and Fred I. Nobel, Roslyn, both of N.Y., assignors to Lea-Ronal, Inc., Freeport, N.Y.

Filed April 27, 1972, Ser. No. 248,160

Int. Cl. C23b *5/20, 5/46*

U.S. Cl. 204—52 R **13 Claims**

An acid copper plating bath which contains a copper metal salt and a minor amount of a sulfoniumalkanesulfonate or sulfoniumalkanecarboxylate as a brightening agent. Illustrative sulfonium compounds are N-cyclohexyl-2-benzothiazol sulfonium-1-propanesulfonate, bis (dimethylthiocarbamyl) sulfonium-1-propanesulfonate, and bis (dimethylthiocarbamyl) sulfonium-1-propanecarboxylate. Preferred amounts of the sulfonium compounds range from about 0.001 to 1.0 grams per liter. The use of such acid copper plating baths in the electrodeposition of copper metal is also disclosed.

3,725,221

RECOVERY OF NIOBIUM AND TANTALUM

John M. Gomes, 1650 Rayburn Drive 89503; Kenji Uchida, 1341 Hillside Drive 89502; and Morton M. Wong, 2281 Riviera St. 89502, all of Reno, Nev.

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,092

Int. Cl. B01k *1/00*

U.S. Cl. 204—61 **5 Claims**

Niobium and tantalum are recovered as phosphides from a crude oxide or mineral feed material by selective electrodeposition from a fused salt bath comprising the feed material, an alkali metal phosphate, an alkali metal halide and an alkali metal borate or boric oxide. Electrolysis at a potential of 2.5 volts or less results in deposition of niobium phosphide essentially free of tantalum, with subsequent electrolysis at 4.0 volts or greater resulting in deposition of tantalum phosphide.

3,725,222

PRODUCTION OF ALUMINUM

Allen S. Russell, New Kensington; Lester L. Knapp, Maryville, and Warren E. Haupin, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 26, 1971, Ser. No. 192,653

Int. Cl. C22d *3/12*

U.S. Cl. 204—67 **17 Claims**

Production of aluminum by continuous electrolysis of aluminum chloride in molten electrolyte of controlled oxide content.

3,725,223

BAFFLES FOR DIMENSIONALLY STABLE METAL ANODES AND METHODS OF USING SAME

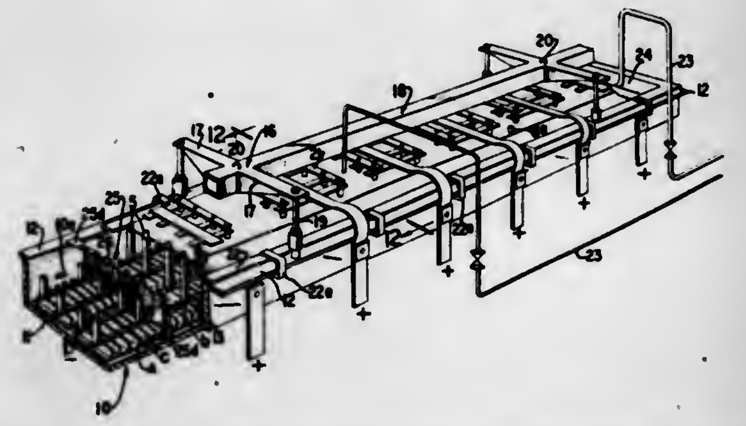
Vittorio de Nora, Nassau, Bahama Islands, and Giovanni Trisoglio, Como, Italy, assignors to Electronor Corporation, Panama City, Panama

Filed Mar. 2, 1971, Ser. No. 120,247

Claims priority, application Italy, Jan. 18, 1971, 19,473/71

Int. Cl. C01d *1/08;* **C22d** *1/04*

U.S. Cl. 204—99 **12 Claims**



Describes baffles for use with dimensionally stable metal anodes in flowing mercury cathode electrolysis cells to control the flow of the electrolyte through the electrolysis gap and upwardly through the openings in the anode working surfaces to improve the operation of the cells, and the method of controlling the flow of the electrolyte through the cells by the use of said baffles or similar flow controlling devices.

3,725,224

COMPOSITION FOR ELECTROLYTIC DESCALING OF TITANIUM AND ITS ALLOYS

Earl W. Kendall, Bonita, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Continuation-in-part of Ser. No. 816,460, Feb. 28, 1969, abandoned. This application June 30, 1971, Ser. No. 158,611

Int. Cl. C23g *1/02;* **C23b** *1/00;* **C09k** *3/00*

U.S. Cl. 204—141.5 **9 Claims**

A non-aqueous electrolytic bath for descaling titanium and its alloys utilizes a hydrofluoric acid bearing compound such as 48 – 50 percent hydrofluoric acid to provide the attack ion in a glacial acetic acid carrier. A buffering agent such as sulfuric acid, acetic anhydride or sulfur trioxide acts as a dehydrating agent picking up water from the hydrofluoric acid to deionize the same and prevent attack on the titanium.

3,725,225

CATHODIC PROTECTION METHOD

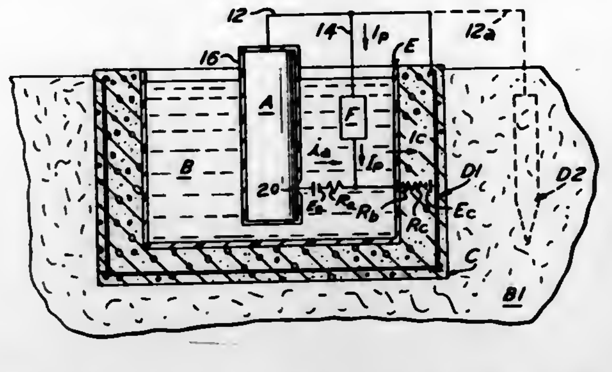
Leon P. Sudrabin, Berkeley Heights, and Paul Kaiser, Union, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 30, 1971, Ser. No. 129,496

Int. Cl. C23f *13/00*

U.S. Cl. 204—147 **10 Claims**

Cathodic protection system for metal structures at least partially immersed in a corroding electrolyte and being connected to a second metal structure by a continuous conductive path. An electrically resistant diaphragm is interposed in the electrolyte between the two structures. Cathodic protection current is then applied to the first metal structure by an anode disposed within the electrolyte between the first metal structure and the diaphragm.



3,725,226

ELECTROCHEMICAL INACTIVATION OF PATHOGENS

Glenn E. Stoner, Charlottesville, Va., assignor to Research Corporation, New York, N.Y.

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,953

Int. Cl. C02b *1/82;* **C02c** *5/12;* **B01k** *1/00*

U.S. Cl. 204—149 **11 Claims**

Pathogens existing in an aqueous medium are inactivated by applying a potential across at least one pair of electrodes suitably disposed within said medium, by means of an alternating voltage, such that each of said electrodes is repeatedly passed through an anodic phase and a cathodic phase, wherein during the anodic phase the peak voltage is less than that at which vigorous electrolytic oxygen is generated, and during the cathodic phase, the peak voltage is greater than that at which electrolytic hydrogen is generated, such that during said anodic phase, pathogens contained within said aqueous medium are inactivated at at least one of said electrodes, and during said cathodic phase, said inactivated pathogens are defouled from said electrode.

3,725,227

PROCESS FOR THE MANUFACTURE OF 2-CHLORETHANEPHOSPHONIC ACID DICHLORIDE

Hans-Jerg Kleiner, Bad Soden, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Mar. 26, 1971, Ser. No. 128,537

Claims priority, application Germany, Mar. 28, 1970, P 20 15 163.7

Int. Cl. B01j *1/10;* **C07f** *9/42*

U.S. Cl. 204—158 HA **10 Claims**

Preparation of 2-chlorethanephosphonic acid dichloride by the reaction of ethanephosphonic acid dichloride with a chlorinating agent.

3,725,228

HIGH ENERGY CURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION

Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Application June 23, 1970, Ser. No. 49,191, which is a continuation-in-part of abandoned application Ser. No. 617,801, Feb. 23, 1967, which in turn is a continuation-in-part of abandoned application Ser. No. 567,841, July 26, 1966. Divided and this application June 25, 1971, Ser. No. 156,975

Int. Cl. C08c *11/54;* **C08d** *1/00;* **C08f** *1/16*

U.S. Cl. 204—159.14 **17 Claims**

The invention disclosed is for a new high energy curable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain backbone of the molecule, and a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule. The high energy curable liquid polymer composition upon curing in the presence of high energy irradiation forms odorless, solid, elastomeric products which may serve as sealants, coatings, adhesives, and molded articles.

3,725,229

HIGH ENERGY CURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION

Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Application June 23, 1970, Ser. No. 49,191, which is a continuation-in-part of abandoned application Ser. No. 617,801, Feb. 23, 1967, which in turn is a continuation-in-part of abandoned application Ser. No. 567,841, July 26, 1966. Divided and this application June 25, 1971, Ser. No. 156,950

Int. Cl. C08c *11/54;* **C08d** *1/00;* **C08f** *1/16*

U.S. Cl. 204—159.14 **17 Claims**

The invention disclosed is for a new high energy curable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain backbone of the molecule, and a polythiol component having a molecule containing a mulitplicity of pendant or terminally positioned —SH functional groups per average molecule. The high energy curable liquid polymer composition upon curing in the presence of high energy irradiation forms odorless, solid, elastomeric products which may serve as sealants, coatings, adhesives, and molded articles.

3,725,230

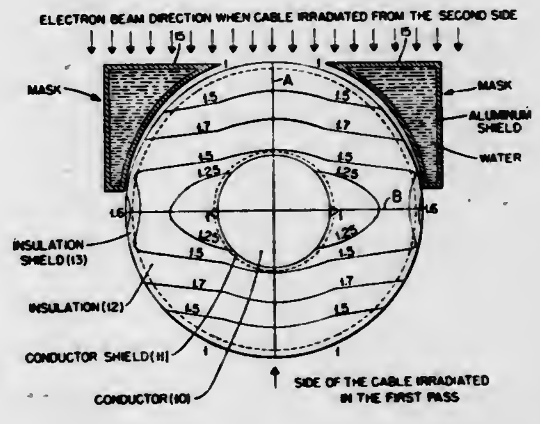
INSULATED ELECTRICAL CABLES AND METHOD OF MAKING THEM

George Bahder, Edison, N.J., Oscar G. Garner, Riverside, Conn., and George S. Eager, Jr., Upper Montclair, N.J., assignors to General Cable Corporation, New York, N.Y.

Filed Mar. 29, 1971, Ser. No. 128,809

Int. Cl. B01j *1/10*

U.S. Cl. 204—159.2 **5 Claims**



This application discloses insulated electrical cables and method of making them. The cables consist of metallic conductors, stranded or solid, a semi-conducting shield over the conductor, a comparatively heavy wall of insulation and another layer of semi-conducting shield which, if used in sufficient thickness, may serve both as a shield and an outer protective jacket. The cables are irradiated in a particular controlled manner to improve desired physical characteristics while preserving desired insulating characteristics. The invention is particularly applicable to high voltage cables rated 5 to 70 kv. or above.

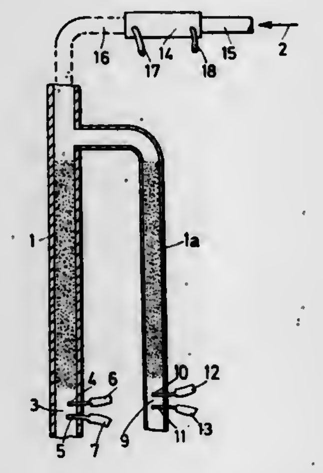
3,725,231
PHOTOSENSITIVE DIACETONE ACRYLAMIDE RESINS

Richard William Jahnke, Mentor on the Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Filed Aug. 20, 1971, Ser. No. 173,664
Int. Cl. B01j *1/00;* **C08d** *1/10*
U.S. Cl. 204—159.14 **7 Claims**

Diacetone acrylamide and analogous substituted acrylamides react with aldehydes containing conjugate unsaturation with respect to the carbonyl group, in the presence of an alkaline reagent, to yield monomeric compounds which are photosensitive and which form photosensitive polymers. The latter can also be prepared by reacting said aldehydes with a diacetone acrylamide polymer while gradually adding said alkaline reagent. The polymers crosslink on exposure to visible or (preferably) ultraviolet radiation and are useful in the preparation of lithographic printing plates, photoresists, etc.

3,725,232
DETECTION METHOD AND APPARATUS FOR CHROMATOGRAPHY

Victor Pretorious, and Hans Helmut Hahn, both of Pretoria, Republic of South Africa
Division of Ser. No. 583,788, Oct. 3, 1966, Pat. No. 3,594,294. This application Feb. 23, 1971, Ser. No. 118,128
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 G **10 Claims**

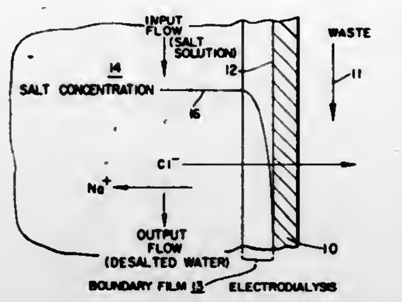


Small amounts of dissolved impurities in an eluent for chromatography and which might interfere with the monitoring of a chromatogram by very sensitive, in particular electrochemical detectors, are removed by passing the eluent, on its way to a chromatographic system, through an electrochemical cleaning device. The device is divided into two parallel passages by a porous wall impregnated with a salt bridge medium. The one passage through which the eluent flows, is packed with a porous conductive medium serving as one electrode and the other passage contains a reference electrode, e.g. calomel or silver chloride. An appropriate voltage applied across the electrodes causes the electrochemical elimination of the interfering impurities.

3,725,233
ELECTRO-OSMOSIS SYSTEM

Jack D. Smith, Boston, Mass., assignor to American Bioculture, Inc.
Original application June 5, 1969, Ser. No. 830,688, now Patent No. 3,657,106. Divided and this application Apr. 14, 1972, Ser. No. 244,138
Int. Cl. B01d *13/02*
U.S. Cl. 204—180 P **2 Claims**

A desalting system making use of electro-osmosis is similar to conventional electrodialysis arrangements in that the input solution is passed between a pair of membranes one of which is anion permeable and the other cation permeable, an applied electric field causing the anions and cations to leave the solution by migrating through the respective membranes. However, unlike conventional electrodialysis membranes, the membranes are also relatively permeable to water. The resulting flow of water toward and through the membranes materially increases the rate at which ions are transported to the membranes and correspondingly increases the rate at which ions are removed from the input solution.



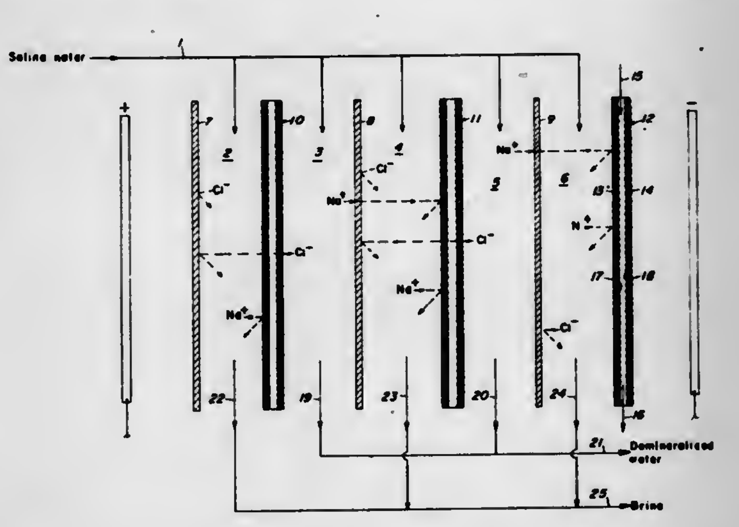
3,725,234
PARTIAL INSULATION OF AN ELECTRODEPOSITION TANK

Frederick M. Loop, North Olmsted, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Apr. 28, 1971, Ser. No. 138,215
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **6 Claims**

In a continuous electrodeposition process where the article enters the electrodeposition bath in a power-off configuration, it has been found that surface irregularities occur on an article when that article is introduced power-off into the electrodepositable composition while the preceding article is still being coated and is in a power-on condition. This problem is solved by insulating that portion of the electrodeposition tank adjacent to and to the rear of the point of entry of the article.

3,725,235
DYNAMICALLY FORMED ELECTRODIALYSIS MEMBRANES

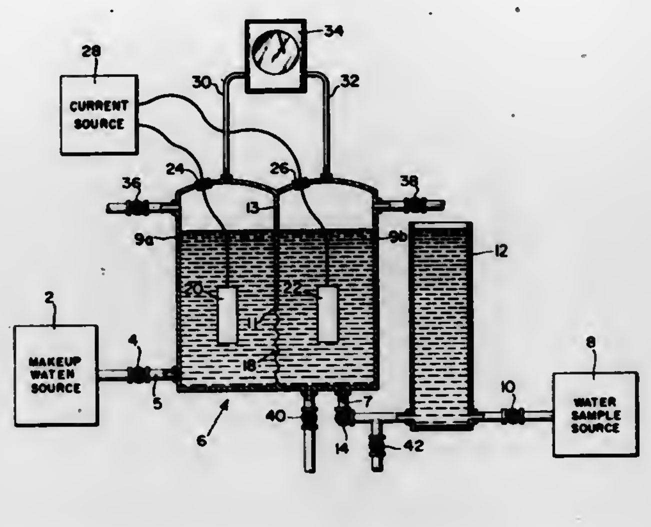
Milton S. Mintz, McLean, Va., assignor to the United States of America as represented by the Secretary of the Interior
Filed Mar. 23, 1971, Ser. No. 127,100
Int. Cl. B01d *13/02;* **B01k** *5/00*
U.S. Cl. 204—180 P **18 Claims**



Electrodialysis membranes are formed in situ by contacting an aqueous suspension of an ion exchange resin with a support material prior to application of an electrical potential across the separation unit.

3,725,236
ELECTROCHEMICAL OXYGEN DEMAND APPARATUS

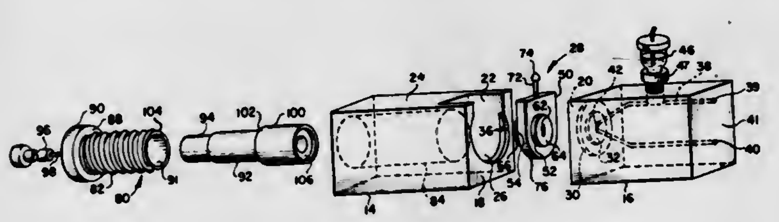
Justin O. Johnson, Jr., Levittown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 24, 1970, Ser. No. 75,438
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 R **9 Claims**



A non-biological method of exhaustive electrochemical oxidation utilizing an apparatus for forming oxygen in an aqueous sample through exhaustive electrolysis by a current flow between a pair of electrodes to oxidize the organic material in the sample in combination with an electrochemical oxidation of the organic material at an electrode immersed in the sample. The separate products of the electrolysis at the respective electrodes are collected, and the partial pressures thereof are measured by a differential pressure measuring means to provide an indication of the oxygen demand when correlated with an electrolysis of a reference fluid sample.

3,725,237
APPARATUS FOR MEASURING ION ACTIVITY OF SOLUTIONS

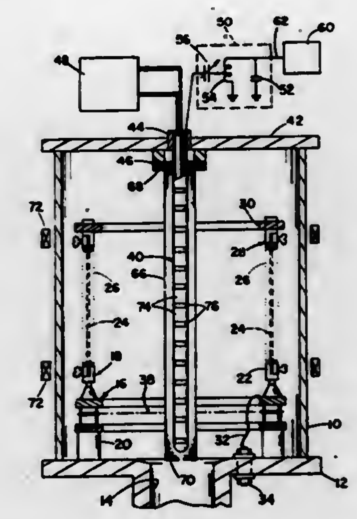
George Matsuyama, Fullerton, and Grover F. Lindell, Anaheim, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Filed Oct. 26, 1970, Ser. No. 83,884
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 L **10 Claims**



An apparatus for measuring the ion activity of a solution in which the ion sensitive barrier of the apparatus comprises a unitary membrane assembly in which an organic sensing solution is held between two hydrophilic membranes, preferably cellophane and cellulose acetate, respectively. Means are provided for replaceably mounting the membrane assembly in a sample flow cell which permits sample solution to flow past the cellophane membrane of the assembly and an electrolyte solution to contact the cellulose acetate membrane.

3,725,238
TARGET ELEMENT

Irwin W. Fischbein, Canton, Ben H. Alexander, Brookline, and Aiyaswami S. Sastri, Malden, Mass., assignors to The Gillette Company, Boston, Mass.
Continuation-in-part of application Ser. No. 865,634, Oct. 13, 1969, which is a continuation-in-part of application Ser. No. 845,142, July 28, 1969. This application June 19, 1970, Ser. No. 47,664
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **5 Claims**



A target element for use in an RF sputtering system for forming a thin film metal alloy on the surface of a substrate. The target element is in the form of an elongated rod and its exposed surface is composed of alternating bands of first and second metals in metallurgically separate form from one another.

3,725,239
HYDROGENATION CATALYST AND PROCESS

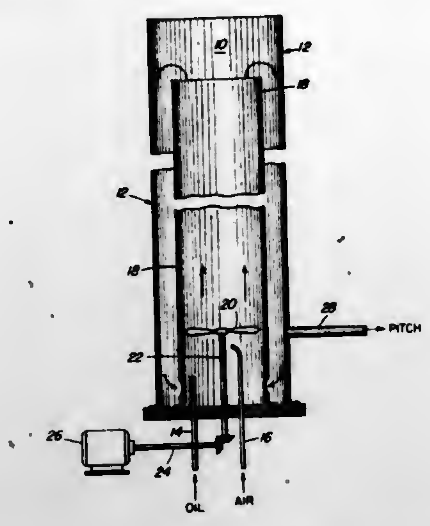
Thomas E, Kiovsky, El Sobrante, and Milton M. Wald, Walnut Creek, Calif., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Original application May 15, 1970, Ser. No. 37,912. Divided and this application Nov. 15, 1971, Ser. No. 198,954
Int. Cl. C10g *1/06*
U.S. Cl. 208—10 **1 Claim**

A catalyst for increasing the rate of hydrogenation reactions including a complex salt of the chloride, bromide or iodide of zinc, tin, antimony, bismuth, cadmium, gallium, mercury or arsenic, and the corresponding ammonium halide.

3,725,240
PROCESS FOR PRODUCING ELECTRODE BINDER ASPHALT

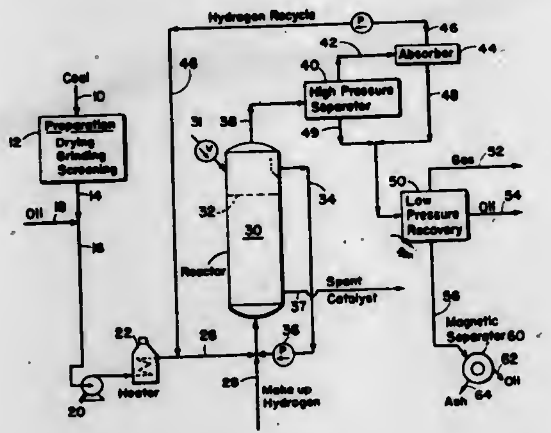
Lester A. H. Baum, Cherry Hill, N.J., assignor to Mobil Oil Corporation
Continuation-in-part of application Ser. No. 57,777, July 23, 1970, which is a continuation-in-part of application Ser. No. 777,157, Nov. 19, 1968, and a continuation-in-part of application Ser. No. 57,825, July 23, 1970, which is a continuation-in-part of said application Ser. No. 777,157, all now abandoned. This application May 13, 1971, Ser. No. 143,063
Int. Cl. C10c *3/04;* **C10g** *37/04*
U.S. Cl. 208—76 **8 Claims**

Asphaltic compositions suitable for use as binders for carbon electrodes can be prepared by a continuous process of polymerization from a feed stock comprising a high boiling oil portion of the product obtained from catalytic cracking of petroleum gas oils, provided that portion (cycle stock) is further cracked in the absence of catalyst and fractionated to remove light ends. A suitable polymerization is conducted in the presence of air at a rate from about 6 to about 30 standard cubic feet of air per minute per barrel of liquid, at a temperature from about 750° F. to about 850° F., and for a period not exceeding one hour to produce an asphaltic composition of increased specific gravity and suitable for the aforementioned use as carbon electrode binders.



3,725,241
SOLIDS REMOVAL FROM HYDROGENATED COAL LIQUIDS

Michael C. Chervenak, Pennington, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.
Filed Dec. 9, 1971, Ser. No. 206,439
Int. Cl. C10g *1/00, 1/06*
U.S. Cl. 208—10 **7 Claims**



Better than fifty percent of the ash and associated solids from a coal-derived oil, such as a hydrogenated coal product, are removed by magnetic separation. The ash and associated solids have been rendered magnetically susceptible by prior hydrogenation treatment.

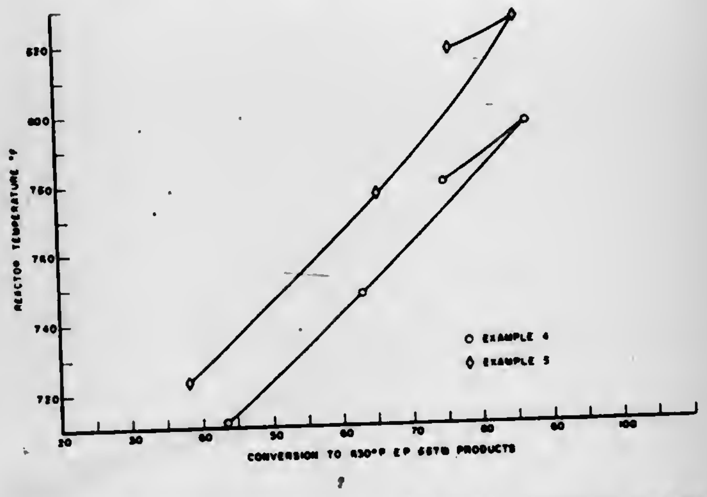
3,725,242
CRACKING HYDROCARBON RESIDUA TO COKE AND AROMATIC GAS OIL

Glen P. Hamner, Baton Rouge, and Ralph B. Mason, Denham Springs, La., assignors to Esso Research and Engineering Company
No Drawing. Continuation-in-part of application Ser. No. 840,814, July 10, 1969. This application Jan. 13, 1971, Ser. No. 106,278
Int. Cl. C10g *37/06*
U.S. Cl. 208—46 **15 Claims**

Coke and a gas oil fraction boiling between 400 and 1050° F. are produced by hydrodepolymerizing a hydrocarbon residua. In particular a steam cracked tar having a boiling point above 650° F., with a substantial amount of the tar having a boiling point above 1050° F., is mixed in specific proportions with a gas oil having a boiling point between 400 and 650° F. and an acyclic hydrocarbon modifier in a reaction zone operating at a temperature between 775 and 900° F. and at a pressure between 50 and 1000 p.s.i.g. to maximize the amount of coke produced.

3,725,243
HYDROCARBON CONVERSION CATALYSTS COMPRISING PHOSPHORUS AND ALUMINOSILICATES

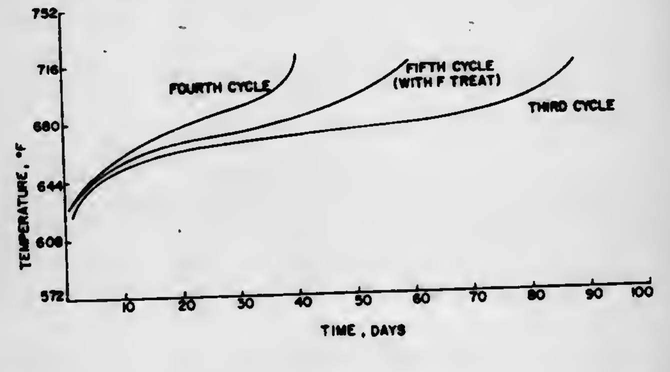
Robert H. Hass, Fullerton, Grant A. Mickelson, Yorba Linda, William J. Baral, Long Beach, Cloyd P. Reeg and Edward C. Attane, Jr., Orange, and Darryl L. Jones, Yorba Linda, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed July 10, 1970, Ser. No. 53,820
Int. Cl. C10g *13/02;* **B01j** *11/82*
U.S. Cl. 208—59 **10 Claims**



Hydrocarbon conversion catalysts having markedly improved characteristics are prepared from intimate admixtures of foraminous alumina-containing refractory oxides and ion exchangeable crystalline aluminosilicate zeolites by impregnation with a strong acidic solution containing Group VIII and Group VI metal compounds and an acid of phosphorus at a pH below 3, to substantially destroy the zeolite crystallinity.

3,725,244
HYDROCRACKING PROCESS WITH FLUORINE TREAT TO AVOID CONDENSED POLYAROMATICS

Hans U. Schutt, Lafayette, Calif., assignor to Shell Oil Company, Houston, Tex.
Filed Oct. 13, 1971, Ser. No. 188,408
Int. Cl. C10g *9/16, 13/06;* **B01j** *11/80*
U.S. Cl. 208—59 **8 Claims**



A two-stage hydrocracking process employing recycle of high boiling, second stage product to second stage feed and a second stage catalyst containing an iron group hydrogenative metal supported on an amorphous silica-alumina-fluorine acid-acting base is improved to avoid formation of polyaromatic compounds in the high boiling product by

(a) first discontinuing the flow of hydrocarbon feed to the second-stage;

(b) then contacting the second stage catalyst with oxygen;

(c) contacting the oxidized second stage catalyst with a sulfiding compound at conditions to convert the iron group metal component to a sulfide form;

(d) contacting the second stage catalyst with from about 0.001% to about 0.2% wt. of catalyst of fluorine in the form of a vapor phase fluoriding compound at a temperature of from 350° to 1100° F.; and

(e) re-establishing the flow of hydrocarbon feed to the second-stage.

3,725,245
PRODUCTION OF LUBRICATING OILS

Robert A. Woodle, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 774,481, Nov. 8, 1968. This application Dec. 2, 1970, Ser. No. 94,547
Int. Cl. C10g *41/00*
U.S. Cl. 208—86 **9 Claims**

Lubricating oils of improved properties are prepared by topping a crude under atmospheric pressure, deasphalting the reduced crude, hydrogenating the deasphalted oil and distilling the hydrogenation product under reduced pressure to recover lube oil distillates. The vacuum residuum may also be solvent deasphalted to produce additional heavier grade lubricants.

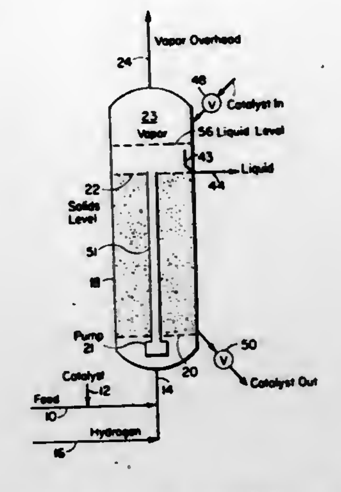
3,725,246
HYDROGEN PRODUCTION AND UTILIZATION

Ronald A. Kmecak and Stephen M. Kovach, Ashland, Ky., assignors to Ashland Oil, Inc., Houston, Tex.
No Drawing. Continuation of abandoned application Ser. No. 769,727, Oct. 22, 1968. This application Nov. 23, 1970, Ser. No. 92,243
Int. Cl. C01b *1/18*
U.S. Cl. 208—100 **5 Claims**

A process for the production of hydrogen, including contacting a light paraffinic hydrocarbon such as ethane, propane, n-butane, iso-butane, n-pentane, iso-pentane, etc., with a catalyst comprising an active metal selected from the group consisting of a Group VIII metal, such as platinum, rhodium, ruthenium, palladium, and nickel, and a Group VI–B metal, such as chromium, molybdenum and tungsten, in an amount between about 0.5 and 15% by weight of the finished catalyst and a promoter selected from the group consisting of Group I, Group II, Rare Earth, and Group IV–A metals of the Periodic System and mixtures thereof, in an amount between about 1 and 15% by weight based on the finished catalyst, both deposited on an inert oxide carrier; liquefying the effluent product, as by condensation or compression; flashing the dry gas portion containing hydrogen therefrom; if desired, further purifying the hydrogen by cryogenic, adsorption and diffusion methods, etc.; separating an unsaturated portion from a saturated portion of the remaining product, as by distillation, adsorption, solvent extraction, selective polymerization, selective aromatic alkylation, selective paraffin alkylation, etc., and recycling unreacted paraffins to the contacting step. The hydrogen recovered from the flashing step is also utilized for the hydrogenation of heavy unsaturated hydrocarbon materials, such as coal liquids, by contacting the heavy liquids with the hydrogen in the presence of a hydrogenation catalyst, preferably of the same character as the hydrogen-producing catalyst, and under conditions sufficient to hydrogenate the heavy liquids.

3,725,247
HYDROGENATION OF RESIDUUM

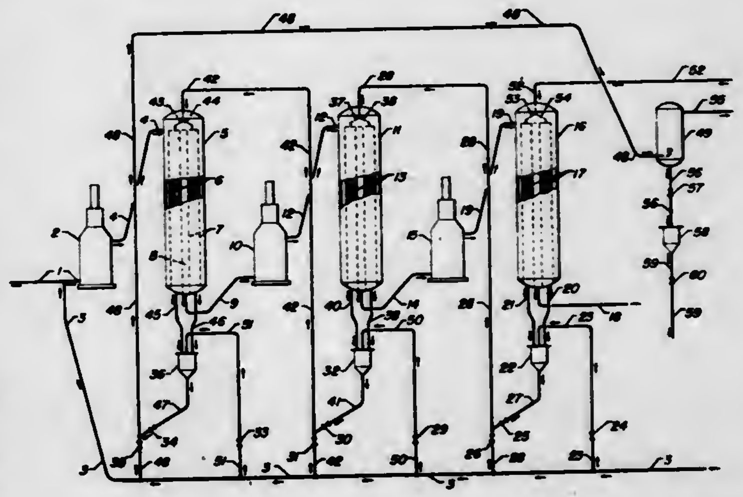
Axel R. Johnson, North Babylon, N.Y., and Ronald H. Wolk, Trenton, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.
Filed Mar. 20, 1972, Ser. No. 236,359
Int. Cl. C10g *9/16, 13/02, 23/02*
U.S. Cl. 208—111 **7 Claims**



In the hydroconversion of certain petroleum stocks, such as Lloydminster crude mixtures from Canadian sources, acceptable desulfurization levels can only be obtained by the use of a desulfurization catalyst operating in upflow liquid phase in accordance with the ebullated bed system by maintaining a conversion rate such that a maximum heptane insoluble number of 60 is not exceeded.

3,725,248
METHOD OF OPERATING A REFORMING PROCESS

Arthur Raymond Greenwood, Niles, and Kenneth Donald Vesely, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 860,905, Sept. 25, 1969, now Patent No. 3,647,680. This application Dec. 14, 1971, Ser. No. 207,910
Int. Cl. C10g *35/06*
U.S. Cl. 208—138 **18 Claims**



A method of operating a reforming process employing a platinum group metal catalyst. A multiple reactor system comprising the side-by-side reactors is employed, each reactor containing a dense-phase moving catalyst bed. The method of this invention enables processing of the catalyst through the reactor system in series flow, all reactors remaining on stream at reforming conditions. The method provides for relatively frequent regeneration, and catalyst activity is maintained at a predetermined high level without resort to increasingly severe reforming conditions.

3,725,249

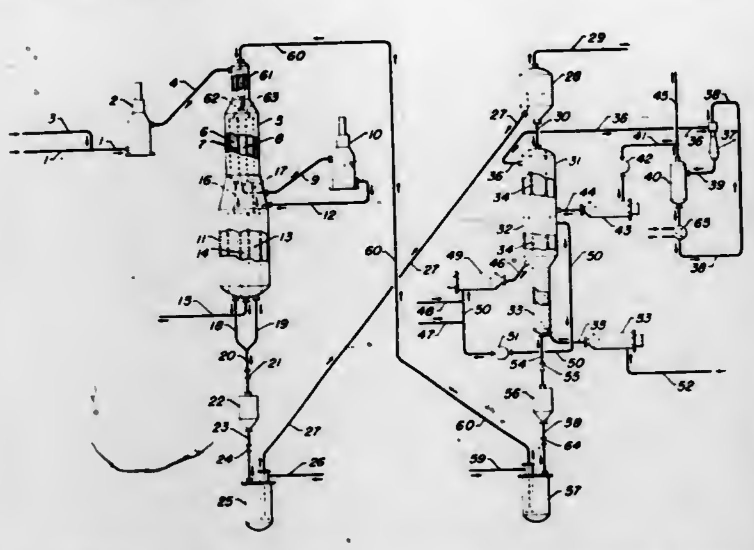
CONTINUOUS REFORMING-REGENERATION PROCESS

Kenneth Donald Vesely, Arlington Heights, and Arthur Raymond Greenwood, Niles, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 860,905, Sept. 25, 1969. This application Dec. 14, 1971, Ser. No. 207,869

Int. Cl. C10g *35/06*

U.S. Cl. 208—139 **21 Claims**



A method of operating a continuous reforming-regeneration process employing a halogen-containing platinum catalyst preferably comprising one or more promoter metals wherein catalyst activity is maintained at a predetermined level by continuous regeneration thereof without the removal of any reactor from the process stream. The method includes the continuous reduction and sulfiding of the catalyst prior to contact with the reactant stream, the reduction and sulfiding being effected in a confined zone in indirect heat exchange relationship with the preheated reactant stream charged to the reforming process.

3,725,250

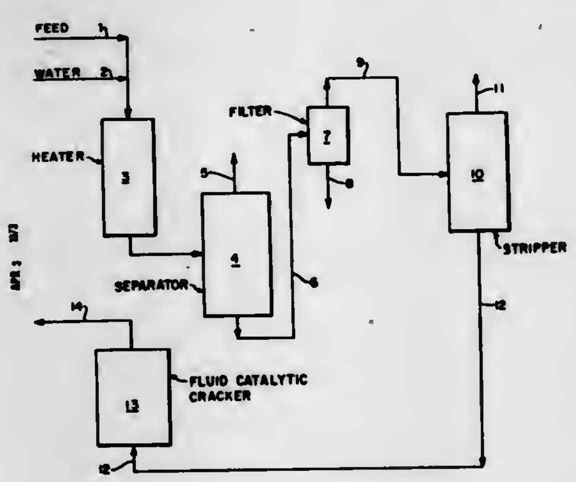
PROCESS FOR IMPROVING A HYDROCARBON CHARGE STOCK BY CONTACTING THE CHARGE WITH WATER AT ELEVATED TEMPERATURE AND PRESSURE

Raymond F. Wilson and Reese A. Peck, Fishkill, Norman D. Carter, Poughkeepsie, Edward L. Cole, Fishkill, and Howard V. Hess, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 20,285, Mar. 17, 1970. This application Jan. 22, 1971, Ser. No. 108,859

Int. Cl. C10g *17/08*

U.S. Cl. 208—208 R **10 Claims**



Oil refining is effected by heating under agitated flow conditions crude oil or residual oil with water at a temperature sufficient to form a foam which is cooled below the vaporization temperature of water to form a stable emulsion containing sulfur, carbon residues, asphaltenes, nickel and vanadium. After removal of the emulsion, the oil can be used as a fuel or in catalytic processes.

3,725,251

TWO-STAGE HYDRODESULFURIZATION OF A HIGH METAL CONTENT HYDROCARBON FEED

Seymour B. Alpert, Los Altos, Calif.; Ronald H. Wolk, Lawrence Township; Michael C. Chervenak, Pennington, both of N.J., and Govanon Nongbri, Newtown, Pa., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 13,739, Feb. 24, 1970, abandoned. This application Nov. 8, 1971, Ser. No. 196,338

Int. Cl. C10g *23/02*

U.S. Cl. 208—210 **10 Claims**

A multi-stage process for the hydrodesulfurization of high metals content hydrocarbon feed materials wherein the first reaction zone is an ebullated bed contacting system using a powdered contact agent having particles in the size range from 40 to 325 U. S. mesh whereby superior metals removal is effected. The reduced metals content effluent is passed to subsequent stages wherein deep desulfurization is obtained due to low metals contamination of the catalyst. Build up of carryover contaminated catalyst from the first reaction zone is prevented by either an intermediate catalyst separation step between zones or use in the subsequent zones of ebullated bed systems incorporating catalyst of sufficiently large particle size whereby the powdered first zone catalyst is carried through and out of the subsequent zones.

3,725,252

DESULFURIZATION WITH SUBSEQUENT H S ABSORPTION

William H. Maier, Rosemont, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 27, 1970, Ser. No. 58,375

Int. Cl. C10g *23/02*

U.S. Cl. 208—213 **12 Claims**

Process for removal of a selected constituent from a vapor stream which comprises contacting the vapor stream in a high pressure absorption zone with a first stream of lean absorbent, mixing the resulting rich absorbent with a second stream of lean absorbent in a low pressure contacting zone, and separating the resulting mixture in a separation zone under conditions sufficient to provide selected constituent and separated lean absorbent. In a preferred embodiment, the separation zone comprises a phase separator and a low pressure absorption zone, the resulting mixture is passed from the low pressure contacting zone into the phase separator, and a resulting vapor stream is passed from the phase separator into the low pressure absorber wherein it is contacted with a third lean absorbent stream. The process has particular utility in the removal of selected constituent, such as an acid gas or mixture of acid gases, in a high pressure absorption zone maintained at a pressure in excess of 1,000 psig. Particular application is in the removal of hydrogen sulfide from a hydrogenation reaction zone, such as a hydrotreating zone or a hydrocracking zone, wherein a hydrocarbon charge stock containing organic sulfur compounds is desulfurized.

3,725,253

PROCESS FOR THE PURIFICATION OF MINERAL OIL

Shoji Yamada, Yokohama, Japan, assignor to Nippon Oil Company, Limited, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 831,986, June 10, 1969. This application Dec. 7, 1971, Ser. No. 205,730

Claims priority, application Japan, June 25, 1968, 43/43,649

Int. Cl. C10g *23/00, 27/04*

U.S. Cl. 208—211 **3 Claims**

A process for the purification of mineral oil including a lube fraction comprising: reacting said mineral oil with oxygen-containing gases in the presence of at least one member selected from the group consisting of sulfuric acid and phosphoric acid as a catalyst at a temperature ranging from 180° C. to 280° C. thereby converting unstable compounds such as sulfur-containing compounds, oxygen-containing compounds, nitrogen-containing compounds, and organometallic compounds present in said mineral oil into compounds of greater molecular weight and increased polarity and separating said compounds from said mineral oil by vacuum distillation to obtain a refined mineral oil product, and further treating said refined mineral oil product in a fixed bed, suspension bed, or fluidized bed with a conventional hydrogenating catalyst under hydrogen pressure at a temperature ranging from 150° C. to 450° C.

3,725,254

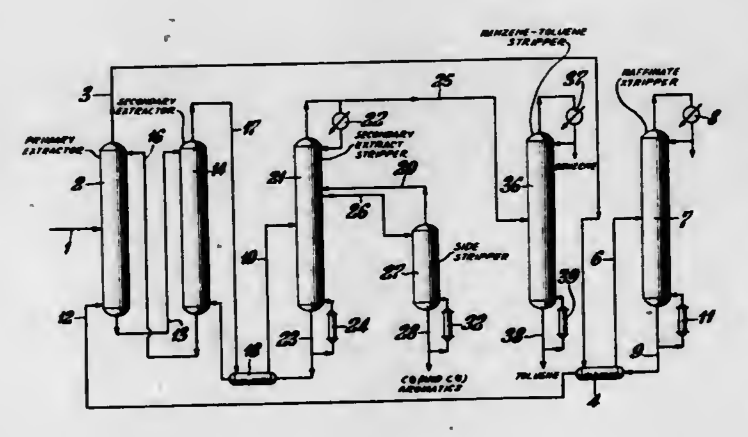
PROCESS FOR THE SEPARATION OF AROMATIC HYDROCARBONS FROM A MIXED HYDROCARBON FEEDSTOCK

Jui Chung Wang, St. Albans, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 13, 1971, Ser. No. 162,178

Int. Cl. C10g *21/02*

U.S. Cl. 208—314 **10 Claims**



A continuous process for separating aromatic hydrocarbons from mixed hydrocarbon feedstock containing aliphatic and aromatic hydrocarbons, said aromatic hydrocarbons being comprised of benzene, toluene, and C_8 aromatics, comprising the following steps:

(a) Contacting the feedstock with a primary solvent and a secondary solvent in a primary extraction zone at a temperature in the range of about 50° C. to about 150° C. and a pressure in the range of about atmospheric pressure to about 200 p.s.i.a. wherein the primary solvent is a water-soluble organic solvent, which has a higher boiling point than and is non-azeotropic with the feedstock, and the secondary solvent is selected from the group consisting of paraffinic and naphthenic hydrocarbons and mixtures thereof, said hydrocarbons having higher boiling points than and being non-azeotropic with the feedstock, and wherein the primary solvent is maintained in sufficient amount to extract essentially all of the aromatic hydrocarbons from the feedstock and the secondary solvent is maintained in sufficient amount to act as a reflux for the feedstock;

(b) Withdrawing from the primary extraction zone primary extract comprising aromatic hydrocarbons and primary solvent and raffinate comprising aliphatic hydrocarbons and secondary solvent;

(c) Contacting said primary extract with the secondary solvent in a secondary extraction zone wherein the temperature and pressure are in the same range as in step (a) and the secondary solvent is maintained in sufficient amount to extract essentially all of the aromatic hydrocarbons from the primary extract;

(d) Withdrawing from the secondary extraction zone primary solvent and secondary extract comprising aromatic hydrocarbons and secondary solvent;

(e) Subjecting the raffinate to distillation in a raffinate distillation zone whereby the aliphatic hydrocarbons are separated from the secondary solvent;

(f) Withdrawing the secondary solvent from the raffinate distillation zone and recycling said secondary solvent to at least one of the extraction zones;

(g) Recycling the primary solvent withdrawn from the secondary extraction zone to the primary extraction zone;

(h) Subjecting the secondary extract to distillation in an aromatics distillation zone having a maximum temperature of 225° C., the temperature gradient being such throughout the zone that about 90 to 99 percent by weight of the benzene and toluene in the extract enters into the vapor phase at the top of the zone; the C_8 aromatics and about 1 to 10 percent by weight of the benzene and toluene in the extract concentrate in the liquid phase at a point between about the middle of the zone and the top of the zone; and the secondary solvent remains essentially in the liquid phase and enters the bottom of the zone;

(i) Withdrawing the vapor phase mixture of benzene and toluene from the aromatics distillation zone in step (h)

(j) Withdrawing the liquid phase C_8 aromatics, benzene, and toluene from the aromatics distillation zone in step (h); and subjecting same to distillation in a side-distillation zone, said side-distillation zone containing about 40 to 60 percent of the number of equilibrium stages contained in the aromatics distillation zone and having a maximum temperature of at least 75° C. less than the maximum temperature of the aromatics distillation zone, and separating the C_8 aromatics from the benzene and toluene;

(k) Recycling the benzene and toluene from step (j) to the aromatics distillation zone; and

(l) Withdrawing the secondary solvent from the aromatics distillation zone of step (h) and recycling such secondary solvent to at least one of the extraction zones.

3,725,255

PROCESS FOR SEPARATING AROMATIC HYDROCARBONS FROM MIXTURES CONTAINING THEM BY LIQUID-LIQUID EXTRACTION AND AZEOTROPIC DISTILLATION

Filippo Barilli, Luigi Lugo, Lucio di Fiore, and Cesare Reni, Milan, Italy, assignors to Societa Italiana Resine, S.p.A., Milan, Italy

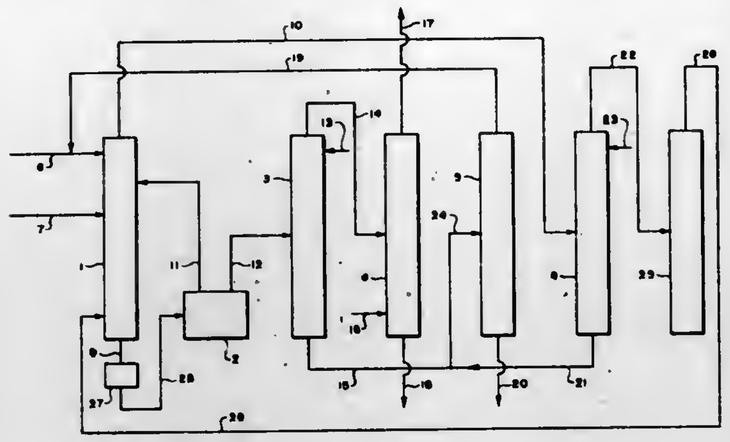
Filed May 4, 1971, Ser. No. 140,203

Claims priority, application Italy, May 12, 1970, 24,459/70

Int. Cl. C07c *7/10;* **C10g** *21/20*

U.S. Cl. 208—331 **10 Claims**

Aromatic hydrocarbons are separated from a mixture of liquid hydrocarbons. The mixture of liquid hydrocarbons is extracted in the liquid phase in an extraction zone at a temperature of about 40° C. to about 80° C. with ethylenediamine solvent having a water content of from 0% to 20% by weight to form an extracted phase and a raffinate phase. The extracted phase comprises predominantly aromatic hydrocarbons, solvent, and a minor amount of non-aromatic hydrocarbons. The raffinate phase comprises predominantly non-aromatic hydrocarbons. The extracted phase and the raffinate phase are separately collected. The extracted phase is cooled to a temperature at least 30° C. lower than the temperature of the extraction. The cooled extracted phase is then separated into a heavier solvent containing phase, and a lighter hydrocarbons containing phase which is scrubbed with water to obtain an aqueous ethylenediamine containing phase and a hydrocarbons phase. The hydrocarbons phase is azeotropically distilled to obtain an overhead product comprising non-aromatic hydrocarbons, and a bottom product consisting essentially of aromatic hydrocarbons which are subsequently rectified.



3,725,256

PROCESS FOR SEPARATING AROMATIC HYDROCARBONS FROM MIXTURES THEREOF WITH PARAFFINS AND NAPHTHENE HYDROCARBONS

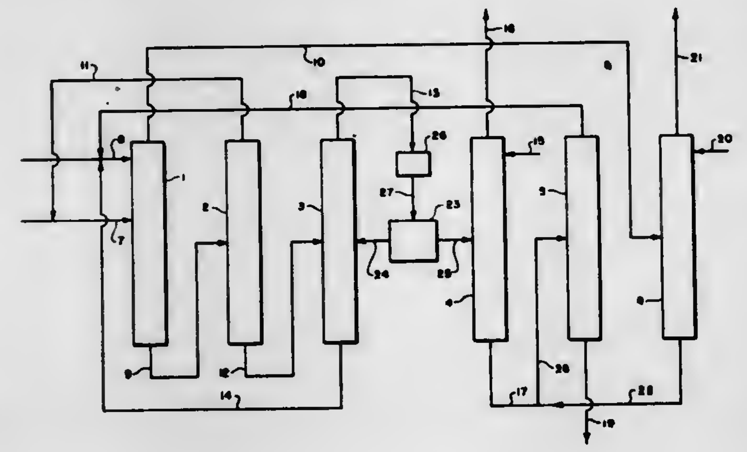
Luigi Lugo, Benedetto, Calcagno, and Cesare Reni, Milan, Italy, assignors to Societa Italiana Resine, S.p.A., Milan, Italy

Filed May 4, 1971, Ser. No. 140,202

Claims priority, application Italy, May 12, 1970, 24,463/70

Int. Cl. C07c *7/10;* C10g *21/20*

U.S. Cl. 208—331 9 Claims



Aromatic hydrocarbons are separated from a mixture of liquid hydrocarbons. The mixture of liquid hydrocarbons is extracted in the liquid phase in an extraction zone with ethylenediamine having a water content of from 0% to 20% by weight to form an extracted phase and a raffinate phase. The extracted phase comprises predominantly aromatic hydrocarbons, solvent, and a minor amount of non-aromatic hydrocarbons. The raffinate phase comprises predominantly non-aromatic hydrocarbons. The extracted phase and the raffinate phase are separately collected. The non-aromatic hydrocarbons in said extracted phase are separated as overhead product by means of extractive stripping of the extracted phase, the aromatic hydrocarbons remaining in the residue of the extractive stripping. The residue of the extractive stripping is azeotropically distilled, the aromatic hydrocarbons and a minor amount of ethylenediamine solvent being collected as the overhead products. The ethylenediamine solvent is collected as the bottom product. The overhead products are cooled to separate them into an ethylenediamine containing phase and an aromatic hydrocarbons containing phase. The aromatic hydrocarbons containing phase is scrubbed with water to separate out a dilute aqueous ethylenediamine containing phase, and aromatic hydrocarbons phase, which is then rectified.

3,725,257

PROCESS OF SEPARATING AROMATIC HYDROCARBONS FROM HYDROCARBON MIXTURES

Carlo Cavenaghi, Lucio di Fiore, Filippo Barilli, and Benedetto Calcagno, Milan, Italy, assignors to Societa Italiana Resine, S.p.A., Milan, Italy

Filed May 4, 1971, Ser. No. 140,201

Claims priority, application Italy, May 12, 1970, 24,460/70

Int. Cl. C07c *7/10;* C10g *21/20*

U.S. Cl. 208—331 11 Claims

Aromatic hydrocarbons are separated from a mixture of liquid hydrocarbons. The mixture of liquid hydrocarbons is extracted in the liquid phase in an extraction zone at a temperature from about 40° C. to about 80° C. with ethylenediamine solvent having a water content of from 0% to 20% by weight to form an extracted phase and a raffinate phase. The extracted phase comprises predominantly aromatic hydrocarbons, solvent and a minor amount of non-aromatic hydrocarbons. The raffinate phase comprises predominantly non-aromatic hydrocarbons. The extracted phase and the raffinate phase are separately collected. The extracted phase is cooled to a temperature at least 30° C. lower than the temperature of the extraction step and then separated into a heavier solvent containing phase and a lighter hydrocarbons containing phase. The non-aromatic hydrocarbons in the lighter hydrocarbons containing phase are separated as overhead product by means of extractive stripping at atmospheric pressure. The aromatic hydrocarbons remain in the residue of the extractive stripping which is then scrubbed with water to thereby obtain an aromatic hydrocarbons phase and an aqueous ethylenediamine containing phase. The aromatic hydrocarbons phase is then rectified.

3,725,258

ACTIVATED SLUDGE SEWAGE TREATMENT PROCESS AND SYSTEM

Marshall L. Spector, Belle Mead, N.J., and Robert D. Jones, Allentown, and Curtis S. McDowell, Macungie, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

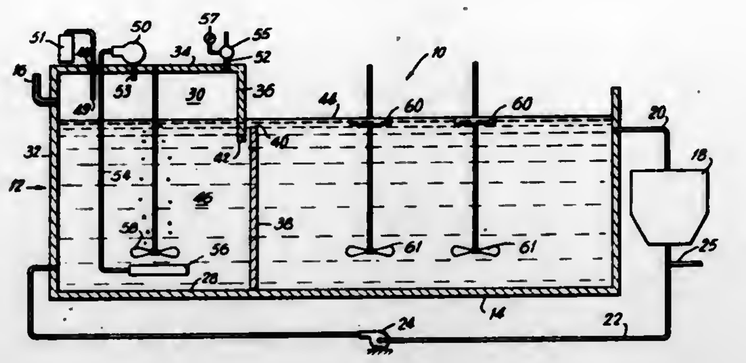
Continuation-in-part of abandoned application Ser. No. 125,602, Mar. 18, 1971. This application Feb. 14, 1972, Ser. No. 226,199

Int. Cl. C02c *1/10*

U.S. Cl. 210—7 7 Claims

An activated sludge sewage treatment process and system which includes an initial enclosed aeration chamber providing a vessel for a mixed liquor, formed from a liquid biologically degradable waste and recirculated sludge, wherein the liquor is aerated with an oxygen-rich aeration gas and maintained at a relatively high level of dissolved oxygen, and a subsequent open aeration chamber wherein the liquor, after being treated in the enclosed vessel, is aerated in the presence of atmospheric air at a substantially lower level of dissolved oxygen. The system is designed so that between 25 to 95%, and preferably 50

to 95%, of the total oxygen utilized by the mixed liquor, to effect biological degradation, is utilized by the liquor in the enclosed vessel, and the remainder of the oxygen utilized by the liquor for biological degradation is utilized by the liquor when the liquor is in the open aeration chamber.



3,725,259

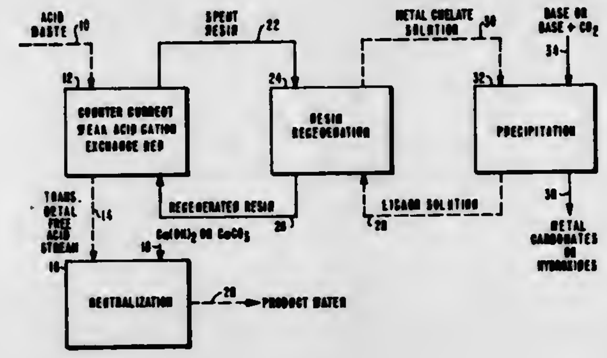
PROCESS FOR RECOVERY OF MINERAL POLLUTANTS FROM ACIDIC WASTE STREAMS

David O. De Pree, Loomis, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Dec. 4, 1970, Ser. No. 95,252

Int. Cl. C02b *1/46, 1/76*

U.S. Cl. 210—30 13 Claims



This patent describes a method for the removal of Group I*b*, II*b*, III, IV, V, VI, VII and VIII metal salts from acidic waste streams such as acid mine drainage, pickling waste, and electroplating waste wherein the waste stream is highly acidic and contains these metal salts as pollutants which comprises: contacting said stream in countercurrent fashion with a cation exchange bed containing a moderately strong or weakly acidic cation exchange resin to deposit metal ions from said salts thereon, neutralizing the acidic effluent from the cation exchange resin to provide a neutral effluent, and regenerating said cation ion exchange resin with a solution of a chelating agent.

3,725,260

SEPARATION OF PESTICIDES FROM LIPIDS BY GEL PERMEATION CHROMATOGRAPHY

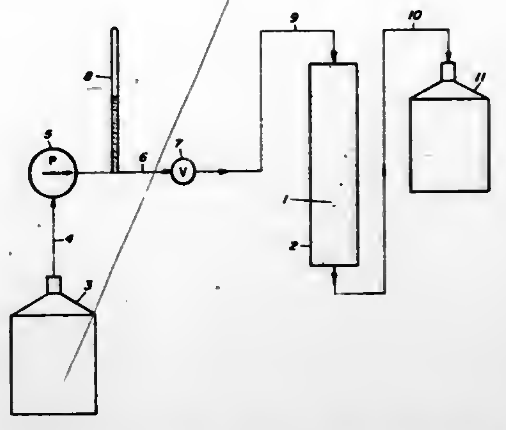
David L. Stalling and Roger C. Tindle, Columbia, Mo., assignors to the United States of America as represented by the Secretary of the Interior

Filed Dec. 28, 1971, Ser. No. 213,118

Int. Cl. B01d *15/08*

U.S. Cl. 210—31 C 2 Claims

Cleanup of lipid samples, for subsequent analysis of pesticide content, is accomplished by means of gel permeation chromatography. The gel employed comprises a styrene-divinylbenzene copolymer and cyclohexane, with cyclohexane also serving as solvent for elution of the sample.



3,725,261

REMOVAL OF MERCURY FROM LIQUIDS USING KERATIN DERIVATIVES

Mendel Friedman, Moraga, Calif., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Nov. 5, 1971, Ser. No. 196,174

Int. Cl. C02c *5/02*

U.S. Cl. 210—38 3 Claims

Mercury is effectively removed from water or other liquids by contact with a keratin derivative, e.g., reaction products of reduced wool with N-vinylimidazole, N-vinylpyrrolidone, or 2-vinylpyridine.

3,725,262

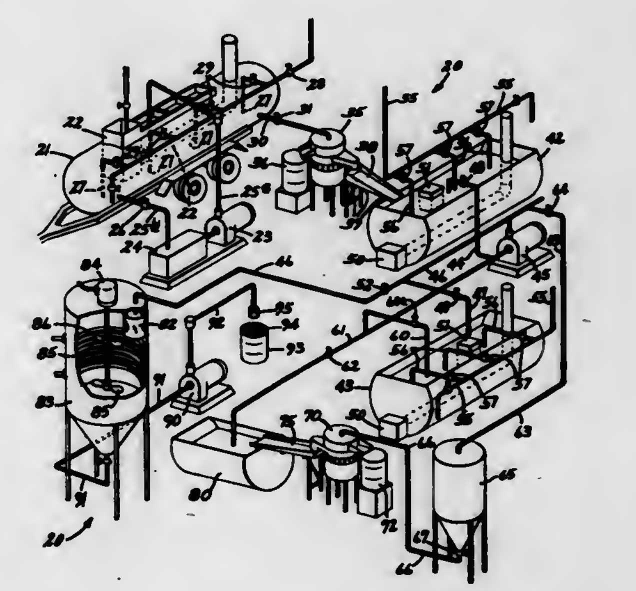
SYSTEM AND PROCESS FOR RECLAIMING FORGING COMPOUNDS

William G. Mattice and David A. Sanford, Eau Claire, Wis., assignors to Waste Research and Reclamation Co., Inc., Eau Claire, Wis.

Filed June 21, 1971, Ser. No. 154,809

Int. Cl. B01d *35/06*

U.S. Cl. 210—42 11 Claims



A process for reclaiming a graphite-containing forging compound wherein the removal of fine metallic contaminants (e.g. metallic shavings of less than 200 mesh size, .074 mm.) is accomplished utilizing magnetic separation. The forging compound is initially preheated to increase the viscosity thereof and, after undergoing filtering to remove solid contaminants larger than the graphite, the fine magnetically attractive contaminants are magnetically separated out of the forging compound. The compound is then sequentially heated to cause dehydration and cooled to ambient temperature while undergoing blending to provide a homogeneous product.

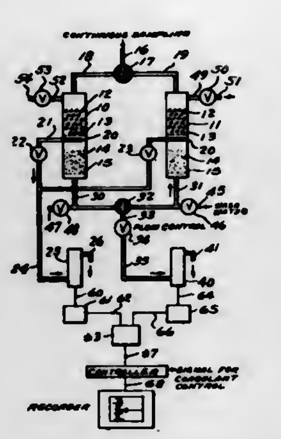
3,725,263
WASTE WATER TREATMENT

Robert H. Harris, Norcross, and Edward F. Morey, Atlanta, Ga. (both of 415 E. Paces Ferry Road, Atlanta, Ga. 30305)

Continuation-in-part of abandoned application Ser. No. 881,485, Dec. 2, 1969. This application Dec. 15, 1970, Ser. No. 98,444

Int. Cl. C02b *1/20*

U.S. Cl. 210—42 **14 Claims**



The addition of clarification chemicals in a filtration process is precisely controlled by the continuous sampling of chemically treated unfiltered water passing through a coarse to fine media bed of a pilot filter device. The pilot filter device measures turbidity of water which passes at a point intermediate through the filter media bed and which leaves the filter as final effluent. By establishing and maintaining an optimum relationship of the intermediate and the effluent turbidities, the proper metering of clarification chemicals is readily achieved in that both underdose and overdose of chemicals is quickly detected.

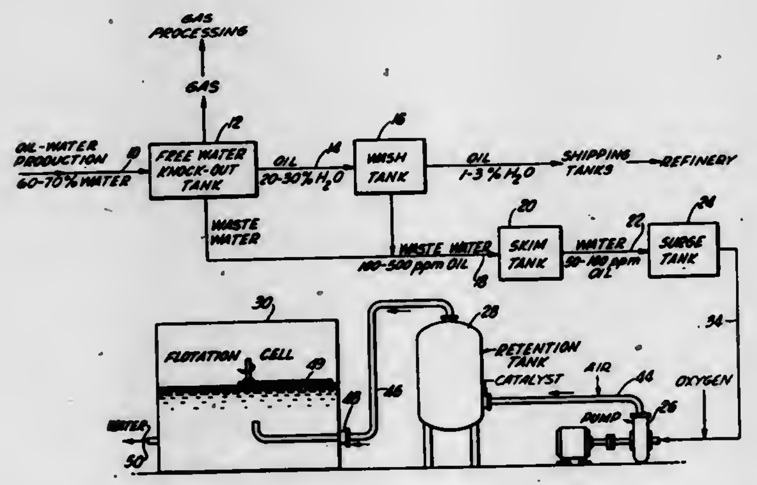
3,725,264
WASTE WATER TREATMENT PROCESS

Douglas W. Wheeler, Huntington Beach, Calif., assignor to Signal Oil and Gas Company

Filed Mar. 13, 1972, Ser. No. 234,276

Int. Cl. C02b *1/34*

U.S. Cl. 210—44 **10 Claims**



A method for removing residual oil and dissolved sulfides from oil production waste waters prior to disposal of the waste water into the ocean, by the injection of controlled amounts of oxygen, air, and a catalyst to oxidize the sulfides to free sulfur into the waste water. The mixture is pumped under pressure into a flotation cell or tank where the pressure is released and the sulfur and oil are separated from the water by flotation.

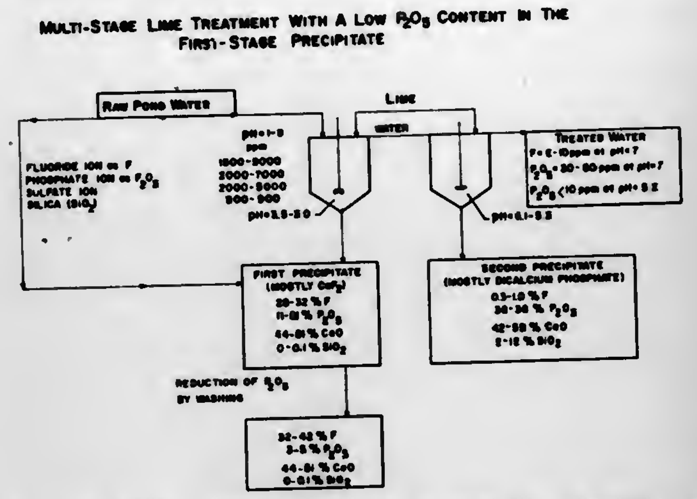
3,725,265
PURIFICATION OF WASTE WATER

Casimer C. Legal, Jr., Elkridge, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of application Ser. No. 61,530, Aug. 6, 1970. This application Jan. 22, 1971, Ser. No. 108,907

Int. Cl. C02b *1/20;* **C02c** *5/02*

U.S. Cl. 210—45 **24 Claims**


MULTI-STAGE LIME TREATMENT WITH A LOW P2O5 CONTENT IN THE FIRST-STAGE PRECIPITATE
RAW POND WATER
LIME
WATER
TREATED WATER
FIRST PRECIPITATE
SECOND PRECIPITATE
REDUCTION OF P2O5 BY WASHING

A multi-stage liming process is described which purifies waste water by controlling the pH of the waste water, e.g., as from a phosphate fertilizer plant, and thereby permitting selective precipitation of impurities in the waste water and their recovery as useful by-products of the process. In one embodiment of the invention the main product of the first stage is a low silica calcium fluoride, and the main product of the second stage is a low fluorine dicalcium phosphate. In another embodiment of the invention the main product of the first stage is low in phosphate content thereby enhancing the value of the by-product, low silica calcium fluoride.

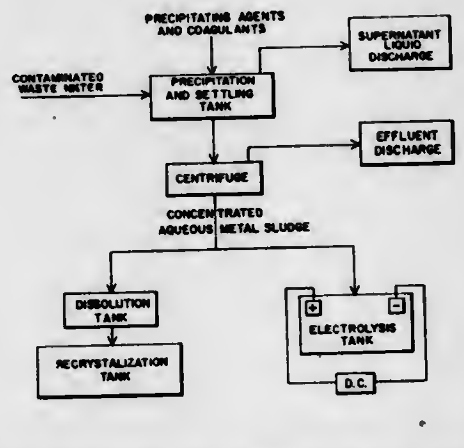
3,725,266
PROCESS FOR REMOVING METAL COMPOUND CONTAMINANTS FROM WASTE WATER

Joseph M. Haviland, Grand Rapids, Mich., assignor to Haviland Products Company, Grand Rapids, Mich.

Filed Aug. 12, 1971, Ser. No. 171,105

Int. Cl. C02c *5/02*

U.S. Cl. 210—45 **9 Claims**


PRECIPITATING AGENTS AND COAGULANTS
SUPERNATANT LIQUID DISCHARGE
CONTAMINATED WASTE WATER
PRECIPITATION AND SETTLING TANK
EFFLUENT DISCHARGE
CENTRIFUGE
CONCENTRATED AQUEOUS METAL SLUDGE
DISSOLUTION TANK
ELECTROLYSIS TANK
RECRYSTALLIZATION TANK
D.C.

A process for removing one or more metal compound contaminants from contaminated industrial waste water comprising precipitating the metal compound contaminants from the waste water to form an aqueous metal compound sludge, allowing the sludge to settle, concentrating the sludge by centrifugation and reclaiming the metal compound contaminants from the sludge for reuse as either the metal compounds or the free metals.

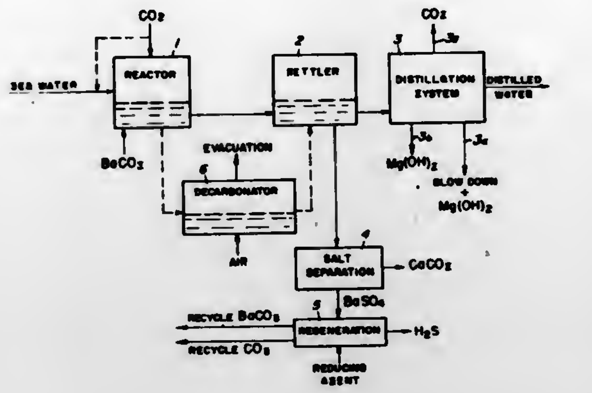
3,725,267
SOFTENING OF SEA WATER BY ADDITION OF BARIUM CARBONATE AND CO_2

P. Gideon Gelblum, Philadelphia, Pa., assignor to the United States of America as represented by the Secretary of the Interior

Filed Feb. 14, 1972, Ser. No. 225,940

Int. Cl. C02b *5/02*

U.S. Cl. 210—48 **16 Claims**



To reduce or prevent scaling during distillation, barium carbonate and small, catalytic amounts of CO_2 are added to sea water to form barium bicarbonate in situ which rapidly reacts with sulfate and calcium, and forms precipitate consisting essentially of barium sulfate and calcium carbonate. The softened water can then be heated to precipitate out magnesium hydroxide.

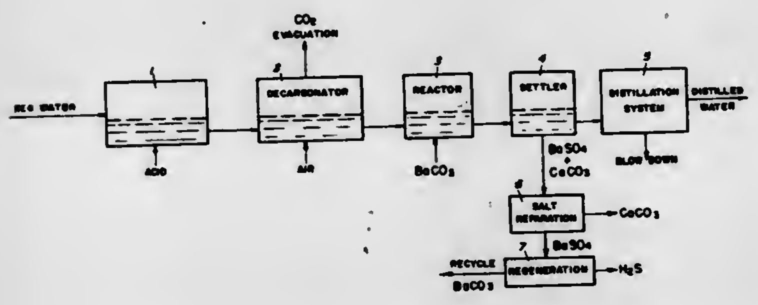
3,725,268
SOFTENING OF SEA WATER BY ADDITION OF BARIUM CARBONATE AND MINERAL ACID

P. Gideon Gelblum, Philadelphia, Pa., assignor to the United States of America as represented by the Secretary of the Interior

Filed Feb. 14, 1972, Ser. No. 225,941

Int. Cl. C02b *5/02*

U.S. Cl. 210—53 **14 Claims**



To reduce or prevent scaling during distillation, barium carbonate and small, catalytic amounts of mineral acid or its oxide are added to sea water to form barium bicarbonate in situ, which rapidly reacts with sulfate and calcium, and forms a precipitate consisting essentially of barium sulfate and calcium carbonate.

3,725,269
METHOD OF DECONTAMINATING AN ORGANOPHOSPHORUS INSECTICIDE

Billy C. Wolverton, Picayune, Miss., assignor to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,951

Int. Cl. C02c *5/02*

U.S. Cl. 210—59 **2 Claims**

A solution for decontaminating and converting selected organophosphorus insecticides into products which can be water washed and discharged into streams without the usual toxic effects to fish normally exhibited by unaltered insecticides.

3,725,270
POLLUTION ABATEMENT PROCESS FOR REFINERY WASTE WATER

Joseph P. Tassoney, Whittier, Calif., and Roger M. Dille, Richmond, Va., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Feb. 25, 1971, Ser. No. 119,054

Int. Cl. C02c *5/04*

U.S. Cl. 210—63 **9 Claims**

This process pertains to the abatement of pollution from sulfide-bearing waste waters. Waste aqueous solutions e.g., sour water, treated sour water, and other refinery waste waters containing sulfides are admixed with a hydrocarbonaceous fuel and reacted by partial oxidation with an oxygen-rich gas in a free-flow noncatalytic gas generator at an autogenous temperature in the range of about 1500 to 3500° F. and a pressure in the range of about 1 to 250 atmospheres to produce synthesis gas from which hydrogen sulfide may be subsequently recovered and converted into by-product sulfur.

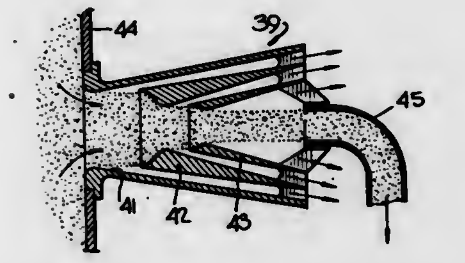
3,725,271
APPARATUS AND METHOD FOR SEPARATING PARTICLES FROM A FLOW OF FLUID

Hugo V. Giannotti, East Patchogue, N.Y., assignor to Giannotti Associates, East Patchoque, N.Y.

Continuation of Ser. No. 733,742, May 28, 1968, abandoned, which is a continuation of Ser. No. 340,913, Jan. 29, 1964, abandoned. This application Nov. 24, 1970, Ser. No. 92,518

Int. Cl. B01d *57/00*

U.S. Cl. 210—65 **4 Claims**



The disclosure relates to an apparatus and a method for separating salt from a brine solution for accelerating the brine solution through a nozzle member and subsequently decelerate the flow through a diffuser member. The acceleration and deceleration of the solution causes the brine to move into a predetermined stream portion of the flow. A tubular passage having its inlet disposed within the interior of the diffuser member intersects the predetermined stream portion and receives and thereby segregates the brine from the flow, whereby the remainder of the flow is water with a reduced concentrate of salt therein.

3,725,272
FLAMEPROOFING AGENT FOR TEXTILE MATERIALS

Harro Petersen, Frankenthal, Friedrich Fuchs, Ludwigshafen, and Wilhelm Ruemens, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 21, 1970, Ser. No. 56,963

Int. Cl. C09k *3/28*

U.S. Cl. 252—8.1 **7 Claims**

A novel flameproofing agent for textile materials containing as active ingredients a carbamoyl alkane phosphonic acid dialkyl ester free from N-hydroxymethyl and N-alkoxymethyl groups and an N-hydroxymethyl compound of an amino-s-triazine which may be non-etherified or partly or completely etherified at the N-hydroxymethyl groups.

3,725,273

GREASE COMPOSITION

John B. Christian, Yellow Springs, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,918

Int. Cl. C10m *7/50, 7/28*

U.S. Cl. 252—13 **3 Claims**

A grease composition consisting essentially of methylphenyldimethyl polysiloxane fluid containing iron octoate as an antioxidant and thickened with asbestos, fluorinated ethylenepropylene copolymer, and ammeline.

3,725,274

COMPOSITION AND METHOD FOR PREPARING METAL FOR COLD-WORKING

Gilbert H. Orozco, 2045 Hadden Road, Euclid, Ohio 44117

No Drawing. Filed Nov. 12, 1970, Ser. No. 89,083

Int. Cl. C10m *3/40, 3/48*

U.S. Cl. 252—18 **10 Claims**

Metal is prepared for cold working by coating it with an aqueous, soap-base lubricant comprising a meltable, water-soluble inorganic pigment, preferably borax and sodium nitrite, preferably a high molecular weight ester of a phosphoric acid, and at least one of the group consisting of water-swellable organic polymers, and hydrophilic colloids or hydrophilic carbohydrates to increase viscosity. Said coating is applied under conditions wherein the metal is heated above 150° F., preferably 170 to 210° F., excess water is vaporized, and a molten soap base film is produced. The film is then rapidly and artificially cooled, as with air jets, to convert the film to the solid state to prevent growth of precipitated pigment crystals.

3,725,275

COMPLEX ALUMINUM GREASES HAVING RELATIVELY CONSTANT CONSISTENCY AT ELEVATED TEMPERATURES

Crawford F. Carter, Concord, and John L. Dreher, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 29, 1969, Ser. No. 854,199

Int. Cl. C10m *5/26*

U.S. Cl. 252—21 **6 Claims**

A grease comprising a major amount of mineral oil and minor amounts of (1) a complex aluminum soap (2) an alkali metal salt of a monocyclic aromatic carboxylic acid, and (3) a member selected from silica or ammonium-treated clay.

3,725,276

TUNGSTEN DISULFIDE LUBRICANT

Masashi Ohkage, 646 Hase, Kamakura, Japan

Continuation-in-part of abandoned application Ser. No. 792,134, Jan. 17, 1969. This application Aug. 3, 1971, Ser. No. 168,550

Claims priority, application Japan, Jan. 26, 1968, 43/4,721

Int. Cl. C10m *5/02*

U.S. Cl. 252—25 **9 Claims**

Make tungsten disulfide lubricant by reacting two to eight moles of sulfur with one mole of tungsten metal powder at high temperatures.

3,725,277

LUBRICANT COMPOSITIONS

Calvin J. Worrel, Detroit, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Original application Jan. 26, 1966, Ser. No. 523,022, now Patent No. 3,413,347, dated Nov. 26, 1968. Divided and this application May 31, 1968, Ser. No. 733,277

Int. Cl. C10m *1/20, 1/32*

U.S. Cl. 252—51.5 R **5 Claims**

Reaction products of high molecular weight alkylphenols, aldehydes and N,N-dialkyl, hydroxylalkyl or amino-alkyl-alkylene diamines are ashless dispersants for lubricating oils.

3,725,278

LUBRICANT COMPOSITIONS

Klaus Hunger, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

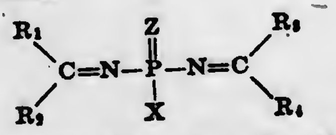
No Drawing. Original application Feb. 4, 1969, Ser. No. 796,581, now Patent No. 3,646,134, dated Feb. 29, 1972. Divided and this application Mar. 18, 1971, Ser. No. 125,887

Claims priority, application Germany, Nov. 28, 1968, P 18 11 351.4, P 18 11 352.5

Int. Cl. C10m *1/46, 1/48*

U.S. Cl. 252—46.7 **6 Claims**

Bis-methylene amides of phosphoric or phosphonic acid, and their thio derivatives, useful as lubricant additives having antioxidant and thermal-stabilizing properties, of the formula:



wherein R_1–R_4, taken alone, are the same or different and are alkyl, cyclohexyl, phenyl, mono- or di-chloro- or bromophenyl, or alkylphenyl; or R_1 and R_2, taken together, or R_3 and R_4, taken together, are alkylene; X is alkyl, cyclohexyl, phenyl, or alkylphenyl bound directly to phosphorus or by way of an oxygen or sulfur atom, or morpholino or dialkylamino; and Z is oxygen or sulfur.

3,725,279

POLYUREA THICKENED GREASE

Eldon L. Armstrong, Mullica Hill, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Aug. 12, 1970, Ser. No. 63,324

Int. Cl. C10m *7/34*

U.S. Cl. 252—51.5 A **13 Claims**

Improved greases, having wide-temperature utility and good oxidation stability, are provided comprising a hydrogenated olefin polymer vehicle and a grease-forming quantity of a thickening agent comprising a polyurea.

3,725,280

MIXTURES OF MONO-n-ALKYLBENZENES AND Di-n-ALKYLBENZENES

Albert M. Durr, Jr., and William R. Meador, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Continuation of abandoned application Ser. No. 725,908, May 1, 1968. This application May 10, 1971, Ser. No. 148,266

Int. Cl. C10m *1/16*

U.S. Cl. 252—59 **13 Claims**

Lubricant oils comprising 5–30 parts by volume of mono-n-alkylbenzenes and 70–95 parts by volume of di-n-alkylbenzenes.

3,725,281

FERROMAGNETIC CHROMIUM DIOXIDE

Fritz Rodi, Kaldenhausen, and Franz Hund, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,256

Claims priority, application Germany, Jan. 14, 1970, P 20 01 383.6

Int. Cl. C01g *37/02*

U.S. Cl. 252—62.51 **7 Claims**

In the production of ferromagnetic chromium dioxide wherein a chromium and oxygen containing compound is treated hydrothermally, there is used as the nucleating agent a compound of the formula A_2TeO_6 wherein A is one or more of chromium, iron, aluminum and gallium. The product is characterized by high coercivity in excess of 400 [Oe.] notwithstanding the use of relatively little tellurium.

3,725,282

PASSIVE WAKE QUENCHING SYSTEM USING NONABLATING MATERIAL, SULFUR AND A SOLID NOBLE GAS FLUORIDE

Elliott K. Weinberg, 1329 Tiger Tail Drive, Riverside, Calif. 92506

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,470

Int. Cl. B64g *1/00*

U.S. Cl. 252—62 **5 Claims**

A system for protecting a spacecraft or vehicle from heat when the vehicle reenters the earth's atmosphere is provided that comprises an ablative composition or a porous nonablating material having dispersed therein (1) a mixture of a solid noble gas fluoride and elemental sulfur or (2) a solid noble gas fluoride.

3,725,283

ELECTROSTATOGRAPHIC DEVELOPER CONTAINING UNCOATED GLASS-CERAMIC CARRIER PARTICLES

Robert D. Fenity, deceased, Webster, N.Y. (by Nancy Fenity, executrix), assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,497

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 **13 Claims**

Electrostatographic developer comprised of a toner and an uncoated carrier wherein the carrier comprises a crystalline phase dispersed in a glass matrix, and the crystalline phase is a Group IV metal oxide or a double oxide of tin, hafnium, germanium, zirconium or titanium and an alkaline earth metal or lead or cadmium. These carriers have the desirable properties generally associated with the coated carriers heretofore employed in the art, but unlike the coated carriers, are not prone to degradation and impactation and therefore have a longer useful life.

3,725,284

METHOD OF PRODUCING OXYGEN POOR GALLIUM ARSENIDE BY USING ALUMINUM WITH SILICON OR GERMANIUM AS A DOPANT

Wolfgang Touchy, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed April 28, 1971, Ser. No. 138,192

Claims priority, application Germany, April 30, 1970, P 20 21 345.0

Int. Cl. H01l *3/20*

U.S. Cl. 252—62.3 GA **1 Claim**

The invention relates to a method of producing oxygen poor gallium arsenide with silicon or germanium as a dopant. An element of the III group of the Periodic System, particularly aluminum, is added to the gallium arsenide containing melt for gettering the oxygen. The invention is particularly suited for the production of gallium arsenide, which is processed into luminescence diodes.

3,725,285

MAGNETIC COATING COMPOSITIONS

Hans H. Denk, Vienna, Va., and Joseph J. Sabad, Trenton, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed June 24, 1970, Ser. No. 49,508

Int. Cl. H01f *1/28*

U.S. Cl. 252—62.54 **4 Claims**

Magnetic coating compositions comprising magnetic oxide pigment and a binder selected from certain water-based acrylic resin emulsions. The compositions of this invention are particularly suitable for imparting magnetic data fields to paper, card stock, film, or other substrates. They are particularly suitable for application to magnetic tapes to be subjected to high transport speeds past magnetic tape heads with which intimate contact must be maintained.

3,725,286

DETERGENT COMPOSITIONS

Robert Pettigrew, Bromborough, England, assignor to Lever Brothers Company, New York, N.Y.

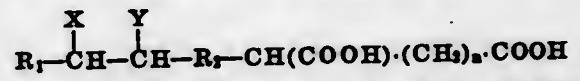
No Drawing. Filed Dec. 2, 1971, Ser. No. 204,348

Claims priority, application Great Britain, Dec. 4, 1970, 57,647/70

Int. Cl. C11d *3/04*

U.S. Cl. 252—89 **5 Claims**

Fabric-washing detergent compositions incorporating, as detergency builders, water-soluble or water-dispersible salts of dicarboxylic acids having the general formula:



$$R_1-\overset{X}{\overset{|}{C}}H-\overset{Y}{\overset{|}{C}}H-R_2-CH(COOH)\cdot(CH_2)_n\cdot COOH$$

wherein R_1 is a hydrogen atom or an alkyl or substituted alkyl group containing from 6 to 20 carbon atoms, R_2 is an alkylene or substituted alkylene group containing from 0 to 4 carbon atoms and optionally incorporating hetero atoms as linking groups, the total number of carbon atoms in groups R_1 and R_2 being from 6 to 20, one or both of X and Y being non-ionisable atoms or groups, any other being hydrogen, and *n* is 0 to 1, are disclosed.

3,725,287

POLYSILOXANE COMPOSITION USEFUL AS A BRAKE FLUID

Frank J. Traver, Troy, N.Y., assignor to General Electric Company

No Drawing. Filed Apr. 8, 1971, Ser. No. 132,556

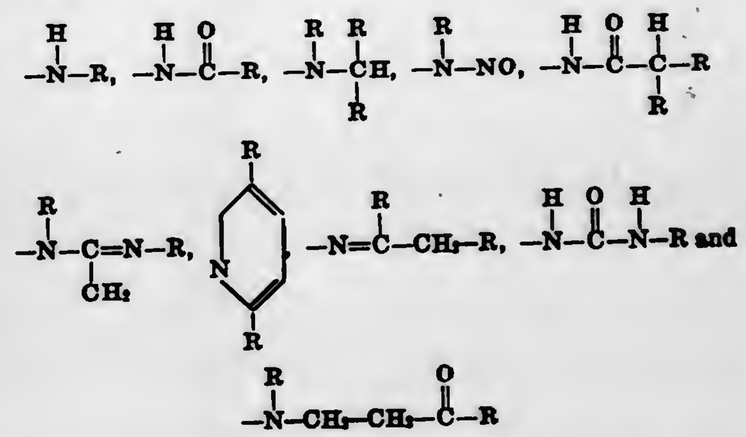
Int. Cl. C09k *3/00*

U.S. Cl. 252—78 **5 Claims**

A siloxane polymer useful as a brake fluid comprising a polymer of the structure,

$$R_a(E-R')_bSiO_{\frac{4-a-b}{2}}$$

where R is a monovalent hydrocarbon radical or a halogenated monovalent hydrocarbon radical, R′ is a divalent hydrocarbon radical which may be straight or branched chained, E is selected from the group consisting of —NH_2,



where R is as defined previously and the different R radicals can be the same or different, where *a* varies from 1.11 to 2.02, *b* varies from 0.023 to 1.00 and the sum of *a* plus *b* varies from 2.024 to 3.00. The present invention also comprises a brake fluid system using the above polysiloxane polymer as the brake fluid.

3,725,288

SOAP COMPOSITION

Charles Louis Bechtold, Edison, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 681,927, Nov. 9, 1967. This application Apr. 23, 1971, Ser. No. 137,076

Int. Cl. C11d *17/04*

U.S. Cl. 252—91 **10 Claims**

Soap composition as an impregnant for scouring pads and the like comprises sodium nitrite, potassium carbonate, polyglycol, sodium high lauric acid oil soap, sodium tallow soap and a foam builder.

3,725,289

STAIN REMOVING COMPOSITION

Gerard Marcel Mouret, 43 Avenue Simon Bolivar, Paris, France

No Drawing. Filed Apr. 23, 1971, Ser. No. 137,070
Claims priority, application France, June 18, 1970, 7022567
Int. Cl. C11d *7/54, 7/42*
U.S. Cl. 252—95 **7 Claims**

A composition for removing stains which contains a proteolytic enzyme, a hydroxylamine compound or a hydrazine compound having at least one free hydrogen on the hydroxylamine or hydrazine nucleus, a perborate and an activator for the perborate.

3,725,290

OXYACETIC ACID COMPOUNDS AS BUILDERS FOR DETERGENT COMPOSITIONS

Douglas Carlyle Nelson, Glenview, and Edward Andrew Knaggs, Deerfield, Ill., assignors to Stepan Chemical Company, Northfield, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 98,887, Dec. 16, 1970. This application May 12, 1972, Ser. No. 252,718
Int. Cl. C11d *3/20;* **C07c** *55/22, 55/24*
U.S. Cl. 252—110 **12 Claims**

A phosphate-free biodegradable detergent builder compatible with various synthetic detergent and soap formulations to produce generally non-eutrophic detergent products. The builder is a water-soluble salt of an aliphatic oxyhydrocarbon carboxylic compound having carboxylic radicals separated from internal oxygen atoms by at least one unsubstituted hydrocarbon radical. A preferred builder is an alkyl metal salt of triglycolic acid and the builders of the invention are combinable in weight ratios with the detergent active surfactants in the formulations ranging from about 20:1 to about 1:10.

3,725,291

SORBENT AND METHOD OF MANUFACTURING SAME

Ctibor Serbus, Kutna Hora, Jan Rezac, Kolin, Stanislav Pribil, Trebon, Petr Marvan, Brno, Libor Krejdirik, Kutna Hora, and Artur Stoy, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,133
Claims priority, application Czechoslovakia, Sept. 16, 1970, 6,310/70
Int. Cl. C02b *1/00, 5/00*
U.S. Cl. 252—180 **9 Claims**

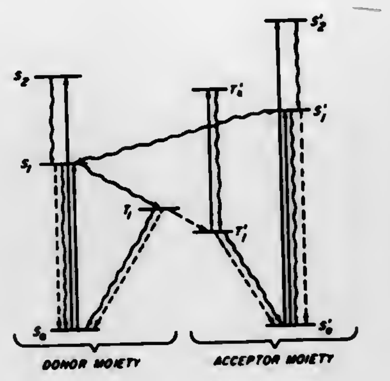
This invention is for a sorbent which comprises an active filler and an active binder, the filler comprising a biological substance, such as telomic plants or algae, and the binder omprising a water-insoluble hydrophilic polymer which preferably contains side groups or substituents which impart desirable sorption properties therein while at the same time acting as an agglomerating means for the active filler, that is, the biological substance and shaping or pelletizing of the mixture. The method of manufacturing the sorbents includes mixing dried and powdered biological substance with a solution of the water-insoluble, hydrophilic polymer in a solvent miscible with water, coagulating the mixture in an aqueous coagulating bath and simultaneously removing the solvent from the solid coagulated mixture.

3,725,292

SINGLE AND DOUBLE ENERGY TRANSFER IN TRIPLET-TRIPLET PHOTOCHROMIC COMPOSITIONS

Gerard Ernest Gerhardt, Warren Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of abandoned application Ser. No. 729,592, May 16, 1968. This application Nov. 25, 1970, Ser. No. 92,913
Int. Cl. G02b *5/20;* **F21v** *9/02, 9/06;* **G02c** *7/10*
U.S. Cl. 252—300 **4 Claims**



A photochromic composition of matter capable of exhibiting photochromism upon exposure to electromagnetic radiation, often colloquially called light, having a wavelength in the range of 200–2,000 nanometers, comprises:

(a) a polymeric substrate capable of transmitting light in the range of 200–2,000 nm. and
(b) about 0.0001 to 2.0% based on the weight of (a), of a photochromic compound of the formula:

$$(D)_m - x - (A)_n$$

wherein D is a chromophore moiety derived from a compound DH, which undergoes a transition to the first excited singlet state upon exposure to light having a wavelength in the range of 200–2,000 nm., x is a bridging function holding together the chromophores D and A; and A is a chromophore derived from the compound AH, which compound AH is characterized by a first excited singlet state at a higher energy level than the first excited singlet state of compound DH, and a lowest triplet state at a lower energy level than the lowest triplet state of compound DH whereby (1) light (electromagnetic radiation) is absorbed to raise one chromophore to an excited singlet, (2) the energy converts to the triplet state, and (3) in the triplet state a chromophore absorbs light at a different wavelength; the functions 1, 2 and 3 occurring in at least two separate bonded chromophores.

3,725,293

CONVERSION OF FUEL-METAL NITRATE SOLUTIONS TO OXIDES

Paul A. Haas, Knoxville, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

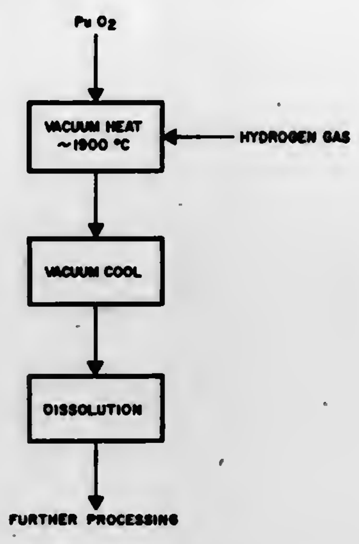
No Drawing. Filed Jan. 11, 1972, Ser. No. 217,038
Int. Cl. C01g *56/00*
U.S. Cl. 252—301.1 R **9 Claims**

A single-step method for converting an aqueous nuclear fuel metal nitrate solution to a fuel-metal oxide. A nitrate-reducing agent selected from the group consisting of hydroxylated organic compounds and hydrazine is added to the nitrate solution. The solution containing the additive is heated to an elevated temperature under pressure until the fuel-metal oxide is precipitated. The precipitated oxide then is recovered.

3,725,294

METHOD FOR DISSOLVING PLUTONIUM DIOXIDE

Ronald L. Deaton, Germantown, and Gary L. Silver, Centerville, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Jan. 27, 1972, Ser. No. 221,255
Int. Cl. C01g *56/00*
U.S. Cl. 252—301.1 R **5 Claims**



Method of dissolving refractory plutonium dioxide (PuO_2) by heating to convert plutonium dioxide to a lower oxide form, which is then dissolved in a suitable acid.

3,725,295

TECHNETIUM LABELING

William C. Eckelman, Hauppauge, and Powell Richards, Bayport. N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed July 20, 1971, Ser. No. 164,431
Int. Cl. A61k *27/04*
U.S. Cl. 252—301.1 R **3 Claims**

The process of using ^{99m}Tc in a radiopharmaceutical comprising the use of a stannous ion as the reducing agent with the pertechnetate ion containing the radionuclide.

3,725,296

OPENING RARE EARTH ORES WITH PERFLUOROALKANESULFONIC ACID

Karl F. Thom, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Continuation-in-part of application Ser. No. 872,726, Oct. 30, 1969, now Patent No. 3,615,169. This application Feb. 20, 1970, Ser. No. 13,158
Int. Cl. C07f *5/00*
U.S. Cl. 252—301.1 R **9 Claims**

Rare earth metals and related ions such as thorium are extracted from ores thereof by treatment with aqueous solutions of perfluoroalkanesulfonic acids. Trivalent metals are extracted preferentially; tetravalent metals tend not to dissolve as readily.

3,725,297

HALOPHOSPHATE PHOSPHOR TREATMENT PROCESS

George R. Gillooly, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.
No Drawing. Filed Mar. 1, 1972, Ser. No. 231,024
Int. Cl. C09k *1/36*
U.S. Cl. 252—301.4 P **5 Claims**

This invention relates to a washing treatment for a halophosphate type phosphor and more particularly to a washing process for improving the luminescent output of alkaline earth halophosphate phosphors by removing any free antimony residue remaining after phosphor preparation and with modifications of the same washing treatment being further able to remove other residual impurities.

3,725,298

PREPARATION OF MIXED OXIDES

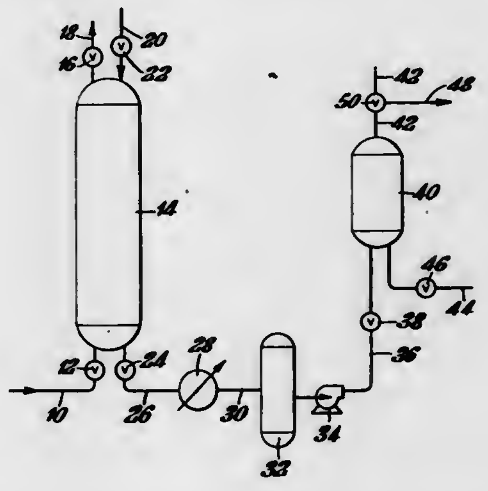
James Louis Woodhead, Didcot, Ronald Michael Dell, Goring-on-Thames, Anthony Richard Junkinson, Wantage, and Raymond Westrop Wilkinson, Goring-on-Thames, England, assignors to United Kingdom Atomic Energy Authority, London, England
No Drawing. Filed Mar. 10, 1969, Ser. No. 805,860
Claims priority, application Great Britain, Mar. 12, 1968, 1,210/68
Int. Cl. B01j *13/00;* **C04b** *35/26, 35/64*
U.S. Cl. 252—317 **7 Claims**

A method of making mixed-oxides comprises taking an aqueous solution having the right balance of metal ions, dispersing it in an inert organic liquid, mixing it with a base solution in the inert organic liquid, especially a long chain aliphatic amine separating out the gel particles so formed and heating them to effect a solid state reaction.

3,725,299

REGENERATION OF MOLECULAR SIEVES HAVING SULFUR COMPOUNDS ADSORBED THEREON

Philip H. Turnock, Katonah; William G. Bancroft, and Max Lee, both of Yorktown Heights, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Aug. 6, 1970, Ser. No. 61,679
Int. Cl. B01j *11/70;* **B01d** *41/02*
U.S. Cl. 252—411 S **3 Claims**



The sweetening of natural gasoline liquid fractions employing molecular sieve type adsorbents to selectively adsorb the sulfur compound impurities is accomplished using a minimum of non-sorbable purge gas for regeneration purposes. The process comprises using a low boiling condensable paraffin to purge the sulfur compounds from the principal adsorption bed, condensing said paraffin, purifying same in the liquid phase by passage through a large pore molecular sieve bed, and thereafter removing the sulfur compounds from the latter bed with a non-sorbable purge gas.

3,725,300

REGENERATION OF BASIC ALUMINA USED AS A CATALYST IN DEHYDROHALOGENATION OF BETA-HALOALKYLPHOSPHONATE ESTERS

Walter Stamm, Tarrytown, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
Division of Ser. No. 696,991, Jan. 11, 1968, Pat. No. 3,576,924. This application Oct. 7, 1970, Ser. No. 78,947
Int. Cl. B01j *11/70, 11/02*
U.S. Cl. 252—412 **5 Claims**

A process is provided for the preparation of α,β-olefinically unsaturated alkyl phosphonate esters by the dehydrohalogenation of the corresponding β-haloalkyl phosphonate esters comprising contacting the haloalkyl phosphonate with basic alumina. A method is also provided for the regeneration of spent alumina catalyst by heating to a temperature in excess of 200° C.

3,725,301

POLYMERIZATION INITIATOR OF ORGANOALKALINE EARTH COMPOUND WITH ORGANOALUMINUM COMPOUND

Francis X. Mueller, Jr., Louisville, Ky., and James D. Brown, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 784,899, Dec. 18, 1968, Pat. No. 3,578,642. This application Oct. 12, 1970, Ser. No. 80,231

Int. Cl. C08g *17/02, 22/04, 23/00*

U.S. Cl. 252—431 R **9 Claims**

A polymerization initiator formed on admixing an organoalkaline earth compound and an organoaluminum compound, wherein the organoalkaline earth compound is the reaction product of an alkaline earth metal with a pyridine-type compound, polynuclear aromatic compound, or polyaryl-substituted ethylenic compound.

3,725,302

SILANIZED CRYSTALLINE ALUMINO-SILICATE

Jesse H. Shimely, and Edward D. Archer, Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 850,285, June 17, 1969, Pat. No. 3,658,696, which is a continuation-in-part of Ser. No. 595,734, Nov. 21, 1966, abandoned. This application Aug. 31, 1970, Ser. No. 68,552

Int. Cl. C07f *7/22;* **B01j** *11/40*

U.S. Cl. 252—431 R **15 Claims**

The external surfaces of crystalline aluminosilicates are treated with hydrocarbyl halosilanes or their condensation products with ammonia, primary amines, secondary amines or alcohols to modify the surface adsorptive properties of the aluminosilicates. In separation processes employing crystalline aluminosilicates wherein the surface adsorbed materials must be removed in a purging operation before the initially adsorbed materials are recovered, silanizing the external surface of the aluminosilicates greatly reduces the time or severity of the purging operation.

3,725,303

BIMETALLIC CATALYST FOR USE IN REDUCING OXYSULFUR COMPOUNDS

Peter Urban, Northbrook, and David J. Albert, Chicago, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 8, 1971, Ser. No. 113,724

Int. Cl. B01j *11/74*

U.S. Cl. 252—439 **10 Claims**

A novel bimetallic catalyst especially useful for the low temperature reduction of oxysulfur compounds with hydrogen, is disclosed. The bimetallic catalyst is a combination of catalytically effective amounts of molybdenum sulfide and of cobalt sulfide with a porous carrier material. It is prepared by impregnating the carrier material with a first metallic component drying and sulfiding to form a sulfided monometallic composite, purging free sulfide from contact with same, impregnating the resulting composite with the second metallic component to form a bimetallic composite, and thereafter, drying and sulfiding the resulting bimetallic composite to produce the bimetallic catalyst. The resulting bimetallic catalyst is especially useful in a method for reducing an inorganic, water-soluble oxysulfur compound wherein an aqueous solution of the oxysulfur compound and hydrogen are contacted with the bimetallic catalyst at reduction conditions.

3,725,304

HYDROCARBON CONVERSION CATALYST

Frederick C. Wilhelm, 30 Algonquin Road, Des Plaines, Ill.

Filed Dec. 28, 1970, Ser. No. 102,059

Int. Cl. B01j *11/78*

U.S. Cl. 252—441 **10 Claims**

A catalyst composite, method of manufacture and process for utilizing the catalyst. The catalyst comprises a tin component and a platinum component on a carrier material. A high surface area porous carrier material is impregnated with a solution comprising a trichlorostannate (II) chloroplatinate anionic complex. The product is dried and calcined to yield an improved catalyst particularly useful for reforming gasoline boiling range petroleum feed stocks.

3,725,305

CATALYST COMPOSITIONS FORMED BY TRANSITION METAL CATIONS AND METHODS OF MAKING AND USING SUCH CATALYSTS

Geoffrey Wilkinson, London, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed July 7, 1970, Ser. No. 53,031

Claims priority, application Great Britain, July 14, 1969, 35,249/69

Int. Cl. C07c *5/02*

U.S. Cl. 252—429 R **20 Claims**

Catalyst compositions containing the cations M_2^{2+}, $M_2(OCOR)_{4cm}{}^{n+}$, $M_2(OCSR)_{4-n}{}^{n+}$, $M_2(OCSR)_{4-n}{}^{+}$ where M is a transition metal which are useful for hydrogenation, hydroformylation, carbonylation, isomerization, disproportionation, and hydrosilation reactions, and methods of making by protonation of corresponding carboxylates, thiocarboxylates, or dithiocarboxylates.

3,725,306

NICKEL CARBONYL COMPLEX CATALYST

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed June 25, 1970, Ser. No. 49,968

Int. Cl. C07c *3/10*

U.S. Cl. 252—430 **18 Claims**

Novel heterogeneous, nickel-containing catalysts comprising

A. A nickel carbonyl complex, and

B. An acidic, solid, silica-based material are active in numerous reactive environments such as oligomerization, including homo- and co-dimerization, and polymerization of various olefins. In specific aspects, bis (triphenylphosphine) nickel dicarbonyl supported on an acidic, calcined, silica-alumina support containing a separate alumina phase, is active in, for instance, the oligomerization, particularly dimerization, of ethylene and propylene, the codimerization of a conjugated diene and an alpha-olefin and the polymerization of conjugated dienes.

3,725,307

PROCESS FOR PREPARING A SILVER-SUPPORTED CATALYST

David Brown, Greenwich, Conn., and Alfred Saffer, Bayside, N.Y., assignors to Halcon International, Inc., New York, N.Y.

Continuation of Ser. No. 456,003, May 14, 1965, abandoned, which is a continuation-in-part of Ser. No. 142,035, Oct. 2, 1961, abandoned. This application Jan. 30, 1967, Ser. No. 612,731

Int. Cl. B01j *11/20;* **C07d** *1/08*

U.S. Cl. 252—455 R **8 Claims**

A silver-supported catalyst is prepared by immersing a carrier of inert porous particles having an average diameter not larger than 3/16 inch, an average pore diameter of about 10–70 microns, and a surface area less than one square meter per gram in an aqueous solution of a silver salt whereby said

particles are impregnated with said solution, separating and drying the impregnated particles, and activating the dried particles by heating in air at a temperature sufficient to decompose the sliver salt. Silica-alumina support particles and a silver salt of an organic carboxylic acid such as lactic acid are preferably used in the process. Optionally, an alkaline earth promoter is added to the silver salt solution. The catalyst product is used in the production of ethylene oxide by the vapor phase oxidation of ethylene.

3,725,308

ELECTRICALLY CONDUCTIVE MASS

Marian J. Ostolski, 70 Piermont Place, Piermont, N.Y.

Filed Dec. 10, 1968, Ser. No. 782,758

Int. Cl. H01b *1/02*

U.S. Cl. 252—513 **7 Claims**

There is described a mass comprising finely divided particles of nickel or cobalt coated with gold or silver or platinum, and binder or matrix of organic or inorganic materials for holding the particles in contact with each other to provide a mass which is electrically conductive or semi-conductive and has properties approximating those of true gold or silver or platinum.

3,725,309

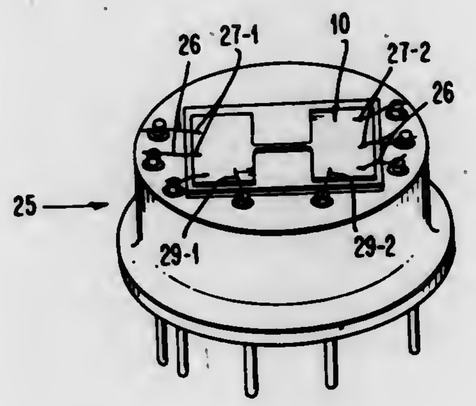
COPPER DOPED ALUMINUM CONDUCTIVE STRIPES

Irving Ames, Peekskill; Francois M. D'Heurle, Ossining, and Richard E. Horstmann, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,371

Int. Cl. H01b *1/02;* **C22c** *21/00;* **H05k** *1/00*

U.S. Cl. 252—512 **19 Claims**



This disclosure provides a copper doped aluminum conductive thin film stripe for use as a current-carrying member in a solid state microelectronic configuration which has substantial resistance against circuit failure due to damage caused by current-induced mass transport in the stripe. It has also been discovered for the practice of this invention that the addition of a relatively small amount of copper to an aluminum stripe together with a suitable heat-treatment enhances the extent of its lifetime during current conduction. Preferably, the percentage copper is from the neighborhood of 0.1 percent to the neighborhood of 10 percent by weight composition of copper in the aluminum and with an annealing heat-treatment in the approximate range of 250°C to 560°C. However, for certain operational conditions of the stripe a selected percent less than 54 percent copper by weight composition is advantageous.

3,725,310

SEMICONDUCTING CADMIUM CADMIUM-ZINC AND MERCURY PHOSPHIDE HALIDES

Paul Christopher Donohue, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 24,821, April 1, 1970, abandoned. This application Aug. 10, 1971, Ser. No. 170,622

Int. Cl. H01b *1/06;* **C01g** *11/00*

U.S. Cl. 252—518 **17 Claims**

Disclosed are phosphide halides of cadmium, cadmium-zinc, and mercury which are semiconductors and which may be doped with materials such as indium, copper, magnesium, and the like. The compositions are useful in semiconductor devices such as thermistors, rectifiers and visible light and infrared detectors.

3,725,311

LOW TEMPERATURE EXTRUDABLE ODOR-NEUTRALIZING COMPOSITION

Larry M. Grubb, Dallas, Tex., assignor to Thuron Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 10,993, May 15, 1972, abandoned. This application May 15, 1972, Ser. No. 253,666

Int. Cl. C11b *9/00*

U.S. Cl. 252—522 **4 Claims**

An extrudable composition and the process of producing it comprising a polymer of 80 to 98 percent PVC, 2 to 20 percent PVAc, and 0 to 20 percent PVA, a plasticizer, a filler to maintain a dry mixture and a volatile odor-neutralizing or modifying agent, the composition being extrudable at a temperature of below 250° F in order to avoid loss of the volatile odor-neutralizing agent through degradation or evaporation.

3,725,312

POLYQUATERNARY FLOCCULANTS AND PROCESSES OF PREPARING THEM BY QUATERNIZING ALKYLENE POLYAMINE RESIN POLYMERS FROM EPIHALOHYDRIN AND MONOALKYL AMINES

Hans Peter Panzer, and Robert Rabinowitz, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 16, 1971, Ser. No. 115,557

Int. Cl. C08g *23/12;* **C02b** *1/20*

U.S. Cl. 260—2 BP **9 Claims**

The cationic flocculant obtained by reacting a monoalkylamine, such as monomethylamine, with an epihalohydrin, such as epichlorohydrin, is quaternized with quaternizing agents, such as dimethyl sulfate, methyl chloride, ethylene oxide, and the like, producing a polyquaternary polymer. The polymer shows improved flocculating power in flocculating aqueous dispersions, such as raw river water, digestion liquors from ilmenite and sulfuric acid, enzyme mashes, sewage flocculation, sewage sludge dewatering, and the like. The polymers are also useful in systems which contain chlorine, such as chlorinated river water, as the quaternary groups are substantially non-reactive with chlorine.

3,725,313

SUSPENSION STABILIZERS

Gunter Naumann; Nikolaus Schon, both of Leverkusen; Hildegard Schnoring, Wuppertal-Elberfeld, and Gottfried Pampus, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 9, 1971, Ser. No. 132,913

Claims priority, application Germany, April 18, 1970, P 20 18 733.1

Int. Cl. C08g *23/12*

U.S. Cl. 260—2.1 R **4 Claims**

This invention relates to the use of rubber-like homopolymers and copolymers of conjugated diolefines or of cycloalkenamers as dispersion agents for the suspension condensation of epihalohydrins and polyalkylene polyamines.

3,725,314
RUBBER RECLAMATION USING ULTRASONIC ENERGY

Arnold H. Pelofsky, East Brunswick, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed June 25, 1971, Ser. No. 156,748

Int. Cl. C08f *47/24*

U.S. Cl. 260—2.3 **6 Claims**

A process for dissolving solid rubber articles such as tires into a liquid vehicle which comprises contacting the rubber while immersed in the liquid with a source of ultrasonic energy whereby the bulk rubber effectively disintegrates upon contact and dissolves into the liquid.

3,725,315
METHOD FOR MAKING AN INSULATING BODY

Peter Bauer, Darmstadt, Germany, assignor to Rohm & Haas G.m.b.H., Darmstadt, Germany

Filed Nov. 6, 1970, Ser. No. 87,580

Claims priority, application Germany, Nov. 18, 1969, P 19 57 820.2

Int. Cl. C08f *47/10, 45/52*

U.S. Cl. 260—2.5 B **6 Claims**

A method of making insulating bodies by dispersing a resin, foamable at a temperature from about 150°C. to about 250°C., in molten asphalt maintained at these temperatures until foaming is complete, and then cooling the mixture.

3,725,316
SELF-EXTINGUISHING POLYURETHANES CONTAINING BROMINATED BENZO-QUINONES

Herbert Jenkner, Cologne-Deutz, Germany, assignor to Chemische Fabrik Kalk GmbH

Filed July 1, 1970, Ser. No. 51,665

Claims priority, application Germany, Sept. 17, 1969, P 19 46 954.6

Int. Cl. C08g *51/58, 41/00*

U.S. Cl. 260—2.5 AJ **5 Claims**

Polyurethane-based materials are rendered self-extinguishing by incorporating therein an effective amount of a brominated benzo-quinone.

3,725,317
NUCLEATION OF THERMOPLASTIC POLYMERIC FOAMS

Clifford P. Ronden, Edmonton, Alberta, Canada, and Donald C. Roylance, Potomac, Md., assignors to Cupples Container Co., Austin, Tex.

Filed Nov. 30, 1970, Ser. No. 93,881

Int. Cl. G08f *47/10;* **C08f** *33/02*

U.S. Cl. 260—2.5 E **15 Claims**

In producing thermoplastic polymeric foams, particularly polystyrene, as by melt extrusion with the aid of a blowing agent, nucleation is accomplished by providing in the thermally plastified polymeric material the combination of an ammonium salt of a carboxylic acid, typically ammonium acetate, a carbonate or bicarbonate, and ammonium chloride. Under conditions of extrusion, for example, the two ammonium salts are thermally decomposed to yield both ammonia, as a nucleating agent, and acidic products which in turn react with the carbonate or bicarbonate to yield carbon dioxide as an additional nucleating agent.

3,725,318
PROCESS FOR THE MANUFACTURE OF POLYURETHANE FOAM BY CONTROLLING THE RATE OF HEAT GENERATION

Olle Bengtson, Goteborg, Sweden, assignor to Imperial Chemical Industries Limited, London, England

Filed March 9, 1971, Ser. No. 122,339

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 BD **5 Claims**

A process for the manufacture of a polyurethane foam which comprises forming a reaction mixture containing an organic polyisocyanate, an organic polyol and an inert blowing agent having a boiling point not exceeding 50°C. at atmospheric pressure under such a pressure that the blowing agent is substantially in condensed form and releasing the pressure on said reaction mixture whereby it expands to form a froth which subsequently cures to form a foam, the reaction mixture having been brought to such a temperature, either before or during the release of pressure, that the rate of generation of reaction heat in said froth during the curing period is substantially equal to the rate at which heat is dissipated from the froth to its surroundings.

3,725,319
LOW SMOKE GENERATING PLASTIC COMPOSITIONS

Kurt C. Frisch, Grosse Ile, Mich., assignor to Owens-Corning Fiberglas Corporation

Continuation-in-part of Ser. No. 33,894, May 1, 1970, abandoned, which is a continuation-in-part of Ser. No. 11,913, Feb. 16, 1970, abandoned. This application March 28, 1972, Ser. No. 238,938

Int. Cl. C08g *51/56, 22/34, 22/44*

U.S. Cl. 260—2.5 AW **7 Claims**

This disclosure concerns isocyanurate-urethane plastic compositions having low smoke generating properties under fire conditions. Reduction of smoke generation is achieved by the addition to the plastic compositions of an alkali metal fluoroborate or ammonium fluoroborate or mixtures thereof.

3,725,320
AGING OF IMPREGNATED FOAMABLE BEADS

Jerry Chi Wang, Lodi, N.J., assignor to Dart Industries, Inc., Los Angeles, Calif.

Filed April 3, 1972, Ser. No. 240,781

Int. Cl. C08j *1/26, 1/30*

U.S. Cl. 260—2.5 B **12 Claims**

A process for aging polymer beads which have been impregnated with a volatile blowing agent wherein the improvement consists of aging in an inert atmosphere at controlled temperature to reduce the volatile impregnant content. The aging can be accelerated safely with incremental temperature increases.

3,725,321
BLOWING AGENTS

Wolf-Dieter Wirth, Odenthal-Hannenberg; Erwin Muller; Johannes Blahak, both of Leverkusen, and Harry Rohr, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 25, 1972, Ser. No. 256,933

Claims priority, application Germany, May 26, 1971, P 21 26 146.1

Int. Cl. C08j *1/20*

U.S. Cl. 260—2.5 R **19 Claims**

The invention relates to the use of 2,4-dioxo-1,2-dihydro-4H-benzoxazine as well as derivatives therefrom as blowing agents for the production of cellular and porous articles. These compounds do not liberate any corrosive, discolorizing, malodorous or toxic decomposition products.

3,725,322
HEAT CURABLE ELASTOMERIC COMPOSITION AND PRODUCTS

Charles Leslie Weidner, Cranbury, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 87,336, Nov, 5, 1970, , which is a continuation-in-part of Ser. No. 672,464, Oct. 3, 1967, abandoned. This application April 23, 1971, Ser. No. 136,994

Int. Cl. C08g *37/16;* **C08d** *9/10*

U.S. Cl. 260—3 **14 Claims**

This specification discloses a new oil soluble phenol formaldehyde resin which comprises a reacted condensation catalyst consisting essentially of an alkaline earth metal salt of a hydroxy ring substituted monobasic aromatic or phenyl terminated aliphatic acid. The catalyst first acts to catalyze the condensation process and then is available to act as an accelerator in the event the resulting resin is to be used for curing compositions such as pressure-sensitive adhesives. Reactive and non-reactive resins of this invention, corresponding adhesives, and various catalysts such as zinc salicylate and others, are disclosed.

3,725,323
CYCLOHEXYLAMMONIUM N-CYCLOHEXYLSULFMATE AS RESIN CATALYSTS

Karl Maurice Beck, Lake Bluff, Ill., assignor to Abbott Laboratories, Chicago, Ill.

Filed July 27, 1971, Ser. No. 166,604

Int. Cl. C08g *9/10, 51/18, 51/24*

U.S. Cl. 260—17.3 **7 Claims**

Formaldehyde-urea resins are catalyzed to form a solid resin of excellent bonding strength, using cyclohexylammonium N-cyclohexylsulfamate in small amounts for curing the resin at elevated temperatures.

3,725,324
ART OF MANUFACTURING DRY WALL TAPING AND FINISHING COMPOUNDS WITH A NITROGENOUS-MODIFIED AMYLACEOUS BINDER

Robert G. Cummisford, Brookfield, Wis., assignor to Krause Milling Company, Milwaukee, Wis.

Filed May 27, 1971, Ser. No. 147,644

Int. Cl. C08b *25/02;* **C08d** *9/06*

U.S. Cl. 260—17.4 ST **19 Claims**

Urea is combined with a gelatinized amylaceous material using water in an amount less than 20 percent of the total mix, and the mixture is subsequently heated to obtain a binder for use in a dry wall finishing compound.

3,725,325
GRANULATED VINYL CHLORIDE RESIN MATERIAL

Masao Takeda; Eiichi Iida, both of Tokyo; Tsuneo Komatsubara, Kamakura-shi, and Yutaka Kagoshima, Kawasaki-shi, all of Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

Filed Nov. 12, 1969, Ser. No. 876,096

Claims priority, application Japan, Nov. 16, 1968, 43/83538

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.1 R **2 Claims**

A granulated material of vinyl chloride powder for paste processing having the specific average grain size, the specific bulk density and the specific dispersibility in plasticizer, and the process for the preparation of sol composition of vinyl chloride resin.

3,725,326
EPDM RUBBER TIRE CORD ADHESIVE FROM DICYCLOPENTADIENE LATEX AND RESORCINOL-ALDEHYDE RESIN

Thomas S. Solomon, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Continuation-in-part of Ser. No. 491,400, Sept. 29, 1965, abandoned. This application Jan. 30, 1969, Ser. No. 795,337

Int. Cl. C08f *5/00, 41/10*

U.S. Cl. 260—29.3 **2 Claims**

A copolymer of dicyclopentadiene and a lower alkyl alpha-olefin, dispersed in water and combined with a water dispersion of resorcinol - formaldehyde resin is useful as a dip adhesive for rayon or nylon tire cord to adhere said cord to an EPDM carcass stock.

3,725,327
ZINC DI(LOWER ALKYL) DITHIOCARBAMATES AS MOLD INHIBITORS FOR LATEX PAINTS

Milo E. Stearns, and Wilbur S. Taylor, both of Westport, Conn., assignors to R. T. Vanderbilt Company, Inc., New York, N.Y.

Filed Nov. 16, 1970, Ser. No. 90,114

Int. Cl. C09d *5/14*

U.S. Cl. 260—29.6 MM **10 Claims**

Zinc dimethyldithiocarbamate, when incorporated in latex paint in sufficient amount, inhibits the growth of mold on the paint film obtained upon drying of the paint.

3,725,328
LATEX COATING COMPOSITION HAVING YIELD VALUES OF 95-550 DYNES/CM^2 AND SHEAR STRESS OF AT LEAST 90 DYNES/CM^2 AT SHEAR RATE OF ABOUT 0.1-0.2/SEC.

S. T. Bowell, North Olmstead; Robert Ashcroft, Strongsville, and G. E. Pekarek, Cleveland, all of Ohio, assignors to SCM Corporation, Cleveland, Ohio

Filed Oct. 26, 1970, Ser. No. 84,192

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 R **2 Claims**

Novel compositions of aqueous compounded latex coatings adapted for airless spray application comprising film-forming latex and pigmentation dispersed in a bodied aqueous medium and exhibiting a defined yield point having a preferred shear stress of at least 90 dynes/cm^2 at a shear rate of between about 0.1 and 0.2 reciprocal seconds are described. A process for airless spray surface coating using the compositions of this invention and coated articles obtained thereby are also described.

3,725,329
PHOTOGRAPHIC SUBBING MATERIAL

Frederick J. Jacoby; Frederick L. Hamb, and Lewis C. Trent, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 865,184, Oct. 9, 1969, Pat. No. 3,658,541. This application Sept. 8, 1971, Ser. No. 178,834

Int. Cl. C08g *17/14, 51/30, 51/34*

U.S. Cl. 260—32.8 R **8 Claims**

Solvent soluble carboxylated polyester subbing materials for photographic elements. An organic solvent soluble polyester is carboxylated by treatment, during the latter stages of polymerization, with an organic dianhydride to produce an organic solvent soluble carboxylated polyester. The solvent soluble carboxylated polyester is effectively used in subbing compositions, desirably containing attack solvent, e.g., coated onto a polyester photographic film support and has excellent adhesion both to the support and to conventional gelatin-cellulose ester subbing layers used to adhere a gelatino silver halide emulsion to the support.

3,725,330
SELF-ADHESIVE INSULATING COMPOSITION

Akira Shirato; Nishizawa Hitoshi, and Sawada Seizo, all of Yokohama, Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Kawasaki-shi, Japan

Filed April 2, 1970, Ser. No. 25,287

Claims priority, application Japan, Nov. 2, 1969, 44/89160

Int. Cl. C08c *11/22;* **C08d** *9/08, 9/12*

U.S. Cl. 260—33.6 AQ **34 Claims**

A self-adhesive insulating tape excellent in electrical properties and weather resistance can be prepared by shaping into a sheet a novel composition comprising (A) an ethylene-propylene-diene terpolymer, (B) an ethylene-propylene copolymer, (C) a tackifier selected from the group consisting of low molecular weight polyisobutylenes, terpene resins, coumarone-indene resins and novolak type phenol resins, (D) an inorganic filler and (E) a vulcanizing agent capable of vulcanizing only the ethylene-propylene-diene terpolymer in this composition, vulcanizing the sheet and then cutting it to a given width. Said self-adhesive insulating tape is extremely suitable for forming insulating layers in connecting high voltage cables or in treating terminals.

3,725,331
COMPOSITIONS CONTAINING AMORPHOUS 1,2-POLYBUTADIENE AND CIS-1,4-POLYBUTADIENE

Jean Lesage, Le Vesinet, and Francois Dawans, Bougival, both of France, assignors to Institut Francois du Petrole, des Carburants et Lubrifiants, Hauts de Seine, France

Filed Oct. 8, 1970, Ser. No. 79,285

Claims priority, application France, Oct. 21, 1969, 6936148

Int. Cl. C08d *9/08*

U.S. Cl. 260—33.6 AQ 4 Claims

New compositions consisting of 40-75 percent by weight of amorphous 1,2-polybutadiene having a molecular weight above 50,000 and 25-60 % by weight of 1,4-cis polybutadiene having a molecular weight above 100,000 result in sulfur vulcanizates having a low brittle point, a high elasticity modulus, and a low rebound and which swell to a relatively low degree when immersed in benzene.

3,725,332
ACRYLONITRILE-BUTADIENE-STYRENE COMPOSITIONS

Frederick E. Carrock, Paramus, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Dec. 15, 1970, Ser. No. 98,449

Int. Cl. C08k *1/36*; C08d *11/02*

U.S. Cl. 260—31.8 M 9 Claims

Compositions which contain a blend of:

a. a first graft copolymer composition derived from the graft copolymerization of a diene-based rubber with, for example, acrylonitrile and styrene, where the rubber has a majority of its particles in the size range of about 0.8 to about 10 micron,

b. a second graft copolymer composition which has a majority of its particles in the size range of 0.005 to about 0.6 micron, and

c. 1 to 10 parts by weight of an epoxidized soybean oil or a mono- or disubstituted phthalic acid ester, e.g., dioctyl phthalate, have been been found to have much higher Izod impact strengths at a given melt flow range than similar blends that do not contain the epoxidized soybean oil or phthalic acid ester for the same total rubber concentration in the blend.

3,725,333
METHOD FOR PRODUCING FOUNDRY MOLDS AND FOUNDRY MOLDING COMPOSITIONS

William B. Adkins, Sidney; Thomas F. Bauer, Bainbridge, and James O. Beane, Sidney, all of N.Y., assignors to Borden Inc., New York, N.Y.

Filed April 20, 1970, Ser. No. 30,259

Int. Cl. C08g *5/04*

U.S. Cl. 260—38 2 Claims

Foundry molding composition is prepared by mixing a granular refractory material, such as sand, with a curing agent and a phenol-formaldehyde resin binder which has been modified with 10–70 percent, based on the weight of the resin, of furfural or furfuryl alcohol. The molding composition is blown into a pattern box preheated to 350°–600°F and cures in less than 60 seconds. The molds prepared from this molding composition demonstrate good resistance to water pick-up, have higher initial tensile strengths, much better retained strengths and do not impart pinholing effect to the castings manufactured therewith.

3,725,334
PHENOLIC RESIN-ISOCYANATE TRIMERIZATION PRODUCT AND FRICTION MATERIAL CONTAINING THE SAME

Franz Popp, Hamburg-Kirchwerder, and Wilfried Augustin, Reinbek, both of Germany, assignors to Jurid Werke GmbH, Hamburg, Germany

Filed May 18, 1970, Ser. No. 38,074

Claims priority, application Germany, May 29, 1969, P 19 27 254.9; May 29, 1969, P 19 27 255.0

Int. Cl. C08g *51/12*; C09k *3/14*

U.S. Cl. 260—38 7 Claims

At least one isocyanurate derivative is added to polymer or polymer mixtures as a stabilizing agent, preferably prior to molding and setting the blend. The isocyanurate derivative may be added in the form of an emulsion or dispersion in a liquid vehicle. An improved friction material contains an isocyanate derivative and a trimerization catalyst acting to react said isocyanate to said isocyanurate, in admixture with an organic binding agent comprising a phenolic resin and inorganic or organic fillers and, if desired, a natural or synthetic rubber.

3,725,335
BINDERS FOR MORTARS

Gerard Lefebvre, Lyon, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

Filed Feb. 17, 1971, Ser. No. 115,993

Claims priority, application France, Feb. 23, 1970, 7006349

Int. Cl. C08f *29/50*

U.S. Cl. 260—40 R 4 Claims

An organic resinous binder composition which reduces shrinkage and shrinkage cracks in mortars formed thereof wherein the binder composition is formulated of an unsaturated polyester and a vinyl monomer such as styrene as the basic components and which includes a polyvinyl acetate in an amount within the range of 0.5 to 2 percent by weight and preferably 0.8 to 1.4 percent by weight of the unsaturated polyester and vinyl monomer.

3,725,336
THERMOPLASTIC COMPOSITION CONTAINING COPRECIPITATED FILLERS AND METHODS OF MAKING THE FILLERS

Rinnosuke Susuki, Tokyo; Hiroshi Hoshi, Chiba-ken; Jiro Saito, Tokyo; Keiichi Murakami, Miyagi-ken, and Michio Hirakawa, Chiba-ken, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed April 23, 1971, Ser. No. 136,762

Claims priority, application Japan, April 25, 1970, 45/35748; April 25, 1970, 45/35749

Int. Cl. C08f *45/04*

U.S. Cl. 260—41 R 4 Claims

A method for the preparation of a filler to be used with thermoplastic resins comprising a process of making the mixture of two or three members selected from the group consisting of sulfur dioxide, sulfur trioxide and carbon dioxide act on calcium hydroxide in the presence of water or a process of making either sulfur dioxide or sulfur trioxide or the mixture thereof act on calcium carbonate in the presence of water. Thermoplastic compositions containing the coprecipitated filler mixture have superior physical characteristics when compared to thermoplastic compositions which contain filler mixtures mechanically mixed.

3,725,337
PROCESS OF STABILIZING POLYETHYLENE SULFIDE

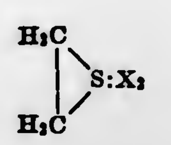
Jose L. Villa, Heightstown, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Division of Ser. No. 40,949, May 27, 1970, Pat. No. 3,582,521. This application Feb. 16, 1971, Ser. No. 115,737

Int. Cl. C08g *17/58*

U.S. Cl. 260—45.8 R 4 Claims

A novel halogen adduct of ethylene sulfide,



wherein X is Br, Cl or I, is prepared and used as an oxidation stabilizer in a stabilizer system for an ethylene sulfide polymer to prevent the oxidation degradation of the polymer, particularly during processing. In a preferred process the oxidation stabilizer in the system is formed in situ in the polymer by polymerizing ethylene sulfide in the presence of from about 0.04 to 4 percent of Br_2, Cl_2 or I_2. A thermal stabilizer is added also to the polymer before high temperature processing to prevent thermal degradation.

3,725,338
THERMOSTABILIZED CHLORINE-CONTAINING POLYMERS

Lewis B. Weisfeld, Highland Park, N.J.; Holger Andreas, Bensheim-Auerbach, and Horst Muller, Fuerth, both of Germany, assignors to Ciba-Geigy Marienberg GmbH

Filed Sept. 4, 1970, Ser. No. 69,988

Claims priority, application Germany, Sept. 12, 1969, P 19 46 235.2

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.75 K 7 Claims

Compositions comprising an ester of aminocrotonic acid and 0.1 to 10 weight per cent of an organometal compound corresponding to the formula

$$[RR_a'R_b''MeZ_{3-a-b}]$$

wherein R, R′ and R″ are alkyl radicals having 1 to 8 carbon atoms and phenyl, Z is one-half oxygen or one-half sulfur, *a* and *b* are 0 or 1, Me is tin or lead and *n* is an integer of 1 to 1000, preferably 1 to 100, are useful heat stabilizers for halogen containing resins. Halogen containing resins suitable for stabilization with these compositions are polyvinyl chloride, polyvinylidene chloride, copolymers of vinyl chloride with vinylidene chloride, vinyl acetate and styrene as well as chlorinated mixtures of polyvinyl chloride and polyolefins.

3,725,339
PROCESS OF REACTING A HALOGEN-SILANE MIXTURE WITH AN ALCOHOL MIXTURE CONTAINING TERTIARY ALCOHOL

Gotz Koerner; Vaclav Kropac, both of Essen, and Gerd Rossmy, Essen-Werden, all of Germany, assignors to Th. Goldschmidt AG, Essen, Germany

Filed March 26, 1971, Ser. No. 128,464

Claims priority, application Germany, April 25, 1970, P 20 20 224.8

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R 6 Claims

Silicone resin having a ratio of R : Si-groups of 0.95 to 1.5, the remaining Si-valences being satisfied by oxygen and alkoxy groups, the maximum amount of alkoxy groups being up to 0.75 mole of alkoxy per 100 g. R stands for methyl and/or (phenyl. 20 mole percent of the methyl and/or phenyl groups may be replaced by vinyl.

The silicone resin is produced by reacting a halogen silane mixture of an R : Si-ratio of 0.95 to 1.5 with a mixture consisting of

a. tertiary, chain-like aliphatic alcohols of 4 to 8 carbon atoms, and

b. primary and/or secondary chain-like aliphatic alcohols of 1 to 8, preferably 1 to 4 carbon atoms.

0.4 to 0.6 mole of tertiary alcohol are used per mole of silicon-attached halogen atom while 0.15 to 1 mole of primary and/or secondary alcohol are used per mole of tertiary alcohol. The reaction is effected at temperatures of between about 10° to 90°C. The reaction product may be subsequently further condensed.

3,725,340
PROCESS FOR THE PRODUCTION OF CROSSLINKABLE POWDER LACQUERS

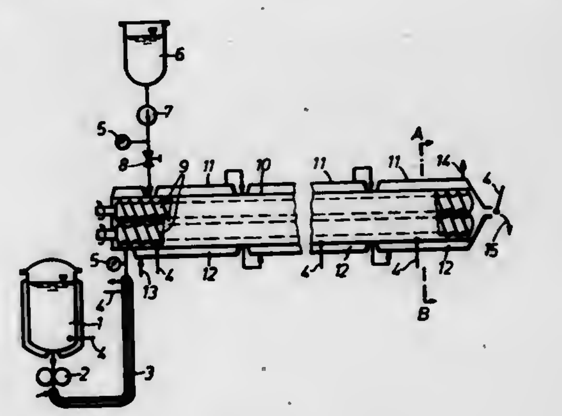
Rudolf Erdmenger, Berg.-Gladbach; Martin Ullrich, Leverkusen-Schlebusch; Rolf Germedonk, Schildgen-Nittum; Josef Pedain, Cologne; Bernd Quiring, and Frank Wingler, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft

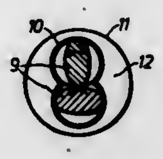
Filed Jan. 21, 1971, Ser. No. 108,389

Claims priority, application Germany, Jan. 27, 1970, P 20 03 415.5

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EP 9 Claims





Reacting lacquer resins containing hydroxyl groups with a softening point of from 50° to 150° C. and an alkoxymethyl isocyanate in the melt in a temperature-controlled screw extruder.

3,725,341
PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT POLYEPOXIDES FROM POLYEPOXIDES AND POLYHYDROXYL-CONTAINING COMPOUNDS

Morris Gwynne Rogers, Sarnia, Ontario, Canada, and James Hwa-San Tsai, Kaohsiung, Taiwan, assignors to The Dow Chemical Company, Midland, Mich.

Filed June 23, 1971, Ser. No. 156,101

Int. Cl. C08g *30/04*

U.S. Cl. 260—47 EP 9 Claims

The invention concerns a process for preparing epoxy resins of increased molecular weight by reacting a polyepoxide such as the diglycidyl ether of bisphenol-A with a polyhydroxyl-containing compound, such as bisphenol-A in the presence of an organometallic compound of tin, germanium, silicon and lead, such as trimethyltin chloride.

3,725,342

CURABLE COMPOSITION COMPRISING A DI-PRIMARY DIAMINE CONTAINING HYDANTOIN RINGS AND A POLYEPOXIDE COMPOUND

Daniel Porret, Binningen, and Juergen Habermeier, Allschwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 876,037, Dec. 12, 1969. This application July 12, 1971, Ser. No. 161,911

Int. Cl. C08g *30/14*

U.S. Cl. 260—2 N **1 Claim**

New bis-(1-γ-aminopropyl-hydantoinyl-3)-alkanes, for example 1,6-bis-(1′-(γ-aminopropyl)-5′,5′-dimethylhydantoinyl-3′)-hexane or β,β′-bis(1-(3′-aminopropyl)-5,5-dimethylhydantoinyl-3)-diethyl ether, and their use as curing agents in curable moulding, coating and adhesive compositions which contain a polyepoxide compound, for example a liquid polyglycidyl ether of bisphenol A. Curing can be carried out at relatively low temperatures, for example at '° C. The new type of curing agent bridges, in respect of its gradation of reactivity, a gap between aliphatic polyamines and cycloaliphatic polyamines. The new curing agents furthermore have the advantage relative to the aromatic polyamines of being non-toxic.

3,725,343

POLYESTER FROM 1,4-DIMETHANOL-1,4 DIALKYL CYCLOHEXANE AND DICARBOXYLIC ORGANIC ACIDS

Ralph C. Schreyer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 722,204, April 18, 1968, Pat. No. 3,646,223. This application Nov. 4, 1971, Ser. No. 195,858

Int. Cl. C08g *17/04, 17/08*

U.S. Cl. 260—42 C **12 Claims**

Polyester from 1,4-dialkyl-1,4-bis(hydroxymethyl) cyclohexanes and dicarboxylic organic acids having at least one carbocyclic ring. Synthesis from substituted butadiene and acrylic compound starting materials is disclosed. Advantages of a variety of polyesters are illustrated.

3,725,344

CROSSLINKED COPOLYMERS OF AROMATIC DIAMINODIAMES, AROMATIC DIAHYDRIDES AND AROMATIC DIAMINES AND METHOD OF PREPARATION

Yasuo Miyadera, 33-2, Nishi-Narusawacho-1-chome; Tatuo Masuko, 23-9, Osecho-3-chome; Tadashi Muroi, 67-4, Ishinazakacho; Hiroshi Noguchi, 2-20-274, Takasuzucho-1-chome, and Hideo Kawashima, 12-14, Nishi-Narusawacho-1-chome, all of Hitachi, Japan

Filed Aug. 12, 1970, Ser. No. 63,276

Claims priority, application Japan, Aug. 20, 1969, 44/66115

Int. Cl. C08g *33/02*

U.S. Cl. 260—47 CP **16 Claims**

A novel copolymer is obtained by subjecting (1) an aromatic diaminodiamide compound whose amino group and amide group are bonded to an aromatic nucleus in a meta or para position to each other and whose amide group is a carboxylic acid amide group or a sulfonic acid amide group, (2) an aromatic tetracarboxylic acid dianhydride and (3) an aromatic diamine to reaction at a temperature not higher than 80°C in the presence of an inert solvent. By dehydrating and cross-linking the copolymer by heating to 100°C or higher, a novel, cross-linked copolymer having a good heat and abrasion resistance is obtained. When said dehydrating and cross-linking reaction is carried out in the form of an electric conductor coating, an electric wire having a good insulation effect is obtained.

3,725,345

COMPOSITION COMPRISING AN EPOXY RESIN ACID ANHYDRIDE AND A N,N′ BIS-IMIDE

Michel Bargain, Lyon, France, assignor to Rhone-Roulenc S.A., Paris, France

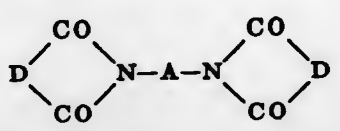
Filed Jan. 14, 1971, Ser. No. 106,570

Claims priority, application France, Jan. 15, 1970, 7001414

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EC **14 Claims**

A thermosetting composition which may be cured to give resins having good heat stability and rigidity comprising the reaction product of an epoxy resin, a carboxylic acid anhydride and a N,N′-bis-imide of the formula:



in which D represents a divalent radical containing a carbon-carbon double bond, and A represents a divalent radical containing at least two carbon atoms.

3,725,346

THERMALLY STABLE POLYINDANYL POLYMERS DERIVED FROM PHENYLENE OXIDES AND PROCESS FOR MAKING THE SAME

Roy G. Neville, San Carlos, Calif., assignor to Bechtel International Corporation

Division of Ser. No. 31,358, April 23, 1970, Pat. No. 3,663,625. This application Aug. 9, 1971, Ser. No. 170,340

Int. Cl. C08f *7/02*

U.S. Cl. 260—47 UA **3 Claims**

This invention relates to a group of polyindanyl polymers derived from disubstituted phenylene oxides. When suitably catalyzed, the monomers of the invention are polymerized to materials that exhibit improved thermal stability, chemical resistance and mechanical flexibility. These polymeric products can be employed as adhesives, coating materials, and laminating resins; and, when suitably reinforced, they can be used as structural plastics.

3,725,347

LINEAR POLYAMIDES HAVING HIGH GLASS TRANSITION TEMPERATURE PREPARED 4-(3-AMINO-PROPOXY)-PHENYL-3-PROPYLAMINE

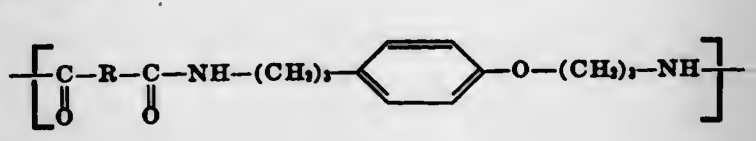
Tadanao Ando, Hiyogo; Seiichi Kataoka, and Isao Shiihara, both of Osaka, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation-in-part of Ser. No. 870,673, Dec. 24, 1969, abandoned. This application Oct. 6, 1971, Ser. No. 187,174

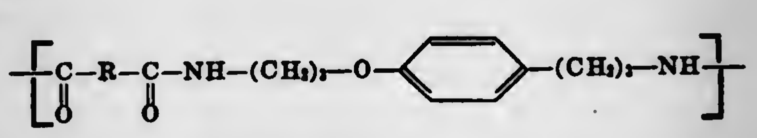
Int. Cl. C08g *20/20*

U.S. Cl. 260—47 CZ **1 Claim**

A linear polyamide having a high glass transition temperature composed essentially of monomer units randomly distributed in the polymer chain, said monomer units having the formula



or



wherein R is a member selected from the group consisting of aliphatic, aromatic and aliphatic-aromatic radicals.

3,725,348

POLYESTER MODIFIED WITH METAL SALTS OF SULFOISOPHTHALIC ACID ESTERS AND POLY(ETHYLENE OXIDE) END CAPPED WITH ALKYL GROUPS

Albert Keith Harrison, and John Mather, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 783,419, Dec. 12, 1968, abandoned. This application Dec. 23, 1970, Ser. No. 101,118

Claims priority, application Great Britain, Dec. 5, 1967, 55,313/67

Int. Cl. C08g *17/14, 17/18*

U.S. Cl. 260—75 S **4 Claims**

Copolyesters of improved affinity for dyestuffs are manufactured by incorporating a poly(alkylene oxide) into a copolyester of which a proportion of the structural units are organic radicals containing at least one sulphonate group as the metal salt.

3,725,349

PHENOL-FORMALDEHYDE ADHESIVE RESINS CONTAINING POLY(C –C ALKYLENEOXY)GLYCOLS

Harry A. Smith, and Erwin H. Kobel, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 100,502, Dec. 21, 1970, abandoned. This application June 12, 1972, Ser. No. 261,740

Int. Cl. C08g *5/18*

U.S. Cl. 260—58 **7 Claims**

Improved phenol-formaldehyde adhesive resins are obtained by premixing with aqueous formaldehyde about 0.3-1.5 parts per part formaldehyde of a poly(C_3—C_4 alkyleneoxy)glycol of Formula I:

$$\mathrm{HO{-}CHRCH_2{-}O{-}CH_2CHR{-}O_n{-}H} \qquad \text{(I)}$$

where R is C_1–C_2 alkyl and n is about 20–80, and thereafter reacting the formaldehyde-polyglycol solution with phenol in the presence of alkali. Preferred are liquid polypropyleneoxyglycols having an average molecuar weight of about 1,200–4,000. The resulting thermosetting resole adhesive resins are particularly suitable for plywood glues.

3,725,350

POLYMERIC SUBSTANCES COMPRISING THE REACTION PRODUCT OF MELAMINE, ALDEHYDE AND OXAZOLIDINES

Jerry H. Hunsucker, c/o Commercial Solvents Corp., Terre Haute, Ind.

Continuation-in-part of Ser. No. 36,679, May 12, 1970, abandoned. This application April 26, 1972, Ser. No. 247,680

Int. Cl. C08g *9/30*

U.S. Cl. 260—67.5 **10 Claims**

Prepolymeric resinous compositions from an oxazolidine and melamine and a lower aliphatic aldehyde. The resinous compositions polymerize on heating and have utility in baking enamels and in electrodeposition formulations to increase the solvent resistance of the film.

3,725,351

FIBERS OF POLYESTERS PREPARED FROM ETHYLENE GLYCOL, DIMETHYL TEREPHTHALATE, SODIUM DIMETHYL-5-SULPHOISOPHTHALATE AND POLY(ETHYLENE OXIDE)

Albert Keith Harrison, and John Mather, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of Ser. No. 783,423, Dec. 12, 1968, abandoned. This application July 23, 1970, Ser. No. 64,052

Int. Cl. C08g *17/14*

U.S. Cl. 260—75 S **2 Claims**

Fibers of copolyester of improved affinity for dyestuffs are derived from at least one dicarboxylic acid and at least 2 glycols, one of the glycols being a poly (alkylene oxide) and a proportion of the structural units of the copolyesters consists of organic radicals containing at least one sulphonate group as the metal salt.

3,725,352

ABA BLOCK POLYMERS OF POLYESTERS AND POLYETHERS

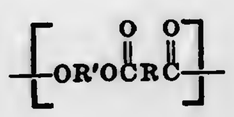
Joseph Victor Koleske; Rene Marie-Joseph Roberts, and Frank Paul Del Giudice, all of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,924

Int. Cl. C08g *39/10*

U.S. Cl. 260—75 R **4 Claims**

The invention relates to novel, solid, substantially water-insoluble ABA block polymers in which the A blocks comprise recurring linear units of the formula



$$\left[\mathrm{OR'O\overset{O}{\overset{\|}{C}}R\overset{O}{\overset{\|}{C}}}\right]$$

wherein the substituents R and R′ are divalent aliphatic groups and in which the B block comprises recurring oxyalkylene units. The block polymers have utility as plasticizers for polyvinyl chloride resins and as dye assists for polypropylene fiber.

3,725,353

AMINO ACID-URETHANE POLYMER COMPOSITIONS

Yasuo Fujimoto, Yokohama; Isao Masumura, Tokyo; Keizo Tatsukawa, Tokyo; Shinsuke Koshimoto, Tokyo, and Toru Doiuchi, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed April 12, 1971, Ser. No. 133,393

Claims priority, application Japan, April 17, 1970, 45/32358

Int. Cl. C08g *22/00*

U.S. Cl. 260—75 NK **12 Claims**

Improved amino acid-urethane polymer compositions containing the reaction product of an intermediate polymer, obtained by the reaction of a polyesterpolyol with a polyisocyanate compound, and an amino acid N-carboxy anhydride or a polyamino acid and processes for the preparation of these compositions.

3,725,354

USE OF MIXED POLYAMINES FORMED BY THE ACID-CATALYZED CONDENSATION OF AN N-ALKYLANILINE, 2-CHLOROANILINE, AND FORMALDEHYDE AS CURING AGENTS FOR POLYURETHANES

Norman K. Sundholm, Middlebury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 796,549, Feb. 4, 1969, abandoned. This application June 23, 1971, Ser. No. 156,021

Int. Cl. C08g *22/16*

U.S. Cl. 260—75 NH **5 Claims**

The mixtures of polyamines formed by the acid-catalyzed condensation of an N-alkylaniline, 2-chloro-aniline, and formaldehyde in certain ratios have im-proved properties for curing polyurethanes. They are readily blended with the liquid polyurethane because they are liquid or have low solidification points.

The properties of the cured polymer can be varied by selecting the proper curing agent, that is, those richer in N-alkylamiline providing softer products, or those richer in 2-chloroamiline providing harder products.

3,725,355
RAPID SETTING POLYURETHANE ELASTOMER COMPOSITIONS

Donald B. Parrish, Lake Jackson, and Franciszek Olstowski, Freeport, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 21, 1971, Ser. No. 191,344
Int. Cl. C08g *22/10, 22/14*

U.S. Cl. 260—77.5 AP **21 Claims**

Rapid setting elastomers are prepared by mixing together (A) a polyether or ester modified polyether polyol having a molecular weight of above 2,000, (B) a polyhydroxyl accelerator-extender compound such as glycerine, (C) an isocyanate containing prepolymer, and (D) an organo-metallic catalyst such as lead octoate.

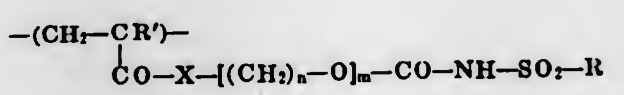
3,725,356
POLYMERIC N-CARBONYL SULFONAMIDES IN PHOTOPOLYMERIZABLE COMPOSITIONS AND PROCESS FOR PREPARATION

Walter Luders, Neu-Isenburg; Hartmut Steppan, Wiesbaden-Dotzheim, and Kurt-Walter Klupfel, Wiesbaden-Sonnenberg, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed June 2, 1971, Ser. No. 149,391
Claims priority, application Germany, June 4, 1970, P 20 27 466.2
Int. Cl. C08g *22/02, 22/04*; **G03c** *1/70*

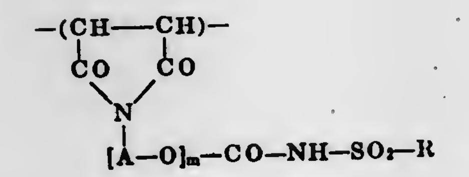
U.S. Cl. 260—77.5 CR **3 Claims**

This invention relates to novel polymers and to a method of producing the same. The polymers are of reduced specific viscosity between 0.05 and 3.0, preferably between 0.2 and 1.0 dl/g., measured at 25° C. using a 1 percent solution in dioxane, contain substituted N-carbonyl sulfonyl groups in their side chains, and are composed of statistically distributed recurrent structural units
of Formula I'

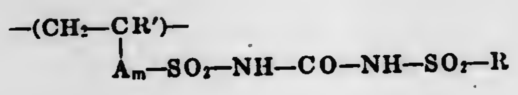


$$-(\mathrm{CH_2}-\underset{\substack{|\\ \mathrm{CO-X-[(CH_2)_n-O]_m-CO-NH-SO_2-R}}}{\mathrm{C}}\mathrm{R'})-$$

and/or
Formula II'



and/or
Formula III'

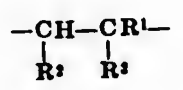


$$-(\mathrm{CH_2}-\underset{\substack{|\\ \mathrm{A_m-SO_2-NH-CO-NH-SO_2-R}}}{\mathrm{C}}\mathrm{R'})-$$

wherein

- R is a saturated aliphatic alkyl or alkoxy group each with one to six carbon atoms which may be substituted by one to three halogen atoms, or a cycloaliphatic alkyl group, or an aryl or aryloxy group each with six or 10 carbon atoms which may be substituted up to 3 times by halogen atoms and/or alkyl or alkoxy groups with one to six carbon atoms,
- R' is a hydrogen atom or a methyl group,
- X is an oxygen atom or an imino group,
- A is a phenylene group or an alkylene group with one to four carbon atoms,
- *n* is an integer from 1 to 4, and
- *m* is 1, or may be 0 when X is an imino group,

and which may further comprise, in a statistical distribution, recurrent structural units of the type



$$-\underset{\substack{|\\ \mathrm{R^2}}}{\mathrm{CH}}-\underset{\substack{|\\ \mathrm{R^3}}}{\mathrm{C}}\mathrm{R^1}-$$

wherein

- a. R^1 is a hydrogen atom or a methyl group,
  R^2 is a hydrogen atom, and
  R^3 is a nitrile group, a phenyl group, an amino-carboxyl group, an alkyl carboxyl group with two to 12 carbon atoms, or an acyloxy group with two to 12 carbon atoms, or
- b. R^1 is an alkyl carboxymethyl group with three to 13 carbon atoms,
  R^2 is a hydrogen atom, and
  R^3 is an alkyl carboxyl group with two to 12 carbon atoms, or
- c. R^1 is a hydrogen atom, and
  R^2 and R^3 are both alkyl carboxyl groups with two to 12 carbon atoms.

3,725,357
TEMPERATURE STABLE FLEXIBLE ISOCYANATE-TERMINATED POLYMERS AND POLYISOCYANURATE POLYMERS THEREFROM

Hubert Jakob Fabris, Akron; Edwin Morgan Maxey, Kent, and Arden Everett Schmucker, Alliance, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Dec. 29, 1971, Ser. No. 213,826
Int. Cl. C08g *22/20, 20/00*

U.S. Cl. 260—77.5 NC **7 Claims**

A urethane-free trimerizable polymer for use in building isocyanurate structures that provide flexiblity, decreased friability and improved temperature stability therein is made by converting a nitro group on an aromatic nucleus that is terminal to a linear or substantially linear polymer of average molecular weight 600 to 3,000 to the corresponding isocyanate group for later incorporation into an isocyanurate structure.

3,725,358
POLYAMIDE FIBERS FROM MIXTURE OF 1,3-BIS-(4-PIPERIDYL) PROPANE AND BIS(P-AMINOCYCLOHEXYL) METHANE

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed April 12, 1971, Ser. No. 133,414
Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **11 Claims**

Polyamide fibers employing 1,3-bis(4-piperidyl)-propane as a comonomer in combination with bis(p-aminocyclohexyl)methane or methyl derivative thereof and an acyclic C_8 to C_{18} dicarboxylic acid are disclosed, the fibers having improved dyeability with retention of crystallinity.

3,725,359
FIRE RETARDANT RESIN COMPOSITIONS OF POST-CHLORINATED VINYL HALIDE-BIS(HYDROCARBYL) VINYLPHOSPHONATE COPOLYMERS

Jagadish C. Goswami, New York, N.Y., and Jung Il Jin, Irvington, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Dec. 23, 1970, Ser. No. 101,194
Int. Cl. C08f *27/03*

U.S. Cl. 260—78.5 BB **12 Claims**

There are disclosed post-chlorinated copolymers of: (1) one or more vinyl halides; (2) one or more bis(hydrocarbyl) vinylphosphonates; and (3) as an optional component one or more ethylenically unsaturated monomers. These post-chlorinated products have a higher glass transition temperature than the copolymers from which they are derived and are, therefore, of greater utility in many applications such, for example, as in the preparation of polyblends with burning thermoplastics wherein they impart a significant degree of flame retardance without causing substantial reduction in the heat distortion temperature of the resulting polyblends.

3,725,360
PROCESS FOR POLYMERIZING STYRENE AND MALEIC ANHYDRIDE

Jack J. Adams, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed March 11, 1971, Ser. No. 123,386
Int. Cl. C08f *1/72, 15/02*

U.S. Cl. 260—78.5 R **12 Claims**

High yields, without the application of heat, are obtained when styrene and maleic anhydride are polymerized in the presence of a tertiary aliphatic mercaptan and certain metals. Preferably the monomers are dissolved in a halogenated aliphatic hydrocarbon solvent.

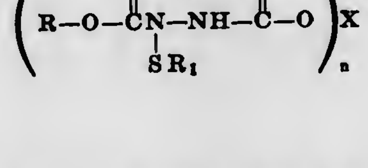
3,725,361
INHIBITING PREMATURE VULCANIZATION OF RUBBER WITH N-THIOHYDRAZODICARBOXYLATE

Kamel Boustany, 1328 Bell Crest Drive, and Aubert Y. Coran, 477 Greenhaven Circle, both of Akron, Ohio

Filed June 7, 1971, Ser. No. 150,801
Int. Cl. C08f *27/06*; **C08c** *11/40, 11/54*

U.S. Cl. 260—79.5 B **12 Claims**

A method is disclosed for inhibiting premature vulcanization of rubber by incorporating into the rubber an N-thiohydrazodicarboxylate of the formula



$$\left(\mathrm{R-O-\overset{\overset{\displaystyle O}{\|}}{C}\underset{\substack{|\\ SR_1}}{N}-NH-\overset{\overset{\displaystyle O}{\|}}{C}-O}\right)_n\mathrm{X}$$

in which R and R_1 independently are alkyl, alkenyl, cycloalkyl, aralkyl and aryl; when *n* is one, X is selected from the same group as R and R_1 and when *n* is two, X is alkylene.

3,725,362
POLY(ARYLENE SULFIDE) COMPOSITION AND METHOD FOR DECREASING THE MELT FLOW OF POLY(ARYLENE SULFIDE)

John H. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed March 8, 1971, Ser. No. 122,254
Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **16 Claims**

The melt flow of poly(arylene sulfides) is decreased by heating the polymer in the presence of a melt flow modifier comprising sulfur and a melt flow modifier rate accelerator such as zinc oxide at a temperature above the melt point of the resin. The poly(arylene sulfide) materials of decreased melt flow retain their thermoplastic character and are readily formed into useful shaped objects as by injection molding.

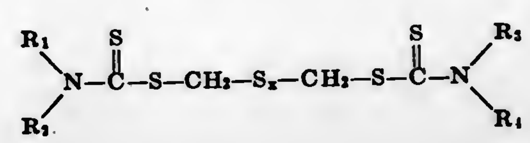
3,725,363
METHOD OF CURING ELASTOMERS WITH THIOCARBAMYL THIOMETHYL SULFIDES

Harry Elmer Albert, deceased, late of Lafayette Hills, Pa. (by Dorothy S. Albert, executrix), assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 781,691, Nov. 29, 1968, Pat. No. 3,579,516. This application Aug. 5, 1970, Ser. No. 61,467
Int. Cl. C08f *27/06*

U.S. Cl. 260—79.5 B **6 Claims**

Novel compounds having the structure



where R_1 and R_3 are alkyl or aryl, R_2 and R_4 are alkyl with the understanding that R_1 and R_2 and R_3 and R_4 may form a ring, and where *x* is an integer of from 2 to 6. These new compositions are useful as accelerators for the sulfur vulcanization of unsaturated elastomers and may be used as vulcanizing agents.

3,725,364
PROCESS FOR PREPARING ELASTOMERS OF ETHYLENE AND C_3-C_{10} ALPHA OLEFINS

Joseph Wagensommer, Westfield; Richard J. Lauria, Metuchen, and John H. Staib, Plainfield, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 31,871, May 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 667,051, Sept. 7, 1967, abandoned, which is a continuation-in-part of Ser. No. 613,727, Feb. 3, 1967, abandoned, which is a continuation-in-part of Ser. No. 504,120, Oct. 23, 1965, abandoned, which is a continuation-in-part of Ser. No. 464,862, June 17, 1965, abandoned. This application Sept. 10, 1971, Ser. No. 179,546
Int. Cl. C08f *15/40, 15/04*

U.S. Cl. 260—80.78 **7 Claims**

A process for polymerizing ethylene and higher alpha olefins in the presence of a catalyst comprising an alkyl aluminum and the reaction product of a vanadium oxyhalide and an alkyl titanate. The resulting elastomeric polymers have exceptional tensile strength and green strength.

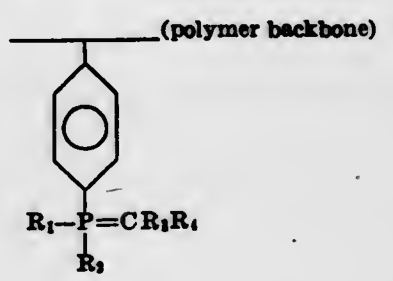
3,725,365
RESINS WITH PHOSPHORANE PENDANT GROUPS AND PROCESS FOR PREPARING SAME

Suzanne V. McKinley, Wellesley, and Joseph W. Rakshys, Jr., Framingham, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed April 8, 1971, Ser. No. 132,606
Int. Cl. C08f *19/00, 15/40*

U.S. Cl. 260—80.71 **17 Claims**

Novel carbon-to-carbon cross-linked resins having a plurality of phosphorane pendant groups are prepared by dehydrohalogenating the corresponding haloalkyl phosphonium salt. The phosphorane-containing resins are useful for converting ketones or aldehydes to olefins via the Wittig reaction. The pendant groups of the novel polymers have the structure



where R_1 and R_2 each independently is an alkyl or aryl group and R_3 and R_4 each independently can be hydrogen, alkyl, aryl, acyl, carbalkoxyl, carbamido or cyano group.

3,725,366

CYCLOALKENYL TRICYCLOALKENE COPOLYMERS AND PRODUCTION THEREOF

Yves Amiard, Pau, and Jean-Paul Bellissent, Billere, both of France, assignors to Societe Nationale Des Petroles D'Aquitaine, Courbevoie, France

Continuation-in-part of Ser. No. 833,696, June 16, 1969, Pat. No. 3,655,796. This application Feb. 4, 1971, Ser. No. 112,796

Int. Cl. C08f *17/00*

U.S. Cl. 260—80.78 **10 Claims**

Cycloalkenyl tricycloalkenes are novel polycyclic compounds which may include substituents such as methyl, ethyl or others. They can be prepared by reacting a substituted or unsubstituted cyclic 1,3-diene with a 2,2′-dicycloalkenyl compound. The cycloalkenyl tricycloalkenes can be used to produce elastomers by copolymerization with non-conjugated polyenes and/or olefins.

3,725,367

PREPARATION WITH SEEDING OF POLYMERS INSOLUBLE IN THEIR MONOMERIC COMPOSITIONS

Thomas Kemp, 92-Bois-Colombes, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

Filed May 15, 1970, Ser. No. 37,852

Claims priority, application France, May 19, 1969, 6916089

Int. Cl. C08f *1/11, 1/13, 15/00*

U.S. Cl. 260—80.81 **28 Claims**

Vinyl based polymers and copolymers and method for the preparation of same by first preparing a seeding latex by polymerization in fine suspension of monomers or comonomers having a vinyl base, preferably vinyl chloride, with an excess amount of organo-soluble catalyst and dispersing the seeding latex in monomers or comonomers having the vinyl base to form a polymerizing composition which is polymerized by heating.

3,725,368

PREPARATION OF POLYMERS

Robert C. Morrison, and Conrad W. Kamienski, both of Gastonia, N.C., assignors to Lithium Corporation of America, New York, N.Y.

Division of Ser. No. 4,126, Jan., 1970, Pat. No. 3,668,263. This application Aug. 25, 1971, Ser. No. 174,919

Int. Cl. C08f *3/16, 7/04, 19/04*

U.S. Cl. 260—84.7 **8 Claims**

Production of polymers of conjugated dienes and/or vinyl-substituted aromatic compounds utilizing, in said production, polymerization initiator compositions comprising reaction products of C_2-C_{12} alkyllithiums with monomers from the group of polymerizable conjugated dienes and polymerizable vinyl-substituted aromatic compounds in a medium of aliphatic, cycloaliphatic or aromatic hydrocarbons and/or aliphatic tertiary monoamines or aryl ethers, the conjugated diene and vinyl-substituted aromatic compound portion of said initiator compositions being relatively nonpolymeric.

3,725,369

PROCESS FOR POSTREACTION OF ALKALI METAL-ACTIVE POLYMERS WITH SILICIC COMPOUNDS AND DIALKENYL COMPOUNDS

Adel F. Halasa, Bath, and Ervin E. Schroeder, North Canton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 717,071, March 27, 1968, abandoned. This application Jan. 6, 1971, Ser. No. 104,461

Int. Cl. C08f *27/00, 19/08;* **C08d** *5/02*

U.S. Cl. 260—85.1 **19 Claims**

The process described herein involves a method of converting relatively low molecular weight polymers of conjugated dienes prepared by alkali metal-catalyzed polymerizations, such as alkyllithium catalyzed polymerizations, and still containing active lithium or other alkali metal therein, by postreaction with a mixture of divinyl benzene and a silicon halide or ester or analogous material containing nitrogen or sulfur in place of the oxygen, to give higher molecular weight polymers having improved cold flow resistance, improved processability and green strength, etc. The improvements are much greater than can be effected by postreaction with either divinylbenzene or silicon halide, etc. individually, or by having divinyl benzene present during the polymerization. The silicon halide, etc. includes chloro, bromo and iodo compounds and can have one to four or even more halogen atoms per molecule. The postreacted products are highly branched elastomers having a broad molecular weight distribution and possessing less cold flow than the polymers from which they are produced. Surprisingly, the reaction product displays little or no tendency for cold flow even after extension with oil.

3,725,370

PROCESS AND PRODUCT OF TREATING LIVE POLYMERS WITH DIVINYL BENZENE AND AN ACTIVE HALOGEN COMPOUND

Adel F. Halasa, Bath, and Ervin E. Schroeder, North Canton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 716,321, March 27, 1968, abandoned. This application Jan. 6, 1971, Ser. No. 104,468

Int. Cl. C08d *5/04;* **C08f** *27/02, 27/00*

U.S. Cl. 260—85.1 **18 Claims**

The process described herein involves a method of converting relatively low molecular weight polymers of conjugated dienes prepared by alkali metal-catalyzed polymerizations, such as alkyllithium catalyzed polymerizations, and still containing active lithium or other alkali metal therein, by postreaction with a mixture of divinyl benzene and a halocompound having highly active halogen, such as bis(chloromethyl) ether, to give higher molecular weight polymers having improved cold flow resistance, processability, green strength, oil extendability, etc. The improvements are much greater than can be effected by postreaction with either the divinyl benzene or the highly active halocompound individually, or by having divinyl benzene present during the polymerization. The highly active halocompounds include chloro, bromo and iodo compounds in which the halogen is attached to a carbon atom alpha to an activating group such as a polar or unsaturated group. The postreacted products are highly branched elastomers having a broad molecular weight distribution and possessing less cold flow than the polymers from which they are produced. Surprisingly, even though the molecular weight of the polymer is increased many times, the reaction product displays little or no tendency for cold flow even after extension with oil.

3,725,371

CATALYZED MOLECULAR SIZING PROCESS

Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

Filed May 21, 1971, Ser. No. 145,956

Int. Cl. C08d *5/02;* **C08f** *15/04*

U.S. Cl. 260—85.3 R **20 Claims**

Low molecular weight Butyl-type copolymers having narrow molecular weight distributions are prepared by contacting a higher molecular weight Butyl-type copolymer, e.g., a Butyl rubber, with a catalyst composition comprising a transition metal salt, an organometallic compound of a metal of Group I-A, II-A, II-B, or III-A of the Periodic Table, a proton donor, and carbon monoxide. The catalyst composition preferably comprises a halide of tungsten, molybdenum, or rhenium, an alkyl aluminum halide, a lower alkanol, and carbon monoxide.

3,725,372

PROCESS FOR OBTAINING MODIFIED POLYETHYLENES AND CROSS-LINKED POLYETHYLENES HAVING HIGH MECHANICAL, CHEMICAL AND ELECTRIC CHARACTERISTICS, AND POLYETHYLENE OBTAINED

Sergio Arrighetti; Giorgio Corradini, and Sebastiano Cesca, all of Milano, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed , Ser. No. 56,004

Claims priority, application Italy, July 18, 1969, 19811 A/69

Int. Cl. C08f *15/04*

U.S. Cl. 260—88.2 D **6 Claims**

A polyethylene is disclosed that is modified by copolymerizing ethylene with a comonomer consisting of a minor quantity of a polycyclic polyene having at least three double bonds in the molecule, and preferably an endomethylenic bridge, so that it can be readily cross-linked under the influence of heat without the presence of an additive, but which still exhibits the characteristics of a conventional crystalline polyethylene.

3,725,373

PROCESS FOR HOMOPOLYMERIZING ACRYLONITRILE

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Jan. 12, 1970, Ser. No. 2,373

Int. Cl. C08f *3/76*

U.S. Cl. 260—88.7 R **10 Claims**

A process for the polymerization of acrylonitrile is provided using a catalyst which contains (A) an iron source, (B) an electron donor ligand, and (C) a reducing agent, in molar ratios of (B) to (A) of about 0.3 to 10:1 and of (C) to (A) of about 3 to 50:1. Preferred catalyst components are ferric acetylacetonate, bis(diphenylphosphino)-ethane and triethylaluminum.

3,725,374

CURED NITROSOFLUOROCARBON RUBBER

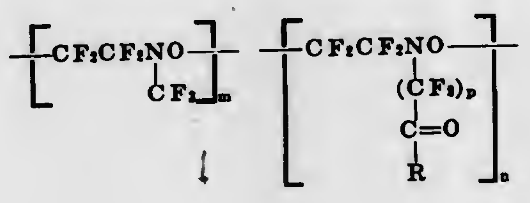
Nathan Mayes, Barrington, R.I.; Joseph E. Green, Brunswick, and Ronald Michaels, Boonton, both of N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Oct. 30, 1970, Ser. No. 85,758

Int. Cl. C08f *3/24*

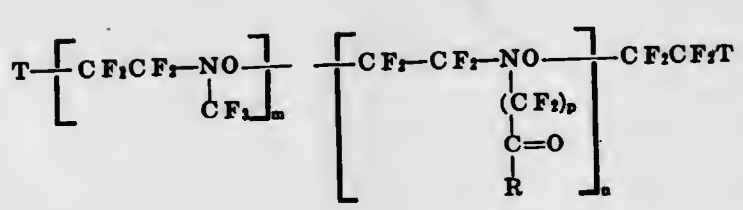
U.S. Cl. 260—92.1 **6 Claims**

A cured, nitroso polymer has been provided by curing polymers obtained by polymerizing monomers which have pendant groups convertible to pendant moieties which are crosslinkable. Some of these monomers with the crosslinkable, pendant groups cannot be introduced into the polymer directly. The polymers with the pendant groups are derived from monomers forming recurring units as represented by the general formulas:



$$-\left[CF_2CF_2\underset{\substack{|\\ CF_3}}{N}O-\right]_m-\left[CF_2CF_2\underset{\substack{|\\ (CF_2)_p\\ |\\ C=O\\ |\\ R}}{N}O-\right]_n-$$

or



$$T-\left[CF_2CF_2-\underset{\substack{|\\ CF_3}}{N}O-\right]_m-\left[CF_2-CF_2-\underset{\substack{|\\ (CF_2)_p\\ |\\ C=O\\ |\\ R}}{N}O-\right]_n-CF_2CF_2T$$

wherein R is a —O—(lower alkyl) group of one to seven carbon atoms; *p* is from 1 to 6; T is a halogen, a perhaloalkyl, —NO, and —NO_2; and the ratio $m : n$ is from 0 : 1 to 50 : 1, preferably *n* can be from 0.1 percent to 10 percent of the units in the polymer. The polymers are cured with such curing agents as an epoxide, a metal oxide, and chromium perfluoroacetate to produce rubbers having good physical properties and chemical resistance. Thus, liquid and solid polymers are provided as well as elastomers derived therefrom.

3,725,375

POLYMERIZATION PROCESS

Alan Charles Sturt, Guildford, England, assignor to BP Chemicals Limited, London, England

Filed May 14, 1970, Ser. No. 37,334

Claims priority, application Great Britain, May 19, 1969, 25,418/69

Int. Cl. C08f *3/30, 15/32*

U.S. Cl. 260—92.8 W **6 Claims**

Process comprising mixing a vinyl chloride polymer latex with vinyl chloride, destroying the latex emulsifying agent which is of the acid salt type, so that the polymer particles pass into the vinyl chloride and polymerizing the latter, preferably under suspension polymerization conditions.

3,725,376

POLYMERIZATION PROCESS EMPLOYING A POLYMERIZATION INITIATOR FORMED ON ADMIXING A VINYLTIN COMPOUND AND A HALOARYLLITHIUM COMPOUND

William J. Trepka, and Richard J. Sonnenfeld, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 811,579, March 28, 1969, Pat. No. 3,620,963. This application April 8, 1971, Ser. No. 132,619

Int. Cl. C08d *1/20;* **C08f** *5/00, 7/00*

U.S. Cl. 260—94.3 **10 Claims**

A polymerization process for the polymerization of conjugated dienes to gel-free polymers of high cis content and relatively low inherent viscosity, and for polymerization of other polymerizable monomers, which employs a polymerization initiator formed on admixing a vinyltin compound and a haloaryllithium compound selected from 3-halophenyllithium, 1-halo-3-naphthyllithium, 3-halo-1-naphthyllithium, milled 4-halophenyllithium, and milled 4-halonaphtyllithium.

3,725,377

PROCESS FOR POLYMERIZING 1-3-BUTADIENE MONOMER

John E. Cottle, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 552,441, Jan. 24, 1966, abandoned. This application May 11, 1970, Ser. No. 37,410

Int. Cl. C08d *3/06, 5/00*

U.S. Cl. 260—94.2 R **1 Claim**

A process for polymerization of monomers containing ethylenic unsaturation including contacting the polymerization feed stock stream with an adsorbent material, and periodically regenerating the adsorbent material with purified separated nonpolymerizable hydrocarbons separated from the feed stock stream after effectuation of the polymerization step.

3,725,378

POLYMERIZATION OF ETHYLENE

John M. Chamberlin, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 721,212, April 15, 1968, abandoned, which is a continuation of Ser. No. 780,953, Dec. 17, 1958, abandoned. This application Jan. 29, 1971, Ser. No. 111,131

Int. Cl. C08f *1/60, 3/04*

U.S. Cl. 260—94.9 R **10 Claims**

A continuous process for producing ethylene polymers by conducting the polymerization of an ethylene feed material at elevated pressures and temperatures in a tubular reactor in the presence of a free-radical initiator for the polymerization and injecting the ethylene feed material containing initiator at a point or points along the length of the tubular reactor while it is simultaneously introduced at the reactor inlet.

3,725,379

CATALYST COMPOSITION AND PROCESS OF POLYMERIZING ETHYLENE WITH SAME

Rudolf H. Gaeth, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 755,808, Aug. 28, 1968, abandoned. This application March 18, 1971, Ser. No. 125,849

Int. Cl. C08f *1/56, 13/04*

U.S. Cl. 260—94.9 E **3 Claims**

A rubbery polymer having properties of ethylene/propylene rubber is produced by contacting ethylene with a catalyst comprising (1) a nickel-containing compound; (2) an organoaluminum halide; and (3) a complex molybdenum compound.

3,725,380

METHOD OF SYNTHESIZING PEPTIDES IN THE PRESENCE OF A CARBODIIMIDE AND A 1-HYDROXY-BENZOTRIAZOLE

Wolfgang Konig, Langenhain/Taunus, and Rolf Geiger, Frankfurt/Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt am Main, Germany

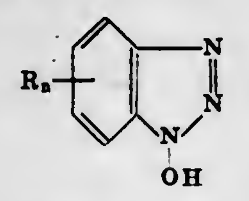
Filed April 1, 1970, Ser. No. 24,844

Claims priority, application Germany, April 5, 1969, P 19 17 690.0; July 24, 1969, P 19 36 656.8

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **5 Claims**

Improved synthesis of peptides by the carbodiimide method in which an amino-protected amino acid or peptide having a reactive carboxy group is condensed with a carboxy-protected amino acid or peptide having a reactive amino group in the presence of a 1-hydroxy-benzotriazole or a substituted 1-hydroxy-benzotriazole of the formula



as well as in the presence of a carbodiimide such as dicyclohexyl carbodiimide.

3,725,381

PROCESS FOR PREPARATION OF OVER-BASED SULFURIZED PHENATES

Yoshinori Sakai, Omiya, and Takashi Hori, Soka, both of Japan, assignors to Maruzen Oil Company, Limited, Minami-ku, Osaka, Japan

Filed June 19, 1970, Ser. No. 47,703

Int. Cl. C07c *161/00*

U.S. Cl. 260—137 **27 Claims**

A process for the preparation of an over-based sulfurized phenate which comprises the steps of heating a mixture of a phenolic compound, elementary sulfur, an alkaline earth metal reagent such as an oxide of a hydroxide of an alkaline earth metal, and a dihydric alcohol at a temperature of from 110° to 200°C in the presence of a higher alcohol as solvent, wherein the weight ratio of the higher alcohol to the phenolic compound is at least 0.5, preferably at least 3.0, to thereby effect sulfurization and metal addition in parallel, distilling the reaction mixture at a temperature below 200°C to remove water formed in the reactions together with a major portion of any unreacted dihydric alcohol, and heating the reaction product contained in the distillation residue together with carbon dioxide at a temperature of from 70° to 200°C in the presence of the higher alcohol, wherein the weight ratio of the higher alcohol to the phenolic compound is at least 10.5, is disclosed.

3,725,382

DIFLUOROPYRIMIDYLAMINO-GROUP-CONTAINING METALLIZED WATER-SOLUBLE REACTIVE FORMAZANE DYES

Philippe Grandjean, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed March 26, 1970, Ser. No. 23,024

Claims priority, application Switzerland, March 26, 1969, 4656/69; April 1, 1969, 4927/69

Int. Cl. C09b *45/18, 62/24;* **D06p** *1/38*

U.S. Cl. 260—146 D **5 Claims**

Metal complexes of reactive water-soluble formazane dyes which contain 2, 3 or 4 sulfonic acid groups and one difluoropyrimidylamino group yield dyeings which have good fastness to light, washing, milling and perspiration.

3,725,383

2-HYDROXY-PYRID-6-ONE AZO DYESTUFFS CONTAINING A CELLULOSE FIBER REACTIVE SUBSTITUENT

Peter William Austin; Allen Crabtree; John Lindley Leng; Denis Robert Annesley Ridyard, and Elliott Young, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

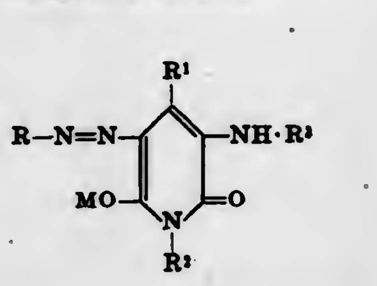
Filed May 20, 1971, Ser. No. 145,505

Claims priority, application Great Britain, July 10, 1970, 33,634/70

Int. Cl. C09b *29/36, 62/08, 62/24*

U.S. Cl. 260—146 T **4 Claims**

Azo dyestuffs of the general formula:



(1)

wherein R represents an aromatic radical which may contain one or more further azo groups, M represents H or a metal atom forming part of a metal-complex system in the dyestuff, R^1 represents an alkyl group or a phenyl radical which may be substituted, e.g., by lower alkyl, lower alkoxy or chlorine, R^2 represents a hydrogen atom, an alkyl, aralkyl or cycloalkyl group or a phenyl radical which may be substituted, e.g., by lower alkyl, lower alkoxy or halogen, and R^3 represents a hydrogen atom, a heterocyclic radical containing a cellulose-reactive substituent, or the acyl radical of an organic carboxylic or sulphonic acid which may or may not contain a cellulose-reactive substituent are valuable dyestuffs for a variety of substrates. For example those containing SO_3H groups and a fiber-reactive group are valuable for dyeing and printing of cellulose polyamide and wool textile materials while those which are free from complex metal groups and sulphonic acid groups may be used as disperse dyestuffs.

3,725,384

SUBSTITUTED PHENYL-AZO-PHENYL-AZO-PHENYL COMPOUNDS

Christian Zickendraht, Binningen, and Alfred Fasciati, Bottmingen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

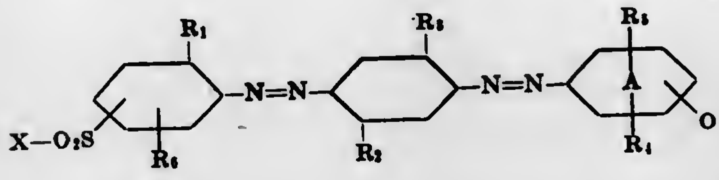
Filed April 10, 1970, Ser. No. 27,458

Claims priority, application Switzerland, April 17, 1969, 5821/69

Int. Cl. C09b *31/02*

U.S. Cl. 260—186 **8 Claims**

Disazo compounds of the formula



(1)

in which R_1 and R_6 each represents a hydrogen or a halogen atom or a nitro, alkyl or alkoxy group, R_2, R_3, R_4 and R_5 each represents a hydrogen atom or an alkyl or alkoxy group, X represents an amino group bound to the $—SO_2$ bridge by way of its nitrogen atom and Y represents an alkyl group or a group of the formula $B—SO_2—$, in which B represents a low-molecular alkyl group or a benzene residue and in which the benzene ring A can be fused to another benzene ring and the Y—O group is in ortho- or para-position to the azo bridge, are valuable dyestuffs suitable for the spin-coloration of cellulose esters.

3,725,385

PROCESS FOR THE DEMETHYLATION OF 3-AMINO MACROLIDES

Leslie Alan Freiberg, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 2, 1970, Ser. No. 86,314

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB **6 Claims**

The 3-dimethyl amino substituent of the desosamine and mycaminose moieties of macrolide antibiotics are mono- and didemethylated by reaction with halogen, preferably iodine, in the presence of base at a controlled pH. The resulting compounds have antibiotic activity, and furthermore are useful as intermediates for alkylation and the like.

3,725,386

METHOD FOR PURIFYING CRUDE, DRY GRANULAR REACTED COLD WATER SWELLING HYDROXYPROPYL STARCH DERIVATIVES

Cleo E. Hanson, and John V. Tuschhoff, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 32,341, April 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 696,149, Jan. 8, 1968, abandoned. This application Dec. 6, 1971, Ser. No. 205,299

Int. Cl. C08b *19/06*

U.S. Cl. 260—233.3 R **5 Claims**

A method of purifying crude, cold water swelling hydroxypropylated starch derivatives prepared by reacting propylene oxide directly with granular starch in the presence of a polybasic, water soluble salt of phosphoric acid catalyst, and in the absence of any liquid reaction medium by washing the crude reacted product with a water-alcohol mixture, the water being present in the water-alcohol mixture in a weight ratio of between 0.1 to 0.7 parts per part of alcohol. The method removes the overreacted-highly substituted starch fractions which are not approved for food use, and other by-products which would otherwise limit the use of the crude product in food.

3,725,387

AMINOETHYLATION OF FLOUR AND STARCH WITH ETHYLENIMINE

Jack C. McClendon, and Elton L. Berry, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed April 21, 1971, Ser. No. 136,219

Int. Cl. C08b *19/04*

U.S. Cl. 260—233.3 R **12 Claims**

Aminoethylated farinaceous materials, e.g., aminoethylated flours and starches, are prepared in the novel process comprising the steps of (A) contacting (1) ethylenimine in the vapor phase with (2) a farinaceous material(s) at a temperature below the dew point of the ethylenimine vapor, and (B) thereafter heating the reaction mixture to a temperature sufficient to cause reaction between (1) and (2). In a preferred embodiment, the reaction mixture from step (A) is maintained at a temperature below the boiling point of ethylenimine until the temperature exotherm which is observed reaches a maximum before heating the mixture (as per Step B). The aminoethylated products produced by the above process are novel products having utility, for example, as pigment binders and dry strength additives in paper.

3,725,388

N-ACYL-7-(N''-CYCLOALKYL-UREIDO-N'-SULFONYL)-ISOQUINOLINES AND -BENZAZEPINES AND ALKALI METAL SALTS THEREOF

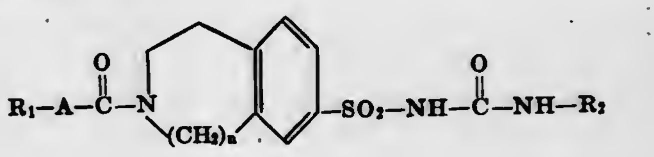
Wolfgang Grell; Gerhart Griss; Manfred Kleemann, and Eberhard Kutter, all of Biberach/Riss, Germany, assignors to Boehringer Ingelheim G. m. b. H., Ingelheim/Rhein, Germany

Filed June 25, 1970, Ser. No. 49,930

Int. Cl. C07d *35/42, 41/08*

U.S. Cl. 260—239 BB **8 Claims**

Compounds of the formula



wherein

R_1 is straight or branched alkyl of one to four carbon atoms, phenyl, alkoxy of one to three carbon atoms — phenyl, tolyl, trifluoromethyl-phenyl, monohalo-phenyl, dihalophenyl, 2-methoxy-5-chlorophenyl, diphenyl, α-naphthyl, 1,2,3,4-tetrahydronaphthyl-(1), indanyl-(1) or benzoyl,

R_2 is n-butyl, cycloalkyl of five to eight carbon atoms, alkyl of one to two carbon atoms — cycloalkyl of five to eight carbon atoms, or adamantyl-(1),

A is a carbon-to-carbon bond, alkylene of one to five carbon atoms or phenyl-alkylene of one to five carbon atoms, and

n is 1 or 2,

as well as alkali metal and alkaline earth metal salts thereof; the compounds and their salts are useful as hypoglycemics in warm-blooded animals.

3,725,389

ADDUCTS OF DELTA-AMINOBENZYLPENICILLIN AND N-SUBSTITUTED-4-PIPERIDONES

Ronald J. McCaully, Malvern; Stanley C. Bell, Penn Valley, and George L. Conklin, Havertown, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed July 2, 1971, Ser. No. 159,573

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **7 Claims**

6-(Substituted-1,3,8-triazaspiro[4.5]decan-1-yl) penicillanic acids are described which exhibit antibacterial properties and whose solubility characteristics can be readily altered to permit wider versatility in their use as antibacterial agents.

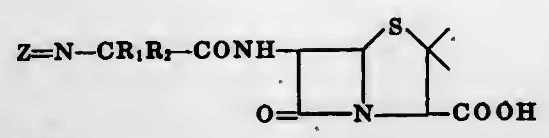
3,725,390
6-AMINOPENICILLANIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Werner Rogalski; Rochus Jonas; Helmut Wahlig, and Rolf Bergmann, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Germany

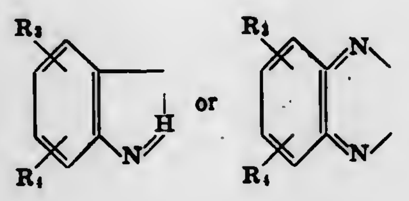
Filed July 23, 1971, Ser. No. 165,311
Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **54 Claims**

6-Aminopenicillanic acids of the formula



wherein Z is



in which R_1 is H, alkyl of one to four carbon atoms, or $COOR_5$, and R_2 and R_5 each are H or alkyl of one to four carbon atoms, and R_3 and R_4 each are H, alkyl or alkoxy of respectively one to four carbon atoms, OH, F, Cl, Br, I, CF_3, NO_2 or NH_2, including the physiologically acceptable salts thereof, possess the antibiotic activity of conventional penicillins, e.g., against penicillin sensitive microorganism, e.g., S. aureus, S. pyogenes, Pasteurella cuniculicida and E. coli, and possess substantially higher acid stability.

3,725,391
PROCESS FOR THE PREPARATION OF LACTAMS FROM CYCLOALKANONE OXIMES

Seiya Suzuki; Yasuo Mizuhata, both of Nagoya; Kunihiko Kinoshita, Aichi-ken, and Takanobu Godo, Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 809,954, March 24, 1969, abandoned. This application Nov. 30, 1970, Ser. No. 93,870
Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A **6 Claims**

A process for the preparation of lactams from cycloalkanone oximes by neutralizing the rearrangement reaction products obtained by subjecting cycloalkanone oximes to the Beckman-rearrangement with sulfuric acid or oleum, with an oxide of magnesium or zinc to thereby separate and recover the desired lactams, wherein the formation of ammonium sulfate as a by-product can be prevented; the recovery and reuse of the neutralizing agents can be advantageously and easily performed with respect to operational steps and operational equipment; the lactams of high purity can be obtained in high yields by simple separation and recovery operations; and occurrence of disadvantageous side reactions during the rearrangement and neutralizing steps can be advantageously prevented.

3,725,392
20,21-ACETONIDES OF PREGNENES, 16β-ALKYL-17α,20,21-TRIHYDROXY PREGNENES, AND PROCESS FOR THE PRODUCTION THEREOF

Philip F. Beal, Kalamazoo, and Kenneth P. Shephard, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed April 23, 1971, Ser. No. 137,051
Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 D **18 Claims**

This invention relates to novel 20,21-acetonides of pregnenes and novel 16β-alkyl-17α,20,21-trihydroxy pregnenes, and processes for the production thereof. The compounds of this invention are useful intermediates; they provide an improved means for obtaining valuable 9α-fluoro-16β-alkylprednisolones and their 21-acylates which are known and highly active anti-inflammatory agents, for example, 9α-fluoro-16β-methylprednisolone (Betamethasone).

3,725,393
3-N-ALKYL-AMINO-CARDENOLIDES AND PROCESS FOR THEIR MANUFACTURE

Ulrich Stache, Hofheim/Taunus; Werner Fritsch, Neuenhain/Taunus; Werner Haede, Hofheim/Taunus; Kurt Radscheit, Kelkheim/Taunus, and Ernst Lindner, Frankfurt/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

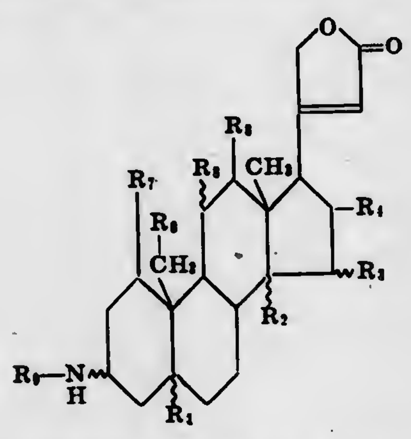
Filed Oct. 18, 1971, Ser. No. 190,281

Claims priority, application Germany, Oct. 19, 1970, P 20 51 204.3

Int. Cl. C07c *173/02*

U.S. Cl. 260—239.57 **14 Claims**

3-N-alkyl-amino-cardenolides of the general formula



in which R_1 represent hydrogen or β-hydroxy; R_2 and R_3 each represents hydrogen or hydroxy, or R_2 and R_3 together represent a further C-C bond or an α- or β-oxido group; R_4, R_5, R_6 and R_7 each represent hydrogen or a hydroxy group which may be esterified — the OH-group for R_6 may also be etherified —; R_8 represents hydrogen or hydroxy; and R_9 represents an alkyl group with one to six carbon atoms which may contain one or several OH-groups, or an araliphatic radical, and the salts thereof with inorganic or organic acids. The compounds have valuable pharmacological properties, especially a positive or negative inotropic action, and a substantially improved solubility in lipids.

3,725,394
METHYLENE-DITHIOLANS

Alain Douche, Lescar; Claude Thibault, Pau; Emmanuel Arretz, Pau, and Alain Pfister, Pau, all of France, assignors to Societe Nationale des Petroles D'Aquitaine, Courbevoie, France

Filed June 23, 1969, Ser. No. 835,772

Claims priority, application France, June 25, 1968, 68156451

Int. Cl. C07d *71/00*

U.S. Cl. 260—240 F **9 Claims**

The present invention relates to the preparation of methylene-dithiolans able to carry various substitutions on their carbons and more especially on the carbon connected by the double methylenic bond to that of position 2.

Dithiolans are heterocyclic compounds containing 2 atoms of sulphur in a cycle having 5 elements. These substances are useful as sulphurants, for example, for the progressive and controlled sulphuration of metals or other materials. Methylene-dithiolans can, moreover, give rise to various interesting reactions, thanks to their double bond between the carbon in position 2 and a carbon exterior to the cycle.

3,725,395
HETEROCYCLIC COMPOUNDS CONTAINING ETHYLENE DOUBLE BONDS AND PROCESS FOR THEIR MANUFACTURE

Adolf Emil Siegrist, Basel; Peter Liechti, Binningen; Erwin Maeder, Aesch/Bl; Leonardo Guglielmetti, Birsfelden; Hans Rudolf Meyer, and Kurt Weber, both of Basel, all of Switzerland, assignors to Ciba-Geigy A.G., Basel, Switzerland

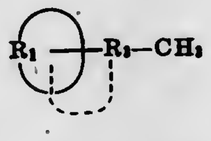
Continuation of Ser. No. 588,318, Oct. 21, 1966, abandoned. This application Aug. 28, 1970, Ser. No. 68,012

Claims priority, application Switzerland, Oct. 28, 1965, 14902/65

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 CA **11 Claims**

The present invention comprises a process for the manufacture of heterocyclic compounds containing ethylene double bonds. This process is characterized by reacting a compound of formula



in which R_1 represents a heterocyclic ring system of aromatic character which (a) contains at least one 5-membered or 6-membered heterocyclic ring with at least one ring nitrogen atom, (b) is free of hydrogen atoms which (1) are bonded to ring nitrogen atoms and (2) which are replaceable by alkali metal, and (c) is bonded to a ring member of R_2 by means of a ring member or has two adjacent ring members in common with two adjacent ring members of R_2, in which R_2 denotes a carbocyclic ring system of aromatic character which contains 6 ring members, and which optionally is condensed with a further aromatic or hydroaromatic ring system, and in which (b) the methyl group shown in the formula is in a p-position to the bond to R_1, is reacted with a Schiff base in the presence of a strongly basic alkali compound, with the reaction medium to be used being dimethylformamide, which is practically anhydrous, except in the case of the use of an alkali hydroxide as the strongly basic alkali compound, in which case the alkali hydroxide may have a water content of up to 25 percent. The products obtained according to this process are valuable fluorescent compounds and useful as optical brighteners.

3,725,396
2,5-DISUBSTITUTED 1,3,4-THIADIAZOLES

Gerald Berkelhammer, Princeton, and Goro Asato, Titusville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 767,004, Oct. 11, 1968, Pat. No. 3,598,830. This application Nov. 25, 1970, Ser. No. 92,908
Int. Cl. C07d *91/62*

U.S. Cl. 260—240 G **7 Claims**

This invention relates to novel 5-amino, 5-acetamido and 5-nitro-2-substituted 1,34-thiadiazoles and their derivatives. These compounds are useful as antibacterial or antifungal agents.

3,725,397
METHOD OF PRODUCING 7β-ACYLAMIDO-3-METHYLCEPH-3-EM-4-CARBOXYLIC ACID ESTERS AND CATALYSTS THEREFOR

William Graham, Pinner, and Lewis A. Wetherill, North Wembley, both of England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

Filed March 10, 1970, Ser. No. 18,284

Claims priority, application Great Britain, Dec. 5, 1969, 59,450/69

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **10 Claims**

The invention relates to a process for the preparation of 7β-acylamido-3-methylceph-3-em-4-carboxylic acid esters from compounds of the penicillin type, in particular, 6β-acylamido penicillanic acid 1-oxide esters, in the presence of a catalyst selected from a mono-O-substituted orthophosphoric acid, an 0,0-di(aryl substituted) orthophosphoric acid, a salt or complex formed from a nitrogen base having a pKb of not less than 4 and a mono-0-substituted orthophosphoric acid or an 0,0-di(aryl substituted) orthophosphoric acid. The salt or complex may be formed in situ in the reaction mixture.

3,725,398
PROCESS FOR PREPARING 9-ARYLOXYCARBOCYANINE COMPOUNDS

Frank G. Webster, and Robert C. Taber, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed April 21, 1971, Ser. No. 136,177
Int. Cl. C09b *23/06*

U.S. Cl. 260—240.6 **24 Claims**

Process for preparing 9-aryloxycarbocyanine dye compounds which comprises reacting a 9-alkylthiocarbocyanine dye compound in the presence of a basic medium with a phenol. The 9-aryloxycarbocyanine dye compounds obtained are useful for the spectral sensitization of silver halide photographic emulsions.

3,725,399
METHOD OF PRODUCING 7β-ACYLAMIDO-3-METHYLCEPH-3-EM-4-CARBOXYLIC ACID ESTERS

Norman V. Ellerton, Harrow; William F. Paradise, Windsor, and Peter E. Sandford, Chalfont St. Peter, all of England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

Filed March 10, 1970, Ser. No. 18,283

Claims priority, application Great Britain, March 11, 1969, 12,866/69; Sept. 22, 1969, 46,622/69

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **18 Claims**

The invention relates to a process for the preparation of 7β-acylamido-3-methylceph-3-em-4-carboxylic acid esters from 6β-acylamido penicillanic acid 1-oxide esters in the presence of catalysts which are salts or complexes of acids with nitrogen bases having a pKb of not less than 4. The salts or complexes may be formed in situ.

3,725,400
PROCESS FOR THE RECOVERY OF HYDROPHILIC ANTIBIOTICS

Walter Voser, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed April 28, 1970, Ser. No. 32,763

Claims priority, application Switzerland, May 13, 1969, 7286/69

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **9 Claims**

The isolation of cephalosporin C from solutions containing it in admixture with impurities stemming from the fermentation broth by adsorption on macroporous, non-ionic adsorption resins with large surface.

3,725,401
NOVEL 3-AMINO-5-BROMO-2H-1,4-THIAZINES

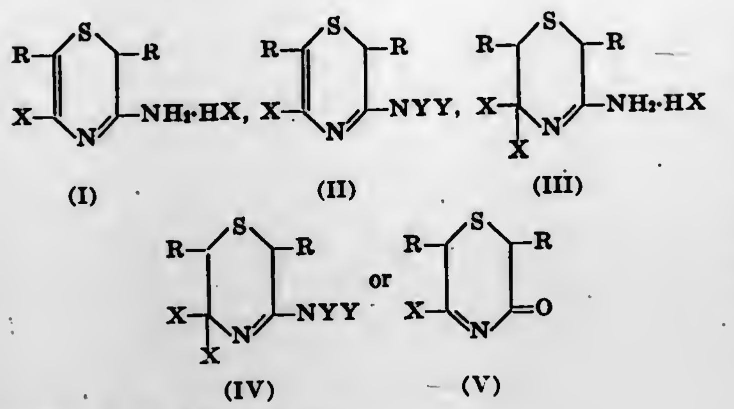
Francis Johnson, Newton Lower Falls, Mass., and Wilmonte A. Nasutavicus, Oakland, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 16, 1968, Ser. No. 762,335

Int. Cl. C07d *93/10*

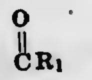
U.S. Cl. 260—243 **17 Claims**

New compounds of the formula



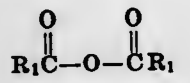
(I) (II) (III) (IV) (V)

wherein X is chloro, bromo or iodo, R is hydrogen, alkyl, aryl, aralkyl, alkaryl, alkoxyaryl, haloaryl, nitroaryl, cycloalkyl, haloalkyl, nitro, halo, acetamido or lower alkyl carbethoxy, Y is hydrogen, alkarylsulfonyl, arylsulfonyl or



$$\overset{O}{\overset{\|}{C}}R_1$$

and R_1 is lower alkyl, lower haloalkyl, cycloalkyl, aryl, nitroaryl or haloaryl, are prepared in the novel cyclization reaction (i) comprising reacting a dinitrile of the formula NC—CH(R)—SCH(R)—CN with at least three molar equivalents of HX at a temperature between about −50°C. and about 50°C., or in the reaction (ii) wherein the neutralized reaction product of (i) is further reacted with YX,



$$R_1\overset{O}{\overset{\|}{C}}—O—\overset{O}{\overset{\|}{C}}R_1$$

or R_2CNO and R_2 is aryl or alkyl or in the reaction (iii) wherein the neutralized reaction product of (i) is further reacted with HBr and an aqueous alcohol solution at reflux temperature. The new compounds are useful as chemical intermediates or in neutralizing acids and as fungicides, herbicides and insecticides.

3,725,402
3-SUBSTITUTED-6-CHLORO-2H-1,3-OXAZINE-2,4(3H)-DIONE

Hans Disselkotter, Cologne, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 13, 1970, Ser. No. 54,660

Claims priority, application Germany, Aug. 8, 1969, P 19 40 368.0

Int. Cl. C07d *87/14*

U.S. Cl. 260—244 R **5 Claims**

3-substituted-6-chloro-2H-1,3 oxazine-2,4(3H)-dione are obtained by reacting malonic acid dichloride with an isocyanate in the presence of a catalyst at a temperature of from −70° to −50°C, and removing the hydrogen chloride formed, by heating after the exothermic reaction has abated. The compounds for instance 6-chloro-3-methyl-2H-1,3-oxazine-2-4(3H)-dione may be used in the production of plant-protection agents or even directly as such for controlling insects and mites.

3,725,403
BENZOTHIAZINE DERIVATIVES

John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,509

Int. Cl. C07d *93/12*

U.S. Cl. 260—243 R **7 Claims**

Disclosed herein are benzothiazines, benzoxazines, indolinones and derivatives thereof. The compounds of the invention possess central nervous system depressant activity as well as anti-bacterial and disinfectant activity.

3,725,404
2-AMINO-4,4-DI-SUBSTITUTED-4H-3,1-BENZOXAZINES

Heinz Kuch; Karl Schmitt; Gunther Seidl, and Irmgard Hoffmann, all of Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt/Main, Germany

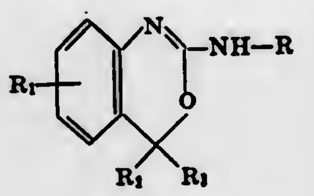
Continuation-in-part of Ser. No. 682,631, Nov. 13, 1967, abandoned. This application June 9, 1971, Ser. No. 151,599

Claims priority, application Germany, Nov. 24, 1966, F 50751

Int. Cl. C07d *87/20*

U.S. Cl. 260—244 R **15 Claims**

2-Amino-4,4-di-substituted benzoxazine derivatives and the salts thereof with a physiologically compatible acid have an action on the central nervous system. These benzoxazines have the formula



in which R is hydrogen, alkyl of one to four carbon atoms, cyclohexyl, phenyl or benzyl, R_1 is hydrogen, halogen, trifluoromethyl, R_2 is alkyl of one to four carbon atoms and R_3 is phenyl or halophenyl.

3,725,405
2,4,7-TRISUBSTITUTED-[PYRIDO 2,3-D]PYRIMIDINE-6-CARBOXAMIDES

Arthur A. Santilli, Havertown, and Dong H. Kim, Wayne, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed June 18, 1970, Ser. No. 47,571

Int. Cl. C07d *57/20*

U.S. Cl. 260—247.2 A **7 Claims**

Novel 2,4,7-trisubstituted-pyrido[2,3-d]pyrimidine-6-carboxamides have been produced which have central nervous system depressant activity and are useful pharmacological agents in the calming of animals.

3,725,406
BENZIMIDAZOLE DERIVATIVES AS FUNGICIDAL ACTIVE COMPOUNDS

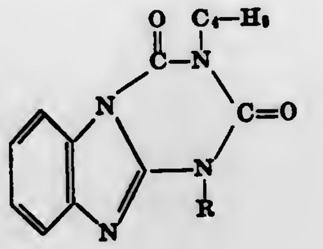
Elaine A. Bose, and Earl R. White, both of Davis, Calif., assignors to The Regents of the University of California, Berkley, Calif.

Continuation-in-part of Ser. No. 172,205, Aug. 16, 1971, abandoned. This application Oct. 12, 1971, Ser. No. 188,499

Int. Cl. C07d *57/34*

U.S. Cl. 260—249.5 **10 Claims**

The method of manufacture, method of use and fungicidal active compounds are described herein. The active compounds have the following formula:



wherein R can be selected from the group consisting of hydrogen, sodium, potassium and ammonium.

3,725,407
6-SUBSTITUTED AMINO-3-NITROIMIDAZO(1,2-B)PYRIDAZINES AND METHODS OF PREPARING THE SAME

Andrew Stephen Tomcufcik, Old Tappan, N.J.; Patrick Thomas Izzo, and Paul Frank Fabio, both of Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed April 8, 1971, Ser. No. 132,565

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A **6 Claims**

The preparation of 6-substituted amino-3-nitroimidazo-[1,2-b]pyridazines by reacting a 6-amino or substituted amino-3-nitroimidazo[1,2-b]pyridazine with an acid chloride or acid anhydride, is described. Other methods of preparing 6-substituted amino-3-nitroimidazo[1,2-b]pyridazines are described. The compounds are useful for their antiprotozoal and particularly antitrichomonal and antiamebic activity in warm-blooded animals.

3,725,408
PTERIDINE DERIVATIVES AND METHOD

Hamish C. S. Wood, Glasgow, and Alexander Stuart, Kent, both of England, assignors to The University of Strathclyde, Glasgow, Scotland

Division of Ser. No. 794,786, Jan. 28, 1969, Pat. No. 3,635,978. This application July 6, 1971, Ser. No. 160,216

Int. Cl. C07d *57/28*

U.S. Cl. 260—251.5 **2 Claims**

A compound 2-amino-4-hydroxy-6-hydroxymethyl-7,7-dimethyl-7, 8-dihydropteridine, or tautomeric forms thereof and pharmaceutically acceptable salts thereof. The compound is useful as a bacteriostat and in antibacterial products. The compound has useful activity against C1. perfringens and Derm. dermatonomous.

3,725,409
8-SUBSTITUTED 10-PIPERAZINE-10,11-DIHYDRODIBENZO(B,F) THIEPINES

Miroslav Protiva; Karel Pelz, and Jirina Metysova, all of Praha, Czechoslovakia, assignors to Spofa, United Pharmaceutical Works, Praha, Czechoslovakia

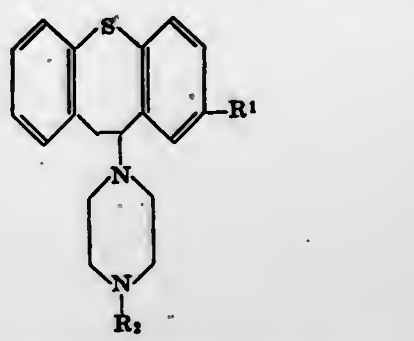
Filed March 23, 1970, Ser. No. 22,074

Claims priority, application Czechoslovakia, March 24, 1969, 2095/69

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR **3 Claims**

8-substituted 10-piperazino-10,11-dihydrodibenzo (*b,f*) thiepines having the formula



(I)

wherein R^1 is alkyl, alkoxy, alkylthio having one to four carbon atoms, or trifluoromethyl, R^2 is hydrogen or hydroxyalkyl having two to four carbon atoms, and the pharmaceutically acceptable salts thereof having valuable pharmacodynamic activity and being suitable for use as neuro- and psychotropic medicaments.

3,725,410
3-AMINOMETHYL-3-QUINUCLIDINOLS

John R. Potoski, Rosemont, and Meier E. Freed, Paoli, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed July 15, 1970, Ser. No. 55,264

Int. Cl. C07d *51/70, 51/72*

U.S. Cl. 260—268 BC **3 Claims**

This invention is concerned with new and novel derivatives of 3-aminomethyl-3-quinuclidinols which are pharmacologically active as CNS depressants useful in the calming of animals. Further, this invention is concerned with methods of producing the new and novel 3-aminomethyl-3-quinuclidinols. Still further, this invention is concerned with 3-methylenequinuclidine oxide which is a new and novel intermediate useful in the production of the new and novel 3-aminomethyl-3-quinuclidinol derivatives of the present invention.

3,725,411
[4-(10,11-DIHYDRODIBENZ[B,F]OXEPIN-10-YL)-1-PIPERAZINYL]-ALKYL]-3-ALKYL-2-IMIDAZOLIDINONES AS CNS-DEPRESSANTS

Walter Schindler, Riehen/Basland; Erich Schmid, Basle, and Armin Zuest, Birsfelden/Basland, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,509

Claims priority, application Switzerland, Aug. 11, 1969, 12124/69

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR **2 Claims**

Compounds of the class of 1-[2- or 3-[4-(10,11-dihydrodibenz[b,f]]-alkyl}-3-alkyl-2-imidazolidinone, which can be substituted in 8-position by chloro, methyl or methoxy, and the pharmaceutically acceptable acid addition of salts thereof, have a depressant effect on the central nervous system; pharmaceutical compositions comprising these compounds and a method of producing a depressant effect on the central nervous system of warm-blooded animals are provided.

An illustrative embodiment is 1-[3-[4-(8-chloro-10,11-dihydrodibenz[b,f]]-propyl]-3-methyl-2-imidazolidinone.

3,725,412
SUBSTITUTED α,α,γ-TRIPHENYL-AMINOPROPANOLS

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Dec. 29, 1969, Ser. No. 888,873
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 BZ **2 Claims**

Substituted α, α, γ-triphenyl-aminopropanols, e.g., 4-methyl-α, α, γ-triphenyl-1-piperazinepropanol, are prepared by treating substituted β-phenyl-β-aminopropiophenones with phenyl lithium or substituted phenyl lithium compounds. The compounds obtained are useful as diuretics and hypotensive/antihypertensive agents.

3,725,413
PROCESS FOR THE PRODUCTION OF ETHYL 8-HYDROXY-1,3-DIOXOLO[4,5G]-QUINOLINE-7-CARBOXYLATE

Jerome Genzer, Livingston, and George Conrad, Irvington, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 164,451, July 20, 1971, abandoned. This application Jan. 17, 1972, Ser. No. 218,504
Int. Cl. L07d *33/48*
U.S. Cl. 260—287 R **4 Claims**

A process for the production of ethyl 8-hydroxy-1,3-dioxolo[4,5g]-quinoline-7-carboxylate is disclosed. This process comprises reacting ethyl alcohol with phosphorous pentoxide under carefully controlled temperature conditions using xylene as the vehicle. To this reaction mixture is added diethyl (3,4-methylenedioxyphenyl)-aminomethylenemalonate which is then heated at 138° to 140° C. for about 60 minutes to produce the desired product. Ethyl 8-hydroxy 1,3-dioxolo[4,5g]-quinoline-7-carboxylate is useful as an intermediate for the production of oxolinic acid.

3,725,414
MANUFACTURE OF HALOGENATED PYRIDINE DERIVATIVES

Roy Dennis Bowden, and Thomas Seaton, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 16, 1971, Ser. No. 172,266
Claims priority, application Great Britain, May 4, 1971, 12,902/71; Aug. 19, 1970, 39,394/70
Int. Cl. C07d *31/26*
U.S. Cl. 260—290 HL **7 Claims**

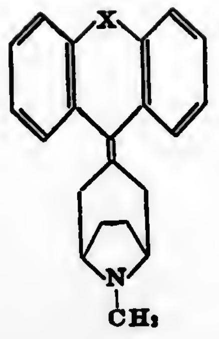
A process for the manufacture of a chloropyridine which comprises interacting -caprolactam with chlorine in the vapor phase at a temperature of at least 250°C.

3,725,415
3-TROPANYLIDINE DERIVATIVES OF TRICYCLIC COMPOUNDS, THEIR SALTS, AND PROCESS OF PREPARATION

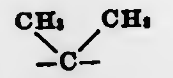
Jacques R. Boissier, Paris, and Roger Ratouis, Saint-Cloud, both of France, assignors to Societe anonyme dite: Societe Industrielle pour La Fabrication des Antibiotiques (S.I.F.A), Puteaux, France

Filed Oct. 21, 1969, Ser. No. 868,230
Claims priority, application France, Oct. 22, 1968, P.V. 170 767; Dec. 20, 1968, 68179397
Int. Cl. C07d *43/06*
U.S. Cl. 260—292 **2 Claims**

Tropane derivatives and acid addition and quaternary ammonium salts thereof, said tropane derivatives having the formula:


(1)

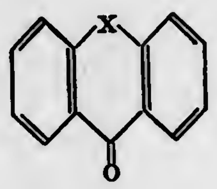
in which X represents: $-CH_2-CH_2-$, $-CH{=}CH-$,


$$\overset{CH_3\quad CH_3}{-C-}$$

and $-CH_2-S-$.

These products are useful in human therapeutics namely as antihistaminic, spasmolytic and antiparkinson medicines.

Compounds of formula 1 are prepared by reacting the organo-magnesium compound of 3β-chlorotropane with a ketone of formula:


(2)

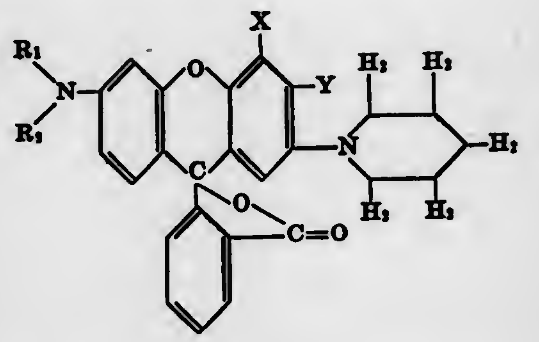
hydrolyzing with water and resulting magnesium complex and reacting the obtained compound with a dehydrating agent (acetic anhydrid or phosphorous oxychloride or hydrochloric acid).

3,725,416
7-PIPERIDINOFLUORAN

Kenji Yamamoto, Fujiidera; Nobuharu Sasaki, Higashiosaka, and Mutsuo Terayama, Yuge, all of Japan, assignors to Yamamoto Kagaku Gosei Co., Ltd., Yuge, Yao, Japan

Filed Nov. 30, 1970, Ser. No. 93,897
Claims priority, application Japan, Dec. 5, 1969, 44/98034
Int. Cl. C07d *29/12*
U.S. Cl. 260—293.58 **7 Claims**

Compounds and a pressure-sensitive copying sheet containing said compounds as a color-forming agent art provided said compounds have the following general formula:



wherein each of R_1 and R_2 is independently alkyl of up to 4 carbon atoms; and each of X and Y is independently hydrogen, halogen of alkyl of up to 4 carbon atoms.

3,725,417
CARBOXAMIDOBENZOIC ACIDS AS HYPOLIPEMIC AGENTS

Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Nov. 2, 1971, Ser. No. 194,922
Int. Cl. C07d *29/22*
U.S. Cl. 260—293.77 **8 Claims**

2-Substituted-5-carboxamidobenzoic acids and the pharmaceutically acceptable salts thereof as hypolipemic agents.

3,725,418
1-PIPERIDINE-1-CYANO-O-CARBAMOYL-FORMOXIMES

Hans Ulrich Brechbuhler, Basel, and Kurt Gubler, Riehen, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Division of Ser. No. 844,163, July 23, 1969, Pat. No. 3,673,236. This application April 13, 1972, Ser. No. 243,847
Claims priority, application Switzerland, July 24, 1968, 11105/68
Int. Cl. C07d *29/32*
U.S. Cl. 260—293.86 **2 Claims**

New basically substituted 1-cyano-O-carbamoyl-formoximes are described as insecticides, acaricides and nematocides, which are distinguished from known carbamoyl-oximes by pronounced systemic insecticidal, acaricidal and nematocidal action. A typical compound is 1-diethylamino-O-(N′-methylcarbamoyl)-formoxime. Processes for the production of these compounds are described as well as pesticidal compositions containing these compounds as active substances.

3,725,419
QUINUCLIDYLALKYL ESTERS

Claude I. Judd, Mequon, and Wallace K. Hoya, Milwaukee, both of Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 18, 1965, Ser. No. 481,446
Int. Cl. C07d *39/06*
U.S. Cl. 260—293.53 **8 Claims**

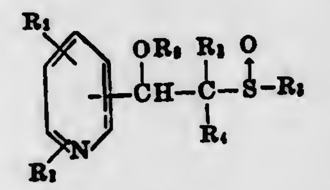
The compounds are quinuclidylalkyl esters which are useful as chemical intermediates and possess an anti-Parkinsonism activity. A representative compound is 2-quinuclidylmethyl phenylcyclopentylglycolate.

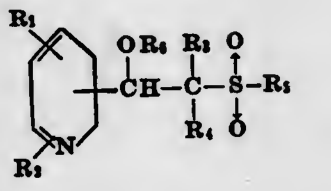
3,725,420
PYRIDYL-β-HYDROXYSULFOXIDES AND SULFONES AND DERIVATIVES

Glenn C. Morrison, Dover; John Shavel, Jr., Mendham, and Wiaczeslaw Cetenko, Parsippany, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sept. 28, 1970, Ser. No. 76,288
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 F **5 Claims**

The present invention relates to pyridyl-β-hydroxy sulfoxides and sulfones having structural formulas:


I


II

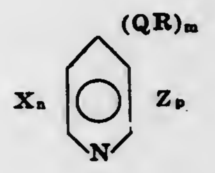
wherein R_1 and R_2 are hydrogen, lower alkyl, cycloalkyl, lower alkenyl, aryl, substituted aryl, aralkyl, substituted aralkyl, heterocyclic, substituted heterocyclic, acyl, halogen, lower alkoxy, nitro, mercapto, lower alkylthio, hydroxy, amino, lower alkylamino, dilower alkylamino and the like. R_3 and R_4 are hydrogen, lower alkyl or aryl. R_5 is alkyl up to 12 carbon atoms, aryl, substituted aryl, heterocyclic or substituted heterocyclic. R_6 is alkyl of up to 12 carbon atoms or acyl When R_4 is hydrogen these compounds are prepared by treating a di alkylsulfoxide or sulfone with a pyridine aldehyde. They can also be prepared by reducing a pyridyl-β-ketosulfoxide, or sulfone, with an alkali metal borohydride. These compounds are useful as immunosuppressive agents.

3,725,421
(THIO-, SULFINYL- AND SULFONYL) CONTAINING PYRIDINE COMPOUNDS

Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 861,506, Sept. 26, 1969, Pat. No. 3,639,413. This application May 17, 1971, Ser. No. 144,330
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 F **6 Claims**

The present disclosure is directed to (thio-, sulfinyl- and sulfonyl) containing pyridine compounds corresponding to the formula



wherein R represents hydrogen, alkyl, monohaloloweralkyl, alkenyl, monohaloalkenyl, cycloalkyl, monohalocycloalkyl, phenyl, aralkyl, alkaryl or monohalophenyl; Q represents sulfide (—S—), sulfinyl

$$\left(-\overset{|}{S}O\right)$$

or sulfonyl

$$\left(-\overset{|}{S}O_2\right)$$

; each X independently represents chlorine, bromine or fluorine; Z represents one of cyano (—CN), carbamoyl (-—CONH₂) or carboxy (—COOH) or the salts thereof; *n* represents an integer of 0 to 3, inclusive; *m* represents an integer of 1 to 3, inclusive; *p* represents an integer of 1 or 2 and the sum of *n+m+p* equals an integer of 2 to 5, inclusive, with the proviso that when Q is other than sulfide (—S—), R is other than hydrogen and when R is H, *m* is not greater than 2. The preparation of these compounds and their utility as pesticides is also taught.

3,725,422
NEW ORGANIC SULFUR COMPOUNDS AND METHODS FOR THEIR PRODUCTION

David B. Capps, Ann Arbor, Mich., and Alexander Erdelyi, Vaucluse, New South Wales, Australia, assignors to Parke, Davis & Company,, Detroit, Mich.

Filed Sept. 7, 1971, Ser. No. 178,469
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 E **9 Claims**

1-Carboxyalkyl esters of 5-chlorodithio-2-pyridinecarbamic acid; and salts and lower alkyl esters of those 1-carboxyalkyl esters. The compounds are antiparasitic agents having nematocidal activity and antifungal activity against various species. They can be produced by reacting a tertiary amine salt of 5-chlorodithio-2-pyridinecarbamic acid with a haloalkanoic acid salt or haloalkanoic acid ester. The tertiary amine salts of 5-chlorodithio-2-pyridinecarbamic acid can be produced by reacting 2-amino-5-chloropyridine with carbon disulfide and a tertiary amine.

3,725,423
EXO-BICYCLOALKANE CARBOXAMIDES

Ronald H. Rynbrandt, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

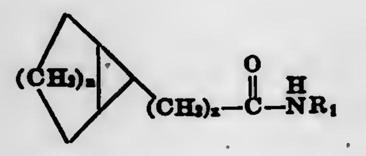
Filed Jan. 14, 1971, Ser. No. 106,603

Int. Cl. C07d ***31/41;*** **C07c** ***103/19***

U.S. Cl. 260—295 K **2 Claims**

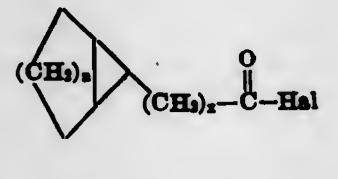
Exo-bicycloalkane carboxamides of the formula 11:

II



wherein *n* has the value of 1 to 3, inclusive; wherein *x* is zero or 1; wherein R_1 is hydrogen, alkyl of 1 to 6 carbon atoms, inclusive, 2-pyridyl, phenyl, and substituted phenyl in which the substituents are selected from the group consisting of alkyl of 1 to 3 carbon atoms, inclusive, alkoxy of 1 to 3 carbon atoms, inclusive, halogen, nitro, and trifluoromethyl, are produced by reacting formyl or acetyl exo-bicycloalkane halide of the formula I

I



wherein *n* and *x* are defined as above, and Hal is chlorine or bromine, with an amine $H_2N—R_1$ in which R_1 is defined as above. Compounds 11 have antidiabetic activity and can be used in mammals to treat hyperglycemia.

3,725,424
3,5-SUBSTITUTED-1,2,4-OXADIAZOLE INNER QUATERNARY AMMONIUM SALTS

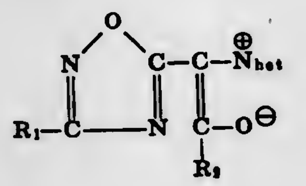
Anne Mary Von Esch, North Chicago, and Aldo Joseph Crovetti, Lake Forest, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 30, 1970, Ser. No. 85,747

Int. Cl. C07d ***31/42***

U.S. Cl. 260—296 R **4 Claims**

New antimicrobial agents of the formula



where R_1 includes halophenyl, loweralkyl, phenyl, nitrophenyl, dinitrophenyl, nitrofuryl, and nitrothienyl; R_2 includes hydrogen and loweralkyl; and N_{het} includes a heterocyclic moiety bonded through a nitrogen thereof which is sufficiently basic to form quaternary ammonium salts.

3,725,425
1,4,5,6-TETRAHYDRO-2-ACETOPYRIDINE, ITS SALTS AND BISULPHITE ADDITION PRODUCTS, AND SYNTHESIS THEREOF

Irving R. Hunter, Berkeley, and Mayo K. Walden, El Cerrito, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture

Filed March 29, 1968, Ser. No. 717,399

Int. Cl. C07d ***31/32***

U.S. Cl. 260—297 R **4 Claims**

Proline and dihydroxyacetone are reacted in the presence of an alkali metal bisulphite to produce the new compound 1,4,5,6-tetrahydro-2-acetopyridine. This compound, as such, or in the form of its bisulphite complex or its salts, is useful for flavoring bread and other bakery products.

3,725,426
DERIVATIVES OF 2,1-BENZISOTHIAZOLINE

Joseph A. Skorcz, Milwaukee; John T. Suh, and Claude I. Judd, both of Mequon, all of Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 32,461, April 27, 1970, Pat. No. 3,657,238, and a continuation-in-part of Ser. No. 682,974, Nov. 14, 1967, Pat. No. 3,528,989, and a continuation-in-part of Ser. No. 571,967, Aug. 12, 1966, abandoned. This application Nov. 3, 1971, Ser. No. 195,481

Int. Cl. C07d ***91/06, 91/10***

U.S. Cl. 260—301 **7 Claims**

The compounds are 2,1-benzisothiazolines substituted in the 3-position which are useful pharmaceutical agents, especially central nervous system stimulants and antihypertensive agents. Compounds disclosed include 1,3-dimethyl-3-(3'-hydroxypropyl)-2,1-benzisothiazoline-2,2-dioxide, 1,3-dimethyl-3-(N-carbethoxy-2'-aminoethyl)-2,1-benzisothiazoline-2,2-dioxide, and 1,3-dimethyl-3-(3'-dimethyl--guanidinopropyl)-2,1-benzisothiazoline-2,2-dioxide.

3,725,427
CERTAIN 2,4-DIMETHYL-5-CARBOXAMIDO-THIAZOLES

William A. Harrison, and Marshall Kulka, both of Guelph, Ontario, Canada, assignors to Uniroyal Ltd., Montreal, Quebec, Canada

Division of Ser. No. 599,734, Dec. 7, 1966, Pat. No. 3,547,917. This application May 1, 1970, Ser. No. 33,921

Int. Cl. C07d ***91/32***

U.S. Cl. 260—302 R **3 Claims**

This invention pertains to 2,4-dimethylthiazole-5-carboxamides, which have utility as fungicides and plant growth regulants. These compounds are prepared by the reaction of alphahalo ketone derivatives with thioamides.

3,725,428
N-BENZOTHIAZOL-2-YL-N'-PROPYLUREAS

Stefan Janiak, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

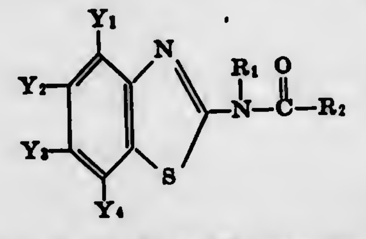
Filed Oct. 22, 1969, Ser. No. 868,589

Claims priority, application Switzerland, Nov. 1, 1968, 16333/68

Int. Cl. C07d ***91/46***

U.S. Cl. 260—305 **3 Claims**

The invention comprises compounds of the general formula



in which Y_1, Y_2, Y_3, Y_4, Y_5, R_1 and R_2 have the meanings given below, their process of manufacture, their use as active ingredients in microbiocidal agents and their methods of use.

3,725,429
BENZAMIDOIMIDAZOLINES

David Maxwell Brown, Dorking, and Eric Alfred Watts, Harlow, both of England, assignors to Beecham Group Limited, Brentford, Middlesex, England

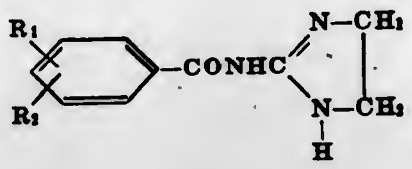
Filed Nov. 12, 1970, Ser. No. 88,978

Claims priority, application Great Britain, Nov. 18, 1969, 56,271/69

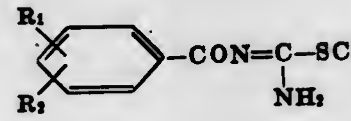
Int. Cl. C07d ***49/34***

U.S. Cl. 260—309.6 **2 Claims**

Imidazolines having hypotensive and/or anti-inflammatory activity are described. They have the formula:



wherein R_1 and R_2 are the same or different and each is hydrogen, halogen, lower alkyl or lower alkoxy. An imidazoline having hypotensive activity is 2-benzamido-2-imidazoline, an anti-inflammatory imidazoline is 2,4-dichlorobenzamido-2-imidazoline. The new imidazolines are prepared from ethylenediamine and a pseudothiourea or acid addition salt of the formula:



3,725,430
DERIVATIVES OF P-AMINOALKYL BENZENESULFONAMIDES

Henri Dietrich, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,510

Claims priority, application Switzerland, Aug. 8, 1969, 12085/69

Int. Cl. C07d ***49/30***

U.S. Cl. 260—309.7 **6 Claims**

1-(p-Ureidoalkylphenylsulfonyl)-2-imino-imidazolidines and 1-(p-thioureidoalkylphenylsulfonyl)-2-imino-imidazolidines being substituted at the imidazolidine and at the 3-position of the ureido moieties are prepared; these compounds and the pharmaceutically acceptable acid addition salts thereof have hypoglycemic activity; pharmaceutical compositions comprising said compounds and methods of producing hypoglycemic effects in mammals are provided; an illustrative embodiment is 1-[p-(2-(3-n-butyl-2-thioureido)-ethyl)-phenylsulfonyl]-2-imino-3-n-butyl-imidazolidine.

3,725,431
1-ARALKYL-3-AMINOINDAZOLES

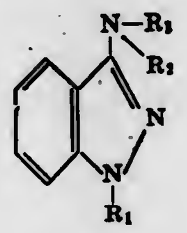
Heinz Werner Gschwend, Millburn, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 23, 1970, Ser. No. 74,838

Int. Cl. C07d ***49/20***

U.S. Cl. 260—310 C **5 Claims**

1-Aralkyl-3-aminoindazoles, e.g. those of the formula



R_1 = aralkyl

R_2 = H, alkyl, free, esterified or etherified hydroxyalkyl

R_3 = aza-(alkyl, cycloalkyl-alkyl, aralkyl, alkanoyl, cycloalkyl-alkanoyl or aralkanoyl)

and salts thereof are antiinflammatory agents.

3,725,432
BIPHENYLYL PYRAZOLE COMPOUNDS

Laszlo Beregi, Boulogne S/Seine; Pierre Hugon, Rueil-Malmaison, and Jean-Claude Le Douarec, Suresnes, all of France, assignors to Societe en Nom Collectif Science Union et Cie, Societe Francaise Medicale, Suresnes, France

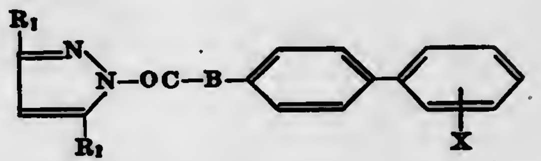
Filed June 28, 1971, Ser. No. 157,727

Claims priority, application Great Britain, July 13, 1970, 33,824/70

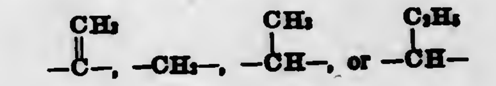
Int. Cl. C07d ***49/18***

U.S. Cl. 260—310 R **4 Claims**

Pyrazole compounds of the formula



wherein R_1 and R_2 are hydrogen, methyl or ethyl, B is



$$\overset{CH_2}{\overset{\|}{—C—}},\ —CH_2—,\ \overset{CH_3}{\overset{|}{—CH—}},\ \text{or}\ \overset{C_2H_5}{\overset{|}{—CH—}}$$

and X is hydrogen or halogen.

These compounds possess analgesic and anti-inflammatory properties.

3,725,433
CONVERSION OF POLYHALOPHTHALOCYANINES INTO PIGMENTARY FORM

Wolfgang Fabian, Heidelberg; Joachim Franz, Ludwigshafen, and Rudolf Polster, Frankenthal, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed May 3, 1971, Ser. No. 139,935

Int. Cl. C09b ***47/04***

U.S. Cl. 260—314.5 **13 Claims**

The conversion of metal-free and metalliferous polyhalophthalocyanines into a pigmentary form by treatment of the crude pigment with a sulfuric acid monophenol ester or a reaction product of a phenol which is practically inert to nuclear sulfonation under the reaction conditions with chlorosulfonic acid or oleum. The treatment mixture then has water added to it and it is stirred for cleavage at 80° to 150°C and then aqueous sulfuric acid phase is separated and the pigment is isolated after the addition of an agent having an alkaline reaction so that the phenol passes into solution.

3,725,434
REACTION PRODUCTS OF A POLYALKYLENE AMINE SULFONIC ACID AND AN ALKENYL SUCCINIC ACID OR ANHYDRIDE

John Scotchford Elliott; Ian Robert Henry Crail, and Gerald John Joseph Jayne, all of London, England, assignors to Castrol Limited, London, England

Continuation of Ser. No. 649,102, June 27, 1967, abandoned. This application Jan. 11, 1971, Ser. No. 105,677

Claims priority, application Great Britain, June 28, 1966, 29,050/66

Int. Cl. C07d ***27/10***

U.S. Cl. 260—326.3 **7 Claims**

Long chain sulfonated amine compounds having amide or imide linkages are prepared by polymerizing a compound containing a polymerizable aziridine ring with sulfurous acid and reacting the resulting sulfur-containing polyalkylene polyamine with a long chain carboxylic acid, such as, a long chain mono-alkenyl succinic acid or anhydride. The products are useful in lubricating compositions.

3,725,435

2-IMINO-PYRROLIDINES

George Ireland Poos, Ambler, Pa., assignor to McNeil Laboratories, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 738,379, June 17, 1968, abandoned, which is a continuation-in-part of Ser. No. 649,812, June 29, 1967, abandoned, which is a continuation-in-part of Ser. No. 409,563, Nov. 6, 1964, abandoned. This application Nov. 5, 1970, Ser. No. 87,324

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.5 D **21 Claims**

The compounds are of the class of 2-imino-pyrrolidines which are useful for their anti-inflammatory and ganglionic blocking activities, and their effect on blood pressure and heart rate.

3,725,436

1-AMINO-3-AMINOALKYL-3-PHENYLINDOLINE COMPOUNDS

Donald E. Butler, 1449 Covington Drive, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 4,127, Jan. 19, 1970, abandoned. This application Aug. 13, 1971, Ser. No. 171,762

Int. Cl. C07d *27/38*

U.S. Cl. 260—326.11 **6 Claims**

1-Amino-3-aminoalkyl-3-phenylindolines, in which the 1-amino group is substituted by an aralkyl group and by methyl or ethyl and the 3-aminoalkyl group is a dialkylaminoalkyl group or a heterocyclic aminoalkyl group; acid-addition salts thereof; and their production by reacting a 1-amino-3-aminaolkyl-3-phenyloxindole with a reducing agent. The compounds of the invention are useful as pharmacological agents that are active primarily as antidiarrheal agents.

3,725,437

PROCESS FOR THE PREPARATION OF αHYDROXY-β PHENYPROPIONIC ACID DERIVATIVES AND ALKALIMETAL-OR AMMONIUM SALTS THEREOF

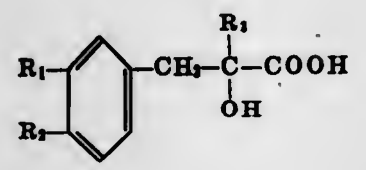
Tsutomu Nagoya, Ashigarashimo-gun; Yoshito Fujima, Kamakura, and Yoichi Shimizu, Yokohama, all of Japan, assignors to Sankyo Chemical Industries Limited

Filed Sept. 16, 1970, Ser. No. 72,903

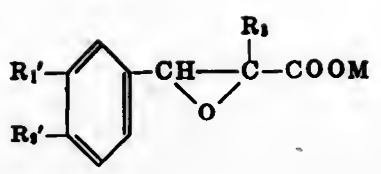
Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **3 Claims**

α-Hydroxy-β-phenylpropionic acid derivatives having the formula



wherein R_1 and R_2 represent a hydroxy group or a methoxy group or R_1 and R_2 taken together represent a methylenedioxy group and R_3 represents a hydrogen atom or a methyl group and alkali metal- or ammonium salts thereof which are useful as intermediates for the synthesis of L-α-methyl-β-(3,4-dihydroxyphenyl)-alanine and L-β-(3,4-dihydroxyphenyl)alanine. The propionic acid derivatives and the salts thereof are prepared by subjecting a β-phenylglycidic acid derivative having the formula



wherein R_1' and R_2' are a benzyloxy group or the same as R_1 and R_2 provided that when R_1 and R_2 are a hydroxy group, R_1' and R_2' represent a benzyloxy group, R_3 is the same as above and M represents an alkali metal or ammonium to a catalytic reduction in the presence of an organic polar solvent such as methanol and acetone.

3,725,438

PRODUCTION OF CYCLIC ACETALS

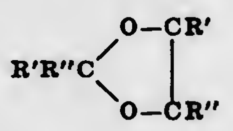
Bruno J. Barone, Houston, Tex., and William F. Brill, Skillman, N.J., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Oct. 16, 1970, Ser. No. 81,554

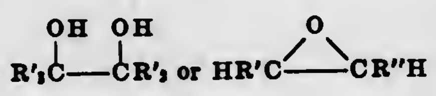
Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 **10 Claims**

Formation of cyclic acetal compounds of the formula



by reacting a carbonyl compound of the formula R'R"C = O with a second reactant which is



wherein R' and R" are selected from the group consisting of hydrogen and an acyclic aliphatic hydrocarbon radical in the presence of a catalyst selected from the group consisting of compounds of Periodic Table Groups VB and VIB. For example acetaldehyde is reacted in liquid phase with ethylene oxide in the presence of molybdenum acetyl acetonate to form 2-methyl-1, 3-dioxolane.

3,725,439

13-CARBOCYCLIC-3-KETO-4-GONENES

Arthur A. Patchett, Cranford, and Thomas B. Windholz, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 7, 1971, Ser. No. 104,760

Int. Cl. C07c *169/20*

U.S. Cl. 260—397.4 **23 Claims**

The invention disclosed herein relates to novel 3,17-bis-oxygenated-gonane compounds having unsaturation in ring A, and a carbocyclic nucleus attached to the C-13 carbon atom, and to the process of preparing these compounds by reacting a 2-carbocyclic substituted cyclopentane 1,3-dione with 6-methoxy-1-vinyl-1-hydroxy-tetrahydronaphthylidene to form a 3-methoxy-13-carbocyclic substituted gona-1,3,5,8(9)-14 pentaen-17-one, followed by reduction, if desired, of the double bonds in rings C and D, and also partial reduction of the aromatic A ring to form a Δ^4 or $\Delta^{5(10)}$ - 3-keto analog. These novel ring A unsaturated 3,17-bis-oxygenated-13-carbocyclic substituted gonane compounds possess antiandrogenic activity, and also, particularly where the carbocyclic nucleus in the 13-position is a cyclopentyl radical, possess anti-progestational action.

3,725,440

SOFTENING AGENT FOR COTTON AND FOR SYNTHETIC TEXTILE SUBSTRATES

James Marvin Brown, Charlotte, N.C., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 583,976, Oct. 3, 1966, Pat. No. 3,509,048. This application March 9, 1970, Ser. No. 17,868

Int. Cl. C07c *143/90*; C11d *1/28*

U.S. Cl. 260—400 **1 Claim**

A process for the production of an alkali metal salt of sulfated monoolefinate ester of a polyalkylene poly hydroxy-alcohol-type compound.

3,725,441

ACYLATING AGENTS, THEIR SALTS, AND LUBRICANTS AND FUELS CONTAINING THE SAME

John P. Murphy, Willoughby, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 725,189, April 29, 1968, Pat. No. 3,574,101. This application Aug. 17, 1970, Ser. No. 64,639

Int. Cl. C07c *143/90*

U.S. Cl. 260—400 **13 Claims**

Oil-soluble carboxylic acid acylating agents are prepared by reacting a high molecular weight mono- or polycarboxylic acid with a sulfonating agent. The resulting acylating agents can be converted to acidic, neutral, or basic metal salts. Both the novel acylating agents and the salts are useful additives for lubricants and fuels and as intermediates for the preparation of other useful lubricant and fuel additives, particularly high molecular weight oil-soluble acylated nitrogen compositions and esters. The latter are prepared by reacting the acylating agents with, for example, alkylene polyamines or mono- or polyhydric alcohols.

3,725,442

COPOLYMERS OF VINYL MONOMERS AND POLYESTERS

Carl S. Marvel, and Roberta C. L. Chow, both of Tucson, Ariz., assignors to The United States of America as represented by the Secretary of Agriculture

Division of Ser. No. 793,189, Jan. 22, 1969, Pat. No. 3,640,927. This application April 9, 1970, Ser. No. 31,436

Int. Cl. C07c *69/66*; C08g *17/02*

U.S. Cl. 260—405 **2 Claims**

There are disclosed herein addition copolymers of (*a*) a vinyl monomer and (*b*) a polymerizable polyester, for example, an acrylate or a vinyl ester of a polyester of an aliphatic hydroxycarboxylic acid. A typical example is the copolymer of (*a*) vinyl chloride and (*b*) a vinyl ester of a polyester of 10-hydroxydecanoic acid. This copolymer is useful for preparing flexible films.

3,725,443

PROCESS FOR THE PRODUCTION OF AN ALKYLENE BIS-DITHIOCARBAMATE

Shigeki Horiie; Hiroyasu Morikawa, both of Yokohama; Chiyuki Fujii, Yamato; Teruo Kobayashi, Tokyo; Susumu Kohno, Tokyo, and Toru Ono, Tokyo, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

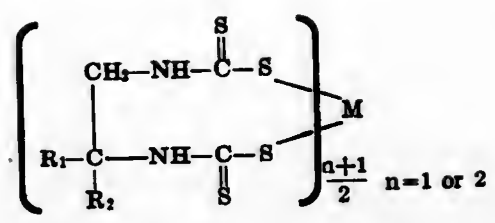
Filed Nov. 12, 1970, Ser. No. 89,079

Claims priority, application Japan, Nov. 11, 1969, 44/89710; Nov. 20, 1969, 44/92482

Int. Cl. C07f *13/00, 15/00, 9/94*

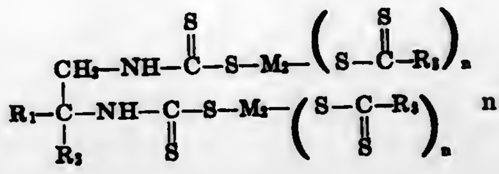
U.S. Cl. 260—429 K **7 Claims**

This invention relates to novel methods for the production of



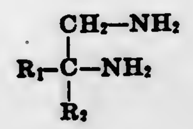
(I)

and



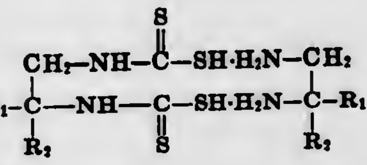
(II)

wherein R_1 and R_2 are hydrogen or alkyl groups, R_3 is a dialkylamino, alkoxy, morphalina or piperidine group, M is a divalent or trivalent metal have fungicidal activity against plant viruses. These compounds are prepared by reacting an a 1,2-alkylene-diamine of the formula:



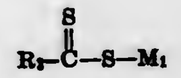
(III)

Compound (V) is reacted with CS_2 to form a 1,2-alkylene-bis-dithiocarbamic acid · 1,2-alkylene diamine addition salt of the formula:



(IV)

Compound (IV) is isolated for purification and is reacted with the appropriate metal ion corresponding to M when compound (I) is being prepared. To prepare compound (II), a mixture of compound (IV) and a dithiocarbamate of the formula:



$$R_3-\overset{\overset{\displaystyle S}{\|}}{C}-S-M_1$$

(V)

is reacted with the appropriate metal ion.

This invention also relates to novel compounds represented by formula (II).

3,725,444

VANADIUM ORGANOMETALLIC COMPOUNDS AND POLYMERIZATION CATALYSTS THEREOF

James R. Huerta, Adrian, and Jeffrey G. Meyer, Chelsea, both of Mich., assignors to Dart Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 846,614, July 31, 1969, Pat. No. 3,595,844. This application Dec. 30, 1970, Ser. No. 102,948

Int. Cl. C07f *9/00*

U.S. Cl. 260—429 K **4 Claims**

The reaction product of a sulfur-containing vanadium salt such as vanadyl sulfate and an organophosphate, such as triethyl phosphate, results in a hydrocarbon soluble catalyst component. This component forms an active vanadium coordination catalyst when combined with an organoaluminum halide. The resulting vanadium coordination catalyst is especially useful in the production of "EP" and "EPDM" rubber.

3,725,445

A DOUBLE SALT OF ZINC ETHYLENE-BIS-DITHIOCARBAMATE AND N-DODECYLGUANIDINE AND PREPARATION THEREOF

Kaoru Ohmori, Yono; Mituo Nakajima, Tokyo; Shuichi Ishida, Ohmiya, and Osamu Yamada, Tokyo, all of Japan, assignors to Nippon Kayaku Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1971, Ser. No. 106,181

Int. Cl. C07f *3/06*

U.S. Cl. 260—429.9 **4 Claims**

A fungicide for agricultural and horticultural use is obtained by adding a mixed solution of ammonium ethylene-bis-dithiocarbamate and n-dodecylguanidine to an aqueous solution of zinc chloride, reacting these reactants together to prepare a double salt of zinc ethylene-bis-dithiocarbamate and n-dodecylguanidine and then mixing therewith auxiliary substances such as extending agent, emulsifier, wetting agent, binding agent, etc. The fungicide is useful as a preparation for controlling diseases of fruit-trees, such as Alternaria leaf spot of apple, and black spot and scab of Japanese pear, etc., and exhibits poor phytotoxicity to plants when compared with n-dodecylguanidine acetate preparations.

3,725,446

(PHENYLTHIOMETHYL) TRIALKYLTIN COMPOUND AND PHENYL SUBSTITUTED DERIVATIVES

Donald J. Peterson, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed March 27, 1970, Ser. No. 23,457

Int. Cl. C07f *7/22*; **A01m** *9/00*

U.S. Cl. 260—429.7 **7 Claims**

Disclosed are novel organotin compounds and a process for preparing same. These organotin compounds correspond to the general formula:

$$R-S-CH_2-Sn-R'_3$$

where R is alkyl of from one to 14 carbon atom; aryl, or substituted aryl, and each R' is alkyl of one to 14 carbon atoms. The organotin compounds of the invention having pre-emergent and post-emergent herbicidal activity are employed in the formulation of herbicidal compositions effective for controlling or combating the growth of weeds and other undesirable vegetation.

3,725,447

LEAD FLUOROBORATES AS REDISTRIBUTION CATALYSTS

John C. Shepard, Jr., Freeport, Tex., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Sept. 23, 1971, Ser. No. 183,228

Int. Cl. C07f *7/24*

U.S. Cl. 260—437 R **4 Claims**

A process for the redistribution of alkyl radicals in tetra alkyl lead compositions by using as a catalyst a trialkyl lead fluoroborate. Also there is shown a new method for preparing trialkyl lead fluoroborates.

3,725,448

PROCESS FOR THE PREPARATION OF CHROMIUM (III) NITRATE COMPLEXES WITH TRANS-ACIDS

Harry Bowman West, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1971, Ser. No. 211,104

Int. Cl. C07f *11/00*

U.S. Cl. 260—438.5 R **6 Claims**

Stable, concentrated, aqueous solutions of complexes of chromium (III) nitrate with certain carboxylic trans-acids are prepared by heating the trans-acid with chromium (III) nitrate and with an alkali, the ratios of the reactants being 1 gram-atom of chromium to 1.0–1.5 gram-equivalents of alkali to 0.4–0.6 mole of the trans-acid. Solutions of these complexes are useful in the process of fabricating glass-fiber/polyolefin composites, for which the complexes are very good coupling agents.

3,725,449

CYCLIC UREA DERIVATIVES AND PROCESS FOR THEIR MANUFACTURE

Hans Dietrich Golitz, Cologne-Stammheim; Rudolf Merten, Leverkusen; Walter Noll, Opladen, and Walter Simmler, Odenthal-Gloebusch, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

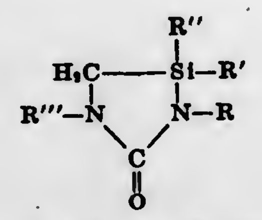
Filed Oct. 16, 1970, Ser. No. 81,515

Claims priority, application Germany, Oct. 29, 1969, P 19 54 447.9

Int. Cl. C07f *7/18*; **C07d** *103/04*

U.S. Cl. 260—448.8 R **13 Claims**

Novel cyclic urea derivatives containing silicon atoms have the general formula



wherein R is a hydrocarbon radical optionally being interrupted by oxygen atoms in ether linkages, R' and R'' (same or different) are hydrocarbon radicals, halohydrocaron radicals, cyanohydrocarbon radicals, or alkoxy radicals, and R''' is a hydrocarbon radical.

3,725,450

PROCESS FOR THE PREPARATION OF ISOCYANATES FROM ACYL AZIDES

Arthur J. Coury, Minneapolis, and Edgar R. Rogier, Hopkins, both of Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Oct. 5, 1970, Ser. No. 78,199

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 P **9 Claims**

Organic acyl azides and isocyanates are prepared from acyl halides and metal azides using acetonitrile in the reaction medium.

3,725,451

SUBSTITUTED BENZOYLHALOALKANESULFONANILIDES

Ronald J. Trancik; Robert A. Scherrer, both of White Bear Lake, and Joseph Kenneth Harrington, Edina, all of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Filed April 13, 1970, Ser. No. 28,020

Int. Cl. C07c *143/74*

U.S. Cl. 260—456 A **32 Claims**

Benzoylhaloalkanesulfonanilides having ring substituents selected from amino, nitro, carboxyl, mercapto, phenylsulfinyl, phenylsulfonyl, lower alkylsulfonamido, lower alkanoylamino, lower alkylthio, lower alkanoyloxy, lower alkylsulfamoyl, lower alkylsulfonoxy and lower haloalkylsulfonoxy. These compounds and salts thereof are active anti-inflammatory agents and some also have anti-pyretic and analgesic activity.

3,725,452

BENZYL-N-(N-BUTYL) CHLOROPHENOXYTHIOBUTYRIMIDATES

Edmund J. Rumanowski, Denver, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 863,011, Sept. 24, 1969, Pat. No. 3,628,944. This application Aug. 9, 1971, Ser. No. 170,354

Int. Cl. C07c *119/20*

U.S. Cl. 260—453 R **3 Claims**

Benzyl-N-(n-butyl)-chlorophenoxythiobutyrimidates are prepared by reacting N-(n-butyl)-di- or trichloro-phenoxythiobutyramide with benzyl bromide in the presence of sodium alkylate. The compounds are useful as herbicides.

3,725,453

L-4'-CYANO-3-(2,2,2-TRIHALOACETAMIDO) SUCCINANILIC ACIDS

Milton Lapidus, Rosemont, and Marian M. McGettigan, Bryn Mawr, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,533

Int. Cl. C07c *101/02, 121/78*

U.S. Cl. 260—465 D **3 Claims**

Disclosed herein are derivatives of L-aspartic acid which have utility as artificial sweetener agents. Also disclosed is a method for producing such derivatives.

3,725,454

PROSTANOIC ACID DERIVATIVES

Philip F. Beal, III, and John E. Pike, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 520,876, Jan. 17, 1966, abandoned, which is a continuation-in-part of Ser. No. 480,107, Aug. 16, 1965, abandoned. This application Oct. 16, 1970, Ser. No. 81,595

Int. Cl. C07c *61/36*

U.S. Cl. 260—488 R **6 Claims**

15-Hydroxy-9- Oxoprostanoic acid and 15-Hydroxy -9-Oxoprosta-trans-13-enoic acid have been prepared.

3,725,455

PEROXY COMPOUNDS CONTAINING A CARBONATE GROUP

Antonio Joseph D'Angelo, Buffalo; Orville Leonard Mageli, and Chester Stephen Sheppard, both of Kenmore, all of N.Y., assignors to Pennwalt Corporation

Filed June 17, 1968, Ser. No. 737,359

Int. Cl. C07c *73/00*; **C08f** *1/60*

U.S. Cl. 260—463 **12 Claims**

A new class of compounds: R-W-R 'where R and R 'are identical oxy radicals containing peroxide functions such as dialkyl or diaralkyl peroxide, peroxyketal, peroxyester, or monoperoxycarbonate, and W is a carbonyl group, or carbonyl containing group, or an alkylidene or aralkylidene group, or a phosphorus containing group.

Examples:

Di[1,3-dimethyl-3-(t-butylperoxy)butyl] carbonate;

Di[1,3-dimethyl-3-(n-butoxycarbonylperoxy)butyl] carbonate;

2,2-Bis[3,3-di(t-butylperoxy)butoxy]propane;

Di[1,3-dimethyl-3-(t-butylperoxy)butyl] ethyl phosphate.

They are free radical affording compounds useful in cross-linking of polyolefins and unsaturated polymers, and for the polymerization of vinyl monomers and diolefinic monomers.

3,725,456

PROCESS FOR PREPARING AMIDINE SALTS

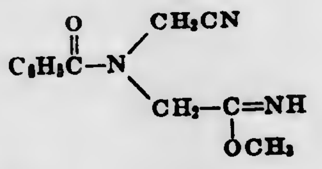
Patricia M. Scanlon, Arlington, Mass., and Elwyn R. Young, Nashua, N.H., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 830,091, June 3, 1969, Pat. No. 3,641,103. This application March 10, 1971, Ser. No. 123,100

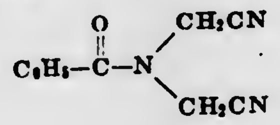
Int. Cl. C07c *121/66*

U.S. Cl. 260—465 D **4 Claims**

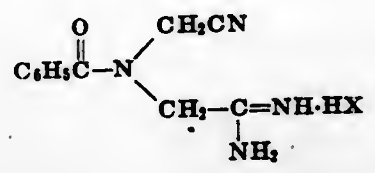
An imidoether having the formula



is prepared by reacting



with methanol in the presence of a sodium methoxide catalyst, and an amidine salt having the formula



is prepared by reacting the imidoether with ammonium chloride or ammonium bromide in the presence of methanol.

3,725,457

PRODUCTION OF ACETONITRILE

Marcel Borrel; Jacques Marion, and Jean Metzger, all of Oullins, France, assignors to Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 819,980, April 28, 1969, abandoned. This application Nov. 3, 1971, Ser. No. 195,514

Claims priority, application France, April 26, 1968, 68149679

Int. Cl. C07c *121/18, 121/32*

U.S. Cl. 260—465.1 **5 Claims**

Process for the preferential formation of acetonitrile in vapor phase ammoxidation of acrolein or products producing acrolein by carrying out the reaction at a relatively low temperature and at a high ammonia to acrolein ratio.

3,725,458

PROCESS FOR PREPARING CYANO-COMPOUNDS

Charles M. Starks, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 10,046, Feb. 9, 1970, abandoned. This application Nov. 17, 1971, Ser. No. 199,769

Int. Cl. C07c *121/06*

U.S. Cl. 260—465.1 **6 Claims**

A process for the preparation of terminally substituted cyano-compounds from 1-alkenes. The process involves the preparation of a 1-bromoalkane from the reaction of the 1-alkene and HBr in the presence of an initiator followed by a catalyzed halogen exchange reaction with HC1 wherein a 1-chloroalkane is formed and HBr is regenerated. The 1-chloroalkane is then reacted with a cyanide containing compound in the presence of an organic quaternary salt catalyst to produce the desired terminally substituted cyano-compound, a 1-cyanoalkane.

3,725,459

PROCESS FOR PURIFYING ADIPONITRILE

Keisho Yamada; Kenji Nishimura; Shinichi Furusaki; Tatsuo Toshimitsu, and Yukio Inaba, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

Filed Aug. 4, 1970, Ser. No. 60,859

Int. Cl. C07c *121/26*

U.S. Cl. 260—465.8 R **5 Claims**

A process for purifying crude adiponitrile which comprises contacting crude liquid adiponitrile with oxygen or a gas containing molecular oxygen at a temperature of from 120° to 300°C. to thereby convert impurities in the crude adiponitrile into colored high-boiling compounds, and separating adiponitrile from the colored, high-boiling compounds by distillation under reduced pressure.

3,725,460
REACTION PRODUCTS OF MULTIAZIRIDINO COMPOUNDS AND HYDROGEN SULFIDE

Heinz Uelzmann, Cuyahoga Falls, and David C. Hidinger, Jr., Akron, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 637,352, May 10, 1967, Pat. No. 3,514,369. This application Nov. 3, 1969, Ser. No. 873,683

Int. Cl. C07c *149/42*

U.S. Cl. 260—470 **2 Claims**

Novel adducts of multiaziridino compounds are prepared by reacting H_2S with multiaziridino compounds. The reaction products, which contain secondary amino and thio groups, may be used to form adhesives, particularly with epoxy compounds, and metal-to-metal laminates.

3,725,461
TEREPHTHALIC BASED UNSATURATED POLYESTERS

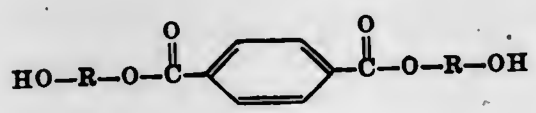
Saunders E. Jamison, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed April 13, 1970, Ser. No. 32,497

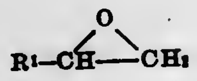
Int. Cl. C07c *69/82*

U.S. Cl. 260—475 P **1 Claim**

A process is disclosed for the preparation of terephthalate based unsaturated polyesters by first reacting a mono unsaturated dicarboxylic acid anhydride having from 4–10 carbon atoms with a terephthalic acid glycol ester having the general formula:



wherein R is C_2 to C_8 alkylene to form a glycol ester-mono unsaturated acid adduct and then reacting this adduct with an oxide having the general formula:



wherein R^1 is H or an organic radical having from one to eight carbon atoms. The resulting polyester is useful in preparing protective coatings and plastics when blended with an ethylenically unsaturated monomer and an addition polymerization initiator system.

3,725,462
PROCESS FOR THE MANUFACTURE OF SUBSTITUTED PHENYL ESTERS AND OPTIONALLY SUBSTITUTED PHENOLS

Manfred Boldt; Hans-Jurgen Arpe, both of Fischbach/Taunus, and Lothar Hornig, Frankfurt/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Sept. 19, 1968, Ser. No. 760,962

Claims priority, application Germany, Sept. 23, 1967, P 16 43 361.7

Int. Cl. C07c *69/14*

U.S. Cl. 260—479 R **6 Claims**

Manufacture of substituted phenyl esters and optionally substituted phenols by reaction of a substituted benzene with an aliphatic or cycloaliphatic carboxylic acid and oxygen in the presence of a noble metal of Group VIII of the Mendeleeff Periodic Table and/or a compound thereof.

3,725,463
PROCESS FOR AROMATIC SUBSTITUTION

Robert E. Robinson, Columbia, S.C., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 809,406, March 21, 1969, Pat. No. 3,578,716, which is a continuation-in-part of Ser. No. 631,917, April 19, 1967, abandoned, which is a continuation-in-part of Ser. Nos. 282,559, May 23, 1963, abandoned, and Ser. No. 282,594, May 23, 1963, abandoned, and Ser. No. 282,595, May 23, 1963, abandoned. This application Jan. 25, 1971, Ser. No. 109,628

Int. Cl. C07c *69/14*

U.S. Cl. 260—479 R **6 Claims**

Substituted aromatic derivatives are prepared by reacting an aromatic compound with a Group VIII platinum metal salt wherein the substituent introduced is derived from the anion portion of said Group VIII platinum metal salt.

3,725,464
PROCESS FOR METHOXYETHYL CARBAMATE

John Gregory De Marco, Bridgewater Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 23, 1971, Ser. No. 211,793

Int. Cl. C07c *125/04*

U.S. Cl. 260—482 C **5 Claims**

Anhydrous aluminum chloride is used as a catalyst for the reaction of 2-methoxyethanol with urea to give 2-methoxyethyl carbamate.

3,725,465
PREPARATION OF L-3,4-DIHYDROXY-PHENYL-ALANINE

Georg Stoeck; Heinz-Gunter Budka, both of Mannheim-Waldhof; Fritz Topfmeier, Heidelberg, and Wolf-Dietrich Gradel, Mannheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Aug. 3, 1971, Ser. No. 168,737

Claims priority, application Germany, Aug. 7, 1970, P 20 39 253.4

Int. Cl. C07c *101/08*

U.S. Cl. 260—501.11 **5 Claims**

To an aqueous solution of D,L-N-benzoyl-3,4-dimethoxy-phenyl-alanine there is added at least one amine selected from the group consisting of D(-)-threo-1-m-nitrophenyl-2-amino-propanediol-1,3, D(-)-threo-1-p-nitrophenyl-2-amino-propanediol-1,3 and D(-)-threo-1-phenyl-2-amino-propanediol-1,3 selectively to precipitate the amine salt of the L-stereoisomer which is separated, dissolved and acidified to precipitate the free L-stereoisomer which is saponified to L-3,4-dihydroxy-phenyl-alanine. The mother liquor from the initial precipitation containing the amine salt of the D-stereoisomer and some L-stereoisomer is acidified to precipitate the free stereoisomers, leaving the amine in the acidified solution. The precipitated free stereoisomers are racemized and recycled for recovery of additional L-stereoisomer. The acidified solution of amine is rendered alkaline and steps are taken to regenerate and recycle the free amine.

3,725,466
PROCESS FOR THE PREPARATION OF PHOSPHORUS COMPOUNDS HAVING AN ALKYL ETHER SUBSTITUENT AND INTERMEDIATES THEREFOR

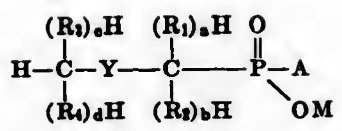
Eugene H. Uhing, Ridgewood, N.J., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 626,977, March 30, 1967, abandoned. This application April 6, 1970, Ser. No. 23,095

Int. Cl. C07f *9/30*; A01n *9/36*

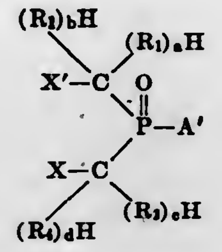
U.S. Cl. 260—502.4 R **2 Claims**

A process for the preparation of compounds of the formula:



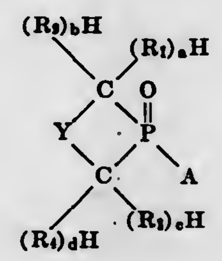
$$H-\underset{(R_4)_dH}{\overset{(R_3)_cH}{C}}-Y-\underset{(R_2)_bH}{\overset{(R_1)_aH}{C}}-\overset{O}{\overset{\|}{P}}\begin{matrix}-A\\ \diagdown OM\end{matrix}$$

wherein R_1, R_2, R_3, and R_4 are hydrocarbylene groups, *a*, *b*, *c*, and *d* are 1 or O, Y is a chalcogen, A is, hydrocarbyloxy, hydrocarbyl, or OM and M is an alkaline metal. Preparation is effected by reacting an organic phosphorus compound of the formula:



wherein X is halogen and X' is halogen or hydroxyl wherein A' is hydroxyl, hydrocarbyloxy, hydrocarbyl, or OM and M is an alkaline metal, with an amount greater than 2 moles of a basic compound MYH. The reaction is conducted at a temperature of from 0° to 150° C. A can also be hydroxyl when the final product is acidified subsequent to its preparation.

Novel intermediate cyclic ether compounds of the formula:



are also prepared by the same process by reacting the corresponding reactant wherein X' is hydroxyl and basic compound MYH is used in an amount of from about 1 to about 1.2 moles.

Preferred embodiments include X as chlorine, Y as oxygen, and M as sodium.

3,725,467
RECOVERY OF CALCIUM MAHOGANY SULFONATE

Frederick R. Chorney, 5703 Oliva St., Lakewood, Calif.

Filed March 23, 1970, Ser. No. 22,019

Int. Cl. C07b *13/00*

U.S. Cl. 260—504 A **5 Claims**

A by-product of the production of mahogany petroleum sulfonate is a filter cake comprising calcium mahogany sulfonate, lime in various forms, and a filter aid such as diatomaceous earth, generally containing about half its weight of mahogany sulfonate. This by-product is generally discarded. The invention provides a method for the economical recovery of the mahogany sulfonate by a process involving the addition of water and a strong acid having a soluble calcium salt, which permits stratification to take place. The so-formed slurry is subjected to the action of gravity as by standing or passing through a centrifuge or a hydrocyclone, which permits the calcium mahogany sulfonate to be recovered, and if desired, to be subsequently purified.

3,725,468
CARBOXYLATION OF CYCLOPENTADIENE

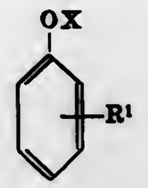
Edwin L. Patmore, Fishkill; William R. Siegart, and Harry Chafetz, both of Poughkeepsie, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 794,344, Jan. 27, 1969, Pat. No. 3,658,874. This application Nov. 10, 1971, Ser. No. 197,529

Int. Cl. C07c *51/00*, *61/28*

U.S. Cl. 260—514 G **5 Claims**

Method of carboxylating an organic compound of the group of $RC \equiv CH$, RCH_2CN, indene or cyclopentadiene where R is hydrocarbyl comprising contacting under anhydrous conditions in an inert atmosphere and in the presence of an inert, aprotic, dipolar, liquid solvent, said compound with a carbonated metal phenoxide, the metal phenoxide of the formula:



where X is sodium or potassium, R^1 is hydrogen or alkyl, and subsequently acidifying the resultant intermediate product to form the carboxylated product.

3,725,469
PROSTANOIC ACID DERIVATIVES

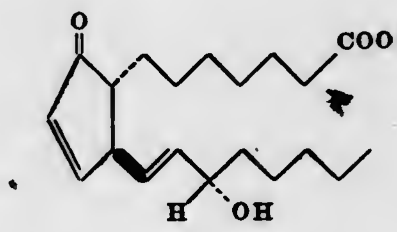
John W. Nelson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 555,236, June 6, 1966, abandoned, which is a continuation-in-part of Ser. No. 480,172, Aug. 16, 1965, abandoned. This application March 23, 1970, Ser. No. 22,037

Int. Cl. C07c *61/36*

U.S. Cl. 260—514 D **3 Claims**

This invention is a group of compounds of the formula:



wherein R_1 is hydrogen or a pharmacologically acceptable cation, essentially free of pyrogens, antigens, proteins, enzymes, cellular material, and other organic acids or salts thereof. These compounds are useful as vasodepressors and antisecretory agents.

3,725,470
AMINO ACID DERIVATIVES

Hermann Bretschneider, Innsbruck, Austria; Ado Kaiser, Neufrenkendorf, Switzerland, and Kraft Hohenlohe-Oehringen, Innsbruck, Austria, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 8, 1970, Ser. No. 35,876

Claims priority, application Switzerland, May 14, 1969, 7350/69; May 14, 1969, 7351/69; May 14, 1969, 7352/69

Int. Cl. C07c *65/02*, *101/00*

U.S. Cl. 260—519 **13 Claims**

A process for preparing 3,4-dihydroxy phenylalanine derivatives including novel 3,4-dihydroxy phenylalanine derivatives wherein the phenyl ring contains an additional substituent which can be hydroxy, lower alkyl, lower alkoxy, halogen, nitro or amino groups from a mono hydroxy phenyl alanine including novel intermediates in this process. The novel 3,4-dihydroxy-phenylalanine derivatives are useful as blood pressure lowering agents and as anti-parkinson agents.

3,725,471
PROCESS FOR PREPARING HYDROXYBENZOIC ACID

Anatoli Onopchenko, Monroeville; Johann G. D. Schulz, Pittsburgh, and Richard Seekircher, Cheswick, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed April 27, 1970, Ser. No. 32,336
Int. Cl. C07c *65/02*

U.S. Cl. 260—521 R **12 Claims**

A process for converting a benzenoid structure carrying a nuclear methyl substituent and a higher alkyl substituent to a hydroxybenzoic acid which involves heating the benzenoid structure with oxygen in the presence of cobaltic ions dissolved in a lower carboxylic acid solvent to selectively convert the methyl substituent on the benzenoid compound to a carboxylic acid group, heating the total reaction product containing the benzenoid compound in a basic system with molecular oxygen to convert the higher alkyl substituent to the corresponding hydroperoxide substituent and thereafter decomposing the benzenoid hydroperoxide compound to hydroxybenzoic acid and ketone.

3,725,472
PROCESS FOR PREPARING α,β-UNSATURATED CARBOXYLIC ACIDS

Akira Kawano, Tsurugaoka; Kozo Sakakibara, Oicho; Iwao Abe, Iruma-gun, and Takayuki Chonan, Saitama, all of Japan, assignors to Daicel Ltd., Osaka, Japan

Filed July 28, 1970, Ser. No. 59,002
Claims priority, application Japan, Aug. 5, 1969, 44/6180
Int. Cl. C07c *51/26, 57/04*

U.S. Cl. 260—530 N **5 Claims**

α,β-unsaturated carboxylic acid is prepared by oxidizing an α,β-unsaturated carbonyl compound in the vapor phase with a molecular oxygen-containing gas in the presence of a ternary catalyst of the formula:

$$Mo_aV_bSb_cO_d$$

wherein *a* is 12, *b* is 1 to 25, *c* is 0.1 to 10.0 and *d* is 38.65 under the condition that the other elements are completely oxidized. The ternary catalyst is supported on a carrier of sintered metallic aluminum made by shaping into granules metallic aluminum powder having a particle size of 6 to 150 mesh and then sintering the granules at a temperature in the range of 600° C. to 660° C.

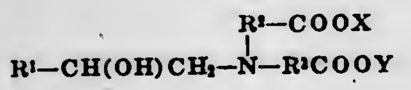
3,725,473
N-(2-HYDROXYHYDROCARBONYL) IMINODICARBOXYLATES

Bjorn Sundby, Piscataway; Edward J. Kenney, Bernardsville, and Harold E. Wixon, New Brunswick, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,992
Int. Cl. C07c *101/20*

U.S. Cl. 260—534 E **5 Claims**

Novel N-(hydroxyhydrocarbyl) iminodicarboxylates or the corresponding carboxylic acids are of the formula:



$$R^1\text{—CH(OH)CH}_2\text{—}\overset{\overset{\displaystyle R^2\text{—COOX}}{|}}{N}\text{—}R^3\text{COOY}$$

wherein R¹ is an aliphatic hydrocarbon radical of 4 to 20 carbon atoms, R² and R³ are divalent aliphatic or aromatic hydrocarbon radicals of 1 to 9 carbon atoms and X and Y are either hydrogen or salt-forming elements or radicals. In preferred embodiments of the invention, R¹ is a saturated radical of 12 to 20 carbon atoms, R² and R³ are identical alkylene radicals of 1 to 2 carbon atoms, and X and Y are the same monovalent metals, or lower alkanolamines e.g., sodium, triethanolamine.

The novel compounds are surface active and substantive to fibrous materials such as cotton, wool and synthetics. They are useful as detergents or as components of detergent compositions. Preferred compounds function very effectively as softening agents, either alone or in conjunction with other detergent composition materials. Additionally, they may be used as starting materials for the manufacture of corresponding N-oxides, which also may be employed as detergents and textile softeners.

3,725,474
METHOD FOR SEPARATING CITRIC ACID

Kiyoshi Nara, Kyoto; Kazuhiko Ohta, Osaka; Kazuyoshi Katamoto, Osaka; Osami Yamazaki, Osaka, and Hideo Fukuda, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sept. 25, 1970, Ser. No. 75,328
Claims priority, application Japan, Sept. 25, 1969, 44/76400
Int. Cl. C07c *59/16*

U.S. Cl. 260—535 P **2 Claims**

Citric acid is removed as tricalcium citrate from an aqueous fluid containing water soluble salts of citric acid and (+)-isocitric acid. To the aqueous fluid is added from about 0.4 to about 0.8 equivalent relative to citric acid of an inorganic calcium compound to precipitate the tricalcium citrate which is recovered from the fluid.

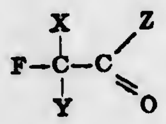
3,725,475
PROCESS OF PREPARING FLUORINE CONTAINING PERHALOGENCARBOXYLIC ACID FLUORIDES OR CHLORIDES

Heinrich Paucksch, Langenhagen; Joachim Massonne, Hannover; Horst Bohm, Thonse, and Gunter Fernschild, Hannover, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

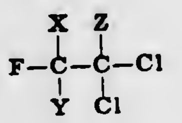
Filed April 6, 1970, Ser. No. 31,048
Claims priority, application Germany, April 5, 1969, P 19 17 630.8
Int. Cl. C07c *51/58*

U.S. Cl. 260—544 F **6 Claims**

Process of preparing fluorine containing perhalogencarboxylic acid fluorides or chlorides having the formula:



in which X if F, Cl or R, Y is F or R, Z is F or Cl and R is $CF_2X(CFX)_n$ wherein *n* is 0 to 7, by reacting a fluorochloroalkane having the formula:



$$F\text{—}\underset{\displaystyle Y}{\overset{\displaystyle X}{\overset{|}{\underset{|}{C}}}}\text{—}\underset{\displaystyle Cl}{\overset{\displaystyle Z}{\overset{|}{\underset{|}{C}}}}\text{—Cl}$$

in which X and Y are as above defined with SO_3 in a mol ratio of fluorochloroalkane to SO_3 of 1:1 to 1:1.5, comprising continuously conducting such fluoroalkane through a mixture of liquid SO_3 and SO_2Cl_2 and/or $S_2O_5Cl_2$ present in a volume ratio of 1:0.05 to 1:20 and to which there is preferably added catalytic amounts of $HgSO_4$ and/or concentrated H_2SO_4 at a temperature of between 0° and 200° C and during the reaction maintaining a part by volume of 5 to 95 percent SO_2Cl_2 and/or S_2O_5Clin the reaction mixture.

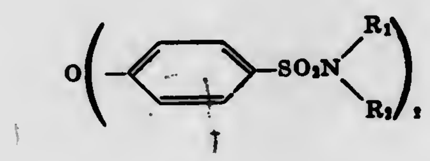
3,725,476
UNSATURATED AMIDES OF OXYBIS (BENZENESULFONIC ACID)

John C. Blackwood, Melrose; Edwin O. Hook, Marshfield, and Walter Beck, Bedford, all of Mass., assignors to Stepan Chemical Company, Northfield, Ill.

Filed Sept. 15, 1971, Ser. No. 180,850
Int. Cl. C07c *143/78*

U.S. Cl. 260—556 AR **7 Claims**

Unsaturated amides of oxybis(benzenesulfonic acid), particularly the mono, di, tri and tetraallyl or methallyl amides, are useful as cross-linking agents for polymeric materials, or as monomers or comonomers in producing allylic-type resins. Such unsaturated amides may be represented by the formula:



wherein

- R_1 is a C_3—C_{12} alkenyl radical wherein the terminal carbon atom has two hydrogen atoms and is bonded to the penultimate carbon atom by means of a double bond; and
- R_2 is a R_1 radical, a C_1—C_6 alkyl radical, a phenyl radical or hydrogen.

3,725,477
OXIMINO KETONES AND METHOD FOR MANUFACTURING AMINO ACIDS FROM SAID KETONES

Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Aug. 27, 1971, Ser. No. 175,727
Int. Cl. C07c *119/00*

U.S. Cl. 260—566 A **1 Claim**

Cycloalkane oximino ketones containing up to about 12 ring carbon atoms are prepared by reacting a cyclic hydrocarbon containing up to about 12 ring carbon atoms with hydroxyl amine and oxygen in the presence of a cuprous salt and ultra-violet radiation. The oximino ketones are oxidized to the hydroxamido alkanoic acid which is reduced catalytically to an amino acid. Cyclododecane is reacted in one embodiment with hydroxyl amine and oxygen in the presence of a cuprous salt and ultra-violet light to obtain 1-oximinocyclododecane-2-one which, in turn is oxidized to 12-hydroxamidododecanoic acid, this acid being reduced to 12-aminododecanoic acid. The amino acid is heated to obtain a polyamide which is used for the manufacture of fibers and molded articles, such as containers and the like.

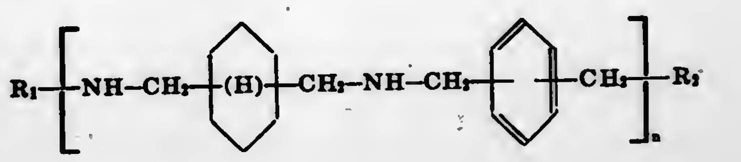
3,725,478
POLYAMINES OF XYLENED AMINES

Ernst Haaschke, Burghausen; Walter Fester, Konigstein/Taunus, and Franz Jakob, Hofheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt/Main, Germany

Filed Aug. 19, 1970, Ser. No. 65,293
Claims priority, application Germany, Aug. 26, 1969, P 19 43 253.2
Int. Cl. C07c *87/28*

U.S. Cl. 260—570.5 P **1 Claim**

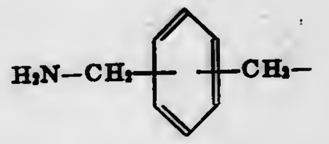
Polyamines of the formula



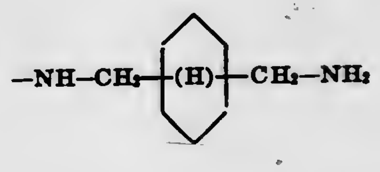
in which *n* represents a whole number of from 1 to 10, preferably

from 1 to 3,

R_1 represents H or



R_2 represents NH_2 or



and the linkages of the rings are meta- and/or para-linkages and, to a small extent, also ortho-linkages. These polyamines are preferably prepared by desaminating hydrogenation of at least one of the isomeric m- and p-xylylene diamines, optionally in admixture with a small amount of o-xylylene diamine; they are suitable, for example, as modification components for the preparation of film and fiber-forming polyamides.

The rings in the said polyamines may also contain low molecular weight alkyl-substituted groups; this means, of course, that the starting substances for the preparation of the polyamines carry corresponding alkyl-substituents.

3,725,479
BIS(4-AMINO-OR 4-SUBSTITUTED AMINO-3,5-DINITROPHENYL) DISULFIDE

William N. Cannon, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed April 20, 1970, Ser. No. 30,228
Int. Cl. C07c *87/62*

U.S. Cl. 260—576 **6 Claims**

Bis(hydroxy, amino, or substituted lower alkyl, alkenyl, or alkynylamino-3,5-dinitrophenyl)disulfide prepared by treating 4-chloro-3,5-dinitrophenyl thiocyanate with an alkali metal hydroxide, carbonate, acid carbonate, or nitrite, ammonium hydroxide, ammonia, or a primary or secondary lower aliphatic amine; useful as intermediates for the synthesis of herbicides.

3,725,480
ASHLESS OIL ADDITIVES

Thornton P. Traise, Chicago Heights; Roger W. Watson, Batavia, both of Ill., and Randel Q. Little, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 774,497, Nov. 8, 1968, Pat. No. 3,591,598. This application Oct. 15, 1970, Ser. No. 81,190

Int. Cl. C08g *9/04, 9/26, 9/34, 37/24, 37/18, 37/36*

U.S. Cl. 260—583 P **3 Claims**

This invention concerns the condensation product of an aldehyde reactant having more than one carbon atom and/or ketone reactant, formaldehyde, an alkylene polyamine, and an alkyl-substituted phenol. These compositions can be used as ashless alkaline additives for lubricating oils.

3,725,481
OLIGOMER COMPOSITION FROM ALKYL AMINE AND SULFUR CHLORIDES

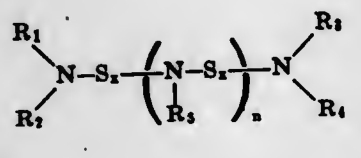
Kyung S. Shim, Dobbs Ferry, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 800,711, Feb. 19, 1969, abandoned. This application March 3, 1971, Ser. No. 120,731

Int. Cl. C08f *27/06;* **C07c** *85/00*

U.S. Cl. 260—583 EE **3 Claims**

An oligomer vulcanizing agent and products made therefrom are described herein. The oligomer composition has the following formula:



wherein R_1, R_2, R_3, R_4 and R_5 can each be selected from the lower alkyl group having one to 10 carbon atoms and x can range between 1 and 7, and n can range between 0.5 and 15.

3,725,482
PROPYLENE OXIDATION IN THE PRESENCE OF GOLD METAL

Noel W. Cant, and William K. Hall, both of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sept. 16, 1969, Ser. No. 858,531

Int. Cl. C07c *45/04*

U.S. Cl. 260—604 R **8 Claims**

Propylene is oxidized with oxygen to primarily acrolein by oxidation in the contact presence of gold metal.

3,725,483
A PROCESS FOR THE HYDROFORMYLATION OF OLEFINS

John F. Deffner, Glenshaw; Edmond R. Tucci, Pittsburgh; Helen I. Thayer, and John V. Ward, both of Oakmont, all of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Aug. 23, 1966, Ser. No. 574,305

Int. Cl. C07c *45/08*

U.S. Cl. 260—604 HF **8 Claims**

An Oxo process wherein an olefin is reacted with hydrogen and carbon monoxide in the presence of a cobalt carbonyl and a trioxadiphosphabicyclooctane, preferably in the presence of a trialkyl amine.

3,725,484
METHOD FOR OXIDIZING ALKYLATED AROMATIC COMPOUNDS

Ken Ito; Hiroshi Kaminaka, both of Toyonaka-shi; Norio Kotera, Amagasaki-shi; Shinji Yamamoto, Nishinomiya-shi; Iwao Dogane, Nishinomiya-shi; Kosuke Shigehiro, Nishinomiya-shi; Hiroshi Kuruma, Takarazuka-shi; Takashi Chinuki, Yoyonaka-shi; Hiroshi Yoshitake; Kenji Tanimoto, both of Minoo-shi; Shinichi Hasegawa, Amagasaki-shi, and Nobuki Kobayashi, Fukushima-ku, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Feb. 21, 1968, Ser. No. 707,304

Claims priority, application Japan, Feb. 25, 1967, 42/12159

Int. Cl. C07c *73/08*

U.S. Cl. 260—610 B **7 Claims**

Hydroperoxides of alkylaromatic compounds are prepared by contacting the alkylaromatic compounds having at least one alkyl or cycloalkyl substituent group having a tertiary carbon atom in the α-position with respect to the aromatic nucleus, with oxygen or a molecular oxygen-containing gas in the presence of 0.001 to 10 percent by weight of molybdenum disulfide at room temperature to 200°C. for 1 to 100 hours.

3,725,485
SEPARATION OF META AND PARA-CRESOL

Joseph C. Martini, Houston, Tex., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 809,947, March 24, 1969, Pat. No. 3,598,842, which is a continuation-in-part of Ser. No. 731,271, May 22, 1968, abandoned. This application Nov. 12, 1970, Ser. No. 89,123

Int. Cl. C07l *39/02*

U.S. Cl. 260—621 A **6 Claims**

A process is defined for the separation of para-cresol from admixture with meta-cresol by the selective condensation of meta-cresol with isobutyraldehyde using a catalyst comprising an aqueous solution of a hydrogen halide.

3,725,486
PROCESS FOR MAKING 1,1-DICHLORETHYLENE FROM 1,1,2-TRICHLORETHANE

William L. McCracken, Southfield; Wilbur H. Petering; Charles E. Kircher, Jr., both of Detroit, and Paul R. Pinchak, Saint Clair Shores, all of Mich., assignors to Detrex Chemical Industries, Inc., Detroit, Mich.

Filed May 23, 1969, Ser. No. 827,139

Int. Cl. C07c *21/20*

U.S. Cl. 260—654 D **9 Claims**

A dehydrochlorination process for the formation of 1,1-dichlorethylene from 1,1,2-trichlorethane in which an aqueous emulsion of 1,1,2-trichlorethane and an alkaline earth metal hydroxide is made to which there is added an aqueous solution of an alkali metal hydroxide in stoichiometric amount, thereby forming 1,1-dichlorethylene, which is continuously removed.

3,725,487
PREPARATION OF DIHALOALKANES AND RELATED PRODUCTS

Alexander F. MacLean; Charles C. Hobbs, Jr., and Edward F. Dougherty, all of Corpus Christi, Tex., assignors to Celanese Corporation of America, New York, N.Y.

Continuation of Ser. No. 473,807, July 21, 1965, abandoned. This application April 13, 1970, Ser. No. 31,880

Int. Cl. C07c *17/00*

U.S. Cl. 260—659 R **5 Claims**

Process for the preparation of an alpha-, omega-disubstituted alkane by reacting a vinyl compound such as ethylene with a chlorine, bromine, or cyanide ion in the presence of an inorganic symmetrical per oxygen compound and a metallic ion of Ni^{+2}, Co^{+2}, Mn^{+2}, Tb^{+3}, Nd^{+3}, Pr^{+3}, Fe^{+2}, Cu^{+2}, or Tl^{+1}.

3,725,488
MULTILITHIUM POLYMERIZATION INITIATORS

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 21, 1971, Ser. No. 108,612

Int. Cl. C07f *1/02*

U.S. Cl. 260—665 R **10 Claims**

Multilithium polymerization initiators are prepared by the metalation of multimethyl-substituted aromatic hydrocarbons with tertiary or secondary alkyl or cycloalkyllithium compounds in hydrocarbon media.

3,725,489
HYDROGENATION OF ALKENES EMPLOYING AN ORGANOMETALLIC HYDROGENATION CATALYST

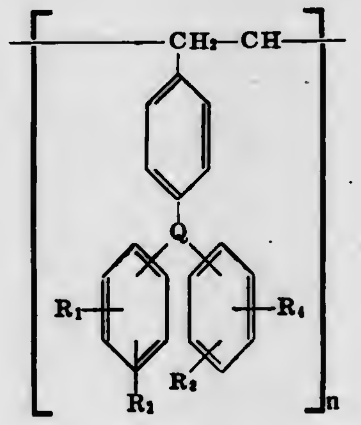
Robert Fuhrmann, Morris Plains, and Jan F. Van Peppen, Chester, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 2, 1969, Ser. No. 863,359

Int. Cl. C07c *5/02, 5/16, 9/00*

U.S. Cl. 260—666 P **3 Claims**

Complexes of rhodium, ruthenium, platinum, palladium, osmium, or iridium with polymers of the structure:



wherein Q is phosphorous, arsenic or antimony, and wherein R_1, R_2, R_3, and R_4 are independently hydrogen, C_1 to C_4 alkyl, C_1 to C_4 alkoxy or C_1 to C_8 dialkyl amino, and wherein n is 10 to 500, are potent catalysts for the hydrogenation of ethylenic or acetylenic double bonds.

3,725,490
PROCESS FOR SEPARATING DIMETHYL NAPHTHALENES COMPRISING 2,6-DIMETHYL NAPHTHALENE AS MAIN COMPONENT

Shizuo Nagahama; Keizo Shimada, and Seizi Kurozumi, all of Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

Filed March 30, 1971, Ser. No. 129,621

Claims priority, application Japan, Dec. 22, 1970, 45/116410; March 30, 1970, 45/26748; March 31, 1970, 45/27301; March 31, 1970, 45/27302; April 1, 1970, 45/27697; Oct. 3, 1970, 45/96047; Nov. 12, 1970, 45/99074

Int. Cl. C07c *7/02*

U.S. Cl. 260—674 N **10 Claims**

A process for separating dimethyl naphthalenes the main component of which is 2,6-dimethyl naphthalene in the form of their complexes with m-nitrobenzoic acid, which comprises contacting a dimethyl naphthalene isomer mixture comprising at least 2,6-dimethyl naphthalene or a hydrocarbon mixture containing such dimethyl naphthalene isomer mixture with m-nitrobenzoic acid, to thereby form a mixture of complexes of the dimethyl naphthalenes with m-nitrobenzoic acid the main component of which is a complex of 2,6-dimethyl naphthalene with m-nitrobenzoic acid, and separating the complexes in the solid state from the reaction mixture.

3,725,491
PROCESS FOR RECOVERING HEAT FROM GAS MIXTURES OBTAINED BY THE THERMAL CRACKING OF HYDROCARBONS

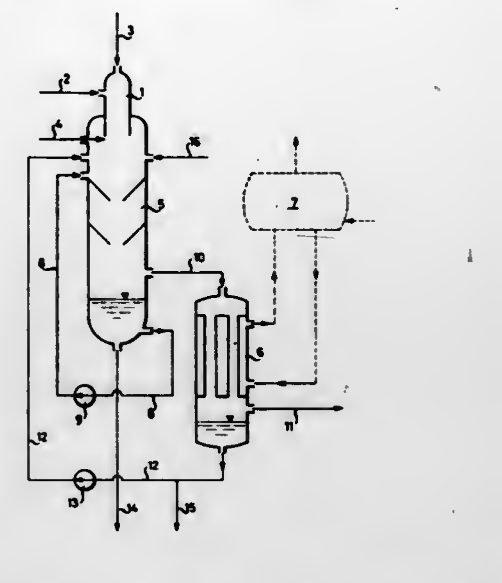
Hartman Voigt; Erich Schneck; Klaus Gunther, and Klaus Noha, all of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Feb. 16, 1971, Ser. No. 115,319

Claims priority, application Germany, Feb. 18, 1970, P 20 07 269.9

Int. Cl. C07c *11/24*

U.S. Cl. 260—679 R **2 Claims**



In a process for the production of acetylene and/or lower olefins from hydrocarbons the enthalpy of cracked gas is recovered in two stages by an oil wash. In the first stage of the oil wash using temperatures within the boiling range of the wash oil and approximately atmospheric pressures, a cycle of high-boiling oil components is maintained and condensed lower boiling oil components which are recycled from the second wash stage are directly vaporized by the cracked gases. The saturated mixture of oil vapor and cracked gases formed in the first stage is fed to the second wash stage and condensed therein by indirect cooling.

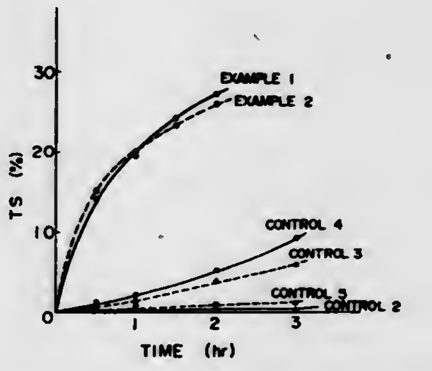
3,725,492
PROCESS FOR THE PREPARATION OF LIQUID POLYBUTADIENE

Keizo Ukita, and Toshimasa Sadamori, both of Tokuyama, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

Filed Oct. 26, 1970, Ser. No. 83,832

Int. Cl. C08f *3/18*

U.S. Cl. 260—680 B **8 Claims**



A process for the preparation of liquid polybutadiene of an average molecular weight of 1,000 – 20,000 containing at least 70 percent of cis-1,4 configuration, which comprises initiating the polymerization of butadiene in a 15 – 70 weight percent butadiene solution in butene-1, in the presence a catalyst system obtained by mixing together an organoaluminum compound of the formula R_nAlCl_{3-n}, wherein R is an aliphatic hydrocarbon residue of 1 – 6 carbon atoms and *n* is a number from 1 to 2, an organonickel compound and water.

3,725,493
OXIDATIVE DEHYDROGENATION

Roy L. Stine, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 677,719, Oct. 24, 1967, abandoned. This application Aug. 24, 1970, Ser. No. 66,559

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 E **7 Claims**

Hydrocarbons are oxidatively dehydrogenated by contacting them with an oxygen-containing gas and a catalyst and following the dehydrogenation, a hydrogen-containing gas is added to the effluent of the contacting under conditions suitable to cause a reaction between the hydrogen and residual oxygen or oxygenated compounds in the effluent.

3,725,494
TWO-STAGE DEHYDROGENATION PROCESS FOR PRODUCING DIOLEFINS

Dennis L. Ripley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 2, 1971, Ser. No. 168,464

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 E **6 Claims**

A two-stage dehydrogenation process for producing diolefins from monoolefins wherein the monoolefin stream is first dehydrogenated under non-oxidative conditions, followed by an oxidative dehydrogenation with an iron phosphate catalyst. Isoprene is produced from a feedstream containing isoamylenes by a two-stage dehydrogenation process wherein the necessity of removing hydrogen from the non-oxidative effluent is eliminated through a selective second stage oxidative dehydrogenation stage.

3,725,495
CATALYTIC STEAM CRACKING OF HYDROCARBONS AND CATALYSTS THEREFOR

Johannes Wrisberg, Gammel Holte; Kjeld Jorn Andersen, Tulstrup, and Erik Mogensen, Ramlose, all of Denmark, assignors to Haldor Frederik Axel Toksoe, Frydenlundsvej Vedbaek, Denmark and Fluor Corporation, Los Angeles, Calif.

Filed Dec. 17, 1970, Ser. No. 99,271

Claims priority, application Great Britain, Dec. 23, 1969, 62,552/69

Int. Cl. C07c *3/34*; **C10g** *11/04*

U.S. Cl. 260—683 R **19 Claims**

Steam cracking of saturated hydrocarbons to form unsaturated hydrocarbons, such as ethylene, propylene, butylenes, butadiene, and aromatics, is carried out in the presence of a catalyst comprising a major proportion of oxides of zirconium or hafnium associated with active alumina together with oxides of chromium, manganese or iron and promoted with compounds of alkali metals and alkaline earth metals. High conversion efficiences are achieved at high space velocities and without carbon deposition.

3,725,496
OLEFIN DISPROPORTIONATION PROCESS

Tadeusz P. Kobylinski, Cheswick, and Harold E. Swift, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed March 17, 1971, Ser. No. 125,439

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **10 Claims**

A process for converting, by disproportionation, an olefin, particularly an alpha-olefin, to a product containing a mixture of olefins of higher and lower carbon number than at least one of the olefins in the olefin charge, which involves contacting the olefin charge under disproportionation reaction conditions including a temperature from 15°C. to 120°C. with a catalyst composition containing molybdenum, cobalt-molybdenum, tungsten or rhenium on an alumina containing support. The catalyst is initially pretreated with an olefin having two to 10 carbon atoms at a temperature higher than the reaction temperature.

3,725,497
PROCESS FOR THE OLIGOMERIZATION OF ETHYLENE

Takaaki Arakawa, 2-4, 1-chome, Muronaki-cho; Kenji Saeki, 12-57, 5-chome, Shozoku-cho, both of Iwakuni-shi, Yamaguchi; Yoshikuni Sato, 12-35, 2-chome, Shinmachi, Otake-shi, Hiroshima, and Yoriya Kitazawa, 213-3, Oaza Waki, Waki-mura, Kuga-gun, Yamaguchi, all of Japan

Division of Ser. No. 862,029, Sept. 29, 1969, Pat. No. 3,652,705. This application Sept. 20, 1971, Ser. No. 182,231

Claims priority, application Japan, Oct. 3, 1968, 43/71612; Oct. 3, 1968, 43/71613; Oct. 3, 1968, 43/71614; Oct. 3, 1968, 43/71616; Feb. 25, 1969, 44/13605; Feb. 25, 1969, 4/13606; March 25, 1969, 44/22043

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D **6 Claims**

A process for the preparation of higher olefins by oligomerization of ethylene, which comprises contacting ethylene with a catalyst in a solvent at temperatures ranging from –30° – +80° C., the catalyst being prepared by the steps of reacting titanium tetrachloride with at least one ketone electron donor, and mixing the reaction product with an aluminum alkyl halide component containing 1.8 – 2.8 bonded halogen atoms per one aluminum atom.

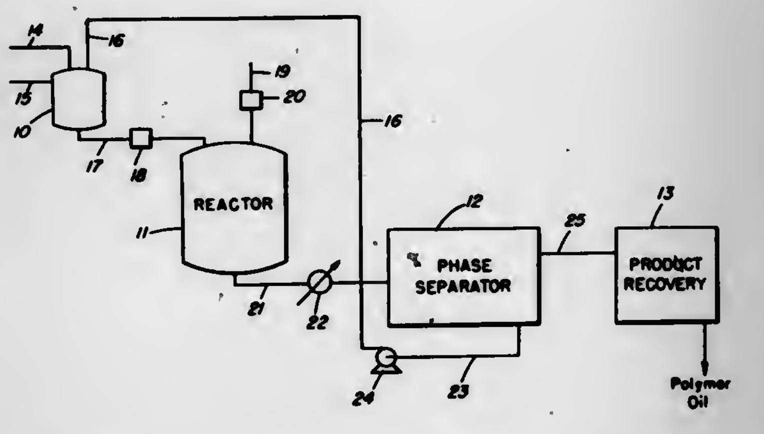
3,725,498
RECYCLABLE LIQUID ALUMINUM CHLORIDE AND BROMIDE COMPLEXES

James A. Brennan, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 745,415, July 17, 1968, abandoned, which is a continuation-in-part of Ser. No. 598,564, Oct. 17, 1966, abandoned, which is a continuation-in-part of Ser. No. 334,394, Dec. 30, 1963, abandoned. This application May 27, 1970, Ser. No. 41,709

Int. Cl. C07c *3/18*

U.S. Cl. 260—683.15 B **3 Claims**



Solutions of aluminum chloride or aluminum bromide, in molar excess, in methyl, ethyl, and propyl esters of C_2–C_{10} normal alkanoic acids, having a total of at least five carbon atoms, remain stable for at least 3 days. These solutions are useful catalysts for reactions, such as olefin polymerization and can be recovered and recycled.

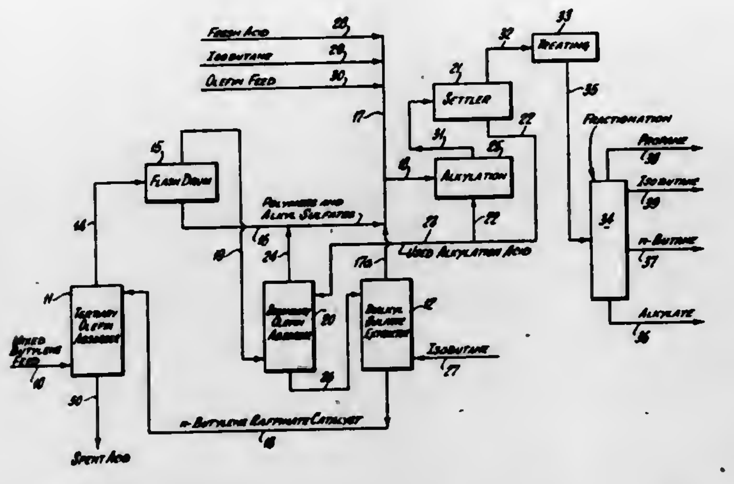
3,725,499
ALKYLATION OF SECONDARY OLEFINS DERIVED FROM HYDROCARBON COMPOSITIONS CONTAINING TERTIARY OLEFINS

Arthur R. Goldsby, Chappaqua, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 740,761, June 27, 1968, Pat. No. 3,591,523. This application June 25, 1970, Ser. No. 49,693. The portion of the term of this patent subsequent to March 24, 1987, has been disclaimed.

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.62 **8 Claims**



Alkylation process wherein tertiary olefins are removed from a mixed olefin feed comprising tertiary and secondary olefins by catalytic polymerization and distillation, the remaining secondary olefins are reacted in excess with strong sulfuric acid until no further reaction occurs, the resulting dialkyl sulfates are extracted from the olefin-acid reaction product leaving a raffinate acid phase which is used as the catalyst for the polymerization of the tertiary olefins. The dialkyl sulfate-isoparaffin extract solution and the tertiary olefin polymers are passed to a sulfuric acid alkylating zone where they are alkylated with isoparaffin.

3,725,500
CATALYST MIXTURE OF ALUMINUM HALO BROMIDE AND SULFUR OXO HALIDE AND ITS USE IN ISOMERIZATION

George M. Kramer, Berkeley Heights, N.J., assignor to Esso Research and Engineering Company

Continuation of Ser. No. 862,046, Sept. 29, 1969, abandoned. This application Sept. 28, 1971, Ser. No. 184,613

Int. Cl. C07c *5/28*; **B01j** *11/74*

U.S. Cl. 260—683.68 **5 Claims**

A catalyst composition comprising (1) aluminum halo bromides such as aluminum bromide and (2) sulfur oxo halides such as sulfurylfluorochloride stabilizes high alkyl carbonium ion concentrations. The catalyst is useful in isomerization processes for converting normal paraffins and naphthenes to isoparaffins and highly branched naphthenes.

3,725,501
INTERCROSSING RESIN/CURING AGENT ADHESIVE SYSTEMS

Ronald D. Hilbelink, Dayton, and Gavin H. Peters, Lebanon, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 60,962, July 2, 1970, Pat. No. 3,657,379, which is a division of Ser. No. 840,060, July 8, 1969, abandoned. This application Jan. 28, 1972, Ser. No. 221,836

Int. Cl. C08g *47/10, 45/06, 39/10*

U.S. Cl. 260—824 R **2 Claims**

Novel adhesive systems are disclosed which pertain to combinations of more than one curable resin and the curing agents corresponding thereto. The disclosed adhesive systems comprise separated reactive components wherein: (a) a first reactive polymeric material is combined with a curing agent for a second reactive polymeric material to yield one component and; (b) the second reactive polymeric material is combined with a curing agent for the first reactive polymeric material to form another component. Several embodiments relating to intercrossing combinations of the two components are disclosed. In all of the embodiments, when the reactive materials from two components are combined, the curing agents react with their respective, intercrossed, reactive polymeric material to yield strong adhesive bonds. Of particular interest in this invention are embodiments of the adhesive systems which pertain to a rapidly curing adhesive and especially to such an adhesive for use underwater.

3,725,502
WATER-SOLUBLE OR INHERENTLY WATER-DISPERSIBLE CONDENSATION PRODUCTS

Willy Bernheim, Diedorf bei Augsburg, and Hans Deiner, Neusass bei Augsburg, both of Germany, assignors to Chemische Fabrik Pfersee GmbH, Augsburg, Germany

Filed July 13, 1970, Ser. No. 54,590

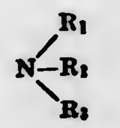
Claims priority, application Germany, July 19, 1969, P 19 36 886.6

Int. Cl. C08g *30/14*

U.S. Cl. 260—830 TW **6 Claims**

Water-soluble or inherently water-dispersible condensation products which cross link with heating are prepared by reacting with heating, and preferably in the presence of water-miscible solvents having boiling points above approximately 50°;

a. about 1 mole of urea, guanidine, derivatives of guanidine or the products of the decomposition of guanidine derivatives; with
b. about 0.25 – 2.5 moles of an epoxy compound containing in the molecule on the average more than one epoxy group; and
c. about 0.1 – 2.0 moles of an amine of the general formula



wherein R_1 represents an alkyl group having 2–4 carbon atoms or an alkanol group having 2–5 carbon atoms, R_2 and R_3 represent hydrogen, an alkyl group having 1–4 carbon atoms or an alkanol group having 2–5 carbon atoms, wherein R_2 and R_3 represent identical or different groups and at least two reactive hydrogen atoms present in the molecule;

and terminating the reaction by the addition of a volatile acid and water. The condensation products are particularly useful as curing agents for dialkyl and alkyl hydrogen polysiloxanes and mixtures thereof, wherein about 10-45 percent of the condensation products, based on the organo polysiloxanes, are employed as the curing agents.

3,725,503
POLYAMIDES WITH DISPERSED OXYALKYATED GRAFTED POLYAMIDES

Joachim Kunde, Frankenthal; Gerhard Ramlow, Ludwigshafen; Guenter Buechler, Heidelberg; Heinz Pohlemann, Limburgerhof, and Hans Hendus, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed June 3, 1971, Ser. No. 149,778

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 TW **8 Claims**

Filaments or fibers of synthetic linear polyamides containing highly oxyalkylated polyamides. The filaments or fibers are notable for their excellent antistatic properties and their soil-hiding effect.

3,725,504
FAST CURING POLYCHLOROPRENE ACRYLIC ADHESIVE

William J. Owston, Edinboro, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Dec. 30, 1970, Ser. No. 102,884

Int. Cl. C08f *15/00, 19/00*

U.S. Cl. 260—876 R **12 Claims**

An adhesive composition capable of curing in a matter of minutes in the presence of free radical vinyl polymerization catalysis consisting essentially of: A, from about 10 to about 52 percent, by weight, of a syrupy copolymer of polychloroprene, methylmethacrylate and styrene; B, from about 7 to below about 15 percent of methacrylic acid, and C, from about 40 to about 83 percent of a solution of an acrylate polymer in methylmethacrylate.

3,725,505
PYRENE CONTAINING POLYMERS PREPARED BY ANIONIC POLYMERIZATION

James J. O'Malley, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 28, 1970, Ser. No. 59,016

Int. Cl. C08f *7/02, 19/00*

U.S. Cl. 260—879 **15 Claims**

An anionic polymerization process for forming homopolymers of vinylpyrene and block copolymers containing at least one polyvinylpyrene segment is disclosed. Block copolymers having novel structures are also described.

3,725,506
MANUFACTURE OF COPOLYMERS OF STYRENE AND α-METHYLSTYRENE

Herbert Bolte, Frankenthal; Paul Wittmer, Landau; Eduard Heil, Limburgerhof, and Herbert Willersinn, Ludwigshafen, all of Germany, assignors to Badische Anilin-&Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhineland Pfalz, Germany

Filed Nov. 16, 1971, Ser. No. 199,350

Claims priority, application Germany, Nov. 16, 1970, P 20 56 197.1

Int. Cl. C08f *19/02, 19/04*

U.S. Cl. 260—88.2 C **3 Claims**

Continuous process for the manufacture of copolymers of styrene and α-methylstyrene having a substantially statistical distribution of the monomers by anionic polymerization at low temperatures with thorough mixing of the reactants.

The process is characterized in that at least part of the heat of reaction is removed by evaporative cooling and that the monomers are fed to the polymerization zone at different points.

3,725,507
PROCESS FOR THE PREPARATION OF VINYL CHLORIDE GRAFT POLYMERS

Satoshi Nakano; Keiichi Azuma; Seiichiro Oba; Samon Wakizaka, and Sunichi Nakamura, all of Tokuyama, Japan, assignors to Tokuyama Soda Kabushiki Kaisha and Sun Arrow Chemical Co., Ltd., Yomaguchi-ken, Japan, part interest to each

Continuation-in-part of Ser. No. 878,948, Nov. 21, 1969, abandoned. This application Oct. 27, 1971, Ser. No. 192,895

Claims priority, application Japan, Nov. 26, 1968, 43/86083

Int. Cl. C08f *37/18, 29/24*

U.S. Cl. 260—896 **4 Claims**

A process for the preparation of a vinyl chloride polymer composition, which comprises (a) dissolving an oil-soluble polyalkylene oxide such as polypropylene oxide, or a copolymer of propylene oxide in the 1-butene oxide or epichlorohydrin, in a monomeric mixture consisting of 99.5 – 90 parts of a vinyl chloride monomer and 0.5 – 10 parts of a comonomer such as ethylene, propylene or 1-butene, the amount of said oil-soluble polyalkylene oxide being 0.5 – 5 percent by weight based on the monomeric mixture, (b) emulsifying or suspending the resulting solution in water, (c) polymerizing the emulsified or suspended solution and (d) recovering the resulting polymer composition. The vinyl chloride polymer composition obtained has very high impact strength even at low temperatures, and same good transparency and other physical properties as polyvinyl chloride.

3,725,508
THIOL DERIVATIVES OF OLEFIN-MALEIC ANHYDRIDE COPOLYMERS

Walter Stamm, Tarrytown, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 770,798, Oct. 25, 1968, Pat. No. 3,629,205. This application March 18, 1971, Ser. No. 76,342

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 C **9 Claims**

Olefin-maleic anhydride copolymers are provided wherein a portion of the anhydride moieties are converted to thio anhydride moieties. Other thio derivatives are also provided including the thio acids. These compounds are effective as stabilizers in vinyl type resins, particularly vinyl chloride polymers and can also serve as chelating agents.

3,725,509
FIRE RETARDANT THERMOPLASTIC POLYMER COMPOSITIONS OF A METHYL METHACRYLATE POLYMER WITH A COPOLYMER OF A HALOGENATED ETHYLENICALLY UNSATURATED MONOMER AND A PHOSPHOROUS CONTAINING VINYL MONOMER

Paul Kraft, Spring Valley, and Siegfried Altscher, Monsey, both of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed June 23, 1970, Ser. No. 49,204

Int. Cl. C08f *29/24*

U.S. Cl. 260—899 **10 Claims**

Self-extinguishing, thermoplastic polymer compositions are prepared by the intimate admixture of a thermoplastic polymer with a copolymer of a halogen containing ethylenically unsaturated monomer and a phosphorus containing vinyl monomer, particularly a bis(hydrocarbyl)vinylphosphonate. The thus modified thermoplastic polymers display a high degree of flame retardance without any substantial changes in their physical properties including, for example, their clarity and hardness and the resulting compositions may be safely employed in any application requiring their possible exposure to fire or high temperatures.

3,725,510
PHOSPHITE-PHOSPHATES

James L. Dever, Lewiston, and James J. Hodan, Williamsville, both of N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 5, 1970, Ser. No. 9,048

Int. Cl. C07f *9/12;* **C07d** *105/04;* **C08f** *45/58*

U.S. Cl. 260—927 R **9 Claims**

Trivalent phosphorus halides and tertiary phosphites react readily with a para-quinone to produce arylene phosphite-phosphate derivatives useful as flame retardants for organic materials.

3,725,511
1-(2-CYANOETHOXY)-2,2-DICHLOROVINYL PHOSPHATE ESTERS

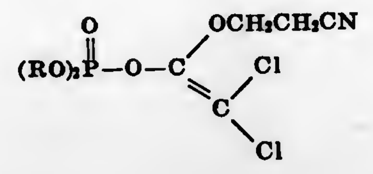
Stanley T. D. Gough, Branchburg, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed April 13, 1970, Ser. No. 27,993

Int. Cl. A01n *9/36;* **C07f** *9/08*

U.S. Cl. 260—940 **3 Claims**

Compound having the formula:



wherein R is alkyl (C_1–C_4), haloalkyl (C_1–C_4), alkenyl (C_2–C_4), phenyl, alkylphenyl, or halophenyl, are new compounds that are useful as insecticides.

3,725,512
O-LOWERALKYL-S-(2-OXOPROPYL-1) PHOSPHONODITHIOATES

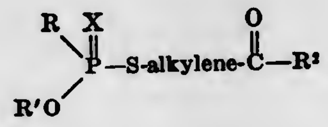
Edward Nelson Walsh, Chicago Heights, Ill., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 381,509, July 9, 1964, Pat. No. 3,564,013. This application Sept. 28, 1970, Ser. No. 76,301

Int. Cl. C07f *9/16*

U.S. Cl. 260—946 **4 Claims**

Phosphonated mercaptals and mercaptoles corresponding to the formula



wherein "alkylene" means a divalent saturated aliphatic radical having from one to three carbon atoms; R is selected from the group consisting of lower alkyl and phenyl and R′ is lower alkyl; X is selected from the group consisting of sulfur and oxygen; R^2 is lower alkyl of from one to three carbon atoms.

3,725,513
PHOSPHORIC ACID ESTERS

Ernst Beriger, Neuallschwil, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

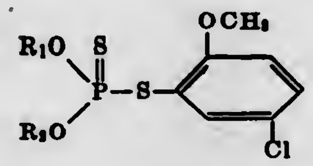
Filed April 27, 1970, Ser. No. 32,414

Claims priority, application Switzerland, April 28, 1969, 6444/69

Int. Cl. C07f *9/08*

U.S. Cl. 260—951 **3 Claims**

Dithiophosphates of the formula



wherein R_1 and R_2 represent alkyl radicals of up to four carbon atoms are effective pesticidal agents, preferably for combating insects, nematodes and members of the order Acarina. The dithiophosphates may be used in pesticidal preparations.

3,725,514
O-ARYL O-ALKYL S-ORGANO PHOSPHOROTHIDATES

Hiroshi Tsuchiya, Ashiya-shi; Kunio Mukai, Nishinomiya-shi; Akio Kimura, Ikedo-shi; Suminori Kawano, Minoo-shi; Keimei Fujimoto, Kobe; Toshiaki Ozaki, Yamamoto, Sigeo; Yositosi Okuno, Toyanaki-shi; Katsutoshi Tanaka, Takarazuka-shi; Tadashi Ooishi, and Hisami Takeda, both of Minoo-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

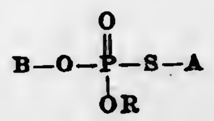
Filed Nov. 3, 1969, Ser. No. 873,503

Claims priority, application Japan, Nov. 12, 1968, 43/82963; Nov. 14, 1968, 43/83366

Int. Cl. C07f *9/18;* **A01n** *9/36*

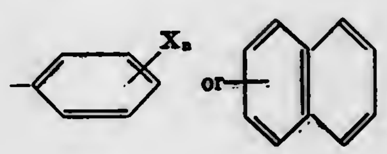
U.S. Cl. 260—964 **5 Claims**

Novel organic phosphorothiolates, which have both strongly insecticidal and fungicidal activities and low toxicity to mammals, having the formula,



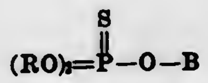
$$B—O—\overset{O}{\underset{OR}{\overset{\|}{\underset{|}{P}}}}—S—A \qquad (I)$$

wherein R is lower alkyl; A is alkyl, alkenyl, alkinyl, haloalkyl or phenylalkyl; B is a group of the formula,



X being phenyl, phenylalkyl, alkoxy, dialkylamino, acylamido or halogen, provided that at least one X is group other than halogen atom, and *n* being an integer of 1 – 5.

These organic phosphorothiolates can be obtained by reacting a thionophosphate having the formula,

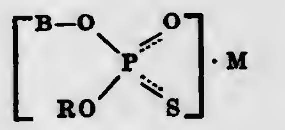


$$(RO)_2=\overset{S}{\overset{\|}{P}}—O—B \qquad (II)$$

wherein R and B are as defined above, with an alkali hydrosulfide having the formula,

$$M \cdot SH \qquad (III)$$

wherein M is an alkali metal, thereby forming a thiophosphate having the formula,



(IV)

wherein B, R and M are as defined above, and then condensing said salt with a halide having the formula,

$$Y \cdot A \qquad (V)$$

wherein Y is halogen; and A is as defined above.

3,725,515
PROCESS FOR THE PREPARATION OF DIALKYL PHOSPHITES FROM ALCOHOLS AND PHOSPHOROUS ACID

Kurt Schimmelschmidt, Bad Homburg, and Hans-Jerg Kleiner, Bad Soden, Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed March 4, 1970, Ser. No. 16,609
Int. Cl. C07f *9/08*
U.S. Cl. 260—978 **7 Claims**

Improved process for the preparation of dialkyl phosphites by means of refluxing phosphorous acid with alcohols under azeotropic separation of the reaction water formed, wherein primary or secondary straight-chained or branched aliphatic alcohols having at least 4 carbon atoms are reacted in an excess of at least 45 percent over the stoichiometrical amount with phosphorous acid in the absence of an inert solvent until the amount of acid in the reaction mixture is as low as possible. In comparison to known processes the dialkyl phosphites are obtained according to the instant process in higher yields and with higher purity. The dialkyl phosphites are valuable intermediates. Owing to their high purity, they are especially suitable as starting materials for such reactions catalyzed by radicals.

3,725,516
MIXING PROCESS AND EXTRUSION OF SOLID PROPELLANTS

Martin H. Kaufman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Continuation of Ser. No. 361,612, April 17, 1964. This application June 11, 1968, Ser. No. 738,721
Int. Cl. C06b *21/02*
U.S. Cl. 264—3 B **4 Claims**

An improved extrudable, high energy solid propellant composition consisting essentially of the copolymer of vinylidene fluoride and perfluoropropylene (Viton), an inorganic oxidizer such as ammonium perchlorate, potassium perchlorate or ammonium nitrate, and a metal powder such as aluminum, beryllium, magnesium or zirconium. This composition is extrudable into any suitable shape and has a very high percentage theoretical maximum density so as to be practical for utilization in rocket motors for propulsion.

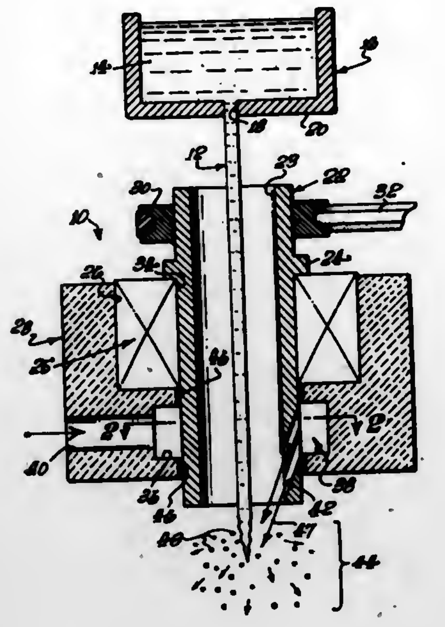
3,725,517
POWDER PRODUCTION BY GAS ATOMIZATION OF LIQUID METAL

Albert R. Kaufmann, Lexington, Mass., assignor to Whittaker Corporation

Filed Nov. 26, 1971, Ser. No. 202,351
Int. Cl. B01j *2/04*
U.S. Cl. 264—12 **7 Claims**

This method comprises striking a stream of liquid metal with a jet of gas which is rotated about the liquid metal stream so that it strikes the latter at an angle of between about 5° and about 90° with respect to the flow axis of the liquid stream to break up the liquid metal into small drops which solidify as a powder. The width of the gas jet is preferably less than that of the liquid metal stream. The rotational velocity of the gas jet about the liquid metal stream is sufficient to circle the liquid stream at least once before the latter moves out of the gas impingement zone.

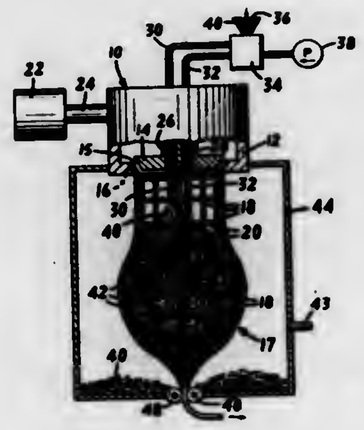
The apparatus employed comprises a vertically-aligned tube which is rotatably mounted in a stationary housing which, together, define an annular plenum chamber located concentrically about the tube. The wall of the rotatable tube defines an aperture which is angled between about 5° and about 90° with respect to the axis of the tube so that a stream of gas flowing therethrough is centered on the vertical axis of the rotatable tube along which liquid metal is gravity flowed from a pour cup positioned above the rotatable tube. As the latter is rotated, a gas is flowed into the plenum chamber and through the angled tube aperture to strike the liquid metal stream flowing downwardly through the tube. The resulting fine metal particles are collected after solidification in a chamber placed below the rotatable tube.



3,725,518
METHOD FOR PRODUCING A TUBULAR NET PRODUCT

Bernard J. Gaffney, Stillwater, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Filed Sept. 29, 1970, Ser. No. 76,417
Int. Cl. B29d *7/24, 9/08;* **B32b** *5/16*
U.S. Cl. 264—24 **15 Claims**

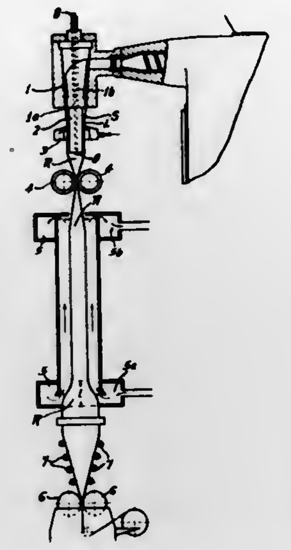


A method is provided for producing a polymer product by extruding a tubular net and applying a finely divided material to the net to form a new product. In one embodiment the finely divided material may at least partially block the openings of the net. When the openings are partially blocked, the product may be biaxially oriented by applying a pressure differential between the interior and the exterior of the product immediately after extrusion. The pressure differential is maintained by the partial blockage of the openings in the extruding net to permanently stretch and orient the net.

3,725,519
PROCESS FOR THE CONTINUOUS PRODUCTION OF MULTIAXIALLY STRETCHED TUBULAR FILMS OF LINEAR POLYESTERS

Walter Seifried, and Ludwig Klenk, both of Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Continuation of Ser. No. 433,640, Feb. 18, 1965, abandoned. This application Nov. 18, 1969, Ser. No. 871,686
Claims priority, application Germany, Feb. 21, 1964, R 52170
Int. Cl. B29d *7/24;* **B29c** *25/00;* **B29d** *23/04*
U.S. Cl. 264—25 **5 Claims**

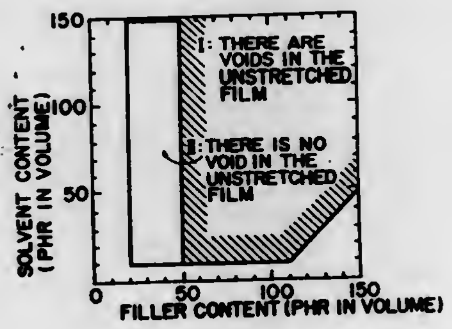


This invention relates to a process for the continuous production of a multiaxially stretched tubular film of a thermoplastic linear polyester having a low melt viscosity by extruding a melt of the polyester in a substantially vertically downward direction from an annular die at a speed v_0 onto an interior calibrating core of a diameter smaller than that of the die while stretching the melt in the longitudinal direction, cooling the melt to form a substantially unoriented tube which engages the core in a gas-tight manner, conveying the tube at a speed $v_1 > v_0$ to a heated stretching zone in which the tube is heated to stretching temperature, stretching the tube by means of a further increase in linear speed $v_2 > v_1$ and by increasing the pressure in the tube, and cooling the tube.

3,725,520
METHOD FOR PREPARING A POROUS SYNTHETIC THERMOPLASTIC FILM OR SHEET

Shigemasa Suzuki, Tadashi, and Kozo Nakamura, Iwakunishi, both of Japan, assignors to Nippon Ekika Seikei Kabushiki Kaisha and Sanyo Pulp Kabushiki Kaisha, both of Tokyo, Japan

Filed April 24, 1970, Ser. No. 31,560
Int. Cl. B29d *7/24, 27/00*
U.S. Cl. 264—41 **11 Claims**



A method for preparing a porous film or sheet, which comprises admixing together 100 parts by volume of at least one thermoplastic resin, 5 – 150 parts by volume of a solvent, and 20–50 parts by volume of a filler, uniformly dispersing the solvent and the filler in said resin to thereby form a stock, molding a film or sheet from the resulting stock, biaxially stretching the film or sheet at a suitable temperature between the glass transition temperature of the resin and the flow temperature of the resin, and substantially removing the solvent from the film or sheet during the period between the molding and the end of the stretching without foaming.

3,725,521
METHOD OF MAKING STEEL POWDER PARTICLES OF SELECT ELECTRICAL RESISTIVITY

Hilmer F. Ebling, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

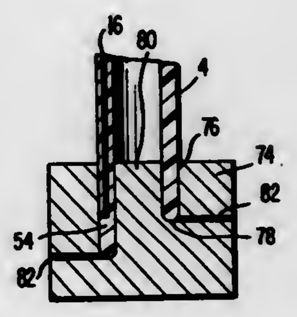
Filed Oct. 29, 1970, Ser. No. 85,240
Int. Cl. B22f *9/00*
U.S. Cl. 264—104 **5 Claims**

A method of making a compressed steel powder article having high resistivity to be used as an electrical component. Steel powder having a particle size finer than 28 mesh is treated with a non-aqueous solution of an organic thermosetting resin to coat the particles with the resin. After evaporation of the solvent and curing of the resin, the coated particles are compressed to form a non-sintered, compressed steel powder article having high electrical resistivity. The compressed article can be subsequently heated to an elevated temperature to stress relieve the article and stabilize the resistivity.

3,725,522
METHOD OF MANUFACTURE OF BALLOON-TYPE CATHETERS

David S. Sheridan, Argyle, and Isaac S. Jackson, Greenwich, both of N.Y., assignors to David S. Sheridan, Argyle, N.Y.

Division of Ser. No. 860,278, Oct. 23, 1969, Pat. No. 3,615,793. This application July 12, 1971, Ser. No. 161,878
Int. Cl. B29c *1/14*
U.S. Cl. 264—138 **4 Claims**



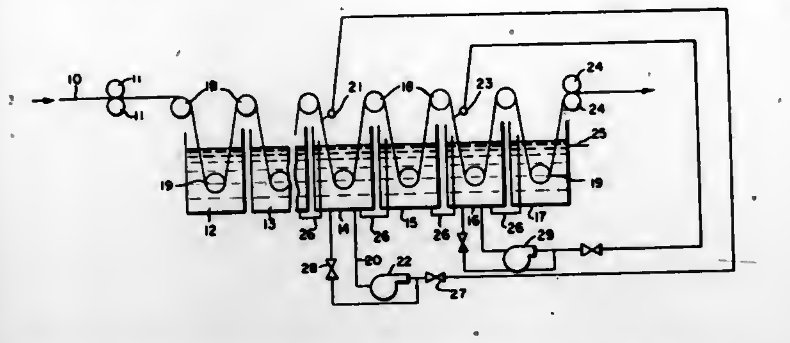
The distal ends of plastic catheters, particularly endotracheal tubes, that have both a major lumen and a secondary lumen in the wall are finished to seal the secondary lumen at its distal end and create an angled distal end on the catheter with a smooth convex surface tip by a molding operation preformed in a vented mold structured to maintain the full opening of the major lumen in the finished distal end.

3,725,523
PROCESS FOR EXTRACTING AND DRAWING A TOW

Braxton C. Bowen, Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 3, 1971, Ser. No. 168,616
Int. Cl. D02j *1/22;* **D06c** *1/00;* **D01f** *3/06*
U.S. Cl. 264—210 F **3 Claims**

An improved process for extracting impurities from synthetic filaments which comprises passing the filaments in the form of a tow, which is simultaneously being drawn, through a series of extraction baths, wherein a portion of the liquor from any given bath is recycled and sprayed with high impact on the fibrous tow at a point above the surface of the bath.



3,725,524
RHENIUM AND MOLYBDENUM SEPARATION FROM SULFIDE ORES

Brice E. Martin, and Martin B. MacInnis, both of Towanda, Pa., assignors to GTE Sylvania, Incorporated, Seneca Falls, N.Y.

Filed May 19, 1972, Ser. No. 255,011
Int. Cl. C01g *39/00, 47/00;* **C22b** *49/00, 61/00*

U.S. Cl. 423—49 **5 Claims**

A process is disclosed for the initial removal of rhenium and other metallic impurities from a sulfide bearing molybdenite ore. A relatively small amount of the molybdenum remains with the rhenium while a major portion is dissolved in water. The rhenium and this portion of the molybdenum are recovered from the other metallic impurities. The process does not evolve sulfur dioxide thus eliminates a potential air pollution problem. The process comprises reacting the ores with at least about 15 percent excess of the amount of alkali metal carbonate theoretically required to convert the molybdenum and sulfur in the ore to water soluble compound under controlled temperatures, leaching 95 percent of the molybdenum from the resulting fusion mass, oxidizing the leached fusion mass, treating the oxidized mass with water to extract the rhenium and molybdenum from the other metallic impurities and recovering the rhenium and molybdenum.

3,725,525
HAIR AND NAIL HARDENING PROCESS

Bernhard Joos, Kurfirstenstrasse 23, Zurich, Switzerland

Continuation-in-part of Ser. No. 708,514, Feb. 27, 1969, abandoned. This application July 1, 1970, Ser. No. 51,678
Int. Cl. A61k *7/04, 7/06, 27/00*

U.S. Cl. 424—61 **5 Claims**

Cosmetic compositions and methods of applying the same are provided wherein the compositions contain 1–15 percent of dimethylolalkyleneurea or dimethylolalkylenethiourea as the primary active ingredient dispersed in a compatible carrier conducive to the application of the cosmetic composition in cosmetically effective amounts.

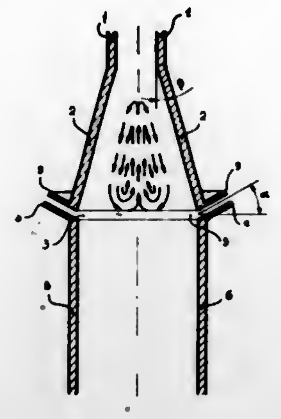
3,725,526
PROCESS FOR PRODUCING PIGMENT QUALITY TITANIUM DIOXIDE

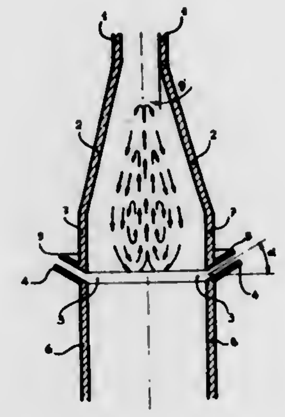
Giovanni Pieri; Aldo Ducato, both of Novara, Italy; Llewellyn John Held, Palmerton, Pa., and Gianfranco Bedetti, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy and The New Jersey Zinc Co., New York, N.Y.

Filed Aug. 17, 1970, Ser. No. 72,561
Claims priority, application Italy, Aug. 29, 1969, 21066 A/69
Int. Cl. C01g *23/04*

U.S. Cl. 423—613 **3 Claims**

A reactor for producing finely divided particles of rutile titanium dioxide including a cylindrical reaction chamber, an outwardly diverging frusto-conical duct having an oxidizing gas inlet at its narrow upstream end and a length of between 0.5 and 10 times the diameter of the reaction chamber, an annular slot for introducing titanium tetrachloride into the device at an angle of 0° to 45° to a perpendicular to the longitudinal axis of the reactor, the slot being located downstream of the divergent duct, the reaction chamber being downstream of the slot and coaxial with the divergent duct. The invention is also related to a method of producing titanium dioxide by oxidizing titanium tetrachloride in a reactor of the type above described.





3,725,527
PROCESS FOR RECOVERING PURE AQUEOUS SOLUTION OF FERRIC CHLORIDE AND AQUEOUS SOLUTION OF METAL CHLORIDES FREE OF FERRIC CHLORIDE FROM FERROUS METAL MATERIAL

Toshio Yamamura; Yuichi Omote; Shiro Sato, and Tomochika Hiyama, all of Kanai, Japan, assignors to Kanto Denka Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 858,173, Sept. 15, 1969, Pat. No. 3,622,269. This application Oct. 21, 1971, Ser. No. 191,489
Claims priority, application Japan, Sept. 19, 1968, 43/67838; Sept. 20, 1968, 43/68070
Int. Cl. C01g *49/10*

U.S. Cl. 423—139 **3 Claims**

Iron material consisting of iron metal having associated minor amounts of other noniron metals is reacted with hydrochloric acid solution to form an aqueous solution of metal chlorides, which solution is oxidized with oxygen or chlorine, or mixtures thereof and then the oxidized solution containing ferric chloride is subjected to liquid-liquid contact with an alkyl, aryl or aralkyl ketone or ether having four to 10 carbon atoms so that the ferric chloride is transferred to the organic extract phase, leaving the noniron metal chlorides in the aqueous raffinate, and back-extracting the organic extract with an aqueous medium and separating the thus obtained aqueous extract solution of ferric chloride.

3,725,528
QUANTITATIVE ION EXCHANGE PROCESS FOR CLAY

Amos Banin, Rehovot, Israel, assignor to Yissum Research Development Company of the Hebrew University of Jerusalem

Filed Feb. 18, 1971, Ser. No. 116,640
Int. Cl. C01b *33/28*

U.S. Cl. 423—112 **16 Claims**

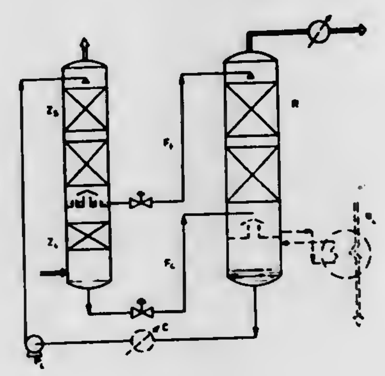
A quantitative ion exchange process for preparing modified clay is disclosed. Clay such as montmorillonite is converted (1) to an acid-free hydrogen-clay by use of an anion (hydroxide) exchange resin; or (2) to another cationic form such as lithium-clay by use of an anion (hydroxide) exchange resin and an equivalent amount of the exchanging cation.

3,725,529
PROCESS FOR ELIMINATING CO_2 AND/OR H_2S FROM GASEOUS MIXTURES

Guiseppe Giammarco, and Paolo Giammarco, both of Venice, Italy, assignors to Vetrocoke Cokapuania S.p.A., Venezia Porto Marghera and Guiseppe Giammarco, Venice, Italy, part interest to each

Filed July 14, 1969, Ser. No. 841,526
Claims priority, application Italy, July 13, 1968, 52432 A/68; April 23, 1969, 51554 A/69; July 18, 1968, 52497 A/68; April 19, 1968, 51504 A/68
Int. Cl. B01d *53/34*

U.S. Cl. 423—223 **5 Claims**



A process for eliminating CO_2 and/or H_2S from gaseous mixtures containing them by means of an absorbent aqueous solution circulated between an absorption phase and a regeneration phase. Gases produced at very high temperature, as in steam reforming or shift conversion, are placed in direct, intimate contact with the absorbing solution to provide heat for regeneration purposes rather than supplying the heat to conventional reboilers of the regeneration columns in the prior art. The process insures that the heat yielded at the absorption step does not interfere with the chemical absorption of CO_2 by subdividing the absorber into two zones, in which the chemical absorption of CO_2 is effected in one and the heat from the gas is given to part of the solution (or to another aqueous liquid) in the other zone. As a result, the solution is heated to a high temperature so that on expanding the solution at the regeneration step, a sufficient quantity of steam for regeneration is evolved.

The temperature of this solution at the absorption step is prevented from rising excessively be removing from the absorber part of the solution which is expanded and thereby cooled. This cooled solution is then returned to an intermediate level in the absorber in order to absorb further quantities of CO_2 and further quantities of heat.

The solution from the absorber which has been heated by the hot gases is expanded by a gradual progressive flash which is of considerably higher efficiency than the conventional simple instantaneous flashing.

3,725,530
METHOD OF REMOVING MERCURY VAPOR FROM GASES

Buntaro Kawase, Tokyo; Iwao Kojima, and Kunio Otani, both of Kawasaki, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Jan. 18, 1971, Ser. No. 107,576
Claims priority, application Japan, June 23, 1970, 45/54089
Int. Cl. B01d *53/34*

U.S. Cl. 423—210 **7 Claims**

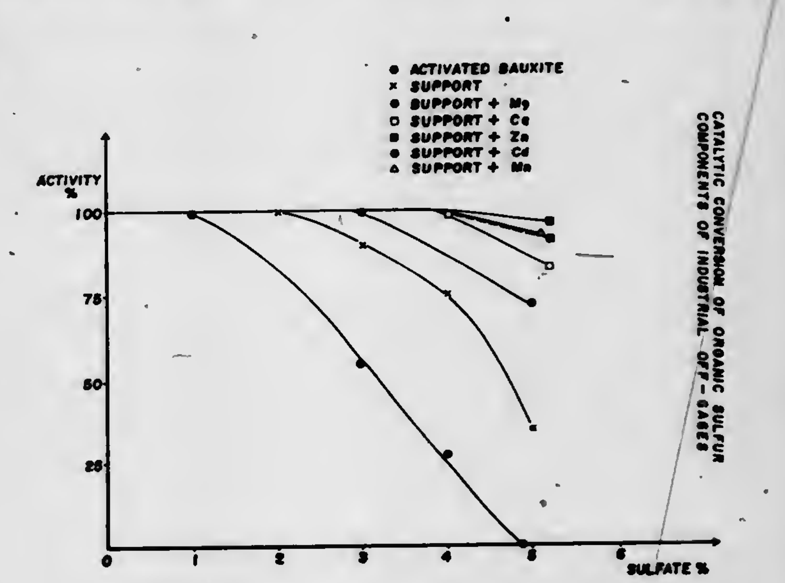
Mercury vapor contained in various gases, e.g., byproduct hydrogen gas generated by a mercury electrolytic cell producing caustic soda, is removed by a simple and effective method which comprises washing the mercury vapor contaminated gas with a dilute acid solution containing persulfate ions.

3,725,531
CATALYTIC CONVERSION OF ORGANIC SULFUR COMPONENTS OF INDUSTRIAL OFF-GASES

Michael J. Pearson, Pleasanton; Orrie C. Olsen, Walnut Creek, and James F. Murphy, Danville, all of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Feb. 22, 1971, Ser. No. 117,393
Int. Cl. B01d *53/34*

U.S. Cl. 423—244 **10 Claims**



A process wherein industrial off-gases containing organic sulfur components are contacted with an alumina base catalyst to convert these organic sulfur components to easily removable compounds such as CO_2 and S. The catalysts employed comprise an alumina base support in combination with at least one metal selected from strontium, calcium, magnesium, zinc, cadmium, barium and molybdenum employed as promoters. The catalysts have significantly increased service life due to the high resistance to sulfate poisoning.

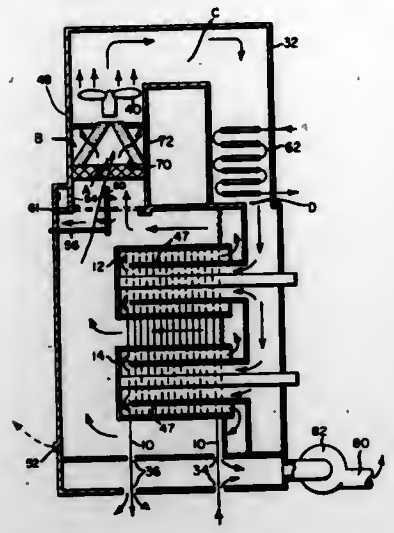
3,725,532
PROCESS FOR REMOVING OXIDIZABLE FUMES FROM HEATED AIR USED TO TREAT TEXTILE FIBERS

Harold Fernandes, and William Henry Walsh, both of Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 812,506, Sept. 18, 1968, abandoned, which is a continuation-in-part of Ser. No. 706,816, Feb. 20, 1968, abandoned. This application Sept. 9, 1970, Ser. No. 70,653
Int. Cl. B01d *53/34*

U.S. Cl. 423—245 **3 Claims**

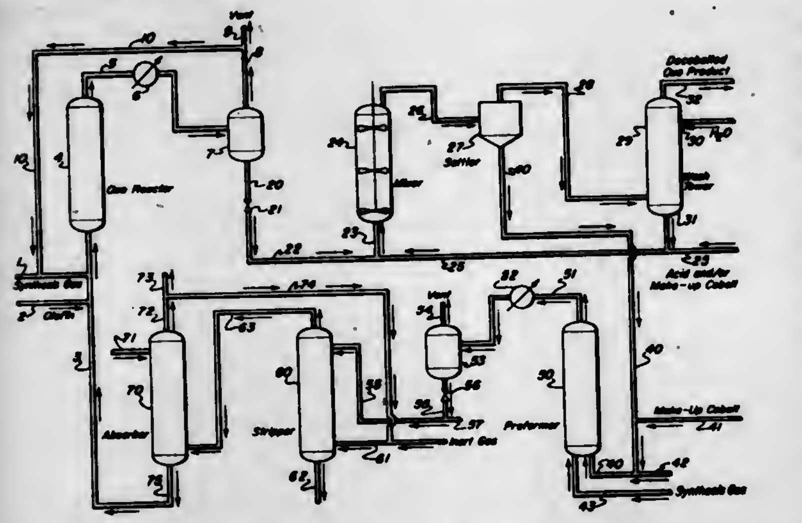
In a process for heat treating textile filamentary structures having a textile finish containing oxidizable components wherein a portion of said components are undesirably vaporized, the improvement for removing at least a portion of said vaporized components comprising directing said components through a gas-permeable structure having an oxidation catalyst for said textile finish in a finely dispersed form on the structure to oxidize said components to a more desirable state at about the same temperature range used to treat the textile structure. Specific oxidation catalysts disclosed are palladium and platinum. The process can operate at extremely high space velocities making the process feasible from an economic viewpoint.



3,725,533
BORON CARBIDE FIBER PRODUCTION
James Economy, Eggertsville, and Vlado I. Matkovich, Williamsville, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.
Filed Nov. 14, 1969, Ser. No. 877,036
Int. Cl. C01b *31/36*; C04b *35/52, 35/58*
U.S. Cl. 423—291 **9 Claims**

Boric oxide fibers having a maximum diameter of about 10 microns are heated in an ammonia atmosphere to about 350°–600° C at a rate of temperature rise of up to about 5,000° C/hr. to produce ammonia-treated fibers consisting essentially of B, N. O and H. The ammonia-treated fibers are heated in an amine atmosphere at about 600°–1,000°C to produce amine-treated fibers consisting essentially of B, C, N, O and H and containing at least about 15% C. The amine-treated fibers may be heated at about 2,000°–2,350°C in an inert atmosphere to produce boron carbide fibers.

3,725,534
METHOD OF FORMING COMPLEX COBALT CARBONYL COMPOUNDS
John C. Reisch, Cranford, N.J., assignor to Esso Research and Engineering Company
Continuation-in-part of Ser. No. 774,452, Jan. 18, 1968, abandoned. This application March 10, 1969, Ser. No. 814,493
Int. Cl. C01g *1/04, 51/02*
U.S. Cl. 423—417 **12 Claims**

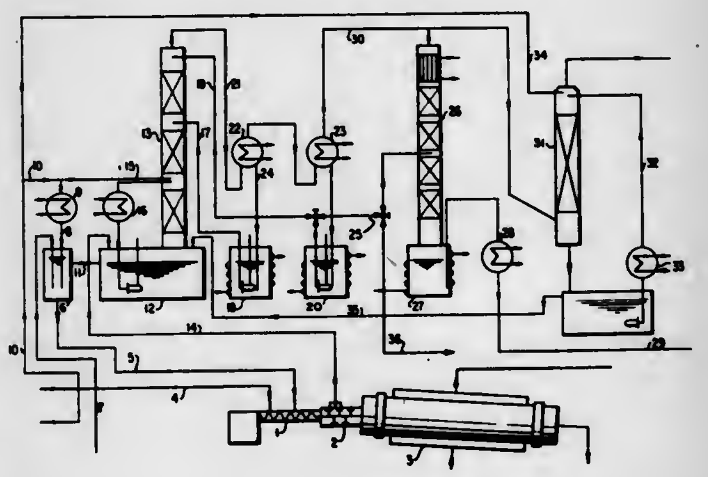


Complex cobalt carbonyl compounds containing a cobalt tetracarbonyl ($Co(CO)_4^-$) anion are formed in the aqueous phase through the reaction of a cobalt material with carbon monoxide in the presence of hydrogen, a noble metal catalyst and a promoter. Useful promoters include alkali and alkaline earth metal compounds, in particular alkali and alkaline earth salts of weak acids, ammonium compounds, amine compounds and quaternary ammonium compounds. The complex cobalt carbonyl compounds thus formed can be converted to useful oxonation catalysts by contacting the same with a mineral acid.

3,725,535
MANUFACTURE OF BASIC CUPRIC COMPOUNDS
James E. Barker, Freehold, N.J., assignor to Cities Service Company, New York, N.Y.
Filed Oct. 22, 1970, Ser. No. 83,214
Int. Cl. C01b *31/24*
U.S. Cl. 423—419 **4 Claims**

Copper chemicals can be prepared from cuprous oxide by aerating a suspension of cuprous oxide in an appropriate medium. Thus, tribasic copper sulfate, a fungicide, can be prepared by aerating a suspension of cuprous oxide in an aqueous solution of copper sulfate.

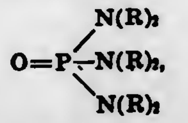
3,725,536
METHOD OF THE CONTINUOUS PRODUCTION OF HYDROFLUORIC ACID
Renato Gentili, Rothausstrasse, Muttenz, Switzerland
Continuation-in-part of Ser. No. 708,310, Feb. 26, 1968, Pat. No. 3,574,557. This application Nov. 13, 1970, Ser. No. 89,270
Int. Cl. C01b 7/22; C01f *11/46*
U.S. Cl. 423—485 **3 Claims**



A method for the continuous production of hydrofluoric acid by the purification and condensation of the hot reaction gases created by the reaction between fluorspar and sulphuric acid, comprising leading the hot reaction gases, already freed from dust, to a scrubbing and stripping column where recycled washing acid absorbs heat and impurities, and from which the gases strip at the same time hydrogen fluoride. The still hot gases are then led to a scrubbing section, employing first impure hydrofluoric acid and then pure hydrofluoric acid, which absorbs further impurities in exchange for which pure hydrogen fluoride is stripped. The cooled gases go then to a fractional condensation stage, where substantial amounts of hydrofluoric acid of industrial purity are collected and volatile impurities, with some hydrogen fluoride are bled off to conventional absorption with fresh sulphuric acid, which HF-laden gas is then led to the scrubbing and stripping column where it absorbs heat and further impurities and from which the hot incoming reaction gases strip hydrogen fluoride. The hot washing acid then continuously overflows to the mixing tank and supplies the acid required for the continuous reaction producing the hydrofluoric reaction gases.

3,725,537
PROCESS FOR THE OXIDATION OF HYDROGEN SULFIDE TO ELEMENTARY SULFUR
Gerhard Schulze, Ludwigshafen, and Wolfgang Heck, Viernheim, both of Germany, assignors to Badische Anilin-Soda-Fabrik Aktiengesellschaft, Ludwigshafen am/Rhine, Germany
Filed Feb. 19, 1971, Ser. No. 117,093
Int. Cl. C01b *17/04*
U.S. Cl. 423—575 **8 Claims**

In the oxidation of hydrogen sulfide with oxygen or sulfur dioxide in a solvent, there is used as solvent a triamide of orthophosphoric acid of the general formula



$$O=P(N(R)_2)_3,$$

where R denotes a hydrogen atom and/or an alkyl group having up to 3 carbon atoms.

3,725,538
PRODUCTION OF CARBON FROM WASTE MATERIALS
John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah
Filed April 20, 1970, Ser. No. 29,987
Int. Cl. C01b *31/02*
U.S. Cl. 423—449 **2 Claims**

A waste materials processing system and method sometimes involving material recycling, which converts solid waste materials, such as household garbage, demolition debris, and so forth, to usable products such as carbon, ash as lightweight aggregate, metals, both ferrous and non-ferrous, and inert fill material. Various methods of separation techniques are applied to separate combustibles from non-combustibles, ferrous materials from non-ferrous materials, lights from heavies, and liquid from solids, to accomplished desired results. Floatation techniques are relied upon to accomplish essential separations as hereinafter described.

3,725,539
PREPARATION OF ALKALINE EARTH METAL TITANATE
Stanley F. Spangenberg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed April 28, 1971, Ser. No. 138,340
Int. Cl. C01g *23/00*
U.S. Cl. 423—598 **7 Claims**

An alkaline earth metal titanate is prepared by reacting an aqueous solution of titanium tetrachloride, an alkaline earth metal anion source, and a hydroxyl ion source to produce an alkaline earth metal titanate precipitate which is separated from the residual aqueous solution.

3,725,540
COLOR AND ODOR STABILIZED DRY AEROSOL ANTIPERSPIRANT
Errol H. Wahl, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed July 30, 1970, Ser. No. 59,691
Int. Cl. A61k *7/00*
U.S. Cl. 424—46 **1 Claim**

Dry aerosol antiperspirant compositions containing hexachlorophene and/or perfumes which are subject to deterioration and are stabilized by the incorporation of a small amount of citric acid.

ERRATUM

For Class 424—61 see:
Patent No. 3,725,525

3,725,541
TREATMENT OF DIARRHEA USING AN INSOLUBLE HOMOPOLYMER OF VINYLPYRROLIDONE
Andre Queuille, Noisey-Le-Sec, and Raymond Larde, Coubron, both of France
Continuation of Ser. No. 738,844, June 21, 1968, abandoned. This application Jan. 12, 1971, Ser. No. 105,967
Claims priority, application France, June 23, 1967, 67111715
Int. Cl. A61k *27/00*
U.S. Cl. 424—80 **2 Claims**

Novel anti-diarrhea and anti-ulcergenic compositions comprising an effective amount of a water-insoluble polymer or copolymer of vinylpyrrolidone and a pharmaceutical carrier.

3,725,542
INTRAMUSCULAR VACCINATION PROGRAM AND VACCINE AGAINST RHINOPNEUMONITIS AND PROCESS FOR PREPARING IT
Anton Mayr, Munich; Kurt Wagener, Hannover; Johann Ditrich Adolf Heinrich Pette, deceased, Munich (by Christiane Wilhelmine Pette, administratrix), and Klaus Petzoldt, Freiburg/Breisgau, all of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg/Lahn, Germany
Continuation-in-part of Ser. No. 166,260, July 26, 1971, which is a continuation of Ser. No. 804,742, March 4, 1969, abandoned. This application Jan. 24, 1972, Ser. No. 220,456
Claims priority, application Germany, March 6, 1968, P 16 92 043.7
Int. Cl. C12k *9/00, 7/00, 5/00*
U.S. Cl. 424—89 **4 Claims**

Method of preparing a vaccine effective against equine rhinopneumonitis which comprises attenuating rhinopneumonitis virus, after initial cultivation, by continuous passage through primary cell cultures of tissues not originating in *equidae*, e.g. piglet kidney cell cultures, until it has lost pathogenicity for the horse. A parenterally administrable vaccine prepared in this manner. A method for immunizing horses and an intramuscular vaccination program against equine rhinopneumonitis in horses.

3,725,543
SYNERGISTIC ANTIBIOTICS
Edward Alexander Konopka, Murray Hill, N.J., and Justus Melchior Gelzer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Continuation-in-part of Ser. No. 81,112, Oct. 20, 1970, which is a continuation-in-part of Ser. No. 13,788, Feb. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 809,967, March 24, 1969, Pat. No. 3,644,616. This application Dec. 8, 1971, Ser. No. 206,185
Int. Cl. A61k *21/00*
U.S. Cl. 424—114 **6 Claims**

Rifamycines or their semisynthetic derivatives, in combination with other antibiotics selected from oligosaccharides, tetracyclines, amphenicols, macrolides or peptides exhibit synergistic effects against pathogens.

3,725,544
FUNGICIDE FOR PROTECTING WOOD
Paul Raff, Ludwigshafen; Wolfgang Reuther, Heidelberg; Harro Petersen, Frankenthal, and Ernst-Heinrich Pommer, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Land Rhineland-Pfatz, Germany
Filed Dec. 9, 1969, Ser. No. 883,639
Int. Cl. A01n *11/00*
U.S. Cl. 424—154 **6 Claims**

A fungicide for protecting wood comprising an aqueous solution of an alkali metal hydroxide, a metal hydroxide forming hydroxo anions, and an alkali metal salt of ammonium salt of N-nitroso-N-cyclohexylhydroxylamine, and a process for protecting wood against fungus attack by treatment with this fungicide.

3,725,545
ENHANCEMENT OF ANTIBODY PRODUCTION BY NUCLEIC ACID-POLYCATION COMPLEXES

Roland Maes, C.P.F.A., Caixa Postal 589-ZC-00, Rio De Janeiro, Brazil

Filed Feb. 3, 1971, Ser. No. 112,372

Int. Cl. C12r *5/00*

U.S. Cl. 424—180 8 Claims

Complex substances capable of enhancing the production of antibodies when introduced in conjunction with an antigen into an animal host are produced by reacting single-stranded or multi-stranded nucleic acid polymers with cationically charged polymers having a molecular weight between about 10^3 and 10^8 in specified proportions, e.g., 50 parts of nucleic acid polymer to 1 part to 500 parts cationic polymer by weight.

3,725,546
CERTAIN PHOSPHORODITHIOLATES AS INSECTICIDES AND FUNGICIDES

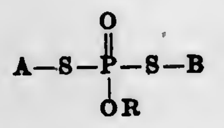
Hiroshi Tsuchiya, Ashiya; Kunio Mukai, Nishinomiya; Akio Kimura, Takarazuka; Keimei Fujimoto, Kyoto; Toshiaki Ozaki; Sigeo Yamamoto, both of Toyonaka; Yositosi Okuno, Nishinomiya; Taizo Ogawa, Minoo; Toshiyuki Wakatsuki, Kyoto, and Yoshihiko Nishizawa, Nara, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 690,725, Dec. 15, 1967, abandoned. This application Aug. 5, 1970, Ser. No. 61,468

Int. Cl. A01n *9/36*

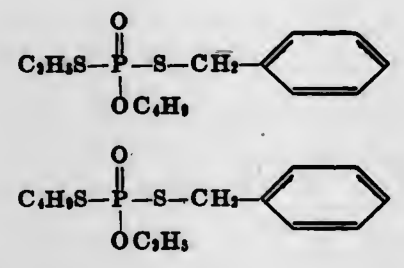
U.S. Cl. 424—225 6 Claims

Method for controlling insects and fungi, in which the insects and fungi are contacted with a phosphorodithiolate of the formula,

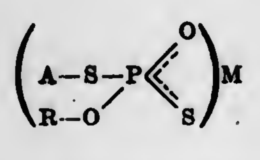


$$A-S-\overset{\overset{O}{\|}}{\underset{\underset{OR}{|}}{P}}-S-B$$

wherein R is a lower alkyl; A is a lower alkyl, etc.; and B is phenylalkyl, etc. Two typical examples of the phosphorodithiolates are shown by the formula



The compounds can be prepared by condensing a dithioate of the formula,



$$\left(\begin{matrix}A-S-P\overset{\cdot\cdot O}{\underset{\cdot\cdot S}{<}}\\ R-O\diagup\end{matrix}\right)M$$

wherein A and R are as mentioned above and M is an alkali metal or ammonium group, with a halide of the formula,

B · Hal

wherein B is as mentioned above and Hal is a halogen.

3,725,547
SYNERGISTIC ANTIBACTERIAL COMBINATION

John A. Kooistra, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 8, 1970, Ser. No. 79,271

Int. Cl. A01n *9/00*

U.S. Cl. 424—245 1 Claim

Antibacterial compositions containing a combination of the zinc salt of 1-hydroxy-2-pyridinethione and 2,4,4′-trichloro-2′-hydroxydiphenyl ether, in a ratio of from about 9:1 to about 1:9 respectively, said combination possessing a synergistic activity permitting use at low concentrations.

3,725,548
SUBSTITUTED INDENYL ACETIC ACIDS IN THE TREATMENT OF PAIN, FEVER OR INFLAMMATION

Tsung-Ying Shen, Westfield, N.J.; Richard B. Greenwald, Framingham, Mass.; Howard Jones, Holmdel, N.J.; Bruce O. Linn, Somerville, N.J., and Bruce E. Witzell, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 33,891, May 1, 1970, Pat. No. 3,654,349, which is a continuation-in-part of Ser. No. 848,736, Aug. 8, 1969, abandoned. This application Oct. 6, 1971, Ser. No. 187,197

Int. Cl. A61k *27/00*

U.S. Cl. 424—303 20 Claims

New substituted indenyl acetic acids and nontoxic pharmaceutically acceptable amides, esters and salts derived therefrom. The substituted indenyl acetic acids disclosed herein have anti-inflammatory, anti-pyretic and analgesic activity. Also included herein are methods of preparing said indenyl acetic acid compounds, pharmaceutical compositions having said indenyl acetic acid compounds as an active ingredient and methods of treating inflammation by administering these particular compositions to patients.

3,725,549
N-TRITYL-IMIDAZOLES FOR CONTROLLING PLANT FUNGI

Karl-Heinz Buchel, Wuppertal-Elberfeld; Erik Regel, Wuppertal-Cronenburg; Ferdinand Grewe, Burscheid; Hans Scheinpflug, and Helmut Kaspers, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

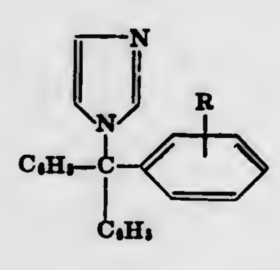
Continuation of Ser. No. 789,601, Jan. 7, 1969, abandoned, and a continuation of Ser. No. 789,602, Jan. 7, 1969, abandoned. This application Sept. 13, 1971, Ser. No. 180,105

Claims priority, application Germany, Jan. 29, 1968, P 16 70 976.5; Jan. 29, 1968, P 16 70 977.6

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 22 Claims

Plant fungicial compositions are produced which comprise an amount of a compound of the formula:



(I)

wherein

R is chloro, bromo or fluoro, or a salt thereof, sufficient to be effective for killing, combatting or controlling plant fungi, in combination with a solid or liquid diluent or carrier. Methods for killing, combatting or controlling fungal diseases in plants comprise applying to the fungi or to the plant to be protected an effective or toxic amount of the above compound.

3,725,550
PYRROLE DERIVATIVE FUNGICIDAL AGENTS AND TREATMENTS

Roger P. Napier, Bridgewater Township, Somerset City, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 15, 1970, Ser. No. 98,486

Int. Cl. A01n *9/22;* **A61k** *27/00*

U.S. Cl. 424—274 9 Claims

Fungicides containing an N-alkyl-trichloroacetylpyrrole as the active component are highly effective in combating soil fungi, as exemplified by inhibiting the development of Pythium disease on cotton crops by pretreating soil with N-methyl-2-trichloroacetylpyrrole.

3,725,551
INSECT CONTROL PROCESS WITH SYNTHETIC HORMONES

William S. Bowers, Bowie, Md., assignor to The United States of America as represented by the Secretary of Agriculture

Division of Ser. No. 788,651, Jan. 2, 1969, Pat. No. 3,563,982. This application Nov. 10, 1970, Ser. No. 88,495

Int. Cl. A01n *9/28*

U.S. Cl. 424—282 29 Claims

Methylenedioxybenzyloxy and methylenedioxyphenoxy ethers of straight chain terpenoid compounds and their epoxides were synthesized and found to mimic the juvenile hormones of insects and be extremely effective control agents.

3,725,552
METHOD OF PRODUCING NASAL VASOCONSTRICTION

Froilan P. Luduena, Albany, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 720,362, April 10, 1968, abandoned. This application Oct. 28, 1970, Ser. No. 84,887

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 3 Claims

Method of producing nasal vasoconstriction in a warm-blooded mammal by oral administration of an ar-amio alcohol, preferably the m-amino species.

3,725,553
METHOD FOR ACTIVATING THE BLOOD FIBRINOLYSIS BY ADMINISTRATION OF 2-AMINO-ETHANESULPHONIC ACID OR SALTS THEREOF

Alberto Giotti, No. 15 via Trento, and Federigo Sicuteri, No. 17a via J. Nardi, both of Firenze, Italy

Filed April 15, 1970, Ser. No. 28,588

Claims priority, application Italy, Feb. 23, 1970, 48769 A/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—315 3 Claims

A method for activating the fibrinolysis of blood by administration of a pharmaceutical compound consisting of 2-aminoethane-sulphonic acid or a salt thereof and a pharmaceutical carrier therefor. The salts of taurine with inorganic and organic bases releasing Na+, K+, Ca++, Mg++ ions as well with diethylamine, morpholine and like are suited thereto.

3,725,554
BENZIMIDAZOLE COMPOUND, METHOD OF USE, AND COMPOSITIONS

Dennis Ernest Burton; Geoffrey Tattersall Newbold, both of Saffron Walden; Albert Percival, Hauxton; Alan James Lambie, Kidderminster, and Ian Robert Sencial, Rubery, all of England, assignors to Fisons Limited, London, England

Division of Ser. No. 631,175, April 17, 1967, which is a continuation-in-part of Ser. No. 457,519, May 20, 1965, abandoned. This application Nov. 15, 1971, Ser. No. 199,018

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 5 Claims

5,6-Dichloro-1-phenoxycarbonyl-2-trifluoromethyl-benzimidazole finds particular use as an acaricide.

3,725,555
BACTERICIDAL COMPOSITIONS AND METHOD OF KILLING BACTERIA USING BIS-(PHENOXYPHENYL) CARBONATES

Walter Traber, Riehen, and Anton G. Weiss, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 747,792, July 26, 1968, Pat. No. 3,592,837. This application Dec. 30, 1970, Ser. No. 102,991

Claims priority, application Switzerland, Aug. 1, 1967, 10854/67

Int. Cl. A01n *9/24*

U.S. Cl. 424—301 7 Claims

Bis-(phenoxyphenyl) carbonates which are unsubstituted or substituted in one or several of their benzene rings by halogen, lower alkyl or trifluoromethyl are disclosed as antibacterial agents.

3,725,556
METHOD OF MANUFACTURING RAPIDLY DISINTEGRATING PHARMACEUTICAL TABLETS

Dieter Hanssen, Rotweinstrasse 24, Ingelheim/am Rhine, and Adolf Knecht, Im Breitle 3/a, Munzingen, both of Germany

Continuation-in-part of Ser. No. 779,269, Nov. 26, 1968, abandoned. This application Nov. 12, 1970, Ser. No. 89,120

Int. Cl. A01n *9/00*

U.S. Cl. 424—357 5 Claims

A method of compounding the inert pharmaceutical carrier ingredients and active drug ingredient of a pharmaceutical tablet composition, which circumvents the conventional granulation step prior to compression in the manufacture of pharmaceutical tablets and results in very rapidly disintegrating tablets; the method consists of

1. spray-drying, after inert gas foaming, a suspension of
   - A. 1 – 20 percent by weight of very finely divided silicon dioxide or aluminum oxide and
   - B. 60 – 98 percent by weight of at least one fine-grained, inert filler material chosen from the group consisting of selected from the group consisting of substantially water-insoluble rice starch and corn starch and alkaline earth metal phosphates, in an aqueous solution of
   - C. 1 – 20 percent of a water-soluble binder,
2. adding the active drug ingredient to the resulting spray-dried, ungranulated tablet pre-mix, and
3. compressing the resulting composition together with the active agent and a tablet lubricant, into pharmaceutical tablets.

3,725,557
ALLOXANTIN COMPOUNDS AS ANTIBACTERIAL AND ANTIFUNGAL AGENTS

John D. Douros, Jr., and Al Fred Kerst, both of Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Aug. 14, 1970, Ser. No. 75,312

Int. Cl. A01n *9/00, 9/22*

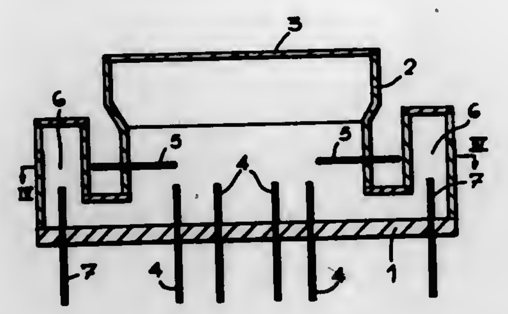
U.S. Cl. 424—251 12 Claims

Alloxantin, and alloxantin dihydrate can be used to inhibit and/or prevent the growth of undesirable herbs, bacteria, fungi, and other microorganisms. This invention is particularly concerned with the bacteriostatic and bactericidal properties of alloxantin compounds against *Staphylococcus aureus* and *Xanthomonas phaseoli*.

ELECTRICAL

3,725,558
GLASS FURNACE

Michel Marie Joseph t'Serstevens, 47 residence Le Festinoy, Ghlin, Belgium
Filed May 24, 1971, Ser. No. 146,230
Claims priority, application Belgium, May 22, 1970, 89398
Int. Cl. C03b *5/02*
U.S. Cl. 13—6 **6 Claims**

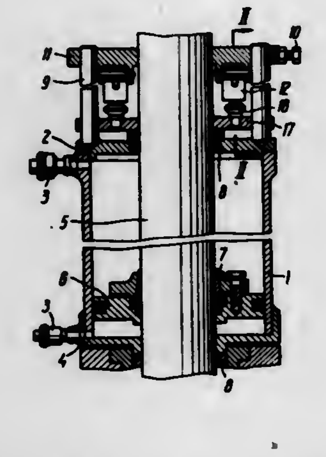


This invention relates to a glass factory kiln comprising principal heating electrodes which transverse the bed and which, by conductivity, produce the thermal energy which, in normal operation, is necessary to keep a glass bath at the desired temperature.

The kiln furthermore involves auxiliary heating electrodes which traverse the side walls and which, in the upper portion of the glass bath, produce a supporting thermal energy which makes it possible to control the upper level of the glass bath and thus the thickness of the compound layer which is on top of this glass bath.

3,725,559
PLASMATRON DRIVE

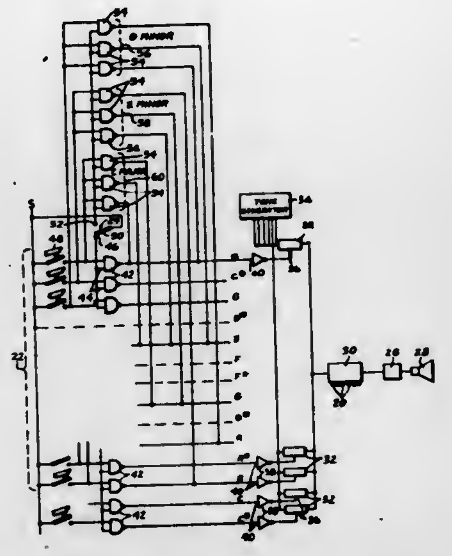
Konstantin Trofimovich Nautny, ulitsa Krasitskogo, 17, kv. 2; Viktor Iosifovich Lakomsky, ulitsa Bastionnaya, 10, kv. 30; Anatoly Ivanovich Chvertko, bulvar Lesi Ukrainki, 2, kv. 36, all of Kiev; Semen Yakovlevich Shekhter, ulitsa Brestskaya, 15, kv. 18; Alexandr Mikhailovich Reznitsky, ulitsa Kirova, 2, kv. 18, both of Kommunarsk Voroshilovgradskoi oblasti, and Viktor Romanovich Pilipchuk, ulitsa Mashinostroitelnaya, 12, kv. 4, Kiev, all of U.S.S.R.
Filed Nov. 9, 1971, Ser. No. 197,011
Int. Cl. H05b *7/12*
U.S. Cl. 13—14 **2 Claims**



A plasmatron drive wherein the plasmatron is combined with the pneumatic drive rod into an integral unit and the pneumatic drive cylinder is provided with a mechanism for fixing the plasmatron in the upper position.

3,725,560
CHORD PLAYING ORGAN

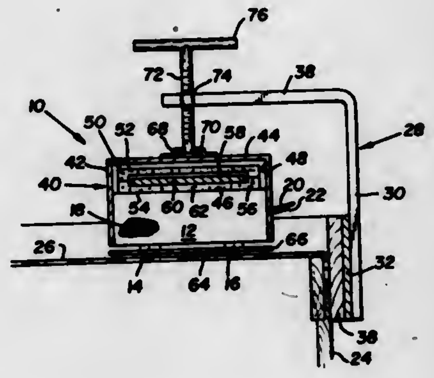
John W. Robinson, and Billy Joe Whittington, both of Jasper, Ind., assignors to The Jasper Electronics Manufacturing Corporation, Jasper, Ind.
Filed March 9, 1972, Ser. No. 233,077
Int. Cl. G01h *1/00*
U.S. Cl. 84—1.01 **6 Claims**



An electronic organ which can be adjusted from playing in a conventional manner to playing in such a manner that at least selected playing keys of the lower manual of the organ will each cause a sounding of a respective chord when actuated. The tone signals from the tone generator of the organ are controlled by keyers and, in one condition of adjustment of the organ, each playing keys controls a single keyer, while in another condition of adjustment thereof, each of a selected group of the playing keys of the lower manual of the organ controls a group of keyers with the keyers pertaining to tones that make up a musical chord. The switching employed in the organ for adjustment thereof from one playing condition to another is by way of d.c. logic and the control of the keyers is also affected by d.c. logic.

3,725,561
METHOD OF ELECTRICALLY REPRODUCING MUSIC AND IMPROVED ELECTRICAL PICKUP FOR PRACTICING THE SAME

Les Paul, Mahwah, N.J., assignor to Gibson, Inc., Kalamazoo, Mich.
Continuation-in-part of Ser. No. 77,946, Oct. 6, 1970, abandoned. This application Sept. 14, 1971, Ser. No. 180,424
Int. Cl. G10h *3/08*
U.S. Cl. 84—1.15 **3 Claims**

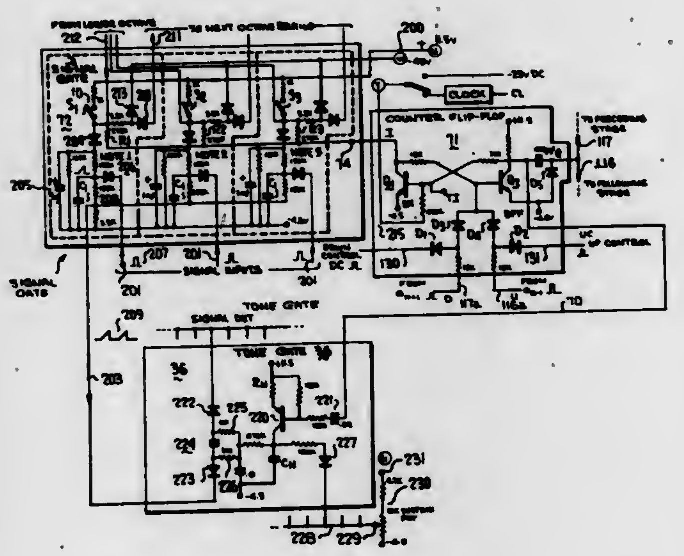


Improvements in the electrical reproduction of the audio output of musical instruments having vibrating surfaces

reproducing said audio output, illustrative examples of which are a drum and a guitar. Product aspects of the invention are demonstrated by the use of an improved electrical pickup that is mounted for vibration in unison with the vibrating surface and thus provides a vibrating magnetic field. A field-influencing magnetic body is confined within a compartment of the electrical pickup that is bounded by resilient walls that in practice causes said body to be set into vibration along with the pickup but in an out-of-phase vibratory pattern. The effect of the vibrating magnetic body is to provide a signal-producing movement relative to the magnetic field that effectively results in audio output reproduction.

3,725,562
ARPEGGIO SYSTEM FOR ELECTRONIC ORGAN

Walter Munch, Jr., and Richard L. Studer, both of Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed Aug. 16, 1971, Ser. No. 171,997
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.24 **37 Claims**

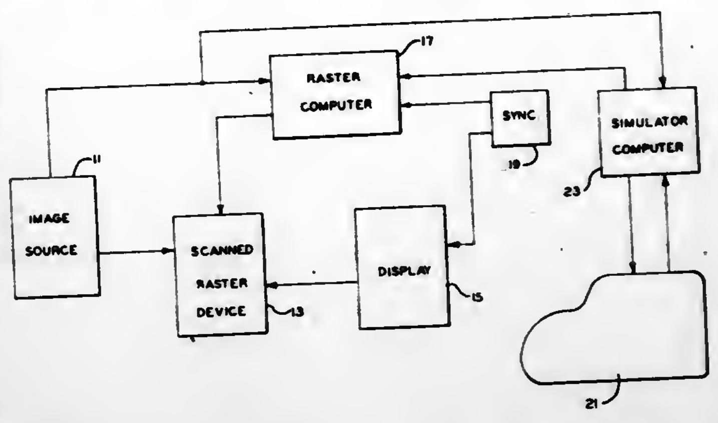


An automatic arpeggio system for an electronic organ, in which playing of a chord, or a single note, turns on tone signal gates for the played notes, and, at will, all octavely related notes, and initiates action of an assynchronous up-down multistage counter which sequentially reads out only the turned on gates, in sequence, either in an up-scan only, or up and then down. The gates lead to tone color filters, amplifiers and loudspeakers. Those counter stages which are selected to turn on gates are constrained to act as clock controlled bistable flip-flops, while the remainder act as monostable flip-flops with a time constant of the order of 30 microseconds, so that their set and reset involves inadequate time elapse to effect sounding of a note by closing of a tone gate.

3,725,563
METHOD OF PERSPECTIVE TRANSFORMATION IN SCANNED RASTER VISUAL DISPLAY

Brian J. Woycechowsky, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.
Continuation-in-part of Ser. No. 134,238, April 15, 1971, abandoned. This application Dec. 23, 1971, Ser. No. 211,372
Int. Cl. G09b *9/08;* **H04n** *3/30;* **G01s** *7/20*
U.S. Cl. 35—10.2 **19 Claims**

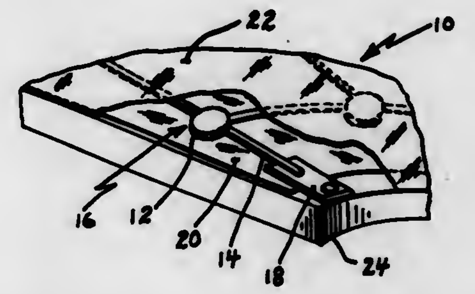
A general method of providing perspective transformations in a visual display system having an image generated by a scanned raster device such as a CRT or television projector is shown. The television display is a window out of which an observer views a simulated picture of terrain. The line of sight from the observer passing through the instantaneous spot position on the window is used to find a ground intersection point, the location of this point on an image source, such as film, is found and a video signal representing that image is generated



by positioning the scan of an image pick up device to that point on the image source.

3,725,564
GROUNDED MULTILAYER INSULATION

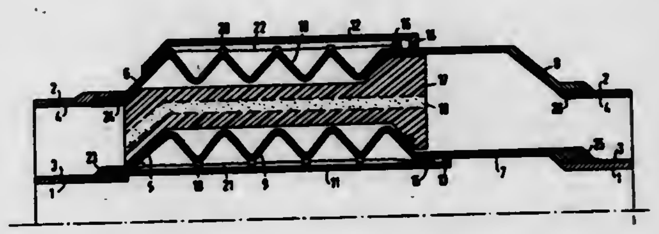
Robert A. Wiedeman, Los Altos, and Harold L. Hillesland, Fremont, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force
Filed Sept. 23, 1971, Ser. No. 182,970
Int. Cl. H01r *3/06*
U.S. Cl. 174—6 **1 Claim**



A grounded multilayer insulation having a grounding net sandwiched between a layer of insulation and a binder material. The grounding net has at least one grounding tab secured thereto. When attachment of the multilayer insulation takes place the same fastener attaches both the grounding tab and insulation.

3,725,565
EXPANSION MEMBER FOR SUPERCONDUCTING CABLE

Fritz Schmidt, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed April 21, 1972, Ser. No. 246,155
Claims priority, application Germany, April 22, 1971, P 21 19 696.3
Int. Cl. H02g *15/26;* **H01v** *11/00*
U.S. Cl. 174—13 **11 Claims**



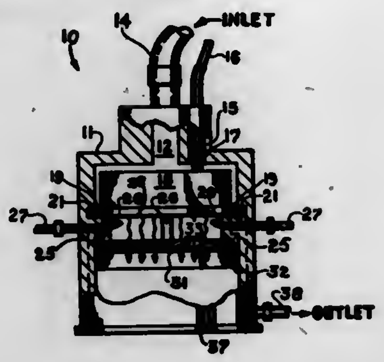
An expansion member for superconducting cable, designed to compensate for the expansion and contraction of the cable, having two corrugated tubes is arranged between the rigid tubes of the superconducting cable with transition sections connecting the corrugated tubes to the rigid tubes. The corrugated portions of the expansion member enables the expansion member to expand and contract. Bushings guide such expansion and there are stops provided to limit the amount of expansion. Wires or braids are provided to control the expansion.

3,725,566
EVAPORATIVE COOLING AND HEAT EXTRACTION SYSTEM

Bruno T. Plizak, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 1, 1972, Ser. No. 247,398
Int. Cl. H01l ***1/12***

U.S. Cl. 174—15 R **10 Claims**



Heat transfer is accomplished from electronic components by inserting simultaneously both a liquid coolant and a gas into a chamber having a high heat flux surface forming one side of the chamber. A porous membrane section forms on opposite side of the chamber and permits both the gas and a hot vapor formed from the water to escape. In operation the gaseous flow is used to break up the liquid coolant film that forms on the high heat flux surface.

3,725,567
GAS-PRESSURE-INSULATED HIGH-VOLTAGE LINE

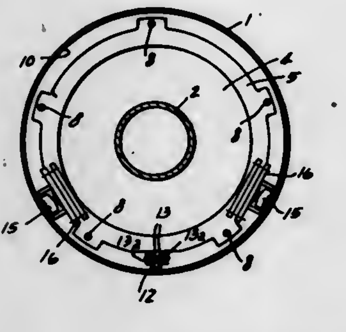
Willi Olsen, and Klaus Schlosser, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft

Filed Sept. 14, 1971, Ser. No. 180,307

Claims priority, application Germany, Sept. 30, 1970, P 20 48 989.8

Int. Cl. H01b ***9/06***

U.S. Cl. 174—16 B **9 Claims**



A fluid-tight, corrosion-resistant high-voltage line comprises a cylindrical metal casing having a corrosion-resistant coating on its inner surface and a plurality of conductor-supporting frame members having roller bearing contact with the inner surface of the casing whereby the frame members and the conductor they support can be moved along the inner casing wall.

ERRATUM

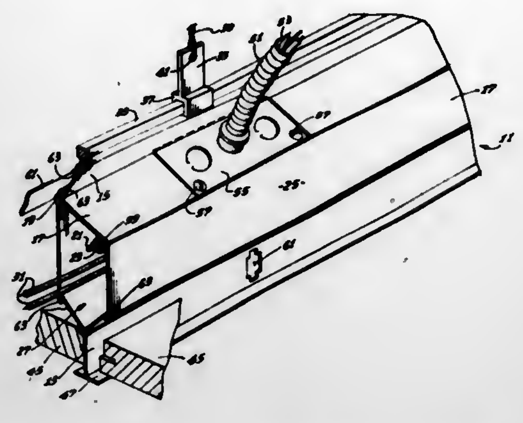
For Class 174—38 see:
Patents Nos. 3,725,580 and 3,725,581

3,725,568
ELECTRICAL CEILING RACEWAY

John Edwin Stanley, La Canada, Calif., assignor to Duo-Flex Corporation, Glendale, Calif.

Filed Dec. 6, 1971, Ser. No. 205,244
Int. Cl. H02g ***3/04***

U.S. Cl. 174—48 **4 Claims**



An electrical raceway comprising a housing which, in section, is enclosed on all sides except an opening which extends along the entire length of the housing. The opening may be closed by a removable cover plate after suitable wiring has been laid into the raceway within the housing. The housing may be of any suitable shape and, in fact, may form two separated raceways, each of which is enclosed by a removable cover. Suitable means are provided, replacing predetermined portions of the covers, for mechanically connecting electrical or telephone conduit thereto so that a suitable connection can be made between the cable within the raceway and that in the conduit. Structure, formed integral with the housing, is provided for suspension of the housing from a building ceiling in such a way that the suspension system does not interfere with access to the raceway through the cover plates. Structure for supporting a false ceiling is also formed integral with the housing and extends therefrom for holding false ceiling panels below the housing in a well-known manner.

3,725,569
COLOR FACSIMILE TRANSMISSION SYSTEM

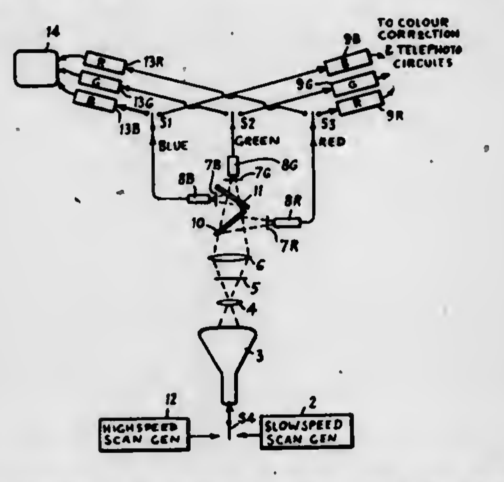
John Vernon Ashworth, Oxshott, and John Hugh Smith, Chorley Wood, both of England, assignors to IPC Services Limited, London, England

Filed Feb. 16, 1971, Ser. No. 115,163

Claims priority, application Great Britain, Feb. 24, 1970, 8951/70

Int. Cl. H04n ***9/02, 1/46***

U.S. Cl. 178—5.2 A **10 Claims**



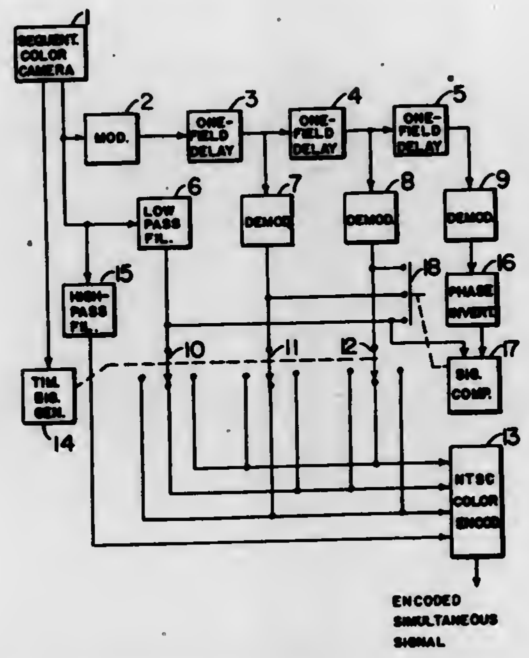
A color transmission system is described for transmitting information representing color separations to a remote point at which the separations are reproduced in a form suitable for making printing plates for reproducing a color picture. A color transparency is scanned by a moving light spot and the light passed by the transparency is directed through a filter for each color component and on to a light sensitive device producing an electrical output signal. The electrical signals representative of the color components are transmitted either sequentially or simultaneously to one or more facsimile receiving devices for producing a facsimile image of each of said color components. The system may include color balance circuits and color correction circuits as well as means for generating a black overprint signal.

3,725,570
TELEVISION SIGNAL CONVERTER

William D. Gramling, 6149 Tompkins Drive, McLean, Va.

Continuation-in-part of Ser. No. 780,683, Dec. 3, 1968, abandoned. This application Sept. 30, 1970, Ser. No. 76,679
Int. Cl. H04h ***9/50***

U.S. Cl. 178—5.2 R **7 Claims**



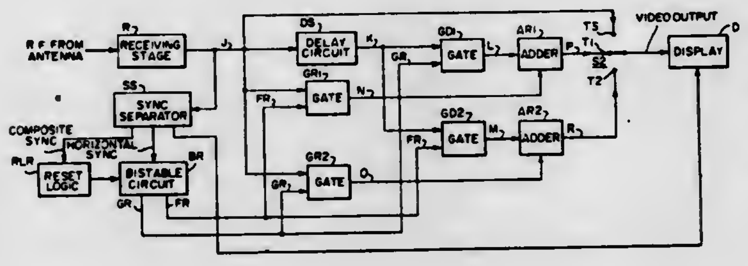
Means for converting sequential color television signals into simultaneous color television signals of the same line and field rate. Also included are means for removing chroma fringing of televised moving objects and means for removing noise from the video or detected error signal to prevent interference of operational thresholds.

3,725,571
MULTIPLEX VIDEO TRANSMISSION SYSTEM

James W. H. Justice, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 21, 1971, Ser. No. 155,078
Int. Cl. H04n ***9/00, 7/08***

U.S. Cl. 178—5.2 R **5 Claims**



System of receiving a plurality of n-separate pictures wherein every nth line of each of the pictures is selected for transmission beginning at a different line and wherein reception of the selected one of the pictures is accomplished by selecting from the plurality of lines transmitted every nth line commencing at the preselected line, with the selected line being delayed by a medium having a bandwidth less than the bandwidth of the video pictures and recombined with the undelayed selected line so that the selected one of the pictures may be displayed with high-quality resolution.

3,725,572
COLOR TELEVISION CAMERA

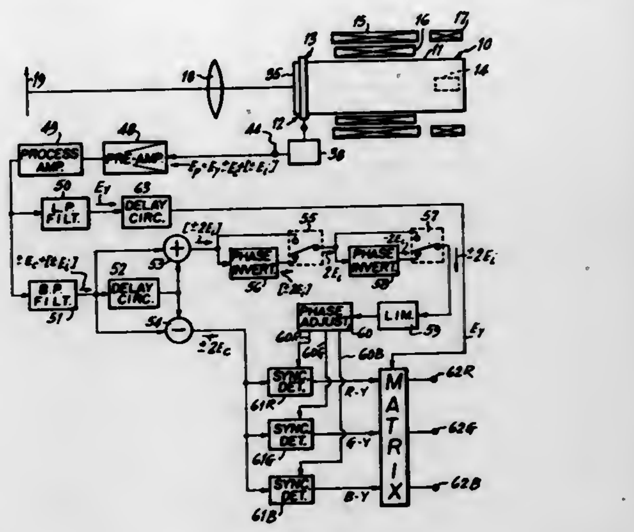
Hiromichi Kurokawa, and Yasuharu Kubota, both of Kanagawa-ken, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 21, 1971, Ser. No. 210,342

Claims priority, application Japan, Dec. 26, 1970, 45/128853

Int. Cl. H04n ***9/06***

U.S. Cl. 178—5.4 ST **17 Claims**



In a color television camera having a target structure which is scanned by an electron beam and on which is projected an image of an object in the field of view of the camera; the target structure comprises first and second groups of photoconductive elements, such as diodes, preferably formed in a semiconductor substrate and being arrayed in lines extending in the line scanning direction and rows extending at substantial angles to the lines, with the lines of the first group of diodes being alternated with the lines of the second group of diodes, color filter elements corresponding to the diodes, respectively, and being disposed between the latter and the object for forming color components of the projected image on the respective diodes, first electrodes connected to the first and second groups, respectively, of the diodes for applying to the latter an alternating signal having phase alternation by line and for picking-up a color video signal corresponding to the projected image in response to the conversion by said diodes of light projected thereon into an electrical output when scanned by the electron beam, and second electrodes arranged generally in the direction of the rows of diodes for receiving an alternating signal having phase alternation by field and for picking-up an index signal corresponding with the arrangement of the second electrodes along the line being scanned and having phase alternation by field. The color video signal and index signal thus formed are combined in a composite signal which is supplied to circuits by which the index signal is employed for deriving the individual color signals from the color video signal.

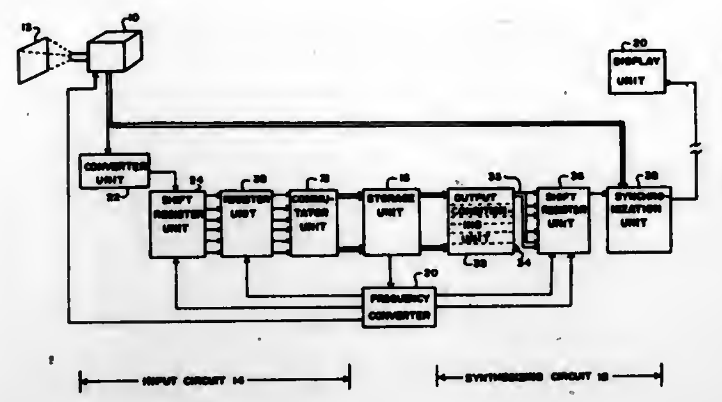
3,725,573
VIDEO BUFFER

Alan Wachtel, Huntington Station, N.Y., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 31, 1971, Ser. No. 176,598
Int. Cl. H04n ***5/78***

U.S. Cl. 178—6.6 DD **16 Claims**

An image transmission system. A television camera scans a projected image and generates a video signal. An input circuit converts the video signal into a two-level signal which is sampled and stored digitally on a magnetic disk or drum. After the signals are stored, they are used to reconstruct a video signal by being recombined and combined with blanking, horizontal drive and synchronization signals from the television camera.



All timing is controlled by signals recorded on timing tracks on the magnetic disk or drum.

3,725,574
METHOD AND APPARATUS FOR RECORDING RASTERED CONTINUOUS-TONE PICTURES IN PRINTED GRAPHICS

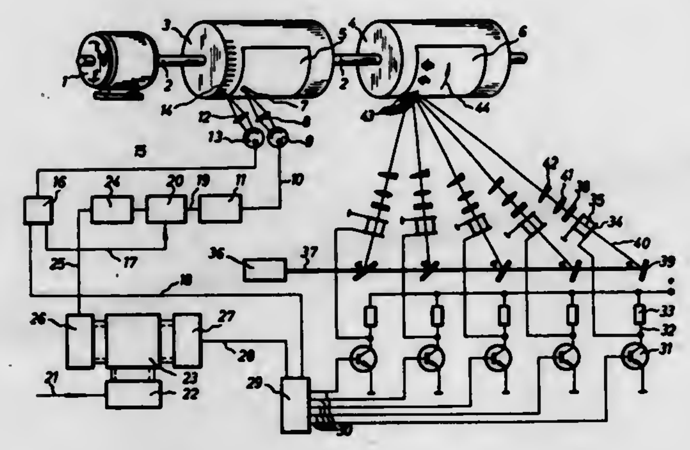
Uwe Gast, Rammsee, Germany, assignor to Dr.-Ing. Rudolf Hell GmbH, Kiel, Germany

Filed Feb. 14, 1972, Ser. No. 225,835

Claims priority, application Germany, Feb. 18, 1971, P 21 07 738.3

Int. Cl. H04n *5/84*

U.S. Cl. 178—6.7 R **20 Claims**



A method of recording half-tone pictures i.e. rastered continuous-tone pictures in printed graphics in which respective covering dots create the recorded picture, with the size of the dots corresponding to the tone value to be depicted thereby in which recordation is effected on a light-sensitive medium by directing thereon polarized light with each covering dot being formed in a respective individual raster field, the area of which field represents approximately the maximum size of a dot, with the path of such light between the source thereof and the recording medium having variable polarization characteristics whereby the amount of light striking the medium may be varied over the raster field and thereby determine the size of the covering dot formed in such raster field with the polarization characteristics of such light path being varied in accordance with the characteristics of the picture to be produced whereby the intensity of the light directed on the medium at the different portions of the raster field it is controlled in dependence upon the size of the dot to be produced for creating the desired tone effect thereat. Apparatus is also provided for practicing the invention utilizing electrically-controllable rotary crystals in combination with polarization filters disposed between such crystals and the recording medium.

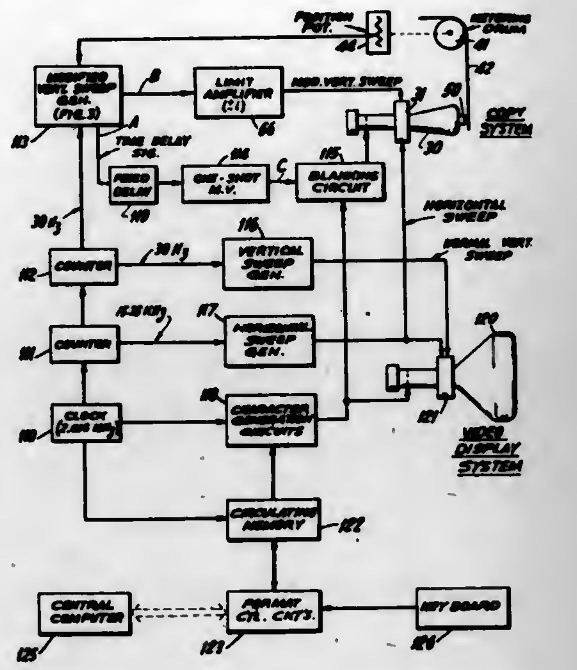
3;725,575
IMAGE TRANSFER DEVICE

Brian E. Dell, Newton, Conn., assignor to Computer Optics, Inc., Bethel, Conn.

Filed May 1, 1970, Ser. No. 33,650

Int. Cl. H04n *5/84*

U.S. Cl. 178—6.7 R **5 Claims**



An image transfer device for the transfering of a video image from a video image generating device to a sensitized medium. By synchronizing the generation of the video image to the movement of the sensitized medium, a continuous transfering mechanism is created.

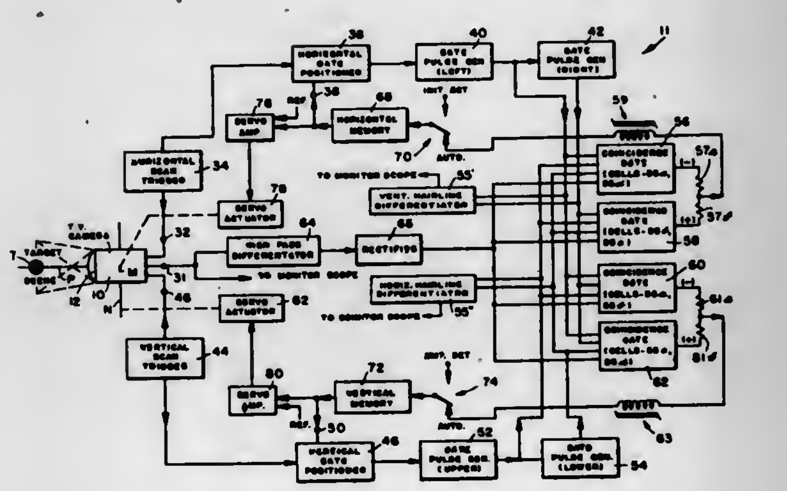
3,725,576
TELEVISION TRACKING SYSTEM

Jack A. Crawford; George R. Lewis, and William H. Woodworth, all of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 12, 1962, Ser. No. 224,594

Int. Cl. F41b *7/00*; **G06f** *15/50*

U.S. Cl. 178—6.8 **4 Claims**



1. In a homing missile of the type steered in response to a television camera contained therein, said missile further adapted to be carried by an aircraft for launching against an assigned ground target within a scene viewed by the camera and adapted to be aimed at the target in cooperation with a television image of the scene displayed by a television viewing device contained within the aircraft, said missile and said aircraft being interconnected prior to launching through a signal relaying means for communicating electrical signals from the missiles to the aircraft, and vice versa, said signal relaying means being adapted to be disconnected upon launching, the combination, comprising;

a. a television camera having a sighting axis and a field of view about said sighting axis and adapted to scan an image of the scene in the field of view of the camera,

said camera being operative to produce a video signal which at each instant of said cycle of scanning motion is representative of the light-tone value of the elemental portion of the image under scan,

said scanning means scanning said image in a predetermined cycle of scanning motion providing a predetermined trace pattern of elemental portions of said image scanned during a scan cycle,

b. gating means operated in controlled variably timed relation to said cycle of scanning motion for defining the geometry of a missile aiming cell of area within the trace pattern and encompassing a small fraction of the total area of the raster pattern, and for passing only the video signal representative of the discrete portions of the trace pattern within said missile aiming cell,

the timed relationship in which said gating means is opened being controllable to move the aiming cell between various portions of the trace pattern area, as desired,

c. means connected to the output of the gating means and responsive to a stimulus consisting of the contrast between the intensity of the component of the gating means output video signal representing the light-tone of the assigned target, and the intensity of the component of the gating means output video signal representing the light-tone of the background surrounding the assigned target, said means being operative to generate an aiming cell positioning signal for controlling the time relation in which said gating means is opened to selectively alter the position of the cell of area to maintain said aiming cell essentially symmetrically disposed about the image of the assigned target,

d. means for generating a missile steering signal in accordance with the displacement of said aiming cell away from a position corresponding to alignment of the aiming cell with the sighting axis of the camera,

e. means operable after the missile is launched for steering the missile in response to said steering signal to alter the missile course in a direction tending to bring the target and the camera sighting axis into alignment to thereby steer the missile along a homing course to the target,

whereby the missile is steered to a target by a combination of a response to the misalignment of symmetry of the aiming cell about the image of the target and a response to the misalignment of the aiming cell relative to the sighting axis of the camera, providing a dynamic range of control action permitting the missile to be controlled to steer itself to any target within the scene viewed by the camera,

f. means responsive to the aiming cell positioning signal for generating an aiming cell image video signal for relaying same to the television viewing device in the aircraft to provide a television image representing the aiming cell,

g. said timed relationship in which said gating means is opened further being adjustable under control of a cell position adjustment signal produced by manually operable means in the aircraft and relayed to the gating means through the interconnecting means,

whereby the missile may be aimed to home toward any desired target in the scene displayed in the aircraft by operation of the manually operable means to bring the television image of the aiming cell into superposition with the television image of the assigned target whereupon the aiming cell will be caused to automatically track the target upon relative movement of the latter in the displayed scene and upon launching the missile will steer itself to the target.

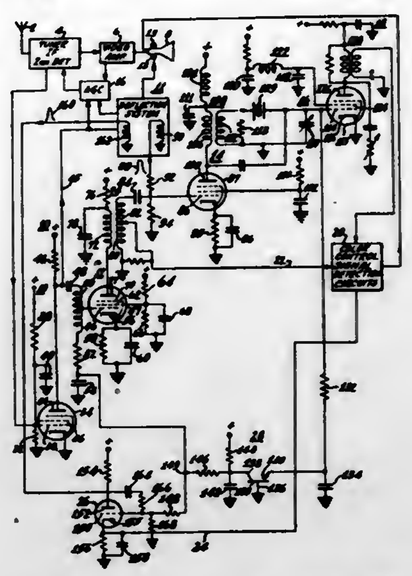
3,725,577
COMMON BASE AMPLIFIER TERMINATING CIRCUIT FOR HIGH IMPEDANCE DETECTING APPARATUS

James M. Yongue, Indianapolis, Ind., assignor to RCA Corporation

Division of Ser. No. 641,759, May 29, 1967. This application Nov. 6, 1970, Ser. No. 87,475

Int. Cl. H04n *5/52*

U.S. Cl. 178—7.3 R **2 Claims**



A closed loop automatic chroma control circuit for a color television receiver is disclosed in which the grid leak current of an injection locked color reference oscillator is supplied to a transistor so as to produce an amplified A.C.C. voltage.

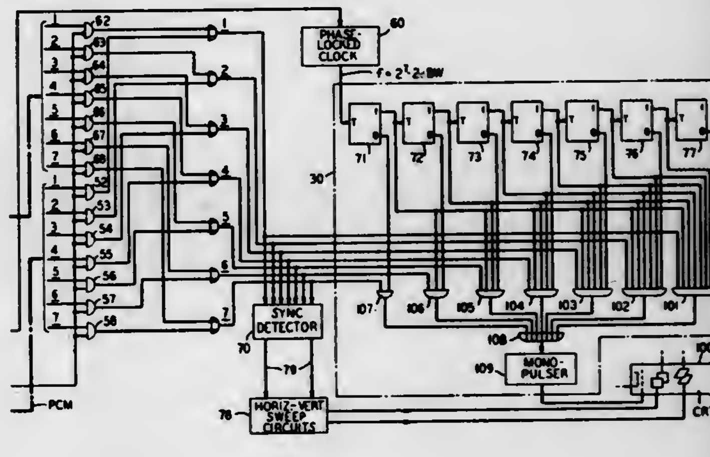
3,725,578
DIGITAL VIDEO RECEIVERS

Earl Franklin Brown, Piscataway, and William Kaminski, West Portal, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 25, 1971, Ser. No. 156,805

Int. Cl. H04n *5/48*; **H01j** *29/52*

U.S. Cl. 178—7.5 R **11 Claims**



This disclosure relates to real time, all digital, video receivers wherein a linear light modulation is achieved by means of a "half-tone process." The half-tone process is effected by gating a linearly scanned electron beam with constant amplitude, variable duty cycle pulses. The duty cycle is varied in successive Nyquist intervals in a manner directly related to the binary digit content of the successive n-bit words of a received pulse code modulated (PCM) video signal. For a 7-bit conventional PCM video signal, for example, 128 different levels of light intensity can be provided for each Nyquist interval.

3,725,579
CIRCUIT FOR ENCIPHERING DEVICE

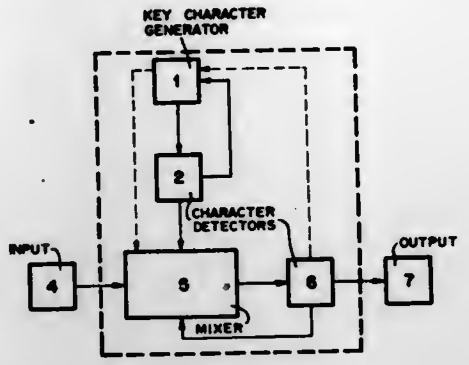
Oskar Edwin Sturzinger, Baar, Switzerland, assignor to Anstalt Europaische Handelsgesellschaft, Vaduz, Liechtenstein

Filed March 10, 1971, Ser. No. 122,969

Claims priority, application Switzerland, March 16, 1970, 3922/70

Int. Cl. H04l *9/00*; G09c *1/00*

U.S. Cl. 178—22 **2 Claims**



There is disclosed a circuit for an enciphering device which couples in character element fashion the multidigit coded signals of a first input location with the multidigit coded signals of a second input location, comprising at least one character detector operatively associated with a key character generator, which upon the occurrence of a first predetermined character combination at its output is influenced such that it offers a different character combination, and wherein at least one charaCter detector is arranged at the output of the circuit which upon the occurrence of a second predetermined character combination causes the key character generator to deliver a predetermined yet always similar character combination before the second predetermined character combination appearing at the output is released.

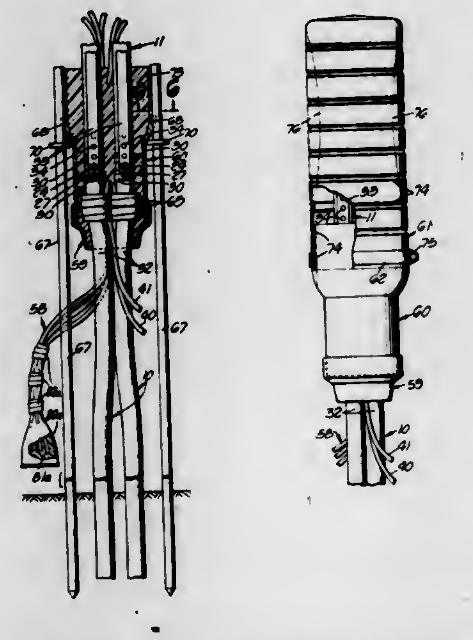
3,725,580
PROTECTIVE CABLE SPLICE ASSEMBLY AND METHOD

John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2331 20th St., Santa Monica, Calif.

Continuation-in-part of Ser. No. 843,508, July 22, 1969, abandoned. This application Sept. 10, 1970, Ser. No. 71,149

Int. Cl. H02g *9/02*, *15/04*

U.S. Cl. 174—38 **51 Claims**



A protective cable splice assembly kit and method for use in making cable splice connections with provision for access, testing, inspecting and adding other splice connections at a later time. The assembly includes a tubular housing member adapted to seat about the legs of a loop formed in a main cable and to be clamped to a cup-shaped cap member telescoped over the return bend of the loop. One or more service cables can be assembled through the tubular housing and hermetically sealed to the latter along with the legs of the main cable by potting compound applied after grounding strips have been connected to the shielding sheaths of the main cable and of the service cables. Preferably the connections to all cable sheaths are hermetically sealed within potting compound. These strips include holes for attaching testing instruments as well as grounding wires to the electrical shields of branchout service cables. The flexible cap member flexes readily to compensate for pressure differential across the junction between the two housing members. The outer end of the service cables are hermetically sealed until needed to complete a service connection and are stored along with the splice enclosure in a subsurface casing having its normally closed top flush with ground level.

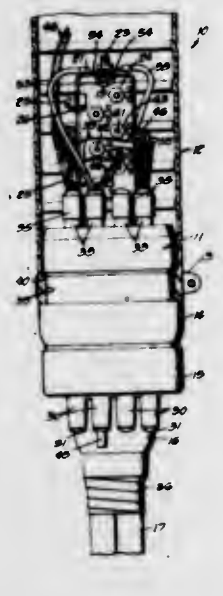
3,725,581
RE-ENTERABLE CABLE SPLICE ASSEMBLY AND METHOD INCLUDING PROVISION FOR ADDING BRANCHOUT SERVICE CABLES AS NEEDED

George W. Gillemot, 2331 20th St., Santa Monica, Calif., and John T. Thompson, 244 Loring St., Los Angeles, Calif.

Filed Aug. 2, 1971, Ser. No. 168,178

Int. Cl. H02g *9/02*, *15/04*

U.S. Cl. 174—38 **24 Claims**



A re-enterable cable splice enclosure or assembly and method for adding branchout service cable connections to a main cable as needed. The splice housing includes first and second separable parts one of which has a main cable sealed thereto along with a plurality of tubular passages adapted to receive additional service cables as needed with provision for maintaining the passage sealed by potting compound. The tubular passages are preferably chargeable with a non-setting permanent gel-like potting compound. The assembly includes provision for using shielded cables the shield jackets of which are seperably connectable to one another and having shield junctions submerged in potting compound.

ERRATUM

For Class 178—6 see:
Patent No. 3,724,028

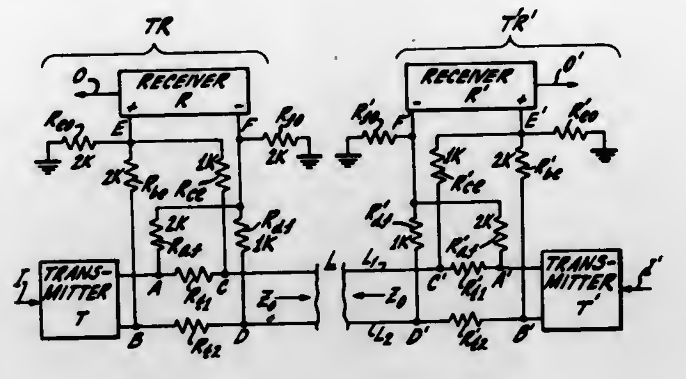
3,725,582
SIMULTANEOUS DIGITAL TRANSMISSION IN BOTH DIRECTIONS OVER ONE LINE

William John Davis, North Palm Beach, Fla., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,492

Int. Cl. H04l *5/14*

U.S. Cl. 178—58 **3 Claims**



A duplex digital signalling system includes a transmission line having characteristic impedance terminations, a transmitter at each end of the transmission line for supplying digital signals through the characteristic impedance termination to the transmission line, and a differential receiver at each end of the transmission line. A resistor network couples each receiver across the local characteristic impedance termination, so that each receiver responds only to the distant transmitter, and digital information may be simultaneously transmitted in both directions through the transmission line.

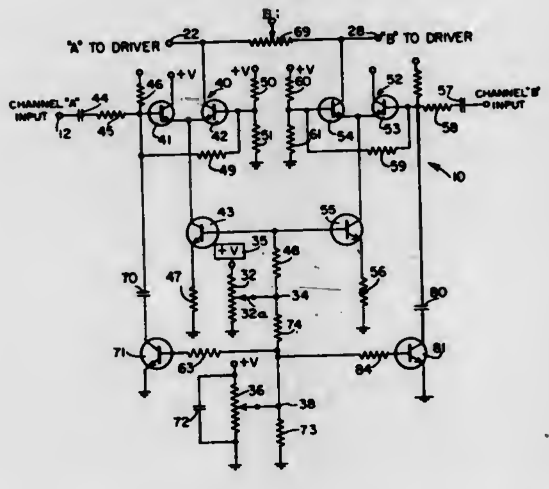
3,725,583
VOLUME AND TONE CONTROL FOR MULTI-CHANNEL AUDIO SYSTEMS

Philip D. Gunderson, Prospect Heights, and Ronald J. Freimark, Addison, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed July 20, 1970, Ser. No. 56,301

Int. Cl. H03f *3/68*

U.S. Cl. 179—1 VL **5 Claims**



A single volume control for a plurality of audio channels is formed by a pair of gain controllable differential amplifiers operated as small-signal amplifiers in an open-ended configuration. The current source for each differential amplifier is provided by a variable current source, such as a transistor collector. By altering the DC bias on this variable current source transistor, the bias current and therefore the gain of the differential amplifier is correspondingly varied. A single potentiometer provides the DC voltage control for the variable current source transistors which, in turn, function as a volume control for the circuit.

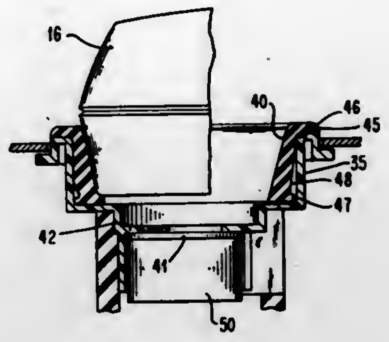
3,725,584
ACOUSTIC COUPLER

Charlie C. Kilmer, and Robert J. Orchard, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,572

Int. Cl. H04m *1/00*

U.S. Cl. 179—1 C **7 Claims**



An acoustic coupler assembly for coupling a telephone handset to a terminal. The assembly contains a housing member of rubber having a plurality of soft foam washers which attach it to the base. The upper portion of the housing has an aperture which contains a tapered resilient sleeve having an inner diameter which corresponds to the outer dimension of a telephone handset. The sleeve is spaced from the wall of the housing so that it can accommodate the various shapes of handsets in use. A ridge at the base of the sleeve provides a limiting action and prevents the handset from being inserted too far.

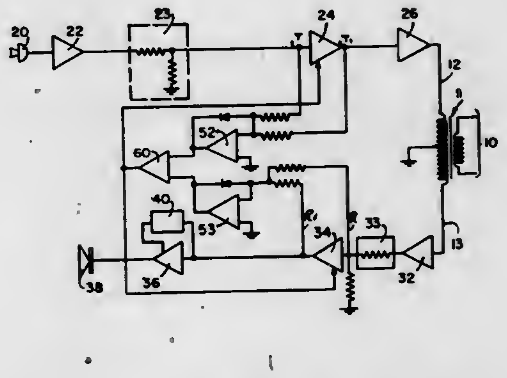
3,725,585
LOUDSPEAKING TELEPHONE STATION CIRCUIT

John Moniak, and Edwin R. Bridenbaugh, both of Corinth, Miss., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed March 21, 1972, Ser. No. 236,714

Int. Cl. H04m *9/08*

U.S. Cl. 179—1 HF **11 Claims**

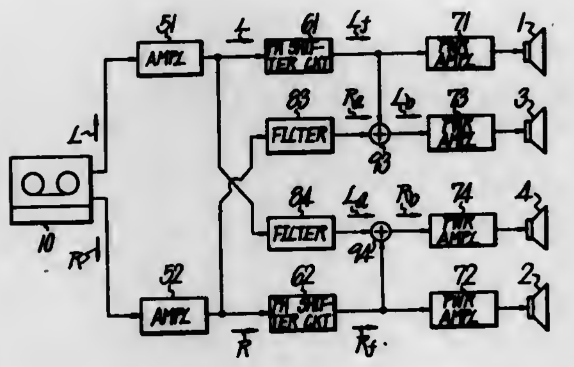


Disclosed is a circuit for providing voice controlled switching for a loudspeaking telephone station. The circuit is generally bistable and in one approach, it is possible for a small amount of bias to be inserted in the circuit to restore it to its transmit mode in the absence of external signals. In operation, a comparator continuously compares the transmit signals against received signal to determine in which mode the circuit should operate, i.e., continue in the operating mode or switch to the other mode. Once in a mode, either transmit or receive, an artificial signal gain is added to the main signal fed to the comparator to prevent oscillatory switching. The actual signal plus the artificial signal must be outweighed by the signal on the other path to effect a switchover.

3,725,586

MULTISOUND REPRODUCING APPARATUS FOR DERIVING FOUR SOUND SIGNALS FROM TWO SOUND SOURCES

Kazumi Iida, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed April 11, 1972, Ser. No. 242,945
Claims priority, application Japan, April 13, 1971, 46/23300
Int. Cl. H04r *5/04*
U.S. Cl. 179—1 G 8 Claims

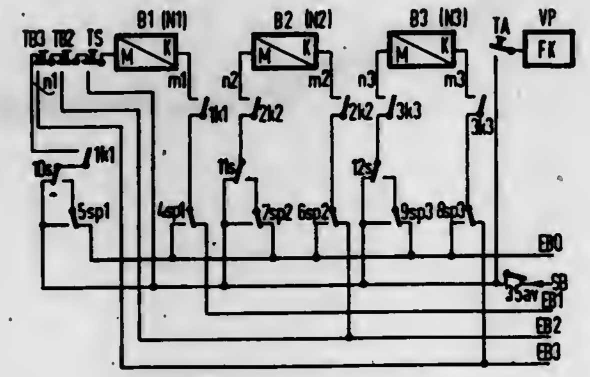


Left and right sound signals applied to two separate input circuits are each shifted in phase by a predetermined amount by phase shifters and are then supplied to separate output circuits. The left sound signal is also fed through a low pass filter to be combined with the phase shifted right sound signal and this combined signal is supplied to a separate output circuit. Likewise the right sound signal is fed through a low pass filter to be combined with the phase shifted left sound signal and this combined signal is also supplied to a separate output circuit. The resultant four outputs give the listener the illusion of naturalness.

3,725,587

APPARATUS FOR A TELEPHONE EXCHANGE SYSTEM WITH CONFERENCE EQUIPMENT AND HAVING A VIDEO CAPABILITY

Peter Klein, Feldafing, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Jan. 27, 1972, Ser. No. 221,238
Claims priority, application Germany, Jan. 29, 1971, P 21 04 338.9
Int. Cl. H04m *11/08, 3/56*
U.S. Cl. 179—2 TV 4 Claims

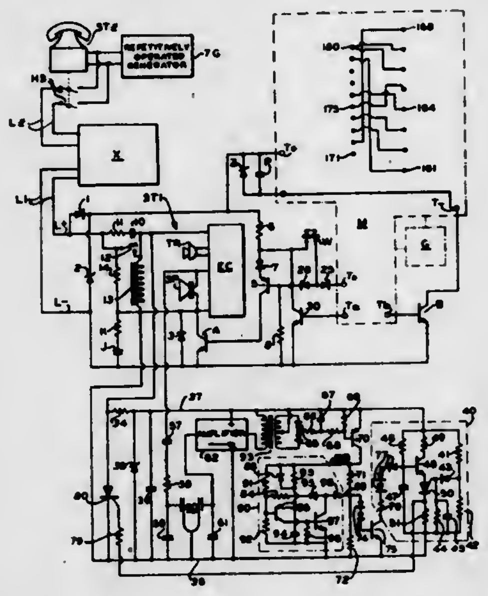


Apparatus is described for completing a conference connection in a telephone exchange system having a video capability. Each subscriber station has a video device constituted by a camera and a television receiver which may be connected to common video lines. Upon connection of a conference signal receiver and through a temporarily operated switch a new subscriber station's video device may be connected to the conference connection. This connection may be completed regardless of whether a conference connection already exists. Subsequently, switching means at each subscriber station, which connect the video devices therein to common video lines, are activated to switch the video devices in the subscriber stations, which were already in the conference connection, so that they can receive video signals from a subscriber station newly entering the conference connection.

3,725,588

TELEPHONE STATION CONNECTION SYSTEM

Donald C. Loomis, Upper Moreland Township, Montgomery County, Pa., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.
Filed Aug. 9, 1971, Ser. No. 169,917
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 R 6 Claims

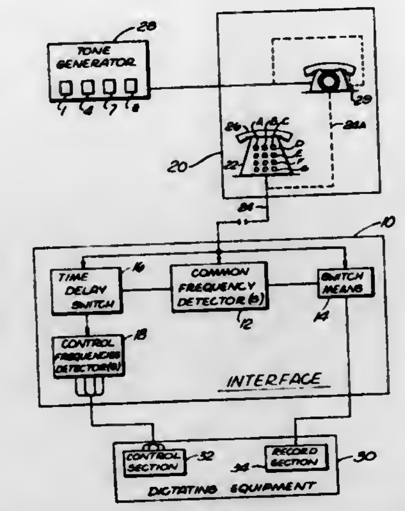


Disclosed is a telephone station adapted for communication through a telephone line and an exchange with a second station at which there will be repetitively superimposed on the communication a signal of predetermined frequency. At the first station there is provided automatic dialing apparatus available for operation to dial the second station, as an incident to which operation the first station will be connected across the line and there will be started an initial operation of a timer. A superseding operation of the timer will be started an an incident to the first station receiving a signal of the predetermined frequency, whereas in response to an unsuperseded operation of the timer the conductive connection abovementioned will be terminated.

3,725,589

REMOTE-CONTROL SYSTEM FOR INTELLIGENCE-RECORDING APPARATUS WITH CONTROL TONE ELIMINATING SWITCHING

Michael E. Golden, 1700 Midvale Avenue, Los Angeles, Calif.
Filed Feb. 14, 1972, Ser. No. 225,828
Int. Cl. H04m *11/10*; G11b *19/2*
U.S. Cl. 179—6 E 12 Claims

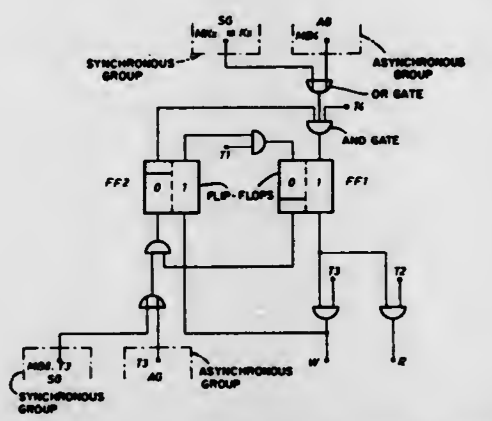


An interface between a telephone system and dictating equipment whereby control signals and intelligence are transmitted over the telephone system and to the dictating equipment to appropriately record the intelligence while eliminating any recordation of the control signals.

3,725,590

ARRANGEMENT FOR TDM TELECOMMUNICATION BETWEEN PCM SWITCHING NETWORKS

Willi Verstegen, Kornwestheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Sept. 1, 1971, Ser. No. 176,834
Int. Cl. H04j
U.S. Cl. 179—15 BS 6 Claims



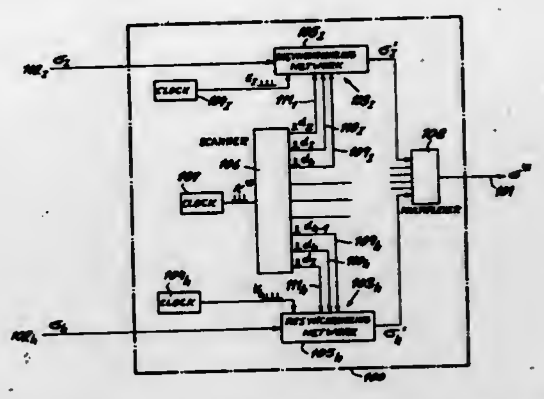
A TDM switching system is disclosed which permits PCM transmission between exchanges. Both directions of transmission are regulated at the clock rate of one exchange. Using a particular form of control of one input stage, it is possible to eliminate the need for buffer storage formerly used to compensate for frequency and phase variations.

3,725,591

SYNCHRONIZATION NETWORK FOR PCM MULTIPLEXING SYSTEMS

Maurizio Palombari, and Luciano Di Biago, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy
Filed Feb. 7, 1972, Ser. No. 224,197
Claims priority, application Italy, Feb. 9, 1971, 20346 A/71
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 AF 10 Claims

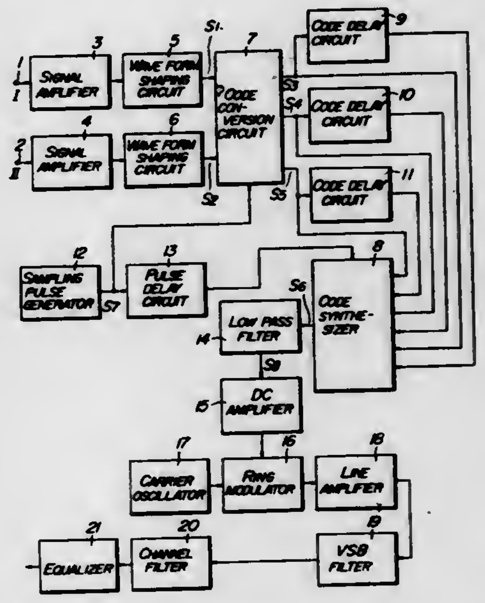
At a multiplexing station serving for the bit-by-bit interleaving of binary pulse trains received from a plurality of feeder channels for retransmission over a common signal path, the bits of each incoming train are stored in a multistage register for a period approximately equaling the length of a scanning cycle during which the several memories are successively sampled, in repeated subcycles, by reading pulses recurring at a rate substantially higher than the bit rate of the individual trains. The storage period of a particular register , measured by a first counter which is stepped by a series of clock pulses recurring at the bit rate, and the corresponding scanning cycle, measured by a second counter in response to the recurrent reading pulses addressed to that register, are compared once every two scanning cycles by a pair of monitoring pulses flanking a reading pulse; if either monitoring pulse coincides with a timing pulse generated during alternate storage periods of one register stage, the allocation of the reading pulses to the several stages of the register is shifted by feeding into the second counter a corrective pulse advancing the count thereof by the equivalent of half a scanning cycle.



3,725,592

AMPLITUDE QUANTIZED SIGNAL TRANSMISSION METHOD

Yutaka Tanaka, Tokyo, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan
Continuation of Ser. No. 736,418, June 12, 1968, abandoned. This application Dec. 13, 1971, Ser. No. 207,442
Claims priority, application Japan, June 13, 1967, 42/38404; April 30, 1968, 43/29396
Int. Cl. H04b *13/00*
U.S. Cl. 179—15.55 R 9 Claims



A signal transmission method which reduces the frequency band of a transmission channel by sampling the input signal, quantizing each sampled pulse, combining the quantized pulses into a group of pulses, combining the quantized pulses in each group into a single pulse the quantized amplitude of which is uniquely determined from the quantized amplitude of each component pulse. The signal transmission method is used for transmitting video, facsimile, audio, data or other similar signals characterized by a high density of information with sufficient recognizability at a comparatively slight cost of signal-noise ratio.

3,725,593
PCM TELECOMMUNICATION SYSTEM WITH STANDBY CLOCK

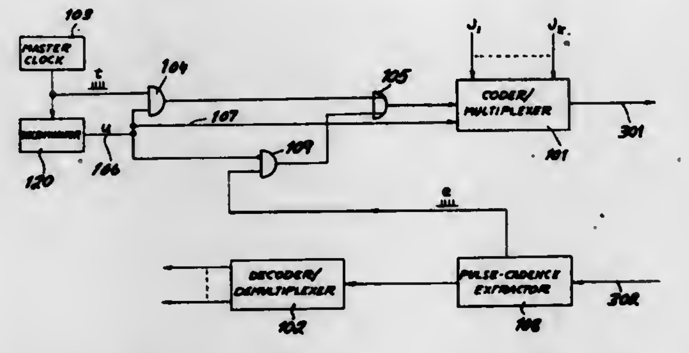
Maurizio Palombari, Milan, Italy, assignor to Societe Italiana Telecommunicaziani Siemens, S.p.A., Milano, Italy

Filed Feb. 22, 1972, Ser. No. 228,000

Claims priority, application Italy, Feb. 22, 1971, 20861 A/71

Int. Cl. H04j *3/14*

U.S. Cl. 179—15 BF **7 Claims**



At a main terminal connected to a remote terminal by way of a PCM signal path, a master clock controls the multiplexing of incoming messages from local lines for transmission over an outgoing line of that path to the remote terminal in a bipolar code enabling extraction of the clock frequency at the remote terminal. A discriminator at the main terminal continuously checks the operation of the master clock and, if that operation is normal, causes the transmission of a verification bit over the outgoing line to the remote terminal in an assigned time slot of a service channel of a period message frame; at the remote terminal, a detector responds to either the absence of the verification bit or the nonarrival of message signals to activate a standby clock controlling the sending of composite messages to the main terminal over an incoming line of the signal path. An extractor at the main terminal, connected to that incoming line, delivers the reconstituted pulses of the standby clock to the multiplexer in lieu of the output of the master clock if the latter operates improperly or not at all, as determined by the associated discriminator; a similar discriminator at the remote terminal may insert a corresponding verification bit into a service slot of a message frame transmitted to the main terminal to establish the correct functioning of the standby clock.

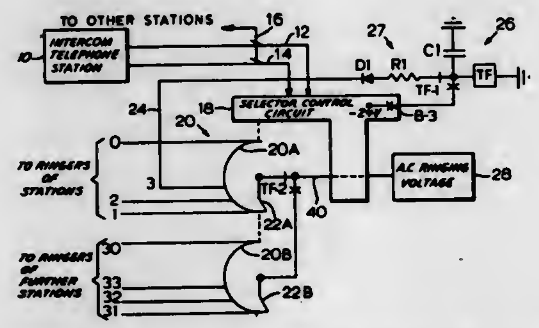
3,725,594
TELEPHONE TRANSFER CIRCUIT ACTUATED BY CALLING SIGNAL

Delmar G. Cartwright, Pte. Claire, Quebec, Canada, assignor to Bell Canada, Montreal, Quebec, Canada

Filed March 29, 1971, Ser. No. 128,690

Int. Cl. H04m *3/04*

U.S. Cl. 179—18 AD **6 Claims**



In an intercom telephone system, when a digit is dialled, a selector control circuit causes a selector to step to a position corresponding to the digit dialled, and ringing is then applied through the selector contacts to the called station. When more than ten stations are needed, one selector contact is connected through a rectifying circuit to a transfer relay. When the digit for such contact is dialled, the ringing voltage applied through such contact is rectified and operates the transfer relay. The transfer relay locks operated, shifts the ringing to the input of another selector level the contacts of which are connected to stations having two digit codes, and causes the selector to return to home position for receipt of the second digit.

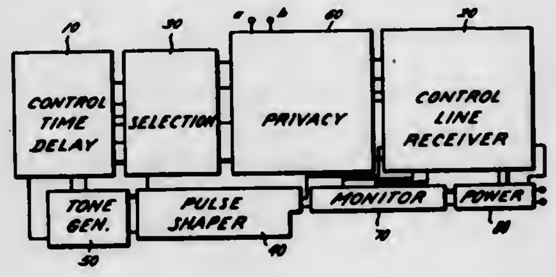
3,725,595
ELECTRONIC CONVERSION AND SECRECY APPARATUS

Bahram Mechanic-Esfahani, 154 Neshat St., Teheran, Iran

Filed March 2, 1971, Ser. No. 120,224

Int. Cl. H04m *3/56*

U.S. Cl. 179—17 B **11 Claims**



An apparatus is disclosed which is inserted into a telephone party line to convert such party line into a private line in response to a telephone call involving a party in the party line and provide secrecy to such call and prevent interference and eavesdropping with a completed call by other parties in the party line.

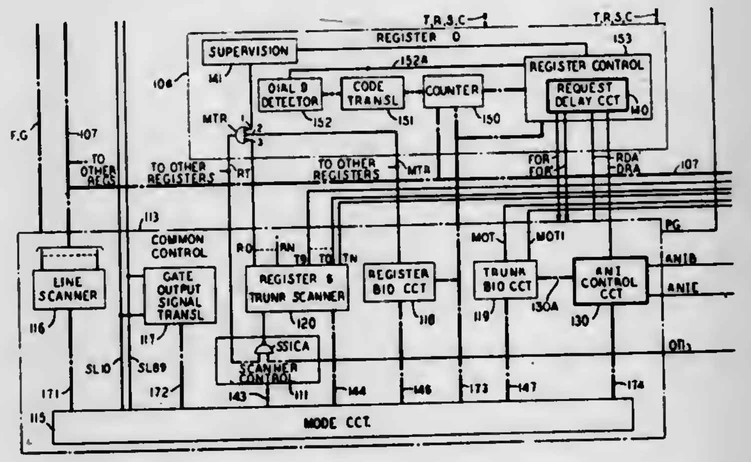
3,725,596
PBX AUTOMATIC NUMBER IDENTIFICATION SYSTEM

Rodney Robert Maxon, and Henry August Meise, Jr., both of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 12, 1971, Ser. No. 198,217

Int. Cl. H04q *3/72*

U.S. Cl. 179—18 FH **18 Claims**



A PBX is disclosed having equipment for automatically generating and transmitting calling station and trunk number information to a central office on outgoing calls. The disclosed system is an improvement in the art in that it does not require additional equipment, such as matrices, for generating the number information. Instead, it obtains this information from pre-existing system circuitry which generates the same information in order to control the establishment of the network paths required for the serving of these calls.

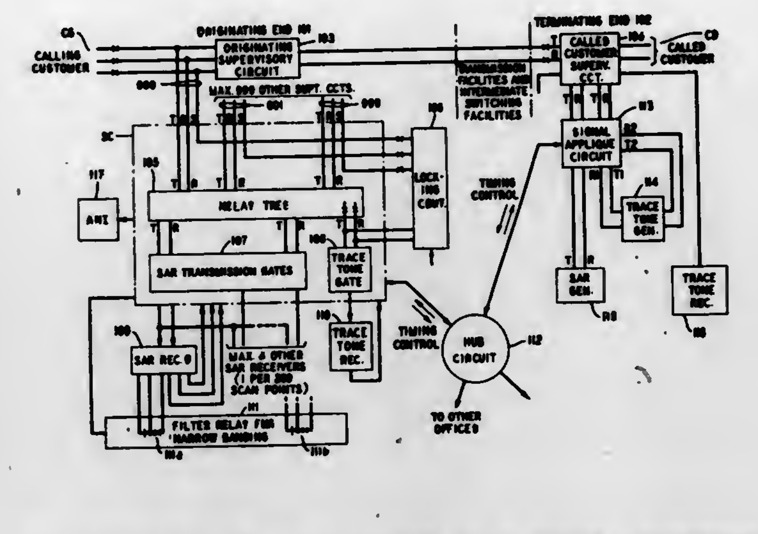
3,725,597
CALLING LINE IDENTIFICATION SYSTEM

Kenneth Streisand, East Brunswick, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 1, 1971, Ser. No. 158,784

Int. Cl. H04q *3/72*

U.S. Cl. 179—18 FH **8 Claims**


CALLING CUSTOMER
ORIGINATING END 101
ORIGINATING SUPERVISORY CIRCUIT
MAX. 999 OTHER SUPT. CCTS.
TRANSMISSION FACILITIES AND INTERMEDIATE SWITCHING FACILITIES
TERMINATING END 102
CALLED CUSTOMER SUPERV. CCT.
CALLED CUSTOMER
RELAY TREE
SAR TRANSMISSION GATES
TRACE TONE GATE
TRACE TONE REC.
TRACE TONE GEN.
SAR REC. 0
MAX. 4 OTHER SAR RECEIVERS (1 PER 200 SCAN POINTS)
FILTER RELAY FOR NARROW BANDING
TIMING CONTROL
CIRCUIT
TO OTHER OFFICES

In a telephone calling line identification system a substantial increase in call tracing capacity is achieved by a timing arrangement in a simulated audible ring tone receiver that controls a scanner to the end that each line, rather than being held for a fixed period, is held only so long as a valid signal appears to be present, the line being released in response to the earliest indication that there is no valid signal.

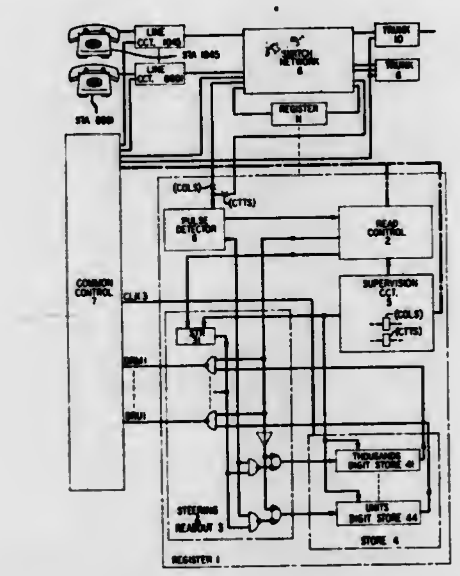
3,725,598
DIGITAL REGISTER READOUT CIRCUIT

Edwin Julius Braun; Henry August Meise, Jr., and George William Taylor, all of Boulder, Colo., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed July 16, 1971, Ser. No. 163,213

Int. Cl. H04q *3/42*

U.S. Cl. 179—18 EB **11 Claims**



A register readout circuit arranged for use with common control switching systems wherein number digits are stored and serially read out at a high speed into a common controller. The circuitry utilizes binary ripple counters having a predetermined number of counting states to register each number digit. During the readout sequence, the common controller applies a high speed pulse train having a number of pulses equal to the number of counting states to each counter. When the counters are advanced to their initial zero counting states associated logic circuitry is enabled to gate remaining pulses of the high speed pulse train over digital leads to the common controller. Since the remaining pulses are mathematically equal to the registered number digits of the counters their reception by the common controller effectively constitutes a nondestructive readout of the registered number digit.

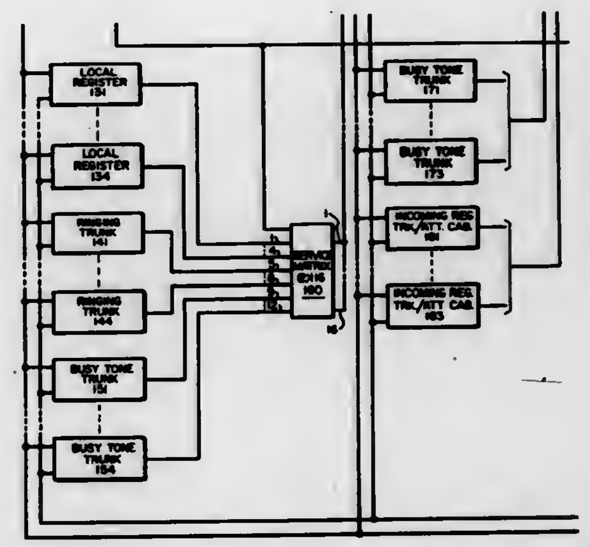
3,725,599
CALL PICKUP SERVICE FOR PABX TELEPHONE SYSTEM

Elmer W. Krock, Chicago, and Charles J. Simon, Hinsdale, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 22, 1971, Ser. No. 165,260

Int. Cl. H04m *3/42*

U.S. Cl. 179—18 BD **7 Claims**



In a private automatic branch telephone system of the common control type, facilities are included whereby a predetermined group of subscribers may answer calls originated either within the private branch telephone system or in an associated central office and destined for termination at a particular substation in the group, at any other substation within the predetermined group. Under control of a central processor the answering station is detected as well as the originally called station and the originating calling circuit, after which the originating calling circuit is connected to the answering station and the original called station is released.

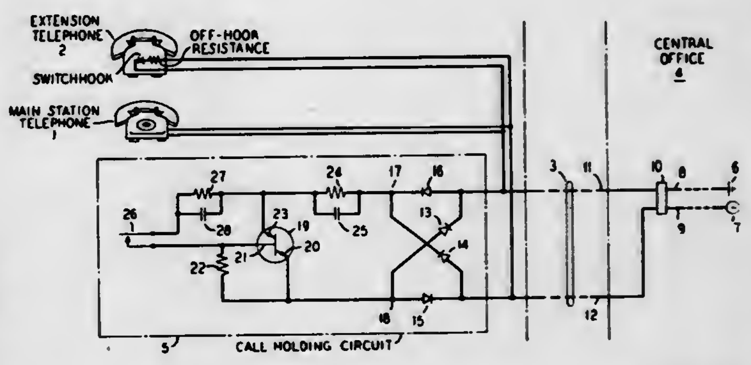
3,725,600
COMMUNICATION CALL HOLDING CIRCUIT

Gerald E. Hutton, Springfield, Ill., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,068

Int. Cl. H04m *1/00*

U.S. Cl. 179—99 **23 Claims**



An electronic telephone call holding circuit including PNPN transistor and pushbutton arrangements is disclosed for enabling a customer conducting a call on one phone to place a "hold" condition on that call, to disconnect that phone from the call by placing the handset "on-hook", and then to answer the call at an extension phone by moving its handset "off-hook", which "off-hook" automatically effects a removal of the "hold" condition without manual key operations.

3,725,601

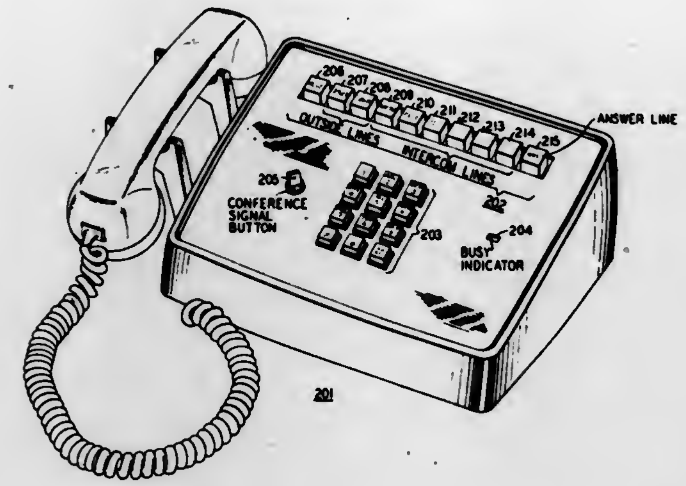
DIRECT STATION SELECTION PRIVATE INTERCOM EXCHANGE SYSTEM

John J. Jetzt, Lincroft, and John Charles Sullivan, Shrewsbury, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 5, 1971, Ser. No. 121,398

Int. Cl. H04m *1/70*

U.S. Cl. 179—99 **10 Claims**



A group of modified key telephone station sets is uniquely interconnected with substantially conventional key telephone equipment to provide a number of PBX-like functions. Each station set is provided with a privacy circuit which under all conditions prevents a station from gaining access to any line already in use.

3,725,602

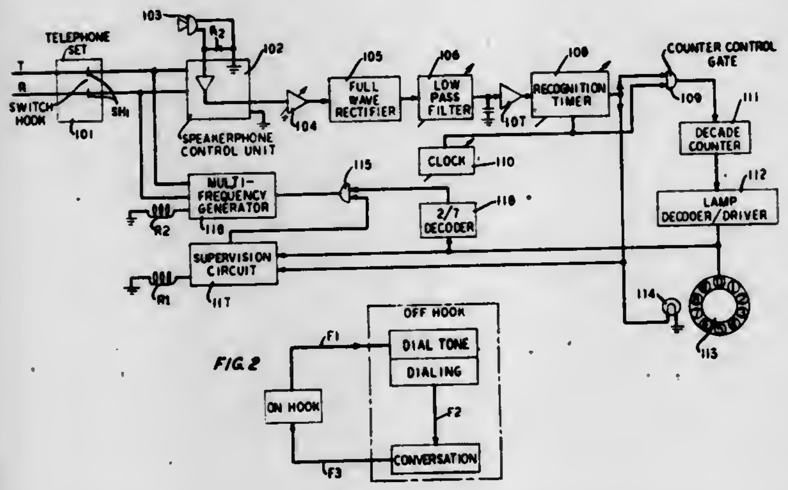
MACHINE CONTROL BY ACOUSTIC ENERGY

Clifford James Hoffman, Oceanport, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1970, Ser. No. 101,817

Int. Cl. H04m *1/26*

U.S. Cl. 179—90 R **9 Claims**



Machine control is effected by the application of voiced commands or other acoustic energy to a transducer to coincide in time with one of a plurality of indicia being displayed sequentially by a clock-driven indicator. The encoded electrical output achieved thereby is utilized to actuate machine control switching apparatus such as a telephone dial and switchhook. Initiating forces other than acoustic, for example the manual closing of a single switch encoded in terms of time and duration of operation, may alternatively be employed in combination with the clock-driven indicator.

3,725,603

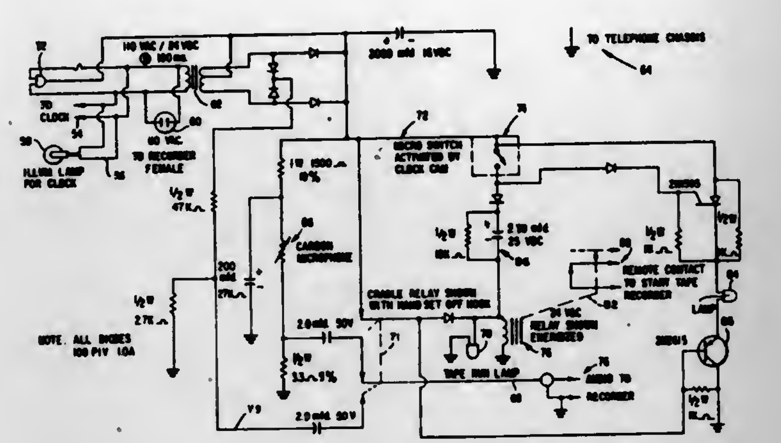
AUDIO VISUAL PROGRAM RATING SYSTEM

Harold F. Mathews, 523 Cashmere Terrace, Los Angeles, Calif.; Jack M. Reeder, 3626 Hampstead Street, Pasadena, Calif., and James A. Ingram, 1197 Arden Road, Pasadena, Calif.

Filed July 21, 1971, Ser. No. 164,553

Int. Cl. G11b *15/18, 27/28, 31/00*

U.S. Cl. 179—100.1 R **8 Claims**



A system and apparatus for rating users actual viewing or listening habits for radio and television, using voice recorders. The system uses voice recorders and information is periodically recorded and transmitted to recorders which are usable in a manner which determines actual viewing or listening habits of the ultimate users with a superior degree of accuracy with each television or radio set in an area of rating sample being equipped with its own instrument which records viewing and demographics while the program is actually being viewed.

3,725,604

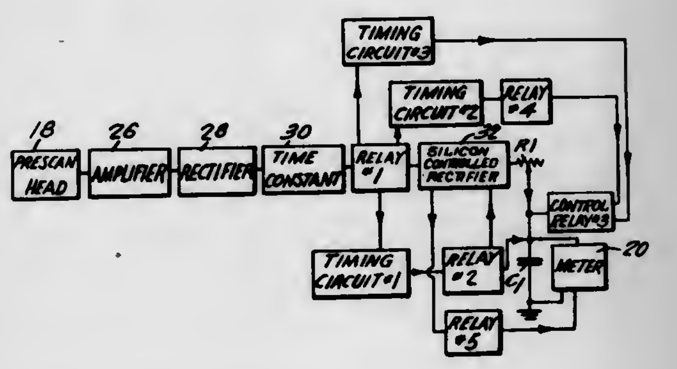
SIGNAL DETECTING APPARATUS FOR USE IN SOUND TRACK RERECORDING

Ronald Crawford Alexander, 4063 Northcliffe Avenue, Toronto, Ontario, Canada

Continuation of Ser. No. 820,397, April 30, 1969. This application Sept. 17, 1971, Ser. No. 181,470

Int. Cl. G11b *27/22, 27/36*

U.S. Cl. 179—100.1 VC **6 Claims**



A signal detecting apparatus for use in sound track rerecording comprising a magnetic storage tape having voice frequency signals transcribed thereon. A first magnetic pickup head is adapted to sense the presence or absence of the voice frequency signals on the magnetic tape. A synchronizing circuit is connected to said first pickup head and to a visual indicator. A second magnetic pickup head is associated with the magnetic tape. The synchronizing circuit is operable by the presence of voice frequency signals at the first magnetic pickup head for producing signals indicative of the exact beginnings and ends of the voice frequency signals and any pauses the voice frequency signals being sensed by the second magnetic pickup head.

3,725,605

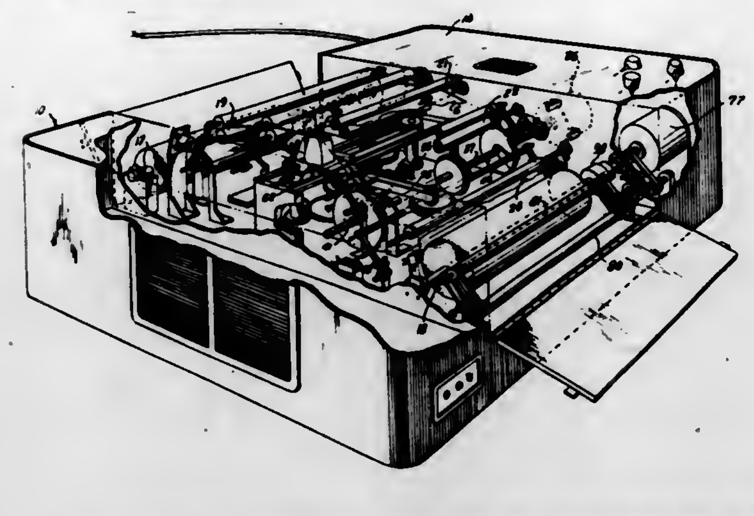
WIDE WEB RECORDER WITH INCREMENTAL TAPE TRANSPORT AND MULTIPLE TRANSVERSALLY SCANNING HEADS

Marcel M. E. Michelin, Apartado No. 5, Alhaurin el Grande, Malaga, Spain

Filed Aug. 7, 1970, Ser. No. 62,085

Int. Cl. G11b *5/48, 21/04*

U.S. Cl. 179—100.2 T **16 Claims**



Apparatus for recording or playing back information magnetically recorded on a tape or web having a recording width of five inches or more for the purpose of handling recordings of long duration, such as books. The apparatus includes means for intermittent incremental advance of the web from the feed spool to the take-up spool, and means for producing traversal of the record-playback heads transversely across the web relative to adjacent, parallel, transverse tracks on the web. In one form, a head reciprocates back and forth to produce one or more tracks between each incremental web advance. In another form, heads carried on a rotor produce two or more adjacent tracks in the same direction between each incremental advance of the web. The apparatus includes means for rapid advance and rewind of the web.

3,725,606

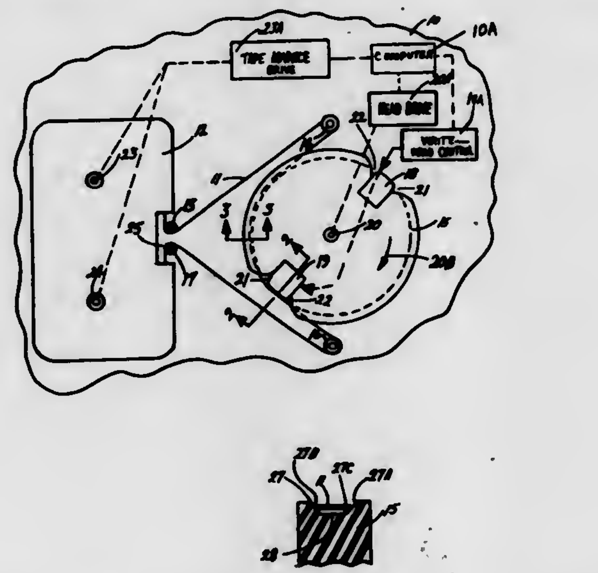
ROTATING MAGNETIC TAPE HEAD HAVING AIR CUSHION SUPPORT FOR THE TAPE

Kenneth C. Thompson, Denver, Colo., assignor to Electronic Processors, Inc., Englewood, Colo.

Filed May 17, 1971, Ser. No. 143,958

Int. Cl. G11b *5/60, 5/52*

U.S. Cl. 179—100.2 P **5 Claims**



A rotating head structure used in magnetic tape recorders such as those for storing digital data. The head assembly has a tape guiding groove and one or more recording and/or playback heads and is rotated so as to move the heads relative to the tape. The tape guiding groove is generally V-shaped in cross section and is narrower than the tape width along the inner portions of the grooves. As the head rotates air is carried along in the groove and the tape tends to float on an air cushion.

3,725,607

MAGNETIC RECORDING APPARATUS WITH EDGE ERASE MEMBERS WHICH ERASE AREA BETWEEN TRACKS

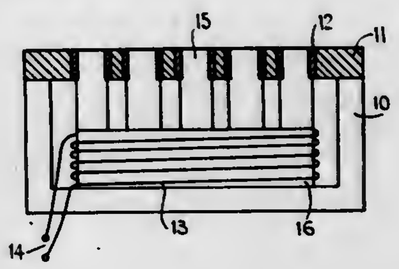
Edward Barnabas Angold, Chichester, England, assignor to International Computers Limited, London, England

Filed April 23, 1971, Ser. No. 136,932

Claims priority, application Great Britain, May 26, 1970, 25,231/70

Int. Cl. G11b *5/02, 5/22*

U.S. Cl. 179—100.2 D **9 Claims**



To eliminate undesired interference between tracks of signals recorded on a magnetic recording medium by a multitrack magnetic recording device having adjacent heads spaced apart by predetermined distances, the marginal edge portions of the signal tracks are erased by erase heads. These are located in fixed positions relative to the record heads so that after recording, the signal tracks travel past the erase heads to remove said marginal portions. To ensure that the erasing effect is limited to the marginal edge portions each erase head is surrounded, except for the actual erasing area, by a non-magnetic medium.

3,725,608

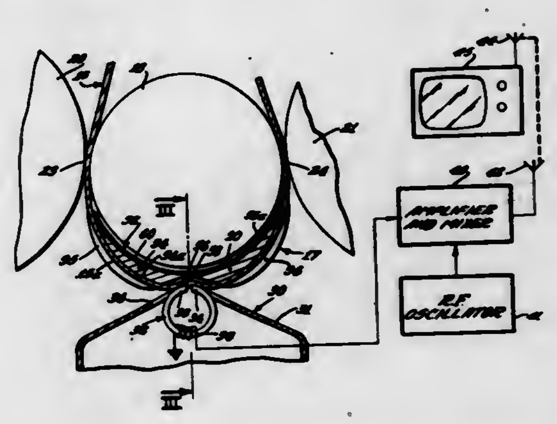
MAGNETIC TRANSDUCER SYSTEM WITH HEAD ENGAGING SLIDABLY SUPPORTED TAPE SOAP . ADJACENT THE CAPSTAN

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 44,510, June 8, 1970. This application Aug. 4, 1970, Ser. No. 60,806

Int. Cl. G11b *5/54, 15/32*

U.S. Cl. 179—100.2 C **4 Claims**



A magnetic tape apparatus wherein a capstan drive assembly provides a tape path thereabout and receives a transducer head with a convex face for scanning engagement with the tape. A magnetic shield may be interposed between the capstan and the head where the capstan is of magnetizable steel. The motor, flywheel and capstan form a unitary assembly which preferably includes a bearing for the outer end of the capstan. A endless loop or reel-to-reel tape cartridge configuration may be engaged with the capstan assembly without manual threading. Idler rollers for the capstan are of configuration to tension the tape at the transducer head location, and may be interchanged to tension the tape in either direction of movement. A preferred head is operable with bias of 10 megahertz or more.

3,725,609

SYSTEM FOR MAGNETIC RECORDING AND REPRODUCING OF A SIGNAL BY MEANS OF A FREQUENCY-MODULATED RECTANGULAR WAVE

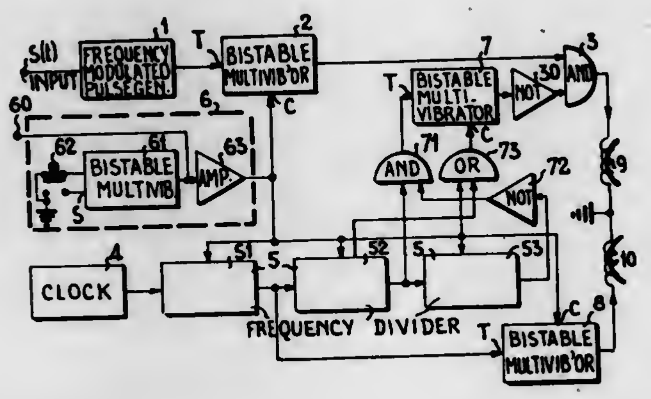
Pierre Lebourg, Paris, France, assignor to Thomson-CSF, Paris, France

Filed April 7, 1971, Ser. No. 131,857

Claims priority, application France, April 28, 1970, 7015526

Int. Cl. G11b *5/44, 5/06*

U.S. Cl. 179—100.2 K **5 Claims**



A magnetic tape recording and playback system wherein, to avoid errors in the reproduced signal caused by the wow of both the recording and playback apparatus, the electrical signal to be recorded frequency modulates a pulse train and is recorded on magnetic tape together with a constant frequency pulse signal, both recorded signals are demodulated and fed to an analogue divider circuit delivering a signal proportional to the ratio between the frequencies of frequency modulated and the constant frequency pulses.

3,725,610

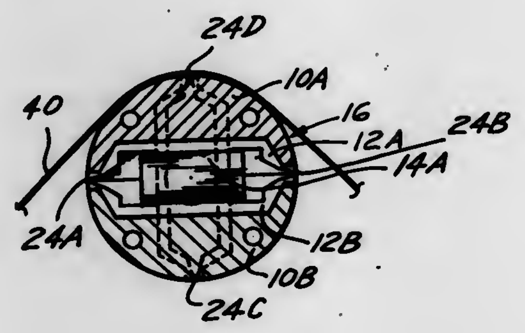
ROTATABLE MAGNETIC TRANSDUCER HEAD

Kenneth R. Wisner, 263-A West 12th St., New York, N.Y.

Filed Jan. 27, 1971, Ser. No. 110,075

Int. Cl. G11b *5/10, 5/28, 5/52*

U.S. Cl. 179—100.2 C **3 Claims**



Supported within a cylindrical housing are first and second magnetic pole members which are displaced from each other along the axis of the housing. Each pole member has at least one transducing gap. The gaps are opposite rotationally displaced openings in the housing. The transducer head is rotatable about the axis of the cylindrical housing. There is disclosed a two-gap and a four-gap embodiment of the transducer head.

3,725,611

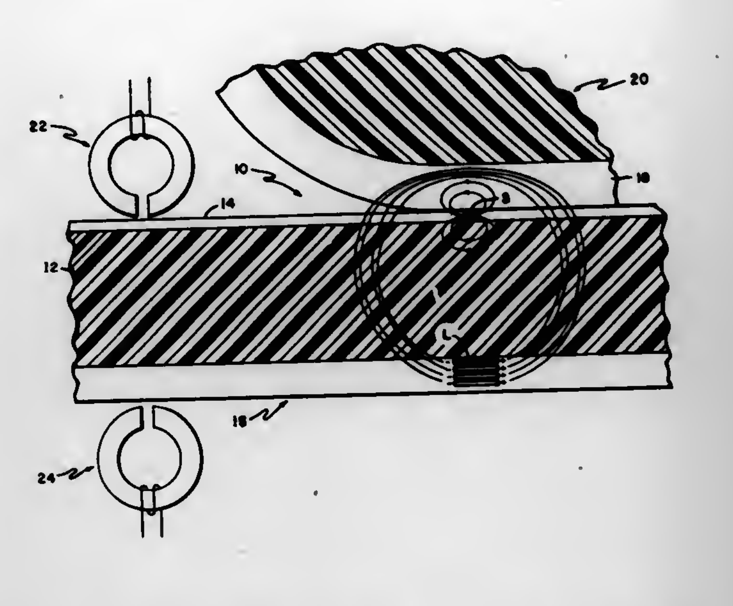
DOUBLE COATED STORAGE MEDIUM FOR CONTACT TRANSFER RECORDING

Philip Smaller, 4155 Wilkie, Palo Alto, Calif.

Filed Sept. 30, 1971, Ser. No. 185,136

Int. Cl. G11b *5/70, 5/86*

U.S. Cl. 179—100.2 A **4 Claims**



A double coated magnetic tape has a relatively thin ferromagnetic layer for storing short wavelength signals and a thicker ferromagnetic layer spaced from the first layer by an intermediate nonmagnetic base for storing long wavelength signals. The thickness of the base and the ferromagnetic layers are selected so that short wavelength signals are efficiently transferred by the thin layer and long wavelength signals are efficiently transferred by the thick layer, the intermediate wavelength harmonics of the long wavelength signals being attenuated by the spacing of the thick layer from a copy tape adjacent the thin layer to which the information is to be transferred.

3,725,612

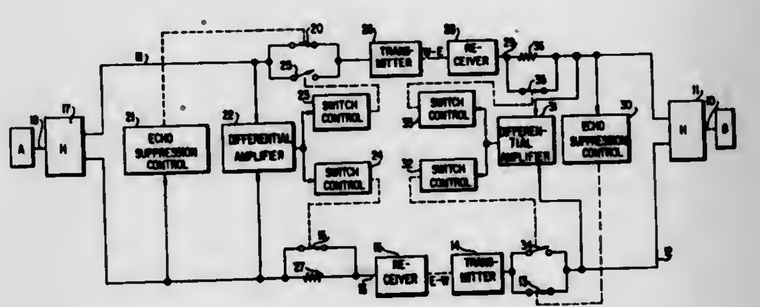
ECHO SUPPRESSOR BREAK-IN CIRCUIT

Samuel Joseph Campanella, Gaithersburg; Henri George Suyderhoud, Potomac, and Michael Onufry, Jr., Gaithersburg, all of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed May 14, 1971, Ser. No. 143,370

Int. Cl. H04b *3/20*

U.S. Cl. 179—170.6 **5 Claims**



Split, switching type echo suppressors with break-in circuitry having dual control of the two break-in switches. At break-in each break-in switch is independently and simultaneously operated for the break-in state. After cessation of break-in each break-in switch is maintained for different hangover periods before reverting to the non-break-in state.

3,725,613

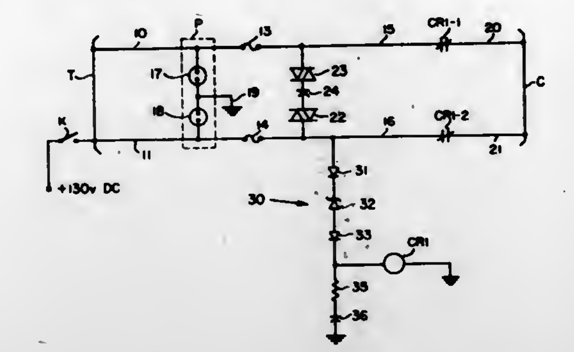
APPARATUS FOR PROTECTING AND TESTING TELEPHONE NETWORK

Richard W. Allen, Rairport; Donald G. Maring, Sr., and Henry J. Andrews, Jr., both of Rochester, all of N.Y., assignors to The Rochester Telephone Corporation, Rochester, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,632

Int. Cl. H04b *3/46*

U.S. Cl. 179—175.3 **4 Claims**



One of the two lines (e.g. tip and ring) linking a telephone company network with a network owned and serviced by a customer of the telephone company is connected through a Zener diode with a relay, which controls two normally-closed switches disposed in the two linking lines. During normal operations the signals in the associated linking line are not great enough to trigger the diode, which maintains the relay deenergized. If a fault develops in one of the networks, an operator at a remote central station of the phone company momentarily applies a high voltage through the associated linking line to the diode, which conducts and momentarily energizes the relay to open its switches and isolate the networks from one another. An RC circuit in parallel with the relay holds it energized for a short time after the triggering signal disappears to enable the operator to test the phone network for faults. Also the two linking lines are provided with current, voltage and power overload devices to prevent customer-owned equipment from damaging the company's network.

3,725,614

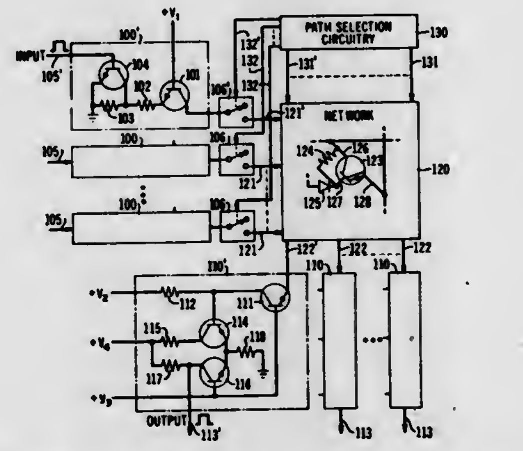
COMMUNICATION ARRANGEMENT ALLOWING NETWORK PATH TESTING

Matthew Francis Slana, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed April 13, 1971, Ser. No. 133,666

Int. Cl. H04m *3/08*

U.S. Cl. 179—175.2 R **10 Claims**



Terminating circuits for a switching network provide crosspoint bias current, pulse transfer, and path testing. Pulse transfer occurs by allowing the bias current to represent one binary value and increasing the current to a second level for the other binary value. When the second level is N times the bias level, $1<N<3$, and the detection circuitry only responds to currents above a threshold level of X times the bias current, where $N+1/2 \leq X<N$ for $1<N \leq 2$, and $N+1/2 \leq N<2$ for $2<N<3$, discontinuities, grounds, and crosses to other paths can be detected by sequentially applying two complementary binary test input signals to an input circuit and observing the responses thereto at the connected output circuit.

3,725,615

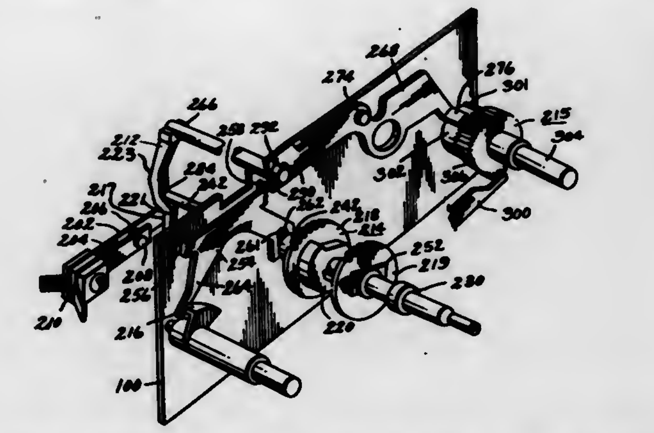
PAWL AND RATCHET MECHANISM FOR ALARM CLOCK TIMER SLEEP SWITCH CAM

Robert L. Boyles, Wayland, and Samuel Polonsky, Medway, both of Mass., assignors to General Electric Company, Bridgeport, Conn.

Filed April 7, 1972, Ser. No. 242,032

Int. Cl. H01h *43/00, 7/08*

U.S. Cl. 200—38 FB **9 Claims**



A sleep switch movement for a clock timer wherein a unique pawl and ratchet mechanism is provided for driving a sleep switch cam. A pawl is counterweighted for urging it into contact with teeth on the sleep cam. The pawl is indexed one increment each minute by a drive mechanism; however, a cam shaft having two flat surfaces is positioned in engagement with the pawl for permitting the pawl to drive teeth on the sleep cam only twice for each revolution of the cam or once every five minutes.

3,725,616

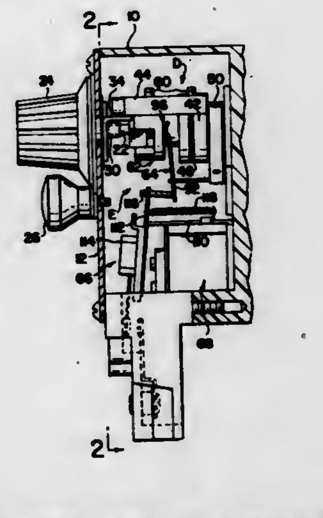
RELAY CLUTCH TIMER WITH ADJUSTABLE CAM MEMBER

Frank Arthur Pearson, Moline, Ill., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed July 22, 1971, Ser. No. 165,142

Int. Cl. H01h *43/10*

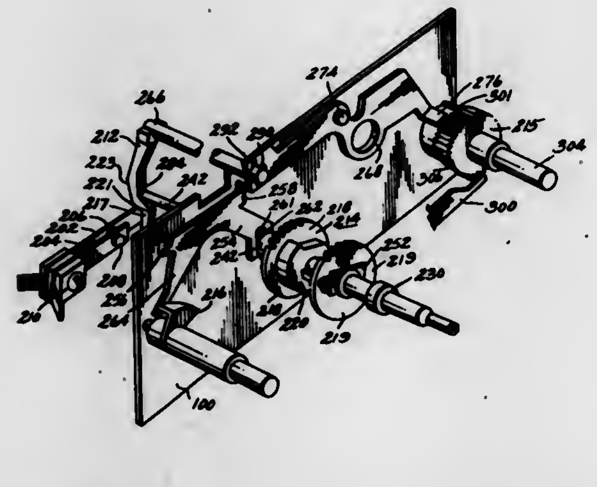
U.S. Cl. 200—38 R **9 Claims**



An adjustable reset timer for providing delayed time sequences for electrical circuits. In the timer, an adjustable cam member, including a cam hub having a serrated face is disposed about the drive shaft of a synchronous motor in a free wheeling relationship therewith. A clutch hub member, also having a serrated face, is received over the drive shaft in rotational driving engagement therewith and is axially shiftable along the drive shaft between engaging and non-engaging positions relative to the cam hub. In the engaging position, the serrations on the hubs mate to form a rotational driving connection therebetween so that in that position, the cam member is rotatably driving from a non-energizing to an energizing position relative to at least one load switch. The clutch hub is normally biased toward the engaging position but is prevented from engagement with the cam hub by a retaining lever. The lever is disposed in an operative relationship with an electrical relay which is selectively energizable and de-energizable to permit the lever to be moved between retaining and non-retaining conditions with resultant corresponding movement of the clutch hub between the non-engaging and engaging positions.

3,725,617
ALARM CLOCK TIMER WITH SWITCH ACTUATING LEVER OPERABLE BY CAM OR MANUAL ADJUSTMENT MECHANISM

Robert L. Boyles, Wayland, and Samuel Polonsky, Medway, both of Mass., assignors to General Electric Company, Bridgeport, Conn.
Filed April 7, 1972, Ser. No. 241,965
Int. Cl. H01h *43/18*; G04c *23/44*
U.S. Cl. 200—38 FB **14 Claims**

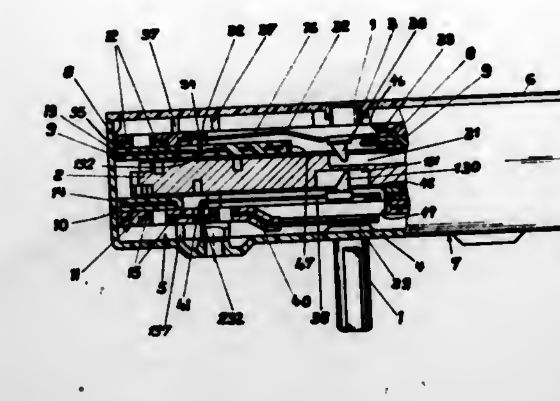


A switch actuating and control mechanism for an alarm clock timer wherein a uniquely shaped switch actuating lever is positioned between an alarm time cam and a switch blade. The alarm time cam moves the switch actuating lever in a lateral direction to close the switch at the alarm time. A manually operable lever is pivotally connected to one end of the switch actuating lever for longitudinally sliding the actuating lever on the alarm time cam to open or close the switch.

3,725,618
ELECTRIC PROGRAM SWITCH FOR AUTOMATIC APPLIANCES

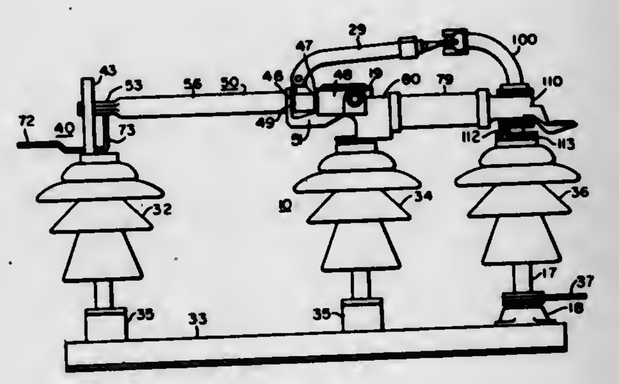
Dieter Voland, St. Georgen, and Erich Scheer, Peterzell, both of Germany, assignors to Kieninger and Obergfell, Georgen im Schwarzwald, Germany
Filed Aug. 27, 1970, Ser. No. 67,377
Claims priority, application Germany, Sept. 3, 1969, P 19 44 648.1
Int. Cl. H01h *43/08*
U.S. Cl. 200—46 **10 Claims**

A program switch, e.g. for a washing machine, has a rotating platter with cam tracks on both sides sandwiched between two pairs of contact carriers. Each contact carrier is a flat body of insulating material with a multiplicity of contact strips imbedded therein, these strips being originally part of a continuous metal foil coated on both sides with insulation. The contact strips of one plate of each pair terminate in a set of projecting tabs while those of the companion plate may remain interconnected and are tied to a supply conductor. The free ends of one set of contact strips of each pair project into cutouts of the respective plates and carry projections in engagement with the associated cam tracks for movement relative to the exposed tips of co-operating strips of the other set.



3,725,619
ELECTRIC DISCONNECT SWITCH HAVING IMPROVED COUNTER BALANCE MECHANISM

John P. McKinnon, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed April 20, 1972, Ser. No. 246,006
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 A **4 Claims**



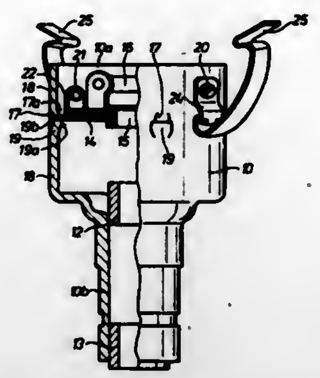
An electric disconnect switch comprising a switch blade movable between an open and closed position with respect to a relatively stationary contact means and a counterbalance mechanism to assist in moving the switch blade between the open and closed position.

3,725,620
DISTRIBUTOR PLATE STRUCTURE AND FIXEDLY MOUNTING ATTACHMENT MEAN TO DISTRIBUTOR HOUSING

Karl-Heinz Schneider, Sonthofen; Dietrich Herker, Giengen; Herbert Madgefrau, Sonthofen; Alfons Plockl, Bihlerdorf, and Ernst Horrwarth, Sonthofen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 4, 1971, Ser. No. 195,751
Claims priority, application Germany, Nov. 7, 1970, P 20 54 930.8
Int. Cl. H01h *9/02*
U.S. Cl. 200—19 R **7 Claims**

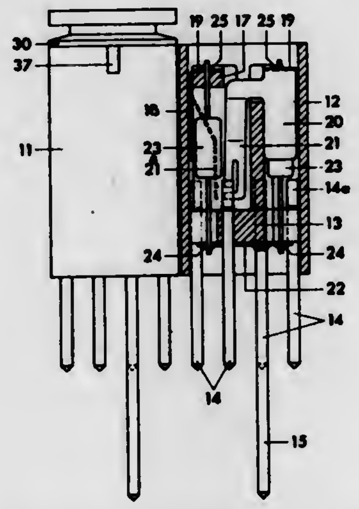
The outside of a circumferential wall of a distributor housing is formed at circumferentially spaced locations with

depressions thereby creating at the inner side projections which center and retain a breaker assembly support plate inserted into the housing through an open side thereof. A method of making such a housing is also disclosed.



3,725,621
MULTI-CONTACT DATA MODULE HAVING A CONNECTION MATRIX AND A SWITCHING BODY AND ACTUATOR PLUG TEMPLATE

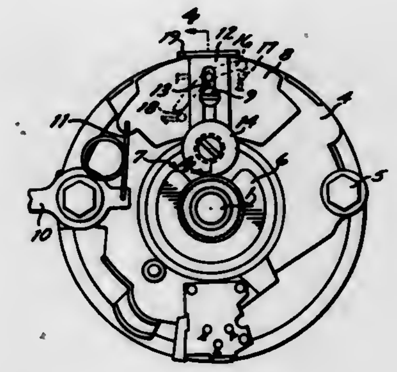
Josef Kirchdorf, Gerlafingen, Switzerland, assignor to Ghielmetti AG, Solothurn, Switzerland
Division of Ser. No. 872,901, Oct. 31, 1969. This application Sept. 22, 1971, Ser. No. 182,661
Claims priority, application Switzerland, Nov. 7, 1968, 16633/68
Int. Cl. H01h *27/10*
U.S. Cl. 200—46 **9 Claims**



A multi-contact data module for a connection matrix having an input channel and a plurality of output channels, said data module comprising at least one switching body means defining a hollow internal cavity, contact pins for establishing electrical connections to the input channel and the plurality of output channels of the connection matrix, said contact pins extending into said hollow internal cavity of said switching body means. Movable contact means are disposed within said hollow internal cavity of said switching body means for cooperation with the contact pins, said movable contact means, when actuated, effecting electrical connections with said contact pins. A single actuator means is provided for each switching body means which is common to all the movable contact means thereof intended to be actuated, such single actuator means comprising a separate plug member means totally separatable from, but removably insertable into, said hollow internal cavity of said switching body means, said plug member means including actuating means for selective ones of said movable contact means. This separate, removably insertable plug member means, when inserted into said hollow internal cavity of said switching body means, serving to deflect selective ones of said contact means against the associated contact pins, whereby a given data distribution mode is effected. There is also provided programing template means having a respective cut-out for each plug member means substantially conforming to the cross-sectional shape of said actuating means on each of said plug members means, whereby said programing template means provides storage of a plurality of data distribution modes.

3,725,622
SEMI AUTOMATIC VEHICLE SIGNAL CONTROL DEVICE

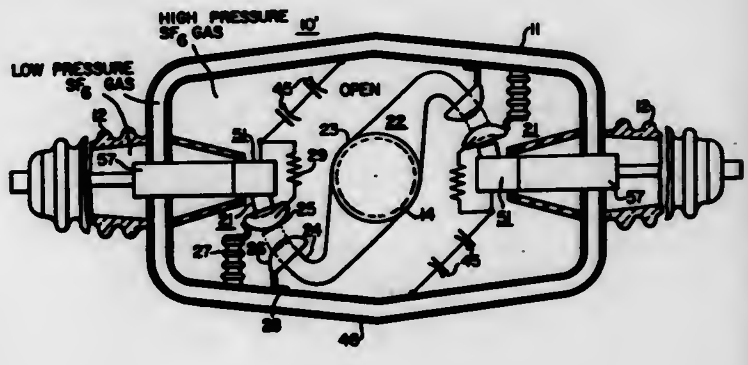
Ralph J. O'Keefe, 161 East Orangethorpe Ave., Space 12, Placentia, Calif.
Filed Nov. 1, 1971, Ser. No. 194,322
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.27 **5 Claims**



When a vehicle turns to either the right or left, a signal light must be lit indicating such a turn. This invention provides a means whereby the signal light (either right or left) is turned on by the movement of the steering wheel. Movement of the steering wheel will automatically close a switch and turn on a signal light indicating to another vehicle that the one vehicle is about to execute a turn.

3,725,623
GAS-BLAST DOWNSTREAM-TYPE OF HIGH-VOLTAGE CIRCUIT BREAKER HAVING FIELD-CONTROLLING SHIELDS AND SINGLE VENTING MOVABLE CONTACT

William H. Fischer, Pittsburgh, and Charles F. Cromer, Trafford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 28, 1968, Ser. No. 771,113
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 B **16 Claims**



In a circuit breaker of the live tank type SF_6 or other gas, is contained in the tank of high-pressure. Two hollow series-connected movable contacts bridge stationary contacts inside the tank. A double break is provided and two stationary shields are provided per break—to give a substantially uniform voltage gradient across the contacts in the open position. Capacitors are used to divide the voltage across the open contacts. A probe arrangement is used to insert resistors into the circuit to reduce the rate of rise of recovery voltage. The shields are contoured to establish a high velocity flow of gas into the arc region. Flow of gas from the high pressure tank through the hollow contacts into a low pressure chamber is controlled by a down stream blast value. Double flow of the gas can be obtained by providing secondary downstream valves and hollow contacts in each bushing in addition to the main downstream valve.

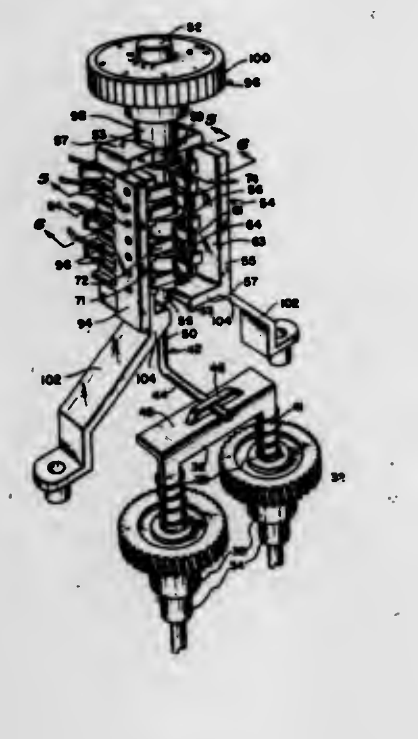
3,725,624
ROTARY SWITCH BEATER EJECTOR

Robert J. Emmons, Collinsville, Conn., assignor to Dynamics Corporation of America, New York, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,654

Int. Cl. H01h *21/10, 3/42*

U.S. Cl. 200—157 **13 Claims**



A food mixer speed control rotary switch and beater ejector unit in which a multi-speed permutation rotor for switching multiple field coil windings is journalled on a plastic frame that supports axially spaced spring switch blades bearing radially on the rotor and a beater ejection push rod is coaxially disposed therewith for the mutual support of each other in a readily assembled unit that includes a nested push button and dial assembly recessed protectively in the forward post of the food mixer handle. The shaft of the dial is journalled in the handle and supports the upper ends of the rotor and ejector rod for thumb operation selectively and simultaneously. Some of said spring switch blades are in open, stressed engagement with said rotor at any given time to hold the rotor in said journalling means.

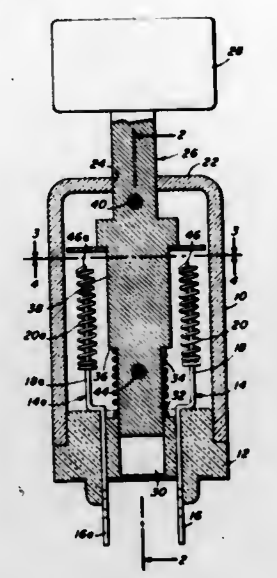
3,725,625
MECHANICAL PUSHBUTTON SWITCH WITH POINTED END COIL SPRING CONTACT

Albert R. Pratt, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 25, 1971, Ser. No. 174,596

Int. Cl. H01h *13/52, 1/06*

U.S. Cl. 200—159 R **3 Claims**



A switch, particularly useful as a keyboard switch, which comprises a casing containing two or more free-standing coil contacts and a longitudinally movable switch bar carrying a shorting plate which when depressed engages adjacent ends of the coil contacts to close an electrical circuit therebetween.

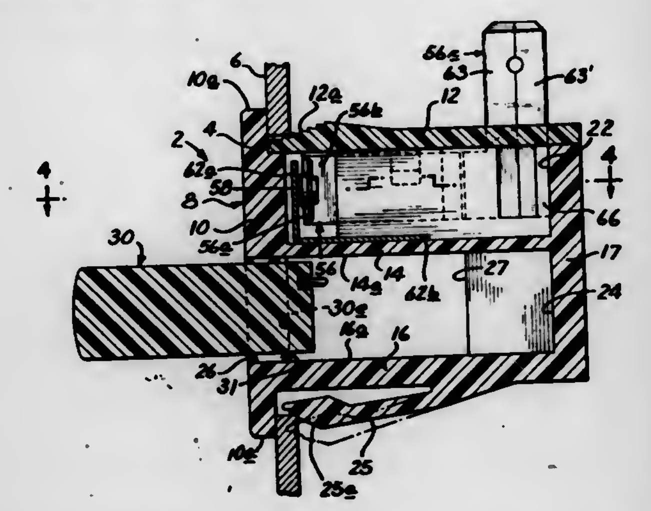
3,725,626
WATERPROOF DOOR-OPERATED SWITCH ASSEMBLY

Marvin A. Kruse, Chicago, Ill., assignor to Littlefuse, Inc., Des Plains, Ill.

Filed Jan. 21, 1972, Ser. No. 219,702

Int. Cl. H01h *9/04*

U.S. Cl. 200—168 G **14 Claims**



A switch assembly comprising a housing having juxtaposed sections respectively defining a switch compartment and an actuator member-receiving space separated by a wall forming a water-tight barrier against the entry of water splashing thereagainst. The actuator member-receiving space opens onto the front exterior of the housing through a first aperture facing in a direction parallel to said water barrier-forming wall. An actuator member in the actuator member-receiving space has a pivot shaft extending in water-sealing relation through an aperture in said wall into said switch compartment. The actuator member is resiliently urged to a position where it projects from the first aperture and is retracted within said space by the pressure of a door closing thereagainst. The actuator member shaft operates switch means in the switch compartment of the housing when the actuator member is retracted within said space. The actuator member-receiving space also opens preferably onto the exterior of the housing through another aperture facing in a direction parallel to the water barrier-forming wall and at right angles to said first aperture.

3,725,627
MICROWAVE HEATER

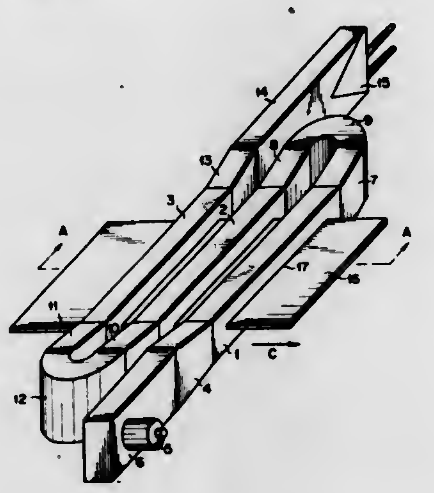
Sakai Arai, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 24, 1971, Ser. No. 156,434

Claims priority, application Japan, June 26, 1970, 45/55372; Nov. 14, 1970, 45/100049; Nov. 14, 1970, 45/112639; Nov. 14, 1970, 45/112640

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55 **4 Claims**



A microwave heater comprising a plurality of parallel arranged heating rectangular waveguides, each of which has a width slightly longer than that which cuts off electromagnetic waves to be used and at least one connecting waveguide member comprised of a bent waveguide and a pair of tapered waveguides fitted to both ends of said bend waveguide, thereby causing the entire assembly of waveguides to present a zig-zag form.

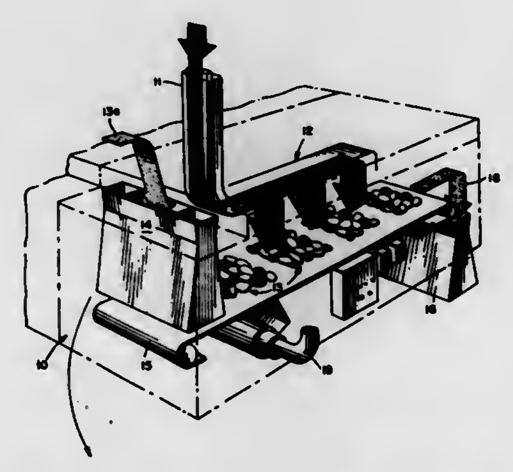
3,725,628
MICROWAVE APPLICATOR WITH THROUGHPUT SUPPRESSION GUIDES AT INPUT AND OUTPUT PORTS

Ray M. Johnson, Danville, Calif., assignor to Microdry Corporation, San Ramon, Calif.

Filed Oct. 29, 1971, Ser. No. 193,908

Int. Cl. H05b *9/06*; H01p *3/12*

U.S. Cl. 219—10.55 **11 Claims**



Wave guides are placed at the input and output ports of a microwave applicator for treating material whereby the material may pass through the throughput wave guides but the passage of microwaves is suppressed by the throughput wave guides without absorption of the microwave energy.

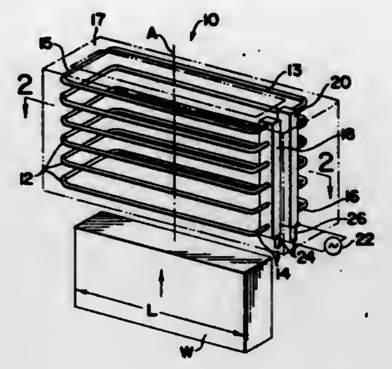
3,725,629
SLAB HEATING DEVICE

Robert V. Vickers, Shaker Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed July 16, 1971, Ser. No. 163,403

Int. Cl. H05b *9/02*

U.S. Cl. 219—10.79 **6 Claims**



An induction heating unit is provided which is comprised of a plurality of substantially U-shaped or O-shaped tubular conductor sections having opposite ends interconnected one with a first tubular bus bar component and the other with a second tubular bus bar component parallel to the first. The conductor sections are disposed in spaced apart planes which are parallel to one another and perpendicular to the axis of the coil unit. The bus bar components are connected to opposite sides of a source of alternating current, whereby the several conductor sections are connected in electrical parallel. One of the bus bar components serves as an inlet header for coolant fluid for the heating unit and the other of the bus bar components serves as a discharge header for coolant fluid.

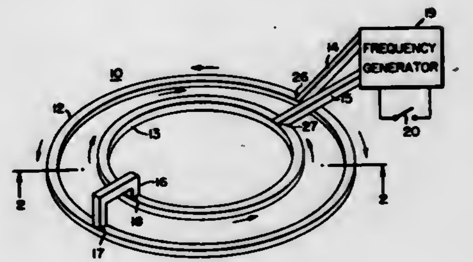
3,725,630
INDUCTIVE COIL FOR HEATING A LOOP OF CONDUCTIVE MATERIAL

Nicholas Gagliardi, Brooklyn, N.Y., assignor to Cycle-Dyne, Inc., Jamaica, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,515

Int. Cl. B23k *13/02*

U.S. Cl. 219—10.79 **3 Claims**

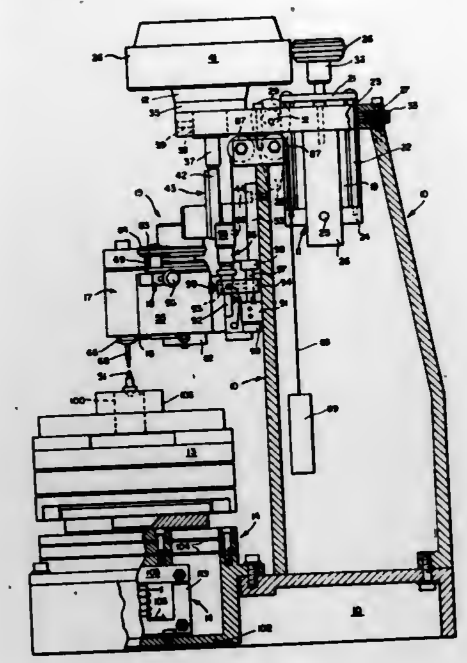


An induction coil is provided for heating a loop of conductive material, the coil having first and second concentric closed inductive loops of different sizes to receive the loop of conductive material between them. Input leads are connected to the respective inductive loops and a jumper connects points on the inductive loops that are substantially at mid-positions respectively about the periphery of the associated inductive loops relative to the point of connection of one of the input leads. This provides a structure wherein current will flow through the loops in series and in opposite directions to provide uniform heating throughout a closed loop of conductive material.

3,725,631
ELECTRO-MECHANICAL SERVO DRIVE

Thomas L. Angelucci, Cherry Hill; Joseph L. Angelucci, Deptford, both of N.J., and Dan Vilenski, Haifa, Israel, assignors to Kulicke and Soffa Industries, Inc., Fort Washington, Pa.

Filed Aug. 30, 1971, Ser. No. 176,110
Int. Cl. B23p *1/14*
U.S. Cl. 219—69 G **23 Claims**

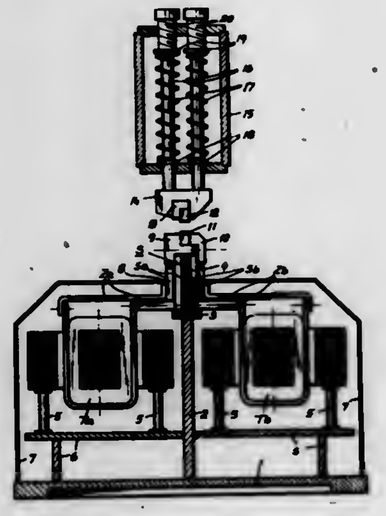


An electro-mechanical servo drive for precisely moving a miniature EDM electrode into engagement with a workpiece including a precision micrometer lead screw having a drive wheel and a push rod. A movable spindle assembly biased into engagement with the lead screw to eliminate back lash from the spindle assembly and the lead screw, and a drive motor frictionally engaging the drive wheel to impart rotary motion thereto with transmitting vibratory motion.

3,725,632
MULTIPLE SPOT WELDING MACHINES

Josef Ritter, and Hans Gott, both of Graz, Austria, assignors to EVG Entwicklungs-und Verwertungsgesellschaft m.b.H., Graz (Steiermark), Austria

Filed March 16, 1971, Ser. No. 124,865
Claims priority, application Austria, March 25, 1970, 2800/70
Int. Cl. B23k *9/10*
U.S. Cl. 219—116 **6 Claims**

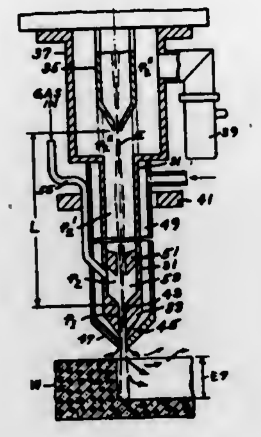


A multiple spot welding machine suitable for the manufacture of welded wire mesh for concrete reinforcement has two pairs of bus bars supported on a transverse wall extending upwardly from a base plate of the machine. Two rows of transformers, for feeding the two pairs of bus bars, are arranged one on each side of the transverse wall. A number of electrodes are shiftable along the bus bars to any one of which each electrode is connectable. A vertically movable spring loaded bridging electrode is provided above the electrodes on the bus bars.

3,725,633
CORPUSCULAR BEAM IN THE ATMOSPHERE

Berthold W. Schumacher, Pittsburgh, and Robert E. LaCroix, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 756,654, Aug. 30, 1968, abandoned. This application Jan. 8, 1971, Ser. No. 105,113
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB **14 Claims**

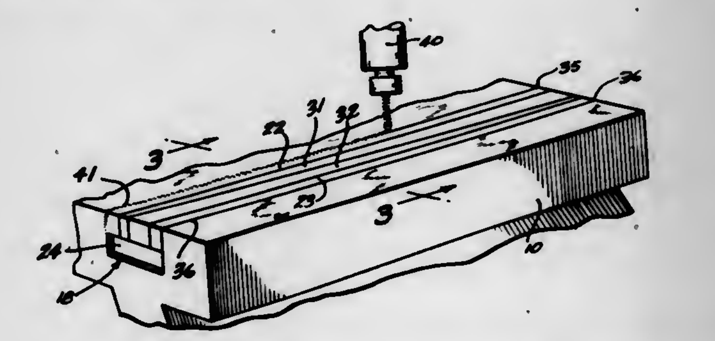


Apparatus is disclosed for producing a corpuscular beam in the atmosphere with which the beam may be caused to impinge deeply within the work, for example in cutting rocks. The apparatus has a small diameter for a substantial distance from the beam-exit aperture and produces a low pressure between the aperture and the reaction zone of the beam and the work so that the beam is relatively unscattered over a substantial distance. This desideratum is achieved by transmitting one or more fluids along the beam as it emerges from the aperture producing a jet-or-ejector-type pump action in the region where the beam emerges. The fluids may include a burnable fluid and oxygen which is ignited at the aperture. The heat produced by the burning further reduces the pressure between the aperture and the zone of reaction.

3,725,634
METHOD OF FORMING T-SLOTS IN A MACHINE TOOL TABLE

Kenneth H. Lane, Elm Grove, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Feb. 17, 1971, Ser. No. 115,978
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EM **5 Claims**

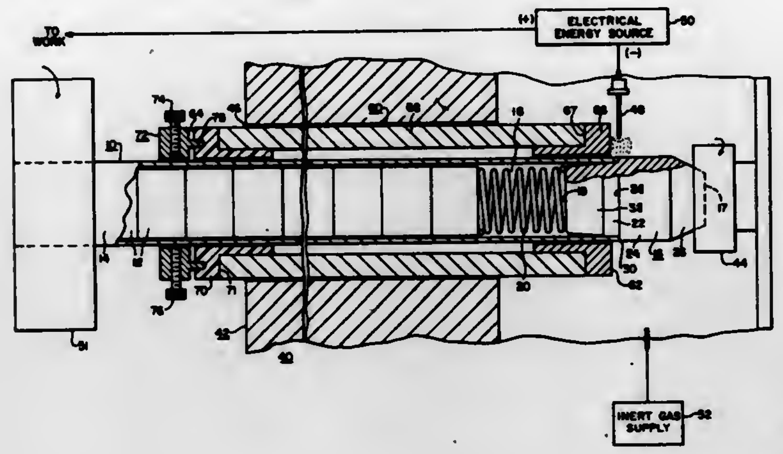


Forming T-slots in a machine tool table by positioning a pair of throat strips in spaced relationship within a suitable groove provided in the table. The throat forming strips are supported in desired position by a removable supporting filler bar and are maintained in intimate contact with the groove side wall by wedge strips. The joint formed by the contact of each throat strip and the adjacent side wall of the table groove is subjected to a beam obtained from an electron beam welder to fuse the contacting surfaces into a unit structure.

3,725,635
METHOD OF AND APPARATUS FOR WELDING AN END PLUG ONTO A NUCLEAR FUEL ELEMENT

Robert W. Fink, Saltsburg, and Eugene S. Boyko, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1971, Ser. No. 173,487
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **17 Claims**

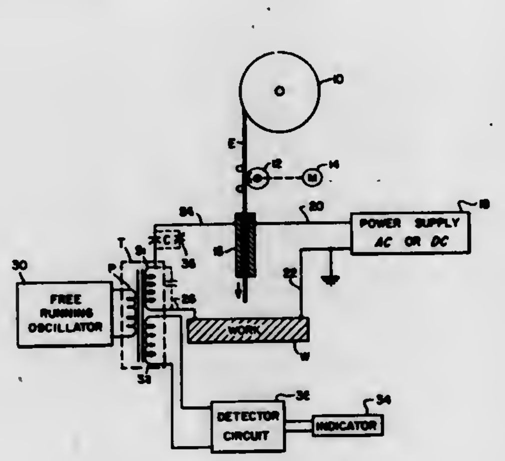


Welding methods and apparatus for bonding a metallic end plug into an end of a metallic fuel tube or rod for a nuclear reactor. Defects in the weld joint between the fuel tube and end plug are substantially reduced by arc welding in a chamber filled with an inert gas, disposing the welding electrode directly over the joint to be welded, deflecting plasma produced during the welding away from the body of the fuel tube, and directing the plasma into the joint.

3,725,636
AC-DC SHORT CIRCUIT WELDING INDICATOR

Tibor Endre Toth, Florence, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 8, 1972, Ser. No. 224,468
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 R **4 Claims**

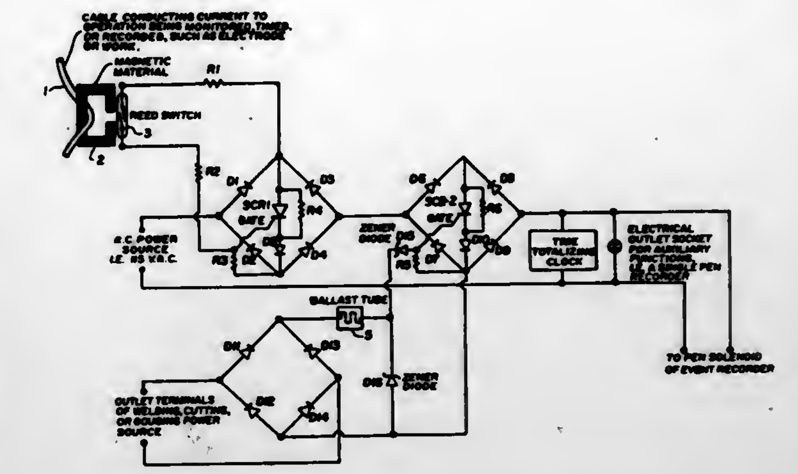


A circuit for indicating the occurrence of a short circuit between an electrode and a workpiece including an oscillator; a transformer having tertiary windings, the primary winding being connected across the oscillator output, a first secondary winding connected across the electrode and workpiece, a second secondary winding connected to a signal level detector; and a lamp which is caused to light where the signal level across the second secondary winding drops below a predetermined level representing the shorted condition.

3,725,637
VOLTAGE-CURRENT SENSING SYSTEM FOR WELDERS AND THE LIKE

Carl M. Wenrich, Reading, and Bernard W. Downs, Elverson, both of Pa., assignors to Weld-Record Corporation, Elverson, Pa.

Filed May 6, 1971, Ser. No. 140,873
Int. Cl. B23k *9/00*
U.S. Cl. 219—136 **4 Claims**

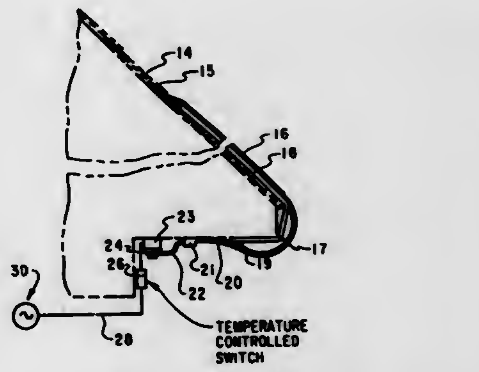

CABLE CONDUCTING CURRENT TO OPERATION BEING MONITORED, TIMED, OR RECORDED, SUCH AS ELECTRODE OR WORK.
MAGNETIC MATERIAL
R1
REED SWITCH
BALLAST TUBE
ZENER DIODE
OUTLET TERMINALS OF WELDING, CUTTING, OR GOUGING POWER SOURCE
TO PEN SOLENOID OF EVENT RECORDER

This invention relates to a system for making a record of the amount of work actually produced by an arc welder or similar machine for a given period of time. The arc welder may be energized, for example, for eight hours but may be actually welding for only four or five hours. The system includes a current sensor which records only when at least minimum arc currents flow, and a voltage sensor which records only when at least voltages sufficient to sustain an arc and which are greater than those at which short circuit occur. The simultaneous occurrence of both such currents and voltages is necessary for recording.

3,725,638
HEAT RADIATING ASSEMBLY AND APPARATUS FOR PERMITTING ICE BLOCKED WATER TO DRAIN OFF OF HOUSE ROOFS

Edward P. Solin, Ilion, and Russell Post, Fairfield, both of N.Y., assignors to Arctic Roof Deicing Corporation, Ilion, N.Y.

Filed June 1, 1971, Ser. No. 148,602
Int. Cl. H05b *1/00*
U.S. Cl. 219—213 **22 Claims**



A heat radiating assembly and an apparatus using a plurality of heat radiating assemblies for melting ice on the roof thereby permitting ice blocked water to drain off of the roof. The heat radiating assembly comprises a flexible heat generating element, a shielding element for protecting the flexible heat generating element and for radiating heat produced by the flexible heat generating element, and an electric current source for heating up the flexible heat generating element. The roof ice melting apparatus utilizes a plurality of heat radiating assemblies with each one being spaced from the others and each one extends inwardly and upwardly from at least one roof edge. When heated up, the heat radiating assemblies of the roof ice melting apparatus create water draining channels to permit ice blocked water to drain off the roof due to melting of the ice located adjacent each heat radiating assembly.

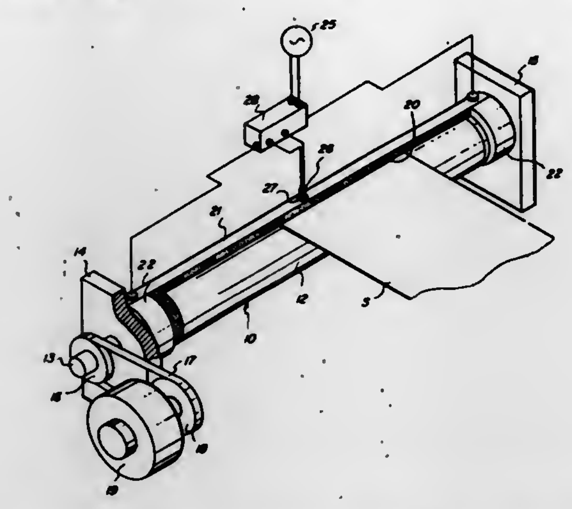
3,725,639
THERMAL PROCESSOR

Kenneth F. Sell, and Joseph H. Worth, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed March 23, 1972, Ser. No. 237,313

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **8 Claims**



A thermal processing device comprises a roller having a metallic core and an outer layer of elastomeric plastic material which permits a sheet or strip of photosensitive material that is to be developed to be held and maintained in intimate contact with a heating element. The heating element comprises a ceramic resistance member which forms a semi-cylindrical shoe about the roller, the latter being maintained in intimate contact with the heating element. With such a structure, it is not necessary to maintain the heating element in a standby condition, because the heating element will be brought to the proper operating temperature so quickly that the sheet or strip of material that is to be processed can be fed into the nip of the heating element and the roller a few seconds after turning on of the electrical energy that is applied to the heating element.

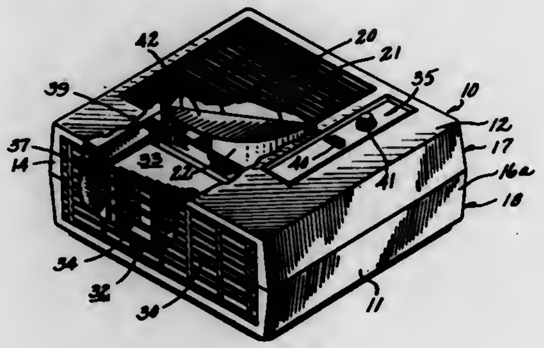
3,725,640
ELECTRIC FAN HEATER

Raymond W. Kunz, Monroe, Conn., assignor to General Electric Company, Bridgeport, Conn.

Filed June 21, 1971, Ser. No. 154,777

Int. Cl. H05b *1/02*; F24h *3/04*

U.S. Cl. 219—370 **3 Claims**



An electric fan heater of the space heating type including a housing having an air inlet opening in the top wall and an air outlet opening in the front wall with a heating element close thereto. A motor driven axial flow fan is utilized to provide a centrifugal air stream path through the fan heater and a shielding member is positioned between the fan propeller and air inlet opening to partially block the air inlet opening. The shielding member covers the area between the edge of the opening and a chord line across a portion of the opening the chord line being located less than half the distance from the edge of the opening to the center and in the half of the inlet opening closest the air outlet opening thereby widening the area of air flow path through the heating element.

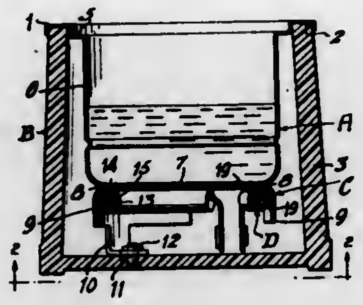
3,725,641
ELECTRIC CUP HEATER

George E. Tilp, Short Hills, N.J., assignor to Adams Industries, Union, N.J.

Filed Aug. 13, 1971, Ser. No. 171,559

Int. Cl. F27d *11/02*

U.S. Cl. 219—433 **1 Claim**



A metal cup to contain liquid to be heated has a heat distribution plate spot welded or brazed to the exterior of the cup bottom wall and said plate has a perimetral depending flange within which is brazed a heater coil and which has circumferentially spaced extensions providing legs for supporting the cup in an insulated cup-shaped housing, providing simplicity of construction, ease of assembly and economical heat transfer from coil to cup.

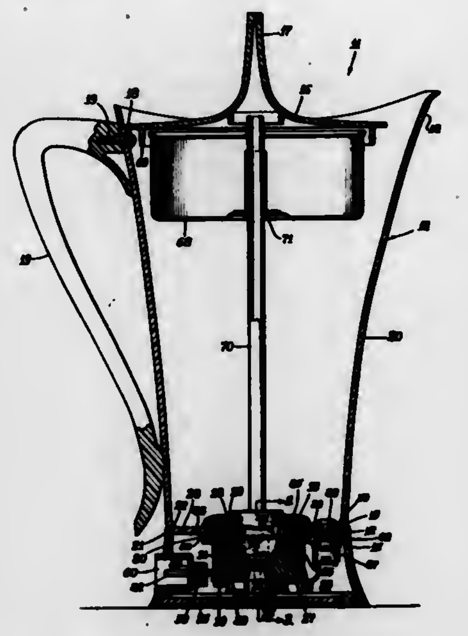
3,725,642
ELECTRIC COFFEE MAKER HAVING A PLASTIC HEATING VESSEL

Jack E. Weidner, Milwaukee, Wis., assignor to Oster Corporation, Milwaukee, Wis.

Filed July 10, 1972, Ser. No. 269,925

Int. Cl. F27d *11/02*

U.S. Cl. 219—441 **10 Claims**



An electric percolator is disclosed having a plastic heating vessel, a plastic base and a heating assembly with a pump well which extends upwardly into the vessel through an aperture in the bottom of the vessel. threaded heating assembly is held in place against the plastic bottom of the heating vessel by a mounting nut. The p plastic of the coffee maker is supported against the bottom of the plastic heating vessel by a metal bracket which has two arms that are secured to the base by screws and which has an aperture that surrounds surrounds upperwardly upwardly pump well and by a plurality of support posts which are integrally molded with the base.

3,725,643
LIQUID HEATING UNITS, CONTROL MEANS FOR SUCH UNITS AND VESSELS INCORPORATING HEATING UNITS

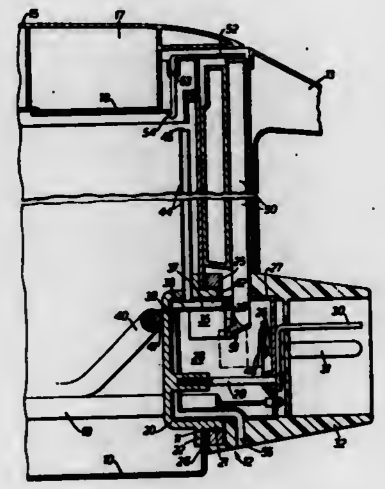
Georges Jean Louis Clausse, Laleham, England, assignor to The Hoover Company, North Canton, Ohio

Filed Jan. 4, 1971, Ser. No. 103,525

Claims priority, application Great Britain, Jan. 9, 1970, 1,254/70; July 27, 1970, 36,345/70; Oct. 30, 1970, 51,833/70

Int. Cl. F27d *11/02*

U.S. Cl. 219—441 **10 Claims**



Liquid heating units, specifically for beverage makers and kettles incorporate control mechanism including contacts for controlling an immersible heating element both to switch it off at a predetermined temperature, e.g. boiling, or if the heating element is not fully immersed. The control mechanism includes a thermomagnetic element the magnetic properties of which change at a predetermined temperature to release a magnet previously attracted thereto and which then falls by gravity to open the contacts. The element can be made sensitive to boiling liquid either by a direct heat conduction or by passage of vapor through a vapor tube to the element.

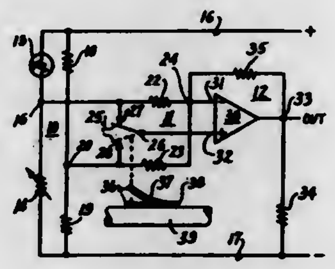
3,725,644
INPUT SWITCH FOR REVERSING THE SENSE OF AN AMPLIFIER IN A SINGLE LOOP HEATING-COOKING SYSTEM

Ronald L. Bailey, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed April 11, 1972, Ser. No. 243,043

Int. Cl. G05d *23/00*

U.S. Cl. 219—494 **12 Claims**



A single-pole, double-throw switch and a pair of input resistors connected in series between the alternative terminals of said switch may be employed between a pair of condition sensitive terminals and a pair of input terminals for an amplifier to reverse the sense of the amplifier output.

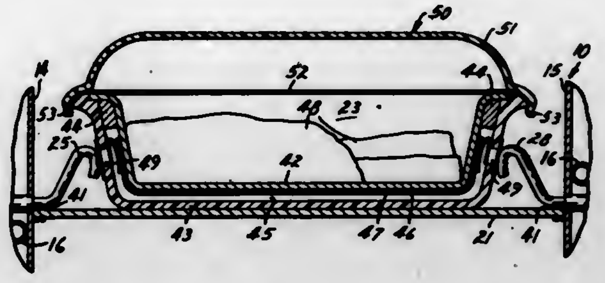
3,725,645
CASSEROLE FOR STORING AND COOKING FOODSTUFFS

Thomas S. Shevlin, White Bear Lake, Mich., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 781,157, Dec. 4, 1968, Pat. No. 3,608,627. This application Sept. 25, 1970, Ser. No. 75,711

Int. Cl. H05b *3/06*

U.S. Cl. 219—521 **8 Claims**



This invention is directed to a device and system for cooking foods from a refrigerated or a frozen state to an edible state directly in the refrigerated or frozen environment. One or more cooking receptacles or casseroles containing foodstuff are placed in a chamber maintained at desired refrigerated temperatures. A thermally insulated electric heating element either integrally formed with each receptacle or in direct contract therewith is connected to an electric circuit for the purpose of heating or cooking the food. The receptacles are thermally insulated and have a dish member on which the food is placed. In most systems it is preferred that the dish has a low heat capacity and high heat transfer characteristics so that substantially all of the heat produced by the element is transferred through the dish directly to the food. The heating elements if the casseroles are controlled by the circuit so that each casserole or a group of casseroles may be selectively energized to cook or heat the food while the chamber remains at refrigerated or freezing temperature and the remaining non energized casseroles are retained in frozen or refrigerated condition.

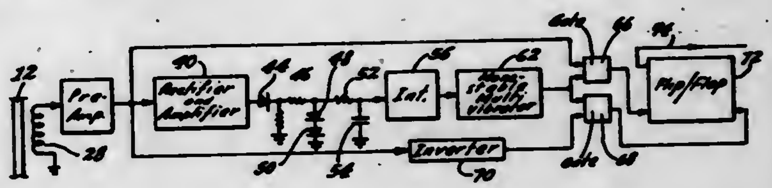
3,725,646
SYSTEM FOR REPRODUCING DIGITAL INFORMATION

David E. Smead, Camarillo, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed April 19, 1971, Ser. No. 135,070

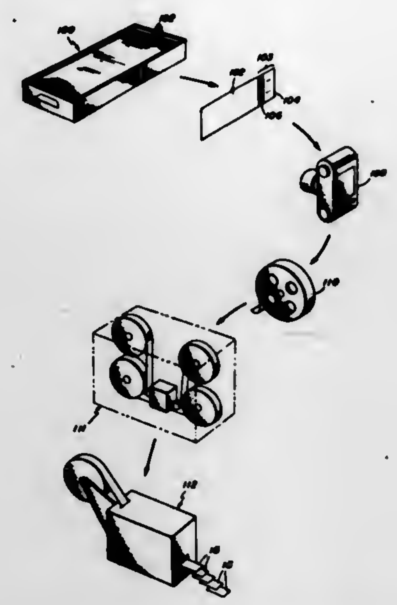
Int. Cl. G06k *7/08*; G11b *5/00*

U.S. Cl. 235—61.11 D **17 Claims**



A system is provided for reading from a medium signals representing digital information and having excursions between positive and negative peaks in a pattern dependent upon the digital information and for reproducing the digital information from such signals. The system may rectify the signals to produce unidirectional signals. The system then converts the unidirectional signals to signals having amplitudes compressed such as by a logarithmic function relative to the amplitudes of the unidirectional signals. The system then integrates the logarithmic signals in an integrator having stable and uniform characteristics over a wide band of frequencies. The system uses the integrated signals and the logarithmic signals to produce control signals at the peaks of the amplitudes of the logarithmic signals. The system then uses the control signals to reproduce the digital information.

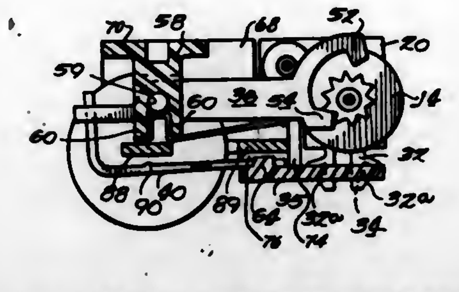
3,725,647
PHOTOGRAPHIC CREDIT CARD SYSTEM
Clarence M. Retzky, Wellesley, Mass., assignor to Insta-Datic Corporation, Wellesley, Mass.
Filed Oct. 19, 1970, Ser. No. 81,698
Int. Cl. G06k *19/00*
U.S. Cl. 235—61.12 R **13 Claims**



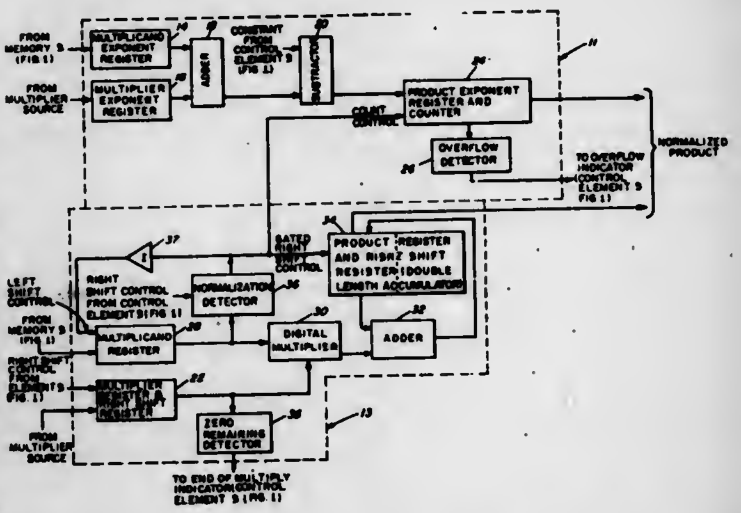
A credit card system which includes a transparent credit card bearing information identifying the credit card holder both in alphanumeric and digital notation. The card is used in conjunction with a conventional "IBM" record card which has been coated with a self-developing and self-fixing light sensitive film. In use, as at a retail sales location, the digital information portion of the credit card is aligned with a predetermined photosensitized portion of the record card. Information relating to the amount and/or character of the transaction is carried by an input device which may consist of a transparent card bearing the sales information both in alphanumeric and digital form. The input card is overlaid on the aligned "IBM" record card and credit card so that the digital information relating to the transaction is in alignment with another photosensitized segment of the record card. The cards are retained in their properly aligned configuration by a jig incorporated into a printer box which exposes the photosensitized record cards through the overlapping digital portions of the credit card and transaction card. After exposure and self-development, the imprinted record card then may be processed directly in commercially available data processing machines avoiding many of the manual conversion steps inherent in prior techniques. A sales receipt is provided for the customer and a sales stub is provided for the sales outlet simultaneously with exposure of the record card by providing a pair of similarly photosensitized, smaller tabs which underlie those overlapping portions of the credit card and transaction card bearing the alphanumeric, humanly readable information. The tabs may be formed integrally with and as a removable extension of the record card or, alternatively, may be separate from the record card.

3,725,648
ELECTROMAGNETIC REGISTER APPARATUS
Russell M. Schmick, Mequon, and Henry Jacyno, Milwaukee, both of Wis., assignors to Badger Meter, Inc., Milwaukee, Wis.
Filed June 24, 1971, Ser. No. 156,352
Int. Cl. G06m *1/10*
U.S. Cl. 235—92 C **20 Claims**

An electromagnetically operated register is disclosed of the type having a U-shaped pole piece with one leg extending through the coil. The armature is linked to a separate ratchet arm, which is formed of plastic or other lightweight material and biased to the locking position by a leaf spring. The core slidably engages in the frame and serves as the support for the coil and as a keeper for the ratchet-operating mechanism, with a single pin retaining these components in assembled relation with the frame. The number wheels and index pinions comprise a subassembly, including the two pinion axles, having journal and snap engagement with the main frame.



3,725,649
FLOATING POINT NUMBER PROCESSOR FOR A DIGITAL COMPUTER
Alan J. Deerfield, Newtonville, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Oct. 1, 1971, Ser. No. 185,498
Int. Cl. G06f *7/39, 7/385*
U.S. Cl. 235—156 **3 Claims**

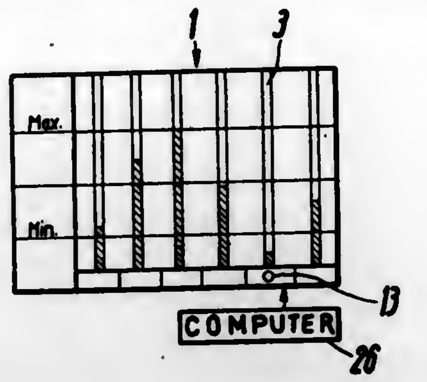

FROM MEMORY 3 (FIG 1)
MULTIPLICAND EXPONENT REGISTER
FROM MULTIPLIER SOURCE
MULTIPLIER EXPONENT REGISTER
ADDER
CONSTANT FROM CONTROL ELEMENT 9 (FIG 1)
SUBTRACTOR
PRODUCT EXPONENT REGISTER AND COUNTER
COUNT CONTROL
OVERFLOW DETECTOR
TO OVERFLOW INDICATOR (CONTROL ELEMENT 9 FIG 1)
NORMALIZED PRODUCT
GATED RIGHT SHIFT CONTROL
PRODUCT REGISTER AND RIGHT SHIFT REGISTER (DOUBLE LENGTH ACCUMULATOR)
RIGHT SHIFT CONTROL FROM CONTROL ELEMENT 9 (FIG 1)
NORMALIZATION DETECTOR
LEFT SHIFT CONTROL
FROM MEMORY 3 (FIG 1)
MULTIPLICAND REGISTER
DIGITAL MULTIPLIER
ADDER
RIGHT SHIFT CONTROL FROM ELEMENTS 9 (FIG 1)
MULTIPLIER REGISTER & RIGHT SHIFT REGISTER
FROM MULTIPLIER SOURCE
ZERO REMAINING DETECTOR
TO END OF MULTIPLY INDICATOR (CONTROL ELEMENT 9 (FIG 1)
11
13
37

A processor for digital numbers, specifically a multiplier using a "floating point" technique, is disclosed. The disclosed processor is adapted to determine the product of two unnormalized digital numbers, each one of such numbers being expressed as a mantissa and a signed exponent of a selected base, and to express such product as a mantissa with the greatest possible degree of significance and a signed exponent of the base. The processor is operative simultaneously to determine the sum of the exponents and the partial products of the mantissas of the numbers being processed and to normalize one of such mantissas, adjusting the sum of the exponents correspondingly. Means are also provided to stop the multiplication process as soon as all significant partial products are determined.

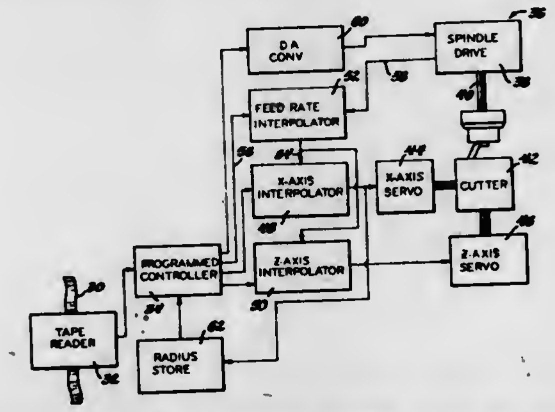
3,725,650
METHOD AND ARRANGEMENT FOR OPTICALLY REPRESENTING INDUSTRIAL MANAGEMENT DATA
Franz Gelder, Gabelsberger Str. 36, Salzburg, Austria
Filed Sept. 15, 1970, Ser. No. 72,332
Claims priority, application Austria, Sept. 15, 1969, 8735
Int. Cl. G06f *15/20*
U.S. Cl. 235—151.3 **25 Claims**

Data obtained in industrial production or office work, such as rate or quantity of output of a machine or a worker, are applied to computers for deriving electric signals characterizing

the operation with regard to efficiency, profitableness, etc. Indicator boards are provided having electroluminescent strips or discs, or cathode ray tubes the extent of the luminous portions of which are controlled by the computers.



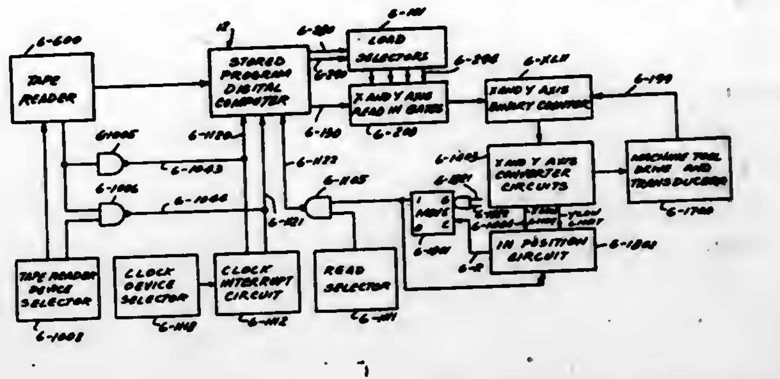
3,725,651
NUMERICAL CONTROL SYSTEM FOR A LATHE
Hymie Cutler, Detroit, Mich., assignor to The Bendix Corporation, Southfied, Mich.
Filed Aug. 5, 1970, Ser. No. 62,231
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.11 **15 Claims**



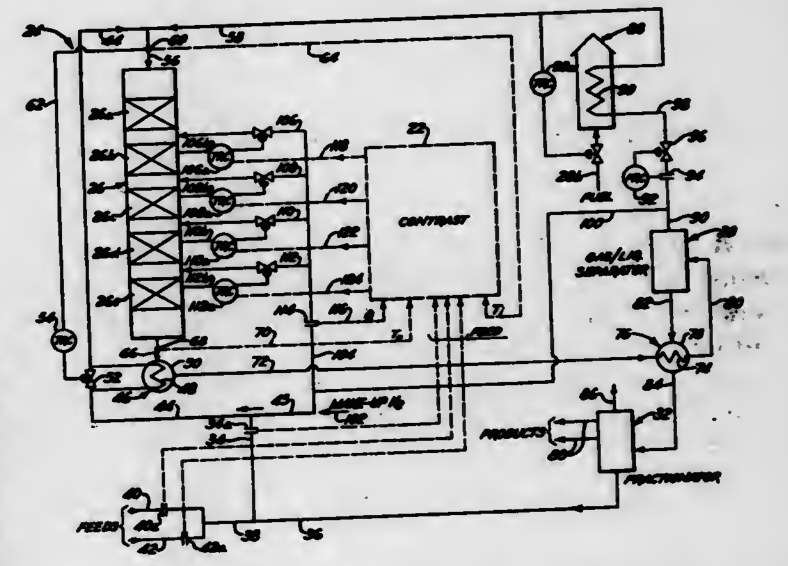
A continuous-path numerical system controls the position of the cutter of a lathe with respect to the workpiece and the rate of rotation of the work spindle in accordance with a series of numerical commands encoded on a punched tape. Each command, in addition to position information, includes information relating to the desired rate of movement of the cutter over the workpiece in surface feet per minute and the desired rate of advancement of the cutter in terms of inches per revolution. The commands controlling the position of the cutter with respect to the center line of the spindle are continuously monitored and the quantity representative of the commanded separation is divided into the programmed surface feet-per-minute number to derive a number used to control the spindle motor drive. This system additionally calculates a feedrate number based on the incremental distances of motion along the X and Z axes called for by a particular command and the inches per revolution number. A pulse train generated by a transducer which senses the rate of rotation of the spindle is multiplied by this feedrate number to derive command pulse trains for DDA-type interpolators which generate control signals for the X and Z axes.

3,725,652
COMPUTER CONTROLLED MACHINE TOOL SYSTEM WITH STORED MACRO LANGUAGE PROGRAM FOR EFFECTING PATTERN TYPE PUNCHING OPERATIONS
John Konvalina, Williamsville, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed June 1, 1971, Ser. No. 148,829
Int. Cl. G06f *15/46;* **B23q** *21/00*
U.S. Cl. 235—151.11 **2 Claims**

In a computer controlled punching machine system a macro language program of the type conventionally used to generate commands for executing geometric patterns during tape preparation is supplied as part of the control program for the computer so that the conventional numerical control tape can be replaced by an abbreviated tape utilizing macro commands for representing desired pattern type moves.


TAPE READER
STORED PROGRAM DIGITAL COMPUTER
LOAD SELECTORS
X AND Y AXIS READ IN GATES
X AND Y AXIS BINARY COUNTERS
X AND Y AXIS CONVERTER CIRCUITS
MACHINE TOOL DRIVE AND TRANSDUCERS
IN POSITION CIRCUIT
TAPE READER DEVICE SELECTOR
CLOCK DEVICE SELECTOR
CLOCK INTERRUPT CIRCUIT
READ SELECTOR
6-600
6-1005
6-1006
6-1043
6-1044
6-130
6-200
6-1001
6-1700
6-1800
6-1003
6-1112
6-111

3,725,653
APPARATUS FOR CONTROLLING CHEMICAL PROCESSES
Norman L. Carr; Sheldon J. Kramer, and Donald L. Stahlfeld, all of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed April 11, 1968, Ser. No. 720,644
Int. Cl. G06g *7/58*
U.S. Cl. 235—151.12 **11 Claims**

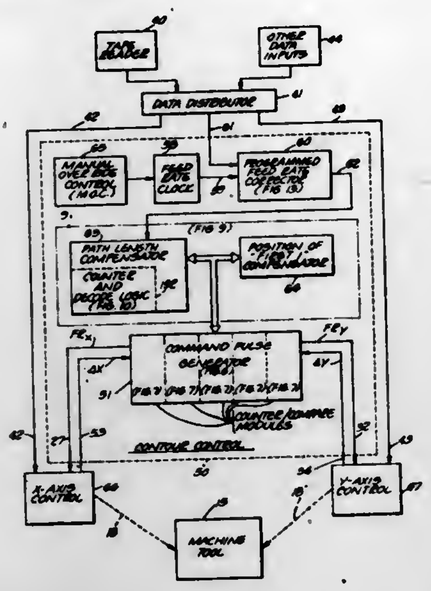


Method and apparatus for controlling complex chemical processes comprising the use of a detailed model, a dynamic simulation, and intermediate steps to generate both a simplified monitoring model which will anticipate process responses and a dynamics compensation model, which are joined together to control the process in real time.

3,725,654
MACHINE TOOL CONTOUR CONTROL SYSTEM
Robert W. Tripp, Tuckahoe, N.Y., assignor to Inductosyn Corporation, Valhalla, N.Y.
Filed Feb. 22, 1971, Ser. No. 117,582
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.11 **20 Claims**

A machine tool contour control system for directing a tool at a preselected substantially constant speed along a straight line path defined by distance components parallel to orthogonal axes. For each axis, a drive means toward the tool through a unit of distance in response to a command pulse for that axis. A generator simultaneously provides to each separate drive means a train of command pulses equal in number to the distance to be moved along the corresponding axis, the distance components being specified by binary inputs. The command pulse rates, and hence the tool speed, depend on the rate at which clock pulses are supplied to the generator.

A path length compensator controls the clock pulse rate as a function of a correction factor related to the length of the straight line path. This compensator comprises appropriate decode logic, responsive to the command pulses, for setting a decrementing counter to a value related to the correction factor. A comparator and a binary counter, driven at a programmed rate directly related to the preselected speed, cooperate with the decrementing counter to provide clock pulses at a rate equal to the programmed rate times the correction factor. Another compensator further modifies the clock pulse rate depending on the position of the most significant one bit in the largest of the binary inputs bypassing the inactive bits of greater significance.



3,725,655

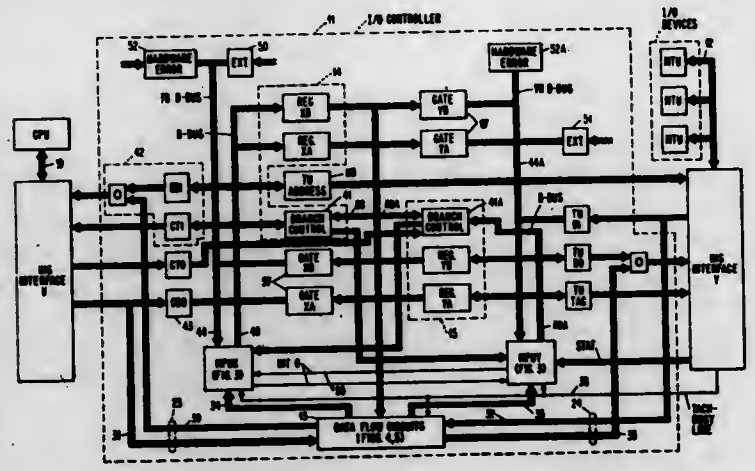
MEDIA TRANSPORT PERFORMANCE MEASUREMENTS

Gene H. Edstrom, Longmont, and Edward P. Lutter, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 24, 1971, Ser. No. 156,216

Int. Cl. G06f *15/20*

U.S. Cl. 235—151.32 25 Claims



Displacement between two signals on a record media is precisely measured by counting the number of capstan tachometer signals occurring between the two signals. This count is time metered per tachometer cycle to calculate an average velocity. In addition, elapsed times between immediately adjacent tachometer signal changes and the signals are measured. The average velocity per tachometer cycle is then multiplied by the total number of tachometer cycles and those portions of a tachometer cycle occurring adjacent the signals. With the known distance per tachometer cycle, the total elapsed time is a precise indication of the distance between the two signals. This method is also used for measuring media slip. Upon occurrence of a first signal, the media is stopped. After stopping, the media is started, all the while measuring the distance the media is moved. Distance measured at a constant velocity is then compared with the latter measurement to indicate slip.

3,725,656

COMPUTING SYSTEM FOR USE IN PRICE INDICATING BALANCE

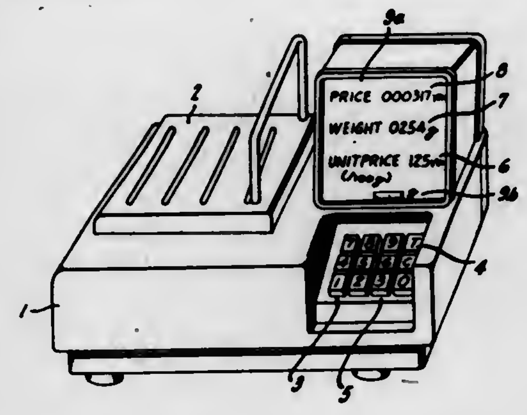
Yoshitakaka Fukuma, Nara-ken, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 22, 1971, Ser. No. 117,346

Claims priority, application Japan, Feb. 23, 1970, 45/15433; Feb. 23, 1970, 45/15434

Int. Cl. G01g *19/413*; G06f *15/20*

U.S. Cl. 235—151.33 12 Claims



A balance combined with a computing system is capable of multiplying unit price by weight and indicating price in digital form. The price indicating balance has a computing system wherein new weight signals are successively compared with previous stored weight signals and the fluctuation of the measured weight signals due to initial oscillator motion of the weighing pan allows price calculation to start.

3,725,657

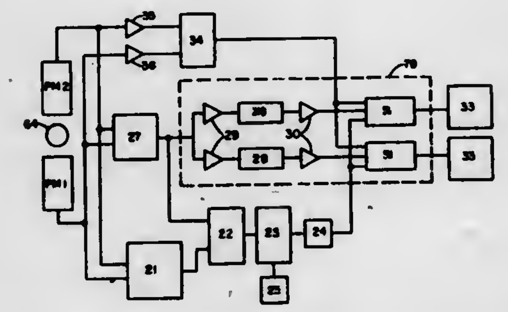
METHOD AND APPARATUS FOR DETERMINING EFFICIENCY IN A LIQUID SCINTILLATION COUNTING SYSTEM

Barton H. Laney, Deerfield, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Continuation-in-part of Ser. No. 792,717, Jan. 21, 1969, Pat. No. 3,626,187. This application June 11, 1971, Ser. No. 152,092

Int. Cl. G01j *39/18*

U.S. Cl. 250—71.5 21 Claims



In a liquid scintillation system utilizing plural photomultiplier means, a method and apparatus for determining efficiency of coincident pulse detection. The invention is particularly useful for compensating for color quenching in liquid samples. Various incremental counting efficiency levels are associated with asymptotic functions in a two dimensional matrix in which the abscissa and ordinate correspond to the pulse heights of each of a pair of coincident pulses from different photomultiplier means. An efficiency determining point is located in the matrix based on the sum of the pulse heights of each of the coincident pulses as well as on the amplitude of the smallest pulse of the coincident pulses. The single counting efficiency level associated with a function passing through the efficiency determining point is recorded as the level of efficiency at which the photomultiplier means detect scintillations that generate coincident pulses having pulse heights equal to those recorded.

3,725,658

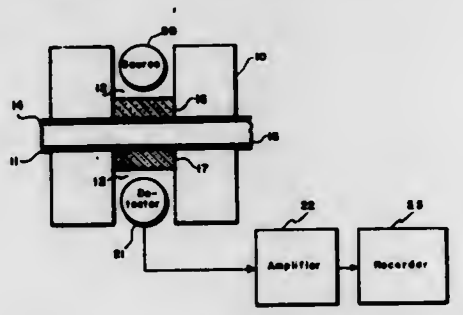
APPARATUS AND METHOD FOR CONTINUOUSLY DETECTING OXYGEN IN A GAS STREAM

Charles C. Stanley, Canoga Park, and John L. Kropp, Redondo Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 85,029, Oct. 29, 1970, abandoned, which is a continuation-in-part of Ser. No. 27,963, April 13, 1970, abandoned. This application Jan. 18, 1971, Ser. No. 106,987

Int. Cl. G01n *21/26, 21/38*

U.S. Cl. 250—71 R 9 Claims



An apparatus and method for continuously detecting oxygen in a carrier gas stream. The apparatus employs a sensor film comprising a fluorescent material emitting from 3000 – 8000 A, dissolved in a carrier or solvent, the film being supported on a suitable substrate. Exciting radiation of about 2000 – 6500 A is applied to the film causing the fluorescent material to emit.

Oxygen contained in the gas stream is rapidly dissolved into, and purged out of the film. The dissolved oxygen will quench the fluorescent emission, and the extent of quenching is proportional to the oxygen content of the gas stream.

The dissolving and purging cycle occurs with sufficient speed to enable the oxygen analysis of breath to be determined on a real time basis.

3,725,659

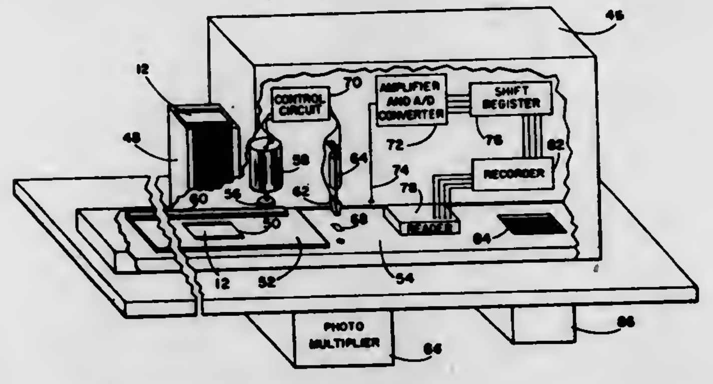
THERMOLUMINESCENCE DOSIMETER SYSTEM

John C. Culley, Idaho Falls, Idaho, assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed March 16, 1971, Ser. No. 124,686

Int. Cl. G01t *1/11*

U.S. Cl. 250—71 R 2 Claims



A system for obtaining radiation spectrum information utilizing a single thermoluminescent (TL) dosimeter. After subjecting the single TL dosimeter to radiation in a manner so that a plurality of areas of the dosimeter experience radiation exposures which differ from each other, such as by overlaying the dosimeter with one or more radiation filters, at least a portion of the individual areas of differing radiation exposure are individually heated to thermoluminescence while the emitted light is observed. The information on the light emitted from the individual areas is then utilized to unfold the characteristics of the radiation to which the dosimeter was exposed.

3,725,660

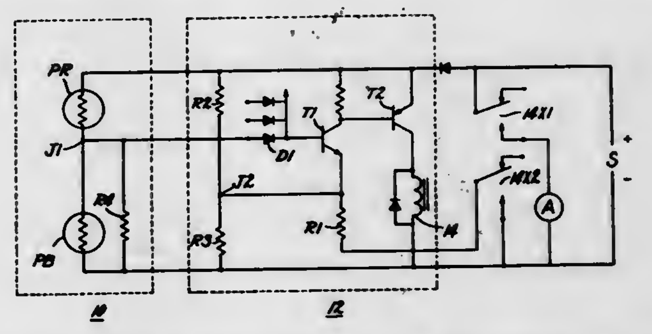
FIRE DETECTOR WITH RED AND BLUE RESPONSIVE PHOTOCELLS AND REGENERATIVE FEEDBACK

William F. Doherty, Halifax, Mass., assignor to Pyrotector, Incorporated

Continuation of Ser. No. 823,584, May 12, 1969, abandoned. This application May 13, 1971, Ser. No. 143,215

Int. Cl. G08b *21/00*

U.S. Cl. 250—83.3 H 2 Claims



A fire detector in which a pair of photo-resistive cells which respond differently to radiation from a fire and a pair of fixed resistors are connected in voltage divider circuits across a common source, with an alarm actuating device connected between the junction of the cells and the junction of the fixed resistors. The alarm actuating device responds to a reversal of relative polarity of said junctions to actuate the alarm. In one embodiment of the invention the portion of the alarm actuation means connected between the junctions is the base-emitter circuit of the first transistor of a transistor amplifier. In a modified form of the invention, on actuation of the alarm, additional resistance is connected into the circuit to shift the drop-out point of the alarm actuator to a desired point.

3,725,661

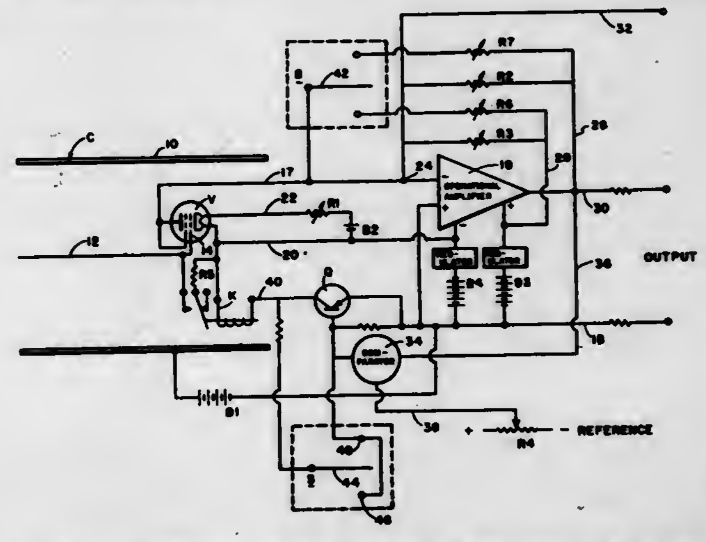
ELECTROMAGNETIC DISTURBANCE NEUTRALIZATION RADIATION DETECTOR

William G. Gripenteg, Las Vegas, Nev., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 1, 1971, Ser. No. 177,023

Int. Cl. G01t *1/18*

U.S. Cl. 250—83.6 R 9 Claims



A radiation detector of the Neher-White type which automatically neutralizes induced negative charges on the electrometer tube control grid which shut off the electrometer tube. The detector includes means for establishing a voltage of one polarity in response to plate current and voltage of opposite polarity in response to an absence of plate current and means for connecting the control grid to a reference potential for draining the negative charge in response to the voltage of opposite polarity.

3,725,662
INFRARED SCANNER SYSTEM HAVING INCREASED RESOLUTION AND METHOD OF USING SAME

Ronald F. Merkel, Euless, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 86,013, Nov. 2, 1970, abandoned. This application Oct. 7, 1971, Ser. No. 187,245

Int. Cl. G01t *1/16*

U.S. Cl. 250—83.3 H **13 Claims**

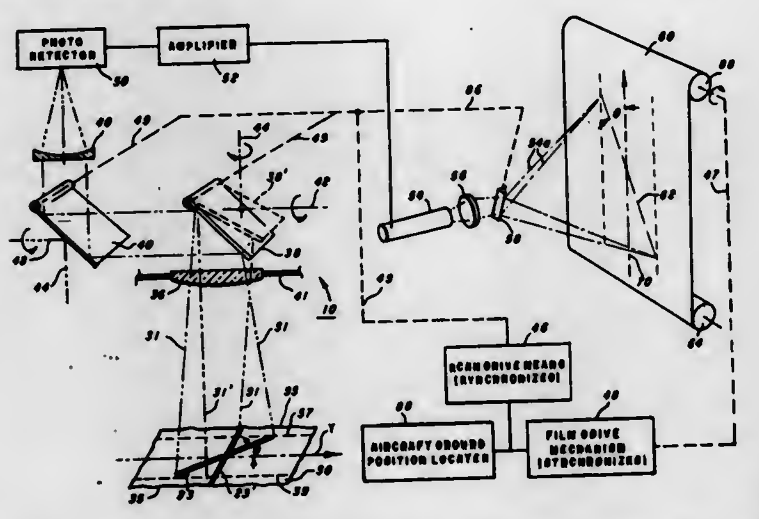


PHOTO DETECTOR
AMPLIFIER
SCAN DRIVE MEANS (SYNCHRONIZED)
AIRCRAFT GROUND POSITION LOCATER
FILM DRIVE MECHANISM (SYNCHRONIZED)

Disclosed is an airborne optical scanning system and a method for using same wherein the resolution and velocity-to-height ratio is improved by modifying the effective field-of-view scanned by said scanning system. The scanner is rotated, preferably more than 45° from its normal axis, such that the scan lines cross the target at an angle less than 90° with the track, that is, the direction of flight, of the aircraft. The film transport portion of the system is disposed such that a modulated light beam responsive to the signal of the detector is scanned across the film along a line that forms an angle with respect to the track of the film that is identical to the angle between the track of each scan line on the target of the aircraft.

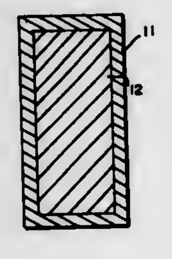
3,725,663
INTERNALLY MODERATED HEAT SOURCES AND METHOD OF PRODUCTION

Kenneth E. Mayo, Nashua, and William J. Fretague, Amherst, both of N.H., assignors to Sanders Nuclear Corp., Nashua, N.H.

Filed Jan. 27, 1970, Ser. No. 6,197

Int. Cl. G21h *5/00*

U.S. Cl. 250—106 S **9 Claims**



Internally moderated neutron activation targets are formed of a mass of a stable metal hydride such as thulium hydride preferably in a surrounding casing of a material having a low thermal neutron cross section and a short half life. Heat sources are formed from the targets by irradiation with neutrons with the hydrogen atoms acting as a moderator to reduce the effect of flux depression during neutron activation.

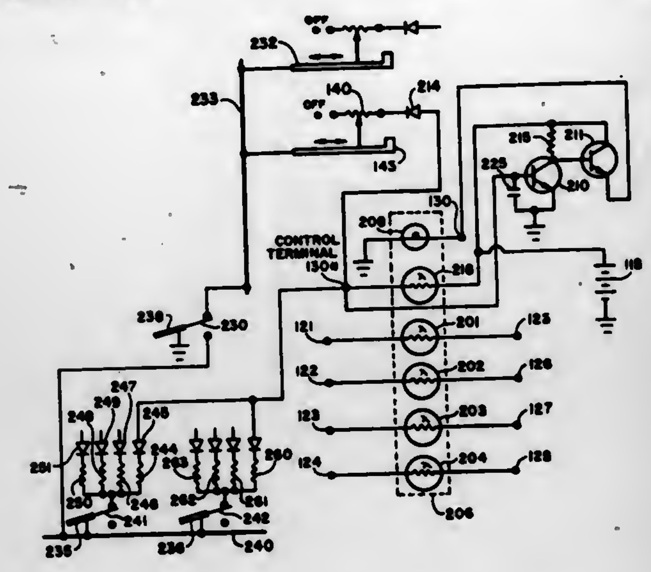
3,725,664
RAPID RESPONDING PHOTOELECTRIC ATTENUATOR SYSTEM

Richard H. Peterson, Palos Park, Ill.

Division of Ser. No. 17,387, March 9, 1970, abandoned. This application Sept. 13, 1971, Ser. No. 179,932

Int. Cl. G01j *1/32*; H05f *1/40*; H01j *39/12*

U.S. Cl. 250—205 **1 Claim**



The invention relates to a harmonic synthesis organ in which a complex wave tone generator generates signals corresponding to the frequencies of the fundamentals and harmonic partials. The complex tones are gated and are collected on a plurality of headers, each header corresponding to a particular harmonic partial. The headers are subdivided into groups of approximately one octave of contiguous tones and the groups are individually attenuated by a multiple attenuator controlled by a control element which may be manually operated draw bar. The outputs of the attenuators are connected to sharp cut off filters which remove all of the natural harmonics from the complex waves, and pass to the amplifier sine waves corresponding to the various partials. A preferred multiple attenuator system employs a plurality of photo resistors associated with a lamp, the intensity of which is controlled by a related draw bar. A lamp control circuit is provided to improve the responsiveness of the lamp to changes in draw bar position. Additional stop control means are provided for controlling the attenuators from either draw bars or from an alternate control system. In the embodiment shown, only a single key contact is associated with each playing key of the organ.

3,725,665
PULSE GENERATOR

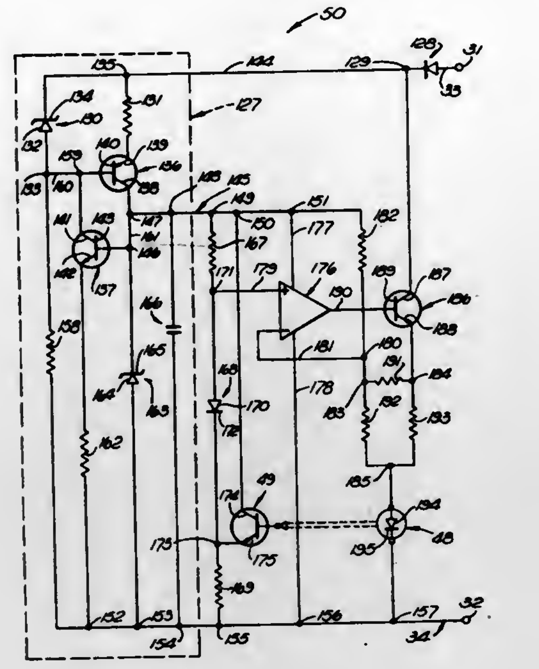
Robert Eugene Talmo, Pasadena, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed March 31, 1972, Ser. No. 240,103

Int. Cl. G01d *5/34*; G01j *1/32*

U.S. Cl. 250—205 **6 Claims**

A total volume flowmeter including a fluid motor to drive a light chopper between a light emitting diode (LED) and a phototransistor connected in a pulse transmitter. Regenerative feedback is provided from the phototransistor to the light emitting diode. That is, the light output of the light emitting diode is increased as the illumination of the phototransistor is increased, and vice versa. This makes it possible to use high gain amplification because it produces a hysteresis which discriminates against false output pulses which would otherwise occur with the use of high gain amplification because of vibration induced by external means. A source of potential and a resistor may be connected in series with the pulse transmitter, both the source of potential and the resistor, if desired, being positioned at a remote location. A pulse counter is connected across the resistor to an indicator which, if desired, may be calibrated in total volume flow. An amplifier is connected from the phototransistor to a transistor switch in series with the LED. The switch and the LED are connected across the line, whereas the remainder of the circuit is connected across a voltage regulator. Putting the LED across the line improves voltage regulation, pulse generation reliability circuit sensitivity, and the square shape of the output wave.



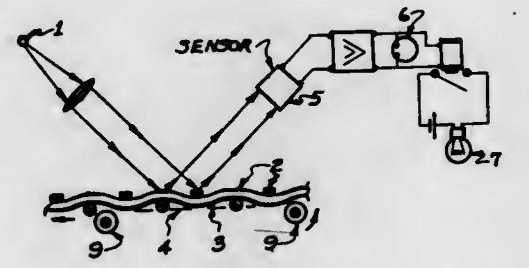
3,725,666
ELECTRO-OPTICAL DETERMINATION OF WEAR OF PAPER MAKING SCREEN

Rainer Berthold, Zum Jungenstr. 16, Frankfurt am Main, Germany

Filed June 17, 1968, Ser. No. 737,702

Int. Cl. G01n *21/16, 21/32*

U.S. Cl. 250—219 DF **6 Claims**



Wear of paper making screen is determined by utilizing increased abraded areas of screen wires for greater reflection of a light beam directed on moving screen. The reflected general beam may also be shifted by reduced thickness of the screen to further affect output of a light sensor, positively on negatively, for comparisons in order to reduce error due to dirty instrument components.

3,725,667
BANK NOTE TESTING APPARATUS

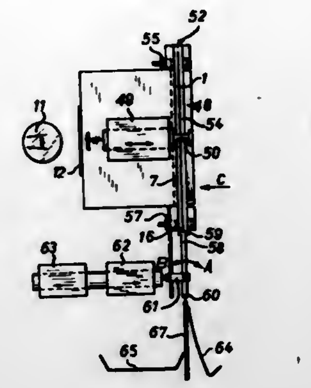
Hermann Schwartz, CH-8134 Adliswil, Switzerland, assignor to Siegfried Peyer, Haus Luna Rock, Bach, Switzerland

Filed Oct. 14, 1971, Ser. No. 189,100

Claims priority, application Switzerland, Oct. 20, 1970, 15433/70

Int. Cl. G01a *21/30*

U.S. Cl. 250—219 DQ **13 Claims**



A process and an apparatus for testing bank notes for their genuineness, particularly for automatic vending machines, wherein the bank note is illuminated from one side from a light source through a mask. The printed image on one side of the bank note is divided by the mask into several test fields. The reflected light from each test field is received by one of a plurality of large area photoelectric cells, which are so connected that departures from a given value are added together to form an error signal.

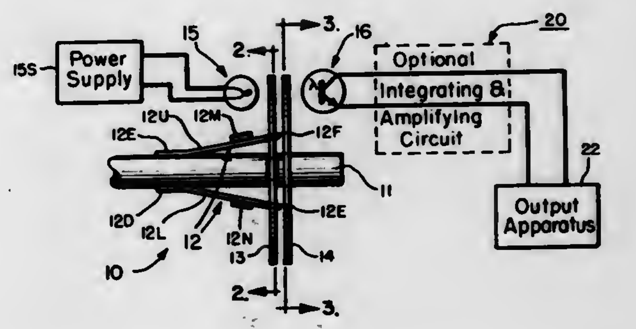
3,725,668
ROTATIONAL SPEED SENSOR

Kenneth W. Padgitt, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 28, 1971, Ser. No. 157,524

Int. Cl. G01d *5/34*

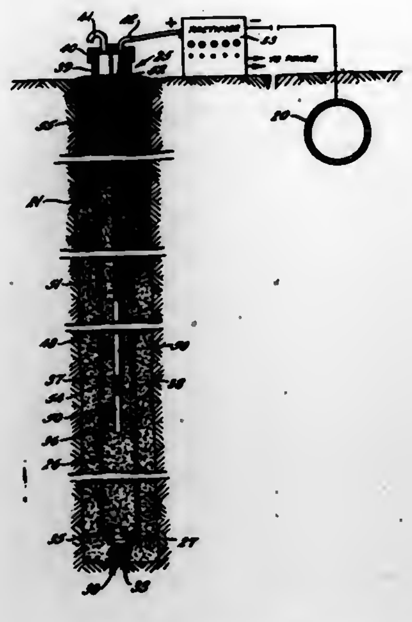
U.S. Cl. 250—231 R **3 Claims**



A rotational speed sensor for producing a d.c. level output signal proportional to shaft speed is disclosed having a light responsive unit (phototransistor) which is masked from a light source by a pair of slotted discs. One disc defines windows and revolves directly with the shaft and the other defines shades for the windows and is mounted to be rotated by a centrifugal force mechanism mounted to revolve directly with the shaft. By means of a cam surface and groove, the second disc is caused to move relative to the first disc to unshade the window progressively as rotational speed increases. The light responsive unit is preferably of the self-integrating (long time constant) type to time average its output and produce the d.c. signal directly.

3,725,669
DEEP ANODE BED FOR CATHODIC PROTECTION

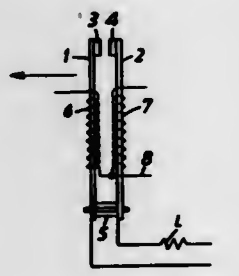
Joe F. Tatum, 2600 Mimosa Lane, Hattiesburg, Miss.
Filed Dec. 14, 1971, Ser. No. 209,517
Int. Cl. H01r *3/06*
U.S. Cl. 307—95 **11 Claims**



The method and apparatus for placing an impressed current or sacrificial anodes in a deep bed to provide cathodic protection of underground metallic structures and for easily replacing anodes which have been expended.

3,725,670
CURRENT-OPERATED SWITCH

Neville Ryland Davis, Chignal Grange, Chignal Smealy, Chelmsford, CM1, 4SZ, England
Filed Sept. 14, 1971, Ser. No. 180,262
Claims priority, application Great Britain, Sept. 24, 1970, 45,675/70
Int. Cl. H01h *35/00*
U.S. Cl. 307—117 **7 Claims**

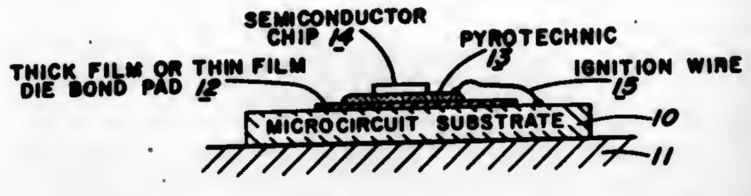


A current-operated switch having contacts opened and closed by a pair of bimetallic strips. Individual heating means are provided for the strips to respond to differential operating currents, a difference of one sign closing the contacts and a difference of the opposite sign opening the contacts. The switch draws a constant total current from a supply and is particularly suitable for operation by a differential transistorized amplifier.

3,725,671
PYROTECHNIC ERADICATION OF MICROCIRCUITS

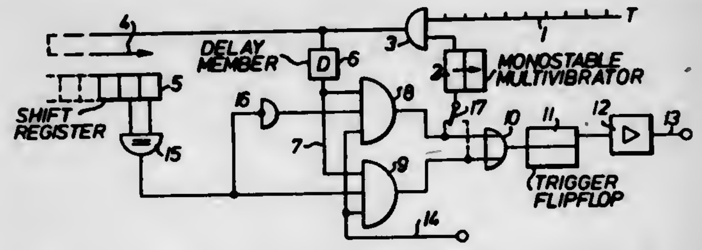
Frank Z. Keister, Culver City, and John B. Rust, Malibu, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Nov. 2, 1970, Ser. No. 90,209
Int. Cl. C06b *19/02*; **H03k** *17/84*; **H05k** *1/18*
U.S. Cl. 307—202 **5 Claims**

An anticompromise pyrotechnic eradication thin film circuit module having thin films of perfluoropolymer and metal thereon in sufficient quantity to produce a pyrotechnic reaction to cause heat of fusion of the metals of the thin film circuit to destroy the circuit beyond recognition and repair.



3,725,672
METHOD AND CIRCUIT ARRANGEMENT FOR DISPLAYING OR RECORDING A SEQUENCE OF BINARY BITS

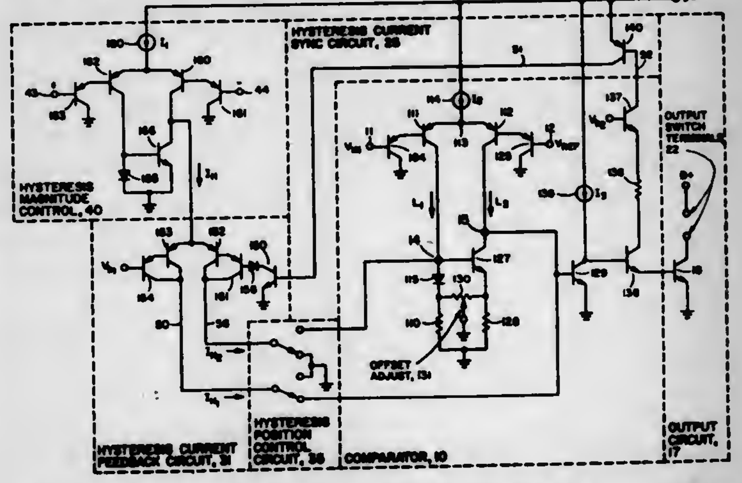
Ernst Gottfried Reuter, D-7753 Allensbach, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany
Filed July 30, 1971, Ser. No. 167,676
Claims priority, application Germany, July 30, 1970, P 20 37 959.3
Int. Cl. H03k *19/08*
U.S. Cl. 307—208 **5 Claims**



A method and circuit for producing a representation of a sequence of binary bits, or a binary word, in the form of a series of changes in the state, or value of a signal, by causing the interval between two successive state changes to have one length when successive binary bits have the same value and a different length when successive binary bits differ from one another in value.

3,725,673
SWITCHING CIRCUIT WITH HYSTERESIS

Thomas M. Frederiksen, Scottsdale, and Ronald W. Russell, Mesa, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 16, 1971, Ser. No. 171,995
Int. Cl. H03k *5/20, 3/26*; **H03f** *3/68*
U.S. Cl. 307—235 R **12 Claims**

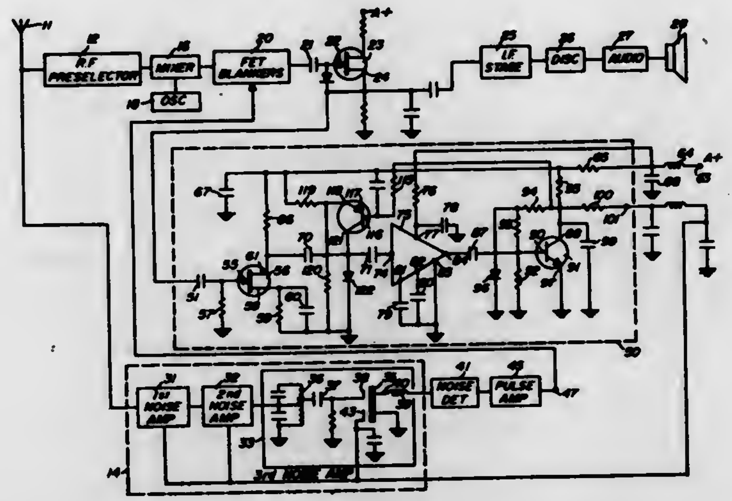

HYSTERESIS CURRENT SYNC CIRCUIT, 28
OUTPUT SWITCH TERMINALS 22
HYSTERESIS MAGNITUDE CONTROL, 40
OFFSET ADJUST, 131
HYSTERESIS CURRENT FEEDBACK CIRCUIT, 31
HYSTERESIS POSITION CONTROL CIRCUIT, 35
COMPARATOR, 10
OUTPUT CIRCUIT, 17

There is disclosed a switching circuit with a controllable hysteresis in which the hysteresis is introduced into the circuit through a feedback circuit which is connected to an internal node of the switching circuit. The input to the switching circuit is therefore independent of the hysteresis feedback circuit. The switching circuit is comprised first of a comparator which includes a differential amplifier, a differential-to-single-ended convertor, and ON-OFF biased output circuitry such that when an input signal is above a predetermined reference

voltage, the switch is in an "open" condition and such that when the input signal falls below this predetermined reference voltage, the switch is in a "closed" or conducting condition. Hysteresis is introduced into the comparator circuit by selectively adding a predetermined amount of current to one or the other of the output nodes of the differential amplifier in the comparator circuit during times correlated with the operating condition of the switching circuit. This additional current raises or lowers the input voltage which is necessary to change the condition of the switching circuit and thus introduces a hysteresis into the circuit. The magnitude of the hysteresis is adjustable by controlling the amount of current delivered to the output nodes of the differential amplifier in the comparator. By the application of the hysteresis-producing current to the appropriate output nodes of the input differential amplifier, the hysteresis can be made to occur to one side or the other of the aforementioned reference voltage. Additionally, the hysteresis may be centered about this reference voltage.

3,725,674
IMPULSE NOISE BLANKER INCLUDING BROADBAND LEVEL SENSING

Dennis R. Schaeffer, Arlington Heights, and Larry R. Wright, Mount Prospect, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed July 8, 1971, Ser. No. 160,854
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **9 Claims**

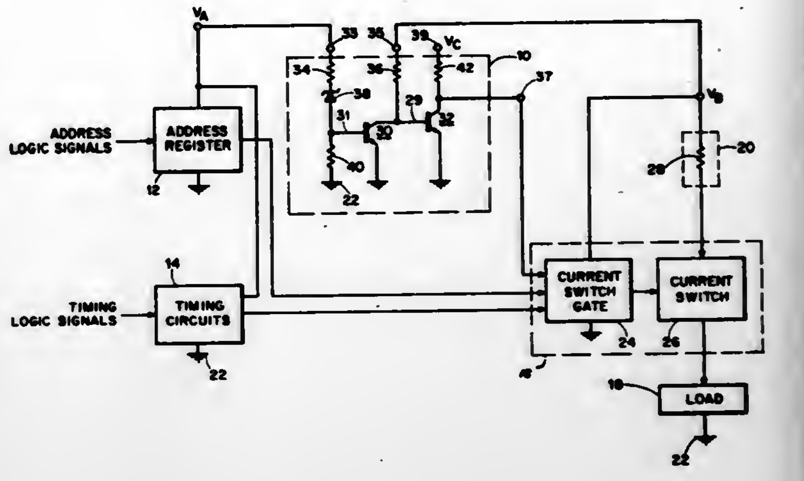


An impulse noise blanking circuit for decreasing the impulse noise in a receiver includes a level sensing circuit coupled to a stage in the signal path following the blanking elements, and to at least one amplifier stage in the noise amplifiers which amplify the impulse noise signals. The level sensing circuit senses the level of the on-channel and adjacent channel energy in the signal path and develops a level sensing signal. The level sensing signal is coupled to the noise amplifiers to vary the gain in accordance with the level sensing signals, thereby reducing the blanking rate and the resultant receiver degradation due to an excessive blanking rate. The level sensing circuit includes a field effect transistor amplifier stage and feedback circuitry to minimize the production of undesired intermodulation producing signals therein.

3,725,675
POWER SEQUENCING CONTROL CIRCUIT

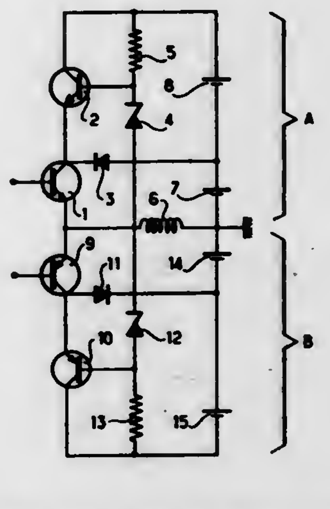
Richard E. Olsen, Framingham, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed March 29, 1971, Ser. No. 128,836
Int. Cl. H02h *7/20*; **H03k** *17/30, 17/56*
U.S. Cl. 307—238 **9 Claims**

Current applied to a load by means of a first voltage is disabled by control means in response to a change of a second voltage by a predetermined value. The control means is powered by the first voltage and includes two stages, a first for detecting a change of the second voltage and the second responsive to such change and powered by the first voltage for generating a signal for disabling the current applied to the load.



3,725,676
ELECTRONIC AMPLIFIER CIRCUIT

Gerard Melchior, Paris, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France
Filed July 27, 1971, Ser. No. 166,434
Claims Priority, application France, July 27, 1970, 7027652
Int. Cl. H03k *17/00*; **H01j** *29/70*
U.S. Cl. 307—255 **11 Claims**

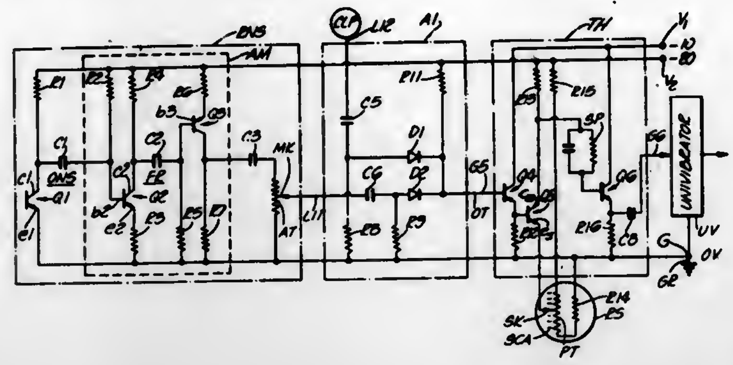


An electronic amplifier circuit including a control transistor connecting a load to a low voltage source in response to a control signal below a prescribed level and control means for switching a high voltage source to said control transistor to energizing said load when the control signal exceeds the prescribed level.

3,725,677
COMPUTER UTILIZING RANDOM PULSE TRAINS

Reed C. Lawler, 412 W. Sixth St., Los Angeles, Calif.
Division of Ser. No. 742,619, July 5, 1968, Pat. No. 3,612,845. This application March 24, 1971, Ser. No. 127,633
Int. Cl. H03k *5/00*
U.S. Cl. 307—260 **15 Claims**

Noise signals from a diode and clock pulses from a clock pulse source are fed to input legs of a logic circuit such as an AND gate, causing pulses of variable amplitude to appear in the output of the circuit. A threshold circuit suppresses pulses having amplitudes below a predetermined level. The remaining pulses trigger a univibrator thus causing pulses to be generated at random times in synchronous with clock pulses thereby forming a train of synchronous random pulses. Trains of random pulses from several such random pulse generators are fed to logic circuits to perform arithmetic operations, such as multiplication.



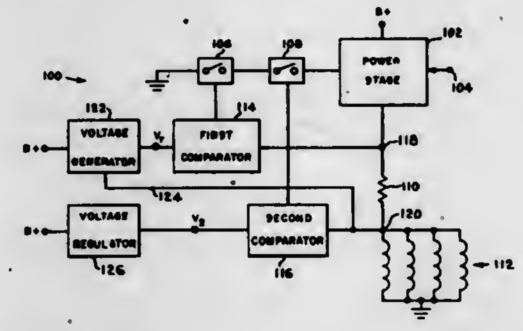
3,725,678
CIRCUIT FOR PROVIDING MULTIPLE LEVEL OUTPUT VOLTAGE SIGNAL IN RESPONSE TO A REMOTELY SENSED VOLTAGE VARIATION AND HAVING AUTOMATIC LEVEL SWITCHING FEEDBACK

Junuthula N. Reddy, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 130,349, April 1, 1971. This application May 7, 1971, Ser. No. 141,182

Int. Cl. H03k *1/14*

U.S. Cl. 307—264 **4 Claims**



The circuit of the present invention is operative to produce an output signal having a plurality of signal levels and which automatically switches therebetween in response to a remotely sensed voltage signal. The circuitry of the present invention includes a current source operative to provide a known quantity of current which is passed through a resistive means to establish the output voltage signal. A current sink is provided in parallel with the resistive network and is selectively operative or inoperative to vary the amount of current flowing from the current source through the resistive network. Means are provided to sense the remote voltage and to control the current sink in response to the sensed voltage. The sensed voltage is also applied to the resistive network through a unidirectional current flow device to establish within the resistive network a voltage which corresponds to the sensed voltage whereby a decrease in the sensed voltage will automatically produce a corresponding decrease in the voltage output signal.

3,725,679
FAIL-SAFE SIGNAL SHAPING CIRCUIT

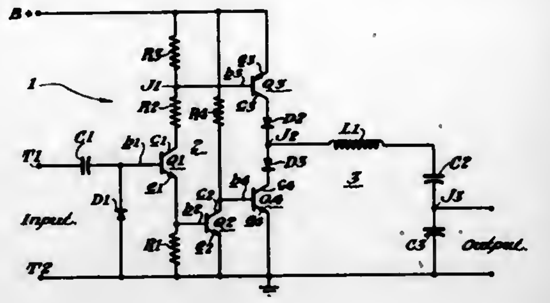
John O. G. Darrow, Westmoreland, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Sept. 15, 1971, Ser. No. 180,635

Int. Cl. H03k *5/01*

U.S. Cl. 307—268 **7 Claims**

This disclosure relates to a fail-safe signal shaping circuit which removes the harmonic producing portions from a square-wave input signal. The signal shaping circuit includes an electronic switching circuit and a series resonant L-C circuit for transforming the leading edge of the square-wave input signal into one half cycle of a cosine wave and for transforming the trailing edge of the square-wave input signal into another half cycle of a cosine wave.



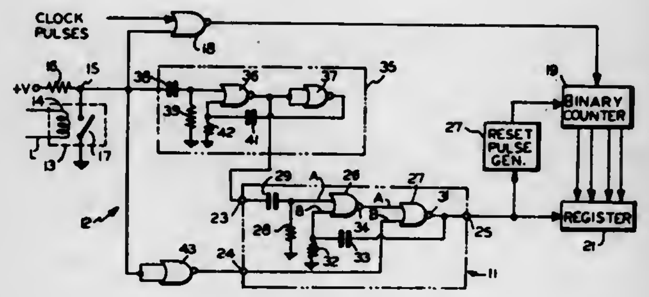
3,725,680
APPARATUS FOR DIGITIZING NOISY TIME DURATION SIGNALS WHICH PREVENTS ADVERSE EFFECTS OF CONTACT BOUNCE

John R. Silva, Rehoboth, Mass., assignor to General Signal Corporation, New York, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,934

Int. Cl. H03k *5/153, 3/10, 3/284*

U.S. Cl. 307—268 **4 Claims**



The disclosure concerns apparatus for preventing contact bounce noise in time duration signals from triggering the production of the control pulses needed to transduce those signals into digital form. It also concerns a special gated one-shot multivibrator for that apparatus which consists of two NOT-type logic gates and passive resistance and capacitance elements.

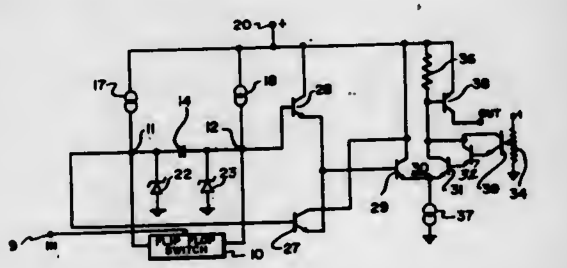
3,725,681
STABILIZED MULTIVIBRATOR CIRCUIT

Thomas M. Frederiksen, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 71,126, Sept. 10, 1970, abandoned. This application Sept. 1, 1971, Ser. No. 177,152

Int. Cl. H03k *3/284, 3/282, 5/04*

U.S. Cl. 307—273 **15 Claims**



An integrated circuit multivibrator provides a stable time constant under varying ambient temperature conditions and with varying supply voltages by commutating a timing capacitor of the multivibrator between matched current source charging circuits. A gating circuit is coupled to the junctions of the timing capacitor with the current sources and supplies an output to a comparator circuit which provides the output pulses from the multivibrator. An astable or free running multivibrator also can be formed with the addition of a bistable circuit to the basic circuit.

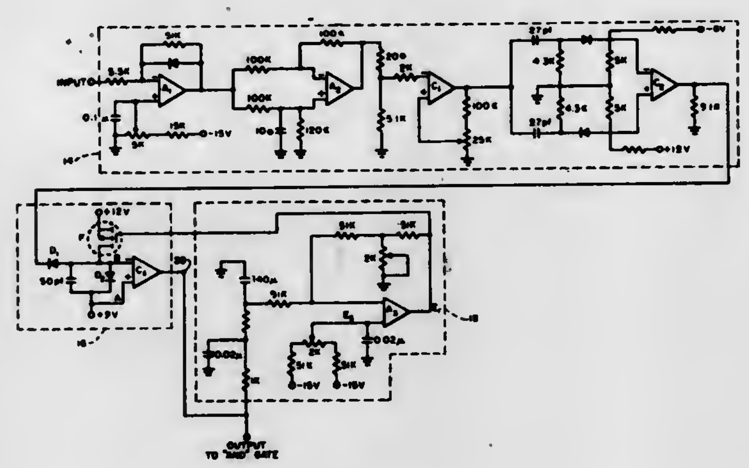
3,725,682
ONE SHOT MULTIVIBRATOR FOR VARIABLE WIDTH VIDEO EDGE DETECTOR

David Rubin, Riverside, Calif., and John B. Seybold, Corona, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Division of Ser. No. 865,709, Oct. 13, 1969. This application April 14, 1971, Ser. No. 134,064

Int. Cl. H03k *17/00*

U.S. Cl. 307—273 **2 Claims**



A device, used with an analog video correlation, for edge detecting the video input from two TV cameras to immediately discern the time correlations peak from past or future partial correlation peaks providing dependable real time map matching.

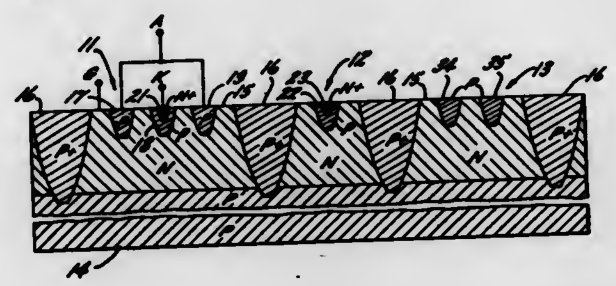
3,725,683
DISCRETE AND INTEGRATED-TYPE CIRCUIT

Todd G. Andersen, Lombard, Ill., assignor to Wescom, Inc., Downers Grove, Ill.

Filed Feb. 3, 1971, Ser. No. 112,345

Int. Cl. H01l *17/00*

U.S. Cl. 307—305 **18 Claims**



A three terminal, four layer latching-type thyristor having its gate brought out from the layer or region adjacent its anode is characterized by having a holding current level which is substantially higher than its turn-on current level and is, therefore, especially well suited for end mark controlled switching systems.

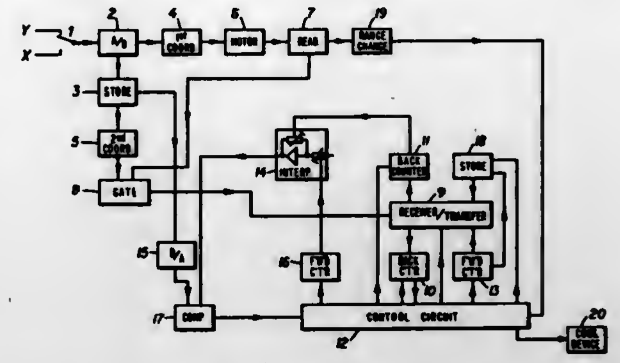
3,725,684
DIGITAL/ANALOG LINEAR INTERPOLATOR

Rudolf K. H. Paschow, Wunstorfer Strasse 59, Hannover, Germany

Continuation-in-part of Ser. No. 718,814, April 4, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,424

Int. Cl. G06f *7/38*; **G06j** *1/00*

U.S. Cl. 235—152 **16 Claims**



An electronic calculating machine for determination of a desired output quantity $z(x_e,y_e)$ related to a first input quantity x_e variable within limits x_0 to x_n and to a second input quantity y_e variable within limits y_0 to y_m. The machine includes a first store storing permanently for each individual one of a series of fixed values x_0 to x_n of the first input quantity the output quantities $z(x, y)$ for a series of fixed values y_0 to y_m of the second input quantity. A reading device is provided for reading out from the first store the output quantities $z(x_\nu, y_\mu)$, $z(x_{\nu+1}, y_\mu)$, $z(x_\nu, y_{\mu+1})$ and $z(x_{\nu+1}, y_{\mu+1})$. An interpolation device is provided for forming, according to one of two preselected linear interpolation functions, as a first interpolated value one of the values $z(x_\nu, y_e)$ and $z(x_e, y_\mu)$ by linear interpolation between the two output quantities of one of the both pairs of output quantities $z(x_\nu, y_\mu)$ and $z(x_\nu, y_{\mu+1})$ and $z(x_\nu, y_\mu)$, $z(x_{\nu+1}, y_\mu)$, and as second interpolated value one of the both values $z(x_{\nu+1}, y_e)$ and $z(x_e, y_{\mu+1})$ by linear interpolation between one of the both pairs of output quantities $z(x_{\nu+1}, y_\mu)$, $z(x_{\nu+1}, y_{\mu+1})$ and $z(x_\nu, y_{\mu+1})$, $z(x_{\nu+1}, y_{\mu+1})$ and in conjunction a third interpolated value $z(x_e, y_e)$ by linear interpolation between the first and second interpolated values. Means are provided for giving out the third interpolated value as the desired output quantity. The calculating machine forms sums and differences in a digital manner and products and quotients in an analog manner.

3,725,685
SYSTEM FOR ADJUSTING THE VALUE OF A RESISTANCE TO A PREDETERMINED VALUE

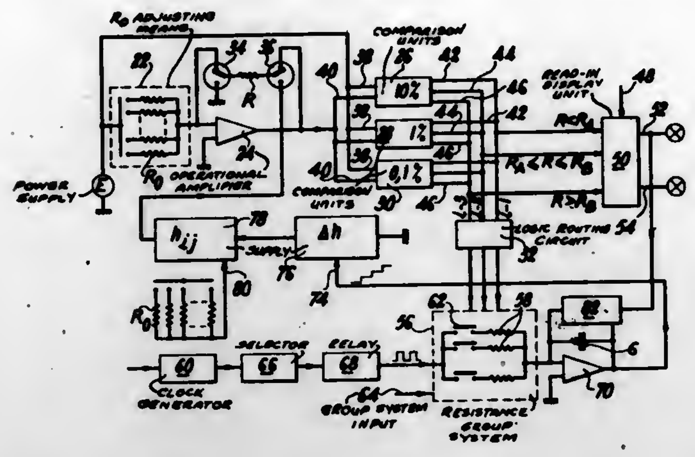
Gerard Bourgoin, 93 Romainville; Pierre Kumurdjian, 91 Saint-Cheron; Alain Loitiere, 91 Wissous, and Jean-Francois Pere, 94 Ivry, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed May 25, 1971, Ser. No. 146,634

Int. Cl. G06g *7/48*

U.S. Cl. 235—151.1 **7 Claims**

The value R of a resistance is adjusted to a predetermined value R_0, R being modified by oxidation of the resistance by the flow therethrough of an electrical pulse train, by at least two read-in circuits, one for reading-in the value R_0 and the other for reading-in the required accuracy of the value R. A comparator having two inputs, one of the inputs having two terminals is connected across the resistance while the other input is connected to the read-in circuit for the value R_0. The comparator compares R and R_0. A store and control circuit whose input is connected to the comparator output determines the power of the first electrical pulse and the power increment of the pulses, the pulse power possibly being initially zero. A generator produces the pulses and the generator input is connected to the store and control circuit output. The generator output may be connected to at least one of the two ends of the resistance of value R. A clock circuit is connected to the generator and selects the repetition frequency and the average width of the pulses. A selector connects the terminals of the resistance of value R alternately to the comparator input terminals and to the generator output terminals.



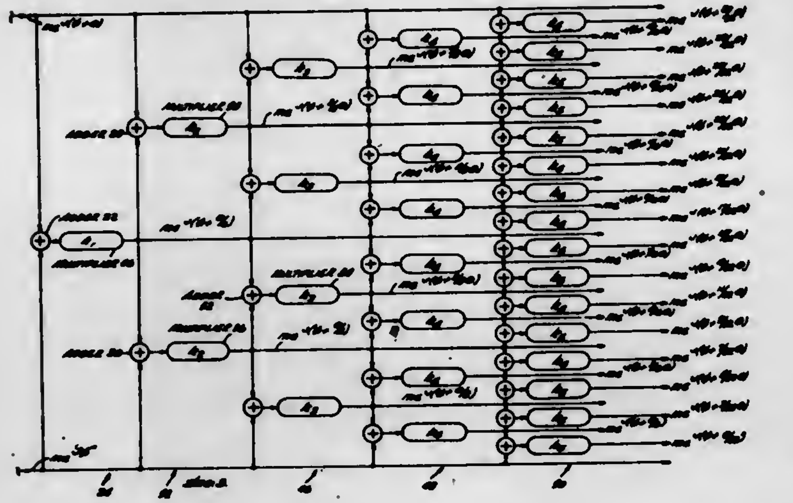
3,725,686
POLYPHASOR GENERATION BY VECTOR ADDITION AND SCALAR MULTIPLICATION

Gerald S. Ustach, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 29, 1971, Ser. No. 110,956

Int. Cl. G06f *7/38*; G06g *7/22*

U.S. Cl. 235—156 **13 Claims**



Herein is disclosed the method and apparatus for producing angular rotations of an input signal (phasor). The method involves phase shifting the input signal by a preselected amount, vectorially adding the input and the phase shifted signals, and then adjusting the amplitude of the sum phasor by a scalar multiplication operation. The addition and multiplication steps are repeated in a plurality of subsequent processing operations whereby various combinations of phasor signals produced during preceding steps are summed and amplitude adjusted to obtain a set of output signals having preselected phase values.

3,725,687
THRESHOLD LOGIC DIGITAL FILTER

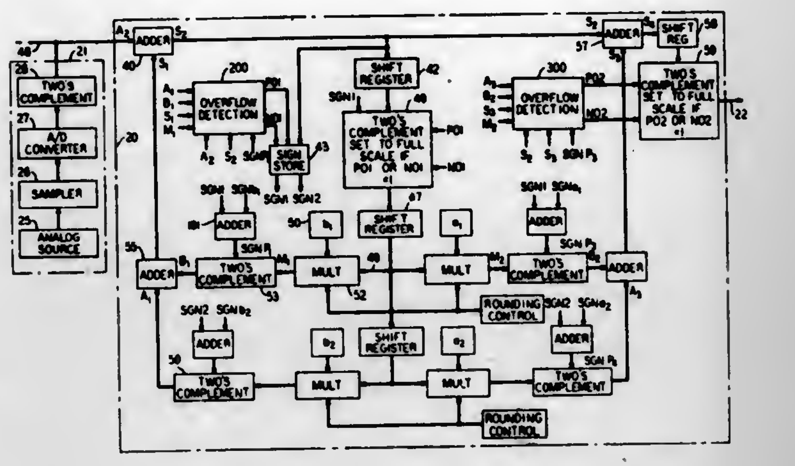
John Donnell Heightley, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed March 4, 1971, Ser. No. 120,829

Int. Cl. G06f *7/38*

U.S. Cl. 235—164 **8 Claims**

A threshold logic digital filter converts an input sequence of sets of bits representing amplitudes of a continuous signal at predetermined sample times into another sequence of sets of bits representing the input sequence of sets transformed by a predetermined difference equation. Storage-processor elements are used for implementing threshold logic adder, multiplier, two's-compartment, and overflow detector circuits in the digital filter.



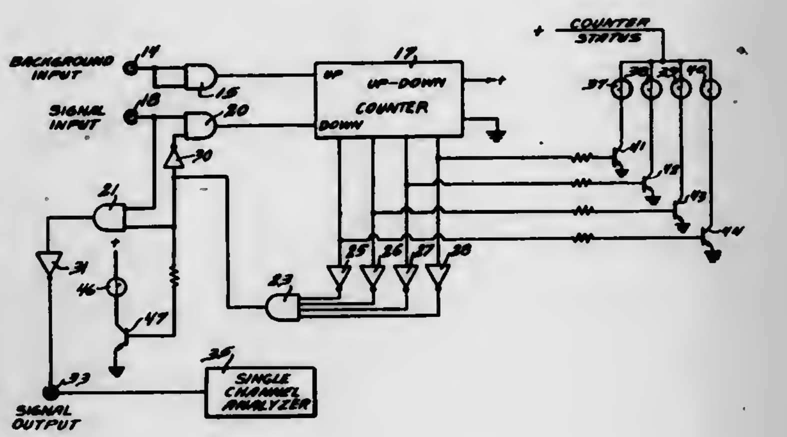
3,725,688
DIGITAL SUBTRACTION DEVICE

Glenn S. Brunson; Robert N. Curran, and Franklin H. Just, all of Idaho Falls, Idaho, assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 3, 1971, Ser. No. 177,599

Int. Cl. G06f *7/385, 7/38*

U.S. Cl. 235—176 **3 Claims**



This circuit acts to subtract a first series of pulses from a second series of pulses. The second series of pulses is coupled directly to an output terminal of the circuit until a first series pulse is counted in one direction by an up-down counter. With a count greater than zero in the up-down counter, the second series of pulses is coupled thereto to count in the opposite direction. With the up-down counter having a count greater than zero, the second series of pulses are also blocked from the output terminal of the subtraction device.

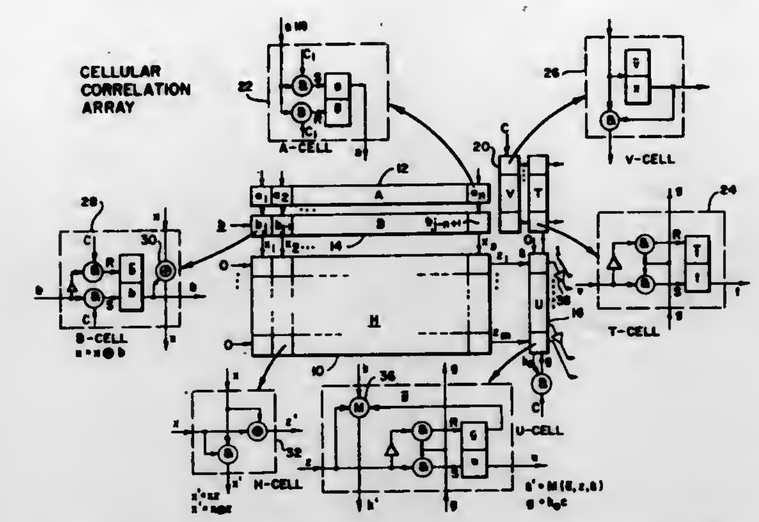
3,725,689
CELLULAR CORRELATION ARRAY

William H. Kautz, Woodside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 3, 1971, Ser. No. 168,654

Int. Cl. G06g *7/19*

U.S. Cl. 235—181 **7 Claims**



The cellular array is capable of cross-correlating two binary sequences and automatically determining the coordinates of the peak of the cross-correlation function. The array includes two input registers, a binary counting array, and several peripheral registers.

3,725,690
APPARATUS FOR EVALUATING A SIGNAL

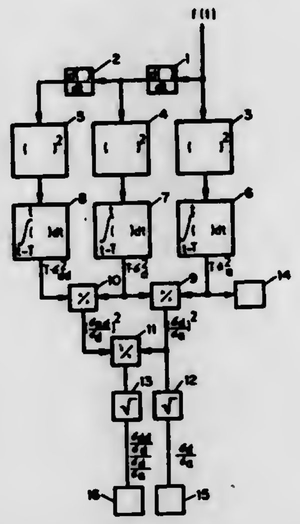
Bo Hjorth, Sollentura, Sweden, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Dec. 11, 1970, Ser. No. 97,229

Claims priority, application Sweden, Dec. 11, 1969, 17159/69

Int. Cl. G06g *7/18*; A61b *5/04*

U.S. Cl. 235—183 **1 Claim**



Apparatus to determine directly from a signal the frequency which represents the standard deviation in the output spectrum of the signal as well as the ratio between the standard deviation of the output spectrum of the derived signal and the above-mentioned standard deviation in the output spectrum of the original signal. The invention is particularly characterized in that the standard deviation or variance of the derived signal is divided by the standard deviation or variance of the original signal, and in that the standard deviation or variance of the twice derived signal is divided by the standard deviation or variance of the single derived signal, whereupon the quotient produced by this procedure is divided by the quotient (standard deviation frequency) produced by the first-mentioned procedure.

3,725,691
ELECTRONIC DEVICES FOR FORMING ALGEBRAIC SUMS

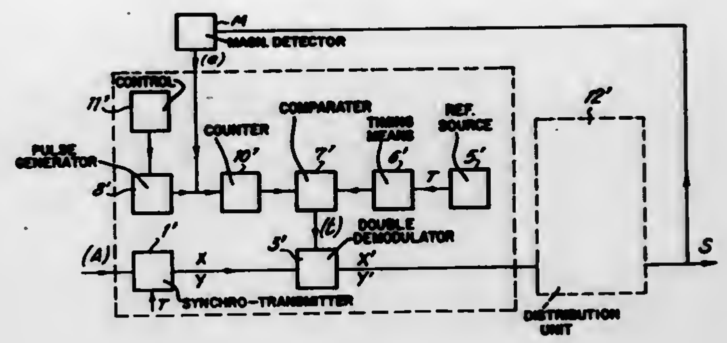
Jacques Delaunay, St-Remy-Les-Chevreuses, France, assignor to Societe De Fabrication D'Instruments De Mesure SFIM, Ramelfe-Garnier, France

Filed July 16, 1971, Ser. No. 163,263

Claims priority, application France, July 17, 1970, 7026471

Int. Cl. G01c *17/38*; G06g *7/22*

U.S. Cl. 235—186 **12 Claims**



An electronic device is arranged to correct the angle A of gyroscopic heading for variations in the magnetic deviation angle *a*, thereby producing the angle $(A+a)$. A synchro transmitter generates a sin A and a cos A signal which are subsequently modulated by a modulator. The modulated signals are then integrated between two sets of limits each of which is a function of the angle *a* and the operational frequency of the modulator. The relationship between the angle *a* and operational frequency is such as to provide four output signals respectively representing various combinations of the product between different pairs of the functions sin A, cos A, sin *a* and cos *a*. By appropriate summing in accordance with trigonametric equations, signals of $\sin(A+a)$ and $\cos(A+a)$ can be produced.

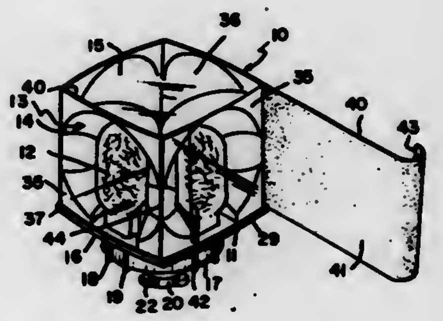
3,725,692
PHOTOGRAPHIC FLASHLAMP UNIT

Charles H. Miller; David R. Broadt, and Donald E. Armstrong, all of Williamsport, Pa., assignors to GTE Sylvania Incorporated

Filed Dec. 20, 1971, Ser. No. 209,962

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 **10 Claims**



A flash cube having a strip of adhesive-backed transparent plastic tape wrapped about its transparent cover side walls to provide increased containment capability.

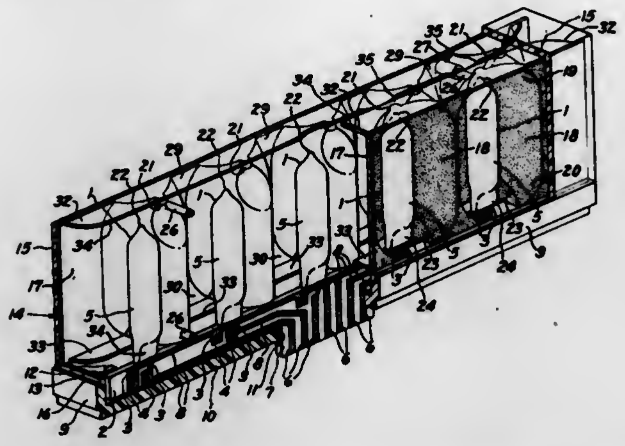
3,725,693
LINEAR PHOTOFLASH LAMP ARRAY AND REFLECTOR UNIT THEREFOR

Robert M. Anderson, Pepper Pike; James M. Hanson, Cleveland; Richard C. Lecrone, Euclid, and William B. Landgraf, Cleveland Heights, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed March 31, 1972, Ser. No. 239,917

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 **17 Claims**



A two-sided linear photoflash lamp array having a multiple reflector unit comprised of a pair of complementary strip-like thin-walled molded plastic reflector panels each formed with a row of side-by-side lamp reflectors and mounted back-to-back in aligned relation with their reflectors facing outwardly in opposite directions and located in staggered nested relation. The reflector panels have interfit members and abutting stand-off shoulders on their backsides for locating the two panels in properly aligned back-to-back position with their reflectors in staggered nested relation and spaced a predetermined distance apart. Stiffening flanges extending between and integrally joining adjacent reflectors of each reflector panel rigidify the panel and prevent heat distortion of any reflector thereof by the flashing of the photoflash lamps in next adjacent reflectors.

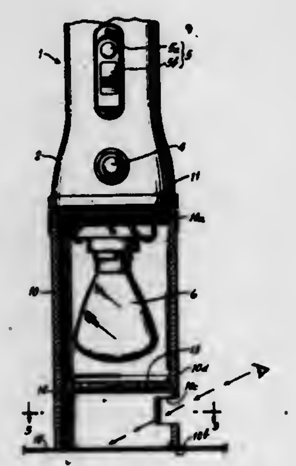
3,725,694
PORTABLE LAMP FOR VIEWING FLUORESCENT MATERIAL

Salvatore F. D'Amato, Flora Park, N.Y.; Clifford D. Guertin, River Vale, and Oliver Ledniicer, Hackensack, both of N.J., assignors to American Bank Note Company, New York, N.Y.

Filed April 5, 1971, Ser. No. 131,105

Int. Cl. F21v *33/00*

U.S. Cl. 240—6.4 R **3 Claims**



Portable lamp, such as a flashlight, for viewing printed material having fluorescent, normally invisible markings thereon, comprising a flashlight having an ultraviolet lamp, and an opaque hood around the lamp and projecting beyond the lamp. The end of the hood is opened and is adapted to be placed against a printed document to be viewed. An aperture is provided in the side of the hood through which the document may be viewed while it is held against the end of the hood.

3,725,695
ILLUMINATION DEVICE

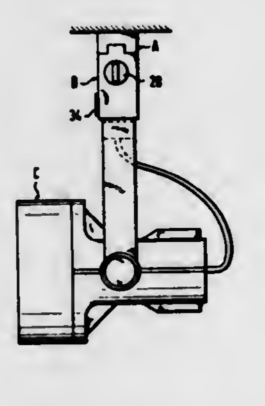
Gerhard Eversberg, Ludenscheid, and Heinz Seelbach, Kierspe, both of Germany, assignors to Firma Reininghaus & Co., Ludenscheid, Germany

Filed Oct. 27, 1971, Ser. No. 192,876

Claims priority, application Germany, Oct. 28, 1970, P 20 52 752.0

Int. Cl. H02g *7/00;* **F21v** *21/34*

U.S. Cl. 240—52 R **7 Claims**



A lighting device, comprising a supporting rail defining a receiving channel in which are disposed conduit rail carriers. A plurality of electrical conduit rails are received in the conduit rail carriers. Three of the conduit rails constitute pole rails and one of the conduit rails constitutes a zero-conduit rail. A connection box is insertable into the supporting rail and is equipped with a plurality of spring holding- and contact-tongues switchable selectively by means of a switch into an engagement- and contact-position with one of the pole rails and into an inoperative position, respectively. An independent preselection switch is disposed between each individual pole contact tongue for the formation of an operating current circuit, and switchable from outside of the supporting rail, and is further equipped with switch contact points of a number corresponding with the number of pole rails on the side of the supporting rail and having an individual contact connection with one of the pole contact points, and a switch bridge on the inside of the preselection switch is connected with a light source by means of a current conduit, and the light source being disposed between the current feed on the pole side and the zero conduit.

3,725,696
PORTABLE LIGHT HOLDER FOR CAMPER'S GAS LAMP

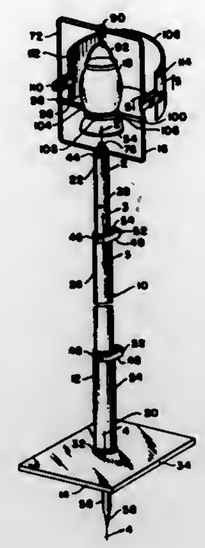
Allen Russell Morton, 1425 Brookline Avenue, Plymouth, Mich.

Filed Oct. 19, 1970, Ser. No. 81,766

Int. Cl. F21v *21/00*

U.S. Cl. 240—84 **11 Claims**

A camp light holder including a telescoping shaft, structure including a substantially flat member extending transversely of the shaft at the bottom thereof and at least one elongated sharpened member for securing the shaft in an upright position on the ground, bail means removably secured to the top of the shaft for supporting a camper's gas lamp and reflecting means operably associated with the bail means for directing the light from the gas lamp. A clamp is provided in one modification of the light holder for maintaining the telescoping shaft at a predetermined height, while an axially split wedging collar is provided in another modification to maintain the shaft at a desired height.



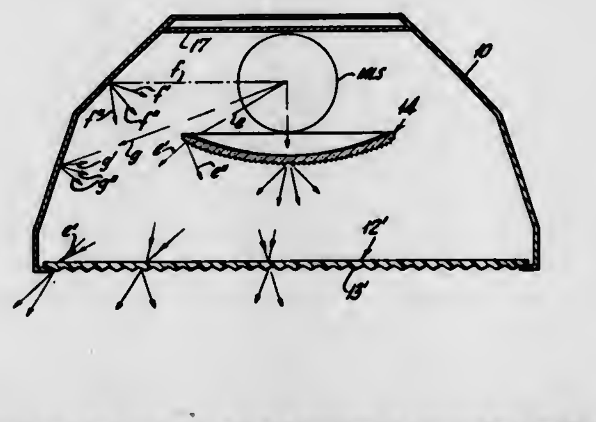
3,725,697
LUMINAIRE COMPRISING MEANS FOR REDUCING TEMPERATURE OF EXTERIOR REFRACTOR

Vearl S. Wince, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 816,873, March 19, 1969, abandoned. This application Oct. 3, 1969, Ser. No. 871,513

Int. Cl. F21v *13/04*

U.S. Cl. 240—93 **9 Claims**



A luminaire for indoor area lighting is provided with an intermediate member for at least diffusing and optionally distributing light emitted from a high intensity light source onto a prismatic lens, with means for diffusing light reflected by the luminaire housing, with the refractor and the intermediate member having such a relationship to each other that the efficiency of the luminaire will be increased and the temperature of the exterior refractor is minimized permitting fabrication thereof from plastic.

3,725,698
MOISTURE BARRIER FOR SEALED BEAM HEADLAMP CONSTRUCTION

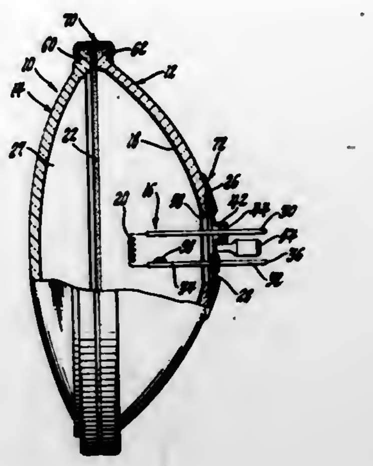
Gale M. Craig, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed March 2, 1971, Ser. No. 120,087

Int. Cl. F21m

U.S. Cl. 240—41 SB **4 Claims**

A sealed beam headlamp wherein the mating areas between component parts are structurally and hermetically joined by a plastic cement overlaid by a metallic moisture barrier, the latter establishing a tortuous moisture flow path of minimal cross section through the cement thereby reducing the rate of moisture diffusion into the lamp envelope and minimizing filament erosion due to "water cycle".



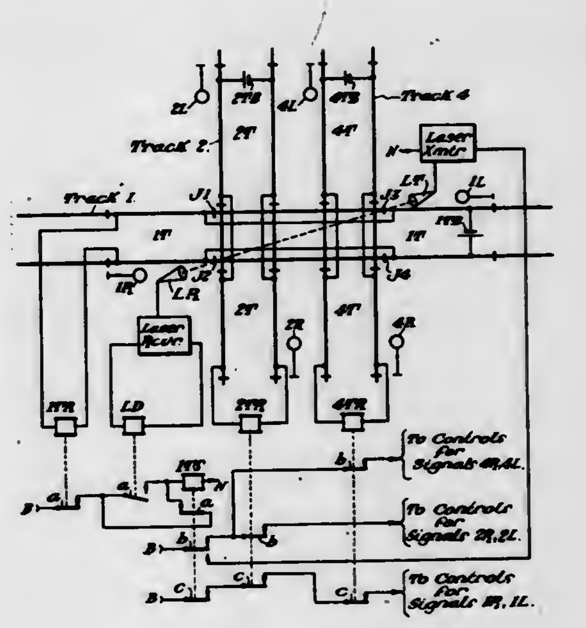
3,725,699
TRAIN DETECTION SYSTEM FOR RAILROAD GRADE CROSSING

Frank T. Pascoe, Greentree Borough, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Jan. 19, 1971, Ser. No. 107,656

Int. Cl. B61l *23/00*

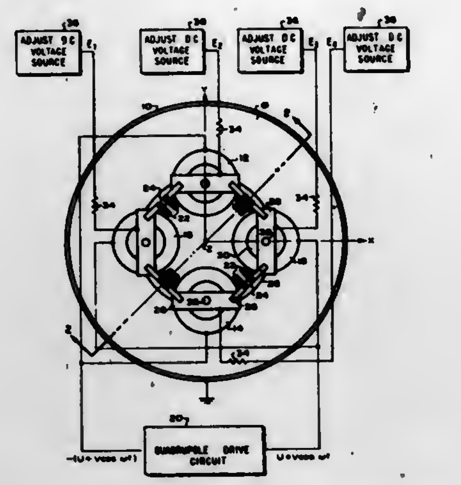
U.S. Cl. 246—114 **8 Claims**



Laser beam presence detection apparatus is positioned to detect a railroad car occupying any part of the crossing portion of a stretch of track which intersects other tracks in a railroad grade crossing. The laser detector thus checks the occupancy condition of the track portion which is insulated from the adjacent conventional track circuit on each side but is long enough to hold a complete car which does not then shunt the track circuit. The laser detector and the track circuit relay jointly control a stick relay normally held energized solely by the track relay. The laser apparatus is approach energized by the release of the stick relay when a train initially occupies either part of the adjacent track circuit. The stick relay is reenergized only when the track relay and the laser detector each record a non-occupied condition for the corresponding section of the crossing track. The stick relay controls the entering signal circuits for all possible conflicting routes through the crossing area but simultaneous parallel moves are permitted.

3,725,700
MULTIPOLE MASS FILTER WITH ARTIFACT-REDUCING ELECTRODE STRUCTURE

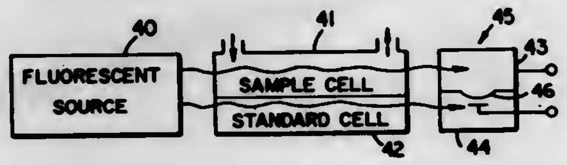
Wilson R. Turner, Los Gatos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 8, 1971, Ser. No. 113,312
Int. Cl. H01j ***39/34***
U.S. Cl. 250—41.9 DS **12 Claims**


ADJUST D C VOLTAGE SOURCE
ADJUST D C VOLTAGE SOURCE
ADJUST D C VOLTAGE SOURCE
ADJUST D C VOLTAGE SOURCE
QUADRUPOLE DRIVE CIRCUIT

Parallel primary electrodes are symmetrically disposed about a central axis within an electrically conductive housing operated at a reference potential. These primary electrodes are driven by an excitation voltage comprising A.C. and D.C. components balanced with respect to the reference potential to provide a multipole mass filter. An ion source is positioned adjacent to the entrance end of the multipole mass filter for transmitting ions generally along the central axis to an ion detector positioned adjacent to the exit end of the multipole mass filter. Auxiliary electrodes, at least some of which may be operated at different potentials, are disposed between adjacent pairs of the primary electrodes along the length thereof outside the central region defined by a cylinder inscribed between the primary electrodes. These auxiliary electrodes are driven by a plurality of independently adjustable D.C. control voltages to reduce artifacts in the mass spectra obtained from the multipole mass filter.

3,725,701
FLUORESCENT SOURCE NON-DISPERSIVE INFRARED GAS ANALYZER

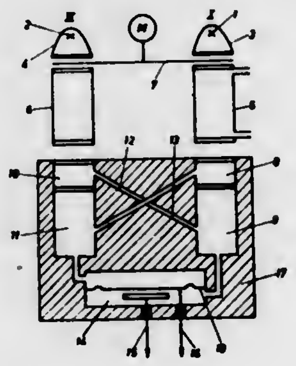
William T. Link, Berkeley, Calif., assignor to Andros Incorporated, Berkeley, Calif.
Continuation-in-part of Ser. No. 859,326, Sept. 19, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,602
Int. Cl. H01j ***37/00***
U.S. Cl. 250—43.5 **27 Claims**



A non-dispersive infrared gas analyzer utilizing a fluorescent source including a specific gaseous compound whose presence in an unknown gas mixture is to be detected and a container having infrared transparent portions. Fluorescent emission from the specific gaseous compound is stimulated by, for example, a black body infrared source. A sample cell retains an unknown gas mixture in a position to receive fluorescent emission so stimulated while a suitable detector or transducer detects energy absorption by the unknown gas mixture of substantially any portion of the fluorescent emission spectrum of the gaseous compound being detected. An additional stage of selectivity is obtained by inserting a fluorescent filter between the sample cell and the detector. A standard for comparison is provided by a two-channel gas analyzer utilizing a standard cell or normalizing cell in addition to the sample cell. A standard for comparison is also provided by including in the fluorescent source a gaseous compound and enriched quantities of one or more isotopes of the gaseous compound to provide different but nearby wave lengths. A variety of arrangements for signal chopping and for shielding the black body infrared source from the sample cell is included.

3,725,702
INFRARED GAS ANALYZER

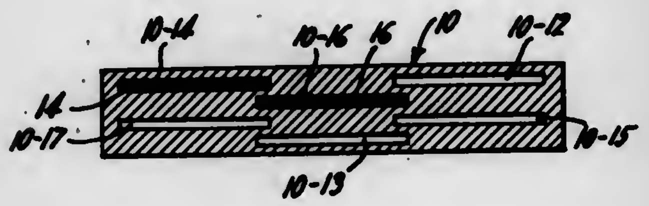
Werner Schaefer, Oberhochstadt, Germany, assignor to Hartmann & Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 29, 1969, Ser. No. 795,089
Int. Cl. G01n ***21/34***
U.S. Cl. 250—43.5 R **5 Claims**



Detector for analyzer is made up of four gas chambers, an incident pair and a respectively alined pair directly after the incident pair, chambers of the pairs being cross-connected by gas conduits. Detector measures difference in the sums of energy absorbed in cross-connected pairs, when analysis and comparison beams are respectively directed into the alined pairs, giving null readings for null values and with great stability of null point.

3,725,703
X-RAY FILM CASSETTE

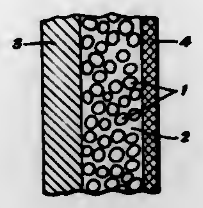
Peter A. Bucky, 30 East 81st Street, New York, N.Y.
Filed June 9, 1971, Ser. No. 151,306
Int. Cl. G03b ***41/16***
U.S. Cl. 250—65 R **6 Claims**



A cassette for holding a plurality of X-ray film packs. The film packs are held in overlapping positions so that the edges of adjacent internal films are aligned to make up a large overall continuous area. Lead markings on the cassette cause mating symbols to be imaged on adjacent films; the final photographs can thus be pieced together easily to form the composite larger picture.

3,725,704
RARE EARTH PHOSPHORS FOR X-RAY CONVERSION SCREENS

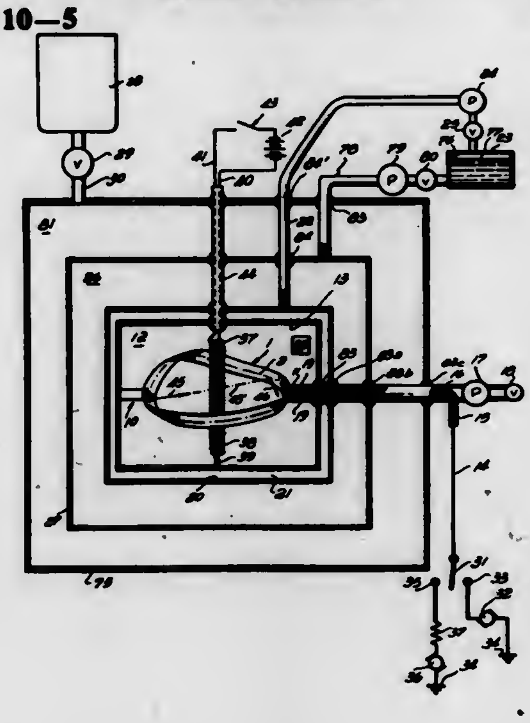
Robert A. Buchanan, Palo Alto, Calif.; Melvin Tecotzky, Mendham, N.J., and Kenneth A. Wickersheim, Palo Alto, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Jan. 28, 1971, Ser. No. 110,442
Int. Cl. G01t ***1/20***
U.S. Cl. 250—71 R **8 Claims**



This invention relates to phosphor screens for converting x-rays to visible or near visible radiation and phosphor materials used in such screens. More particularly, the x-ray conversion screens are of the type used, for example, in fluoroscopy, film intensifiers and x-ray image intensifier tubes and the phosphor materials are oxysulfides of lanthanum, gadolinium or lutetium activated with trivalent terbium.

3,725,705
METHOD FOR STORING ELECTRIC ENERGY AND AN ELECTRIC ENERGY STORING SYSTEM

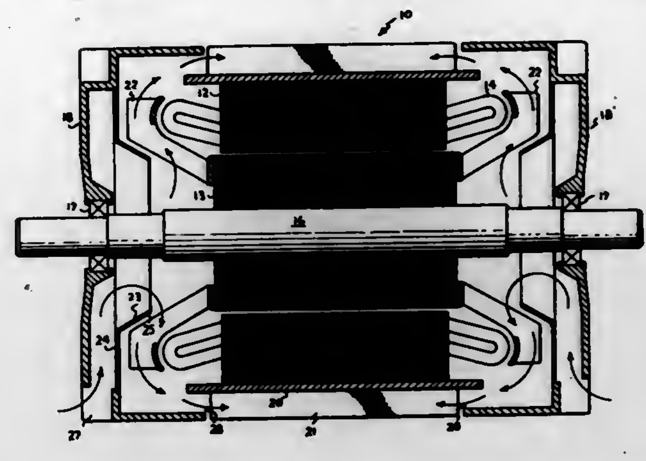
Adolfo Samuel Werner Borinski, Casilla de Correo, 4836-Correo Central, Buenos Aires, Argentina
Filed Feb. 2, 1972, Ser. No. 222,950
Int. Cl. H02n ***1/00***
U.S. Cl. 310—5 **23 Claims**



Method for storing electric energy and an electric energy storing system for directly storing extremely high density electric charges, comprising a metallic conductor defining an endless non-orientable surface, preferably housed and insulatingly suspended in a refrigerated chamber, cooled below the transition point of said conductor, an insulated electricity conducting line connected at one point to said conductor and accessible from outside of said chamber, and means for at least temporarily creating an impelling force on the electrons of static electric charges to be fed over said line onto said conductor, to provide a direction controlled movement of electrons along said conductor.

3,725,706
HEAT TRANSFER SYSTEM FOR DYNAMOELECTRIC MACHINE

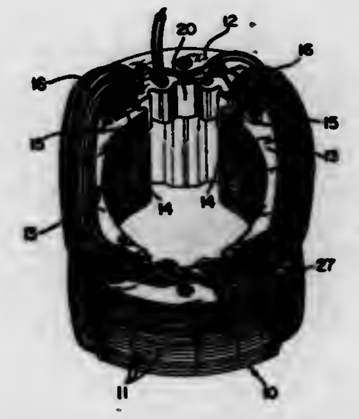
Alan Franck Lukens, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed July 26, 1971, Ser. No. 165,950
Int. Cl. H02k ***9/06***
U.S. Cl. 310—62 **3 Claims**



A dripproof dynamoelectric machine is described wherein air is admitted through the end shields directly into the end turn cavities at opposite ends of the machine to be circulated across the radially inner faces of the end turns before being expelled from the end of the machine whereat the air was admitted. The exhaust air then is directed across the motor frame by a shroud overlying the exhaust apertures to cool the stator by the transfer of heat from the stator laminations through the frame to the air circulating across the frame. Preferably the frame is finned to maximize the heat transfer surface in contact with the flowing air and the fans are secured to the rotor end rings. For increased volumetric flow of the air through the motor, the fans utilized to circulate the air through the end turn cavities underly the end turns adjacent the stator laminations and extend radially outward beyond the stator end turns to overlie the end turns.

3,725,707
FIELD SUB-ASSEMBLY FOR UNIVERSAL ELECTRIC MOTORS

Wendell B. Leimbach, James W. Marshall, both of Baltimore, and Salvatore R. Abbratozzato, Towson, all of Md., assignors to Black and Decker Manufacturing Company, Towson, Md.
Filed May 5, 1971, Ser. No. 140,374
Int. Cl. H02k ***11/00***
U.S. Cl. 310—71 **24 Claims**



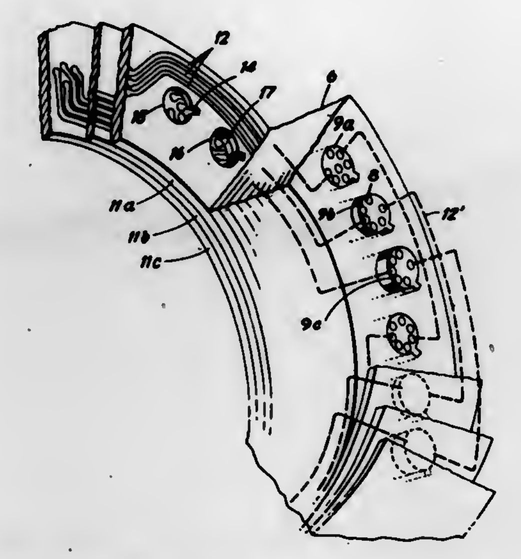
For a universal electric motor, a wound field sub-assembly including a core and a pair of coils wound in slots therein, wherein the solid, magnet wire of the coils is connected to the stranded, lead wire via a simplified and improved connector and process. A connector, insulatively mounted on the field core, receives the magnet wire and provides for later connection to stranded lead wire or another circuit element.

The process includes, in addition to the conventional winding of the coils on the core, the step of mechanically securing the start and end portions of the wound coil to the terminal before control thereof is released by the winding apparatus.

3,725,708
CORE FOR A DYNAMO-ELECTRIC MACHINE

Zinon C. Possis, Minneapolis, Minn., assignor to Possis Corporation, Minneapolis, Minn.

Filed Oct. 7, 1971, Ser. No. 187,398
Int. Cl. H02k *3/00*
U.S. Cl. 310—179 **4 Claims**

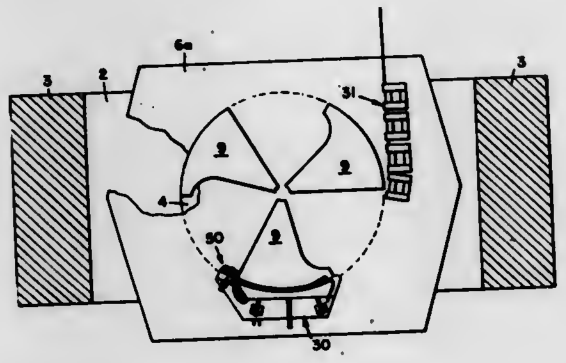


Stators and armatures for dynamo electric machines in which the customary windings are replaced by extruded inserts seated in circumferentially spaced holes that extend axially through the core of the stator or armature, each of which inserts consists of a group of parallel spaced apart wires embedded in insulating material, the ends of the wires being connected to conductivity paths of printed circuit boards at the axially opposite faces of the core.

3,725,709
CYCLOTRON BEAM EXTRACTION

George O. Hendry, Napa, Calif., and Dale K. Wells, Martinez, both of Calif., assignors to The Cyclotron Corporation, Berkeley, Calif.

Filed Feb. 25, 1971, Ser. No. 118,751
Int. Cl. H05h *13/00*
U.S. Cl. 313—62 **6 Claims**



A method and apparatus for extraction of high beam currents from an isochronous cyclotron which segregates that portion of the orbiting particles to be extracted at the extraction radius in the absence of any electric deflection field and then electrostatically deflects the segregated particles from orbit with an electrostatic field the location of which increases in radius with respect to the center of the cyclotron. Segregation is made by a long sloped and cooled preseptum preceding an electrostatic deflection channel.

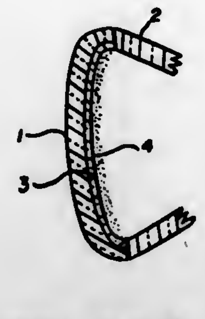
3,725,710
METHOD OF MAKING A CATHODE-RAY TUBE

Johannes De Gier, and Reinhart Charles Willem Eisses, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 542,967, April 7, 1965, Pat. No. 3,573,955. This application Feb. 25, 1971, Ser. No. 118,761

Claims priority, application Netherlands, April 17, 1965, 6504936

Int. Cl. H01j *29/00, 29/22*
U.S. Cl. 313—64 **6 Claims**

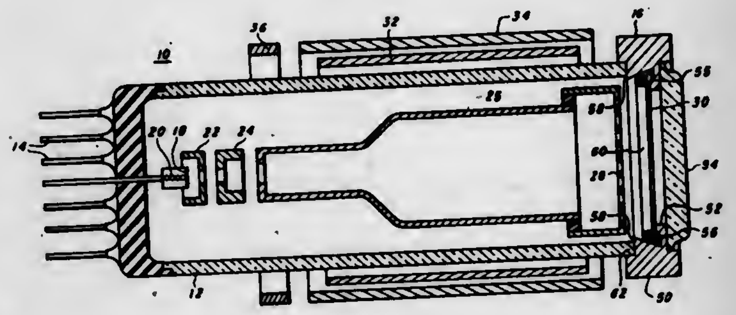


Discoloration of easily reducible oxide containing glass in window portion of cathode-ray tube due to high energy electron bombardment is prevented by providing a thin transparent layer substantially free of easily reducible metal ions between the glass and the superimposed luminescent screen.

3,725,711
IMAGE PICK-UP TUBE SUPPORT STRUCTURE FOR SEMICONDUCTIVE TARGET

Porter Sadler, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 1, 1971, Ser. No. 148,762
Int. Cl. H01j *29/02, 31/38, 29/45*
U.S. Cl. 313—66 **6 Claims**



An image pick-up tube with a diode array target having a chemically deposited silicon resistive film covering the diode array of the target and a target mounting assembly including a conductive ring having an inwardly extending flange adjacent one end of the ring. The flange has a window or face plate side in sealing engagement with a face plate and a target side which is grooved to receive the periphery of the diode array target. The inner wall of the ring coacts with the ring flange to form a notch for a spring type retaining ring. The retaining ring when properly positioned within the notch directs the periphery of the diode array target into the groove and retains the target firmly within the groove of the conductive ring. The target bearing side of the flange is channeled to prevent air entrapment between the target and face plate when vacuumizing the image pick-up tube. The end of the ring opposite the face plate surface forms a seat for the bulb of the image pick-up tube and a stop for a retaining ring positioning tool. The stop properly positions the target retaining ring when carried by the tool and prevents the retaining ring from contacting the fragile diode array target. When assembled with the target the conductive ring provides the electrical contact for biasing the target and taking off the video signal.

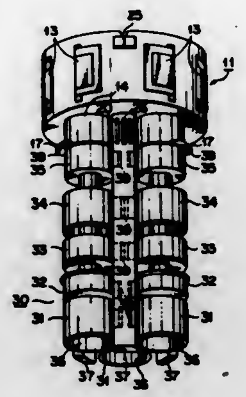
3,725,712
TRIPLE ELECTRON GUN ASSEMBLY HAVING UNITS ATTACHED BY GLASS BEADS TO PROTRUSION FROM CONVERGENCE ELECTRODE

Shinichi Sawagata, Nerima-ku, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Sept. 29, 1971, Ser. No. 184,776

Claims priority, application Japan, Oct. 20, 1970, 45/103549

Int. Cl. H01j *29/02, 29/50*
U.S. Cl. 313—70 C **5 Claims**



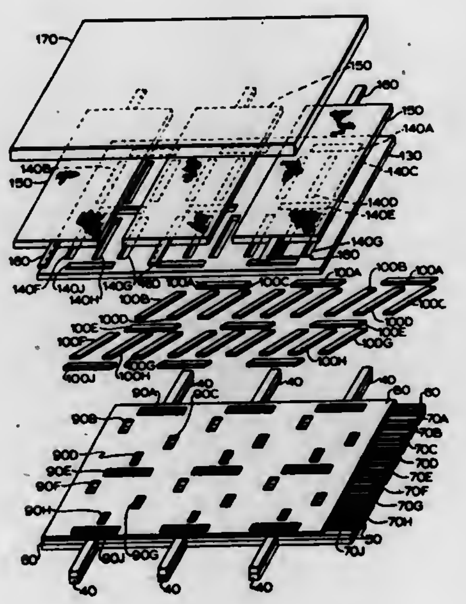
A triple electron gun assembly comprising three stacks of electrodes so arranged as to have their axes slightly inclined for convergence and a cup-shaped convergence electrode secured to the forward ends of the three electron gun units, said cup-shaped convergence electrode being provided with a protrusion having cylindrical walls corresponding in size and shape to the forward ends of the three electron gun units.

3,725,713
MULTI-POSITION GASEOUS DISCHARGE DISPLAY PANEL

George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 88,047, Nov. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 61,642, Aug. 6, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,538

Int. Cl. H01j *61/38, 61/66*
U.S. Cl. 313—108 R **15 Claims**

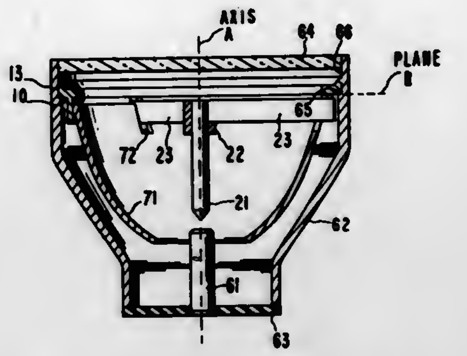


The display device is of a sandwich construction and includes a base plate on which a plurality of the electrode components of the device are formed by a screening or printing process or the like. The base plate may also include a sheet of metal having an insulating coating, the metal sheet having preformed portions which can be used to support electrode contacts after the entire device has been assembled.

3,725,714
MOUNTING RING AND METHOD FOR REFERENCING MEMBERS IN A SHORT ARC LAMP

Norman C. Anderson, Foster City, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed May 13, 1971, Ser. No. 143,165
Int. Cl. H01j *17/06*
U.S. Cl. 313—110 **5 Claims**

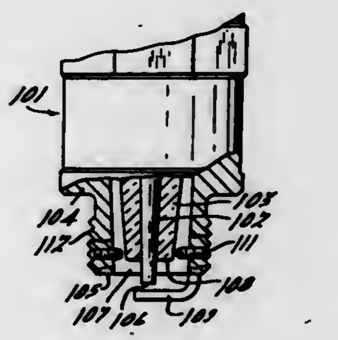


A mounting ring and method is described for referencing the cathode to the reflector in a short arc lamp, and the cathode/reflector to the anode and the lamp exterior. A reference plane is formed on the mounting ring. One or more planes parallel to this reference plane are formed in a brazing fixture and spaced so that the tip of the cathode is at a controlled distance from the reference plane. The same reference plane or one parallel to it is used to control positioning of the anode and lamp exterior. Axial concentric surfaces are formed on the ring and on at least one cylinder in the brazing fixture to control concentricity of the ring, cathode and reflector, and of the ring, anode and lamp exterior. When two or more cylinders are used, surfaces on a first cylinder can be made to expand at the same rate as the ring, with one surface constrained at brazing temperature by a concentric surface on a second cylinder which expands at substantially the same rate as the electrode.

3,725,715
SPARK PLUG

Cecil J. Krow, P.O. Box 249, Ralston, Okla.

Filed July 19, 1971, Ser. No. 163,825
Int. Cl. H01t *13/42*
U.S. Cl. 313—131 **10 Claims**



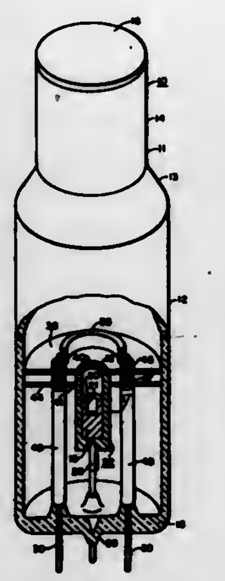
A spark plug having in combination an adjustable axial air gap spark and circumferentially interrupted ground electrode means which creates a surface flame spark. The surface flame and air gap spark are transverse to each other, permitting adjustment of the shorter air gap spark electrode. The spark plug comprises a central electrode within an insulator, an air gap surrounding the insulator and a ground electrode carrying a pin which extends over the central electrode. In one embodiment, the air gap is relatively narrow, and carbon-reducing slots are formed in the ground electrode. In a second embodiment, radially adjustable surface flame ground electrode pins are provided. In another embodiment, a non-adjustable pin is carried by the ground electrode for the surface flame. In still another embodiment, a single J-shaped pin acts both as an adjustable air gap spark electrode and an adjustable surface flame electrode.

3,725,716
HOLLOW CATHODE DEVICE WITH IMPROVED SPECTRAL LIGHT OUTPUT AND STABILITY

George K. Yamasaki, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 16, 1971, Ser. No. 153,496
Int. Cl. H01j *61/04, 61/12*

U.S. Cl. 313—185 **4 Claims**



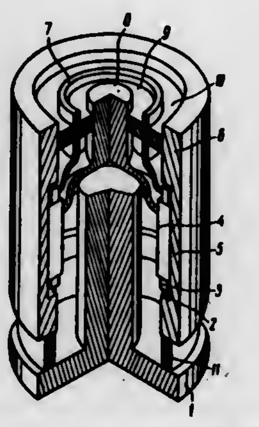
A hollow cathode lamp of the type used as a source of spectral radiation characteristic of the materials within the hollow cathode. More particularly, the cathode is comprised of a body of material of which a characteristic radiation is desired having hollow within a front surface and an electrical conductive sleeve member surrounding said cathode body and extending beyond the front surface of the cathode body and electrically interconnected with the cathode lead-in.

3,725,717
GRID-CONTROLLED MICROWAVE THERMIONIC DEVICE

Anton Felixovich Leliovsky, prospekt Smirnova, 24, korpus 2, kv. 90; Vladimir Alexandrovich Ryabinin, Fontanka, 33, kv. 103; Karl Romanovich Terra, Grazhdansky prospekt, 27, kv. 152, and Kira Boleslavovna Yankevich, ulitsa Shkolnaya, 15, kv. 26, all of Leningrad, U.S.S.R.

Filed June 22, 1970, Ser. No. 48,305
Int. Cl. H01j *1/46, 21/10, 1/15*

U.S. Cl. 313—302 **2 Claims**



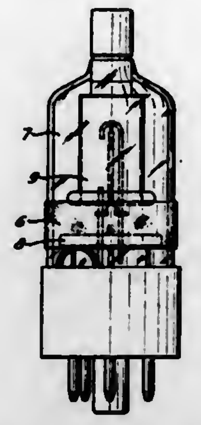
A grid-controlled VHF thermionic device which can be used as an amplifier or a generator of VHF electromagnetic oscillations and which has two grid-leads forming, together with a cathode lead, two lines for feeding in the energy of a VHF electromagnetic field, the two lines being connected in parallel for the currents and voltages of said electromagnetic field.

3,725,718
FLAME-SPRAYED FERRITE POWDER X-RAY RADIATION SHIELD

Virgil P. Quirk, and James M. Titlar, both of Saint Marys, Pa., assignors to Stackpole Carbon Company, Saint Marys, Pa.

Filed April 29, 1969, Ser. No. 828,066
Int. Cl. H01j *1/52*

U.S. Cl. 313—313 **2 Claims**



Ferrite powder is flame sprayed onto a glass or ceramic substrate to form a continuous coating, in which the powder is fused together and to the substrate to form a radiation shield. When the substrate is the glass envelope of a television receiver high voltage rectifier tube, such a shield in the correct location will absorb most of the X-rays that otherwise would be emitted by the tube.

3,725,719
METHOD AND ARITCLE FOR INHIBITING GASEOUS PERMEATION AND CORROSION OF MATERIAL

Martin M. Seldon, and Leo J. Garbini, both of Sunnyvale, Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Nov. 30, 1970, Ser. No. 93,902
Int. Cl. C23c *15/00*

U.S. Cl. 313—317 **5 Claims**

A method and apparatus for inhibiting gaseous permeation and corrosion of materials is disclosed. Gaseous permeation and corrosion of materials is inhibited by the provision of a coating of gold and tantalum over the surface of the article to be protected. In a preferred method of applying the coating, the gold and tantalum are co-deposited by sputtering to form the coating. The gold and tantalum coating is preferably protected by an organic coating to form a barrier to prevent contact of the gold and tantalum coating with corrosion-producing materials. The gold and tantalum coating reduces hydrogen permeation of coated materials by factors of several thousand compared to a reduction factor of approximately five times for a pure gold coating of comparable thickness.

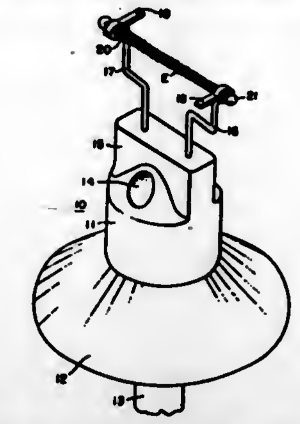
3,725,720
ELECTRIC LAMP MOUNT HAVING A BEADED FILAMENT COIL

James Petro, Little Falls, and Clair M. Rively, Old Bridge, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 163,651, July 19, 1971, which is a division of Ser. No. 792,988, Jan. 22, 1969. This application July 12, 1972, Ser. No. 271,103
Int. Cl. H01j *1/16, 19/10, 19/06*

U.S. Cl. 313—344 **6 Claims**

The coiled tungstem filament of an electric incandescent lamp is provided with a fused bead of tungsten-iron alloy at each end and is so fastened to the lead wires of the mount assembly that the beads are located outboard from and in contiguous relationship with the respective lead wires. The beads are larger than the diameter of the filament coil and spaced a predetermined distance apart and thus serve as built-in guides or "reference points" during the filament-mounting operation which accurately control the lighted-length of the mounted coils.

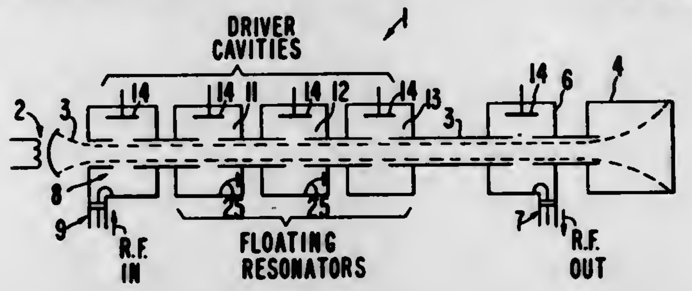


3,725,721
APPARATUS FOR LOADING CAVITY RESONATORS OF TUNABLE VELOCITY MODULATION TUBES

Martin E. Levin, San Mateo, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed May 17, 1971, Ser. No. 144,411
Int. Cl. H01j *25/10*

U.S. Cl. 315—5.43 **8 Claims**



A tunable high frequency velocity modulation beam tube has a plurality of floating resonators arranged along a beam path intermediate an input circuit and an output circuit for velocity modulating the beam to provide bunching of the beam at the output circuit. The cavity resonators are tunable over a relatively wide band for tuning the electronic bandwidth of the tube over a relative wide tunable band. A plurality of floating resonators are each loaded by a series resonant loading circuit with the Q's and frequencies adjusted to provide a certain flat electronic bandwidth. The loading circuits are tuned and loaded such that the loss introduced into the floating resonators is frequency dependent over the tunable band of the tube in order to maintain the given electronic bandwidth over the tunable band of the tube.

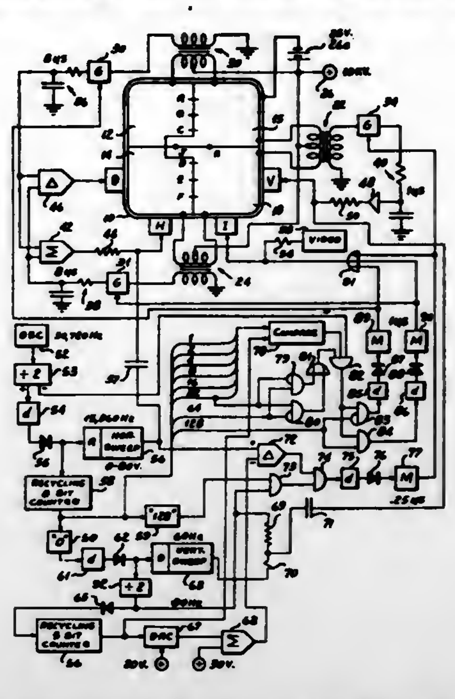
3,725,722
DISPLAY CENTERING SYSTEM

George Mann, Gateshead N.E. 97YA, England, assignor to United Aircraft Corporation, East Hartford, Conn.

Filed April 19, 1971, Ser. No. 134,961
Int. Cl. H01j *29/70*

U.S. Cl. 315—21 R **27 Claims**

A display centering system comprises a cathode ray tube having a metalized screen which is etched to provide at least a pair of electrically discrete sectors. The split screen acts as a target anode; and is operated at a potential to collect all primary and secondary electrons. The beam current is momentarily increased at predetermined points of the raster independently of the normal video signals; and the differential anode currents between the two halves of the split screen are measured at such points of the raster to determine positioning errors. In order to avoid excitation of the phosphors to a visible level, the points in the raster at which the beam current is momentarily increased is successively varied from field to field and from frame to frame. The metalized layer of the screen is preferably split along a line passing through the center of the display so that the display may be centered with the highest accuracy. Information can be readily displayed at the center of the screen, since at any given point the video signal will only occasionally be affected by the pulse of increased beam current which is used to establish the center of the display.

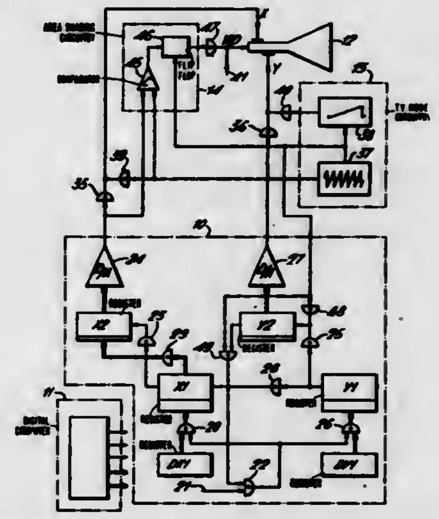


3,725,723
GRAPHIC DISPLAY SYSTEM

John Matthew Colston, Gravesend, England, and James Robert Machin, Grand Prairie, Tex., assignors to Elliott Brothers (London) Limited, London, England

Filed Sept. 25, 1970, Ser. No. 76,516
Int. Cl. H01j *29/70*

U.S. Cl. 315—22 **9 Claims**

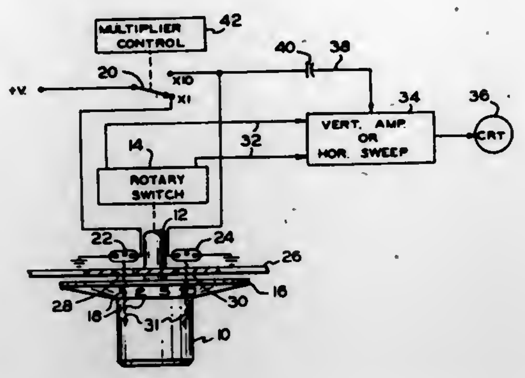


Display systems of the CRT type are known which operate in various modes. One mode is a TV type mode; another is a DDA (digital differential analyzer) type mode, in which two digital registers (X and Y registers) control the spot displacement, being incremented at constant high speed by increments *dx* and *dy*, where $dx^2 + dy^2$ is a small constant. If *dx* and *dy* are constant, this draws a straight line, whose slope, tan θ, is dy/dx.

By the invention, the DDA-type mode circuits can also be operated during system operation in the TV-type mode, with *dy* equal to the line spacing and *dx* equal to tan θ times the line spacing. The X register alone is used, and incremented on each line scan. Its contents are compared with the line scan waveform, and a pulse produced on equality. If this pulse is fed directly to the video circuits, this produces a line on the screen superposed on whatever other information is being displaced. The pulse may instead be used to change the state of a flip-flop whose output is fed to the video circuitry; this results in brightening an area on the screen bounded by the line which the pulses would produce directly. This may be used as a horizon indicator for an aircraft pilot's display system, distinguishing the horizon from any other linear information which may be displayed at the same time.

3,725,724
DEFLECTION FACTOR INDICATING APPARATUS

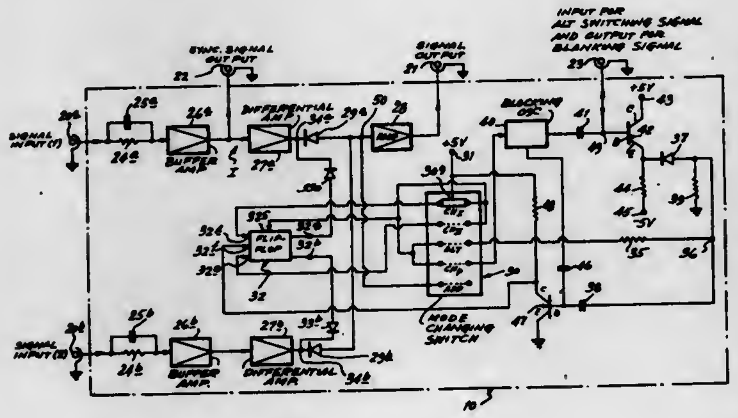
Charles Howard Vollum, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Jan. 11, 1971, Ser. No. 105,336
Int. Cl. H01j *29/70*
U.S. Cl. 315—24 **14 Claims**



A switch apparatus is described including a rotary switch operated by a knob having a movable dial flange with display characters thereon at switch positions corresponding to different multiplying factors provided for the output signal of an electrical circuit controlled by such switch. A pair of fixed light sources mounted at two different readout positions beneath the flange are selectively energized by an external multiplier switch to illuminate only one of the factors at such readout positions in accordance with the operation of such multiplier switch. The rotary switch and multiplier switch may be connected to change the gain of a vertical amplifier or to change the sweep speed of a horizontal ramp generator in a cathode ray oscilloscope so that the illuminated character display on the knob dial automatically indicates the proper deflection factors of such oscilloscope.

3,725,725
OSCILLOSCOPE APPARATUS

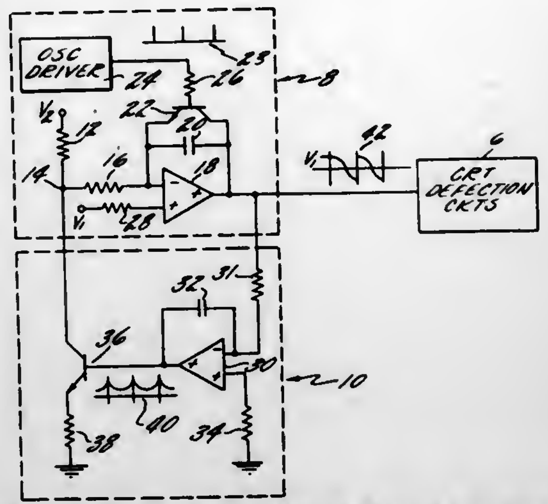
Susumu Yoshida, and Yoshio Ishigaki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Oct. 3, 1969, Ser. No. 863,543
Int. Cl. H01j *29/74*
U.S. Cl. 315—26 **8 Claims**



A single-trace type oscilloscope which may be of small size and light weight is adapted for multi-trace operation by providing an adapter connected with the oscilloscope, with minimal alteration of the latter, and which is selectively operable to cause the single-trace type oscilloscope to display a selected one of a plurality of input signals, to display the input signals simultaneously or to display the input signals alternately during successive sweep periods or during successive periods having a high frequency as compared with the sweep frequency.

3,725,726
CRT GEOMETRY CORRECTION WITH ZERO OFFSET

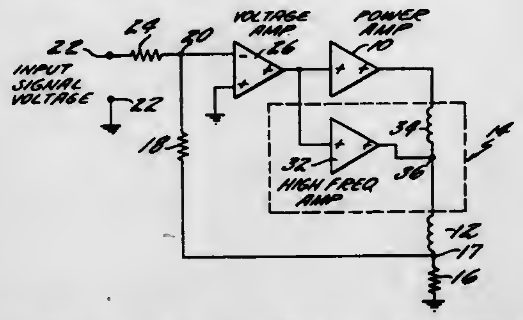
Roger Frankland West, Weston, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 21, 1970, Ser. No. 100,231
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 GD **2 Claims**



A sawtooth driving voltage for deflecting the beam in a cathode ray tube has centering and geometry distortion correction provided by means of a feedback path including an integrator which adds a substantially parabolic function back to a summing input to the amplifier which is providing the deflection voltage.

3,725,727
WIDE-BAND MAGNETIC YOKE DEFLECTION SYSTEM

Glenn C. Wachner, Scarsdale, N.Y., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 8, 1971, Ser. No. 113,221
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **1 Claim**

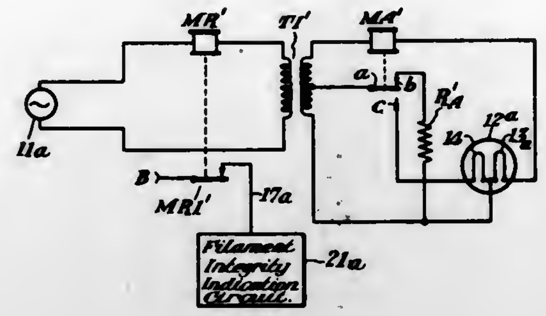


A system for providing current to an inductive load such as a magnetic yoke deflection system is improved by the addition of a low power, high frequency amplifier and a few passive components. Deflection current components at frequencies higher than the frequency spectrum of the unimproved magnetic yoke deflection system are provided by the high frequency amplifier, thereby enhancing the deflection system bandwidth far beyond limitations encountered using the teachings of the prior art.

3,725,728
FAIL-SAFE LAMP FILAMENT MONITORING CIRCUIT

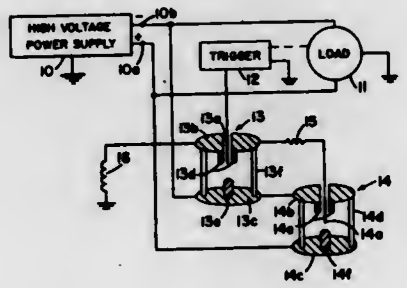
Kenneth Gordon King, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England
Filed Sept. 4, 1970, Ser. No. 69,765
Claims priority, application Great Britain, Sept. 23, 1969, 46,903/69
Int. Cl. H01j *7/44*
U.S. Cl. 315—65 **8 Claims**

This invention relates to a fail-safe lamp filament monitoring circuit including an a. c. signal source to provide an a. c. signal to the primary of a transformer which, in turn, supplies alternating electrical energy to a lamp filament connected in its secondary, a monitoring device responsive to the current in the primary winding and an auxiliary loading device connected in the secondary. The auxiliary loading device is effective to increase power flow through the transformer to energize the filament to a level where the monitoring device is operated and held operated until the lamp filament is no longer energized at which time the monitoring device is released at the transformer magnetizing current.



3,725,729
ELECTRICAL CROWBAR SYSTEM WITH NOVEL TRIGGERED SPARK GAP DEVICES

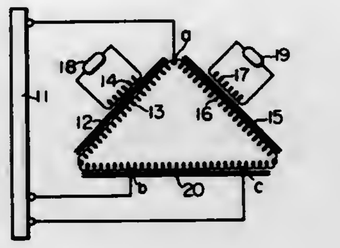
Michael S. McDermott, San Jose, and Carl A. Pederson, Los Altos, both of Calif., assignors to The United States of America as represented by the Secretary of the Army
Filed Oct. 29, 1971, Ser. No. 193,847
Int. Cl. H01t *1/00;* **H02h** *3/00*
U.S. Cl. 315—75 **4 Claims**



Spark gap devices including removable and adjustable electrodes are shown. These devices are usable in an electrical crowbar circuit. The devices include a master gap device and a slave gap device, each of which includes a tubular insular with metal end caps, and with electrodes attached to the end caps. One of the caps of each device and one of the corresponding electrodes have an axial perforation, with a trigger electrode extending through the perforation. In the master gap device, the trigger electrode extends to the end of the electrode through which it extends; in the slave gap the trigger electrode extends beyond the electrode through which it extends and adjacent the other electrode of the device. All of the electrodes may be easily replaced by disassembling the devices, and may be easily adjusted.

3,725,730
FLICKERLESS THREE-PHASE LIGHTING DEVICE FOR ELECTRIC DISCHARGE LAMPS

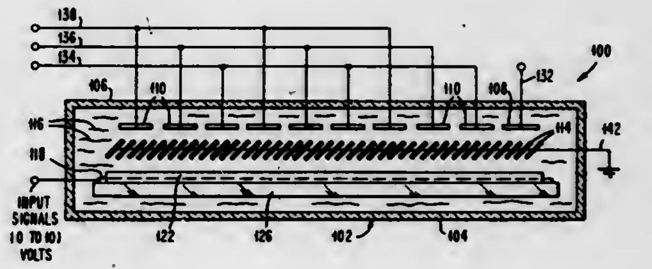
Kenichi Nakai, Neyagawa, and Takehiko Yamashita, Ichikawa, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Dec. 23, 1971, Ser. No. 211,510
Claims priority, application Japan, Dec. 28, 1970, 45/130583
Int. Cl. H05b *41/16*
U.S. Cl. 315—144 **4 Claims**



The invention concerns a flickerless discharge lamp lighting device which utilizes a three-phase to two-phase converter capable of converting three-phase current into a two-phase current with a phase difference of 90°.

3,725,731
SELF-SCANNING PLASMA DISPLAY DEVICE WITH PHOSPHOR SCREEN

Benjamin Kazan, Bedford Hills, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 29, 1971, Ser. No. 157,971
Int. Cl. H05b *39/00*
U.S. Cl. 315—169 R **8 Claims**

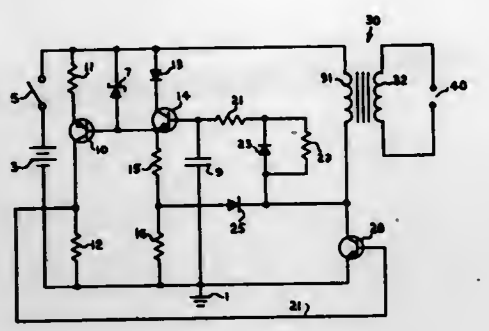


A display device having an inert gas-filled, transparent envelope, containing a set of parallel cathode elements an anode grid structure forming a venetian blind type structure and a glass support plate carrying a set of parallel conducting strips perpendicular to the plane of the parallel cathode strips and coated with a layer of ZnO phosphor. Light is emitted by the phosphor when one of the cathode elements is connected to a negative potential, the anode grid structure connected to a ground potential and one of the phosphor bearing conducting strips is connected to a low positive signal voltage. Color displays may be generated by applying a series of phosphors which generate different colors in an alternating fashion on the glass support plate.

3,725,732
VOLTAGE REGULATED TRANSISTORIZED IGNITION SYSTEM FOR AN AUTOMOBILE TURBINE ENGINE

Kaushik H. Thakore, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 25, 1972, Ser. No. 229,364
Int. Cl. H05b *37/02*; F02p *1/00*
U.S. Cl. 315—209 T **6 Claims**

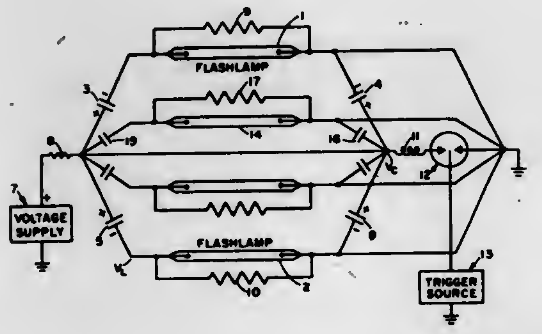


An ignition system for a gas turbine engine that includes a current regulated transistorized oscillator in combination with a transformer and a spark plug in the secondary of the transformer to produce sparks to ignite fuel in the turbine.

3,725,733
ULTRAFAST MULTIPLE FLASHLAMP

Michael E. Mack, Vernon, Conn., and Robert J. Mongeon, East Longmeadow, Mass., assignors to The United States of America as represented by the Secretary of the Navy

Filed April 19, 1971, Ser. No. 135,280
Int. Cl. H05b *37/00*
U.S. Cl. 315—228 **4 Claims**



There is disclosed a control system for firing a plurality of flashlamps so as to produce high intensity light pulses with ultrafast rise times for pumping laser systems wherein a resonant circuit is utilized to develop maximum voltage across the flashlamps at a time corresponding to their breakdown delay time.

3,725,734
ELECTRONIC FLASH DEVICE

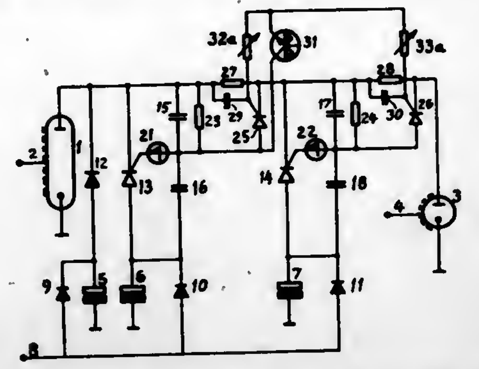
Arthur Schneider, Wiesenweg, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed March 9, 1971, Ser. No. 122,411

Claims priority, application Germany, March 11, 1970, P 20 11 432.3; March 13, 1970, P 20 11 905.5; March 14, 1970, P 20 12 150.0

Int. Cl. H05b *37/00*
U.S. Cl. 315—241 P **10 Claims**

Electronic flash apparatus for photographic purposes, comprising a flash tube and a series of capacitors providing power for flashing the flash tube. When the flash tube is triggered, only one capacitor is connected across the flash tube. One or more additional capacitors are then switched into the flash tube circuit, for additional flash illumination, depending upon the amount of light required for the photograph. In one embodiment of the invention, the switching of additional capacitors into the flash tube circuit is controlled by the amount of light reflected from the subject being photographed.



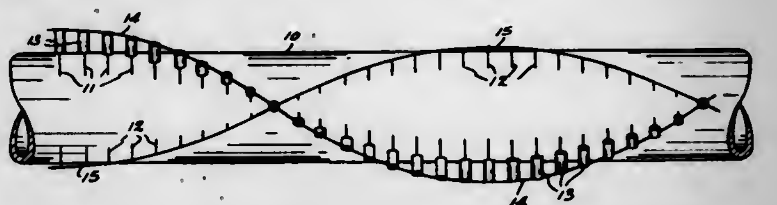
3,725,735
TRANSVERSE ELECTRODE EXCITATION OF A MOLECULAR GAS LASER

Alexandre J. Beaulieu, Ste. Foy; Roger Fortin, Courcelette, Quebec; Derwyn C. Johnson, Ottawa, and Alexander Robinson, Sillery, Quebec, all of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence of Her Majesty's Canadian Government

Filed Aug. 20, 1970, Ser. No. 65,476

Claims priority, application Canada, Aug. 29, 1969, 60,718

Int. Cl. H01s *3/22*; H05b *41/14*
U.S. Cl. 315—249 **3 Claims**

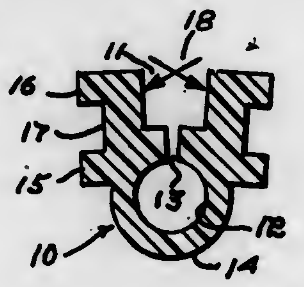


A transverse excitation system for a molecular gas laser is disclosed in which a pair of electrodes supplied with high voltage DC pulses are provided, the electrodes being shaped to cause an electric discharge therebetween which has a predetermined geometric distribution such that the gain characteristic and the refractive index characteristic of the laser is a spatial distribution to preferentially excite a predetermined resonant cavity mode in the laser gas. Two specific examples of such an electrode structure as a helical electrode structure and a planar electrode structure in which a plurality of rows of pin electrodes are provided, the rows being skewed at an angle with respect to the longitudinal axis of the laser.

3,725,736
STATIC NEUTRALIZER

Peter Bishop, Portland, Maine, assignor to United Industrial Syndicate, Inc., Portland, Maine

Filed Feb. 17, 1972, Ser. No. 227,157
Int. Cl. H01t *19/04*; H05f *3/00*
U.S. Cl. 317—2 F **7 Claims**

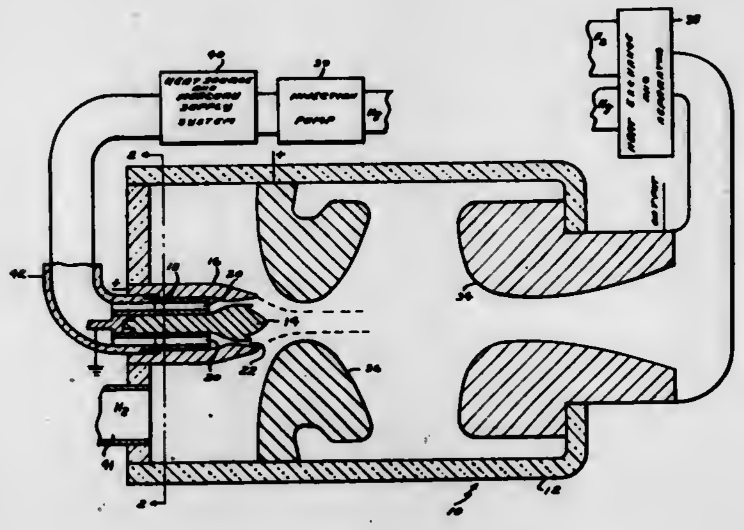


A device is disclosed for use in neutralizing static electric charges and includes a bar provided with a lengthwise channel connected to a lengthwise parallel internal passageway by a slit through the intermediate wall with the bar being an extrusion of a material that is yieldably resilient. An insulated conductor has a plurality of discharge devices fixed thereon and is clamped in place with the conductor in the passage and the discharge points of the device extending through the slit into the channel with the walls of the slit in engagement with the discharge points. Grounded conductors are secured to the sides of the bar and they are interconnected through the bar by rivets which are located between discharge points.

3,725,737
CORONA DISCHARGE ELECTRODE STRUCTURE FOR ELECTROFLUID DYNAMIC GENERATOR

Maurice O. Lawson, Dayton, and Theodore L. Wilke, Columbus, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force

Filed Nov. 8, 1971, Ser. No. 196,284
Int. Cl. H02k *45/00*
U.S. Cl. 317—3 **5 Claims**



A corona electrode discharge system, such as used in electrofluid dynamic generators, having corona electrode and an attractor electrode forming an annular converging-diverging nozzle, with the corona electrode having a step adjacent the diverging portion of the nozzle. A high pressure fluent material is supplied to the nozzle to provide a supersonic flow through the nozzle and to create a constant density high pressure region with a corresponding high dielectric breakdown strength between the corona and attractor electrodes and a constant density low pressure region adjacent the step with a corresponding low dielectric breakdown strength.

3,725,738
DEVICE FOR PREVENTING A CORONA DISCHARGE FROM ASSUMING THE FORM OF A SPARK DISCHARGE IN ELECTROSTATIC PAINTING APPARATUS

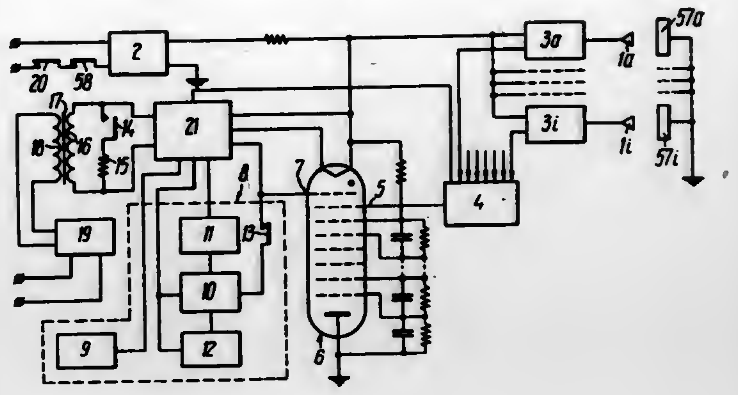
Valery Nikolaevich Sokolsky, Pesochnaya, 2, ultisa Leningradskaya, 70/2, kv. 8, and Igor Ivanovich Mamaev, Mitavsky pereulock, 3, kv. 26, both of Leningrad, U.S.S.R.

Filed Jan. 28, 1972, Ser. No. 221,709

Claims priority, application U.S.S.R., Dec. 17, 1968, 1291005; Dec. 24, 1969, 1388901

Int. Cl. B05b *5/00*
U.S. Cl. 317—3 **6 Claims**

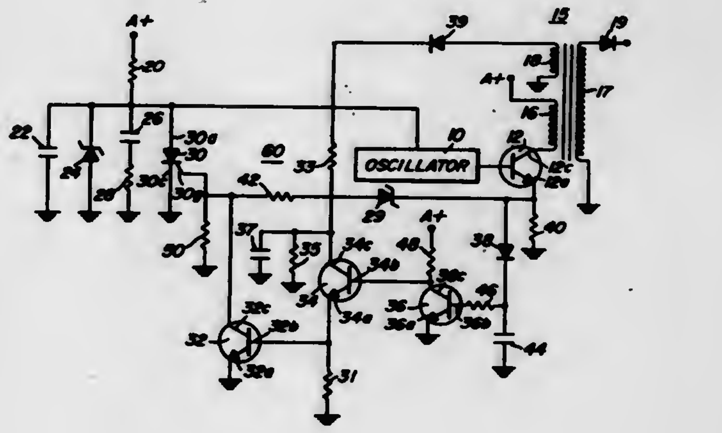
A protective device preventing the transformation of a corona discharge into a spark discharge in electrical apparatus, particularly, in electrostatic painting apparatus, consists of a multielectrode gas discharge tube having a control grid which through a starting unit is connected to pickups or sensing elements controlling the operating current. The multielectrode gas discharge tube which may be a thyratron has a keep-live electrode. A comparison unit having a source of reference voltage is connected through a contact of a time relay to the keep-live electrode.



3,725,739
DUAL MODE POWER SUPPLY PROTECTION CIRCUIT

Donald E. Griffey, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 21, 1972, Ser. No. 219,707
Int. Cl. H02h *3/08*, *7/20*
U.S. Cl. 317—16 **12 Claims**

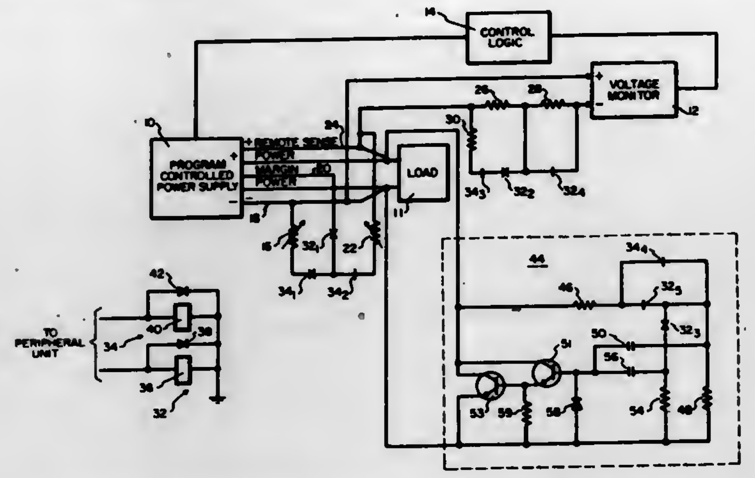


An overload protection circuit for a power supply having circuitry for sensing the amount of current delivered by the supply, and for turning off the supply with a silicon controlled rectifier in the event of an overload. Timing circuitry is provided to automatically turn on the power supply a predetermined time following turn-off, and to sense the current delivered to the load to determine whether the overload still exists. If the overload has been removed, the operation of the power supply returns to normal, but if the overload persists, the power supply is turned off and a second timing circuit maintains the power supply in the off state until the supply is manually reset.

3,725,740

VOLTAGE MARGINING CONTROL CIRCUIT FOR PROGRAM CONTROLLED POWER SUPPLIES

Karl H. Kuster, Glendale Heights, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed March 27, 1972, Ser. No. 238,216
Int. Cl. H02h *9/04*
U.S. Cl. 317—16 **8 Claims**

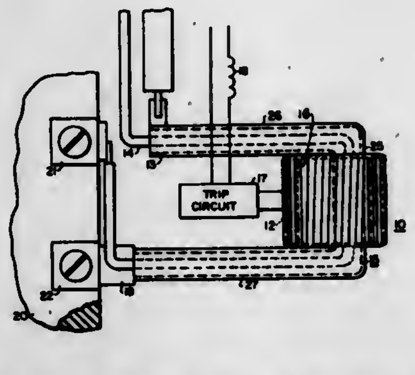


A voltage margining circuit for use with a program controlled power supply wherein relay logic is used to control the output of a monitored power supply during voltage margining of a load during test operations.

3,725,741

DIFFERENTIAL TRANSFORMER MOUNTING ARRANGEMENT PARTICULARY FOR GROUND FAULT INTERRUPTER APPARATUS

John J. Misencik, Shelton, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 30, 1971, Ser. No. 158,336
Int. Cl. H02h *1/02*; **H01f** *17/06*
U.S. Cl. 317—18 D **5 Claims**



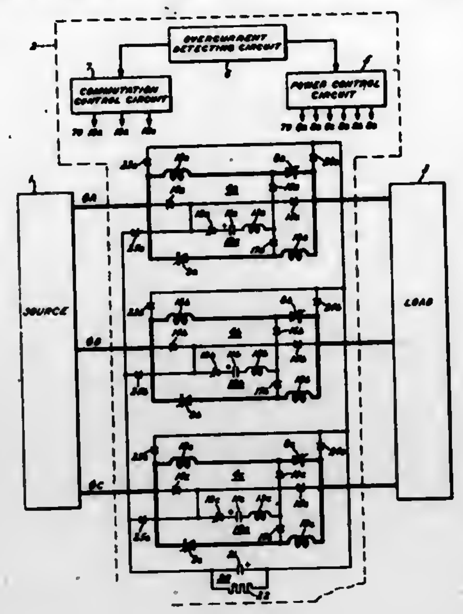
A coaxial conductor passing through an apertured core of a differential transformer is provided with an outer conductor in the form of a rigid tubular conductive member with one or more insulated inner conductors therein. Outside the core, the rigid tubular member is bent at two substantially right angles forming two parallel legs. At least an end of one leg is attached to a fixed support so that the coaxial conductor provides a way of fixing the electrical characteristics of the transformer as well as substantially mechanically securing the core of the transformer by a simple and effective means.

3,725,742

STATIC CIRCUIT BREAKER

Ernest M. Pollard, Cherry Hill, N.J., assignor to General Electric Company, Philadelphia, Pa.
Filed Feb. 23, 1972, Ser. No. 228,493
Int. Cl. H02h *7/00*
U.S. Cl. 317—33 SC **9 Claims**

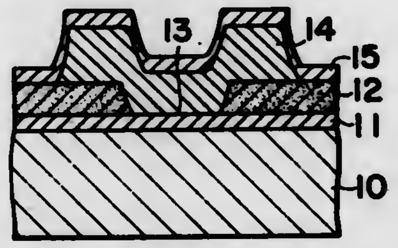
Disclosed is a 3-phase static circuit breaker including three phase switches, each switch including a pair of power thyristors connected in inverse parallel relationship with one another and a common commutation circuit. A common surge suppressing circuit for all the switches is also provided in the static circuit breaker.



3,725,743

MULTILAYER WIRING STRUCTURE

Yoshimasa Murayama, Kodaira, Japan, assignor to Hitachi, Ltd., Chiyoda-ku, Tokyo, Japan
Filed May 19, 1971, Ser. No. 144,789
Int. Cl. H01l *19/00*
U.S. Cl. 317—101 A **14 Claims**



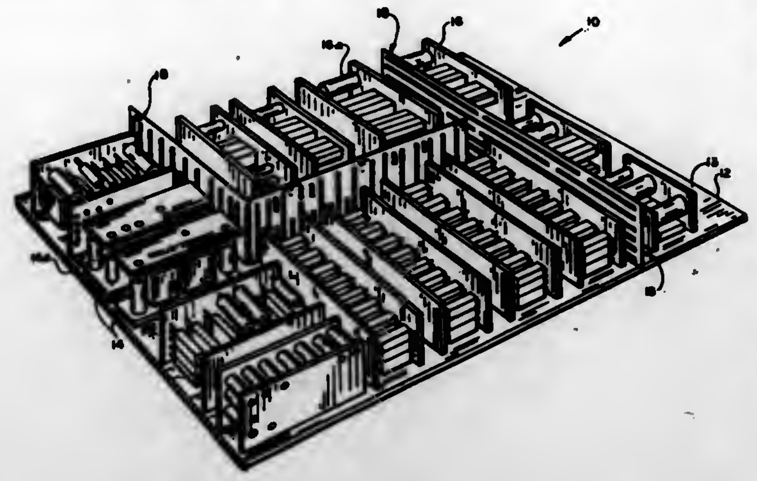
A multilayer wiring structure and its method of production, in which the multilayer wiring structure comprises a first wiring conductive layer disposed on the surface of an insulative substrate, an insulative layer disposed on the first wiring conductive layer and provided with an opening for exposing a predetermined part of the conductive layer, an interconnecting conductive layer disposed in the opening part of the insulating layer, the interconnecting conductive layer being thicker than the insulative layer, and a second wiring conductive layer disposed on the insulative layer and the interconnecting conductive layer.

3,725,744

ELECTRICAL COMPONENT CONNECTOR ASSEMBLY

Charles J. Reed, Boulder, Colo., assignor to Ball Brothers Research Corporation, Boulder, Colo.
Filed June 11, 1971, Ser. No. 156,143
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 CC **4 Claims**

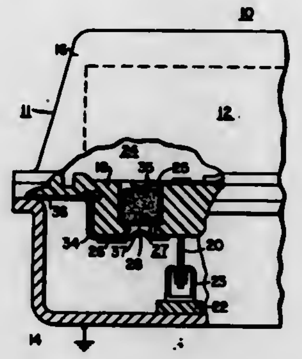
An assembly for electrically connecting together various miniaturized electrical components is disclosed and generally includes a planer surface, such as a mother board, which supports the electrical components as well as at least one thin insulating strip lying in a plane extending perpendicular to the surface and defining a plurality of apertures arranged in accordance with a predetermined circuit plan. A plurality of spaced-apart electrically conductive posts and at least one electrically conductive rail are mounted on opposite sides of the insulating strip and extend in transverse directions so as to cross the aforesaid apertures in accordance with the predetermined plan. In this manner, preselected posts are welded to preselected rails through commonly crossed apertures, and are also electrically connected to the various electrical components which thereby connect these components together in accordance with the aforestated predetermined circuit plan.



3,725,745

VOLTAGE SURGE PROTECTION DEVICE FOR ELECTRIC METERS

William J. Zisa, Cary, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 23, 1971, Ser. No. 182,954
Int. Cl. G01r *1/36*; **H02b** *9/00*
U.S. Cl. 317—104 **4 Claims**



A voltage surge protection device having a combined current limiter and arc discharge arrangement extending through the enclosure of an electric meter includes an improved outer contact strip with an integrally formed arcing electrode section. A U-shaped bend in the contact strip defines the arcing electrode section and is aligned with the central axis of a cooperating arcing electrode end of the current limiter. A predetermined spark gap spacing is formed between the electrodes for controlling arc discharges within a localized path. The current limiter includes a valve block having a heat shrinkable insulating cover for compressively reinforcing the body of the valve block against mechanical destruction and preventing arcing flashovers.

3,725,746

CONTROL CENTER WITH EXPANDABLE FRAME CABINET

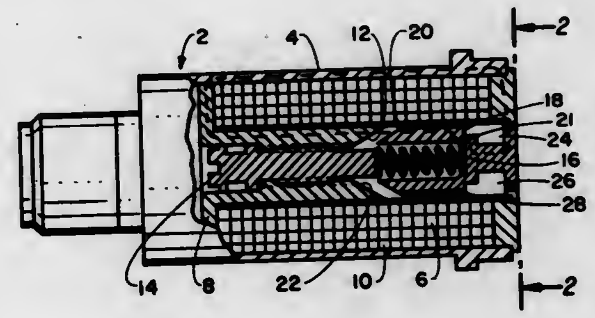
John T. Carroll, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed June 22, 1972, Ser. No. 265,152
Int. Cl. H02b *1/02*
U.S. Cl. 317—120 **10 Claims**

A control center comprising an integral die cast base and an integral die cast top which are rigidly joined together by structural upright members that provide modular expansability and convenience without sacrificing strength, safety or economy. Inherent with the arrangement is the unitized compartment for electrical control equipment which may be varied to suit a variety of sizes of controls. Included in the compartment is the provision of a wire raceway providing protection and affording ready accessability for servicing. A bus bar compartment is formed as an integral part of the structural unit with convenient access being provided to easily and readily connect the controls to the busses.

3,725,747

PROPORTIONING SOLENOID

Arnold A. Cowan, Tarzana, Calif., assignor to DeLaval Turbine Inc., Princeton, N.J.
Continuation-in-part of Ser. No. 164,527, July 21, 1971, abandoned. This application Jan. 17, 1972, Ser. No. 218,140
Int. Cl. H01h *47/00*
U.S. Cl. 317—123 **26 Claims**

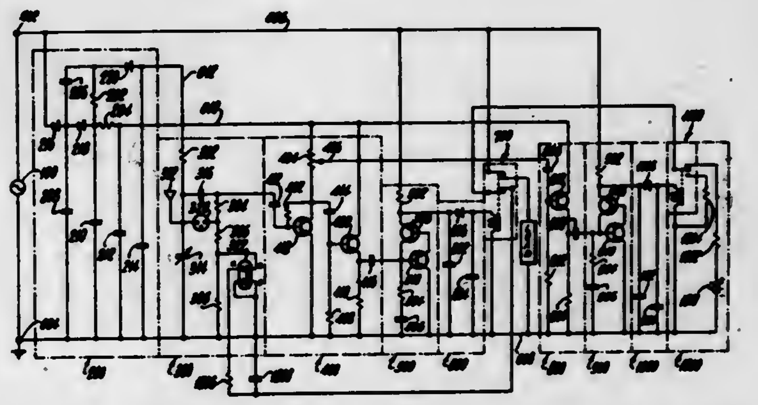


A solenoid and solenoid-actuated mechanism which is operated under conditions whereby the armature of the solenoid is controllably and variably movable by selected increments by the imposition of such current levels, with respect to armature mass and load forces acting thereon, so as to obtain high armature saturation and by the provision of a solenoid design that permits high magnetic leakage paths so that the armature displacement is a function of input control current which may in several embodiments include an interrupter or switching circuit. Hysteresis is beneficially influenced by the reduction of frictional resistance parameters to obtain high performance characteristics.

3,725,748

SELF-ADJUSTING CONDITION-RESPONSIVE CONTROL CIRCUIT

Carl E. Atkins, Montclair, N.J., assignor to Wagner Electric Corporation, Newark, N.J.
Filed Nov. 8, 1971, Ser. No. 196,440
Int. Cl. H01h *47/12*
U.S. Cl. 317—146 **10 Claims**

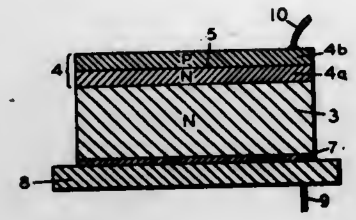


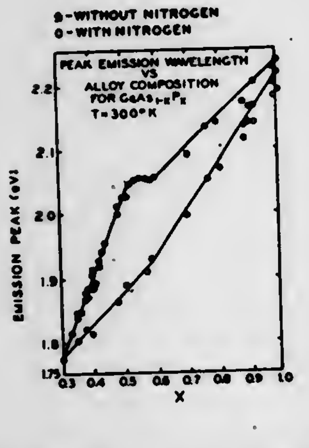
The output of an oscillator is normally continuously varied within predetermined limits so that a first, load-controlling relay is normally de-energized and a second relay is normally energized and de-energized alternately to continuously vary the input voltage to a filed-effect transistor connected in the output of said oscillator. Thus, the circuit "hunts" about a reference level of detected capacitance and compensates for both slow variations from that reference level and drift in values of circuit elements, but will cause a load to become energized in response to a rapid change in detected capacitance.

3,725,749
GaAs$_{1-x}$Px ELECTROLUMINESCENT DEVICE DOPED WITH ISOELECTRONIC IMPURITIES

Warren Olley Groves; Arno Henry Herzog, and Magnus George Craford, all of St. Louis County, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed June 30, 1971, Ser. No. 158,312
Int. Cl. H01l *15/00*
U.S. Cl. 317—234 R 16 Claims



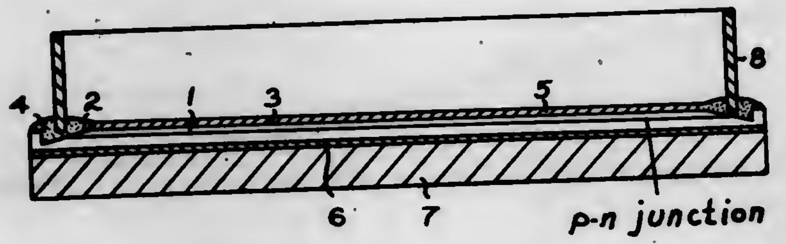


The disclosure herein pertains to the preparation of semiconductor materials and solid-state devices fabricated therefrom. More particularly, the disclosure pertains to a vapor phase process for the preparation of electroluminescent materials, particularly GaAs$_{1-x}$P$_x$, doped with isoelectronic impurities, particularly nitrogen, and to electroluminescent devices fabricated therefrom.

3,725,750
SEMICONDUCTOR DISC HAVING TAPERED EDGE RECESS FILLED WITH INSULATION COMPOUND AND UPSTANDING CYLINDRICAL INSULATING RING EMBEDDED IN COMPOUND TO INCREASE AVALANCHE BREAKDOWN VOLTAGE

Andre Bolliger, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland

Continuation of Ser. No. 2,834, Jan. 14, 1970, abandoned.
This application Feb. 15, 1972, Ser. No. 226,550
Int. Cl. H03l *3/00*
U.S. Cl. 317—234 R 4 Claims

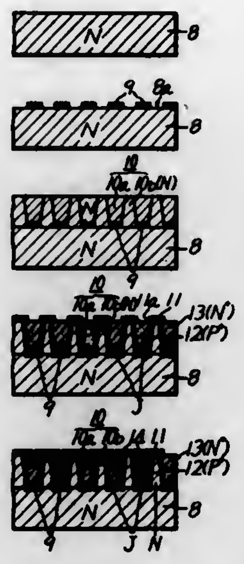


A disc of semiconductor material includes a P-N transition extending transversely therethrough to a circumferentially extending recess located in a marginal edge portion. The recess is filled with an insulating compound and the end portion of a cylindrical insulating member projects into and is embedded in the insulating compound to increase the breakthrough voltage.

3,725,751
SOLID STATE TARGET ELECTRODE FOR PICKUP TUBES

Kinji Wakamiya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 20, 1970, Ser. No. 4,184
Claims priority, application Japan, Feb. 3, 1969, 44/8042
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R 6 Claims

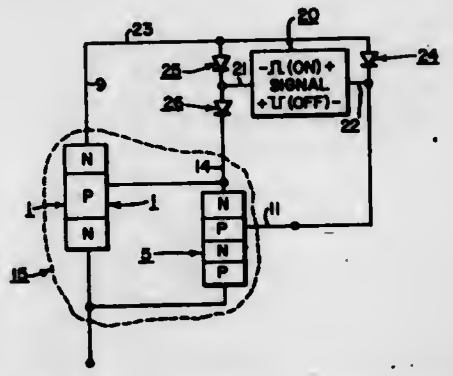


A target using a diode array for pickup tubes which consists of a semiconductor substrate including on one surface thereof an array of regions, defining PN junctions with the major portion of the substrate formed from a vapor-deposited layer of the same conductivity type as the substrate and having a plurality of polycrystalline regions of low resistivity of conductivity type opposite to the substrate.

3,725,752
SEMICONDUCTOR DEVICE

John Mansell Garrett, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

Filed Sept. 15, 1971, Ser. No. 180,631
Claims priority, application Great Britain, Oct. 6, 1970, 47,432/70
Int. Cl. H01q *5/00*
U.S. Cl. 317—235 R 1 Claim



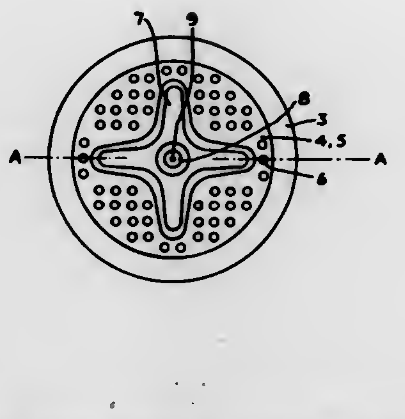
The present disclosure provides a semiconductor device having a first portion which constitutes effectively a transistor and a second portion which constitutes effectively a thyristor; the collector region of the transistor and the anode region of the thyristor being commonly connected to a first lead of the device, the emitter region of the transistor being connected to a second lead of the device, the gated base region of the thyristor being connected to a third lead of the device, and the

base region of the transistor portion and the cathode region of the thyristor being commonly connected to a fourth lead of the device.

3,725,753
INVERSE GATE SEMICONDUCTOR CONTROLLED RECTIFIER

John Mansell Garrett, London, England, assignor to Westinghouse Brake English Electric Semi-Conductors Limited, London, England

Continuation of Ser. No. 40,792, May 27, 1970, abandoned.
This application April 14, 1972, Ser. No. 244,310
Claims priority, application Great Britain, June 11, 1969, 29,713/69
Int. Cl. H01l *11/10*
U.S. Cl. 317—235 R 17 Claims

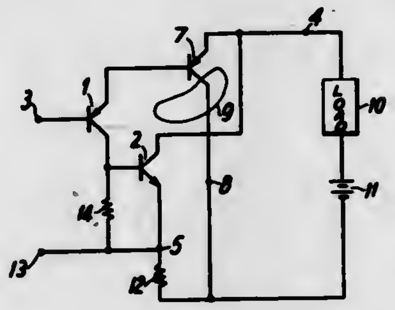


An inverse gate semiconductor controlled rectifier device including a base region, and main and auxiliary emitter regions respectively forming a main and auxiliary PN junction with the said base region is provided with a conductive layer located on the surface of the base region in ohmic contact therewith and extending from adjacent the auxiliary emitter junction to alongside an edge of the main emitter junction but not of itself bridging either the main or auxiliary junction. The conductive layer, in operation, expands a preferential current path between the auxiliary emitter and main emitter along the said edge.

3,725,754
TRANSISTOR CIRCUIT OF COMPOUND CONNECTION

Tokio Furuhashi, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 15, 1972, Ser. No. 263,272
Claims priority, application Japan, June 29, 1971, 46/47778
Int. Cl. H01l *19/00*; H03f *1/10*
U.S. Cl. 317—235 5 Claims

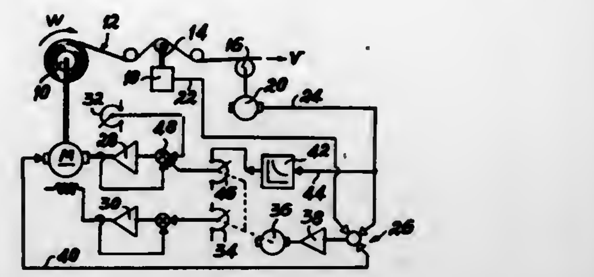


A compound connection transistor circuit in which an additional transistor is connected between a pair of transistors of opposite polarities, to thereby prevent undesired oscillation of the circuit.

3,725,755
SYSTEMS FOR DRIVING REELS AT CONTROLLED SPEED AND POWER AND IMPROVED APPARATUS FOR EFFECTING SUCH DRIVING

Lucio Stabile, Milan, Italy, assignor to Vanguard U.S., Millbrae, Calif.

Filed Nov. 25, 1970, Ser. No. 92,576
Claims priority, application Italy, Nov. 27, 1969, 25015 A/69
Int. Cl. B65h *25/28*
U.S. Cl. 318—6 10 Claims

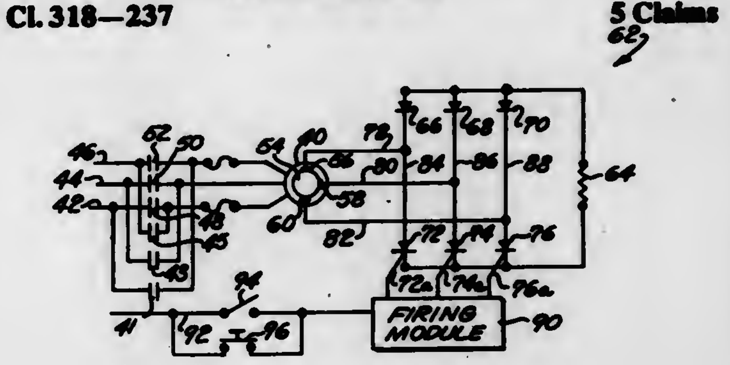


A system for winding and unwinding material on a reel which can act as a regulated system "with constant power", when confronted with variations in the angular speed W of the reel, due to variations of diameter, and as a purely "velocity" regulated system, when confronted with variations in linear velocity V of the material, in transient phases of strong acceleration, by taking advantage of the combination of the availability of the full feeding of the motor field, and of the direct control of values and amounts involved, thereby eliminating the need for recourse to means for approximate simulation of these values.

3,725,756
HOIST STATIC CONTROL

Howard M. McConnell, Chagrin Falls, and Abraham Zeewy, University Heights, both of Ohio, assignors to Harris Intertype Corporation, Cleveland, Ohio

Filed Sept. 2, 1970, Ser. No. 68,889
Int. Cl. H02p *5/40*
U.S. Cl. 318—237 5 Claims



A printing press includes an improved delivery pile hoist which supports a pile of sheets thereon and which lowers the pile of sheets so as to maintain the top of the pile between predetermined levels as sheets which travel through the press are added to the pile. The hoist includes a wound rotor motor for intermittently lowering the pile as the height of the pile increases as sheets are added thereto. The motor is operated intermittently by static circuitry which alternately renders the rotor windings conductive and non-conductive to currents induced therein. When the rotor windings are non-conductive, current will not flow through the rotor windings and the motor will not operate to move the hoist. When the windings are conductive, induced current will flow in the rotor windings and will cause the rotor to turn and lower the hoist. The present construction is operable to accurately control the height of the pile of sheets and has a simple and reliable construction which has a much longer life than conventional magnetic starters.

3,725,757

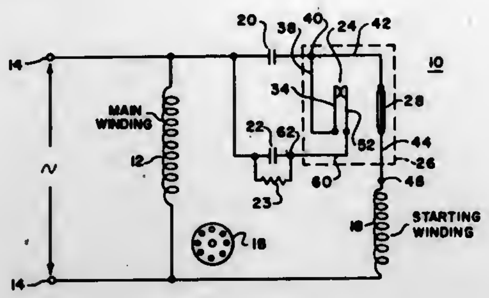
STARTING CIRCUIT FOR PERMANENT SPLIT CAPACITOR MOTOR

Henry Ehrens, Bayside, N.Y., and Charles W. Slocum, Spring Lake Heights, N.J., assignors to Thermo-Electronics, Inc., Allenwood, N.J.

Filed May 13, 1971, Ser. No. 143,016

Int. Cl. H02p *1/44*

U.S. Cl. 318—221 C **3 Claims**



A starting circuit for a permanent split capacitor motor having a main field winding, a starting field winding, a running capacitor, and a supplementary starting capacitor. A thermal relay is provided having normally closed switch contacts coupling the supplementary starting capacitor across the running capacitor and a bimetallic element serially coupled with the starting winding and running capacitor across the main winding. The bimetallic element opens the switch contacts thereby to disconnect the starting capacitor in response to a first predetermined current flow in the starting wind-ing circuit and maintains the switch contacts open in response to a lower current flow.

3,725,758

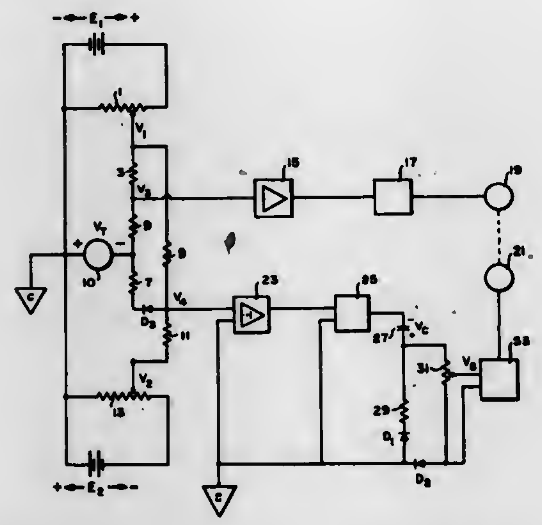
AUTOMATIC FEEDBACK CLOSED LOOP SYSTEM FOR FORWARD SPEED CONTROL AND BRAKING CONTROL

Victor Leyk, Herndon, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 1, 1971, Ser. No. 148,507

Int. Cl. H02p *5/16*

U.S. Cl. 318—269 **6 Claims**



This invention controls a dynamo-electric device, such as a DC motor for running at a desired operating speed. The motor speed is maintained at the desired level by feeding back a tachometer voltage indicative of the motor speed, to an adder whose output provides a positive polarity error signal. The error signal is amplified in two channels: an under speed channel and an over speed channel. The under speed channel provides a signal to a motor current control device which supplies the current to the motor to maintain the motor speed. An over speed signal is applied across a charged capacitor. The over speed signal being less than the voltage indicating the set speed charge on the capacitor, the capacitor discharges generating an over speed signal. This over speed signal is then applied to a braking control device which controls a mechanical brake.

3,725,759

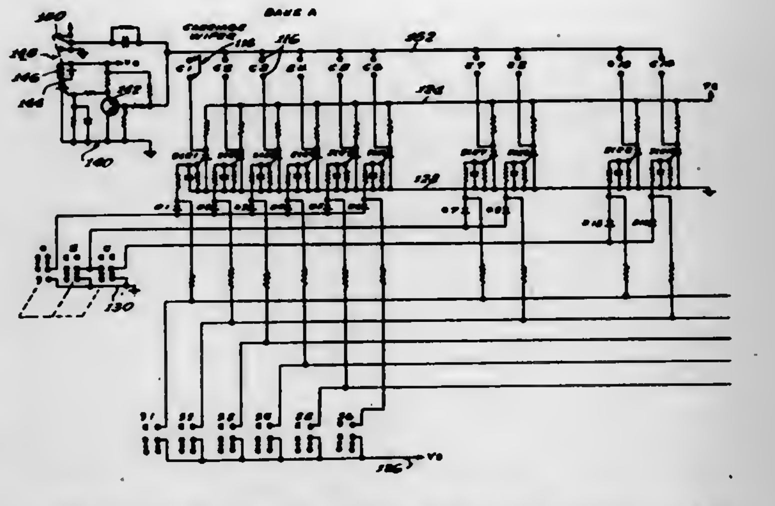
SWITCHING SYSTEM

William E. Olliges, Chicago; Edward L. Polanek, Glendale Heights, and Robert Gurney, Chicago, all of Ill., assignors to Universal Research Laboratories, Incorporated

Division of Ser. No. 75,359, Sept. 25, 1970. This application June 15, 1972, Ser. No. 263,179

Int. Cl. G05b *11/26*

U.S. Cl. 318—467 **6 Claims**



A tape cassette playing system using a magazine holding a number of cassettes is provided, in which a tape playing carriage moves along tracks adjacent the magazine to hunt for a selected one or more of the number of cassettes. The system has a memory to store information as to the selected cassettes. When a first selected cassette is found, it is automatically removed from the magazine and moved laterally into the carriage for playing. After the first cassette has been played, it is automatically returned to the magazine and the carriage hunts for another selected cassette.

3,725,760

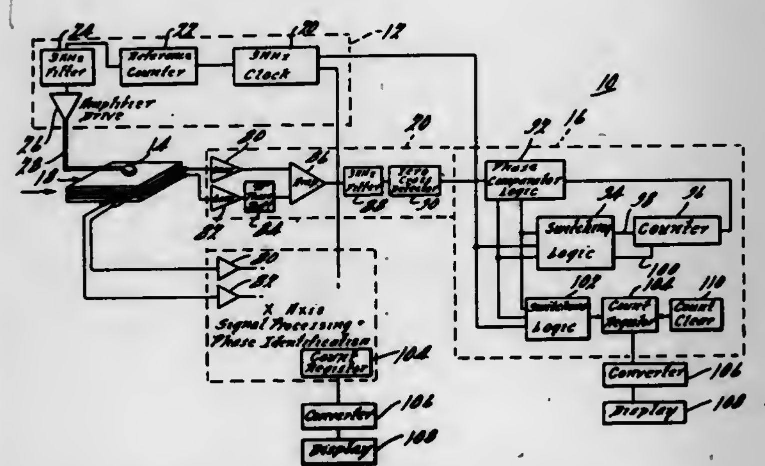
AUTOMATIC PLOTTER UTILIZING A COORDINATE GRID DEVICE

Knight V. Bailey, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 805,559, March 10, 1969, Pat. No. 3,647,963. This application Aug. 12, 1971, Ser. No. 171,230

Int. Cl. G05b *19/42*

U.S. Cl. 318—568 **7 Claims**



A device for determining position coordinates of points on a surface which includes a conducting grid structure having at least two grid elements to be placed over or under a surface and a cursor structure having a circular conducting loop element to be moved across the surface of the grid structure. An alternating electric signal is supplied to either the cursor conducting loop or to each of the conducting grid elements. This signal induces a signal in each element of the unexcited conducting structure. Position coordinates are determined by apparatus which measures the induced signal or signals and records the signal change produced when the cursor is moved across the grid surface. Several embodiments of measuring devices which determine the distance between arbitrary points on a surface such as a map, graph, or photograph are illustrated. Automatic plotting embodiments are also shown and described in which the plotting motion is determined by comparing signals representing the measured loop position on the grid with a preselected set of command signals.

3,725,761

SERVO CORNER COMPENSATION FOR PHOTOELECTRIC ROTARY SCAN LINE TRACERS

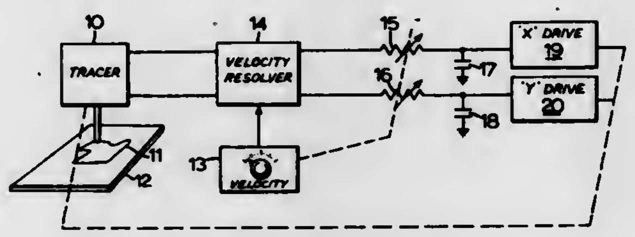
Henry Webber, Dundas, Ontario, Canada, assignor to Westinghouse Canada Limited, Hamilton, Ontario, Canada

Filed Oct. 22, 1971, Ser. No. 191,743

Claims priority, application Canada, Oct. 26, 1970, 096,473

Int. Cl. G05b *19/36*

U.S. Cl. 318—577 **3 Claims**



Rotary scanning pattern tracers observe the pattern at points in advance of the steering center of the follower. When due to other requirements, the circle of scan is large. This may result in rounding off of sharp corners, because in effect the center of steering is trailed along behind the forward scanning point. By selection of suitable steering signal delay characteristics this error can be reduced.

3,725,762

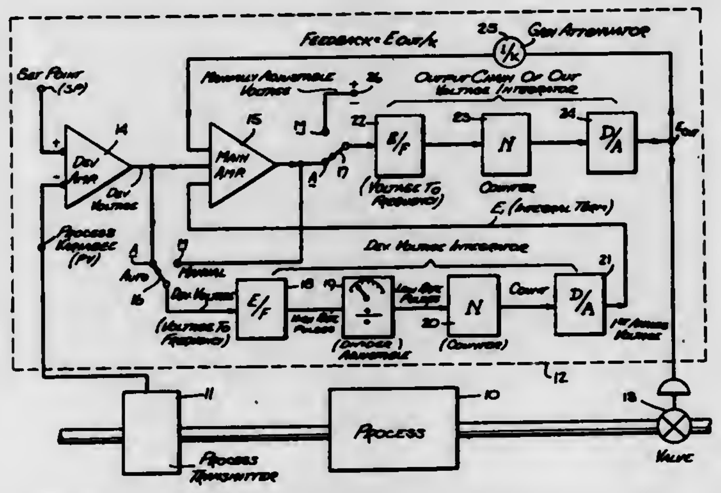
HYBRID PROCESS CONTROLLER OPERABLE IN THE AUTOMATIC AND MANUAL

Peter S. Levesque, Jenkintown, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed Aug. 5, 1971, Ser. No. 169,375

Int. Cl. G05b *7/00*

U.S. Cl. 318—591 **8 Claims**



An electronic controller forming a part of a process control system in which a signal representative of a process variable is compared with a set point signal to produce an output signal to operate a final control element. The controller includes a hybrid digital-analog configuration which permits bumpless transfer between automatic and manual modes, in an arrangement which is drift-free in the manual mode and does not require a long resistor-capacitor time constant.

3,725,763

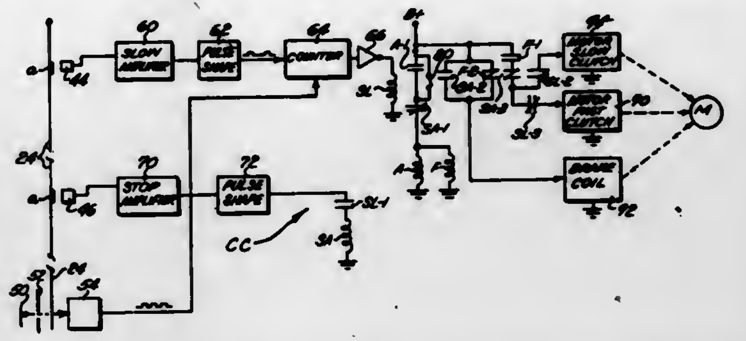
BACK GUAGE POSITION CONTROL FOR A PAPER CUTTING MACHINE

Henry J. Tokarz, East Lake, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Nov. 27, 1970; Ser. No. 93,127

Int. Cl. G05b *19/26*

U.S. Cl. 318—600 **8 Claims**



A paper cutting machine control is provided for controlling the positioning of a movable back gauge relative to a guillotine type cutting tool. The back gauge is driven by a motor so as to normally advance toward the tool at a high speed and is controlled to a low speed or a stopped condition in dependence upon position command marks recorded on a control record. Relative motion proportional to the back gauge velocity is imparted between the control record and mark sensors, which includes both low speed and stop sensors for sequentially sensing each mark and respectively providing a low speed control signal and a stop control signal. These signals are respectively used for controlling the motor so that the back gauge is driven at its low speed or is at its stopped condition. The low speed sensor includes two sensing means spaced apart by a sufficient distance so that at least one low speed control signal is provided as the relative motion is being decreased to zero.

3,725,764

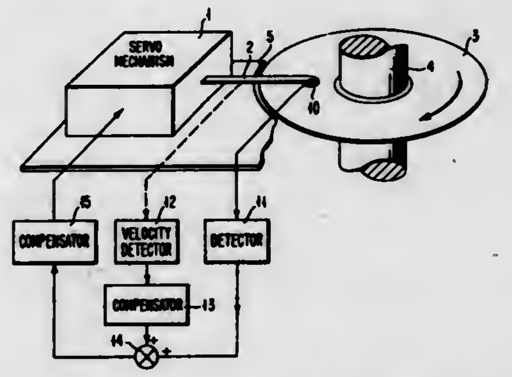
SERVO POSITIONING SYSTEM FOR MAGNETIC DISK MEMORY INCLUDING RADIAL RUNOUT SERVO COMPENSATION

Richard K. Oswald, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 1, 1971, Ser. No. 130,118

Int. Cl. G05b *11/01, 6/02*

U.S. Cl. 318—629 **6 Claims**



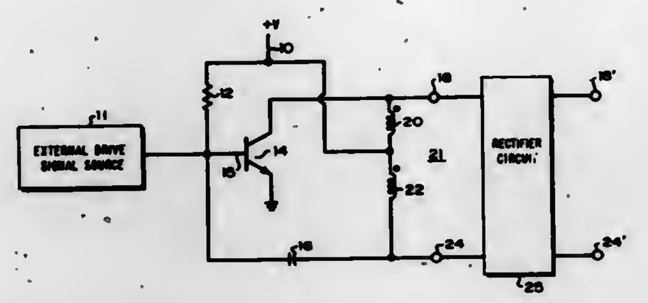
Servo apparatus for accurately following a servo track on a moving surface. The track possesses a degree of radial runout from a nominal position. A first transducer is mounted on a movable arm to indicate the lateral direction and distance from the servo track. The movable arm is positioned laterally with respect to the servo track by a servo motor. A second transducer measures the velocity of said first transducer for generating a signal indicative of the magnitude of the radial runout existing within the servo positioning system. Correction means is used to combine the output from said first transducer and from second transducer to produce a positioning error signal to the servo motor such that the first transducer will exactly follow the radial runout present in the servo positioning system.

3,725,765
SWITCH-TYPE D.C. TO D.C. CONVERTER
Chu-Sun Yen, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 22, 1971, Ser. No. 200,763

Int. Cl. H02m *3/22*

U.S. Cl. 321—2 **5 Claims**



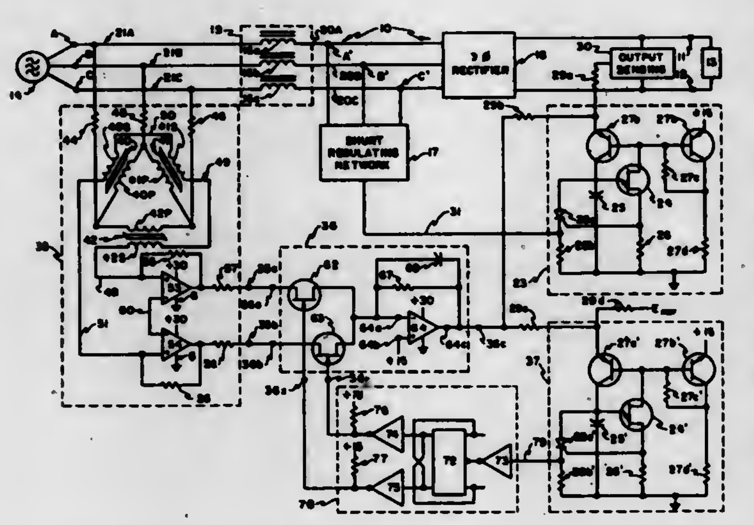
A transistor coupled to a nonsaturating transformer is provided with a capacitive feedback path to form a D.C. to D.C. converter.

3,725,766
FREQUENCY COMPENSATING CIRCUIT FOR VOLTAGE REGULATORS
Harold J. Brown, Lorain, Ohio, assignor to Lorain Products Corporation

Filed Aug. 17, 1972, Ser. No. 281,479

Int. Cl. H05b *37/02*

U.S. Cl. 321—5 **12 Claims**



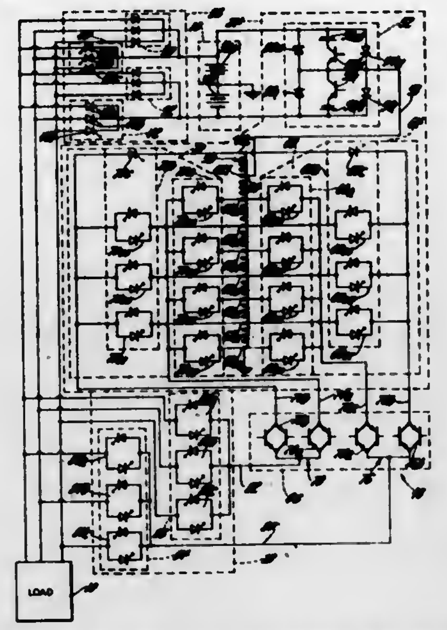
A control circuit for eliminating the effect of changes in the frequency of an a-c input voltage on a regulated output voltage in voltage regulator circuits utilizing variable frequency regulating waves. A phase-lock loop controls the frequency of a first, reference oscillator in accordance with the frequency of the a-c input voltage to provide a frequency error signal proportional to the difference between the actual frequency of the input voltage and the nominal frequency of that voltage. The frequency error signal is applied to a second, control oscillator which is not part of the phase-lock loop. This allows the control oscillator to follow input voltage frequency variations without being locked in phase to the input voltage and thus allows the control oscillator to be controlled in accordance with the magnitude as well as the frequency of the a-c input voltage.

3,725,767
METHOD OF AND APPARATUS FOR GENERATING THREE-PHASE SINUSOIDAL VOLTAGES
Thomas M. Corry, Goleta, Calif., assignor to General Motors Corporation

Continuation-in-part of Ser. No. 83,358, Oct. 23, 1970, abandoned. This application March 26, 1971, Ser. No. 128,330

Int. Cl. H02m *7/52*

U.S. Cl. 321—5 **19 Claims**



A method and apparatus are provided for inverting input unidirectional source voltage to generate substantially sine-wave, three-phase, line-to-line output voltages. In the apparatus, most of the power transfer from the unidirectional source to the load conductors is effected through flat-top "-power center" portions of line-to-neutral generated voltages. A minor proportion of the power to the load is supplied by an ascending and descending voltage generator which, in the three-phase system, produces alternate pairs of stepped ascending and descending voltages at a frequency equivalent to at least three times the fundamental frequency of the substantially sinusoidal output voltages. The ascending and descending voltages are selectively switched to complement the power center voltage of each phase voltage to complete the line-to-neutral waveforms. The respective line-to-neutral voltages are phase displaced 120° in relation to each other and are combined to form three-phase, line-to-line voltages characterized by a high fundamental frequency content and low harmonic distortion. In accordance with one preferred form of the method and apparatus of this invention, the waveform of the line-to-neutral voltages outboard the flat power center is based on a departure from the line-to-neutral fundamental in such fashion that higher fundamental content, more nearly sine-wave, line-to-line voltages are obtained than would be obtained from line-to-neutral voltages having less harmonic distortion. Further, in accordance with an additional preferred form of the method and apparatus of this invention, the flat-top voltage portions are generated by a square-wave inverter operated in slaved relation to the ascending and descending voltage generator through the medium of reverse voltage commutating pulses, to the square-wave generator, introduced into the respective line-to-neutral voltages by the ascending and descending voltage generator.

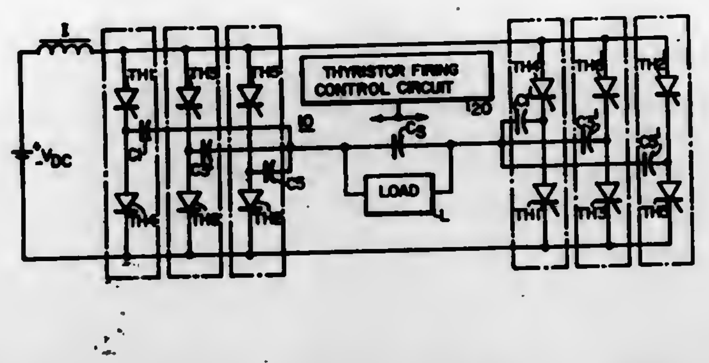
3,725,768
CURRENT FED INVERTER CIRCUIT USING THE TIME SHARING PRINCIPLE
Brian R. Pelly, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 7, 1971, Ser. No. 150,574

Int. Cl. H02m *7/52*

U.S. Cl. 321—6 **6 Claims**

A current fed inverter circuit operating in a time-sharing mode to supply A.C. output voltage to a load from a D.C. voltage source. Typically the load may be inductive, for example, an induction heating work coil, in which case a capacitor is connected across it to correct the power factor. So-called "-time-sharing" capacitors are connected in series between the solid state switching devices of the inverter circuit, which are typically thyristors, and the electrical load. Under all output voltage conditions up to and including the preferred full load voltage operating condition the phase displacement between the output voltage and output current is such that the current always lags the voltage thus establishing a lagging phase angle operation. The time-sharing capacitors under ideal conditions are dimensioned such that with the full load current flowing at the output of the inverter circuit, the peak voltage developed across each time-sharing capacitor is approximately equal to the peak load voltage at the normal output frequency.

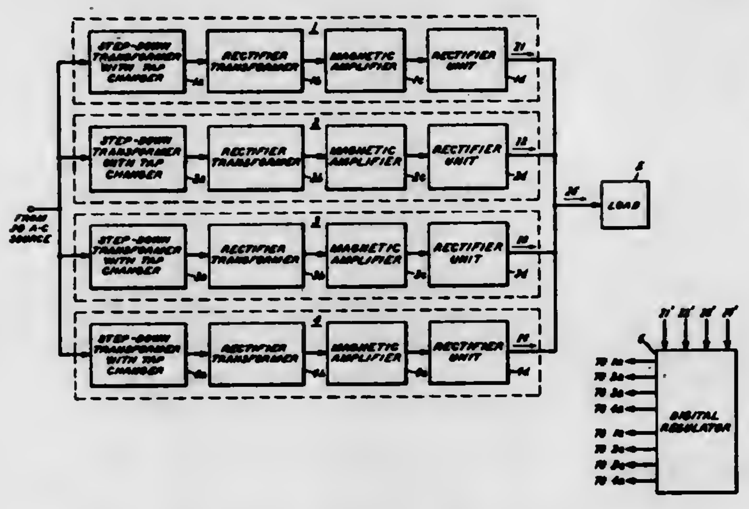


3,725,769
DIGITAL REGULATOR AND METHOD OF CURRENT REGULATION
Robert P. DePuy, Cherry Hill, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed Jan. 10, 1972, Ser. No. 216,681

Int. Cl. H02m *1/18*

U.S. Cl. 321—14 **13 Claims**



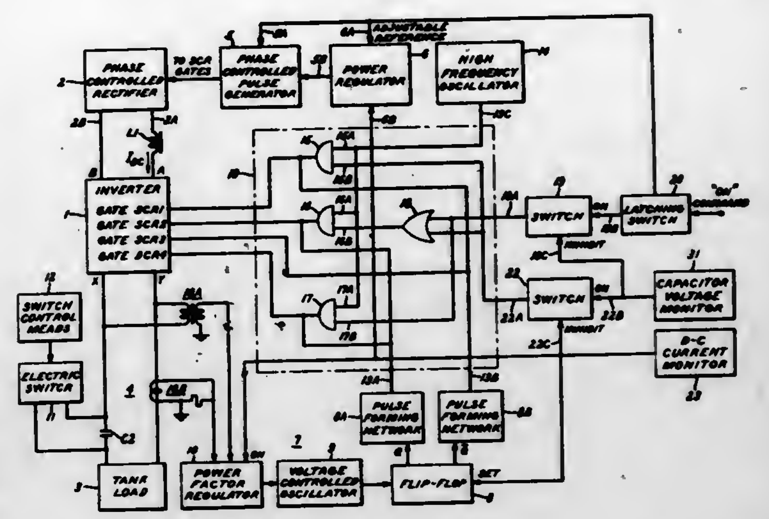
A digital regulator for controlling the amount of current supplied to a load from parallel-connected rectifiers. If no rectifier is overloaded, the regulator maintains the magnitude of load current at a preselected level by either raising the output of the rectifier which is supplying the least current or by lowering the output of the rectifier which is supplying the most current. If, however, any rectifier becomes overloaded, the regulator switches to a mode of operation in which it allows the overloaded rectifier to operate in its overloaded state for a predetermined period of time, after which its current output is lowered. If the lowering of the current output of the overloaded rectifier causes the magnitude of load current to drop below the preselected level, the regulator will, after lowering the output of the overloaded rectifier, raise the output of the rectifier which has been continuously operating in range for the longest period of time.

3,725,770
STARTING CIRCUITRY FOR SERIES/PARALLEL COMPENSATED, CURRENT-FED INVERTER
Ronald B. Bailey, Waynesboro, Va., assignor to General Electric Company, Philadelphia, Pa.

Filed July 25, 1972, Ser. No. 274,895

Int. Cl. H02m *7/48*

U.S. Cl. 321—45 R **5 Claims**



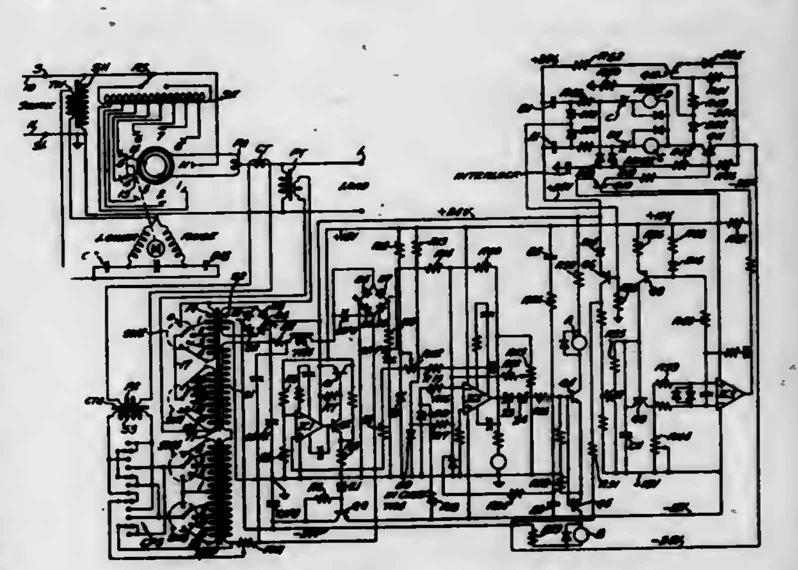
In a thyristor-composed, current-source, inverter including a series compensating capacitor for supplying energy to a tank load, means are provided for starting the inverter from a non-operating state. To that end the compensating capacitor is charged by direct current flowing through a path formed by the conduction of certain inverter thyristors and at the first time after the commencement of such conduction certain other thyristors are rendered conductive to enable the magnitude of the direct current to build up. At a second time after the commencement of conduction of said other thyristors, alternate triggering of the inverter thyristors is commenced and alternating current flows through the load. The voltage on the compensating capacitor commutates inverter current until the load is charged sufficiently to commutate current on its own.

3,725,771
STATIC CONTROL FOR STEP VOLTAGE REGULATOR
Thomas P. Gilmore, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sept. 16, 1971, Ser. No. 181,076

Int. Cl. G05f *1/20*

U.S. Cl. 323—20 **32 Claims**



A control for a step voltage regulator having a reversible motor for actuating a tap changer switch to vary the regulator output voltage when a "raise" or a "lower" signal respectively is applied thereto, includes a potential sensing transformer for deriving a sample DC voltage proportional to the regulator output voltage, a zener diode for deriving a DC reference voltage of opposite polarity to said sample voltage, a summing operational amplifier which receives the sample and the reference voltages on its inverting input, a polarity and magnitude sensor including a pair of oppositely-poled, serially-arranged zener diodes coupled to the output of the summing amplifier and a NPN and PNP transistor having commoned bases coupled to the pair of zener diodes for deriving raise and lower signals when the output voltage from the summing amplifier is of predetermined magnitude and of opposite polarity, and a rheostat for varying the gain of the summing amplifier to thereby regulate the voltage bandwidth within which the output voltage of the step regulator is maintained.

3,725,772
CIRCUIT ARRANGEMENT FOR GENERATING A PHASE-SHIFTABLE VOLTAGE

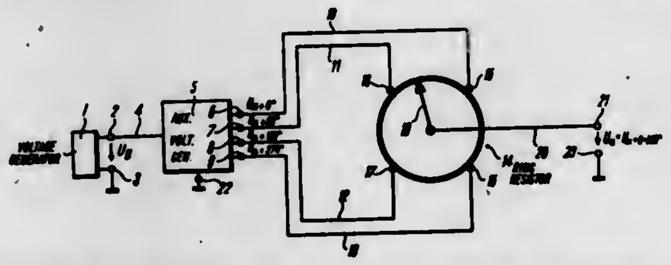
Dieter Ratzel, Forchheim, Germany, assignor to Bruker Physik AG, Karlsruhe, Germany

Filed July 13, 1971, Ser. No. 162,037

Claims priority, application Germany, July 30, 1970, P 20 37 762.2

Int. Cl. G05f *1/12*

U.S. Cl. 323—105 **6 Claims**



A circuit arrangement for the generation of a voltage, the phase position of which relative to a reference voltage can be shifted within wide limits, preferably between 0° and 360°, characterized in that said circuit arrangement comprises a device for generating from the reference voltage at least three auxiliary voltages having a certain phase shift relative to each other, that an ohmic resistor with taps is provided to which the auxiliary voltages are supplied, that the geometric distance of the taps from each other is proportional to the phase angle of the auxiliary voltages connected to the taps, and that the ohmic resistor is provided with a wiper to which the output terminal of the circuit arrangement is connected.

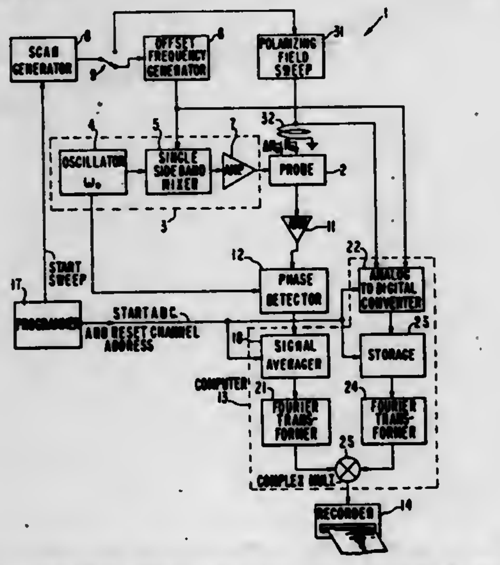
3,725,773
AN RF SPECTROMETER HAVING MEANS FOR EXCITING RF RESONANCE OF A PLURALITY OF RESONANCE LINES SIMULTANEOUSLY USING A HIGH SPEED SCANNING MEANS

Forrest A. Nelson, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed April 19, 1971, Ser. No. 135,257

Int. Cl. G01n *27/00*

U.S. Cl. 324—0.5 AC **13 Claims**



In a Fourier transform spectrometer the sample is immersed in a polarizing magnetic field of intensity H_0 and is irradiated with radio frequency energy of a frequency ω. The ratio of ω to H_0 is rapidly and repetitively scanned over a range of values to repetitively excite resonance of a plurality of resonance lines within the sample. The scanning repetition frequency is sufficiently high to sustain simultaneous resonance of the plurality of excited resonance lines. A signal representative of the composite resonance signal emanating from the sample and containing the plurality of simultaneous excited signals is complex multiplied by a signal representative of said scan frequency.

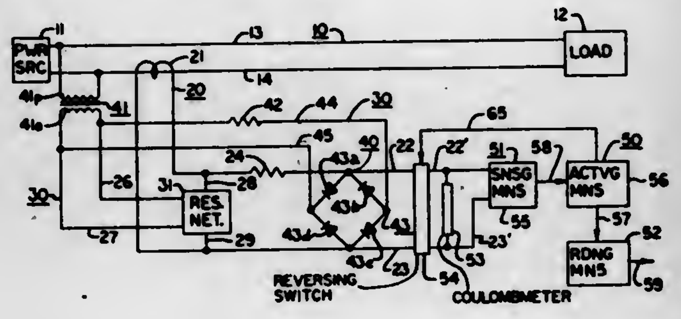
3,725,774
APPARATUS FOR MEASURING ELECTRICAL ENERGY CONSUMPTION

Victor E. Stewart, Jr., South Milwaukee, Wis., assignor to McGraw-Edison Company, South Milwaukee, Wis.

Filed Feb. 24, 1971, Ser. No. 118,295

Int. Cl. G01r *21/00*

U.S. Cl. 324—142 **34 Claims**



A current transformer is connected to an electrical power circuit to provide a measure of the current in the power circuit. The current measure is applied through a reversing switch and a diode rectifying bridge to a coulombmeter and is controlled by commutating the bridge with a voltage from a voltage transformer connected to the electrical power circuit. The connections are made to apply current to the coulombmeter during the portion of the current cycle that occurs during a selected voltage half-cycle. The current measure is further controlled by a modulating circuit connected to respond to the voltage of the power circuit and to modulate the current as a function of voltage level. A control means responds to a selected condition of the coulombmeter to reverse the control current connections to the coulombmeter. A reading means senses the number of reversal operations to thereby provide an indication of the total amount of energy consumed in the power circuit over a selected period.

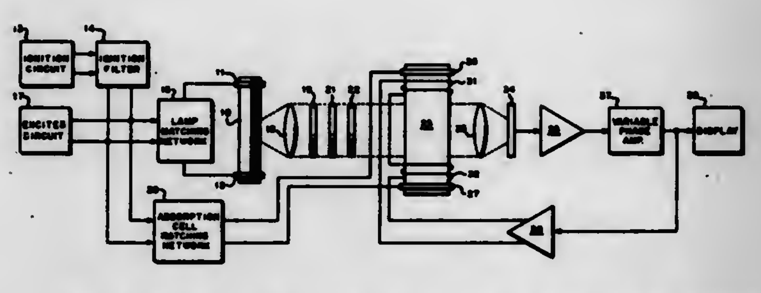
3,725,775
SELF-OSCILLATING HELIUM MAGNETOMETER

Richard E. Gasser, 430 Elm Street, Warminster, Pa.

Filed Aug. 23, 1968, Ser. No. 754,769

Int. Cl. G01r *33/00*

U.S. Cl. 324—0.5 R **7 Claims**



A self-oscillating magnetometer having a metastable helium atom absorption cell optically pumped with the light emission line of 3888.65 Angstroms wavelength. The amount of light transmitted through the absorption cell at this wavelength is sensed by a photo-detector which has relatively high spectral response at the same wavelength. The photo-detector output signal provides a signal to a pair of Helmholtz coils for generating an RF resonance frequency field in the absorption cell and a signal to a display indicative of the ambient magnetic field strength.

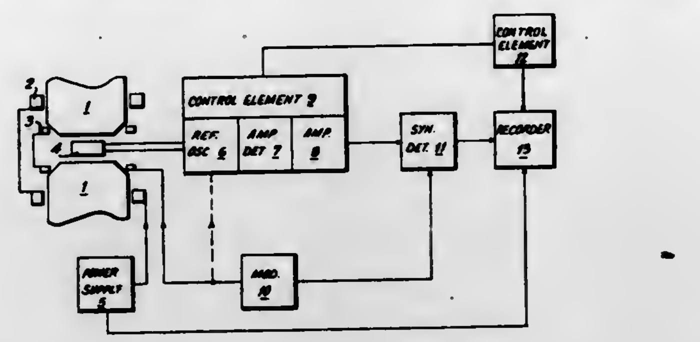
3,725,776
ABSORPTION DETECTOR FOR NUCLEAR MAGNETIC RESONANCE MEASUREMENTS WITH A FREQUENCY CONTROL

Marko Petrinovic, Zagreb, Yugoslavia, assignor to Institute "Rudjer Boskovic", Zagreb, Yugoslavia

Continuation of Ser. No. 6,250, Jan. 27, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 224,042

Int. Cl. G01n *27/78*

U.S. Cl. 324—0.5 R **4 Claims**



An absorption detector for determining nuclear magnetic resonance with automatic frequency control. The detector comprises a sample holder including coils, a reference oscillator including a tank circuit being coupled to these coils. A magnet is provided including modulating coils and power coils and having a gap in which the holder is positioned. The oscillator includes a low-noise amplifier and impedor, and a limiter connected in feedback relation with the amplifier via the impedor. A low-frequency amplifier is provided and a synchronous detector is coupled via the low-frequency amplifier to the low-frequency amplifier. An XY recorder is coupled to the synchronous detector, and a modulating oscillator is coupled to the modulating coils, the reference oscillator and the synchronous detector. A power supply is coupled to the power coils and to the XY recorder to determine the X position of the latter. An automatic control is provided which is coupled to the reference oscillator to control the frequency thereof.

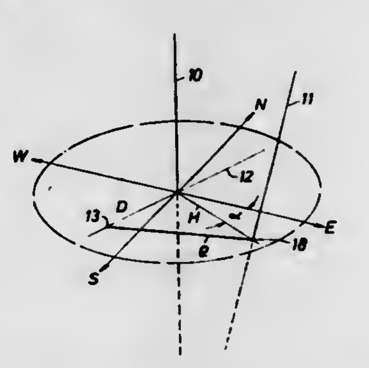
3,725,777
METHOD FOR DETERMINING DISTANCE AND DIRECTION TO A CASED BOREHOLE USING MEASUREMENTS MADE IN AN ADJACENT BOREHOLE

Joseph D. Robinson, and John P. Vogiatzis, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed June 7, 1971, Ser. No. 150,327

Int. Cl. G01v *3/08, 3/18*

U.S. Cl. 324—8 **6 Claims**



A method for locating a cased borehole from an adjacent open borehole wherein the casing has a remanent magnetization and measurements are made in the adjacent open borehole of the total magnetic field and magnetic and gyro compass deflections.

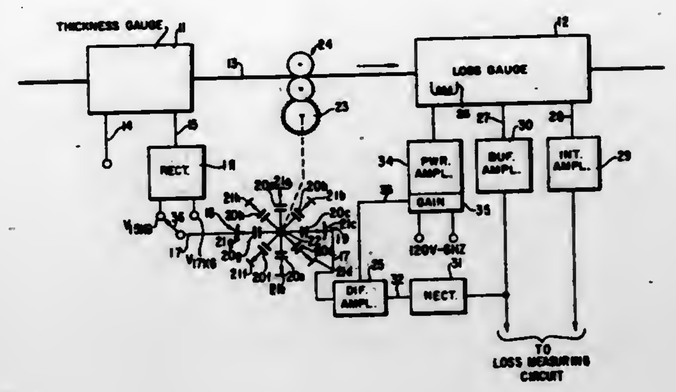
3,725,778
TESTING APPARATUS HAVING IMPROVED MEANS FOR MAINTAINING A CONSTANT DENSITY OF MAGNETIC FLUX INDUCED IN A MOVING STRIP OF METAL

Stephen C. Leonard, Cheshire, and Maurice D. Dillck, Pittsfield, both of Mass., assignors to General Electric Company

Filed July 6, 1971, Ser. No. 159,849

Int. Cl. G01r *33/12*

U.S. Cl. 324—34 R **3 Claims**



A synchronous time delay is provided to assure substantially constant flux density in a moving strip of steel where it passes through a relatively stationary loss measurement guage in a continuous steel tester system. This synchronous delay system utilizes a rotary make-before-break switch with associated signal storage means to transfer a signal representative of the thickness of a section of the moving strip at a first position to control the flux density of the same section at a second position.

3,725,779
APPARATUS FOR TESTING THE ELECTRICAL CONDUCTIVITY OF FILAMENTS

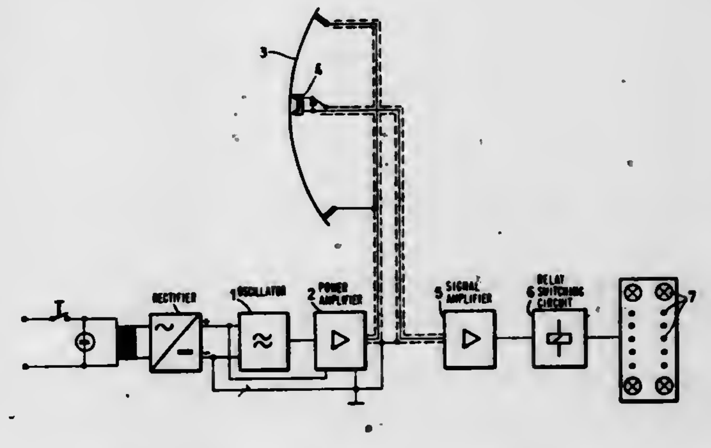
Gerhard Mauer, An der Teichbreite 6, 318 Wolfsburg, Germany

Filed Nov. 27, 1970, Ser. No. 93,159

Claims priority, application Germany, Nov. 29, 1969, P 19 60 103.7

Int. Cl. G01r *31/02*

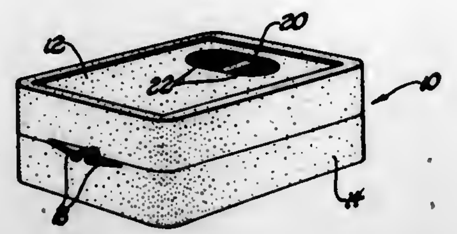
U.S. Cl. 324—51 **1 Claim**



Apparatus for testing filaments embedded in a material in which the filaments are connected to alternating voltage current and the alternating fields produced by the alternating currents are measured as flowing through the individual filaments by means of induction coils to which a signal transmitter and recorder are connected.

3,725,780
PORTABLE MINIATURE BULB TESTER HAVING BRISTLE BRUSHES FOR CONTACTING THE BULB TERMINALS

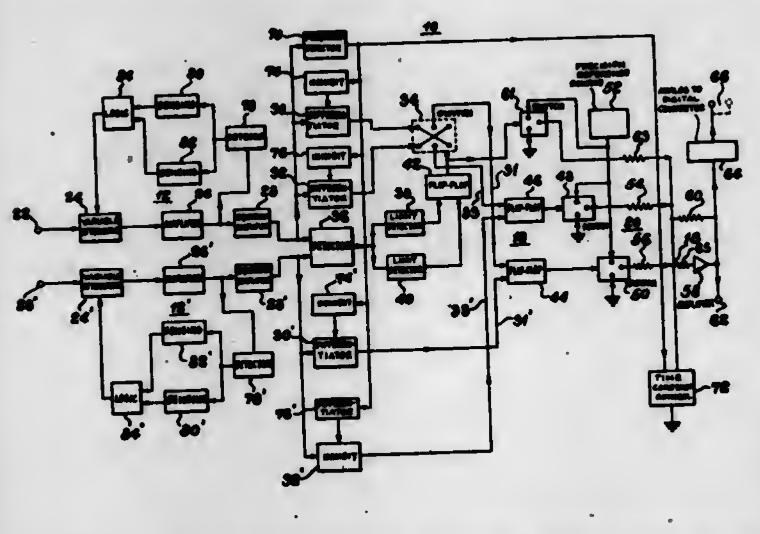
Richard Emil Olin, 2840 North Adams Road, Troy, Mich.
Filed Jan. 7, 1971, Ser. No. 104,712
Int. Cl. G01r *31/22, 31/02*
U.S. Cl. 324—51 **7 Claims**



A portable DC miniature bulb tester comprising a snap-open plastic case containing a conventional nine-volt battery, a snap-tab connector for the battery, and a pair of leads connecting the battery across a pair of brass bristle brushes which are accessible from the exterior of the case through an aperture in the upper shell of the case. Miniature electric bulbs of various base types may be tested by connecting the base terminals across the brushes.

3,725,781
PHASE METER WITH NOISE ERROR REDUCTION MEANS

Philip P. Cox, Piscataway, N.J., assignor to Dranetz Engineering Laboratories Inc., Plainfield, N.J.
Filed March 17, 1971, Ser. No. 125,123
Int. Cl. G01r *25/00*
U.S. Cl. 324—83 A **14 Claims**

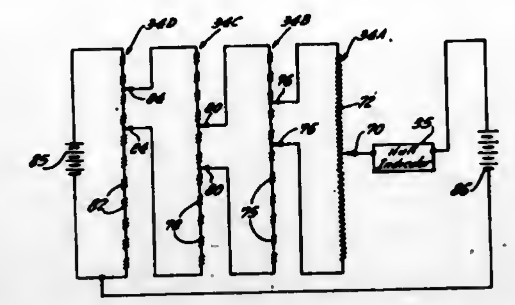


A phase meter for measuring the phase angle between two alternating current signal waveforms having means for the presentation of the phase difference in either analog or digital form. Means are provided for reducing errors due to noise and waveform distortion and eliminating the 0° – 360° ambiguity.

3,725,782
POTENTIOMETRIC MEASURING DEVICE WITH MULTIPLE STAGE COUNTER MECHANISM

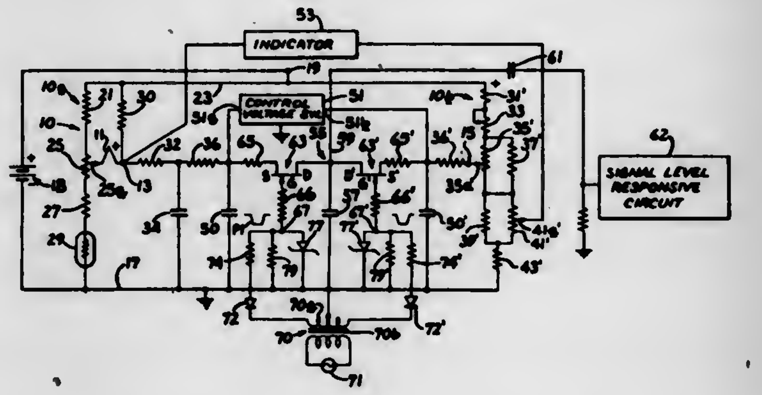
Joel A. Naive, La Jolla, and Peter J. Van Benschoten, Rancho Santa Fe, both of Calif., assignors to Wavetek, San Diego, Calif.
Division of Ser. No. 561,558, June 29, 1966. This application July 9, 1970, Ser. No. 53,372
Int. Cl. G01r *17/02*
U.S. Cl. 324—98 **9 Claims**

In a potentiometric measuring counter assembly comprising rotary counters corresponding to successive orders of integers, the transfer means from each lower order counter to the next higher order counter is unidirectional to transmit a carry from the lower order counter to the higher order counter but to prevent the higher order counter from operating the lower order counter.



3,725,783
COMBINED BRIDGE OUTPUT AND CHOPPER CIRCUIT

Ahdor H. Alton, Lake Zurich, and Mitchell I. Kohn, Skokie, both of Ill., assignors to Gulton Industries, Inc., Metuchen, N.J.
Division of Ser. No. 827,714, May 26, 1969, Pat. No. 3,591,077. This application Aug. 20, 1970, Ser. No. 65,626
Int. Cl. G01r *27/02, 17/10*
U.S. Cl. 324—101 **10 Claims**

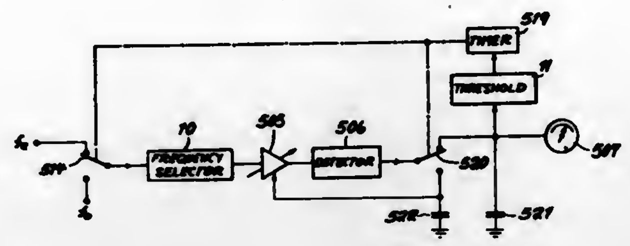


A bridge output circuit is coupled between bridge output terminals of a D.C. bridge circuit including impedance means coupled between at least one of the bridge output terminals and a first output circuit terminal between which terminal and a common D.C. voltage input terminal of the bridge is coupled a capacitor,and a control signal input is arranged so the capacitor charges to a voltage which is a function both of the control voltage input and the voltage at the associated bridge output terminal. A chopping circuit comprising a pair of field effect transistors is coupled between the aforementioned output circuit terminal and another capacitor associated with the other bridge output terminal. A common capacitor at the juncture between the field effect transistors is alternately coupled by switching the field effect transistors alternately to the two aforementioned capacitors so that the common capacitor charges between the voltages of the other two capacitors.

3,725,784
AUTOMATIC CALIBRATING AND MEASURING SYSTEM

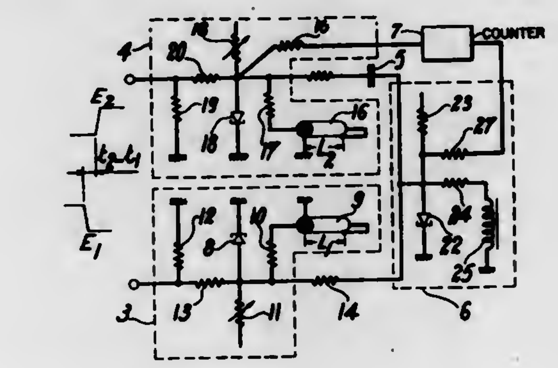
Herbert Bayer, Reutlingen, Germany, assignor to Wandel u. Goltermann, Reutlingen, Germany
Filed June 7, 1971, Ser. No. 150,438
Claims priority, application Germany, June 24, 1970, P 20 31 045.6
Int. Cl. G01r *1/02, 1/38*
U.S. Cl. 324—130 **8 Claims**

A system with a test position for measuring the amplitude (or phase) of an incoming signal wave of predetermined frequency is repetitively switched over to a calibrating position in which the system receives a reference oscillation of constant frequency and phase for automatically readjusting its circuits, if necessary. If the input signal disappears or drops below a certain minimum level, a sensing circuit reduces the rate of switchover or arrests the system in test position to reduce wear of the relay contacts employed therefor. A random or quasi-random change in that rate may be utilized to prevent false indications due to the stroboscopic effect of periodic switchover in the presence of a modulating frequency close to the switching rate.



3,725,785
TIME INTERVAL ANALYZER

Jean-Pierre Barrot, Chemin de la Bouhume; Jacques Negrou, and Charles Pelte, both of Les Chenes, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed March 2, 1971, Ser. No. 120,160
Claims priority, application France, March 3, 1970, 7007533
Int. Cl. G04f *9/00*
U.S. Cl. 324—188 **1 Claim**

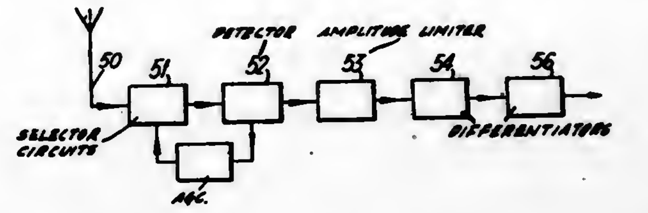


In an analyzer for time intervals which are defined by two successive electrical pulses each appearing in a separate channel, a first generator delivers recurrent rectangular signals having a period *T*1 and is triggered by the first pulse, a second generator delivers recurrent rectangular signals having a period *T*2 of slightly smaller value than the period T1 and is triggered by the second pulse, the signals emitted by each generator being of opposite polarity. Means are provided for detecting the phase reversal of the leading edges of said signals, and a counter which is driven by one of said generators is stopped by said means when a phase reversal of the leading edges has been detected.

3,725,786
SYSTEM FOR DISCRETE MARKING AND DETECTING A PREDETERMINED POINT IN TIME WITHIN THE ENVELOPE OF A PULSE MODULATED CARRIER

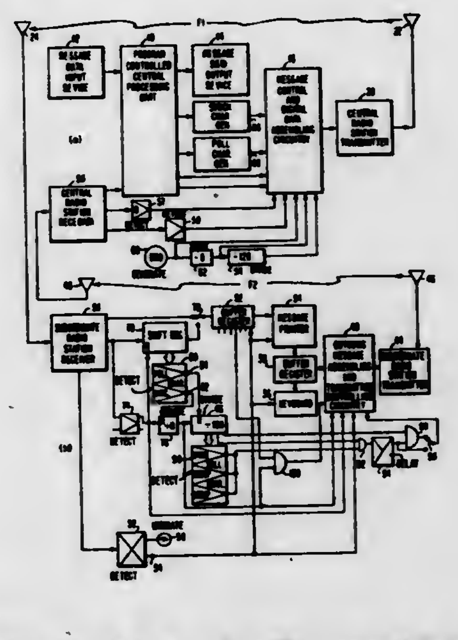
Charles William Earp, London, N.W. 3, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 16, 1971, Ser. No. 115,214
Claims priority, application Great Britain, March 5, 1970, 10,624/70
Int. Cl. H04b *1/38*
U.S. Cl. 325—15 **5 Claims**

The radiator pulse of an aircraft distance measuring equipment is characterized by a radio frequency phase reversal at its mid-point in time, hence producing a sharp cusp of zero amplitude which is more easily identified and measured than the leading edge.



3,725,787
EXIGENT MULTISATELLITE DIGITAL RADIO COMMUNICATIONS SYSTEM

John Richard Featherston, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1971, Ser. No. 158,342
Int. Cl. H04b *1/00*
U.S. Cl. 325—58 **19 Claims**

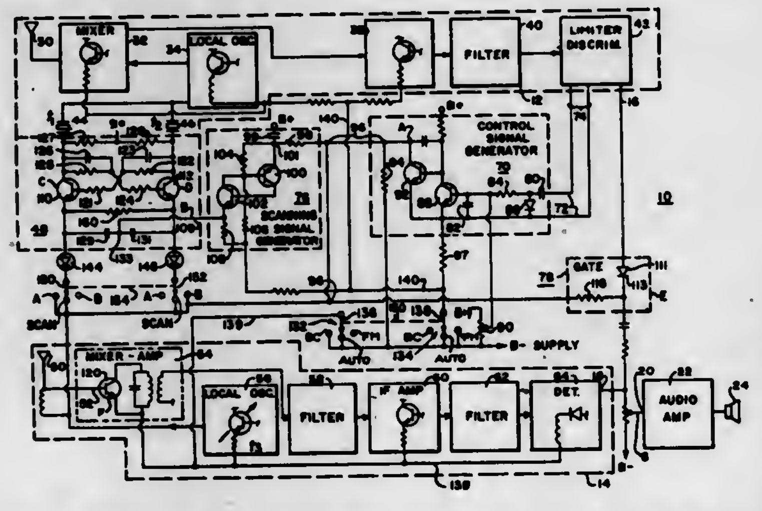

PROGRAM CONTROLLED CENTRAL PROCESSING UNIT
CENTRAL RADIO STATION TRANSMITTER
DETECT

The reliability and efficacy of traffic control in multiple station exigent radio communications is assured by a digital data communication system having accelerated polling and lockout of satellite or circumjacent subordinate station transmitting apparatus when the subordinate stations are contending for the attention of the central or base station and/or a circumjacent station is located in an area of unfavorable radio wave propagation. Duplex frequency operation with the central station continuously broadcasting messages and/or synchronizing characters, assures synchronization and resynchronization immediately on receipt of a single synchronizing character. Contention is evaluated in the central receiving apparatus by determining the level of optimum signal-to-noise ratio and measuring the r.m.s. value of distortion to establish reception parameters for controlling the mode of the radio net operation. A busy signal is then broadcast for locking out all transmission from the subordinate stations except for that one station accepted. Similarly an indication of field strength is obtained at subordinate station receiving apparatus by a threshold detector arranged to lock out the transmitting apparatus for propagation levels predetermined as unreliable and in a mobile situation to notify the operator to move the station to a better location for communication. Current flow in the second limiter stage of an FM receiver is suggested as a base measurement over a predetermined time period to prevent backlash. Confirmation, acknowledgment, and roll call are controlled by a polling character transmitted at the end of a message. Circuitry responsive to these characters is arranged for conducting an accelerated poll for effecting a single bit response from each circumjacent transmitter addressed specifically in a poll as listed in a predetermined time assignment. For the latter arrangement a shift register used for normal data processing is arranged to double as a counter for this purpose. Changeover delay is obviated by effecting transmission at a predetermined later bit time. Subordinate stations are addressed in general, in groups or as individual stations as best suits the purpose at the central station. Each character comprises identification bits and a control bit. Circuitry responsive to the latter bit is arranged to lock out the transmitter when the central receiving apparatus is busy. Overall capacity of the system is enhanced by interposing message buffer stores for each transmitting and each receiving apparatus.

3,725,788
SIGNAL-SELECTING RADIO RECEIVER

George H. Fathauer, Decatur, Ill., assignor to Masco Corporation, Taylor, Mich.

Filed Oct. 1, 1971, Ser. No. 185,585
Int. Cl. H04b *1/32*
U.S. Cl. 325—469 **30 Claims**

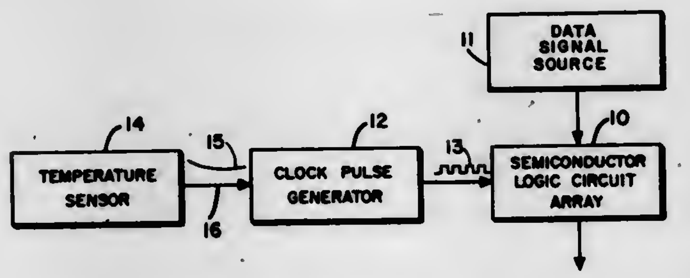


The invention is a signal-selecting radio receiver which includes first converter means for tuning to a continuously occurring radio frequency signal, and second converter means for automatically, sequentially tuning to a plurality of discrete, preselected frequencies different from that of the continuously occurring radio frequency signal. The first and second tuner means operate simultaneously and the second tuner means includes circuitry for automatically switching the receiver from one of the discrete frequencies to another in sequence until a signal is received. There is also provided circuitry which disables the second tuner in the absence of a signal on any of the discrete frequencies and for disabling the first tuner means and locking the second tuner means in condition to receive one of the discrete frequencies upon reception of a signal on that frequency.

3,725,789
TEMPERATURE CONTROLLED CLOCKING OF LOGIC CIRCUITS

Donald V. Mager, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 99,879
Int. Cl. H03k *7/00*
U.S. Cl. 328—3 **4 Claims**

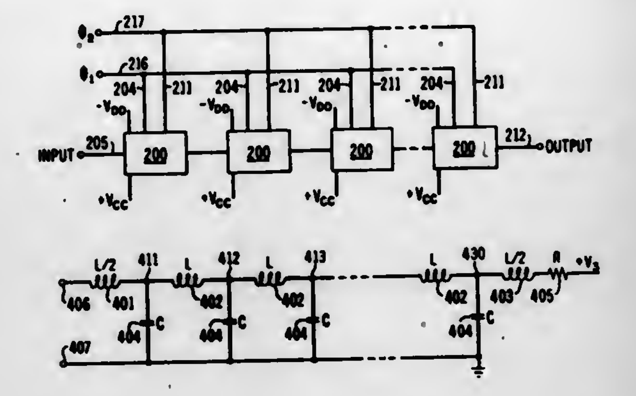


A variable frequency pulse generator whose pulse repetition rate is controlled as a function of temperature is used as a source of gating signals for a logic array so that the propagation delay of data signals through the logic array is optimized.

3,725,790
SHIFT REGISTER CLOCK PULSE DISTRIBUTION SYSTEM

Cyrus Frank Ault, Wheaton, and Robert Graham Spencer, North Aurora, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed June 1, 1971, Ser. No. 148,317
Int. Cl. H03k *23/00, 19/08*
U.S. Cl. 328—37 **6 Claims**



A clock pulse distribution bus for an MOS shift register having a large clock terminal input capacitance comprises a plurality of serially connected inductance elements. The shift register stages are organized into groups and the clock terminals of each group are connected to a different node of the bus between inductance elements. The inductance elements and the input capacitance of the clock terminals form a lumped parameter delay line which staggers in time the charging of the input capacitance of successive groups of clock terminals. Only the resistive characteristic impedance of the delay line thus formed is presented to the clock pulse driver, rather than the dynamically lower impedance of a large capacitive load.

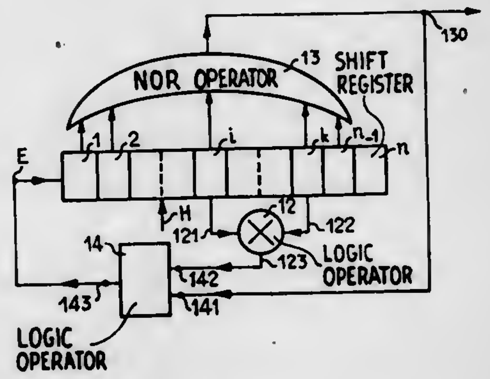
3,725,791
DIVIDER CIRCUITS

Jean Pierre Moreau, and Jean Marie Boudry, both of Paris, France, assignors to Seacosem-Societe Europeene de Semiconducteurs et de Microelectronique

Filed Aug. 13, 1971, Ser. No. 171,592

Claims priority, application France, Aug. 21, 1970, 7030699

Int. Cl. H03k *21/36*
U.S. Cl. 328—41 **3 Claims**

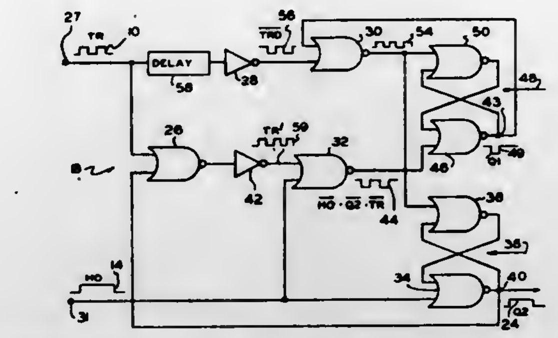


A divider circuit, comprising an n-stage shift register having a feedback loop for maximum periodicity, is provided. A NOR operator has $n-1$ inputs connected with the first $n-1$ steps of said register and one output, constituting the single output of said divider circuit, loop-connected on to the divider input through an OR operator having a first and a second input, said first input being connected with said divider output and said second input being connected with the output of an "exclusive OR" operator having two inputs respectively connected with two predetermined steps of said register. The division ratio is 2^n or 2^n-1 according as said OR operator is exclusive or nonexclusive.

3,725,792
JITTER-FREE TRIGGER CONTROL CIRCUIT

James R. Kellogg, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 7, 1972, Ser. No. 216,070
Int. Cl. H03k *4/08*
U.S. Cl. 328—60 **9 Claims**

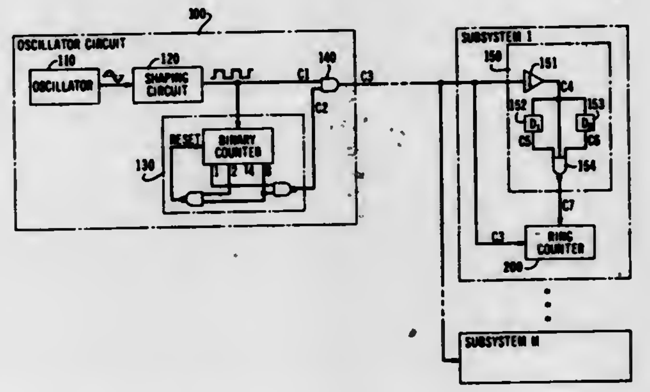


An enabling signal for a trigger control logic gate is changed from a non enabling level to an enabling level by a flip-flop actuated by an output from a second gate when a holdoff signal from a triggered circuit applied to an input of the second gate changes from a holdoff level to a non holdoff level during the time interval when an input trigger signal from a trigger circuit, also applied to an input of the second gate, is at a non triggering level. The input trigger signal is also applied to another input of the trigger control gate and timed so that the non triggering level of such signal prevents a triggering operation by such gate during the time interval when a change of the enabling signal to its enabling level can be delivered to such gate. The timing of the application of input triggering signal to the trigger control gate is such that a change of such signal to a triggering level occurs only after the time interval referred to. The triggering operation of the trigger control gate causes the flip-flop to be reset to change the enabling signal back to its original level and also resets another flip-flop to produce the output signal, the second flip-flop having been previously set by the holdoff signal.

3,725,793
CLOCK SYNCHRONIZATION ARRANGEMENT EMPLOYING DELAY DEVICES

Earl Gordon Phillips, Aurora, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 15, 1971, Ser. No. 208,319
Int. Cl. H03k *1/00*
U.S. Cl. 328—63 **9 Claims**

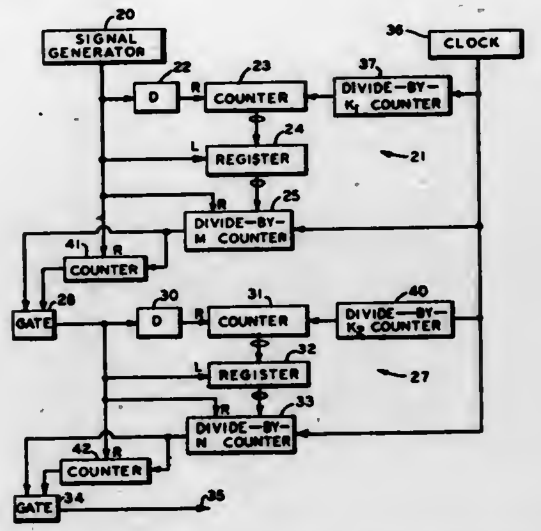


An arrangement for synchronizing the clocks of a plurality of subsystems is disclosed. The arrangement comprises a pulse generator for applying a series of basic clock pulses to local clock circuits in the several subsystems and a circuit which periodically blocks one pulse of the series of basic clock pulses. A detection circuit in each subsystem reinitializes the local clock circuit of the subsystem when the absence of one of the basic clock pulses is detected.

3,725,794
INTERPOLATING APPARATUS

Robert W. Asplund, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,192
Int. Cl. H03k *5/00*; G01r *29/00*
U.S. Cl. 328—129 **14 Claims**

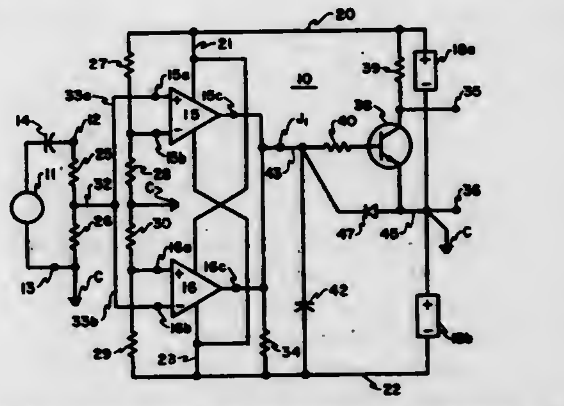


Interpolating apparatus for dividing time intervals of variable duration into an integral number of subintervals is shown wherein the time intervals are divided into a first predetermined number of subintervals each of which are further divided into a second predetermined number of subintervals.

3,725,795
A-C VOLTAGE DETECTOR

Lee O. Mesenhimer, Avon, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Dec. 22, 1971, Ser. No. 210,718
Int. Cl. H03k *5/20*
U.S. Cl. 328—135 **12 Claims**



A circuit for indicating the presence or absence of an a-c voltage. A comparator assumes a first state when an a-c voltage applied thereto is outside a predetermined range of threshold voltages and assumes a second state when the a-c voltage is within that range of voltages. An output voltage control circuit establishes a first output voltage, to indicate the presence of an a-c input voltage, when the comparator is in its first state and establishes a second output voltage, to indicate the absence of an a-c voltage, when the comparator is in its second state. Circuitry is provided to introduce a time-delay between the time that the comparator assumes its second state and the time that the output voltage control circuit establishes the second value of output voltage. The latter time-delay is arranged to be short enough to allow the voltage detector to rapidly indicate actual interruptions in the a-c input voltage but long enough to prevent the voltage detector from indicating an a-c voltage interruption merely because the a-c voltage has varied through the above voltage range in the course of normal a-c voltage variations.

3,725,796
PROCESS FOR THE MEASUREMENT OF THE DISTORTION IN TRANSMISSION SYSTEMS WHICH TRANSMIT DATA IN PARALLEL BIT CODED FORM

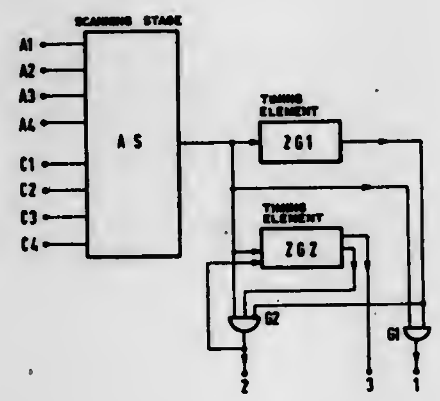
Erwin Schenk, and Kurt Biedermann, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 9, 1971, Ser. No. 151,428

Claims priority, application Germany, June 10, 1970, P 20 28 655.9

Int. Cl. H03b *1/00*; H03k *5/00*

U.S. Cl. 328—163 6 Claims



A process for the measurement of distortion in systems which employ parallel transmission of binary data is described. A first impulse edge appearing on one of the parallel output lines fixes a reference point and actuates a first timing member. The first timing member subsequently emits an impulse after an interval corresponding to 1.5 times the theoretical character duration has elapsed. The output of the first timing member is used as a scanning mark. All of the impulse edges arising on the output lines during the aforementioned delay interval are routed to an indicating device producing an indication of their time positions relative to the reference point. The first impulse on the output lines actuates a second timing member which produces an output upon the appearance of the first impulse occurring after the aforementioned delay interval. That first impulse occurring after the delay interval is shown by the indicating device in its time condition relative to the reference point. In case of failure of an impulse to appear at the output line the second timing member and the indicating device are automatically switched to an output condition after 1.5 times the theoretical character duration.

3,725,797
METHOD AND APPARATUS FOR FORMING A BEAM OF CHARGED PARTICLES

Senichi Masuda, 1-40-10-605 Nishigahara, Kita, Japan

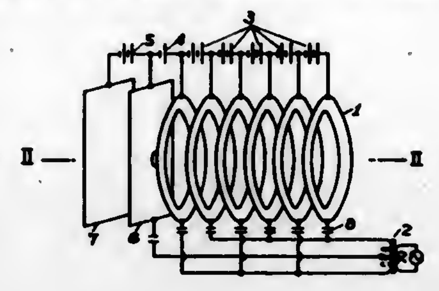
Filed April 23, 1971, Ser. No. 136,967

Claims priority, application Japan, April 28, 1970, 45/36500

Int. Cl. H01j *29/58*

U.S. Cl. 328—228 11 Claims

Charged particles are concentrated and held in space by means of an unequal, alternating electric field and the resulting beam of particles is directed through a hole in a plate electrode to a target electrode. A gate electrode adjacent the plate electrode may be operated selectively to oppose and enable the passage of the concentrated beam of charged particles to the target.



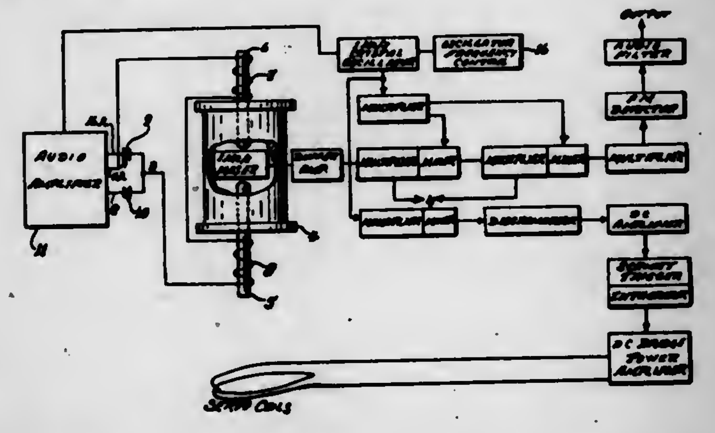
3,725,798
PROTON MASER ANTENNA TUNING MEANS

Jonathan C. Webster; Earl L. Sloan, III, both of Ridgefield, Conn., and Alexander Ganssen, Munich, Germany, assignors to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 3, 1971, Ser. No. 177,751

Int. Cl. H01s *1/02*

U.S. Cl. 330—4 3 Claims



Tuning means capable of extending the low frequency sensitivity of a proton maser antenna to higher frequencies are realized by magnetically chopping the effective permeability of the maser antenna magnet at the local oscillator frequency. This effectively chops the received signal at the local oscillator rate and translates it to the fixed system frequency f_{IF}. The system electronics are tuned to receive only the maser sidebands corresponding to f_{IF}, and tuning is accomplished by varying the local oscillator frequency.

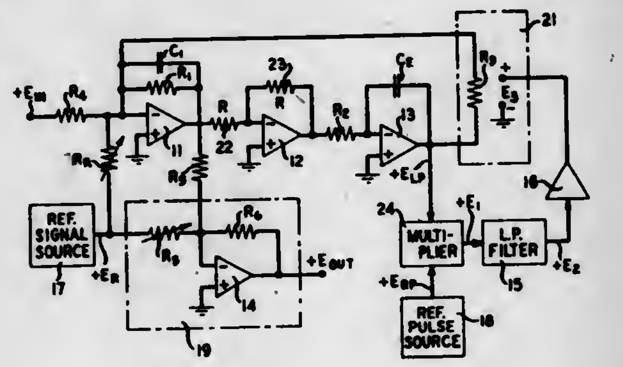
3,725,799
POLE FREQUENCY STABILIZED ACTIVE RC FILTER

Richard James Cubbison, Jr., Burlington, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 12, 1972, Ser. No. 217,169

Int. Cl. H01p *1/32*

U.S. Cl. 330—21 12 Claims



In an active RC filter exhibiting a predetermined signal transfer characteristic, a reference signal is applied to the input of the filter and examined for phase shift at the low-pass signal output of the filter. A signal proportional to the variation in phase of the reference signal is used to alter a voltage controlled resistor, which in turn varies the pole frequency of the filter. The reference signal is cancelled from the signal appearing at the bandpass output of the filter to remove it from the final desired output of the filter.

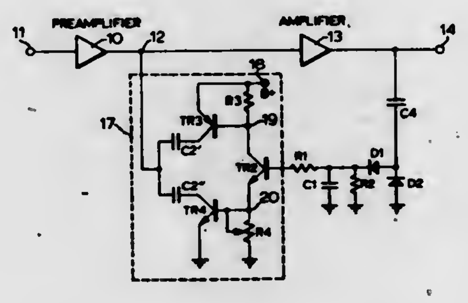
3,725,800
AGC NETWORK

Joseph Papay, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed Sept. 7, 1971, Ser. No. 178,031

Int. Cl. H03g *3/30*

U.S. Cl. 330—29 6 Claims



An AGC network connected between the input and output terminals of an amplifier avoids distortion and yet permits the preamplifier to provide a high level output signal. A part of the output signal of the amplifier is rectified, filtered and applied to a transistor to develop in its output circuit two D.C. signals that are applied to the base-emitter junctions of two transistors of opposite conductivity types that shunt the input terminal of the amplifier.

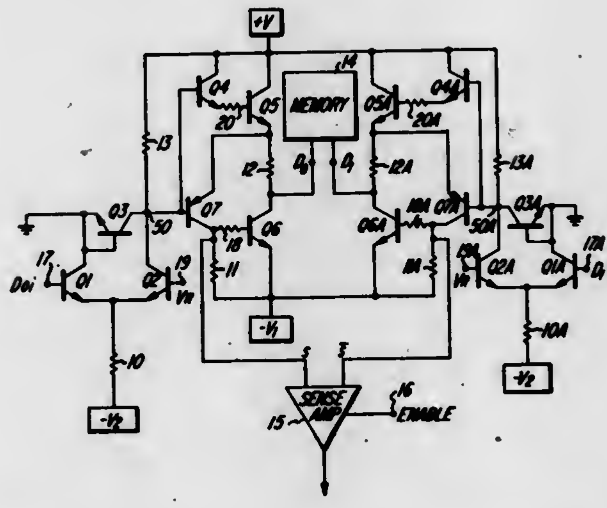
3,725,801
VOLTAGE DRIVER CIRCUIT

Howard Raymond Beelitz, Princeton, N.J., assignor to RCA Corporation

Filed April 5, 1971, Ser. No. 130,963

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D 8 Claims



A voltage driver circuit which may be utilized as an input circuit to a sense amplifier and which operates as a voltage level shifting circuit to permit interconnection of different types of circuit technology.

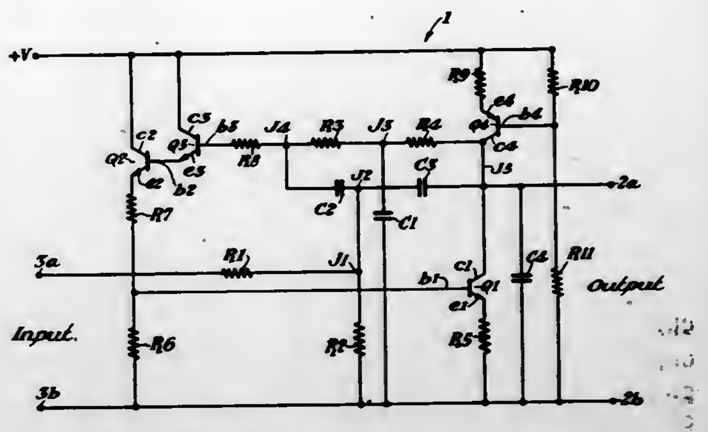
3,725,802
FAIL-SAFE ELECTRONIC BAND-PASS FILTER

John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed April 9, 1970, Ser. No. 27,089

Int. Cl. H03f *3/04*

U.S. Cl. 330—31 17 Claims



This disclosure relates to a fail-safe electronic filter circuit including a feedback amplifier. The feedback path of the amplifier includes a twin-T network which is imperfectly nulled to only provide regeneration at a preselected frequency so that an output signal is only available during the presence of a signal having the preselected frequency and in the absence of a critical component or circuit failure.

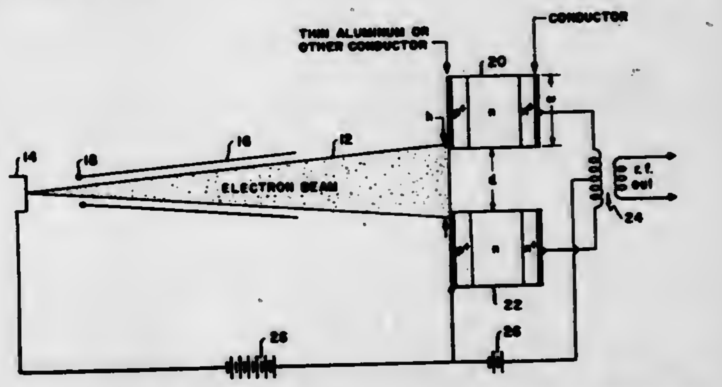
3,725,803
HYBRID ELECTRON-BEAM, SEMICONDUCTOR-DIODE AMPLIFYING DEVICE

Max N. Yoder, 6512 Truman Lane, Falls Church, Va.

Filed Jan. 25, 1972, Ser. No. 220,672

Int. Cl. H03f *3/04*

U.S. Cl. 330—46 2 Claims



A hybrid amplifying device comprising an electron-beam-forming device and a pair of P-N semiconductor junction devices. The junction devices are connected in a pushpull circuit arrangement with respect to a load. They are also arranged so that they are separated by the beam width. The beam is deflected by an input signal so that with increasing deflection in one direction or another, it will irradiate increasing areas of one junction device or the other, respectively. The current flow is a direct function of the amount of area irradiated by the beam and the amplification is therefore linear.

3,725,804
CAPACITANCE COMPENSATION CIRCUIT FOR DIFFERENTIAL AMPLIFIER

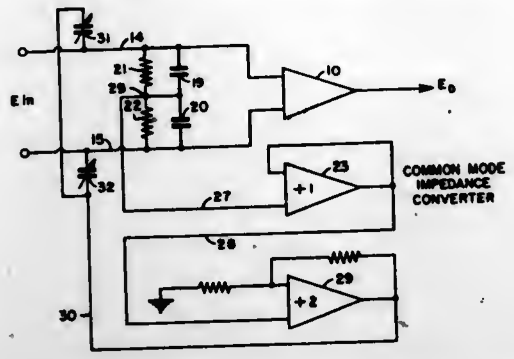
Marion J. Langan, Huntsville, Ala., assignor to Avco Corporation, Huntsville, Ala.

Filed Nov. 26, 1971, Ser. No. 202,442

Int. Cl. H03f *3/68*

U.S. Cl. 330—69 1 Claim

A differential amplifier is often used as a signal conditioner for low level transducer pick-ups. In many such applications the differential amplifier is remotely located with respect to the transducer. If there is amplifier input capacitance, or capacitance from either transmission line to any potential other than that of a driven guard, differential error signals may be derived from common mode potentials. There is here disclosed circuit means for compensating for amplifier input capacitance and/or transmission line capacitance to unguarded potentials by use of regenerative feedback of the amplified common mode signal to each input of the differential amplifier.

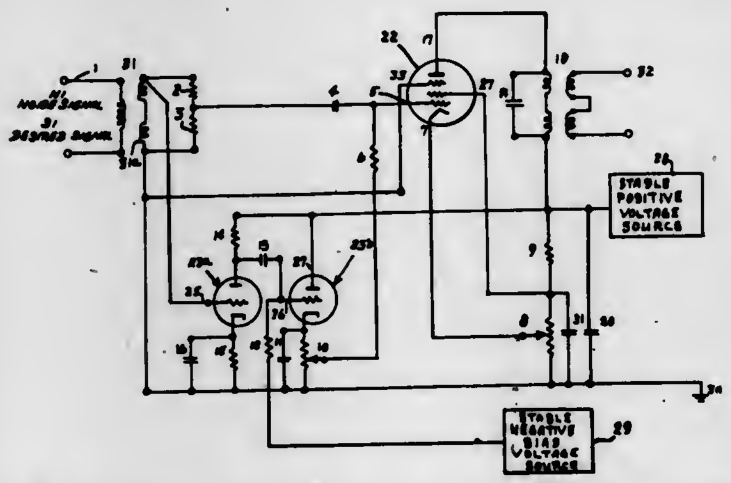


ERRATUM

For Class 330—124 see:
Patent No. 3,725,818

3,725,805
INFORMATION ENHANCING AMPLIFIER

Laurence E. Orne, 4 Erbar Circle, Billerica, Mass.
Filed June 7, 1972, Ser. No. 260,647
Int. Cl. H03f *3/00*
U.S. Cl. 330—136 **3 Claims**

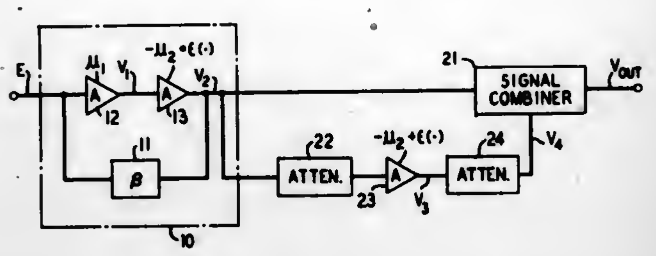

1
31
NOISE SIGNAL
DESIRED SIGNAL
22
17
33
27
19
32
4
STABLE POSITIVE VOLTAGE SOURCE
26
STABLE NEGATIVE BIAS VOLTAGE SOURCE
29

An information enhancing amplifier for insertion in a communication system. The amplifier includes a dual input signal representative of information. The input signal also includes noise. One circuit cathode detects the modulation substantially to the exclusion of the noise. The detected signal is applied to control the amplification of the other circuit to provide an output signal representative of virtually the information only.

3,725,806
DISTORTION REDUCTION IN A REPEATERED TRANSMISSION SYSTEM

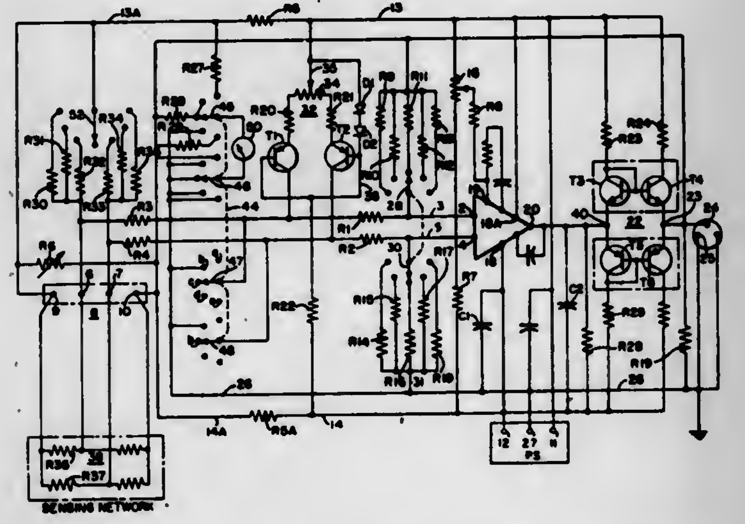
Sidney Darlington, Durham, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed June 9, 1972, Ser. No. 261,519
Int. Cl. H03f *1/26*
U.S. Cl. 330—149 **11 Claims**

The distortion appearing at the output of a repeater having a non-linear power amplifier with local feedback as an input amplifier stage is substantially reduced by generating a compensating distortion component within an auxiliary network. The auxiliary network attenuates a signal derived from the input amplifier stage and amplifies the attenuated signal with an auxiliary amplifier having substantially the same gain and distortion characteristics as the power amplifier in the input stage. The output of the auxiliary amplifier is attenuated and combined with the output of the input stage to substantially reduce the distortion.



3,725,807
DIRECT CURRENT AMPLIFIER

Walter V. Bratkowski, McKeesport, and Paul F. Pittman, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 31, 1970, Ser. No. 68,223
Int. Cl. H03f *1/00*
U.S. Cl. 330—185 **13 Claims**



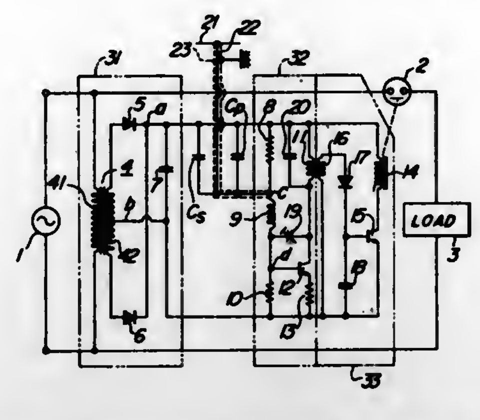
A self-contained direct current amplifier for a sensing network wherein the high gain amplifier may be balanced independently of the sensing network feeding the amplifier and wherein the output potential applied by the sensing network to the high gain amplifier may be balanced independently of the amplifier and in which the amplifier supplies the power for the sensing network and the balancing power for determining the balance between the sensing network output and the high gain amplifier input as well as for the power to the high gain amplifier itself.

3,725,808
PROXIMITY SENSITIVE ON-OFF TRANSISTOR OSCILLATOR FOR CONTROLLING A RELAY CIRCUIT

Takayoshi Oushige; Yukio Kinoshita; Kikuo Iizuka, and Yutaka Nishimiya, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed April 19, 1971, Ser. No. 135,221
Claims priority, application Japan, April 20, 1970, 45/38940
Int. Cl. H01h *47/32*; H03b *5/12*
U.S. Cl. 331—65 **2 Claims**

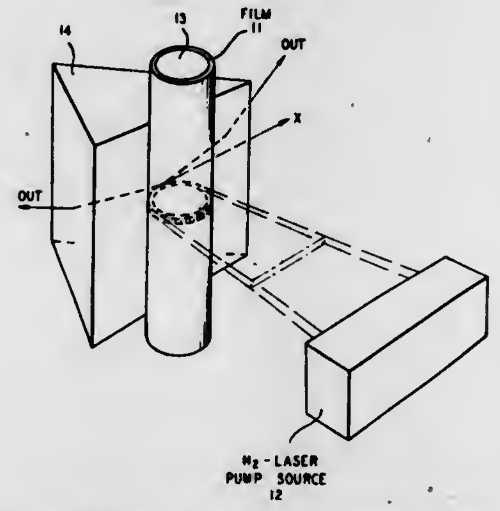
A proximity sensitive on-off transistor oscillator becomes operative with the approach of a human body towards its detection plate, and includes back-coupled oscillation coils, an

oscillating transistor, a negative feedback controlling capacitor connected between the collector and base of the transistor and a lead wire shielded by a shielding wire and connected between the oscillator and the detection plate.



3,725,809
DIELECTRIC RING LASERS USING WAVEGUIDING

Reinhard Ulrich, Matawan, and Heinz Paul Weber, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed April 5, 1971, Ser. No. 131,296
Int. Cl. H01s *3/00*; G02b *5/14*
U.S. Cl. 331—94.5 **4 Claims**

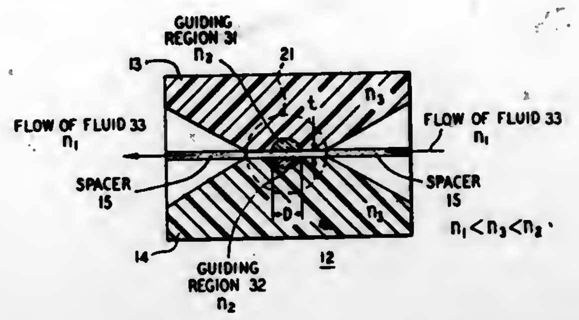


There is disclosed a ring laser in which mode-controllable oscillations occur in a dye-doped dielectric film along an axis wrapped around a lower-index dielectric. Output coupling is typically achieved by fringing field coupling to a nearby dielectric body of higher index.

3,725,810
OPTICAL STIMULATED EMISSION DEVICES EMPLOYING SPLIT OPTICAL GUIDES

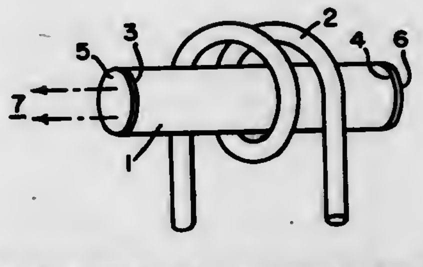
Arthur Ashkin, Rumson; Erich Peter Ippen, and Rudolf Kompfner, both of Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed April 23, 1971, Ser. No. 136,831
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **15 Claims**

There is disclosed a coherent optical device in which the stimulated emission of coherent radiation is achieved by monochromatic light launched into a split guiding structure which includes a fluid active medium. Typically, the active fluid flows transverse to the axis of the guiding structure through split solid members thereof spaced apart in the order of a wavelength of the light. In one embodiment of the invention, the solid members have guiding regions with higher indices of refraction than the fluid active medium. The monochromatic light propagates in and along these regions; and its fringing field pumps the fluid. In a second embodiment, the solid members have lower indices of refraction than the fluid active medium. The monochromatic light is then concentrated in a region of the fluid. The disclosed devices include stimulated Raman-emission devices and dye lasers.



3,725,811
LASER AND FLUORESCENT CRYSTALLINE MATERIALS

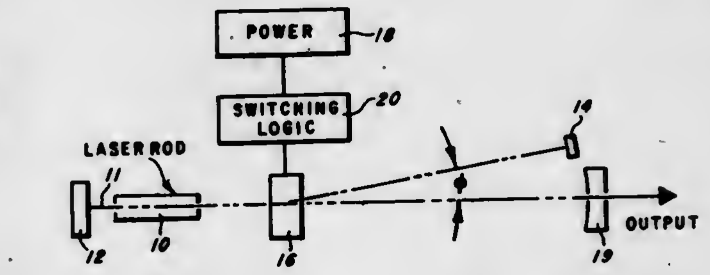
Joseph Murphy, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 474,591, July 26, 1965. This application Sept. 15, 1969, Ser. No. 866,413
Int. Cl. H01s *3/16*
U.S. Cl. 331—94.5 **16 Claims**



Refractory host materials containing a transition metal ion, for example an ion of scandium, titanium, vanadium, chromium, manganese, iron or chromium and a rare earth ion, for example Nd^{3+}, Dy^{3+}, Ho^{3+} or Sm^{3+}, are suitable for laser applications. The transition metal ion and the rare earth ion are substitutionally disposed in the host lattice to replace a metal ion of the host.

3,725,812
LASER SYSTEM MOVING ELECTRONICALLY SELECTABLE GAIN

Warner C. Scott, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 26, 1971, Ser. No. 147,049
Int. Cl. H01s *3/11*
U.S. Cl. 331—94.5 **14 Claims**



A laser system for selectively producing, in response to electronic signals, laser pulses at random intervals and of preselected and variable energy, including a laser cavity capable of being electronically controlled to effect a selectively variable gain. An acousto-optic deflector is disposed in the laser cavity and the amount of acoustic energy applied to the deflector controls the amount of radiation feedback to the laser rod and thus controls the Q or gain of the laser system to any of a wide range of selectable values.

3,725,813
GAS LASER TUBE WITH A DISCHARGE PATH DEFINED BY ROD-SHAPED MEMBERS MADE OF ION BOMBARDMENT RESISTIVE INSULATOR MATERIAL

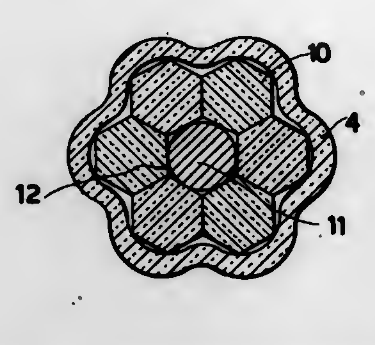
Susumu Yasuda, and Norio Sato, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 21, 1971, Ser. No. 154,894

Claims priority, application Japan, June 25, 1970, 45/55717

Int. Cl. H01s *3/02, 3/22*

U.S. Cl. 331—94.5 **6 Claims**



A gas laser tube comprising a discharge path defined by a plurality of rod-shaped members made of an insulator material that is capable of withstanding ion bombardment. The rod-shaped members are preferably circular or hexagonal in cross-section, and are in tight contact with one another and with the inside surface of the tubular portion of the laser tube envelope.

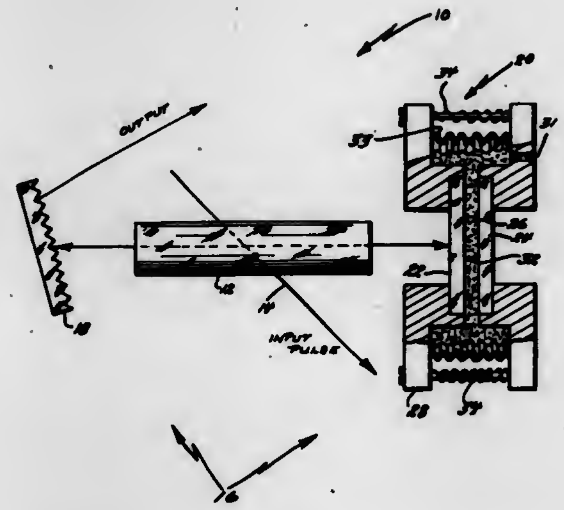
3,725,814
APPARATUS FOR LOCKING THE FREQUENCY OF A LASER TO AN ATOMIC ABSORPTION LINE

Howard Schlossberg, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 10, 1971, Ser. No. 179,383

Int. Cl. H01s *3/08*

U.S. Cl. 331—94.5 **6 Claims**



An apparatus made up of a laser and a compound optical resonator which locks the frequency of the laser to the atomic absorption line of a gas having a narrow absorption line and which is placed within the compound resonator. The gas sufficiently destroys the interference effects of the resonator thereby lowering the loss of the resonator to a value for which the laser will oscillate. This oscillation frequency is thus locked to the frequency of the absorption line of the gas.

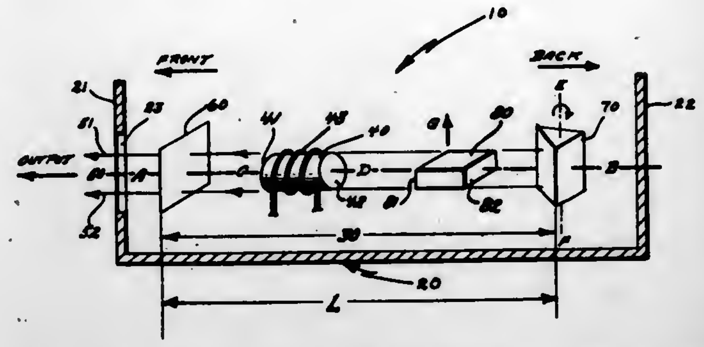
3,725,815
PHOTOELASTIC MODE-LOCKING OF Q-SWITCHED LASERS USING BIREFRINGENT CRYSTALS

Edward S. Cassedy, Jr., 6 Hampshire Road, Great Neck, N.Y., and Martin Piltch, Postfach 968, D-3400 Gottingen, Germany

Filed Jan. 10, 1972, Ser. No. 216,514

Int. Cl. H01s *3/10*

U.S. Cl. 331—94.5 **6 Claims**



Apparatus for, and a method of, achieving mode-locked operation in a Q-switched laser by using a transparent, photoelastic, uniaxial birefringent crystal. Mode-locked operation is achieved by interposing the crystal within the laser resonant cavity which is of a predetermined length for use with the particular crystal. The crystal is positioned on the longitudinal axis of the laser, and between the laser medium and the Q-switch, with the optic axis of the crystal being in a plane normal to the longitudinal axis of the laser.

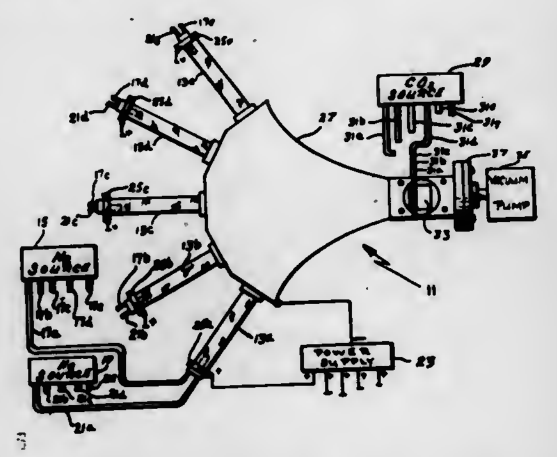
3,725,816
FAN GEOMETRY MIXING LASER

Dennis N. Mansell, Palos Verdes, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed April 28, 1972, Ser. No. 248,420

Int. Cl. H01s *3/22*

U.S. Cl. 331—94.5 **4 Claims**



A mixing laser is fed by a plurality of glass discharge tubes arranged in a fan configuration each tube being fed by a helium source and a nitrogen source. The nitrogen source is electrically excited by a DC power supply and sent to a vacuum mixing chamber where the gases are mixed with cold carbon dioxide through bleed bars.

3,725,817
HIGH POWER LASER SYSTEM

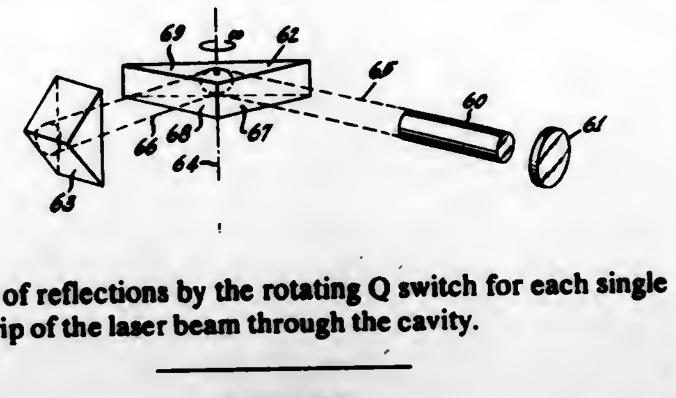
Thomas E. Nolan, Medfield, Mass., assignor to RCA Corporation

Filed Sept. 2, 1964, Ser. No. 393,831

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 **7 Claims**

Disclosed is a system for decreasing the required angular velocity of a mechanically rotated Q switch for a laser for any given speed of switching the laser cavity from a low Q switch state thereof to a high Q state thereof. This is accomplished by incorporating means for providing a predetermined plural number of reflections by the rotating Q switch for each single round trip of the laser beam through the cavity.



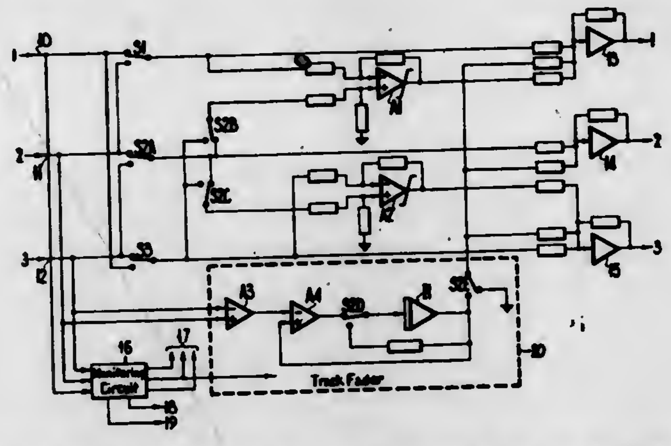
3,725,818
VOTER CIRCUITS FOR THREE-CHANNEL REDUNDANT SYSTEMS

Amin Mulji Nurmohamed, Gillingham, and Richard Watters, Penshurst, near Tonbridge, both of England, assignors to Elliott Brothers (London) Limited, London, England

Filed Sept. 15, 1971, Ser. No. 180,632

Int. Cl. H03f *3/68*

U.S. Cl. 330—124 D **5 Claims**



This invention relates to voter circuits for three-channel redundant systems, "synchronizing" the signals in the channels. The channel 2 signal is normally fed straight through, and is compared with the signals in channels 1 and 3 by limited authority amplifiers A1 and A2 whose outputs are added into channels 1 and 3 to bring those channel outputs into near equality with channel 2. Faults are detected by a fault detector 16, which detects when any one channel input differs by more than a preset small amount from the other two channels. For channel 1 or channel 3 faults, the input for that channel is switched to channel 2 or channel 1 respectively. For channel 2 faults, the input for that channel is switched to channel 3; additionally, a fader circuit 20 is switched in. This stores the difference between channels 2 and 3 just before the fault, adds it to the outputs, and gradually fades out this difference until the outputs are following channel 3 instead of channel 2. Transients in the outputs following a fault are thus eliminated without affecting the frequency response of the system to changes in the inputs.

3,725,819
SUPERCURRENT DEVICES WITH ENHANCED SELF-FIELD EFFECTS

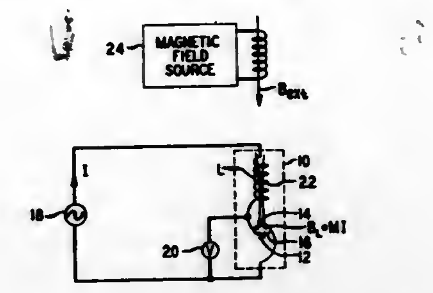
Theodore Alan Fulton, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkely Heights, N.J.

Filed July 26, 1971, Ser. No. 166,129

Int. Cl. G01r *33/02*; H03b *7/02*; H03k *3/38*

U.S. Cl. 331—107 S **9 Claims**

A supercurrent device comprising a pair of weak-link regions connected in a superconducting loop is driven by a current source. In series with the loop is an inductor for generating a magnetic field (i) proportional to the current flowing through the loop and (ii) the flux of which extends through the loop. The device, which exhibits both negative resistance and discrete supercurrent states at zero voltage, functions in several ways including: as a negative resistance oscillator, as a memory device, or as a highly sensitive linear magnetometer.



3,725,820
PHOTOSENSITIVE SOLID OSCILLATOR

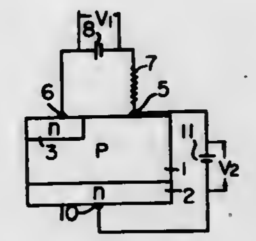
Kiyoshi Kojima, and Toshiro Abe, both of Osaka, Japan, assignors to Matsushita Denko Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 889,236, Dec. 30, 1969. This application Jan. 17, 1972, Ser. No. 218,096

Claims priority, application Japan, Jan. 5, 1969, 44/1264; Feb. 14, 1969, 44/11180; March 31, 1969, 44/25113; April 24, 1969, 44/32102; April 30, 1969, 44/33831

Int. Cl. H03b *7/06*

U.S. Cl. 331—107 R **7 Claims**



A photosensitive solid oscillator, which comprises an impurity layer formed on a surface of a semi-conductor wafer, two separate impurity layers formed one the other surface of said wafer as spaced along the surface from each other, and electrodes respectively provided at least on each of the latter two impurity layers. The respective impurity layers on both surfaces of the wafer are of a reversely conducting type semiconductor with respect to said wafer and contain an impurity of higher concentration than in the wafer.

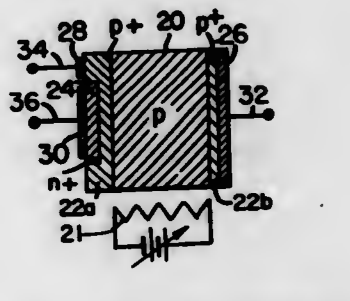
3,725,821
SEMICONDUCTOR NEGATIVE RESISTANCE DEVICE

Shigeru Mitsui, c/o Kitaitami Works of Mitsubishi Denki kabushiki Kaisha, No. 1, Aza Zugaike, Ojika, Itami, Hyogo Prefecture, Japan

Continuation-in-part of Ser. No. 879,249, Nov. 24, 1969, abandoned. This application May 17, 1972, Ser. No. 254,239

Int. Cl. H03b *7/06*

U.S. Cl. 331—107 G **25 Claims**



A method of imparting a negative resistance to a wafer of semiconductive material having applied thereacross an electric field of a threshold magnitude above which current flowing through the semiconductive material decreases with an increase in the applied field comprises the steps of causing both electrons and holes to exist respectively in the conduction and valence bands of the semiconductive material so as to be approximately equal in density to each other in thermal equilibrium in the absence of the applied electric field. The semiconductive material has an energy band structure including first and second valleys in the conduction band and a third valley in the valence band. The second valley is higher in energy level than the first valley and a vector of wave number at a minimum point on the second valley is equal to that at a maximum point on the third valley in the valence band.

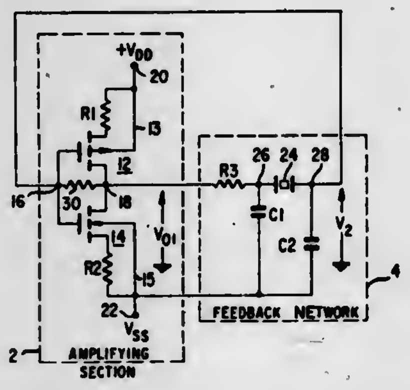
3,725,822
PHASE SHIFT OSCILLATORS USING INSULATED-GATE FIELD-EFFECT TRANSISTORS

Sargent Sheffield Eaton, Jr., Phillipsburg, N.J., assignor to RCA Corporation, Somerville, N.J.

Filed May 20, 1971, Ser. No. 145,407

Int. Cl. H03b *5/24, 5/36*

U.S. Cl. 331—108 B **7 Claims**



An oscillator comprising a complementary symmetry field effect transistor inverter, and a feedback loop from the output terminal to the input terminal of the inverter. Frequency stabilization is achieved by connecting the source electrode of each transistor through a resistor to the respective power supply terminals for these transistors and the two substrates directly to the respective power supply terminals.

3,725,823
STRIPLINE CIRCULATOR BIASED BY A PLURALITY OF SMALL POLE PIECES

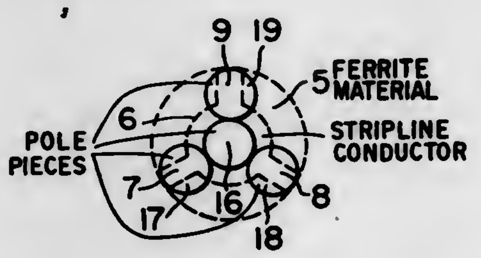
Tari Miura, Tokyo; Kiichi Nakamura, and Tadashi Hashimoto, both of Ichikawa, all of Japan, assignors to T.D.K. Electronics Company, Ltd., Tokyo, Japan

Filed June 18, 1971, Ser. No. 154,422

Claims priority, application Japan, June 30, 1970, 45/57578

Int. Cl. H01p *1/32, 5/12*

U.S. Cl. 333—1.1 **3 Claims**



A plurality of small magnets or pole pieces are disposed in opposed relation with a line conductor vacuum-deposited upon one surface of a disk-shaped magnetic medium so that the external magnetic field may be vertically applied to the line conductor. The frequency band characteristic as well as the backward loss characteristic may be improved.

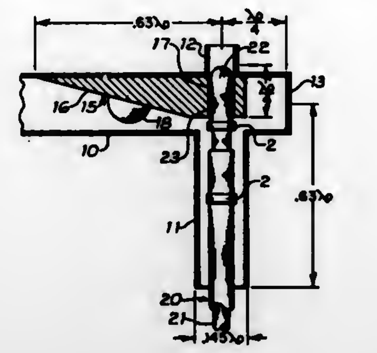
3,725,824
COMPACT WAVEGUIDE-COAX TRANSITION

Oakley McDonald Woodward, Princeton, N.J., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 20, 1972, Ser. No. 264,671

Int. Cl. H01p *5/10;* **H03h** *7/38*

U.S. Cl. 333—21 R **8 Claims**



A compact waveguide-to-coaxial transition coupling having a half-height waveguide with a shorted termination and with a tapered ridge waveguide section having a port therein one-quarter wavelength from the termination into which port is "-floatingly" fitted a coaxial line termination with impedance matching steps thereon, and inductive buttons on the side walls of the half-height waveguide laterally of the tapered ridge waveguide section to provide transition of microwave at a voltage standing wave ratio of 1.1 or less over at least a 13 percent band.

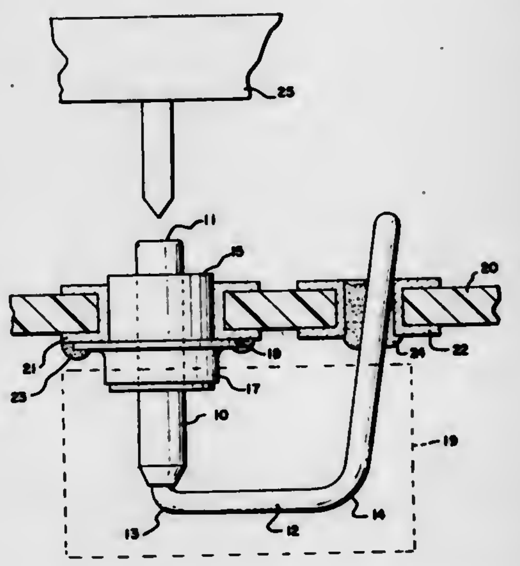
3,725,825
FILTERED SOCKET FOR ELECTRONIC CIRCUIT BOARD

William Jeffery Hudson, Jr., Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 14, 1971, Ser. No. 152,883

Int. Cl. H01h *7/14*

U.S. Cl. 333—79 **8 Claims**



A filtered socket decouples the pin of an electronic circuit device such as a transistor or a thin film amplifier. The tubular socket is constructed of a resilient metal with a pin receiving opening at one end and a resilient tail at the other end. A tubular filter is soldered onto the socket. This filter has a metal flange which is positioned against the plated through circuit in a hole on the circuit board. The filtered socket is locked to the board by resiliently positioning the tail in another hole in the circuit board. The board is flow soldered to establish an electrical connection between the outer conductive surface of the filter and a common electronic connection extending to the hole in which the socket is positioned. Another electrical connection is established between the circuit extending to the other hole and the socket itself. A solder-free plastic coating on a portion of the filter and a portion of the tail prevents solder from bridging the two holes.

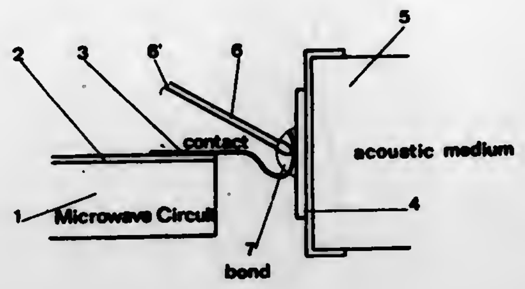
3,725,826
POINT-CONTACT-ELECTRODE DRIVEN MICROWAVE ELECTROACOUSTIC TRANSDUCER

Bernard Chiron, and Jean Puyhaubert, both of Paris, France, assignors to Sociète Lignes Telegraphiques et Telephoniques, Paris, France

Filed June 14, 1971, Ser. No. 152,670

Int. Cl. H03h *9/30;* **H04r** *17/00*

U.S. Cl. 333—30 R **3 Claims**



Improvement of the interconnection between an electroacoustic transducer and a microwave circuit to reduce the insertion losses.

A flexible metallic strip connected to the microwave circuit is maintained in contact at a selected chosen point with the transducer under the pressure exerted by a mechanical member adhesively bonded to the said transducer.

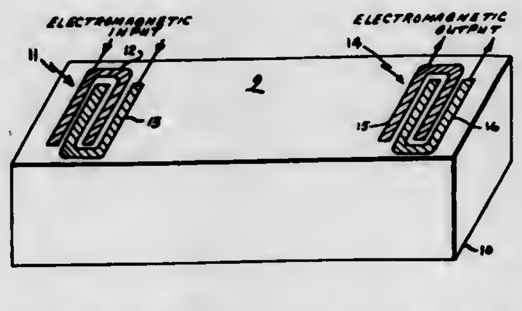
3,725,827
HIGH COUPLING LOW DIFFRACTION ACOUSTIC SURFACE WAVE DELAY LINE

Andrew J. Slobodnik, Jr., Burlington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 17, 1972, Ser. No. 254,121

Int. Cl. H03h *7/30*

U.S. Cl. 333—30 **3 Claims**



An acoustic surface wave delay line having a lithium niobate substrate member the surface wave propagation plane of which is parallel to the lithium niobate crystalline X axis and intersects the crystalline Z and -Y axes. Optimum results are obtained when the intersecting angle of the propagation plane and the Z axis is in the vicinity of 16.5°.

3,725,828
ASYMMETRICAL LOSS-POLE MECHANICAL FILTER

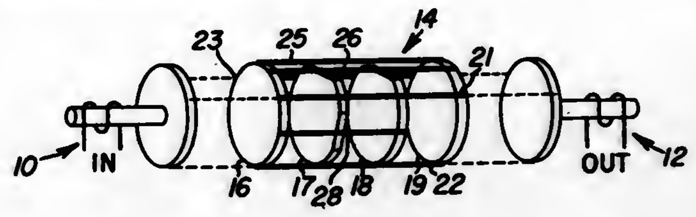
Gabor C. Temes, Los Angeles, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed March 13, 1972, Ser. No. 234,182

Int. Cl. H03h *9/26*

U.S. Cl. 333—71 **6 Claims**

An electromechanical filter of disc type in which the frequency response for a given passband may be varied to achieve a desired characteristic by appropriately shifting loss-poles. The filter includes at least one four-disc resonant section including first coupling wire means attached to the peripheries of each of said discs, second coupling wire means attached to the first and fourth discs and bridging the second and third discs, and third coupling wire means attached to the first and third discs and bridging the second disc. A fourth coupling wire means may be attached to the second and fourth discs and bridging the third disc.



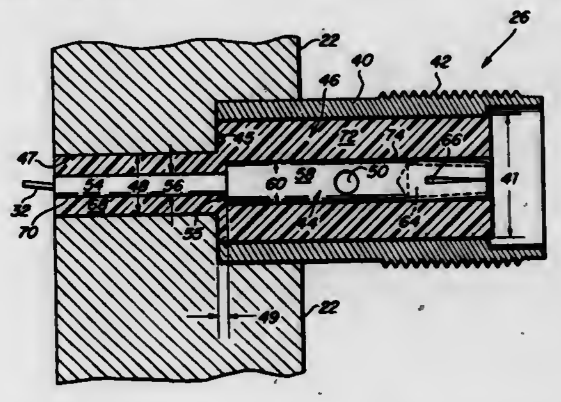
3,725,829
ELECTRICAL CONNECTOR

Deane David Brown, Mountain View, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed July 14, 1971, Ser. No. 162,432

Int. Cl. H01p *3/00, 3/08*

U.S. Cl. 333—84 M **10 Claims**



An electrical connector for transferring electromagnetic energy between a coaxial cable and a microstrip transmission system, each having a characteristic impedance of 50 ohms, with a minimal power loss due to a reflective discontinuity during the transfer. The electrical connector includes a central conductor and an outer conductor enclosing the central conductor, and has first, second, and transition sections each of which is designed to have a characteristics impedance of 50 ohms. The first and second sections are designed like sections of a coaxial cable to have a characteristic impedance of 50 ohms by the proper selection of the ratio of the diameters of the central and outer conductors. The central conductor of the first section has a small diameter, and the diameter of the outer conductor is a selected multiple of the small diameter to yield a characteristic impedance of 50 ohms. The second section has a large diameter central conductor, and the diameter of the outer conductor is the same selected multiple of the large diameter to yield a characteristic impedance of 50 ohms. The central conductor has an abrupt shoulder like transition between the small ad large diameters of the first and second sections. Similarly, the outer conductor has an abrupt shoulder like transition between the small and large diameters of the first and second sections. The transition section of the connector joins the first and second sections, and is constructed to have a short length of the small diameter of the central conductor enclosed within a short length of the large diameter of the outer conductor. The abrupt shoulder like transitions of the central and outer conductors define a large surface area between the central and outer conductors over a short conductive path. This large surface area introduces a significant capacitive reactance which is compensated for by positioning the short length of the small diameter central conductor in the large diameter outer conductor. This relative positioning introduces a significant inductive reactance into the transition section to compensate for the significant capacitive reactance introduced by the large surface area, and results in a characteristic impedance of 50 ohms in the transition section.

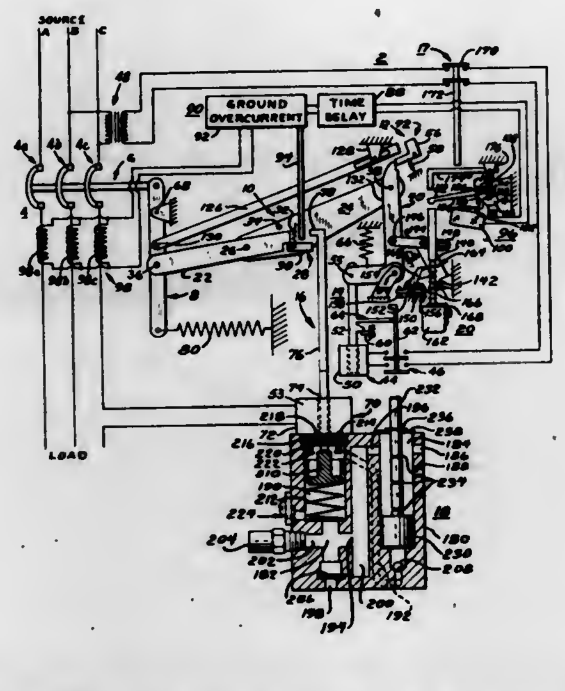
3,725,830
CONTROL MEANS FOR RECLOSING CIRCUIT BREAKER

Max Rigert, West Allis, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed March 24, 1972, Ser. No. 237,732

Int. Cl. H01h *81/04*

U.S. Cl. 335—32 **12 Claims**



A reclosing circuit breaker having a fault overcurrent time delay means and an operation counting means. The opening time delay means selectively permits one or more fast opening operations and then, in response to a pumping force by a spring charged during a previous opening operation, blocks an oil exhaust port so that subsequent opening operations are time delayed. The operation counting means is advanced a predetermined step distance for each opening operation of the circuit breaker and is held in each advanced step until just before reclosing of the circuit breaker. The step distance advanced and the point at which the counting means is released is controlled, in part, by a simple adjustment device. Depending on its initial setting, the counting means will permit a predetermined number of circuit breaker opening operations and then will actuate a means for locking open the circuit breaker.

3,725,831
MAGNETIC BEAM ADJUSTING ARRANGEMENTS

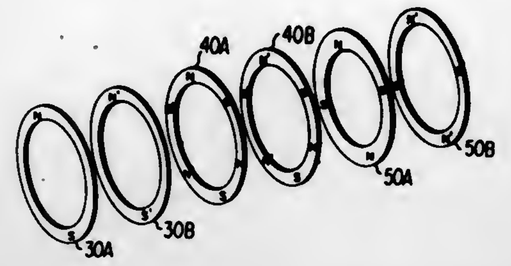
Robert Lloyd Barbin, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,757

Int. Cl. H01f *7/00*

U.S. Cl. 335—212 **8 Claims**

A pair of four-pole magnet rings, each mounted for independent, concentric rotational adjustment about the neck of an in-line, tri-beam shadow-mask color kinescope, constitute a facility for introducing mutually opposing shifts of the outer beams of the in-line trio in any desired direction, without substantially affecting the central, axial beam, and without requiring internal pole piece structures for field directing purposes. A pair of 6-pole magnet rings, each mounted for independent, concentric rotational adjustment about an adjacent region of the color kinescope neck, constitute an additional facility for introducing like-direction shifts of the outer beams of the in-line trio in any desired direction, without substantially affecting the central beam, and without requiring internal pole piece structures for field directing purposes. The two magnet ring pairs together provide an arrangement for effecting static convergence of the beam trio at the kinescope screen. A third pair of two-pole magnet rings, similarly subject to rotational adjustment about the kinescope neck, provide means for introducing like-direction shifts of all three beams in any desired direction for conventional purity adjustment purposes. In a preferred application of the invention, the two-pole ring pair, six-pole ring pair and four-pole ring pair, appear in axially spaced relation of a common mount surrounding the kinescope neck to the rear of a deflection yoke (with the ring pairs in the order named, progressing from the neck base toward the yoke rear) and constitute the only neck components (exclusive of the deflection yoke) required in set-up and operation of the color kinescope.



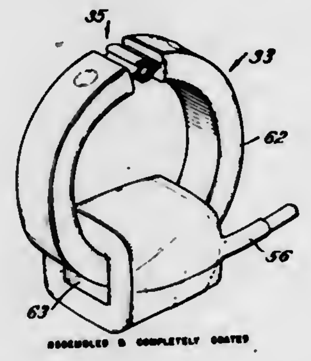
3,725,832
MAGNETIC CORE STRUCTURE

Edmund O. Schweitzer, Jr., Northbrook, Ill., assignor to E. O. Schwertzer Manufacturing Co., Inc., Mundelein, Ill.

Continuation-in-part of Ser. No. 55,532, July 16, 1970, abandoned. This application Oct. 12, 1971, Ser. No. 188,034

Int. Cl. H01f *27/24*

U.S. Cl. 336—96 **9 Claims**



A circular magnetic core structure comprises a plurality of laminations of prestressed oriented silicon steel secured together near their juxtaposed ends which are biased into mutual engagement and are separable to receive an alternating current carrying conductor to induce into the core alternating magnetic flux which induces alternating current into a coil on the core corresponding to the current in the conductor. The core and coil are encapsulated in insulating material. In one embodiment self curing cement is applied to the juxtaposed ends after the core is applied to the conductor to seal them together. In another embodiment the ends are provided with interlocking separable coupling extensions of corrosion resisting magnetic material.

3,725,833
TRANSFORMER TAP SELECTOR

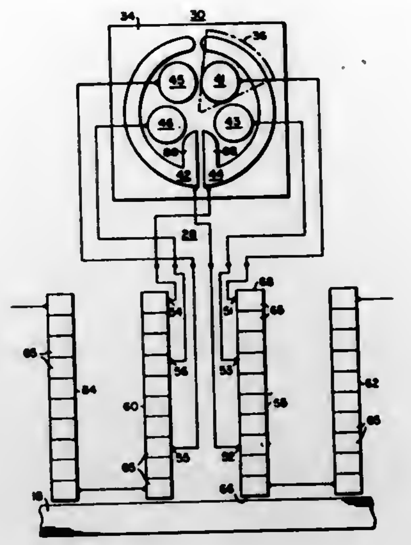
Michael W. Thomas, Muncie, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 28, 1972, Ser. No. 248,474

Int. Cl. H01f *21/12*

U.S. Cl. 336—146 **6 Claims**

Tap selecting means providing minimum flux symmetry destruction at different tap settings. The tap selecting means includes movable and stationary contacts connected to tap terminals on coils of the transformer winding structure. The contacts and the tap connections are arranged to provide maximum tapout in one coil before tapping-out another coil.



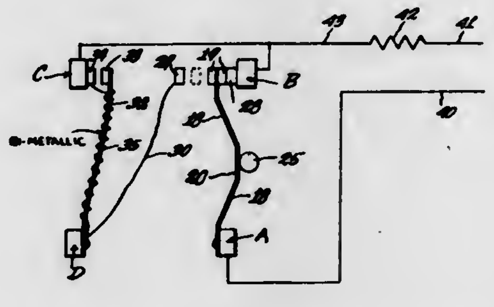
3,725,834
ELECTRIC SWITCHES

Robert L. Dorsey, Sr., 6550 Mahoning Ave., N.W., Warren, Ohio; James C. Gross, 140 Champion West, and H. George Myers, 327 Willard, S.E., both of Warren, Ohio

Filed Oct. 27, 1971, Ser. No. 192,911

Int. Cl. H01h *37/72*

U.S. Cl. 337—44 **9 Claims**



A switch for controlling energization of a signal device, such as an electric light, the switch having an actuator arm which is movable to any one of three positions. In one position of the actuator, current flow to the signal device is interrupted; in a second position of the actuator, uninterrupted current flows to the signal device so that the latter is energized in a steady manner; and in a third position of the actuator, current flows intermittently to the signal device so that the latter may act as an emergency indicator.

3,725,835
MEMORY MATERIAL ACTUATOR DEVICES

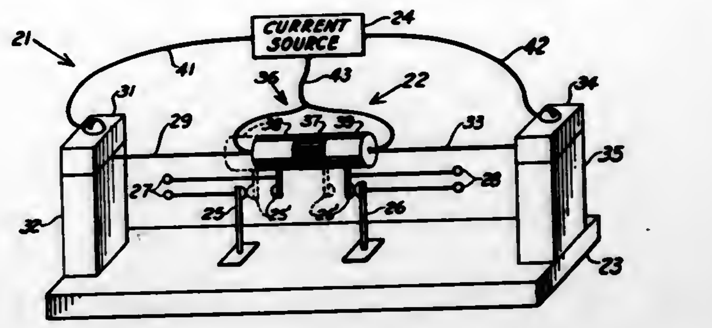
John B. Hopkins, 295 Harvard St., Cambridge, Mass., and Wilhelm Rindner, 6 Tyler Road, Lexington, Mass.

Filed July 20, 1970, Ser. No. 56,459

Int. Cl. H01h *61/06*

U.S. Cl. 337—140 **13 Claims**

Disclosed are actuator devices employing "memory material" actuator and reset elements that deform from a set shape toward an original shape when subjected to a critical temperature level after having been initially deformed from the original shape into the set shape while at a lower temperature. The actuator and reset elements are mechanically coupled such that temperature-induced deformation of one into its original shape effects mechanical deformation of the other into its set shape. By selectively and alternately applying heat internally to the actuator and reset elements reversible output motion is provided for a wide variety of output functions.



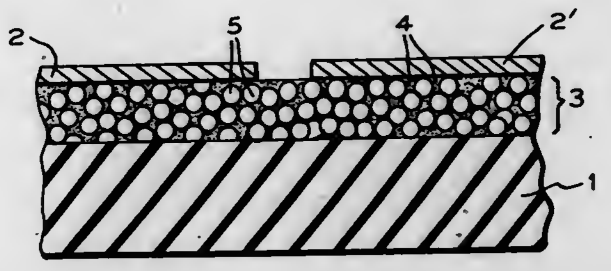
3,725,836
THICK FILM VARISTOR AND METHOD FOR MAKING THE SAME

Mitsuo Wada, Kazuyuki Nishimoto; Masaki Aoki, and Yoshio Iida, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed May 25, 1971, Ser. No. 146,624

Int. Cl. H01c *7/12*

U.S. Cl. 338—21 **14 Claims**



A thick film varistor having a thick film of finely divided particles of zinc oxide dispersed in a glass frit which bonds the particles together. Electrodes are provided on the thick film. The varistor is made by preparing a paste of the zinc oxide particles, the frit, and a liquid vehicle, and applying the paste to an insulating base. The paste is heated to evaporate the liquid vehicle and then melt the particles of frit to bond the particles of zinc oxide together. Thereafter the electrodes are applied. Alternatively, one electrode can be applied to the insulating base, the thick film formed thereon, and a second electrode applied to the surface of the thick film.

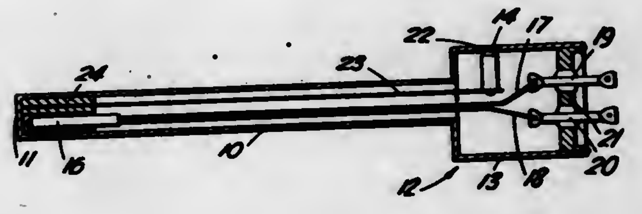
3,725,837
PLATINUM RESISTANCE TEMPERATURE SENSORS

Harry Fullager, Bognor Regis, England, assignor to Rosemount Engineering Company Limited, Bognor Regis, England

Filed Sept. 13, 1971, Ser. No. 179,669

Int. Cl. H01c *7/00*

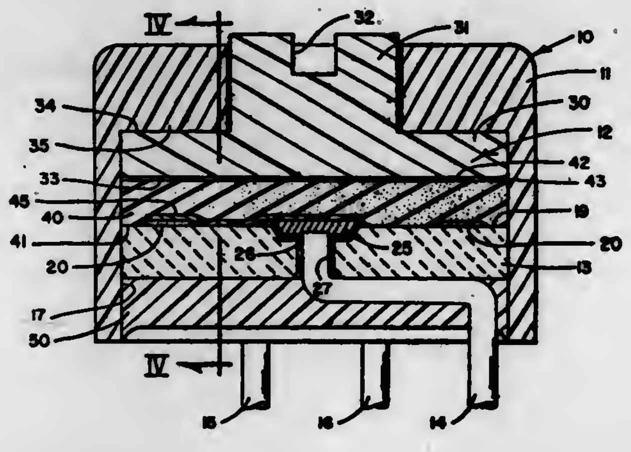
U.S. Cl. 338—28 **14 Claims**



Platinum resistance thermometers with means for preventing ingress of moisture from the atmosphere at temperatures below 100°C., and preferably below 150°C., and for relieving the rise in pressure within the thermometer as the thermometer is heated. In one arrangement the thermometer has a metal sheath sealed apart from a vent and a closure member is provided on the free end of a bimetallic strip. In another arrangement, the closure member is carried on the end of a tube mounted within the metal sheath and having a coefficient of expansion different from that of the sheath. Other arrangements incorporate an aneroid-type bellows, a dessicator, and a temperature-sensitive sealing material allowing breathing only at elevated temperatures.

3,725,838
VARIABLE RESISTOR HAVING AN IMPROVED WIPER MEMBER

Gustav Hubert, Gabriel, Calif., assignor to Spectrol Electronics Corporation, City of Industry, Calif.
Continuation-in-part of Ser. No. 118,750, Feb. 25, 1971, Pat. No. 3,652,970. This application Dec. 14, 1971, Ser. No. 207,753. The portion of the term of this patent subsequent to March 28, 1989, has been disclaimed.
Int. Cl. H01c *1/12*
U.S. Cl. 338—174 3 Claims

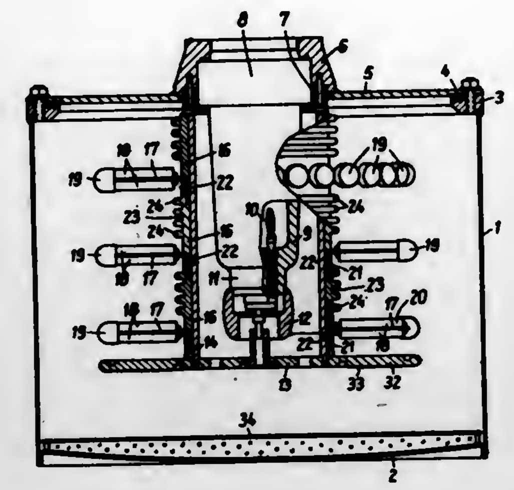


A variable resistor of the rotary type is illustrated having a rotatable wiper member, a substrate member carrying an arcuate resistance element and a collector element, all coaxially secured in a cylindrical housing. The wiper member comprises a relatively rigid carriage element having a screw driver slot therein for rotating the wiper member from the exterior of the housing. A resilient pad element is adhesively secured to the carriage element. A flexible contact element is secured to the face of the pad element facing the resistance and collector elements so that the contact element makes electrical contact between the collector and the desired location on the resistance element. The spacing between the substrate member and the carriage member within the housing is less than the uncompressed thickness of the pad element so that the pad urges the contact element into firm engagement with the resistance and collector elements. A portion of the pad element forms a peripheral seal with the substrate member to prevent the passage of contaminates to the resistance element.

3,725,839
MEASURING RESISTANCE DEVICE FOR HIGH VOLTAGE

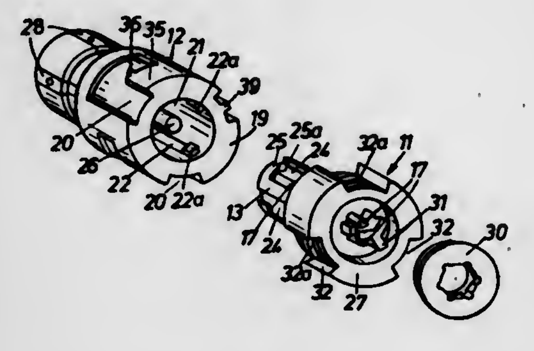
Gerhard Koppen; Wilfried Dobring, and Manfred Siebart, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed July 14, 1971, Ser. No. 162,440
Claims priority, application Germany, July 24, 1970, P 20 37 907.1
Int. Cl. H01c *1/16*
U.S. Cl. 338—334 11 Claims

A measuring resistance device for high voltage such as for measuring the accelerating voltage of particle-beam apparatus, especially an electron microscope, has a housing fillable with a fluid insulating medium and a carrier disposed in the housing. The carrier has a plurality of disk-like carrier plates made of electrical insulating material and spacers for mutually separating the plates. The spacers and the plates are stacked to conjointly configure the carrier as columnar structure. A plurality of individual rod-like resistors are serially connected together and grouped into a plurality of sets, each of the sets being arranged on a corresponding one of the plates.



3,725,840
ELECTRICAL PLUG AND SOCKET COUPLING FOR CONNECTING ELECTRICAL LEADS

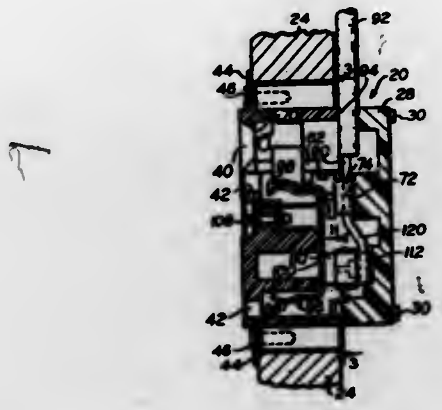
Kurt Hesse, Lemgo-Lippe, Germany, assignor to Staff & Schwarz G.m.b.H, Lemgo-Lippe, Germany
Filed March 29, 1971, Ser. No. 128,795
Claims priority, application Austria, March 31, 1970, 2942
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R 10 Claims



An electrical coupling for connecting electrical leads containing two coupling halves, a socket and a plug having at least two current conducting contacts and at least one protective contact each, the protective contacts being capable of being connected together before the current conducting contact is made, wherein the socket at its coupling end has an annular space enclosing a core the outer wall of which is provided with radially projecting coupling members partially projecting into the annular space, and the inner wall of which, formed by the core, is provided with longitudinal electric contacts extending in the axial direction of the plug, and set back relatively to the front of the socket at the coupling end, together with a protective or earthing contact, the plug, at the coupling end, having a coupling ring engaging in the annular space of the socket and comprising external coupling members, the inner plug space enclosing the contact base of the socket comprising elongated electrical contacts extending in the axial direction of the plug and set back relatively to the face of the plug on the coupling end, together with a protective or earthing contact, so that the coupling members of the socket and plug form a bayonet connection disposed within the socket member and secured against unintentional detachment in the coupled position.

3,725,841
WALL RECEPTACLE WITH IMPROVED CONNECTOR TERMINAL CONSTRUCTION

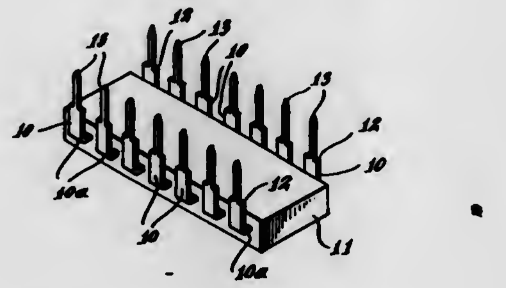
Daniel E. Robinson, Metuchen, and Solomon Rubinstein, Fanwood, both of N.J., assignors to General Cable Corporation, New York, N.Y.
Filed April 9, 1971, Ser. No. 132,723
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R 11 Claims



This improved wall receptacle has a housing with slots in the front wall for receiving the prongs of electrical cord fittings and has terminals in the housing held in depressions of the housing and in position to contact with the prongs that are inserted through the slots. These terminals are constructed with barrels that grip conductors of a power cable and that can be secured to the cable before being inserted into the housing. In the preferred construction, the terminals are held in the housing by a back portion of the housing that is detachably connected to the portion into which the terminals fit. The construction can be made so that the power conductors require no bending for either entrance or termination. A ground connection can also be provided with the barrel clamping feature for the ground wire.

3,725,842
CONNECTOR FOR INTEGRATED PACKAGE

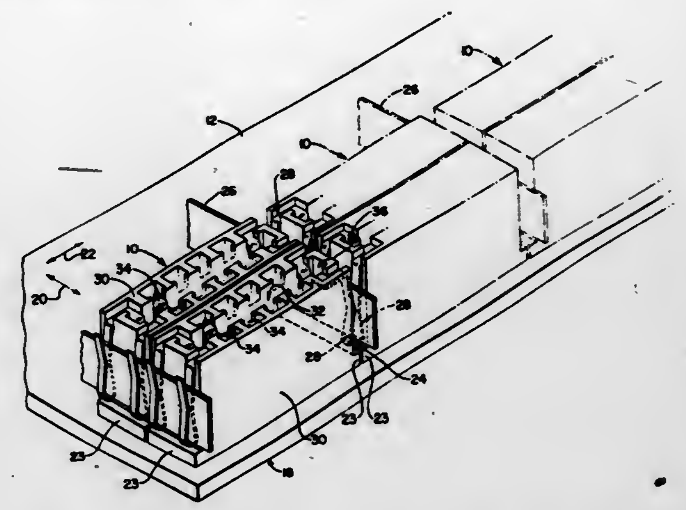
Leonard H. Feldberg, Spring Valley, N.Y., assignor to Burndy Corporation
Filed Oct. 16, 1970, Ser. No. 81,435
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 CF 16 Claims



A connector is adapted to hold an integrated circuit package in assembled relation thereto and also to a plate or printed circuit board. The connector has electrodes to the ends of which are applied terminals of the integrated circuit package, the electrodes yielding to compensate for variations in the dimensions of the electrodes and terminals. Detent means may be formed on the connector to secure it to the plate or printed circuit board in position to grasp and hold the integrated circuit package.

3,725,843
BUSSING CONSTRUCTION FOR PRINTED CIRCUIT CONNECTORS

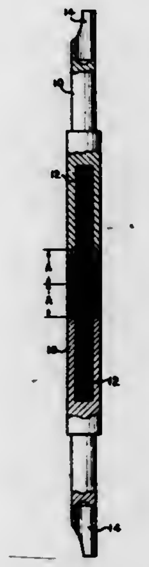
Lennart B. Johnson, Topsfield, Mass., assignor to Teradyne, Inc., Boston, Mass.
Continuation-in-part of Ser. No. 32,570, April 28, 1970, abandoned. This application July 6, 1971, Ser. No. 159,732
Int. Cl. H05k *1/07*
U.S. Cl. 339—19 11 Claims



A bussing construction for printed circuit card connectors arrayed on the front face of a panel forming a connector plane provides bus bars above the plane and extending adjacent the connector ends, with clips on the connectors mounting the bus bars to the connectors. The connectors also mount distribution conductors above the connector plane and connecting the bus bars to distribution contacts seated in the connector sockets.

3,725,844
HERMAPHRODITIC ELECTRICAL CONTACT

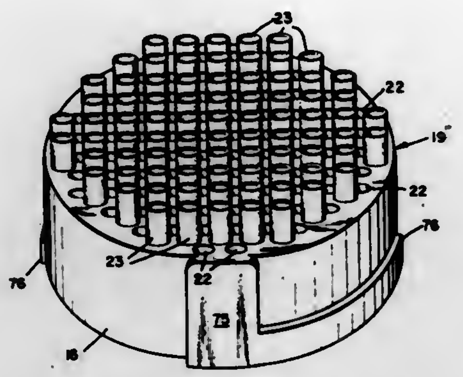
James E. McKeown; Stephen E. Gregoire, and Donald E. Michel, all of Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.
Filed March 15, 1971, Ser. No. 124,088
Int. Cl. H01r *13/22, 25/00*
U.S. Cl. 339—49 R 20 Claims



A hermaphroditic type electrical connector assembly that does not use the standard male and female connection. Instead of a single male pin, several fine wires are bundled together to form a brush contact. Similarly, the mating contact is comprised of several fine wires bundled into a brush. When the contacts are in mated relationship, the fine wires of the connector assembly are intermingled to complete the electrical circuit relationship between the mated contacts of the connector assembly.

3,725,845
ENVIRONMENT PROOF CONNECTOR

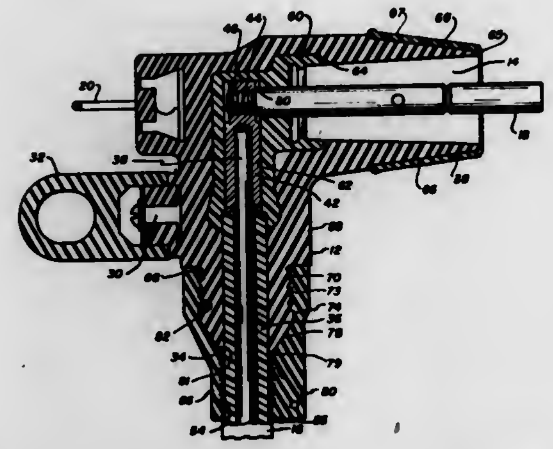
Robert L. Moulin, Placentia, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed March 30, 1971, Ser. No. 129,410
Int. Cl. H01r *13/64, 25/10*
U.S. Cl. 339—49 R **3 Claims**



A multicontact connector intended primarily for geophysical surveying work is made totally hermaphroditic so that the entire connector can function either as a male or as a female member whereby the connector can be connected to its identical counterpart. Also disclosed is a connector insert from which hollow posts extend to individually enclose half of the contacts anchored in the insert, the posts being distributed in a pattern such that, when two such inserts are face to face and properly indexed, their respective arrays of posts clear one another.

3,725,846
WATERPROOF HIGH VOLTAGE CONNECTION APPARATUS

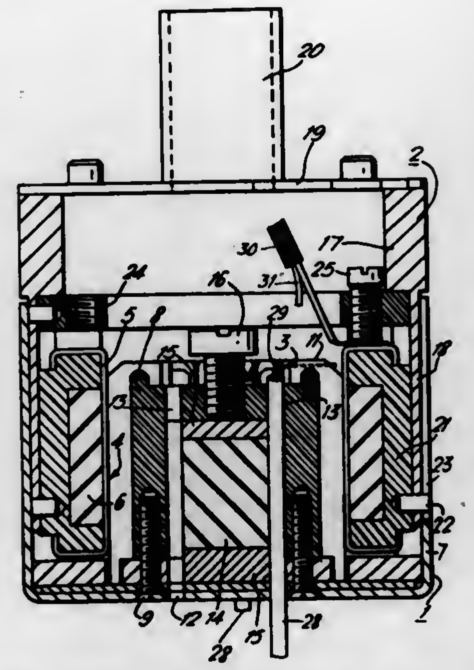
Robert Allen Strain, Florissant, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,651
Int. Cl. H01r *11/02, 13/46*
U.S. Cl. 339—61 R **4 Claims**



A high-voltage connector construction capable of use in submersible or exposed areas. The metallic connector itself and its connection to the conductor of a shielded cable are surrounded by a semi-conductive body of elastomeric material which engages the cable metallic connector and acts to prevent voltage differential and resulting corona within air gaps in and around the connection. A two-piece insulating housing of elastomeric material surrounds the semi-conductive body. The housing has a conductive or semi-conductive outer coating sprayed or dipped onto its outer surface, the outer surface being engaged in a sealing relation with a moisture seal, the moisture seal being fabricated of conductive or semi-conductive elastomeric material and being capable of sealing the entrance of the cable to the insulating housing and conductively engaging the cable shield.

3,725,847
ELECTRICAL CONNECTORS FOR MULTIPLE THERMOCOUPLE CONDUCTORS

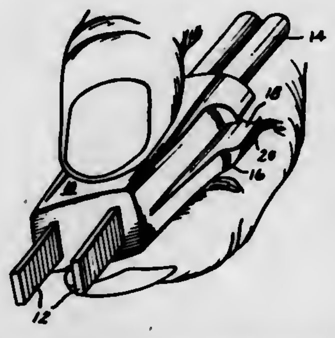
Piyatilleke Perera Guneratne, Millom, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed May 4, 1971, Ser. No. 140,216
Claims priority, application Great Britain, May 19, 1970, 24,297/70
Int. Cl. H01r *13/12*
U.S. Cl. 339—61 M **3 Claims**



The electrical connector for multiple mineral insulated thermocouple conductors comprises a socket member having multiple contacts which present knife edges to corresponding strip contacts in a complementary plug member. The strip contacts are embraced by a resilient sleeve which urges the strips into contact with the knife edges. The knife edges penetrate any oxide film on the strip contacts and ensure good electrical connection between the contacts. The socket member has a central resilient plug which can be compressed axially to expand it radially outwardly thereby to grip the ends of mineral insulated cables entering the socket and arranged about the central plug.

3,725,848
ATTACHMENT PLUG WITH CORD GRIP

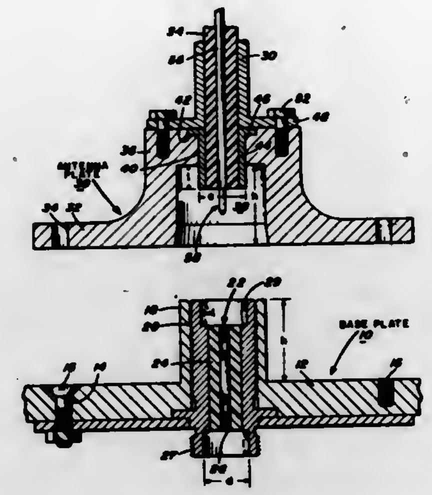
William E. Davidson, Ontario, Calif., assignor to General Electric Company, Bridgeport, Conn.
Filed June 11, 1971, Ser. No. 152,077
Int. Cl. H01r *13/60*
U.S. Cl. 339—62 **1 Claim**



The invention is an attachment plug for an appliance or the like, the plug having an integral cord grip formed on its side and an open channel to grip a single conductor or one-half of a flat two-conductor cord to lock the plug on the cord when not in use. The grip is formed to serve a dual purpose of both clamping the cord and providing a finger gripping means to remove the plug and is so disposed that the cord remains untwisted when it is clamped by the plug.

3,725,849
PLUG IN ANTENNA, ANTENNA BASE AND TEST PROBE SYSTEM

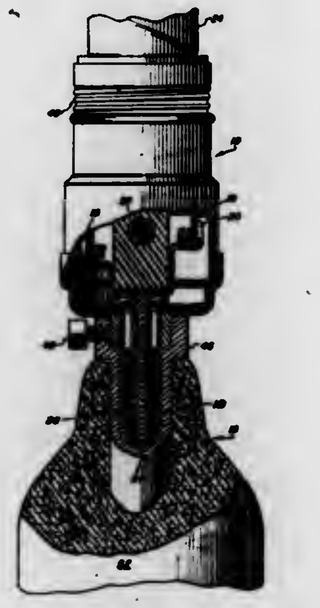
Edward G. Becke, Camp Springs, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 23, 1970, Ser. No. 83,552
Int. Cl. H01r *17/06*
U.S. Cl. 339—92 R **6 Claims**



An antenna mounting system, including a base plate having a rear coaxial connector to which a coaxial cable is permanently attached. The base plate is permanently attached to the exterior of the mounting surface with the coaxial connector extending inwardly thru a hole in the mounting surface. An antenna mounting plate or a test probe fits onto the base plate. The antenna or test probe is secured to the base plate by bolts, thereby allowing for the rapid removal of the antenna and replacement thereof by the test probe.

3,725,850
DETACHABLE LAMP SOCKET ASSEMBLY

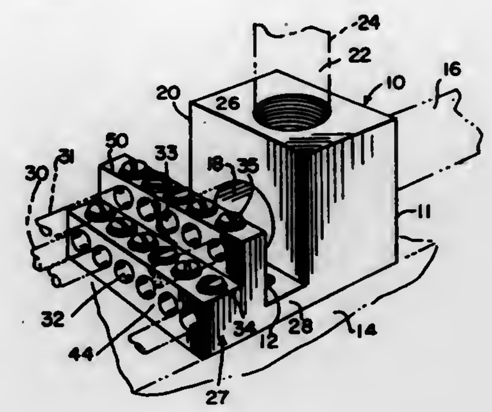
John Izumi, 105 East Ohio St., Chicago, Ill.
Filed July 6, 1971, Ser. No. 159,943
Int. Cl. H01r *13/54*
U.S. Cl. 339—92 R **3 Claims**



A detachable lamp socket assembly having a lamp socket for receiving a bulb, prongs extending from the bottom of the lamp socket, the prongs being connected within the socket to the bulb and lamp switch terminals, a lamp base assembly including a receptacle at the top thereof for detachable contact with the socket prongs and a cavity mounting position associated with the receptacle, the socket prongs being detachably insertable into the lamp base assembly for electrical engagement therewith, and the cavity sized to engage in snug fitting detachable contact with a substantially cylindrical rim provided at the bottom of the lamp socket.

3,725,851
CONNECTOR FOR HIGH AMPERAGE APPLICATIONS

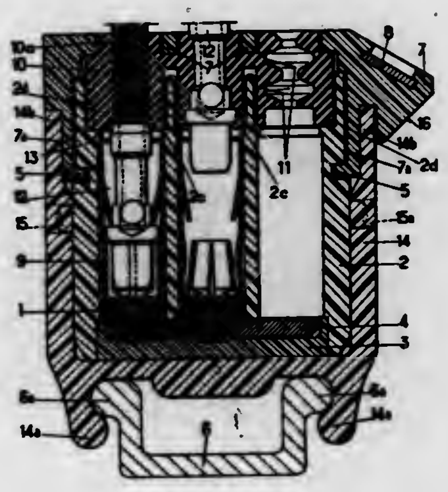
Richard L. Linn, Northbrook, Ill., assignor to Underwriters Safety Device Company, Chicago, Ill.
Filed Jan. 31, 1972, Ser. No. 221,975
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 N **8 Claims**



A unitary connector particularly suitable for high amperage applications is disclosed. It provides high density of smaller conductor connections per length of connector. A preferred embodiment facilitates visual inspection of all connections for confirmation of the completeness and security of such connection. The connector can be made from a single metal extrudate and current passes through the integral connector without passing across butting interfaces between elements within the connector assembly.

3,725,852
WATERPROOF ELECTRICAL CONNECTOR

Lucien Blanchet, Le Vesinet, France, assignor to Air LB, Colombes, France
Filed Nov. 18, 1971, Ser. No. 200,003
Claims priority, application France, Nov. 24, 1970, 7042194
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 V **6 Claims**

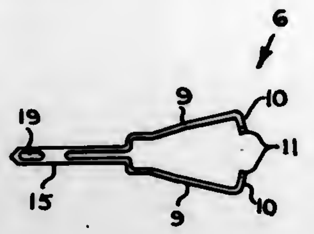


Waterproof electrical connector comprises a contact-supporting inner cup, a cover snap-fastened onto the inner cup and through which conductors are admitted to said inner cup, and an outer cup snap-fastened to the inner cup which prevents separation of said inner cup and cover.

3,725,853
ELECTRICAL CONTACT

James E. McKeown, and Donald E. Michel, both of Sidney, N.Y., assignors to The Bendix Corporation, Smithfield, Mich.

Filed March 22, 1971, Ser. No. 126,803
Int. Cl. H01r *11/22, 25/00*
U.S. Cl. 339—252 R **2 Claims**

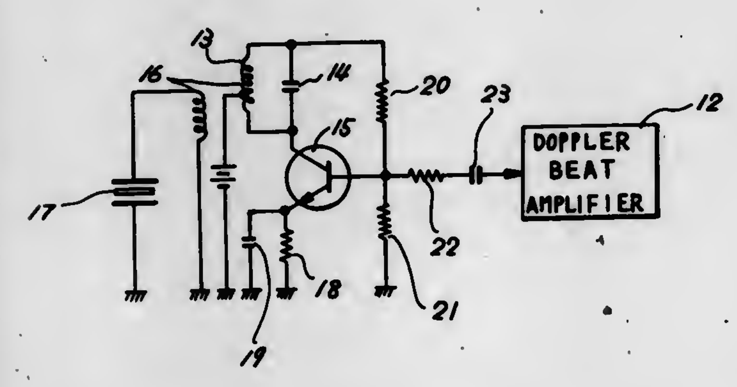


An electrical contact which is comprised of a pair of elongated male electrical conductor members having angled end portions in face-to-face relationship so that when the male members, entering opposite sides of an electrical conductor conduit are forced together, the action of the angled surfaces against one another force the male members into pressure contact with the inner wall of the conduit thereby placing the conduit in electrical circuit relationship with the male members.

3,725,854
SYSTEM FOR DETECTING MOTION OF A NEARBY TARGET BY CONTINUOUS ULTRASONIC WAVES

Kozo Otsuka, Tokyo, Japan, assignor to Toitsu Kogyo Kabushiki Kaisha, Yokohama, Japan

Continuation-in-part of Ser. No. 768,261, Oct. 17, 1968, abandoned. This application June 12, 1970, Ser. No. 45,764
Claims priority, application Japan, May 2, 1968, 43/29642
Int. Cl. G01s *9/66*
U.S. Cl. 340—1 R **4 Claims**



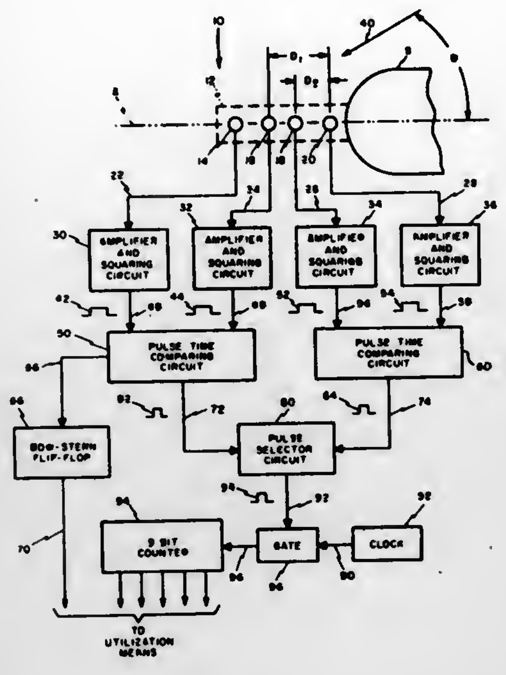
A system for detecting motion of a nearby target by continuous ultrasonic waves comprising an ultrasonic wave resonator, synchronized with a continuous wave generator, and means for detecting a minute change in the radiation impedance of said ultrasonic wave resonator.

3,725,855
SYSTEM FOR DETERMINING DIRECTION OF ARRIVAL OF SIGNALS

Francis J. Murphree, Winter Park; Peter D. Kenndey, Casselberry, and Richard B. Webster, Winter Park, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 23, 1971, Ser. No. 173,762
Int. Cl. H04b *7/08*
U.S. Cl. 340—6 R **7 Claims**

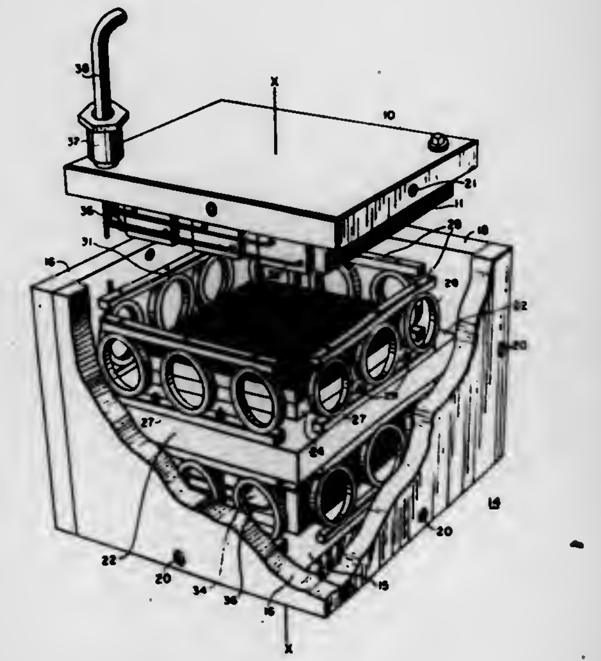
Determination of direction from which energy waves, e.g., sonar signals, arrive utilizes a plurality of pairs of hydrophone probes on a common axis and averages time delays of one pair with delays of other pair. Circuitry rejects first portion of signals, then selects equal number of signals from each probe pair for averaging.


10
40
AMPLIFIER AND SQUARING CIRCUIT
AMPLIFIER AND SQUARING CIRCUIT
AMPLIFIER AND SQUARING CIRCUIT
AMPLIFIER AND SQUARING CIRCUIT
PULSE TIME COMPARING CIRCUIT
PULSE TIME COMPARING CIRCUIT
BOW-STERN FLIP-FLOP
PULSE SELECTOR CIRCUIT
9 BIT COUNTER
GATE
CLOCK
TO UTILIZATION MEANS

3,725,856
PUSH-PULL TRANSDUCER

John Chervenak, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 24, 1956, Ser. No. 611,798
Int. Cl. G01v *1/00*
U.S. Cl. 340—8 R **12 Claims**

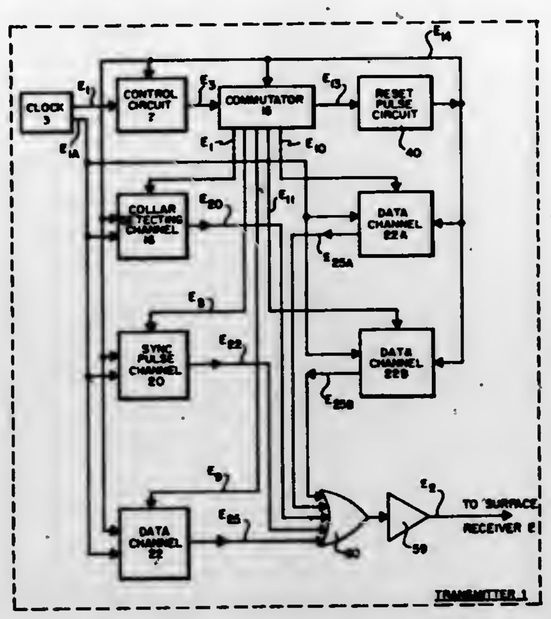


An electro-acoustic transducer is disclosed comprising an enclosing hollow piston element of relatively light rigid nonmagnetic material; a central vibratory mass element is situated within said piston element having opposite portions of magnetic material. The use of the piston-action vibrator unit eliminates complex modes of vibration, resulting in higher efficiency than ordinary diaphragm action.

3,725,857
MEANS AND METHOD FOR TIME-SHARING MULTICHANNEL WELL LOGGING

Robert William Pitts, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,395
Int. Cl. G01v *1/22*
U.S. Cl. 340—18 CM **33 Claims**

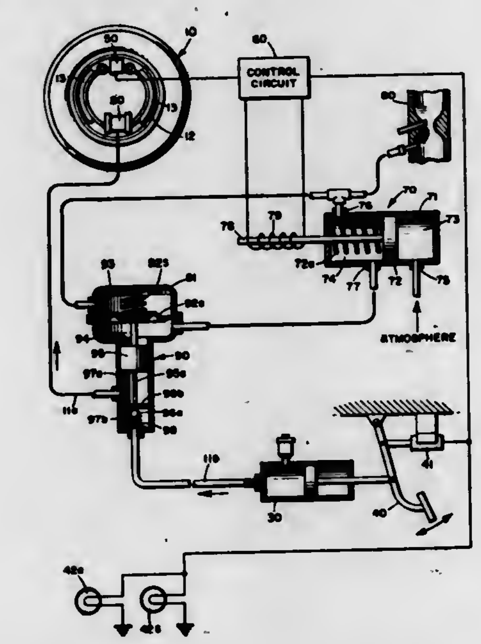


A transmitter in a borehole provides a pulse train to a surface receiver. Each cycle of the pulse train is divided into a plurality of time intervals, and the pulses in each time interval correspond to a different sensed condition of the borehole or the nature of the earth formation traversed by the borehole. The receiver separates the pulses of the pulse train according to time interval and provides an output for each time interval. Each output provided by the receiver corresponds to a different sensed condition of the borehole or nature of the earth formation.

3,725,858
VEHICLE SKID CONTROL DEVICE

Hiroshi Arai, and Jun Ohta, both of Toyota-shi, Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo, Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Claims priority, application Japan, Dec. 30, 1970, 45/134519
Int. Cl. B60t *8/08*
U.S. Cl. 340—53 **2 Claims**

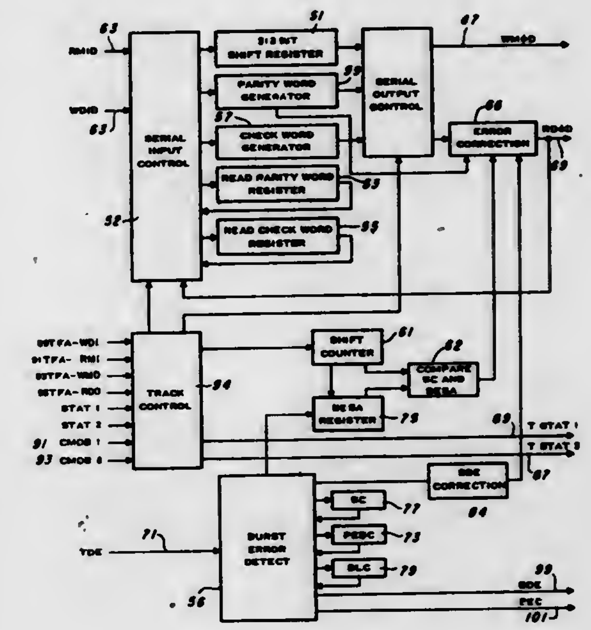


A skid control device for vehicles, comprising a wheel velocity voltage generator adapted to generate a voltage corresponding to wheel velocity, a control circuit adapted to produce a braking pressure reducing signal by determining the occurrence of wheel lock from the wheel velocity voltage, an electromagnetic three-way change-over valve responsive to the braking pressure reducing signal to modulate the braking pressure, a braking pressure modulator which changes the braking pressure of the wheel cylinder by means of the operating signal from said change-over valve, a braking switch adapted to produce an electric signal in conformity with the effort applied to the brake pedal, and an AND circuit adapted to produce a skid control signal in accordance with the "and" of the signal derived from the controller and the signal derived from the braking switch, thus preventing the wheel from becoming locked during braking.

3,725,859
BURST ERROR DETECTION AND CORRECTION SYSTEM

Charles M. Blair, Dallas, and Frank L. Huband, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 14, 1971, Ser. No. 152,941
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL **4 Claims**



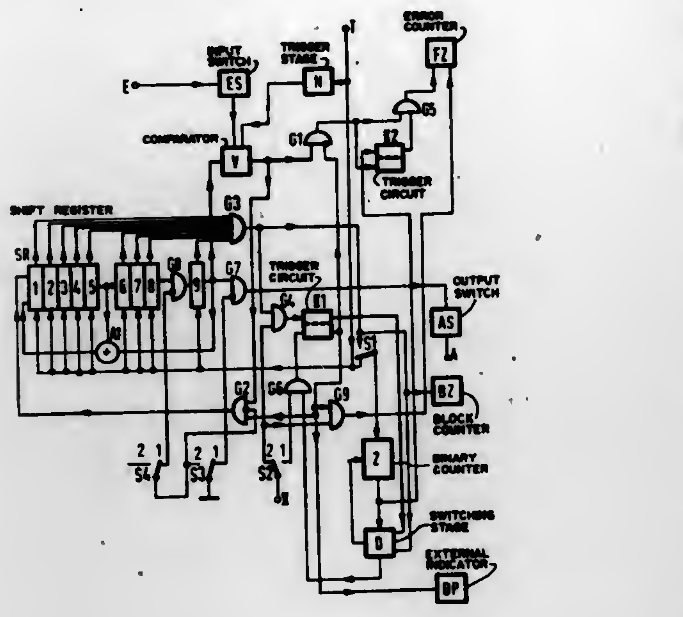
A data communication system has a source of data. The data is divided into data segments. When a burst error is indicated, the location of the burst error is determined and the burst error is corrected.

3,725,860
PROCESS AND CIRCUIT ARRANGEMENT FOR THE MEASURING OF THE FREQUENCY OF BIT ERROS AND BLOCK ERRORS WITH OPTIONAL BLOCK LENGTH IN THE TRANSMISSION OF BINARY CODED DATA CHARACTERS

Jurgen Kemper, Zurich, Switzerland, and Erwin Schenk, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed April 20, 1971, Ser. No. 135,645
Claims priority, application Germany, April 29, 1970, P 20 21 098.4
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 AX **4 Claims**

A process and apparatus are described for measuring the frequency of bit errors and block errors with optional block length in the transmission of binary coded data characters, in which at the sending station, a certain test text with fixed text

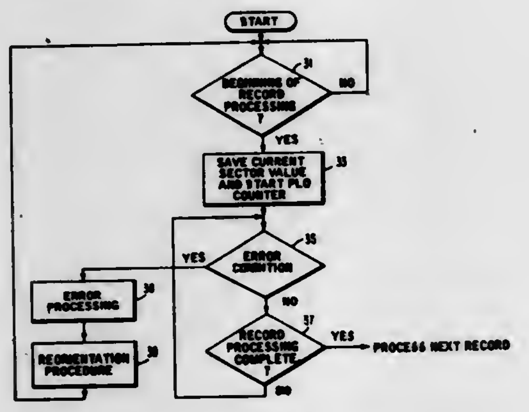


cycle length is sent out and in which the error measurement takes place at a receiving station.

3,725,861

APPARATUS AND METHOD FOR ESTABLISHING EXACT RECORD REORIENTATION AFTER ERROR CONDITION IN A DATA STORAGE SUBSYSTEM

Robert J. Hancock, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 10, 1971, Ser. No. 197,459
Int. Cl. G11c *29/00*
U.S. Cl. 340—146.1 F **5 Claims**

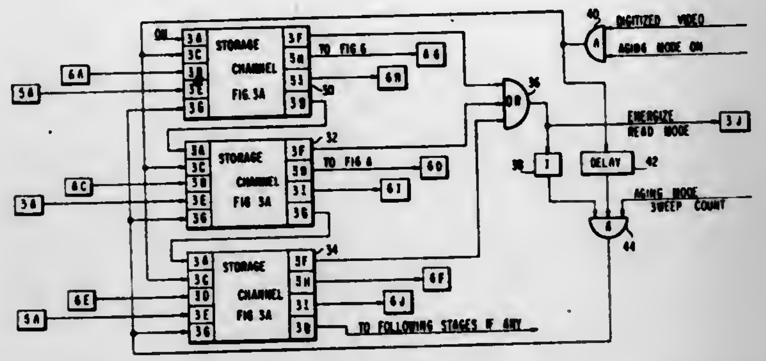

START
BEGINNING OF RECORD PROCESSING ?
NO
YES
SAVE CURRENT SECTOR VALUE AND START PLO COUNTER
ERROR CONDITION
YES
NO
ERROR PROCESSING
REORIENTATION PROCEDURE
RECORD PROCESSING COMPLETE ?
YES
PROCESS NEXT RECORD
NO

Apparatus and a method in a cyclically readable storage subsystem for establishing exact record reorientation on a record, in order to process said record on a read cycle subsequent to the detection of an error condition in the record. Variable length records are recorded on circumferential tracks, said tracks being divided logically into sectors. At the beginning of processing each record, its sector number is stored and a counter having a period of precisely one revolution is started. If an interrupt due to an error condition establishes the interrupt is handled and, when the selected processing transducer is at the saved sector value minus one on a subsequent revolution, a specified time delay T is begun. At time T, a timer creates a first window W1 under which the counter is continuely checked for a predetermined value which the counter should achieve just prior to the beginning of the record. Upon detection of this value, a second timer creating a second window W2 is started and a beginning of record indicator is searched for under this window. Detection of the beginning of record indicator within W2 extablishes the reorientation.

3,725,862

LINE FINDING SYSTEM AND METHOD FOR CHARACTER RECOGNITION

David C. Roberts, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 790,615, Jan. 13, 1969, abandoned. This application June 25, 1971, Ser. No. 157,047
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 H **8 Claims**

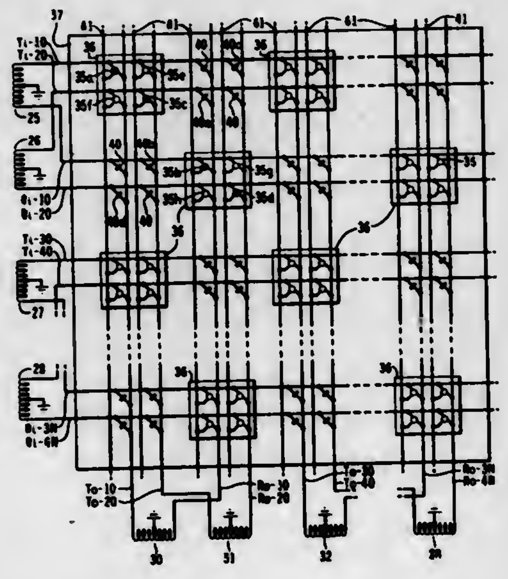


In an optical character recognition system the position of a line of characters is detected during the period when the recognition system is not reading the characters but is executing an aging scan which is normally used only for moving the recognition beam around to prevent burns on the face of the recognition system video scanner. The line positions are stored for use during the read mode of the recognition system. The positions of lines actually read during the read mode are compared with these stored positions to determine that all lines in stored positions were actually read. If not read, the read mode is re-executed to read these lines.

3,725,863

BALANCED SEMICONDUCTOR SWITCHING NETWORK CIRCUIT AND CONSTRUCTION

Laimons Freimanis, Chicago, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 17, 1971, Ser. No. 209,330
Int. Cl. H04q *3/50*
U.S. Cl. 340—166 R **13 Claims**

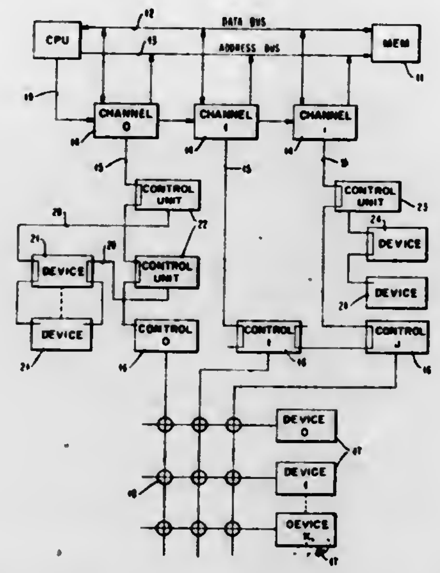


A circuit organization and construction for a solid state, balanced switching network which compensates for the inherent capacitance presented by inactive crosspoint elements. Intersecting tip and ring conductors are mounted on opposite sides of a glass plate with thyristor chips mounted at alternating intersecting points within apertures in the plate. At the other intersecting points, the flat, coordinate conductors are so dimensioned that, with the interposed glass as a dielectric, capacitors are formed which present capacitances at idle crosspoints substantially canceling the capacitances presented by nonconducting thyristors.

3,725,864

INPUT/OUTPUT CONTROL

William A. Clark, Boulder, Colo.; Kent A. Salmond, Los Gatos, Calif., and Thomas S. Stafford, Dunwoody, Ga., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed March 3, 1971, Ser. No. 120,563
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **54 Claims**



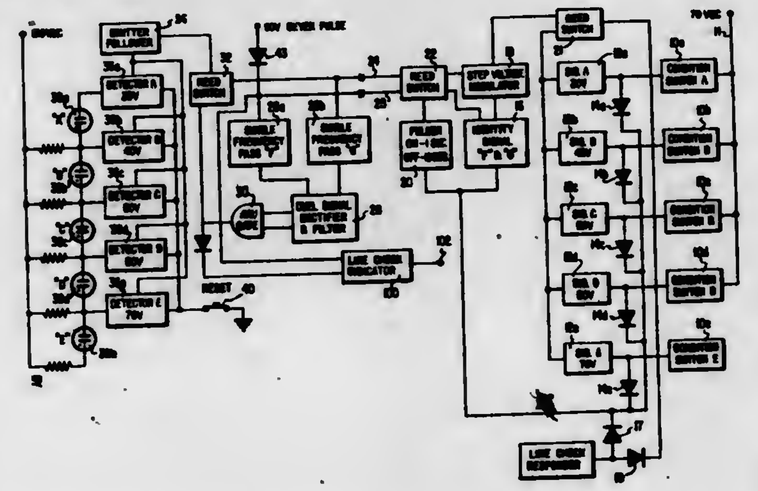
An input/output control system for a data processor which controls the transfer of data from I/O devices (such as disks or drums in which data are recorded in fixed sector lengths and in which the devices are capable of signalling when they reach any desired sector).

A plurality of channels for scheduling and executing input/output programs are provided, each capable of being logically connected to a device through a cross-point switch. I/O tasks are placed in a queue common to the channels. Channels extract tasks from the queue and execute channel programs associated with the tasks. During latent periods of devices channel programs corresponding to the devices are queued in device queues. This frees a channel to go on to another task. When a device is at a point where its program can be continued, any free channel which has access to the device responds, re-enters the program by extracting it from the device queue, and resumes execution of the program.

3,725,865

ELECTRONIC ALARM SYSTEM

Anthony Prince Fairchild, Aspen, Colo., assignor to Synectron, Inc., Aspen, Colo.
Filed May 3, 1971, Ser. No. 139,792
Int. Cl. G08b *19/00*
U.S. Cl. 340—172 **10 Claims**

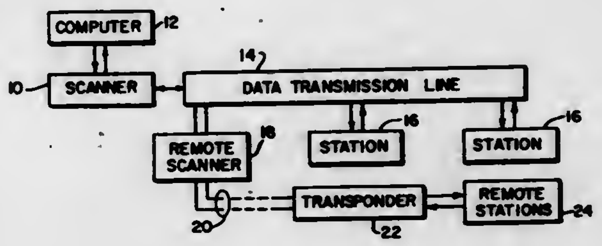


An electronic alarm system providing an indication of conditions existing at a number of locations with each location being equipped with a number of sensors for indicating each of a number of different types of conditions. Each sensor at a given location, when actuated, produces a step voltage output having an amplitude different from the amplitudes produced by the other sensors at that location. The step voltage output of a sensor at a given location is modulated by one signal of a dual frequency signal, the frequencies of which are peculiar to the particular sending station or location. A pulse operated reed switch is placed at the output of each sending station and permits the modulated signal to be transmitted therefrom in response to the presence of an output at one of the condition response sensors. The signal is transmitted to a central location containing a plurality of receiving stations, and the transmitted signal will actuate that receiving station which is frequency-tuned to the transmitted signal. An arrangement of Zener diode and silicon controlled rectifier detectors are used to sense the D.C. voltage level to identify the condition existing at the sending or remote station.

3,725,866

DATA COMMUNICATION SYSTEM

Homer R. Oldfield, Jr., Weston; Edward B. Rawson, Lincoln, and Daniel B. Schwarzkopf, Stow, all of Mass., assignors to Searle Medidata, Inc., Waltham, Mass.
Filed March 8, 1971, Ser. No. 121,938
Int. Cl. G06f *3/04*
U.S. Cl. 340—172.5 **13 Claims**



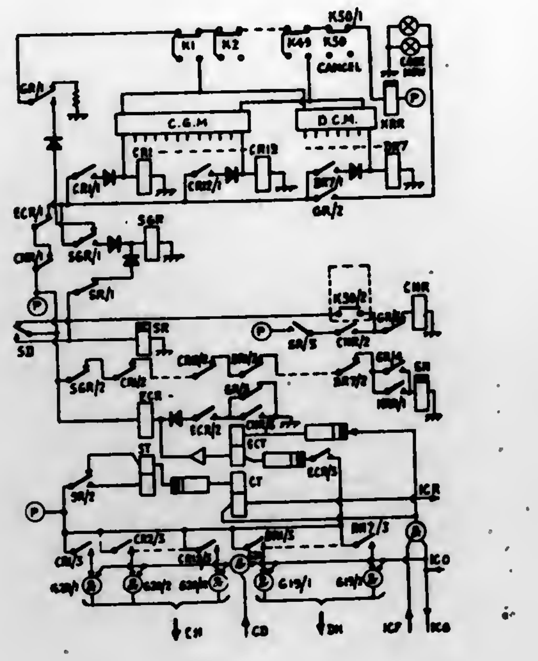
A data communication system especially adapted for multiphasic health screening in which stations remote from a central processor by a link of significant communications delay are communicative with the system identically as local stations operative in the system without delay.

3,725,867

A SELECTIVE CONTROL SYSTEM FOR DISPATCHING ARTICLES ON A CONVEYOR

John H. Jordan, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England
Filed April 22, 1970, Ser. No. 30,840
Claims priority, application Great Britain, May 2, 1969, 22,498/69
Int. Cl. G06k *17/00*; G11b *27/14*; G05b *19/30*
U.S. Cl. 340—172.5 **7 Claims**

A control system is proposed which is of more special but not exclusive application to the dispatching of articles on a conveyor and where the conveyor can be carrying many objects at one time which are destined for discharge at different points. Dispatching of an object is accompanied by entry into a computer type store of a count representation and a representation which identifies the action to be performed when the count representation has been decremented to a significant value. Decrementing of the count representation is effected after predetermined elapsed intervals or events which in the case of the conveyor system correspond to set distances covered by the conveyor.

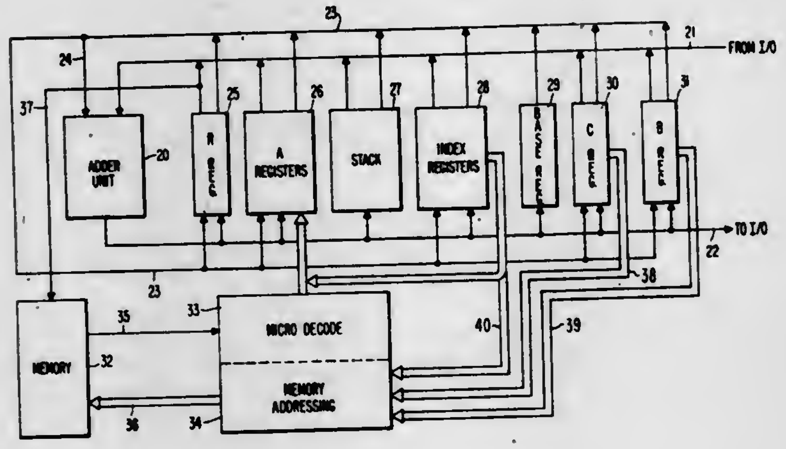


3,725,868

SMALL RECONFIGURABLE PROCESSOR FOR A VARIETY OF DATA PROCESSING APPLICATIONS

Michael M. Malmer, Jr., Livonia; Cornelius C. Perkins, Birmingham; Donald W. Waldenmayer, Novi; Patrick J. Chowning, and Leonard R. Gardner, both of Clawson, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 19, 1970, Ser. No. 81,786
Int. Cl. G06f *9/16*
U.S. Cl. 340—172.5 **3 Claims**



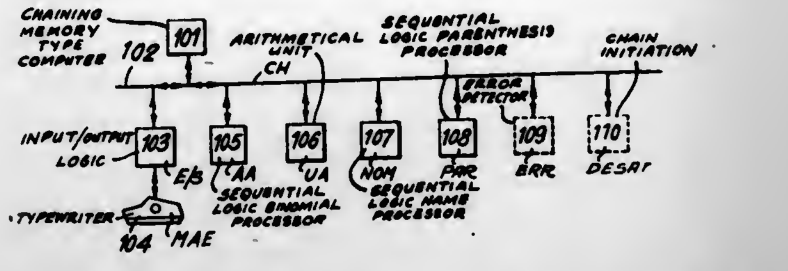
An improved microinstruction data processor capable of operating as an independent processor or as a terminal unit for a large general purpose computer employing a read/write disk memory to hold both macroinstructions and microinstructions, wherein the microinstructions implement macroinstructions. The memory has a macroinstruction portion and a microinstruction portion having a changeable boundary therebetween to accomodate a variable number of microinstructions. A push-down stack facilitates microprogram branching and returning by holding microinstruction return addresses when microinstructions call for branching to microprogram subroutines. A microinstruction decoding register augmented with a microinstruction buffer register decodes a previously fetched microinstruction while a new microinstruction is fetched from memory.

3,725,869

COMPUTER DEVICE

Boris Alexandre Sokoloff, 4, rue Boris Vilde, Fontenay-aux-Roses, France

Filed Nov. 23, 1970, Ser. No. 92,117
Int. Cl. G06f *7/38, 13/06*
U.S. Cl. 340—172.5 **8 Claims**


CHAINING MEMORY TYPE COMPUTER
102
101
ARITHMETICAL UNIT
CH
SEQUENTIAL LOGIC PARENTHESIS PROCESSOR
CHAIN INITIATION
ERROR DETECTOR
INPUT/OUTPUT LOGIC
103
105
106
107
108
109
110
E/S
AA
UA
NOM
PAR
ERR
DESAT
SEQUENTIAL LOGIC BINOMIAL PROCESSOR
SEQUENTIAL LOGIC NAME PROCESSOR
TYPEWRITER
104
MAE

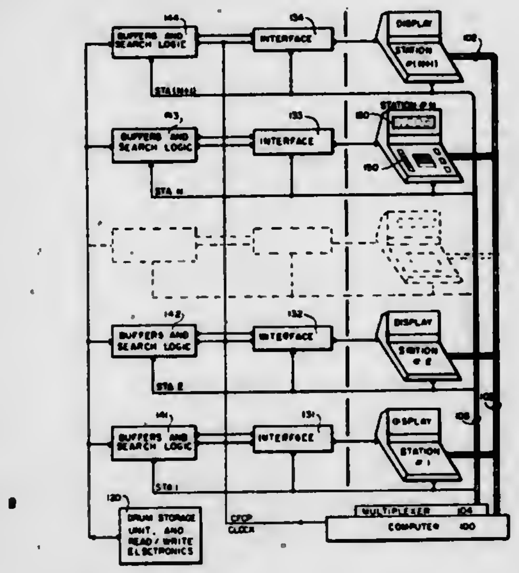
Computer device of the immediate interpretation and evaluation type, characterized by the fact that it is combined with a memory that can be used in accordance with the principles of symmetrical linking of different elements of one or several pieces of information and enabling complex expressions written in accordance with specific rules without the aid of preparation, translation or coordination programs of any kind, to be evaluated rapidly. The invention is applicable to automatic data processing.

3,725,870

PARALLEL-ACCESS DATA FILE SYSTEM

Marvin Felcheck, Monsey, N.Y.; Wallace Kirschner, Trumbull, Conn.; Robert J. Jarosik, Stratford, Conn., and Charles W. Capes, Bethel, Conn., assignors to Pitney Bowes-Alpex Inc., Danbury, Conn.

Filed Dec. 24, 1970, Ser. No. 101,371
Int. Cl. G06f *7/34, 13/06*; G06k *15/20*
U.S. Cl. 340—172.5 **12 Claims**



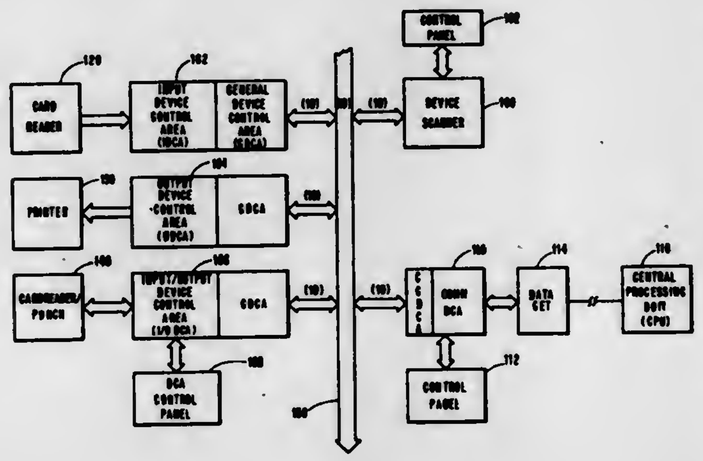
A central file system in which information in the form of data associated with identifying operands is stored in random sequence at separate locations of a storage medium, and these locations are cyclically scanned by read/write means at the storage medium. Multiple participating access stations having display means and data-input means are each coupled with their own comparator means, and all comparator means can simultaneously receive the scanned operands and data on an equal priority basis, and compare the operands arriving on-the-fly with operands respectively entered at the associated stations. When coincidence is found at any comparator, the data associated with that operand is temporarily stored for display at the associated station. At the beginning of each storage medium location being read-out, each station seeking coincidence has its search logic reset to assume coincidence for that particular storage location, and then a bit-by-bit on-the-fly comparison is made as the information is read out. If coincidence persists for the whole operand being read from that storage location, the data therein is retained for display. If not, the data is dumped from that station's temporary storage register by replacement with data read-out from the next storage location to be scanned. Any station can update the central storage medium's information by entering a priority mode, in which the other stations are momentarily locked-out from access, and then erasing and/or replacing data in a particular storage medium location.

3,725,871

MULTI FUNCTION POLLING TECHNIQUE

Robert E. Heuttner, Acton; Edward B. Tymann, Natick; and Richard Nolin, North Andover; all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 11, 1971, Ser. No. 114,431
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **41 Claims**


CONTROL PANEL
CARD READER
120
102
INPUT DEVICE CONTROL AREA (IDCA)
GENERAL DEVICE CONTROL AREA (GDCA)
DEVICE SCANNER
100
PRINTER
130
104
OUTPUT DEVICE CONTROL AREA (ODCA)
GDCA
CARDREADER PUNCH
140
INPUT/OUTPUT DEVICE CONTROL AREA (I/O DCA)
GDCA
DCA CONTROL PANEL
DATA SET
114
116
CENTRAL PROCESSING UNIT (CPU)
CONTROL PANEL
112
110

Input devices or output devices connected to a common bus of a communications terminal are polled in response to a polling sequence specially coded to request information from either a single input device or number of input devices or status information from either input or output devices. The sequence is transmitted over a communications channel to control apparatus coupled to the bus. The control apparatus stores representations in accordance with the coding of address information items included within the sequence and initiates operations in response to and in correspondence with the stored representations.

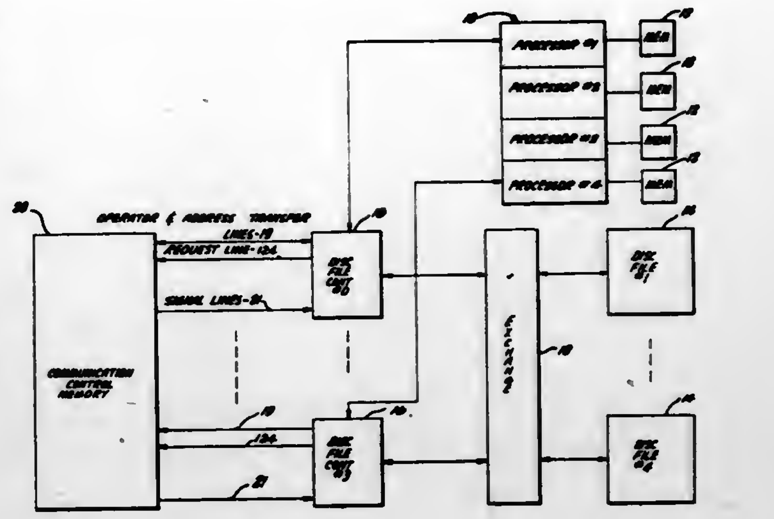
3,725,872

DATA PROCESSING SYSTEM HAVING STATUS INDICATING AND STORAGE MEANS

Edward Balogh, Jr., Diamond Bar; James Russell Bennett, Glendora; William F. Keenan, Goleta; William A. Logan, Covina, and John S. Murphy, Altadena, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 804,613, March 5, 1969. This application March 3, 1971, Ser. No. 120,717
Int. Cl. G06f *9/18, 15/16*
U.S. Cl. 340—172.5 **26 Claims**

Status indicating and storage means for an addressable memory shared by a plurality of disc file control units. The control means provide addresses to the memory for initiating an access therein and provide the same address to the status indicating and storage means. The status indicating and storage means receives the address and has a memory in which received addresses are stored together with an associated indicium. The indicium indicates whether the corresponding address is in use. The status indicating and storage means is operative for providing an output indication of a stored indication of use for a received address.

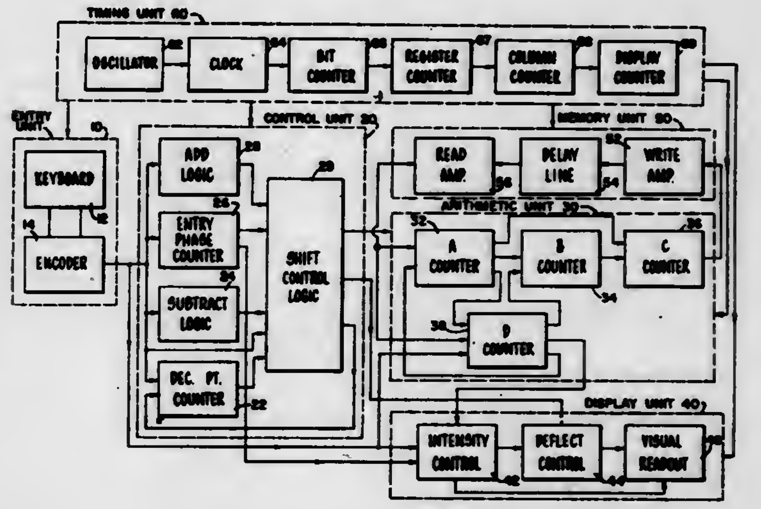


3,725,873

CALCULATOR HAVING A SEQUENTIAL ACCESS STACK

George H. Hare, Oakland, Calif., assignor to The Singer Company

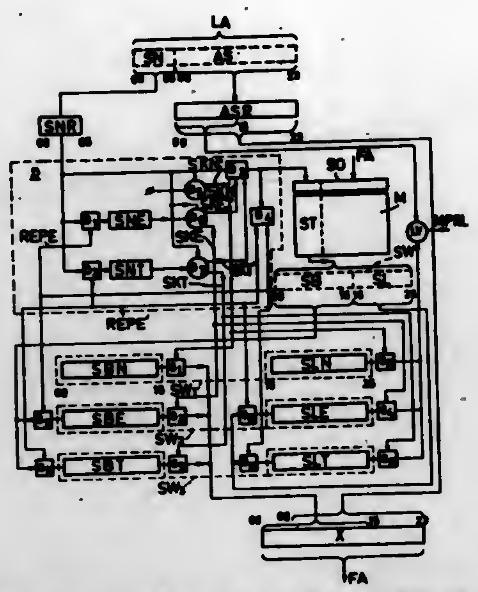
Continuation of Ser. No. 725,960, May 1, 1968, which is a continuation of Ser. No. 366,235, May 11, 1964, abandoned. This application April 7, 1971, Ser. No. 132,237
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **20 Claims**



An electronic desk top calculator wherein digit data is entered into an entry register, and arithmetic and other control functions are initiated, by means of a keyboard, and wherein the entered data is stored in an automatic sequential access store. The entry register and at least one of the registers of the automatic sequential access store are displayed in superadjacent rows of juxtapositioned digits with like-order digits aligned column-by-column. Whenever new data is entered, any data previously contained in the entry register and the registers of the automatic sequential access store is shifted to the next higher order register in the store. Similarly, on the initiation of any function which removes the data from the entry register, or which combines the data in the entry register with the data in the next higher order register in the store as the result of a mathematical function, any data contained in the remaining registers of the store is shifted to the next lower order register of the store.

3,725,874
SEGMENT ADDRESSING

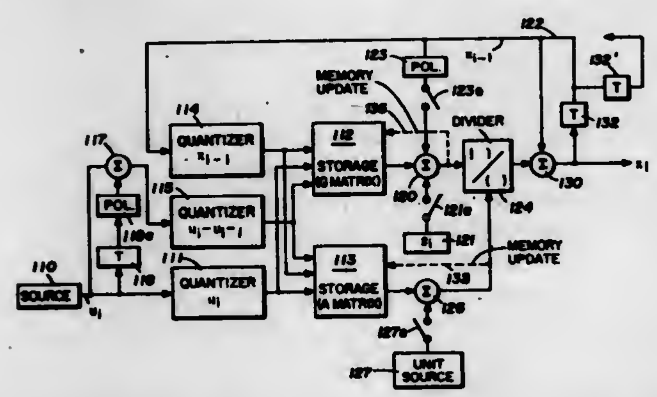
Jean J. Marie D. Van Heel, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 822,681, May 7, 1969, abandoned. This application Sept. 2, 1971, Ser. No. 177,442
Claims priority, application Netherlands, May 11, 1968, 6806735
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **4 Claims**



A computer comprising a store addressable in segments, containing segment words selectable by segment numbers, which words contain data of the segment, for example, a segment base address and a segment length information, in which two or three segment word registers are provided for storing two or particularly three segment words in order to ensure a rapid run of the programmes in the event of frequent change of addressing in a plurality of segments. The computer for this purpose with a detection device for detecting whether and, if so, in which of the in total two or three segment word registers the segment word of an indicated segment in a segment number register is stored. In the presence of the relevant segment word it is released via gates for calculating the address and for length check. In the absence of said segment word this word is carried on from the store to a segment word register. Particularly one of the three segment word registers is constantly reserved for storing the segment word of one given segment (O-segment).

3,725,875
PROBABILITY SORT IN A STORAGE MINIMIZED OPTIMUM PROCESSOR

William C. Choate, and Michael K. Masten, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 889,143, Dec. 30, 1969, abandoned. This application Jan. 14, 1972, Ser. No. 217,771
Int. Cl. G06f *15/18*
U.S. Cl. 340—172.5 **6 Claims**



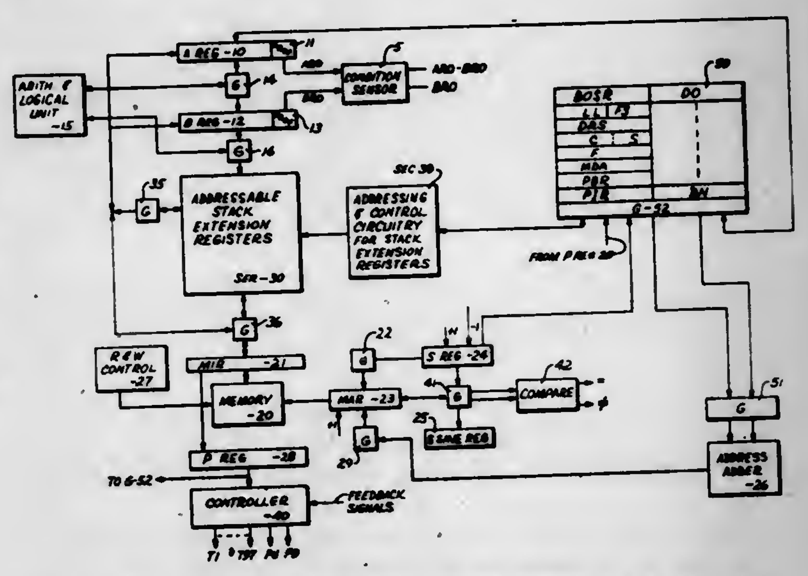
A trainable signal processor having at least one input signal *u* and one desired output signal *z* applied thereto during training and having at least one actual output signal derived therefrom during execution is provided. From each member of the input sequence $u(t_i)$ a key K_i is generated. K_i may have only a finite number of values and is a single valued function of *u*. Corresponding to each value of the K_i generated during training, a trained response is derived from samples of the desired output signal *z* measured at those instances t_i at which that value of K_i occurred. This operation is such that the contemporary value of the trained response is maintained in a tree allocated file. The file thereby associates with each key K_i a trained response. Storage is provided for only those K_i which actually occurred during training, which is an important attribute since these typically constitute a small fraction of those values which may theoretically occur, especially when the input is of multi-dimensional character. During execution the tree allocated file provides for efficient retrieval of the trained responses which are employed in determining the actual output signal of the processor.

Whereas the tree allocation can greatly reduce the storage relative to that of the storage-wise inefficient method of direct addressing, the speed of operation is less due to the need to perform a sequence of operations on components of the key. Disclosed herein is a means of greatly improving the speed of the tree allocated file while retaining its advantages.

The means involves control of the tree structure through a probability sorting operation which is effected periodically to arrange the nodes within the tree such that the modes of a filial set which are selected most frequently during training are placed near the entry node of the set. Specifically the node most likely to be selected is made the entry node of the set; it is chained to the node next most likely to be selected, etc., leaving the node least likely to be selected the terminal node of the set. This property holds for all sets of nodes within the tree.

3,725,876
DATA PROCESSOR HAVING AN ADDRESSABLE LOCAL MEMORY LINKED TO A MEMORY STACK AS AN EXTENSION THEREOF

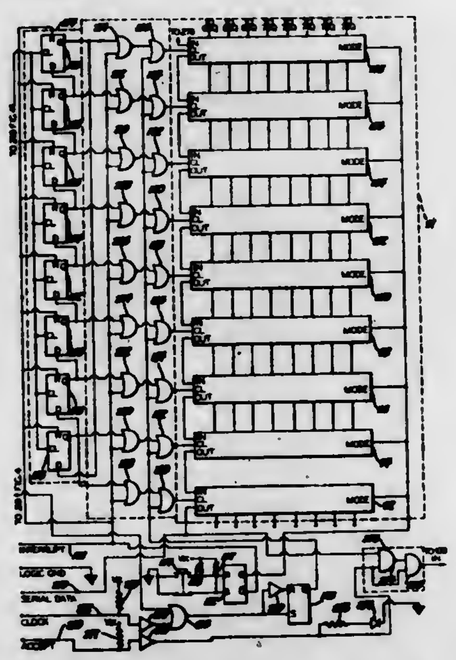
Erwin A. Hauck, Arcadia, Calif., assignor to Burroughs Corportion, Detroit, Mich.
Filed Feb. 8, 1972, Ser. No. 224,420
Int. Cl. G06f *7/10*; G11b *27/00*
U.S. Cl. 340—172.5 **17 Claims**



A data processing system has a main memory for storing a stack of information for processing. Stored in the main memory stack are control words which mark off procedural areas of the stack, operand words for processing, and reference words for indicating locations of control words and of operand words. A pair of high speed registers are provided for coupling information to the processor's arithmetic unit for processing. These two registers are linked to the stack so that they are the top two available locations of the stack. The processor includes a plurality of high speed registers which are linked to the memory stack to form a stack extension. Stored in the stack extension are control words that form a part of an address environment list and a stack history list; parameters that are local to the current addressing environment; and operands that have been called to the top of the stack. Words stored in the stack extension are captured and are not pushed down into the memory stack during the execution of a procedure. Means are provided for addressing each register within the stack extension and for coupling captured information therein to the register which is the top available location of the stack. Means are provided for updating the stack extension when a new procedure is entered so that it will capture the information relating to the new procedure.

3,725,877
SELF CONTAINED MEMORY KEYBOARD

Ronald B. Kell, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed April 27, 1972, Ser. No. 248,290
Int. Cl. G06f *3/02*, *11/06*
U.S. Cl. 340—172.5 **3 Claims**

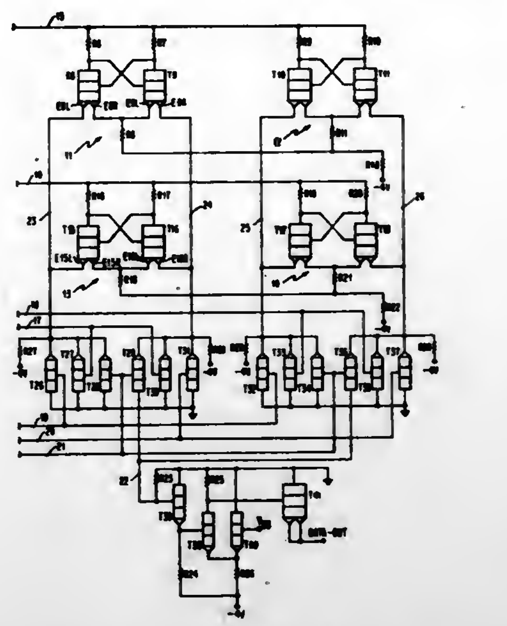


A keyboard unit is disclosed for temporarily storing information for subsequent transfer to a computer. The unit includes a plurality of pushbuttons interconnected with a two-digit display through encoding and decoding circuitry, for operator verification of data entered and further includes a shift register memory for temporarily storing the data entered. The shift register memory is programmed by a counter so that the data is sequentially stored in the individual shift registers. The shift registers are operable in either a parallel input or serial output mode under the control of a flip-flop which responds to connection and disconnection of the memory keyboard with a computer. During the temporary storing of data the shift registers operate in a parallel mode. When the keyboard memory is connected with a computer the shift registers are switched to their serial output mode and the data is transmitted to the computer under computer control. A code word is stored in one of the memory shift registers to permit identification of the keyboard memory unit from which the data is being received. In the serial transmission of data to the computer a wrap-around circuit is provided which permits redundant transmission of data for verification by the computer.

3,725,878
MEMORY CELL CIRCUIT

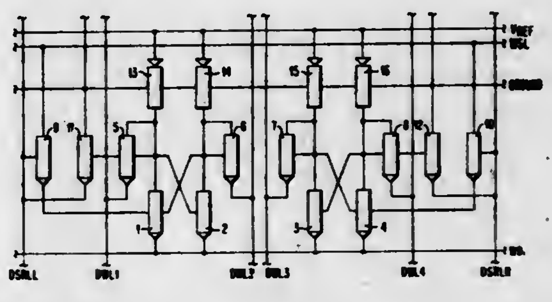
Andrew R. Berding, Sunnyvale, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,536
Int. Cl. G11c *11/40*; H03k *3/286*
U.S. Cl. 340—173 FF **6 Claims**

A memory cell circuit is provided with a plurality of cells arranged in rows and columns. Each cell comprises a pair of cross-coupled transistors with the collector of each transistor direct-coupled to the base of the other transistor Each transistor has a pair of emitters. One emitter of each pair is connected in a current-switch mode with the emitters of the sense amplifier transistors.



3,725,879
FUNCTIONAL MEMORY CELL

David H. Martin, Canterbury, England, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 16, 1970, Ser. No. 89,791
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 AM **10 Claims**

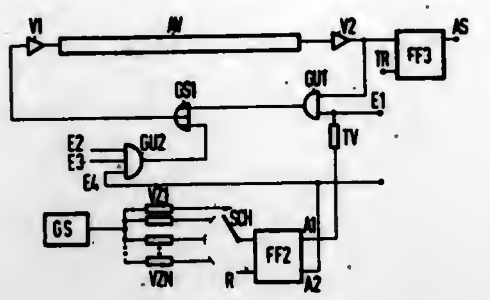


A functional memory cell circuit is provided with a sense line and a drive line for each word, and a pair of search lines for each digit. A plurality of binary cells are arranged in arrays. Circuitry is provided for causing current to flow in the word sense lines in response to mismatches between the signal states of the digit search lines as compared with the respective signal states of the binary cells. The amplitudes of the search currents in the word sense lines are relatively constant irrespective of the number of mismatches in each word.

3,725,880
ARRANGEMENT FOR THE DETECTION OF FAULTS IN ELECTRONIC CIRCUITS

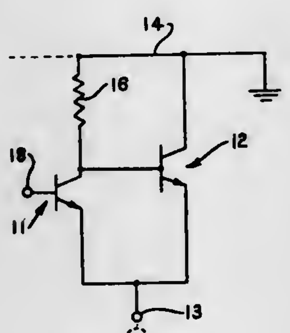
Harald Sachs, Faistenhaar, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed March 4, 1971, Ser. No. 120,987
Claims priority, application Germany, March 13, 1970, P 20 12 068.7
Int. Cl. G11c *21/00*
U.S. Cl. 340—173 RC **3 Claims**

An arrangement for searching for errors in electronic circuits employs a circulating memory for storing the output signals of the circuit to be checked, a gate circuit which generates a write-stop signal upon the occurrence of an error to prevent storage of the output signals into the circulating memory, and by means for indicating the content of the circulating memory.



3,725,881
TWO TERMINAL BIPOLAR MEMORY CELL

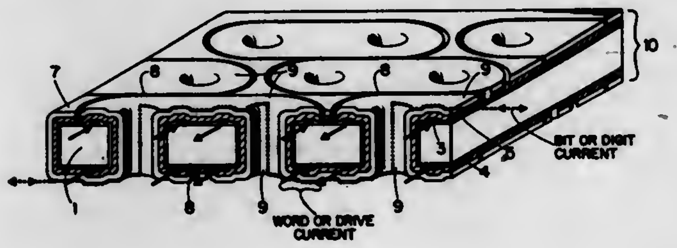
Roger B. Dellor, Palo Alto, Calif., assignor to Intersil Incorporated, Cupertino, Calif.
Filed Aug. 25, 1971, Ser. No. 174,878
Int. Cl. G11c ***11/40;*** **H03k** ***3/286***
U.S. Cl. 340—173 FF **6 Claims**



A pair of transistors are interconnected with a single resistor as a bipolar integrated circuit to provide a structure having two stable states which may then represent binary states in a memory unit. Isolation and interconnection requirements are minimized to thus materially increase the packing density possible in a single chip..

3,725,882
MEMORY ELEMENT AND CONFIGURATION

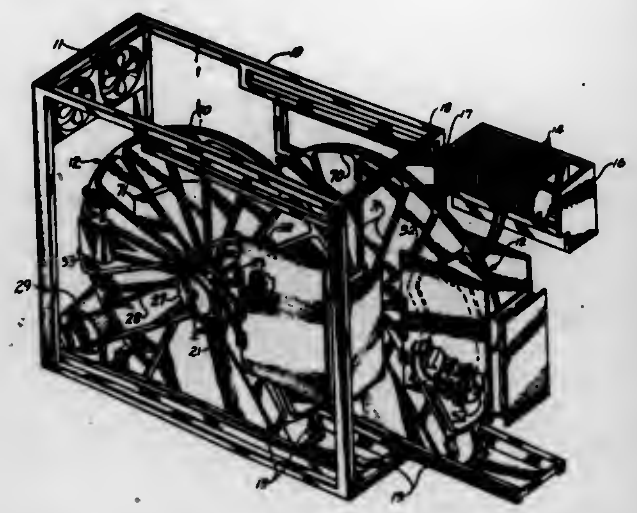
John H. Kefalas, North Billerica, and Roman E. Lukianov, Framingham, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 18, 1969, Ser. No. 886,273
Int. Cl. G11c ***5/04, 11/06***
U.S. Cl. 340—174 M **8 Claims**



A data storage device has a number of mutually separate, closed-flux-path magnetic elements arranged within a plane in an array of columns and rows. Each of a first set of conductors surrounds a respective column of magnetic elements and is magnetically linked therewith. Corresponding to each row of elements is a conductor of a second set of conductors which threads through the magnetic elements of its respective row.

3,725,883
MODULAR DISK FILE UNIT

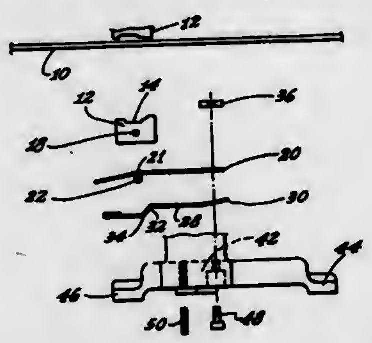
Eugene E. Bennett, and Alpheus F. Stansell, both of Thousand Oaks, Calif., assignors to Burroughs Corporation, Detroit, Mich.
Continuation of Ser. No. 864,296, Oct. 3, 1969. This application March 13, 1972, Ser. No. 234,170
Int. Cl. G11b ***5/00, 5/74;*** **G11c** ***11/02***
U.S. Cl. 340—174.1 C **12 Claims**



An arrangement for magnetic disk memories having a plurality of modular memory disk units in separate housings mounted in a single cabinet is described. Support yokes for each unit support a pair of hubs with the rotatable disk mounted between bearings in the two hubs. In addition, a closed, substantially circular, housing around the disk is mounted on the hubs to maintain dimensional stability relative to the disk in radial and circumferential directions. Magnetic recording heads are mounted on sides of the housing generally toward the periphery and are, therefore, maintained in precise position relative to the disk. Matched pairs of preloaded angular contact bearings are employed for mounting the disk on a shaft in the hub and both inner and outer races of the bearings are clamped in place. Undue loads on the bearings are prevented by making the housing with flexural rigidity in a direction along the axis of the bearings high enough to hold the recording heads in substantially fixed position and low enough to apply an insubstantial axial load on the bearings.

3,725,884
FLYING HEAD SUPPORT WITH DAMPING MEANS

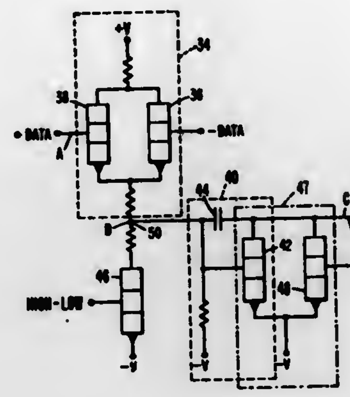
Irwin B. Garfein, Los Angeles, Calif., assignor to Engineered Data Peripherals Corporation, Santa Monica, Calif.
Filed Aug. 20, 1970, Ser. No. 65,516
Int. Cl. G11b ***5/60***
U.S. Cl. 340—174.1 E **9 Claims**



A flying head support with damping means includes a spring support for a magnetic head, which spring support maintains the magnetic head adjacent to a magnetic disc and wherein a thin film of air is produced between the head and the disc by the rotation of the disc. Damping means are supported relative to the spring support and with the damping means pressing against the spring support to damp vibrations in the magnetic head.

3,725,885
METHOD AND APPARATUS FOR AMPLITUDE SENSING AND DATA GATING IN A MAGNETIC-STORAGE DEVICE WITH DIGITAL INTERFACE

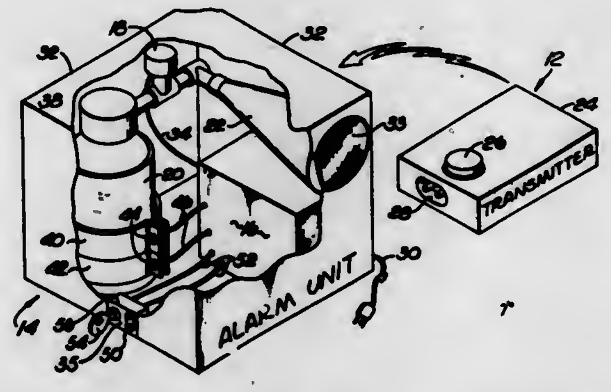
Rolf Andresen, Broomfield, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 28, 1970, Ser. No. 76,144
Int. Cl. G11b ***5/44***
U.S. Cl. 340—174.1 H **12 Claims**



A data signal read from magnetic tape is converted from an analog signal into a digital, or quasidigital, signal by hard limiting. This digital signal is combined with an indication as to whether the amplitude of the digital signal is above a predetermined threshold and then passed to a control unit operating with the tape drive. The control unit generates control signals used to change the predetermined threshold used by the tape drive. A change in threshold is made in accordance with detection of a record block and in accordance with error in the record block.

3,725,886
FLUID-POWERED ALARM SYSTEM

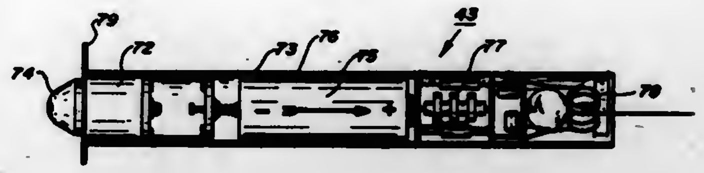
Ronald A. Marks, Canoga Park, Calif., assignor to Consulting Specialists, Inc., Torrance, Calif.
Filed Feb. 9, 1972, Ser. No. 224,731
Int. Cl. G08b ***3/06, 23/00***
U.S. Cl. 340—224 **7 Claims**



An alarm system provides an audible signal, incorporating a pressurized vessel for supplying fluid to a sonic horn under control of an electrical system and a solenoid valve. The electrical system incorporates independent a.c. and d.c. power arrangements for energizing the valve as well as the remainder of the control system. A trigger circuit is actuated by a receiver and a remotely-located transmitter, to initiate operation, which in the disclosed embodiments involves a compound pattern or cycle for more effective use of the fluid and to increase the severity of the signal as human stimulus. The system also incorporates heater means for maintaining the pressure structure operative over an extended interval of time.

3,725,887
RADIO TRANSMITTING ALARM SYSTEM

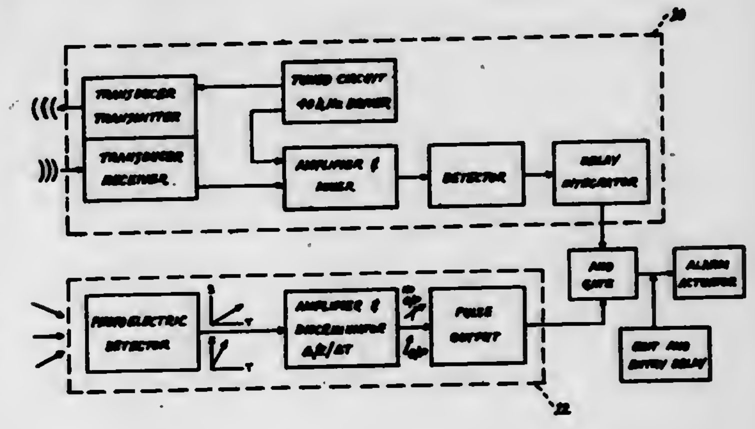
Vincent R. Sneider, Paramus, N.J., assignor to Sneider Electronic Systems, Inc., Passaic, N.J.
Filed June 10, 1968, Ser. No. 735,670
Int. Cl. G08b ***19/00***
U.S. Cl. 340—224 **5 Claims**



A radio transmitting alarm system where each signal actuating device includes a radio transmitter of short range and determined frequency and a self-contained power supply. The switch actuation of the transmitter may include a plunger-type switch, a level-indicating switch using mercury or a heat-responsive switch. The receiving station, as well as having a radio receiver tuned to the same frequency as the transmitter, may have a light, bell or a tape-actuated signal which is sent to a central monitoring station.

3,725,888
DETECTOR SYSTEM

Elias E. Solomon, Duxbury, Mass., assignor to Pyrotector, Incorporated, Hingham, Mass.
Filed April 5, 1971, Ser. No. 131,222
Int. Cl. G08b ***13/16, 13/18***
U.S. Cl. 340—258 A **3 Claims**

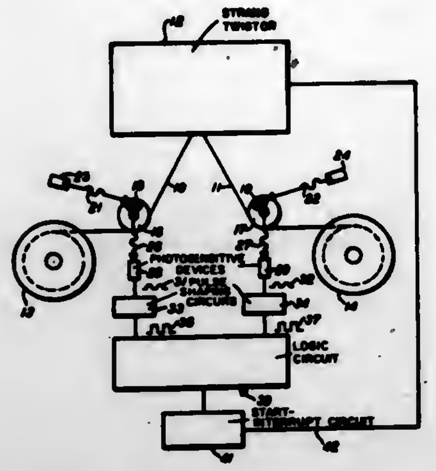


An intruder detector system that utilizes both a Doppler effect detector system and an optical detector system monitoring the same space. An alarm output signal produced by either detector under alarm conditions is prevented from activating an alarm unless the other detector also is producing an alarm signal.

3,725,889
LOGIC CIRCUITRY FOR MONITORING THE CYCLIC OPERATIONS OF A PAIR OF DEVICES

John J. Glosek, Roselle, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 1,611, Jan. 9, 1970, Pat. No. 3,624,522. This application June 4, 1971, Ser. No. 150,163
Int. Cl. B65h ***63/02;*** **G08b** ***21/00***
U.S. Cl. 340—259 **3 Claims**

Logic circuitry is utilized to monitor the continued cyclic operation of a pair of devices, e.g., strand feeding devices. As the devices function a pair of trains of pulses are generated and the logic circuit detects and generates a malfunction signal upon the generation of two pulses within one train without the intervening generation of a pulse in the other train. The logic circuit accepts concurrent generation of pulses, and the subsequent reversal of the lead pulse in the trains without the generation of malfunction signals. Facilities are also provided to allow the devices to commence operation independent of control by the logic circuits.



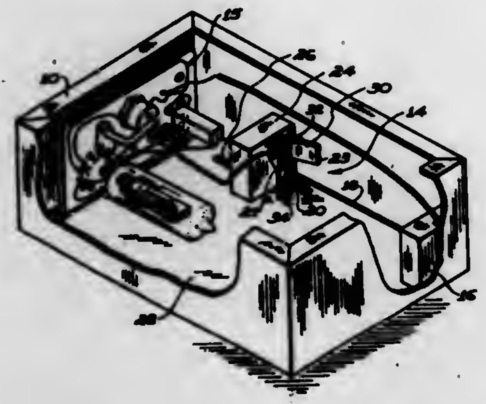
3,725,890
MOTION SENSITIVE ALARM SYSTEM

John C. Cirino, Lyndhurst, Ohio, assignor to Gregory Sales Co., Cleveland, Ohio

Filed March 17, 1971, Ser. No. 125,127

Int. Cl. G08b *13/02*

U.S. Cl. 340—262 26 Claims



A motion sensitive alarm system having a sensing mechanism for actuating an alarm device in response to rotational motion, i.e., being tilted, as well as in response to linear motion. The alarm system includes a generally V-shaped conductive cage, a flexible rod having one end portion fixedly mounted, and an elongated cylindrical weighted member carried by the other end portion of the flexible rod. The cylindrical weighted member is disposed in a direction generally perpendicular to the direction of the elongated flexible rod. Accordingly, the weighted member begins oscillating in response to either rotational or linear acceleration. When the weighted member begins oscillating, it contacts the V-shaped conductive cage to thereby actuate the alarm device. The alarm device remains energized for a predetermined period of time and is then de-energized by a time-delay thermal relay.

3,725,891
PROTECTIVE BUILDING STRUCTURE

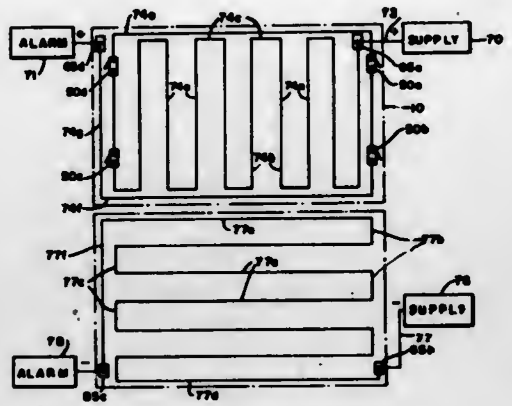
Elton W. Miller, 285 Franklin St., Harrisonburg, Va.

Filed Sept. 8, 1970, Ser. No. 70,158

Int. Cl. G08b *13/08, 13/12*

U.S. Cl. 340—273 8 Claims

A protective structure having a plurality of independent alarm circuits adapted for use adjacent to a window or the like opening in a building wall. The structure includes a frame and a plurality of insulating members secured within the frame. Each of the insulating members defines an opening for receiving an electrical conductor therein. Since each of the insulating members may be fractured by the application of a predetermined amount of force thereon, for example by an intruder, a rupturing of the electrical conductor by the fracturing of the insulating member will cause an alarm to be actuated. The frame defines a pair of perimetric recesses about the outer periphery thereof to accommodate conductors therein so that if the frame is ruptured, an alarm will likewise be sounded. The conductors in one recess are in circuit with the conductors in certain of the insulating members, while the conductors in the other recess are in circuit with the conductors in the remaining insulating members so that a pair of independent circuits are provided. A plurality of tamper switches are also disposed in the device so that attempts to remove the protective structure from the opening in the building wall will also actuate an alarm. Thus, the structure is effective against attempts to remove the structure, to sever its frame, or break through the opening defined by the frame.



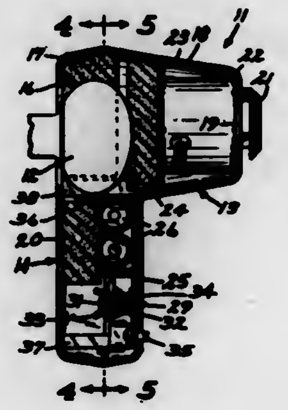
3,725,892
DOOR KNOB BURGLAR ALARM

Frank J. Faltico, Edina, Minn., assignor to Allied Trading Co., Minneapolis, Minn.

Filed April 26, 1971, Ser. No. 137,190

Int. Cl. G08b *13/08*

U.S. Cl. 340—274 4 Claims



An alarm device designed for temporary placement over a conventional doorknob in frictional engagement therewith. A pair of normally open mercury switches are operatively connected through batteries to an annunciating buzzer, and unauthorized rotation of the doorknob in either direction closes one of the switches to actuate the buzzer.

3,725,893
MONEY CLIP ALARM FOR A CASH DRAWER

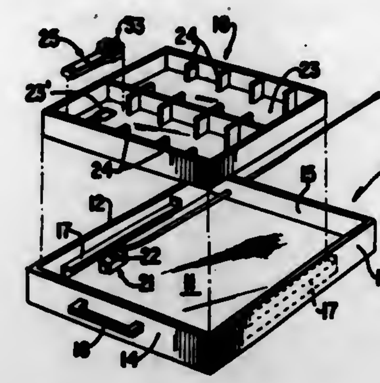
Jacob H. Malta, Doylestown, and Harrison E. Cassel, Cedars, both of Pa., assignors to Schulmerich Manufacturing Co., Sellersville, Pa.

Filed Nov. 23, 1970, Ser. No. 91,796

Int. Cl. G08b *13/02*

U.S. Cl. 340—280 8 Claims

A compartmented insert for a cash drawer is provided with a money clip which includes a pivotally mounted drop actuator retained in a raised position by a paper bill inserted in the clip. The actuator is positioned over an opening in the bottom of the insert through which protrudes a control switch mounted on the bottom of the drawer. The control switch is normally closed when its switch arm is raised and is connected to an alarm circuit which is energized when the paper bill is withdrawn from the clip to unblock the actuator which pivots downwardly and engages the control switch arm to move the arm downwardly to an opened position. The alarm is especially useful in conjunction with operation of bank, or the like, security or surveillance systems.



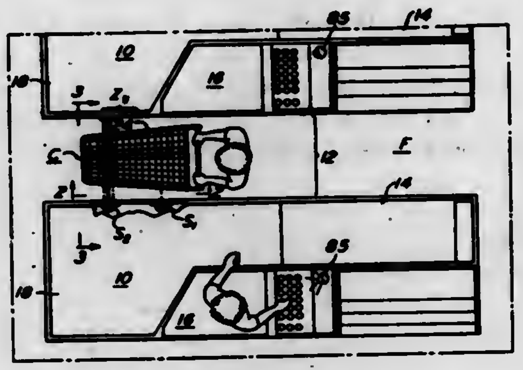
3,725,894
PHOTOCELL CONTROLLED SHOPPING CART PACKAGE DETECTOR

Edwin A. Geisler, 7339 Central Avenue, Philadelphia, Pa.

Filed Sept. 27, 1971, Ser. No. 184,043

Int. Cl. G08b *13/00*

U.S. Cl. 340—280 R 7 Claims



A system for detecting an article or the like on the lower storage section of a market cart as the cart passes through a scanning zone. The cart has a light reflective element mounted thereon operable to reflect a substantial portion of the light projected from a source back to said source. Sensing means are provided having a threshold level and operable to direct a beam of light to said reflective element and produce an output signal only when the intensity of light reflected back to the sensing means exceeds said threshold level. Scanning means are operable when conditioned by the output signal from said sensing means to scan the storage of the cart when it passes through the scanning zone. Signal means are operatively associated with said scanning means actuatable when said scanning means is conditioned and an article is present in the storage section of the cart.

3,725,895
STOLEN ARTICLE DETECTION

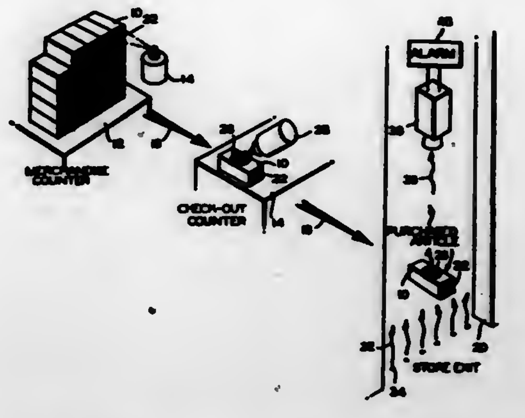
Lawrence B. Haynes, 1205 Kershaw Drive, Raleigh, N.C.

Continuation-in-part of Ser. No. 98,990, Dec. 17, 1970, abandoned. This application July 13, 1972, Ser. No. 271,437

Int. Cl. G08b *13/00*

U.S. Cl. 340—280 11 Claims

A method and system for detecting stolen articles such as by shoplifting. Articles in a store and the like are sprayed with a non-toxic, humanly undetectable aerosol which is subject, being highly aromatic in nature, to detection by a sensing device. In removing the treated article a detection area or zone from the store must be passed and if unauthorized or unapproved removal of the article is attempted an indicator or alarm is activated by detection of the aerosol, resulting in apprehension of the article carrier. If the article is paid for or removal from the premises is otherwise authorized, then when passing through an authorizing area such as a checkout counter, the sensible odor can be neutralized or rendered passive or an additional neutralizing agent or means can be applied to the article, either method of which will serve to prevent activation of the detection device.



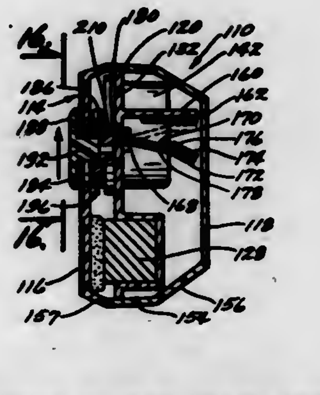
3,725,896
POSITION SENSITIVE ALARM WITH MAGNETIC LATCHING PENDULUM SWITCH

Robert J. Wagner, 5225 Redman Avenue, Omaha, Nebr.

Continuation-in-part of Ser. No. 142,894, May 13, 1971. This application Oct. 12, 1971, Ser. No. 188,031

Int. Cl. G08b *13/08*

U.S. Cl. 340—282 5 Claims



An alarm device sounds an audio alarm when it is moved to a predetermined position. The alarm includes a magnetic latching pendulum switch which is normally open but which is closed to energize the alarm when the device falls onto its back portion. A dial lock means is also provided for preventing the pendulum switch from being manually opened until the proper number has been dialed thereon. The device may be used in conjunction with inwardly or outwardly swinging doors, and vertically or horizontally sliding windows. Means is also disclosed for positioning the device with respect to inwardly swinging doors and horizontally sliding windows or doors.

3,725,897
VISUAL DISPLAY SYSTEM

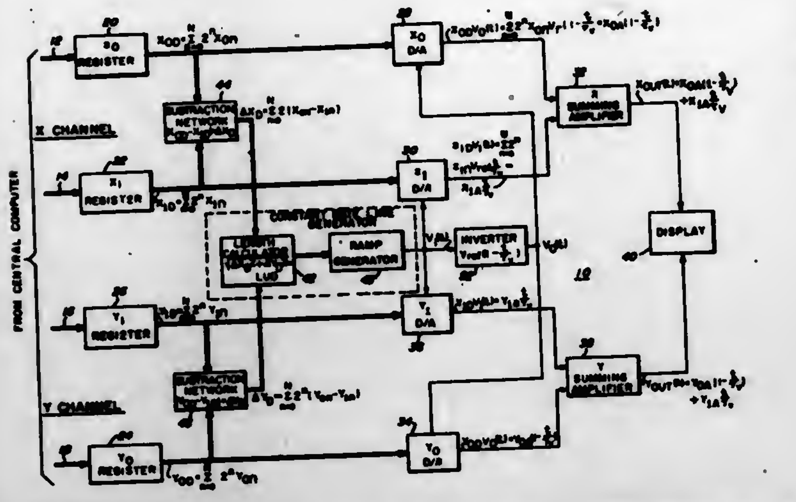
Mark H. Bleiweiss, Marlboro, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 20, 1971, Ser. No. 107,930

Int. Cl. G06f *3/14*

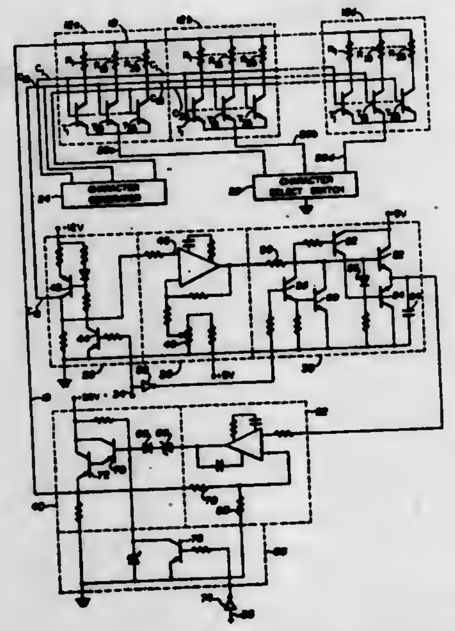
U.S. Cl. 340—324 A 4 Claims

A constant writing rate vector generator capable of accepting digital inputs representative of the endpoints of a line and converting them into analog voltages proportional to the transition time of the generated line such that random positioning of the electron beam on a cathode ray tube and the writing of vectors while maintaining an equal and constant



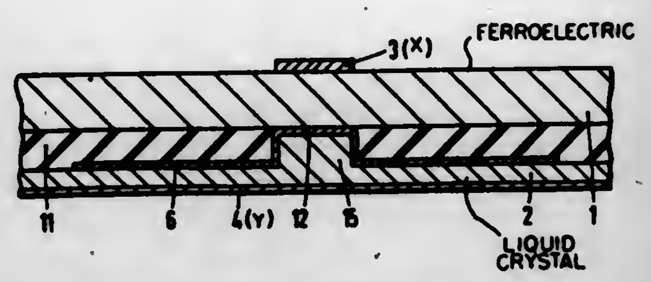
brightness without additional intensity compensation is achieved. The digital endpoint data controls a constant voltage ramp with a time duration directly proportional to the vector length, which ramp is used to control the transition rate of a pair of digital to analog converters.

3,725,898
TEMPERATURE COMPENSATED MULTIPLE CHARACTER ELECTRONIC DISPLAY
Joseph R. Canton, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 788,249, Dec. 31, 1968, abandoned. This application May 3, 1971, Ser. No. 139,945
Int. Cl. G05d *23/24*; H05b *3/28*
U.S. Cl. 340—324 **12 Claims**



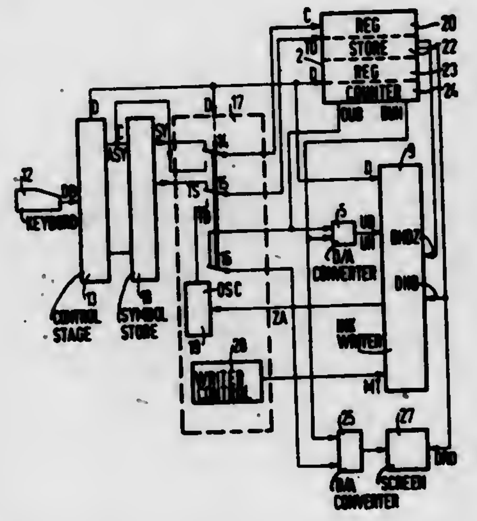
A temperature compensated multiple character electronic display is described. Each character position includes a multielement matrix controlled by a transistor. The collectors of all transistors of all matrices are common. The emitters of all transistors of a single character matrix are common, and are selectively connectable to ground so that the characters can be sequentially enabled. The corresponding elements of all character matrices are connected to a common control line and are actuated by a single character generator. The power sequentially applied to each character is controlled separately to maintain a uniform display under varying operating temperatures by sampling the voltage of the base-emitter junction of a transistor of the enabled character as a measure of its temperature, and then applying power to the character during the following display cycle that is related to the sampled temperature.

3,725,899
DATA EXHIBITING SCREEN DEVICE WITH A LIQUID-CRYSTAL LAYER, AND METHOD OF MANUFACTURE
Waldemar Greubel, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Oct. 21, 1970, Ser. No. 82,642
Claims priority, application Germany, July 29, 1970, P 20 37 676.5
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 M **14 Claims**



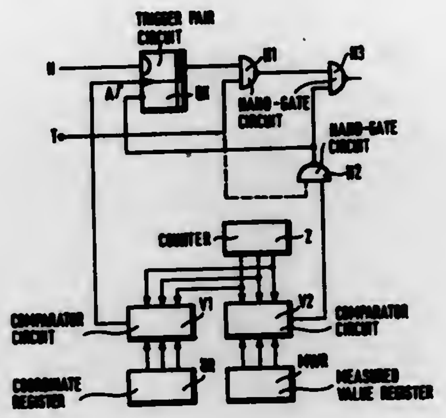
A data exhibiting screen device comprises a layer of liquid crystals whose light scattering or transparency is controllable by applying an electric field. A ferroelectric layer of ceramic material extends face-to-face in parallel proximity to the liquid-crystal layer and constitutes a capacitance controllable by the magnitude of the applied electric field. Electric field means in the form of a cross-bar arrangement supply the field excitation.

3,725,900
METHOD AND APARATUS FOR THE PRODUCTION OF CHARACTERS AT WILL ON THE PICTURE SCREEN OF A CATHODE RAY TUBE AND/OR ON RECORD PAPER
Friedrich Ohmann; Rudolf Otto, and Wolfgang Wiedenmann, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Filed March 10, 1971, Ser. No. 122,679
Claims priority, application Germany, Feb. 22, 1971, P 20 62 546.1
Int. Cl. G08b *5/36*
U.S. Cl. 340 **1 Claim**



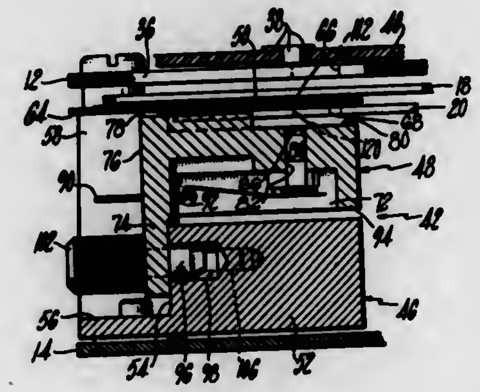
A method and apparatus for representation of characters from signals emitted from a writing signal source, such as a keyboard, data processing installation, card scanner or the like, at will on the picture screen of a cathode ray tube and/or on record paper or a similar data carrier, wherein an image generator is employed to produce data signals for controlling the electron beam on the picture screen of a cathode ray tube, means are provided for deriving from these signals deflecting and/or blanking signals for a record printer, the printer preferably being an ink jet printer.

3,725,901
METHOD OF AND APPARATUS FOR REPRESENTING MEASURED VALUES ON THE SCREEN OF A VIDEO APPARATUS
Eckmar Lehari, and Manfred Schwarztrauber, both of Karlsruhe, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed March 29, 1971, Ser. No. 128,743
Claims priority, application Germany, March 28, 1970, P 20 14 953.5
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **13 Claims**



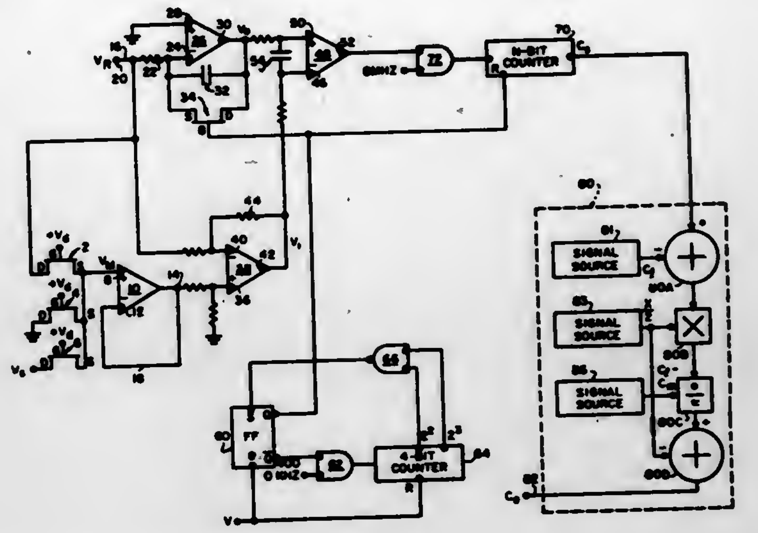
For the reproduction of measured values on the screen of a line scanning video apparatus, the intensity of the beam current thereof is modulated with unblanking signals to a mean value during the writing of each line between the image field edge and the unblanked image dots of the measured values. The beam current and consequently the intensity of the beam for the latter is greater than the said mean value. The frequency value of the unblanking signals is such that the bright-modulated image dots are no larger than the image elements.

3,725,902
OPTICAL ENDCODER
Ronald A. Finnegan, South Windsor, Conn., assignor to Veeder Industries Inc., Hartford, Conn.
Filed July 1, 1970, Ser. No. 51,509
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 P **8 Claims**



An optical encoder is provided with a new and improved exposure assembly comprising a readily replaceable exposure block fixedly mounting a plurality of individual light bulbs within a predetermined display pattern, a base for the exposure block supporting an apertured display mask within a code display station and aligning means on both the block and the base facilitating accurate and repeated aligned assembly of the block on the base without readjustment of the assembly.

3,725,903
SELF-CALIBRATING ANALOG TO DIGITAL CONVERTER
Henry R. Kosakowski, Denville, N.J., assignor to The Bendix Corporation, Teterboro, N.J.
Filed Feb. 9, 1971, Ser. No. 113,872
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 AD **11 Claims**

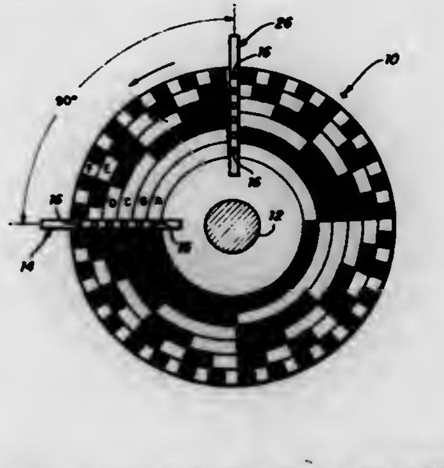


A self-calibrating analog to digital converter wherein, if the full scale reading of the converter is defined as X counts, the calibration formula takes the following form:

$$C_o = [C_s - C_1]\,[X/2\,(C_m - C_1)] - X/2; \text{ wherein}$$

C_o is the count of the calibrated output; C_s is the count of the analog signal to be converted; C_1 is the count of the low scale calibration point; and C_m is the count of the mid-scale calibration point.

3,725,904
ENCODER WITH A REDUNDANT OPTICAL SYSTEM
Donald H. Breslow, Framingham Center, and Sidney A. Wingate, Concord, both of Mass., assignors to Itek Corporation, Lexington, Mass.
Filed July 23, 1971, Ser. No. 165,620
Int. Cl. G08c *9/06*; H03k *13/02*
U.S. Cl. 340—347 P **9 Claims**



An absolute rotary encoder in which a redundant optical system is located at any one of several angular positions around the encoder disc relative to the original optical system. In the event of failure of a component in the original optical system, the redundant optical system is connected in place of the original optical system. In the embodiment where the redundant optical system is located at 90° away from the original optical system, signals from the redundant optical system are identical to signals from the original optical system for all but the most coarse and second most coarse encoder tracks. Signals from the photodetectors for the most coarse and second most coarse tracks of the redundant optical system are fed to compensating logic circuits which operate on these signals and yield positional output signals for the most and second most coarse tracks which are identical to positional output signals which would have been produced by the original optical system. In addition a simple logic circuit is provided which recognizes whether the primary or redundant system is connected and then performs the necessary signal switching.

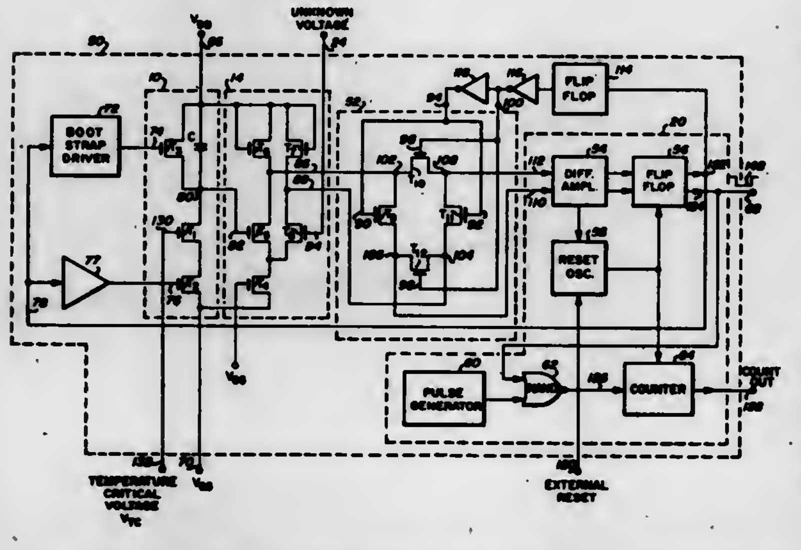
3,725,905
MONOLITHIC ANALOG-TO-DIGITAL CONVERTER

Burton R. Tuzzi, 10090 North Blaney, Cupertino, Calif.

Filed Aug. 2, 1971, Ser. No. 168,105

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 AD **8 Claims**



A self- contained fully integrated, monolithic analog-to-digital converter including, a linearized ramp generator for providing a reference voltage, a comparator for comparing the reference voltage to an unknown voltage, one or more differential amplifying stages, a cross-over network for providing semiconductor components mismatch compensation, a flip-flop for generating output pulses having widths proportional to the unknown voltage, and a counter responsive to the flip-flop output for developing a digital output signal commensurate with the unknown voltage.

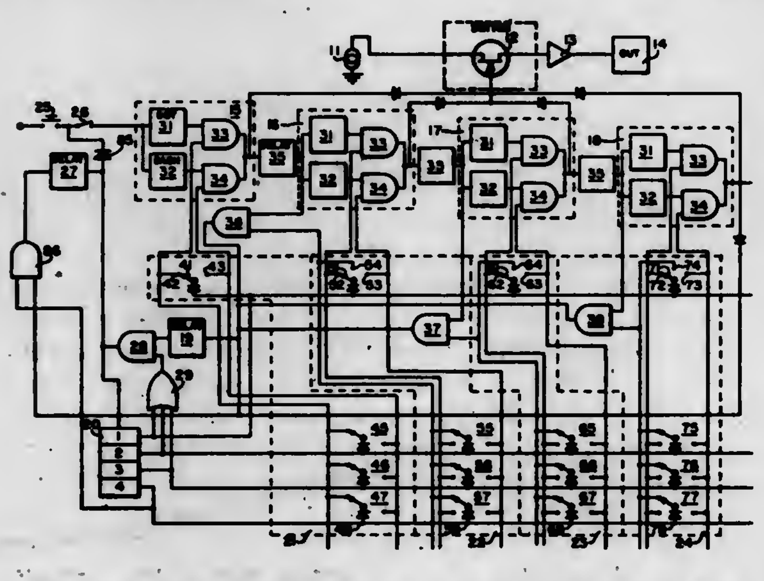
3,725,906
SELF-TIMING CODE KEYER

George R. Quick, Silver Spring, and George R. Sowter, Ashton, both of Md., assignors to The Singer Company, New York, N.Y.

Filed Sept. 24, 1970, Ser. No. 75,212

Int. Cl. G08c *19/22*

U.S. Cl. 340—365 **8 Claims**



This is an automatic code keyer which can be used, for example, for automatically generating in Morse code the call letters of a radio transmitter. The keyer of this invention is simpler and has fewer parts than prior art devices. It comprises a plurality of selection circuits which activate individual dot or dash circuits. In each case where a dot is selected, a short pulse is generated, and if a dash is selected, a long pulse is generated. The generation of a pulse opens a gate which permits a tone to be transmitted to the output for a duration of the pulse. The selection devices are manually controlled and are operated to select the appropriate dot or dash for each element of a desired letter. If neither is selected, the pulse is applied to the next line of selection devices which control the original pulse generators and gating circuits. The system may be expanded to provide for the automatic generation of any number of letters.

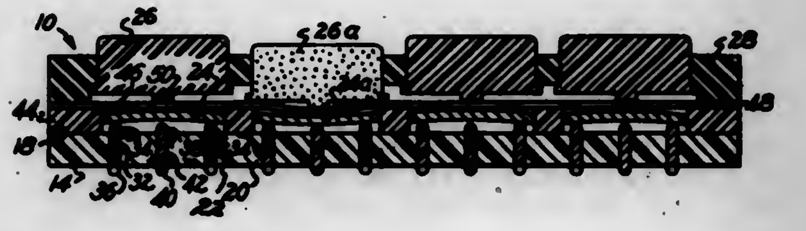
3,725,907
PUSHBUTTON KEYBOARD SYSTEM

Henry J. Boulanger, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 1, 1971, Ser. No. 148,503

Int. Cl. H04q *3/00*

U.S. Cl. 340—365 A **17 Claims**



A keyboard system in which a plurality of spaced sets of conductive members including U and rivet shaped are arranged at a surface of a support in electrical communication with conductive paths on an opposite surface of the support. A plurality of actuatable conductive elements, one for each set of conductive members, are provided to establish bridging electrical connection between conductive members of a set upon application of a preselected deflecting force to the conductive elements.

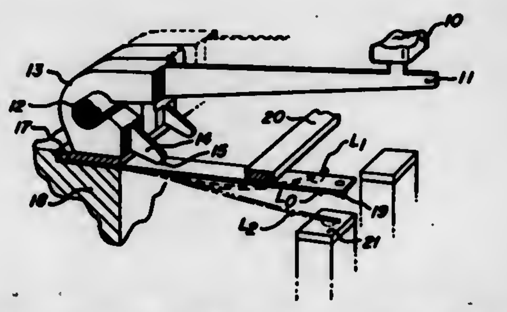
3,725,908
IMPACT TRANSDUCER KEYBOARD APPARATUS

Marcel Briseharre, Thoiry, and Xavier de Saint Sauveur, Ferney-Voltaire, both of France, assignors to Control Data Corporation, Minneapolis, Minn.

Filed June 21, 1971, Ser. No. 156,146

Int. Cl. H04q *3/00*

U.S. Cl. 340—365 A **6 Claims**



A keyboard apparatus having a plurality of spring-mounted hammers actuated by the key mechanisms is disclosed, where the hammers contact piezoelectric crystals to generate electrical signals when keys are depressed.

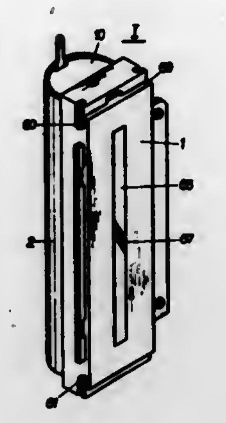
3,725,909
ROTATING COIL MAGNETIC INDICATOR

Georg Seibel, Dreieichenhain, Germany, assignor to Scheeller & Co., Frankfurt A.M. Sud, Germany

Filed Feb. 22, 1971, Ser. No. 117,625

Int. Cl. G08b *5/14, 5/22*

U.S. Cl. 340—373 R **32 Claims**



In the indicator disclosed, a coil, rotatably suspended between two pivoting straps,passes through the center of a tubular high coercivity magnet and surrounds the magnet from the center to the outside. The magnet forms a longitudinal gap. The straps are coaxial with the magnet. Current through the coil rotates it so that its outer portion moves peripherally along the magnet. A drum surrounding the magnet and traveling with the coil carries a helical indication. The latter is visible through a gap on a stationary slide indicator. Rotation of the coil moves the visible indication laterally along the gap. The device is suitable for indicating channels or stations on television or radio sets in response to electrical signals.

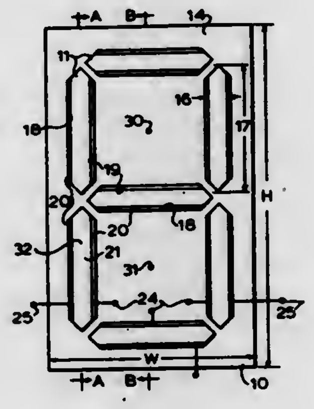
3,725,910
ELECTRICALLY CONTROLLABLE LIGHT REFLECTING CELL AND MEANS FOR UTILIZATION ON A CHARACTER PRESENTATION DEVICE

Joseph T. McNaney, 8548 Boulder Drive, La Mesa, Calif.

Filed June 18, 1971, Ser. No. 154,298

Int. Cl. G08b *5/36*

U.S. Cl. 340—378 R **15 Claims**



Specified herein is an informational character presentation device utilizing electrically controllable light reflecting cells for allowing light from a common source of light to be converted into an array of light emitting areas on the viewing surface of the device, each area representing a segment with which one or more message characters may be formed. Various embodiments of the light reflecting cell are included in the disclosure, each embodying the principles of a light guide utilizing a series of internal light reflections for the transmission of light to the emitting area thereof.

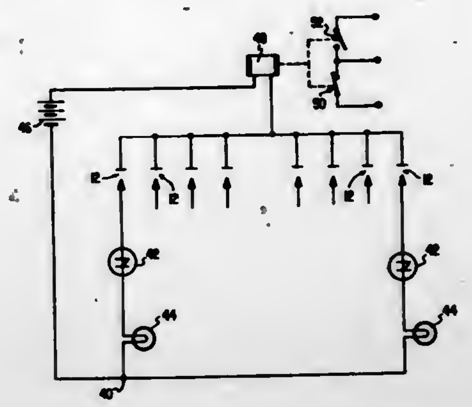
3,725,911
STOP MOTION DEVICE WITH SELECTIVE INDICATOR

Harold E. Cook, Lanett, and Harold H. Lanier, Fairfax, both of Ala., assignors to Batson-Cook Company, West Point, Ga.

Filed Dec. 15, 1971, Ser. No. 208,096

Int. Cl. G08b *21/00*

U.S. Cl. 340—415 **5 Claims**



A stop motion system for multi-thread textile machines includes a number of thread slack-detection switches disposed in parallel and each having an indicator lamp and a diode in series with the switch. A voltage source and a stop motion relay are in series with the switches and the voltage source produces a potential through any closed switch and its associated lamp and diode greater than the breakover voltage for the diode. Each diode, however, is a four layer diode so that its sustaining voltage is very much less than its breakover voltage. In this way, the first diode to conduct reduces the potential available across any of the other diodes to the sustaining voltage so that only the first detector circuit activated will be effective to provide an indication of malfunction.

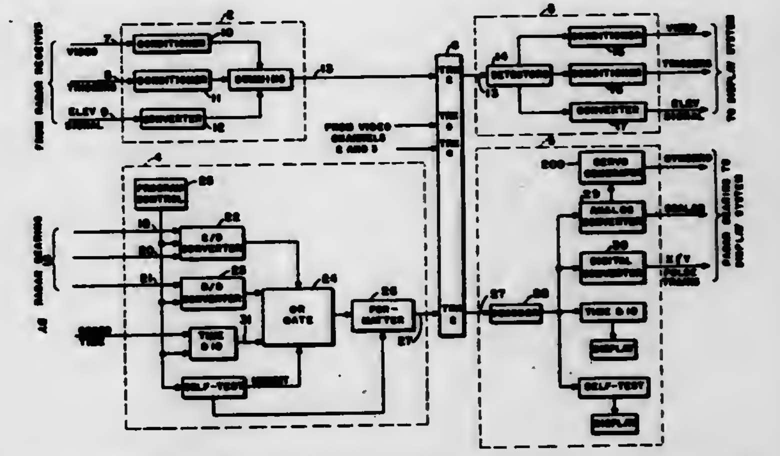
3,725,912
RADAR VIDEO RECORDING SYSTEM

Donald E. Buchholz, Silver Spring; Ronald L. Bakala, Laurel; Robert E. Miller, Ellicott, and Richard W. Pickering, Burtonsville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 17, 1971, Ser. No. 144,103

Int. Cl. G01s *7/02*

U.S. Cl. 343—5 PC **15 Claims**



A radar data system for recording and replaying radar information for energizing a search radar display unit and having a capability of accommodating a plurality of search radars of either the two-dimensional or three dimensional type. In addition, provision has been made to allow for the variety of signals used to define the search radar position and also for internal fault detection. Also, the system can record and provide command and control signals for external simulators and/or computer systems to perform a wide variety of functions which may be related to the recorded search radar presentations. The system is divided into two primary sections, record and reproduce, and is further subdivided according to the type of data being recorded on a recorder track.

3,725,913

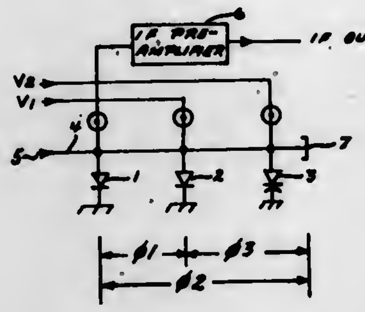
MICROWAVE SENSITIVITY TIME CONTROL CIRCUIT

Ernest R. Roehl, Anaheim, and Gerald D. Carey, Fullerton, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Nov. 22, 1971, Ser. No. 200,719

Int. Cl. G01s *7/34*

U.S. Cl. 343—5 SM **2 Claims**



A microwave sensitivity control (STC) circuit for use with a radar receiver is provided in which the STC control element is included as a part of a microwave mixer. STC control diodes are located aft of the microwave mixer diode. The receiver is operated with STC not applied until the target return is sufficiently large to cause the transfer function of the mixer-IF preamplifier to just begin compressing. At this time control bias is applied to the STC diodes which reduces the electric field intensity at the plane of the mixer diode by 25 db as the target returns become larger.

3,725,914

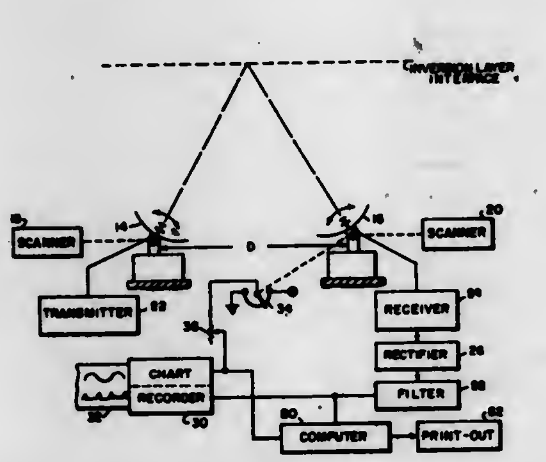
MEASUREMENT OF TEMPERATURE INVERSIONS

Cliff I. Davidson, and Charles F. Laing, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 5, 1971, Ser. No. 140,539

Int. Cl. G01s *9/60*

U.S. Cl. 343—5 W **12 Claims**



Method and apparatus for measuring the height and strength of the uppermost limit of a temperature inversion with the use of radio-frequency wave energy. This is achieved by using a wavelength which will not be reflected by water droplets and particulate matter in the air but which will be at least partially reflected at the top of an inversion layer due to a change in the index of refraction of the air because of an abrupt change in temperature and density. Preferably, separated transmitting and receiving antennas are used and the height of the uppermost limit of the inversion layer is determined trigometrically.

3,725,915

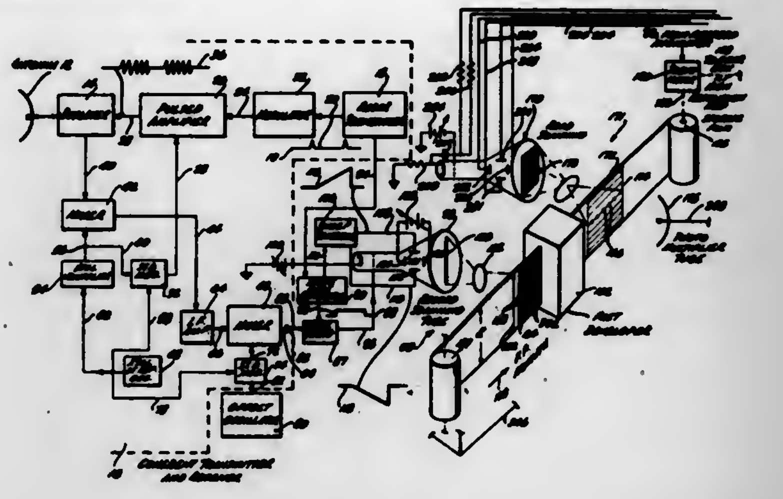
HIGH RESOLUTION MAPPING SYSTEM

Elvin E. Herman, Pacific Palisades, and Henry L. McCord, San Pedro, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 27, 1960, Ser. No. 78,768

Int. Cl. G01s *9/42*

U.S. Cl. 343—5 PC **16 Claims**



A synthetic array mapping system is disclosed that is operable from a moving craft so as to provide a high resolution map of an area such as a sector of the earth's surface. A coherent side looking redar system is provided in the moving craft to obtain and store varying frequency doppler history components of objects in the area to be mapped. The stored history components are then mixed with a swept oscillator signal. Difference signals developed by this mixing are applied to a narrow-band filter to compare the frequency of the difference signal with a predetermined pass band and develop mapping signals representing objects in a fixed angular position relative to the flight path of the craft.

3,725,916

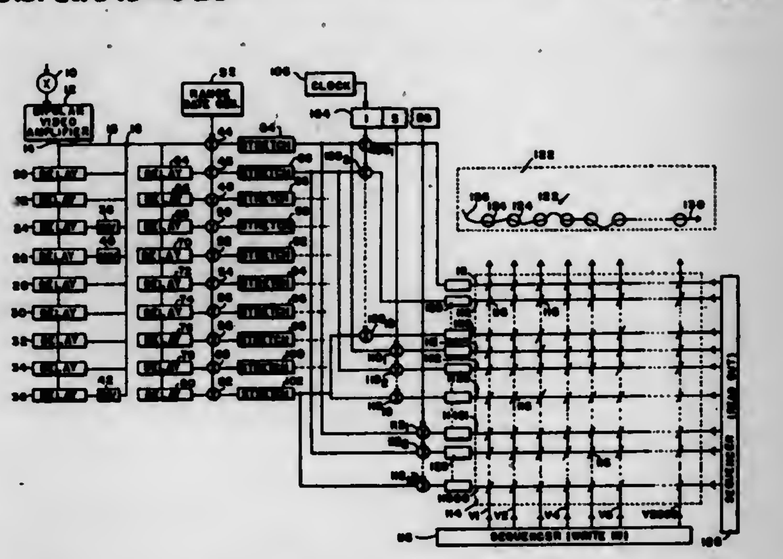
POST STORAGE RANGE AND DOPPLER CORRELATION METHOD AND APPARATUS

Thomas P. Cutler, Chestnut Hill, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Sept. 1, 1967, Ser. No. 665,069

Int. Cl. G01s *9/02*; G06f *15/34*; G06g *7/19*

U.S. Cl. 343—5 DP **20 Claims**



Apparatus is herein disclosed for processing signals by storing and correlating with preset programs. The apparatus is disclosed as it relates to a pulse doppler radar application. Target reflected coded signals modulated by doppler are partly correlated to resolve ranges which are ambiguous with relation to the remaining uncorrelated code. The partly correlated signal is stored in a magnetic core matrix. A series of stitching networks wired (or stitched) in accordance with predetermined range and doppler combinations are coupled to the storage matrix so that when the signals stored in the matrix are read out to the stitch networks, correlation of the remaining ambiguity will occur indicating unambiguous range and doppler of targets. The stitch networks compare the stored code time histories with the preset codes representing a combined range and doppler signal.

3,725,917

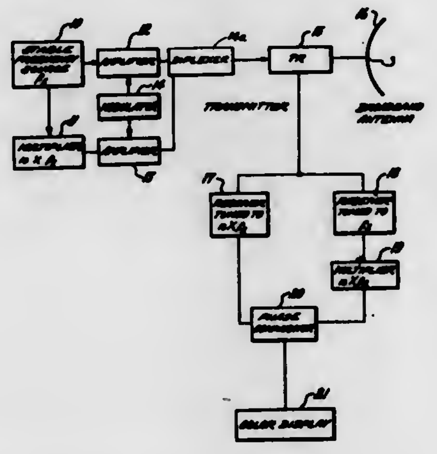
RADAR PHASE COMPARISON METHOD AND SYSTEM FOR OBJECT RECOGNITION

Carlyle J. Sletten, Acton; Allan C. Schell, Richard B. Mack, William B. Goggins, Jr., all of Winchester, and Philipp Blacksmith, Concord, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Jan. 27, 1969, Ser. No. 795,775

Int. Cl. G01s *9/02*

U.S. Cl. 343—55 A **3 Claims**



A radar method and system of object recognition wherein multiple integral coherent-harmonic frequency signals are directed towards the object and the return signals therefrom are phase compared to provide a resultant signal having characteristics distinguishing the object from its background. Also included is a color display for displaying the resultant signal in color to enhance the reflection characteristics of the object.

3,725,918

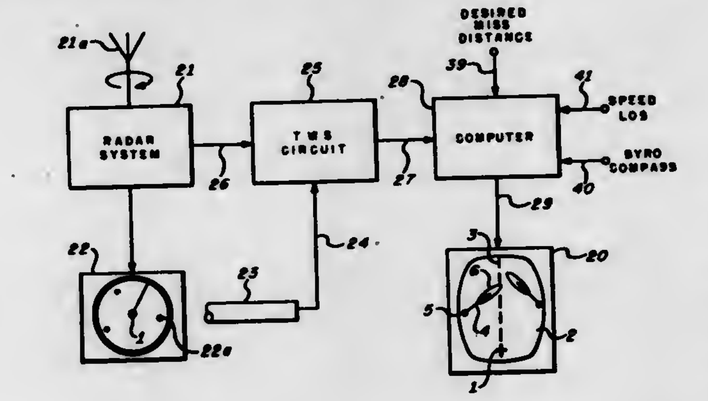
COLLISION AVOIDANCE DISPLAY APPARATUS FOR MANEUVERABLE CRAFT

Herman J. Fleischer, Halesite; Philip Lipsky, Hartsdale, and Bert V. Tiblin, Huntington, all of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 18, 1970, Ser. No. 90,558

Int. Cl. G01s *7/06*

U.S. Cl. 343—5 EM **11 Claims**



Collision avoidance display apparatus that provides indicia representative of present positions of intruding vehicles as well as predicted tracks thereof. Each track terminates in a region representative of the area to be avoided to assure passing the corresponding intruding vehicle by at least a predetermined distance. These displayed indicia provide information for assessing maneuvers to avoid collision with the intruding craft.

3,725,919

METHOD AND APPARATUS FOR PLOTTING VESSEL POSITION

Jerry J. Jones, and Joe C. Lochridge, both of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Dec. 19, 1969, Ser. No. 886,562

Int. Cl. G01d *9/10*; G01s *5/14, 11/00*

U.S. Cl. 343—6.5 R **16 Claims**

A pipelaying barge is controlled in response to the error between the actual barge position and a desired pipeline route or course illustrated on a strip map. Although the desired pipeline route is not a straight line on a chart, the strip map illustrates the pipeline as a relatively straighter route or course. The straighter route or course strip map is obtained by plotting the route or course on a chart where relative rotation between adjacent gridline segments has been effected so as to cause the plot of the route on the reoriented gridline segments to assume a straighter form.

3,725,920

DISTANCE MEASURING METHOD AND APPARATUS FOR THE PERFORMANCE THEREOF UTILIZING TWO TR

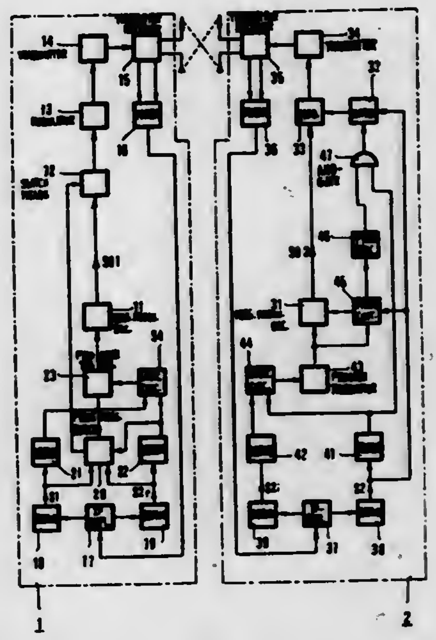
Hanspeter Kupfer, Geroldswil, and Marcel Hossmann, Zurich, both of Switzerland, assignors to Albiswerk Zurich AG, Zurich, Switzerland

Filed Nov. 12, 1970, Ser. No. 88,644

Claims priority, application Switzerland, Nov. 24, 1969, 17435/69

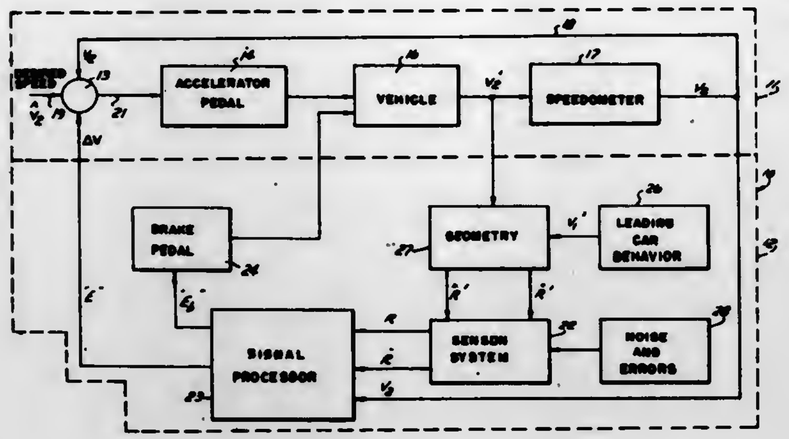
Int. Cl. G01s *9/38, 9/56*

U.S. Cl. 343—6.5 R **3 Claims**



An apparatus and method for distance measurement by means of two transmitter-receiver devices arranged at the terminal points of the path to be measured and which can be selectively switched as a main- or auxiliary station. The invention contemplates automatically initiating transmission back of a difference signal produced at the auxiliary station upon the appearance of a phase quiescent condition at a measuring frequency control of the auxiliary station, arrival of such transmitted back difference signal at the main station automatically triggering measurement of a corresponding partial measurement result. Upon completion of each partial measurement result the measuring signal of the main station is automatically switched-off, and non-presence of at least one difference signal at the main- and auxilliary stations bringing about continuation of the measurement program to the next successive measuring frequency and switching-in the measuring signals.

3,725,921
TRAFFIC RESPONSIVE SPEED CONTROL SYSTEM
Joseph S. Weidman, Walled Lake; Henry C. Yee, Royal Oak; Jack G. Elliott, Farmington, and Zaven Margosian, Birmingham, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.
Filed Nov. 4, 1970, Ser. No. 86,922
Int. Cl. G01s *9/04; 9/46*
U.S. Cl. 343—7 ED **30 Claims**



A system for automatically adjusting the speed of a vehicle to existing traffic conditions is described. The system functions in conjunction with an automatic speed control system to maintain a safe following distance between vehicles traveling in the same direction. A range and range-rate sensor generates signals which are indicative of the distance between the vehicles, as well as the closing or opening velocity of the vehicles. These signals are used to accelerate or decelerate the trailing vehicle to maintain a safe and optimum distance between the vehicles in accordance with the speed of the lead vehicle. The system is noncooperative, so that the lead vehicle need not be similarly equipped in order for the system to operate. The system is capable of overriding the speed control system within the vehicle but can be overridden by the driver when a deceleration or acceleration decision is executed. Although the system can override the speed control system, the speed set into the speed control system can not be exceeded except by driver override. However, overriding of the speed control system by the invention system or by driver override does not destroy the speed set by the driver.

3,725,922
CONVERGENCE RATE IMPROVEMENT FOR ADAPTIVE RECEIVING ARRAY ANTENNAS OF HIGHER ORDER THAN 2-PULSE MTI CANCELLERS
Lawrence E. Brennan, Tarzana, and Irving S. Reed, Santa Monica, both of Calif., assignors to Technology Service Corporation, Santa Monica, Calif.
Filed Sept. 13, 1971, Ser. No. 179,782
Int. Cl. G01s *9/42*
U.S. Cl. 343—7 A **6 Claims**

A system for improving the convergence rate of adaptive receiving array antenna systems in MTI radar systems, having cancellers of higher orders than a 2-pulse canceller, is provided by a transformation matrix according to the following technique.

Form the matrix H with elements

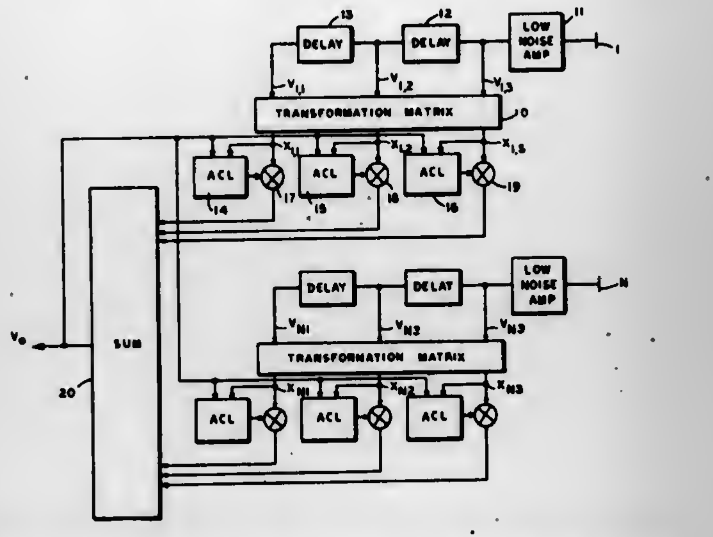
$$H_{mn}=1-\epsilon \quad m-n^{2}$$

where $\epsilon = \log 1/\rho$ and ρ is the correlation between successive returns. The transformation matrix then has the form

$$U=\begin{pmatrix} GFAC & 0 & 0 & . & . & 0\\ & 0 & 1 & 0 & . & . & 0\\ & 0 & 0 & 1 & . & . & 0\\ & . & . & . & . & . & .\\ & 0 & 0 & 0 & . & . & 1\end{pmatrix} U_1 \begin{pmatrix}1 & 0 & 0 & . & . & 0\\ 0 & e^{i\psi} & 0 & . & . & 0\\ 0 & 0 & e^{i3\psi} & . & . & 0\\ . & . & . & . & . & .\\ 0 & 0 & 0 & . & . & e^{i(N-1)\psi}\end{pmatrix}$$

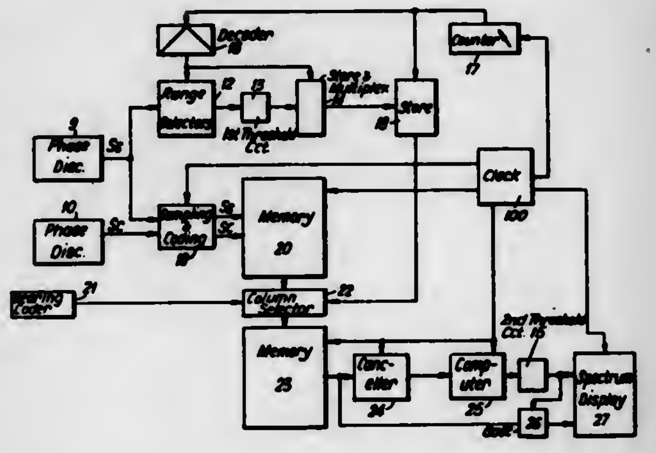
$$U_1\begin{pmatrix}h_1\\ h_2\\ h_3\\ .\\ .\\ h_N\end{pmatrix}$$

where GFAC is a gain factor greater than unity, ψ is a phase shift angle, and $h_1, h_2, \ldots h_N$ are the eigenvectors of H ordered



such that the associated eigenvalues are monotically increasing. Antenna element signals V are then transformed according to the equation $X=UV$.

3,725,923
COHERENT DIGITAL PULSE DOPPLER RADAR SYSTEM WITH IMPROVED SIGNAL HANDLING CAPACITY
Henri J. Bosc, Paris 7e; Michel G. M. Castets, Meudon, and Jean-Claude A. Debuisser, 78 Fontenay-le-Fleury, all of France, assignors to International Standard Electric Corporation, New York, N.Y.
Filed July 6, 1971, Ser. No. 159,987
Claims priority, application France, July 7, 1970, 70/25146
Int. Cl. G01s *9/42*
U.S. Cl. 343—7.7 **5 Claims**

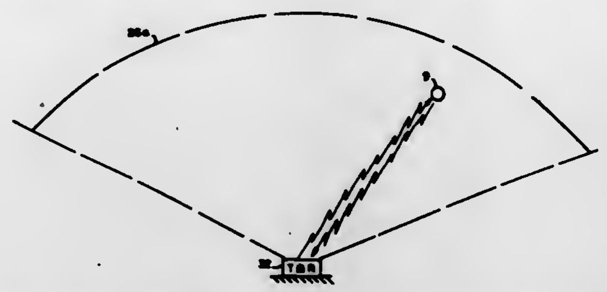


A pulse Digital Doppler coherent MTI radar system in which sine and cosine phase detector outputs are both coded and stored in a plurality of range increments. A first channel stores digital codes for moving targets exceeding a minimum

predetermined amplitude threshold. That information is used to control another MTI channel to reduce the number of target signals which must be processed in a second channel, thereby providing increased processing time. Storage of signal codes is effected in dual memories, one being read while real time storage is carried out in the other.

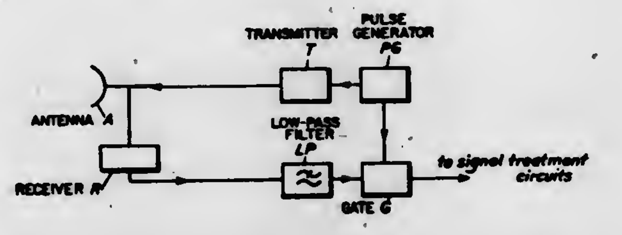
The sine and cosine phase detector output processing facilitates derivation of target velocity and sense. A Fourier transform display depicts Doppler component content in selected signals, the latter being controlled by bearing as well as range increment data.

3,725,924
INTERMITTENT CW SYSTEM FOR SATELLITE SURVEILLANCE
Roger L. Easton, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 22, 1970, Ser. No. 56,031
Int. Cl. G01s *9/04*
U.S. Cl. 343—10 **8 Claims**



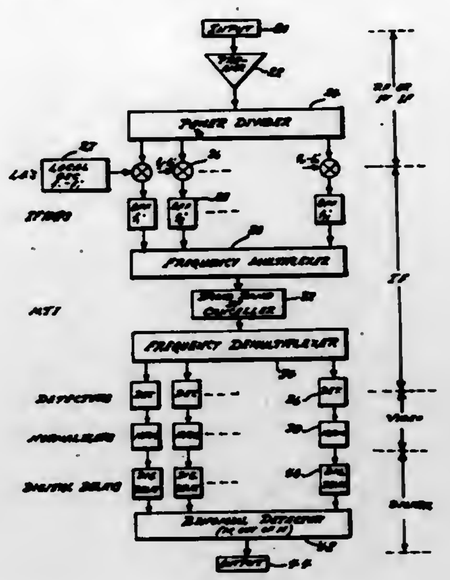
An electronic satellite surveillance system wherein transmitters and receivers are located at the same sites and wherein the transmitted signals consist of multifrequency, intermittent, CW electromagnetic energy which is radiated in narrow fan patterns and wherein the receivers include means which allow unambiguous angle and range determination.

3,725,925
TRANSMITTER- AND RECEIVER ARRANGEMENT FOR DETECTION OF TARGETS WITHIN A LIMITED RANGE NEXT TO THE ARRANGEMENT
Nils Erik Borje Holmgren, Goteborg, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Nov. 4, 1970, Ser. No. 86,800
Claims priority, application Sweden, Nov. 6, 1969, 15233/69
Int. Cl. G01s *7/28*
U.S. Cl. 343—17.1 R **3 Claims**



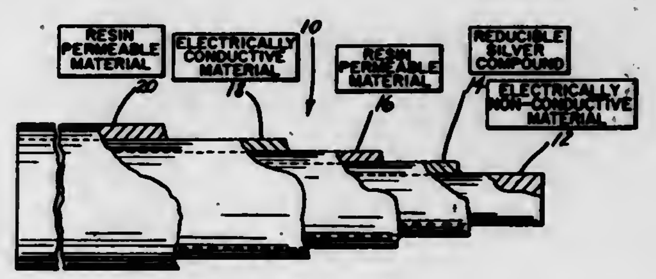
Transmitter- and receiver arrangement for detection of targets situated within a limited range next to the arrangement by means of transmitted and target reflected pulses, whereby the amplitude of the reflected pulses decreases with the distance to the target. A pulsed transmitter is connected to the transmitter antenna of the transmitter and receiver arrangement and is controlled from a pulse generator so that pulses are fed periodically to the transmitter antenna. The pulse generator also controls an on-off circuit in the receiver part of the arrangement, the input of which circuit via a low-pass filter is connected to a receiver which in its turn is connected to a receiver antenna. During a certain short time interval in conjunction with the trailing edge of the transmitted pulse the pulse generator opens the on-off circuit allowing a received signal to be fed to the signal processing circuit of the receiver. By selecting the cut-off frequency of the low-pass filter and the time interval during which the gate is open in a suitable manner a compensation of the distance dependent amplitude of the echo signal can be achieved.

3,725,926
FREQUENCY DIVERSIFIED RADAR SYSTEM
Manuel Ares, Manlius, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force
Filed March 11, 1969, Ser. No. 808,038
Int. Cl. G01s *9/02*
U.S. Cl. 343—17.5 **2 Claims**



A frequency diversity moving target indicator radar system utilizing a combination of coherent and incoherent processing to improve performance in clutter interference, including a multiple frequency waveform which is processed in a multiple channel receiver and further including a frequency multiplexer, a broad band delay line IF canceller and a demultiplexer. Normalizers producing digital signals, and digital delays for aligning the signals in the time domain combine with a binomial detector to produce target information.

3,725,927
DISAPPEARING-REAPPEARING RADAR CHAFF AND METHOD FOR PRODUCTION
William S. Fiedler, Madison, Wis., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Dec. 27, 1962, Ser. No. 248,188
Int. Cl. G01s *7/42*
U.S. Cl. 343—18 E **8 Claims**


RESIN PERMEABLE MATERIAL
ELECTRICALLY CONDUCTIVE MATERIAL
10
RESIN PERMEABLE MATERIAL
REDUCIBLE SILVER COMPOUND
ELECTRICALLY NON-CONDUCTIVE MATERIAL
20
18
16
14
12

Dispersable radar chaff having the characteristic of intermittently being electrically reflective and non-reflective, and comprising an inert core element progressively surrounded by alternated layers of reducable metallic salt, resin permeable material and oxidizeable metal, the chaff so formed being activated before dispersion by application of an oxidizing-reducing agent, said agent in progressively working its way inward alternately oxidizing a metallic layer to become non-reflective, and reducing a metallic salt layer to become reflective.

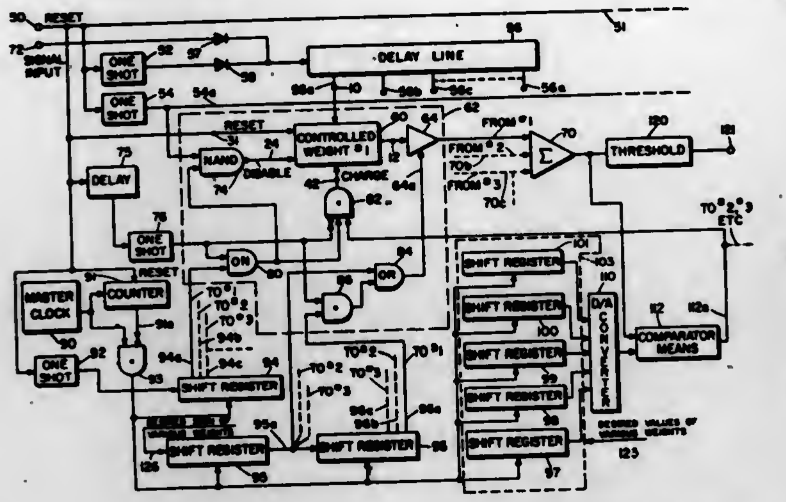
3,725,928
DIGITALLY CONTROLLED WEIGHT ADJUSTMENT SYSTEM

Edward George Klimchak, Owings Mills, and Erik Rosenbaum, Randallstown, both of Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed March 31, 1971, Ser. No. 129,728

Int. Cl. G01s *9/02*

U.S. Cl. 343—55 A **11 Claims**



A hyperplane radar signature recognizer consists of a delay line through which a radar signature which is to be classified is propagated. The delay line includes a plurality of time spaced taps at which time spaced points on the radar signature are sampled. Each delay line tap is sampled through an associated electrically controlled weight with the weighted samples being summed to provide a measure of signal classification. The electrically controlled weights are controlled by propagating through the delay line prior to the receipt of the radar signature an amplitude standardized pulse. With all weights disabled so as to present an open circuit to the aforementioned summing network the weights are enabled one at a time in turn, and the output from the summing network compared against a desired weight value. The electrically controlled weight is then adjusted until its value is equal to the desired value. After all the electrically controlled weights have been set to their desired values the signature recognizer is ready to receive the radar signature. The timing logic circuit required to program the adjustment of the electrically controlled weights is also disclosed.

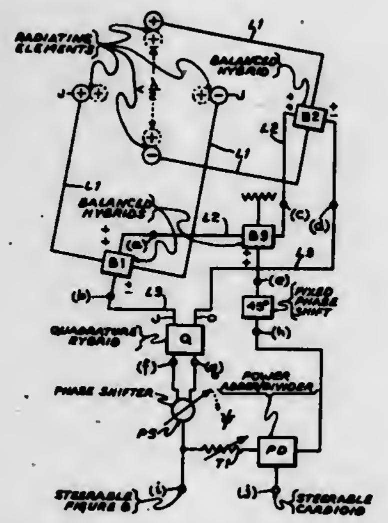
3,725,929
STEERABLE NULL ANTENNA ARRANGEMENT

William M. Spanos, Wayne, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 28, 1971, Ser. No. 157,245

Int. Cl. H01q *3/26*

U.S. Cl. 343—844 **27 Claims**



A steerable null antenna arrangement capable of providing cardioid, figure-eight or multinull steerable patterns utilizing electrically optimized phase shifters or resolvers for the steering elements. Via a hybrid feed arrangement a first pattern excitation is developed from two orthogonally arranged pairs of omnidirectional radiators simultaneously with an omnidirectional omniphase reference pattern without the need for a separate sense antenna. The simultaneously generated patterns combine to form a resultant pattern having at least one null (cardioid) which is electrically steerable to any angle in azimuth. Provision is made for varying the azimuthal angular separation of the nulls produced in the resultant pattern.

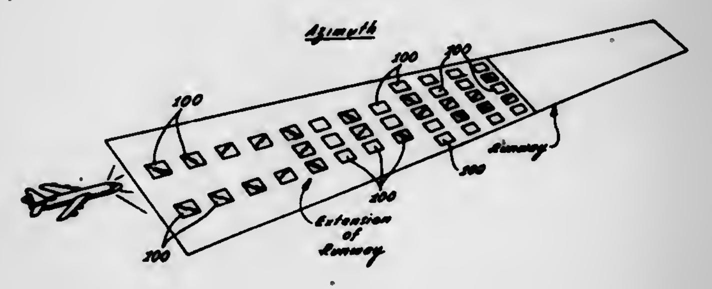
3,725,930
MICROWAVE RADIOMETRIC AIRCRAFT LANDING ASSIST SYSTEM

Philip J. Caruso, Jr., 15611 Del Prado Drive, Hacienda Heights, Calif.

Filed May 15, 1969, Ser. No. 824,860

Int. Cl. G01w *1/00*

U.S. Cl. 343—100 ME **5 Claims**



A microwave radiometric landing assist system is provided which serves as an aid for landing aircraft, for example, and which may complement the present practice of using visible light sources for runway guidance. The landing assist system of the present invention involves the use of passive metallic objects positioned on the ground in a predetermined pattern. These objects are detected by a microwave radiometric receiving system located in the aircraft, and which likewise may be considered passive in that it does not radiate energy from the aircraft. The microwave radiometric landing assist system of the invention provides a display for the pilot which is analogous to the display provided by visible light sources, for example, but which is available day and night and under all types of weather conditions. The information presented to the pilot is obtained at a rapid rate over an area which includes the metallic objects pattern. The area frame rate is fast enough to allow the pilot to react properly in flying the terminal approach.

3,725,931
AUTOMATIC INTEGRATOR CONTROL FOR RADIOMETRIC GUIDANCE

Robert P. Moore, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

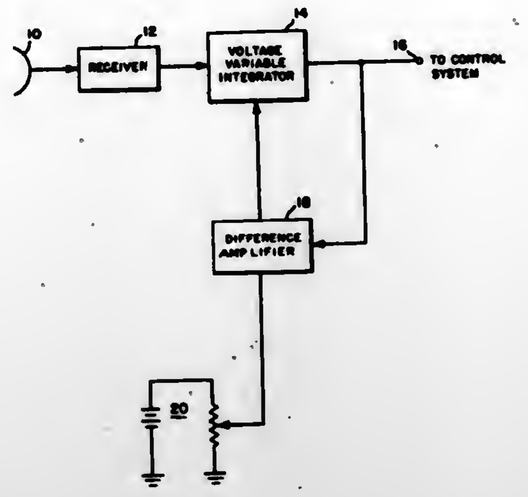
Filed April 16, 1971, Ser. No. 134,555

Int. Cl. G01w *1/00*

U.S. Cl. 343—100 ME **1 Claim**

A microwave radiometric sensor is provided with a voltage variable integrator controlled by a voltage from a difference

amplifier that compares the integrator output signal with a reference voltage. The reference voltage is established at a



value to maintain an optimum signal-to-noise ratio of the target signal.

3,725,932
RECEIVERS FOR PHASE COMPARISON RADIO NAVIGATION SYSTEMS

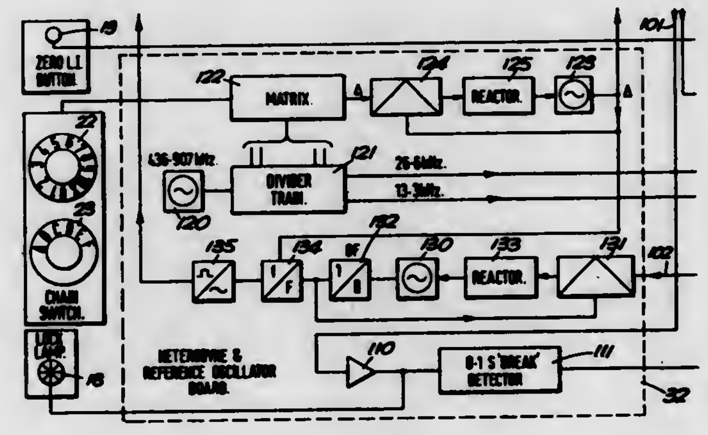
David Geoffrey Hughes, London, England, assignor to Decca Limited, London, England

Filed Nov. 9, 1970, Ser. No. 88,037

Claims priority, application Great Britain, Nov. 10, 1969, 54,973/69

Int. Cl. G01s *1/30*

U.S. Cl. 343—105 R **7 Claims**



In a phase comparison radio navigation system in which a receiver may be operated with signals from a number of different chains of transmitting stations, each chain using radiations on a number of different harmonics nf of a common fundamental frequency f, the different chains using different fundamental frequencies, the receiver is provided with an oscillator and divider chain feeding a syntheizer matrix to form a frequency syntheizer to provide heterodyne signals of frequency *n* Δ for changing the frequencies of the received signals from harmonics of f to harmonics of F where F a fixed frequency used in the receiver for all chains. This oscillator and divider chain also provides timing signals for effecting a digital phase comparison between multiple frequency signals radiated in turn for short periods from the various stations to provide lane identification (for resolving ambiguities in the much more highly accurate but ambiguous normal position line determination).

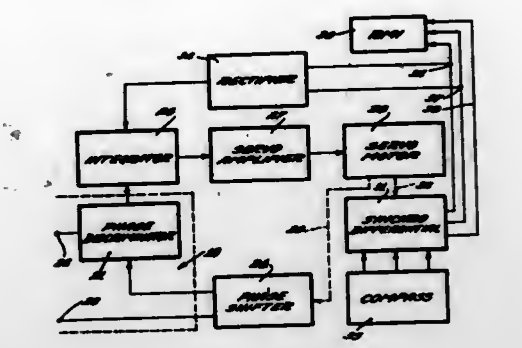
3,725,933
APPARATUS AND METHOD OF SMOOTHING NAVIGATION SIGNALS

Earl Stuart Perkins, Oak Brook, Ill., and James Hobbs, Overland Park, Kans., assignors to Butler National Corporation, Oak Brook, Ill.

Filed Sept. 11, 1970, Ser. No. 71,461

Int. Cl. G01s *1/44*

U.S. Cl. 343—106 R **1 Claim**



It is desirable to smooth the radio signals used in aircraft navigation so that maximum accuracy can be obtained in the control and operation of aircraft. The present invention provides for smoothing VOR bearing radio signals by limiting the maximum excursions which the signal can take in view of the axial parameters of the system and to adjust the maximum response with an integrator when necessary.

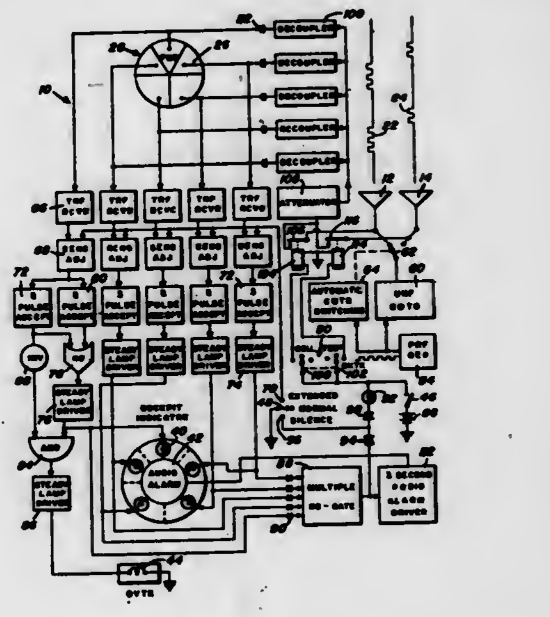
3,725,934
COLLISION WARNING INDICATOR

David L. Ludlow, P.O. Box 342, Oak Harbor, Wash.

Filed May 28, 1971, Ser. No. 147,781

Int. Cl. G01s *3/00, 5/02*

U.S. Cl. 343—112 CA **17 Claims**

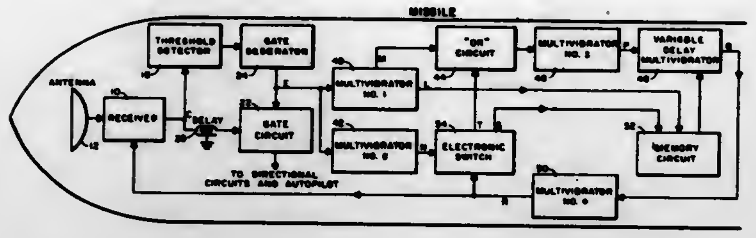


A train of output pulses from a pulse repetition generator is split into two pulse groups for modulating signal energy radiated forwardly and rearwardly from a moving craft in a collision warning system. Receiving antennas arranged in a circumferential sector array on each craft, pick-up signal energy within sector zones, from approaching or overtaken craft to energize directional sector lamps on an indicator panel. Pulse recognizing circuits limit response of the lamps to pulse modulated signal energy in such a manner that a warning is provided only if approaching or overtaken craft are within overlapping sector zones.

3,725,935
LEADING EDGE DISCRIMINATOR CIRCUIT

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 29, 1967, Ser. No. 627,596
Int. Cl. G01s *3/10*
U.S. Cl. 343—114.5 **2 Claims**

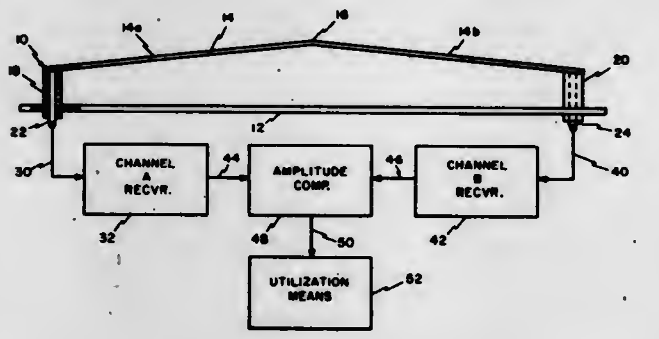


An apparatus for use in the guidance systems of anti-radar missiles to provide discrimination against echo signals when the target is a pulsed radar. It consists of circuits that permit only the leading portion of the first pulse received in each radar cycle to reach the seeker direction sensing circuits.

3,725,936
VHF TRAVELLING WAVE LOOP ANTENNA

Robert P. Sherman, Dix Hills, N.Y., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 16, 1971, Ser. No. 171,895
Int. Cl. G01s *3/28*
U.S. Cl. 343—119 **1 Claim**



An improved single antenna means serves two channels of an RDF simultaneously by utilizing each of two receivers (or transmitters) as the antenna termination for the other. The antenna features a novel shape in that it is truncated in width to one-half that of prior antennas.

3,725,937
RADAR SYSTEM FOR DETERMINING THE ANGULAR DEVIATION OF A TARGET FROM A REFERENCE LINE

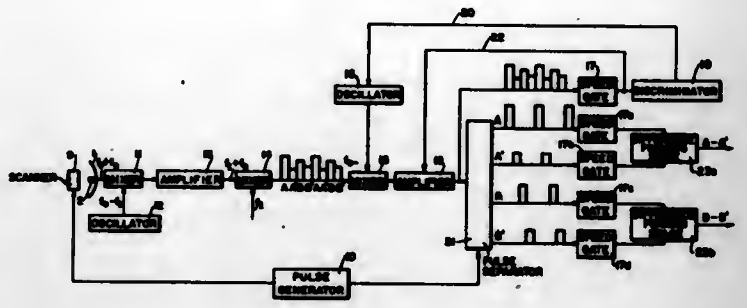
Olaf Schreiber, Ulm/Donau, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Donau, Germany

Filed May 25, 1964, Ser. No. 370,126

Claims priority, application Germany, May 25, 1963, T 24057

Int. Cl. G01s *3/16*
U.S. Cl. 343—120 **28 Claims**

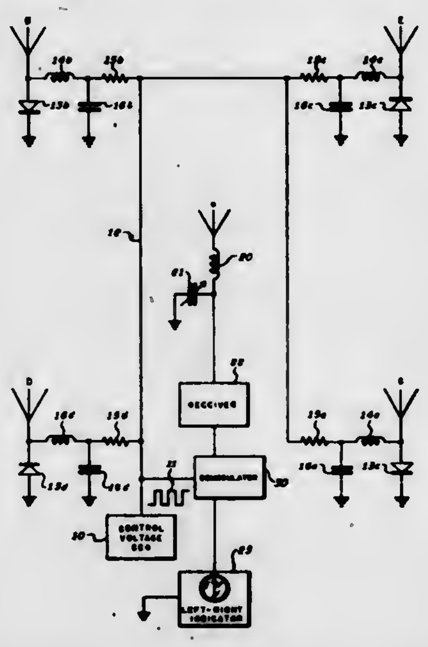
A radar system for determining the angular deviation of a target from a reference line. In an exemplary embodiment, an antenna arrangement is switched between at least two states which result in at least two respective radiation patterns having axes of symmetry at an angle to the optical axis of the antenna. The incoming signals are passed through a single receiving channel and are separated, in synchronism with the rate at which the antenna is switched to produce the different radiation patterns. The amplitude relation of successive separate signals is determined from which there is derived an error signal which is proportional to the angular deviation.



3,725,938
DIRECTION FINDER SYSTEM

Stanley H. Black, and Richard B. Formeister, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 5, 1970, Ser. No. 77,927
Int. Cl. G01s *3/20*
U.S. Cl. 343—120 **10 Claims**

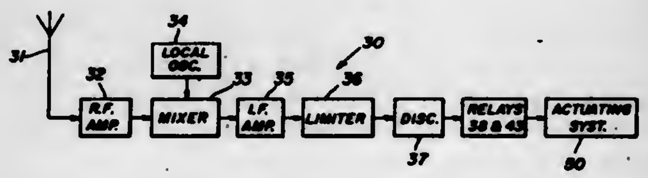


A high frequency radio direction finder receiver system of the over-lapping lobe switching type utilizes an array of lineal antenna elements formed of crossed multiple-element receiver antenna systems sharing one directly coupled receiver antenna element in common. Lobe switching is afforded through bias voltage control of a characteristic of the elements by semiconductor switching circuits.

3,725,939
VEHICLE SECURITY SYSTEM

Julian I. Saltzstein, Cleveland, Tenn., assignor to Sure Lock Systems, Inc., Cleveland, Tenn.

Filed June 7, 1971, Ser. No. 150,509
Int. Cl. H01h *47/20*; H04b *7/00*
U.S. Cl. 343—225 **14 Claims**

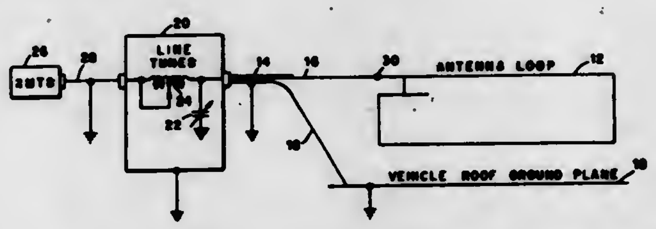


A security system for automatically locking and unlocking the door of a vehicle has a radio receiver mounted on the vehicle, which receiver provides a control signal when the proper RF signal is being received. An actuator responds to the control signal and unlocks the locking mechanism of the door and maintains the same unlocked as long as the control signal is present. A portable radio transmitter is adapted to be carried by the driver of the vehicle and is operative to provide an RF signal, so that the locking mechanism will be unlocked as long as the driver is within a predetermined distance from the door and will be locked when the driver is beyond that distance.

3,725,940
HORIZONTAL VEHICLE MOUNTED OMNIDIRECTIONAL LOOP ANTENNA HAVING A SHORTING STUB

Ralph J. Siple, Idaho Falls, Idaho, assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 8, 1972, Ser. No. 224,490
Int. Cl. H01q *1/32*
U.S. Cl. 343—713 **5 Claims**

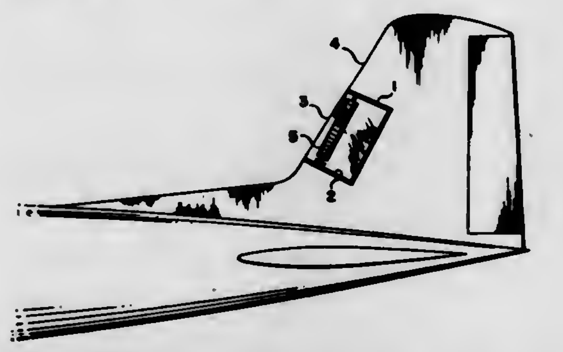


A horizontal rooftop antenna is adapted to be mounted on rolling stock or a highway truck. It is in the form of an end fed shunt-type closed loop radiator tuned to frequencies between 2 and 30 MHz.

3,725,941
HIGH-FREQUENCY NOTCH-EXCITED ANTENNA

Paul F. Stang, Saugus, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed April 2, 1968, Ser. No. 718,034
Int. Cl. H01q *1/28*
U.S. Cl. 343—708 **11 Claims**



A high-frequency, high-power transmitting antenna, suitable for use in aerospace vehicles flying at very high altitudes, is described. The antenna assembly comprises an inductive coil with appropriate tuning capacitors installed within a notch in the airframe. The airframe is used as the radiating element and the matching unit is enclosed in a sealed gas-filled container pressurized to approximately one standard atmosphere for the purpose of inhibiting corona in the region of the current-carrying parts at extremely high altitudes.

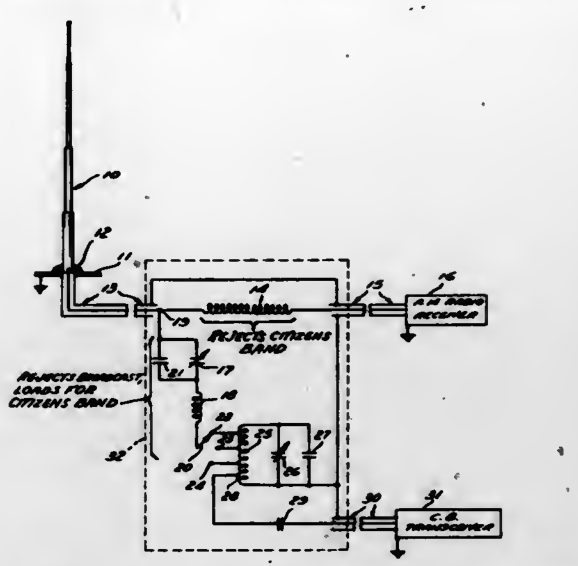
3,725,942
VEHICLE-MOUNTED ANTENNA AND COUPLING CIRCUIT THEREFOR

Milosh L. Ukmar, Euclid, Ohio, assignor to Allen Electric and Equipment Company, Chicago, Ill.

Filed April 22, 1965, Ser. No. 450,027
Int. Cl. H01q *1/34, 5/00, 9/00*
U.S. Cl. 343—715 **15 Claims**

Vehicle-mounted antenna system having a novel coupling circuit connected between the end of an antenna lead-in cable away from the latter's connection to a conventional standard broadcast antenna and a standard broadcast (A.M.) radio receiver and citizens band communications equipment. This coupling circuit:

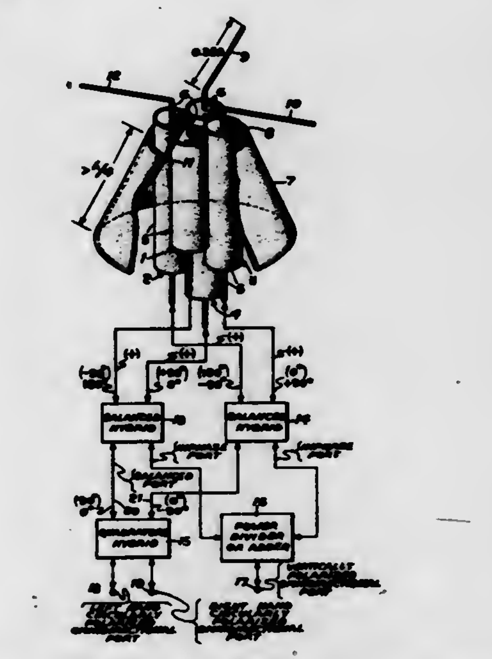
1. passes standard broadcast signals to the standard broadcast receiver and blocks incoming citizens band signals from this receiver;
2. passes citizens band signals and blocks standard broadcast signals between the antenna and the citizens band communications equipment;
3. increases the effective electrical length of the antenna for efficient transmission and reception of citizens band signals; and
4. impedance matches the antenna lead-in cable to the citizens band communications equipment.



3,725,943
TURNSTILE ANTENNA

William M. Spanos, Wayne, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Oct. 12, 1970, Ser. No. 79,964
Int. Cl. 343 *854*; H01q *21/26*
U.S. Cl. 343—797 **7 Claims**



A multimode turnstile antenna providing simultaneously, without interference, right and left hand circularly polarized omnidirectional patterns and a vertically polarized omnidirectional pattern. Four coaxial cables are disposed vertically and parallel to each other. A frusto-conical member has its smaller diameter end disposed adjacent the upper ends of the coaxial cables to electrically and physically interconnect the outer conductors of all the coaxial cables. This arrangement, when the two pairs of diagonally disposed coaxial cables are excited in a balanced relationship and the pairs are excited orthogonally by first energy, provides simultaneously both right and left hand circularly polarized omnidirectional patterns. When four members are disposed adjacent the upper half of the coaxial line with each of these members being coupled to the center conductor of a different one of the coaxial lines and extending outwardly at an angle (preferably 90°) with respect to the associated one of the coaxial lines with the members orthogonally related with respect to each other, the antenna, in addition, simultaneously provides, when each of the four coaxial lines are excited inphase by second energy, a vertically polarized omnidirectional pattern. An embodiment of a feed arrangement is disclosed enabling the four coaxial lines to be excited inphase by the second energy and simultaneously to enable each of the four coaxial lines to be excited by the different orthogonally related first energy.

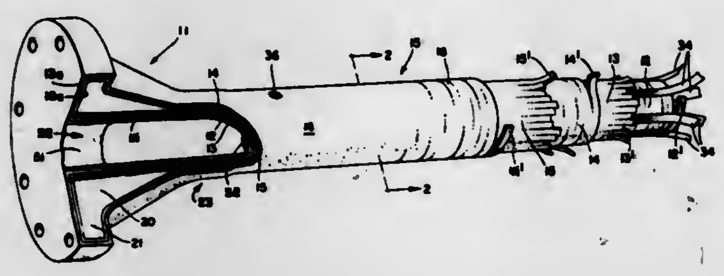
3,725,944
FREE STANDING FIBERGLASS ANTENNA

Michael Archibald Valeriote, Jr., R.R. No. 1 Puslinch, Guelph, Ontario, Canada

Filed Jan. 26, 1971, Ser. No. 109,825

Int. Cl. H01q *1/40*

U.S. Cl. 343—873 **9 Claims**



An antenna which is constructed exclusively of fiberglass, with the sole exception of the electrical conductors, couplings, and upper and lower ends, which may incorporate fiberglass or some other material, which antenna is constructed in a series of lengths, or in a single length in the case of a very short antenna, each of the lengths being essentially of hollow tubular construction, with the walls of the tube made up of alternate layers of glass fiber filaments, one such layer being made up of filaments extending longitudinally along the axis of the antenna, and the next such layer being made up of filaments which are wound spirally around the antenna, anywhere from four to twelve or more such layers being employed one upon the other, and in which the antenna base is constructed with at least the longitudinal glass fibers being formed into a generally bell-shaped base member, and incorporating a reinforcing core of which may be fiberglass or some other material with such longitudinal fibers extending through a central opening in the core, and then being folded backwardly around the exterior of the core, and led alongside the exterior of the antenna itself for a predetermined distance, the exterior of the core and fiberglass filaments extending therearound, being formed into a suitable base shape, by means of an exterior mould which is clamped therearound under pressure during curing of the resin.

3,725,945
GEARED FOLDING ANTENNA

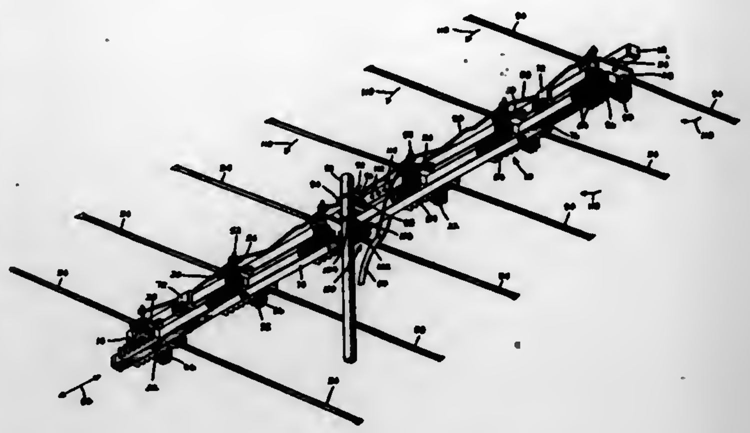
Lynn L. Lockwood, Burlington, Iowa, assignor to Antennacraft Company, Burlington, Iowa

Filed Feb. 23, 1972, Ser. No. 228,637

Int. Cl. H01q *3/02*

U.S. Cl. 343—882 **10 Claims**

A folding antenna is disclosed comprising a first elongated boom, an antenna element and a means pivotably securing the antenna element to the first boom for movement between retracted and extended positions. A first gear is drivingly coupled to the proximal end of the antenna element and a means for rotating the first gear is longitudinally, slidably coupled to the first boom. The antenna further includes a means for electrically connecting a transmission line to the antenna element and a means for clamping the antenna to a mast.



3,725,946
RADIO ANTENNA STRUCTURE

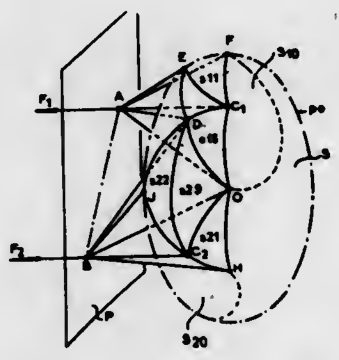
Michel Marie Francois Quequen, St. Nom La Breteche, France, assignor to Camusat Gueguen France, Saint Nam La Bretche, France

Filed April 27, 1971, Ser. No. 137,820

Claims priority, application France, April 29, 1970, 7018535

Int. Cl. H01q *15/14*

U.S. Cl. 343—912 **6 Claims**



Radio antenna structure of large size enabling as easy erection on the site by assembly of separate panels. The structure comprises an assembly of curvilinear triangles whose projection defines a network of lines intersecting at 60°, several assemblies of these triangles constituting the base of pyramids constituted by bars transmitting forces rearwardly of the reflecting surface of the antenna. The apices of these pyramids are united in a plane by rigid bars so that the whole of the structure is completely triangulated and indeformable.

The antenna provided with a radio source lends itself to an installation resisting wind and frost.

3,725,947
AUTOMATIC TIMEKEEPING AND ACCOUNTING UNIT

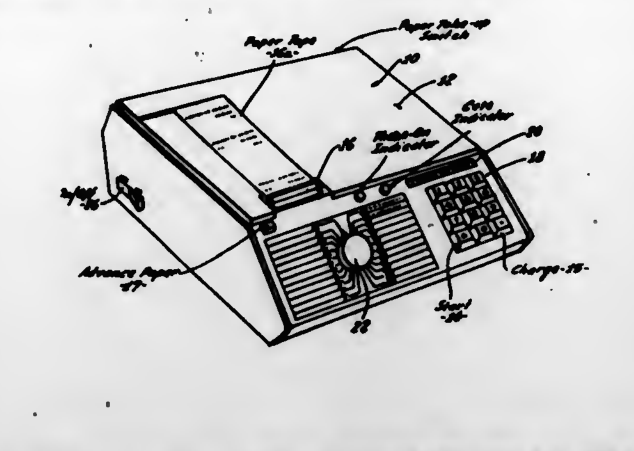
Eugene J. Albertini, Tarzana, and Stephen K. Shu, Los Angeles, both of Calif., assignors to Computer Management Systems, Inc., Los Angeles, Calif.

Filed Sept. 30, 1971, Ser. No. 185,055

Int. Cl. G07c *1/10*

U.S. Cl. 346—33 R **8 Claims**

An automatic timekeeping and accounting unit is provided which has particular utility for use by professional persons such as lawyers, accountants and the like. The unit of the invention is intended to be placed on, in, or behind the desk of the user. The unit, in one of its embodiments, contains a columnar printer, a numeric keyboard entry, a functional dial, a columnar device mechanism, operation buttons, and appropriate electronic circuitry. The unit functions automatically to record a client's identifying number, a work activity code number, and the time spent at the particular work, as well as other appropriate data. A record is then made on a paper tape, or on a magnetic tape cassette, which is used to make up statements, or other appropriate reports. This latter function may be carried out by the subscriber himself, or by a central data processing office.



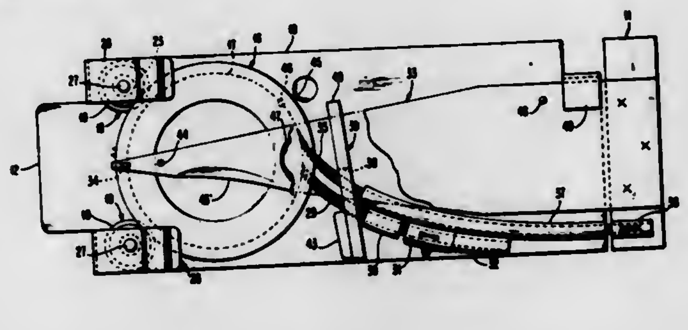
3,725,948
SCRATCH STRAIN RECORDER

Richard H. Prewitt, Cottage in the Woods, Route 3, Lexington, Ky.; Volker Schmidt, Todds Road, R.R. No. 7, Lexington, Ky., and Erich A. Schmidt, 2415 Liberty Road, Lexington, Ky.

Filed June 28, 1971, Ser. No. 157,187

Int. Cl. G01d *15/02*

U.S. Cl. 346—77 **14 Claims**



A scratch strain gauge has an annular target guided into its recording position where it cooperates with a scratch element on a scratch arm to indicate strains of opposite senses. The gauge has a guide adjacent one edge of a plate on which rollers are mounted for rotatably mounting the target in cooperation with brushes. The guide cooperates with a groove in the periphery of the target to insure that the groove receives one of the rollers, then the brushes, and finally the other roller as the target is inserted into its recording position. Ears, which are disposed above the rollers and extend outwardly beyond the rollers to overlie portions of the target when the target is in its recording position, aid in insuring that the target is seated on the roller tongues when disposed in its recording position.

3,725,949
PNEUMATIC INSTRUMENT SERVOMECHANISM

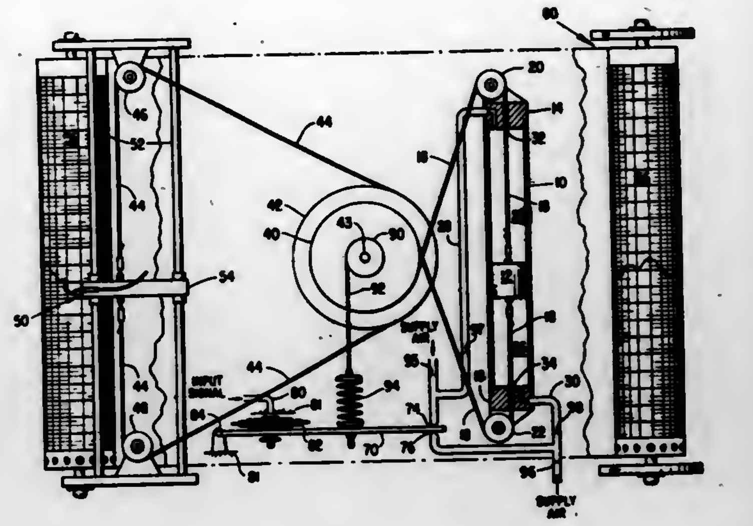
Leslie E. Friedline, Mentor; Thomas E. Stevenson, Willoughby Hills, and Lee A. Weber, Mentor, all of Ohio, assignors to Bailey Meter Company, Croydon, Surrey, England

Filed Jan. 3, 1972, Ser. No. 214,676

Int. Cl. G01d *5/42*

U.S. Cl. 346—72 **10 Claims**

A pneumatic servomechanism having a piston within a cylinder and fluid connections to the cylinder to introduce fluid pressure against either end of the piston so as to position the piston within the cylinder proportional to the difference in fluid pressure caused by a change in an input variable. A pulley system is attached to the piston by means of a cord connected to both ends of the piston and is proportionately rotated by the piston movement. A vane-nozzle differential fluid couple responsive to the rotation of the pulley system nulls the difference in pressure across the piston when the piston reaches a position corresponding to the change in the input variable.



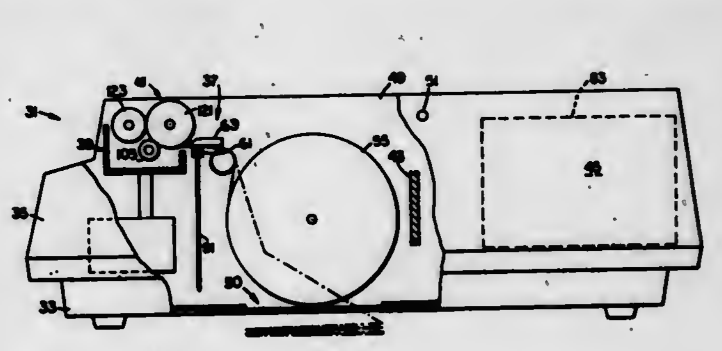
3,725,950
ELECTROSTATIC PRINTING APPARATUS

Reginald T. Lamb, Mountain View, Calif., assignor to Bausch & Lamb Incorporated, Rochester, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,128

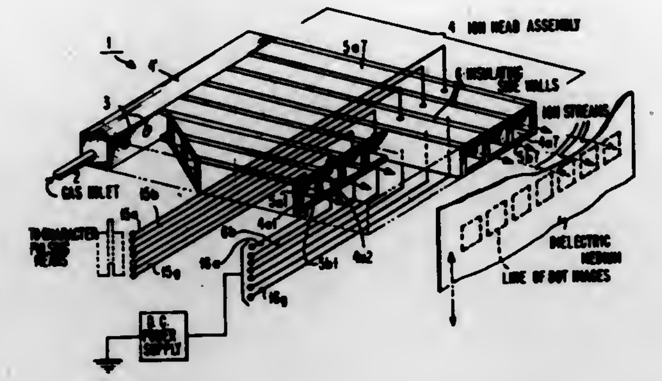
Int. Cl. G01d *15/06*; **G03g** *15/10*

U.S. Cl. 346—74 ES **18 Claims**



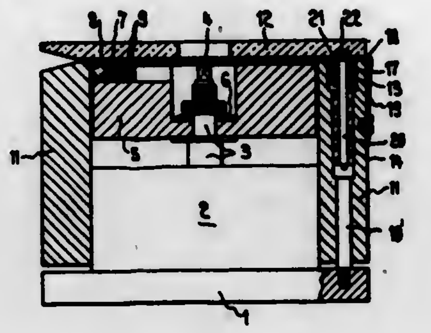
A printing machine, of the kind in which data is printed on sheet material at a printing station by electrostatically charging selected areas of the sheet to attach pigmented particles to the selected areas, includes two rows of opposed and linearly aligned electrodes at the printing station. One row of electrodes is a row of stylus electrodes with the electrodes divided into groups having the same number of electrodes in each group. Each group is further divided into an odd block and an even block of electrodes with the same number of electrodes in each block. The other row of electrodes is a row of segment electrodes with each segment having a length equal to the length of one block of stylus electrodes. The row of segment electrodes is offset with respect to the stylus electrodes in a manner such that an even segment electrode and an odd segment electrode are associated in a pair with each block of stylus electrodes. Corresponding stylus electrodes in each group are connected together by a common supply line or highway. The voltage as supplied to either a stylus electrode or a segment electrode is insufficient by itself to produce a charge on the sheet; but when the voltage supplied to a stylus electrode is combined with the voltage supplied to an opposed segment electrode, a charge is produced on the sheet. This division of the voltage and this method of associating paired segments with each block of stylus electrodes are used to control the selective charging of areas of the sheet along the line of the opposed rows of electrodes.

3,725,951
ELECTRO-IONIC PRINTING
Robert E. McCurry, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 16, 1971, Ser. No. 153,718
Int. Cl. G01d *15/06*; H01j *29/84*
U.S. Cl. 346—74 ES **4 Claims**



A method of forming electrostatic images on a dielectric surface by controlling the relative ion concentration in a gas stream moving through a channel and directed upon said dielectric surface. Application of an electric field across the channel enables the stream to vary in ion concentration so as to cause the formation of a desired linear charge configuration on the dielectric. Selective application of electric fields to an array of channels causes formation of desired image charge configurations on the dielectric surface.

3,725,952
TIME-MEASURING DEVICE
Werner Sulzberger, Dahlholzliweg 13, Bern, Switzerland
Filed Sept. 11, 1970, Ser. No. 71,449
Claims priority, application Switzerland, Sept. 20, 1969, 14166/69
Int. Cl. G07c *1/06*
U.S. Cl. 346—82 **9 Claims**

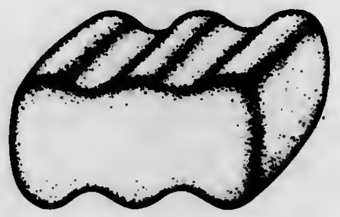


A time-stamp clock for marking a time card comprising a timepiece mechanism in driving relation with a rotatable stamp having at least one time mark, and means for positioning a time card relative to said stamp to enable marking at different times on said card with the time marks disposed substantially in registry thereon.

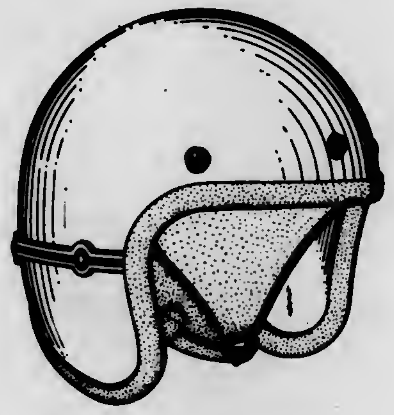
DESIGNS

APRIL 3, 1973

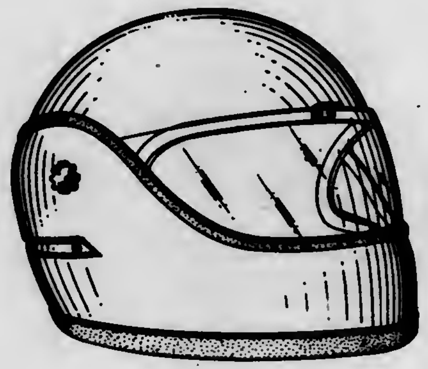
226,595
HAM PRODUCT
Andre Caunes, F 74-Langin, par Bons-en-Chablais, France
Continuation-in-part of design application Ser. No. 18,800, Aug. 22, 1969. This application Aug. 26, 1971, Ser. No. 175,126
Claims priority, application France Mar. 7, 1969
Term of patent 14 years
Int. Cl. D1—*04*
U.S. Cl. D1—26



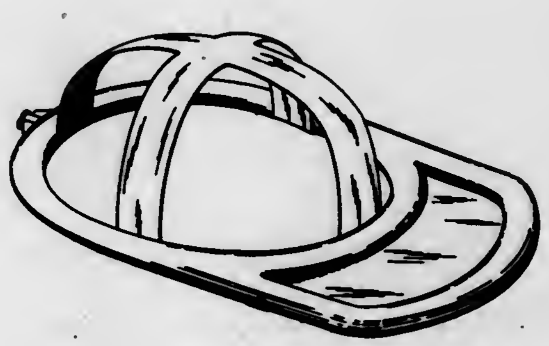
226,596
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kakoh Co., Ltd., Tokyo, Japan
Filed June 16, 1971, Ser. No. 153,924
Claims priority, application Japan Dec. 17, 1970
Term of patent 3½ years
Int. Cl. D2—*03*
U.S. Cl. D2—232



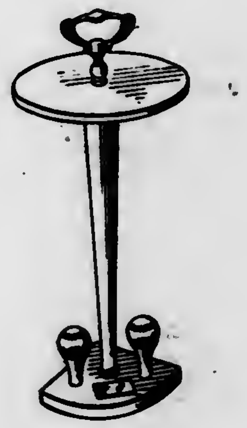
226,597
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kakoh Co., Ltd., Tokyo, Japan
Filed July 1, 1971, Ser. No. 159,086
Claims priority, application Japan Apr. 20, 1971
Term of patent 3½ years
Int. Cl. D2—*03*
U.S. Cl. D2—232



226,598
EYE VISOR
David Yeeda, Rochester, N.Y.
(14045 Los Sancho St., Dallas, Tex. 75240)
Filed Feb. 4, 1972, Ser. No. 223,810
Term of patent 14 years
Int. Cl. D2—*203*
U.S. Cl. D2—247



226,599
TABLE
Edwin D. Charles, % Ed Charles Enterprises Inc., 27–28 Gillmore St., East Elmhurst, N.Y. 11369
Filed May 11, 1971, Ser. No. 142,433
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—20



226,600
TABLE
Edwin D. Charles, % Ed Charles Enterprises Inc., 27–28 Gillmore St., East Elmhurst, N.Y. 11369
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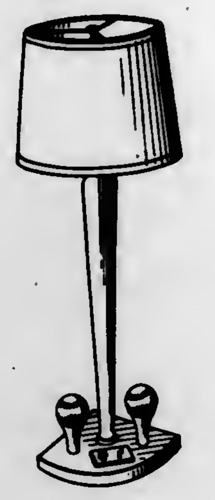
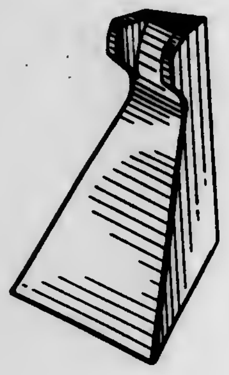
Term of patent 14 years
Int. Cl. D6—*03*

U.S. Cl. D6—20



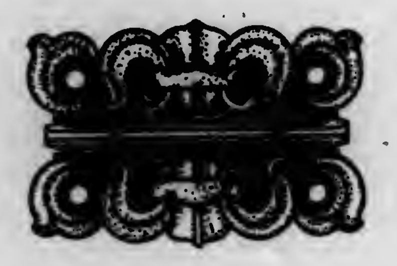
226,601
CUSHION
William O. Klotzbach, 19925 Lorain Road, Apt. 6, Fairview Park, Ohio 44126
Filed Mar. 15, 1972, Ser. No. 235,099
Term of patent 14 years
Int. Cl. D6—*09*

U.S. Cl. D6—201



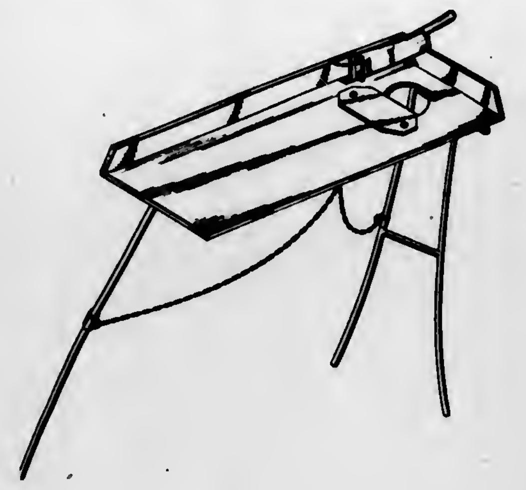
226,602
HINGE
Lee Richard Chasen, Port Chester, N.Y., assignor to Coats & Clark, Inc., New York, N.Y.
Filed Jan. 3, 1972, Ser. No. 215,242
Term of patent 14 years
Int. Cl. D8—*06*

U.S. Cl. D8—191



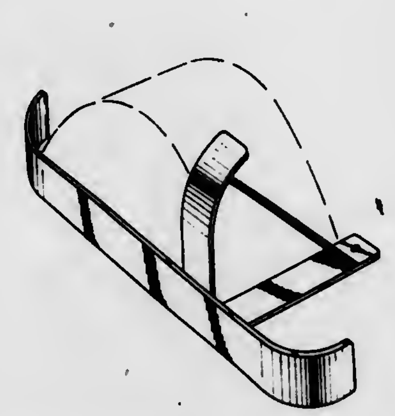
226,603
FOLDING TABLE FOR CLEANING FISH AND SMALL GAME
Leonard Burton Knighten, 2424 N. Piedras St., El Paso, Tex. 79930
Filed Mar. 23, 1970, Ser. No. 22,020
Term of patent 14 years
Int. Cl. D22—*05*

U.S. Cl. D11—1



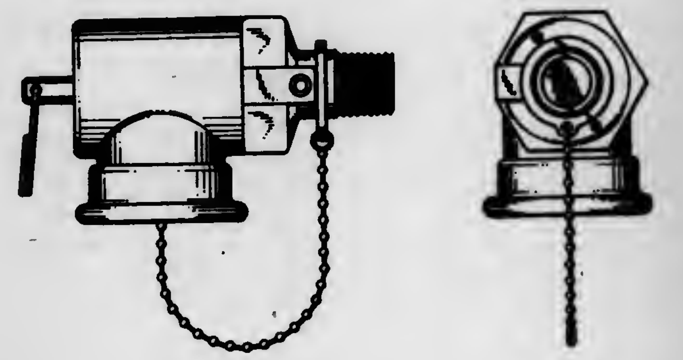
226,604
BRACKET FOR CENTERING A CAMPER UNIT WITHIN A TRUCK BED
Carl G. Henson, 3063 Webster St., Eugene, Oreg. 97402
Filed May 6, 1971, Ser. No. 141,070
Term of patent 14 years
Int. Cl. D12—*16*

U.S. Cl. D14—6 A



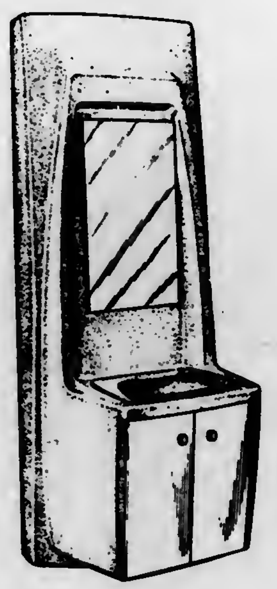
226,605
PRESSURE RELIEF VALVE
Frederick J. Brindisi, Rochester, N.Y., assignor to Qualitrol Corporation, Fairport, N.Y.
Filed Jan. 20, 1972, Ser. No. 219,602
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—19



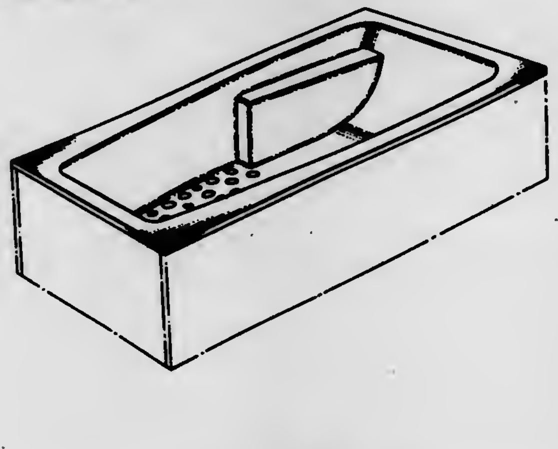
226,606
BATHROOM VANITY UNIT
Myron J. Ament, Bethel Park, Pa., assignor to Wallace-Murray Corporation, Pittsburgh, Pa.
Filed July 27, 1971, Ser. No. 164,491
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D23—49



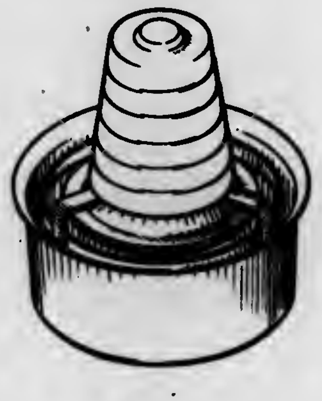
226,607
BATHTUB
William J. Lawrence, Van Nuys, Calif., assignor to Gruber Systems Inc., North Hollywood, Calif.
Filed May 11, 1971, Ser. No. 142,429
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D23—55



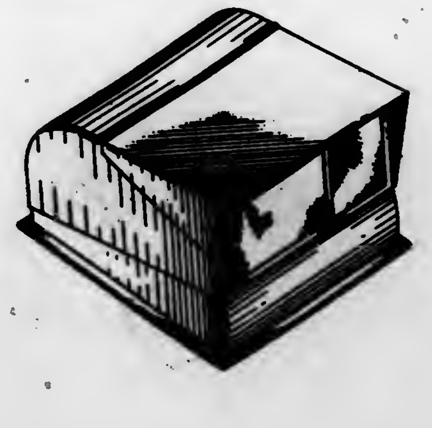
226,608
HUMIDIFIER
Robert T. Martin, 1708 East 4800 South, Salt Lake City, Utah 84117
Filed Sept. 1, 1971, Ser. No. 177,193
Term of patent 14 years
Int. Cl. D23—*99*

U.S. Cl. D23—146



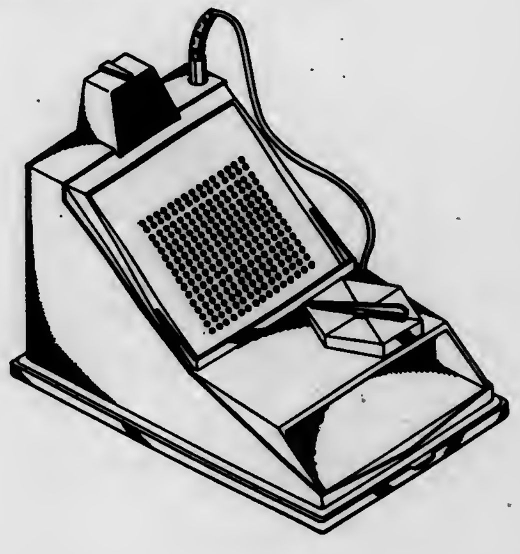
226,609
ENCLOSURE FOR ROOF MOUNTED APPARATUS
Hilton H. Drew, 559 S. Ridge St., Mesa, Ariz. 85204
Filed May 7, 1971, Ser. No. 141,461
Term of patent 14 years
Int. Cl. D23—*04*

U.S. Cl. D23—153



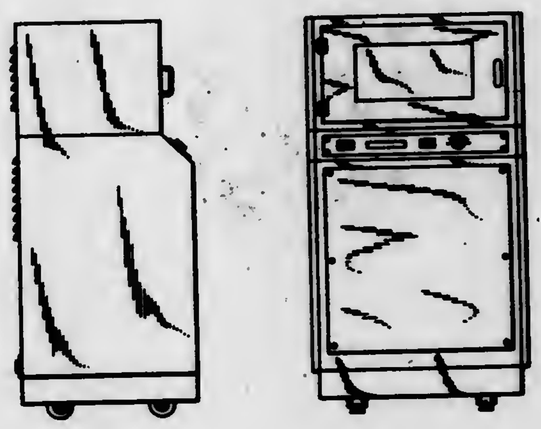
226,610
ELECTRICAL TEACHING UNIT
Robert E. Aumann, Iron Ridge, Wis., assignor to Enrichment Reading Corporation of America, Inc., Iron Ridge, Wis.
Filed Sept. 10, 1971, Ser. No. 179,621
Term of patent 14 years
Int. Cl. D19—*07*

U.S. Cl. D25—1 R



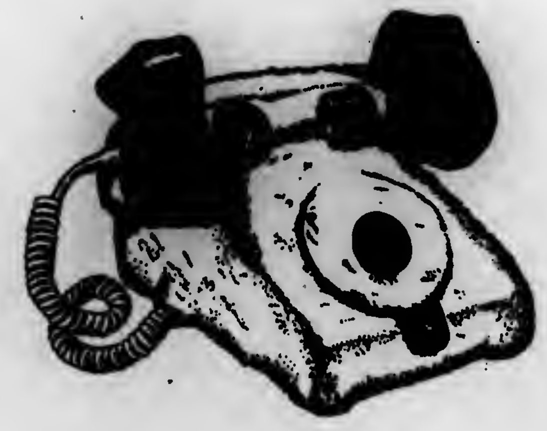
226,611
NUMERICAL CONTROL MACHINE
Warren Ponemon, Oyster Bay, N.Y., assignor to Autonumerics, Inc., Westbury, N.Y.
Filed Aug. 18, 1971, Ser. No. 172,952
Term of patent 14 years
Int. Cl. D14—*02*

U.S. Cl. D26—5 C



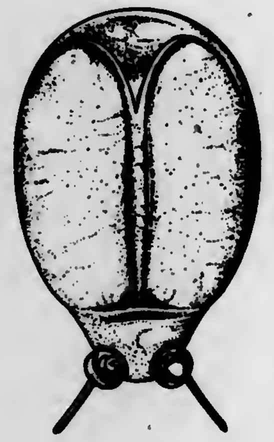
226,612
TELEPHONE COVERS

Barbara H. Robinson, 9955 Miraflores Drive,
Baton Rouge, La. 70815
Filed Apr. 29, 1971, Ser. No. 138,849
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



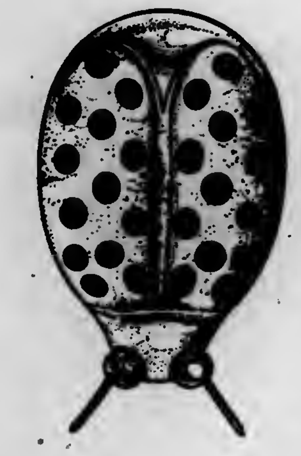
226,613
DECORATIVE ORNAMENT

Jay T. Stauffer, Lititz, Pa., assignor to Wilton
Brass Company, Columbia, Pa.
Filed June 18, 1971, Ser. No. 154,483
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 B



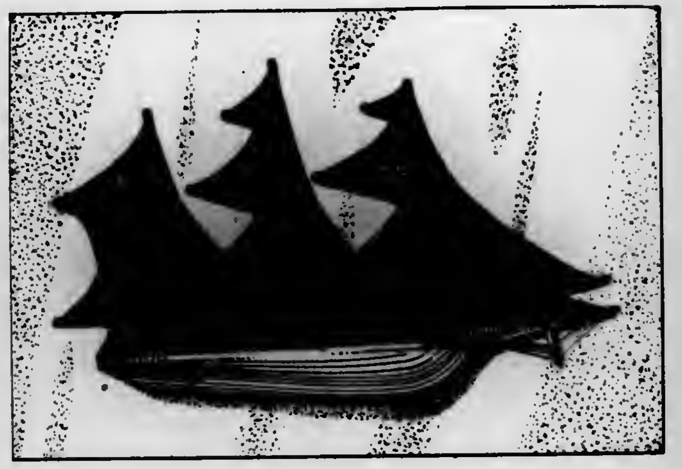
226,614
DECORATIVE ORNAMENT

Jay T. Stauffer, Lititz, Pa., assignor to Wiltou
Brass Company, Columbia, Pa.
Filed June 18, 1971, Ser. No. 154,482
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 B



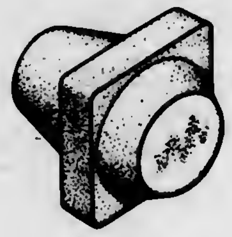
226,615
SHIP MODEL WALL PLAQUE

Francis R. Nartowicz, 204 Fort Worth St.,
Hampton, Va. 23369
Filed Aug. 20, 1971, Ser. No. 173,741
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



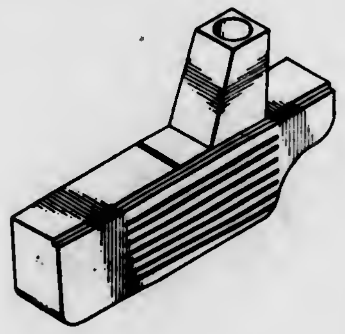
226,616
RESILIENT BALL FOR A TWIRLING BATON

John F. Hale, 3729 Greenbay Drive 45415, and Frederick J. Miller, 2150 E. Rahn Road 45440, both of Dayton, Ohio
Filed May 21, 1971, Ser. No. 145,997
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 BC



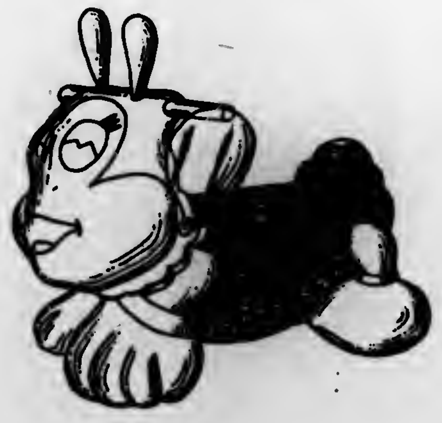
226,617
PUTTER HEAD

John Dohan, Jr. 11111 Violett Drive,
Garden Grove, Calif. 92640
Filed July 1, 1971, Ser. No. 159,102
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



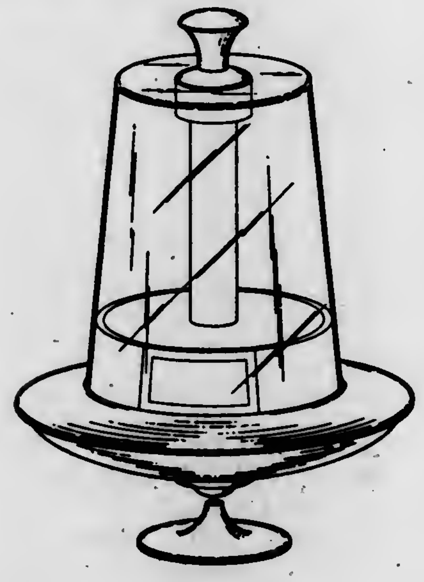
226,618
INFANT'S RIDING TOY

Leonard M. Dvorin, Beechurst, N.Y., assignor to Hasbro
Industries, Inc., Pawtucket, R.I.
Filed Aug. 9, 1971, Ser. No. 170,409
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



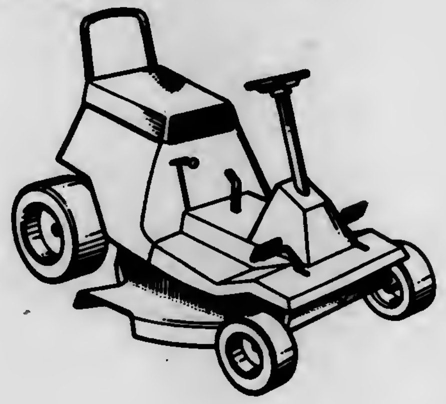
226,619
TOY SPINNING TOP

Herbert A. Plassmann, Bryan, Ohio, assignor to The
Ohio Art Company, Bryan, Ohio
Filed Aug. 20, 1971, Ser. No. 173,712
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 CC



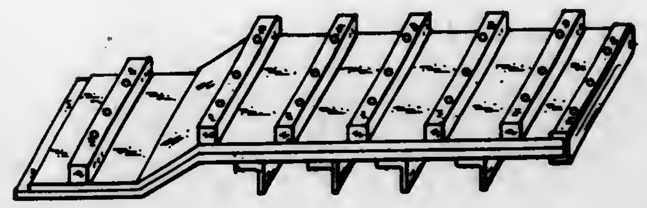
226,620
RIDING MOWER

Mario F. Fernandez and Robert L. Rydeen, St. Paul, Minn., assignors to Toro Manufacturing Corporation, Minneapolis, Minn.
Filed Aug. 30, 1971, Ser. No. 176,437
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 B



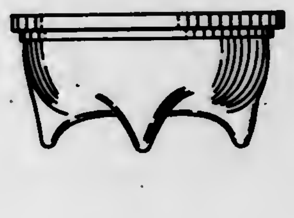
226,621
VEHICLE TRACTION BOARD

Louis Bartman, 7227 Horrocks St.,
Philadelphia, Pa. 19149
Filed Dec. 29, 1971, Ser. No. 213,802
Term of patent 14 years
Int. Cl. D12—*05, 99*
U.S. Cl. D41—1 C



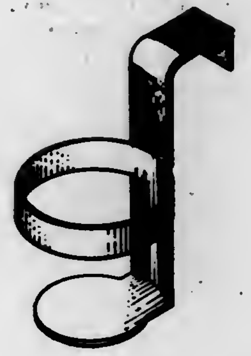
226,622
COVERED DISH OR SIMILAR ARTICLE

Norman L. Chapman, Lincolnwood, Ill., assignor to National Portion Control, Inc., Chicago, Ill.
Filed Sept. 7, 1971, Ser. No. 178,530
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 A



226,623
HOLDER FOR A BEVERAGE CONTAINER OR THE LIKE

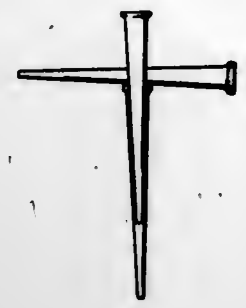
Grady W. Shuford, Forest City, N.C., assignor to HHS
Investors, Inc., Forest City, N.C.
Filed July 29, 1971, Ser. No. 167,546
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—21 A



226,624
CROSS

William T. Maze, 105 Middle St.,
Greenwood, Ind. 46142
Filed Jan. 4, 1972, Ser. No. 215,448
Term of patent 14 years
Int. Cl. D11—*01*

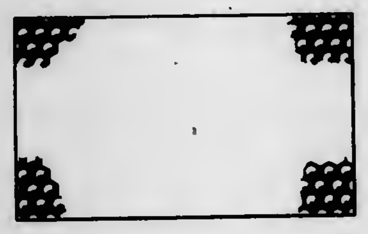
U.S. Cl. D45—16 B



226,625
LUMINAIRE LENS

Ian Lewin, Newark, Ohio, assignor to Holophane
Company, Inc., New York, N.Y.
Filed July 16, 1971, Ser. No. 163,181
Term of patent 14 years
Int. Cl. D26—*05*

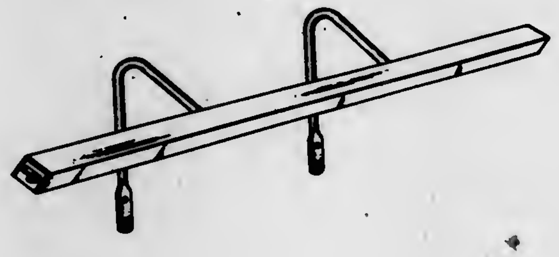
U.S. Cl. D48—16 A



226,626
ARTIST'S LIGHT

Carl A. Sundstrom, deceased, late of Torrance, Calif.; by Carl C. Sundstrom, administrator, 1700 Via Arriba, Palos Verdes Estates, Calif. 90274
Filed July 15, 1971, Ser. No. 163,125
Term of patent 14 years
Int. Cl. D26—*05*

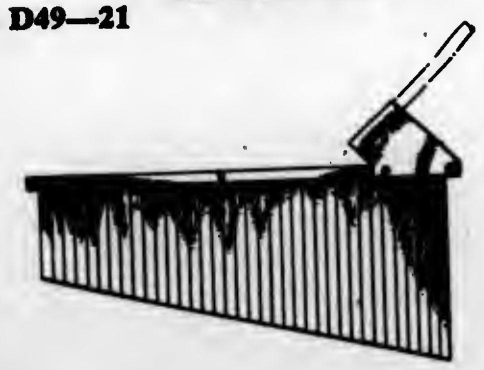
U.S. Cl. D48—20



226,627
BROOM HEAD OR THE LIKE

Milan J. Mylan, 974 Haverford Ave.,
Pacific Palisades, Calif. 90272
Filed July 12, 1971, Ser. No. 161,407
Term of patent 3½ years
Int. Cl. D4—*01*

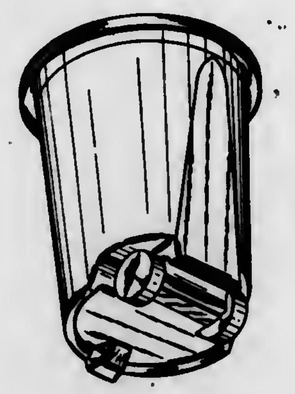
U.S. Cl. D49—21



226,628
REFUSE CONTAINER

James L. Shannon, 7914 Greenbuch Ave., Van Nuys, Calif. 91402, and Phillip J. Gentile, 16301 Knollwood Ave., Granada Hills, Calif. 91344
Filed Feb. 7, 1972, Ser. No. 224,379
Term of patent 14 years
Int. Cl. D7—*06*

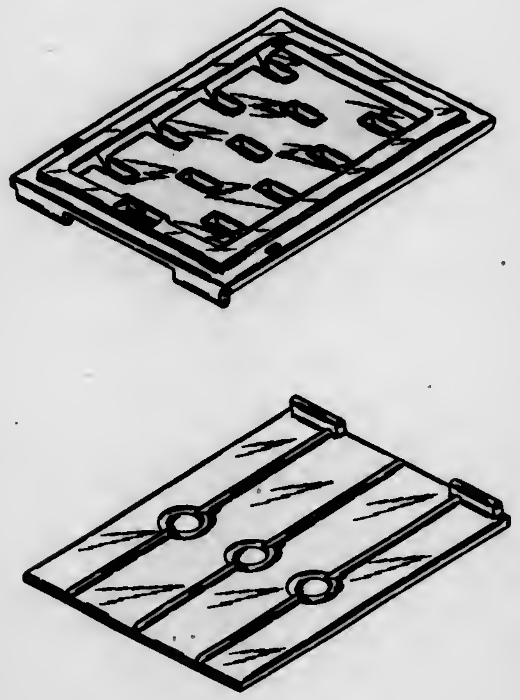
U.S. Cl. D49—30



226,629
REFUSE CONTAINER LID

James L. Shannon, 7914 Greenbuch Ave., Van Nuys, Calif. 91402, and Phillip J. Gentile, 16301 Knollwood Ave., Granada Hills, Calif. 91344
Filed Feb. 7, 1972, Ser. No. 224,394
Term of patent 14 years
Int. Cl. D7—*06*

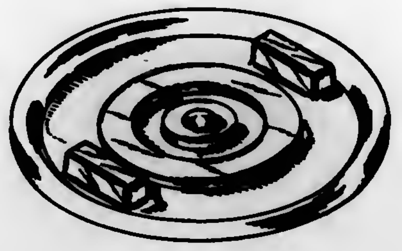
U.S. Cl. D49—35



226,630
REFUSE CONTAINER CLOSURE

Phillip J. Gentile, 16301 Knollwood Ave., Granada Hills, Calif. 91344, and James L. Shannon, 7914 Greenbuch Ave., Van Nuys, Calif. 91402
Filed Feb. 7, 1972, Ser. No. 224,397
Term of patent 14 years
Int. Cl. D7—*06*

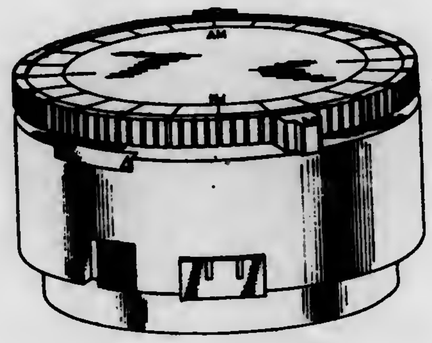
U.S. Cl. D49—35



226,631
TIMER

Jack F. Baker, Glenview, and Robert W. Fee, Oak Park, Ill., assignors to AMF Incorporated
Filed May 5, 1971, Ser. No. 140,649
Term of patent 14 years
Int. Cl. D10—*03*

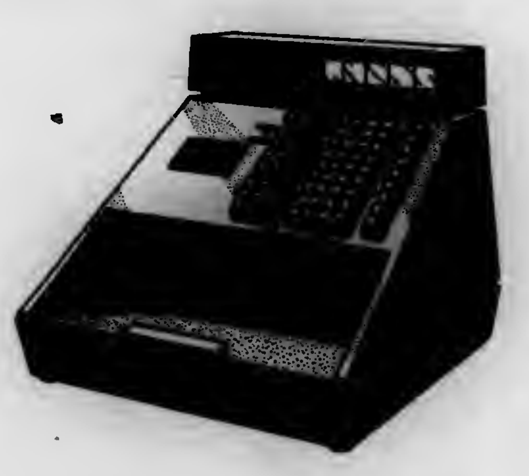
U.S. Cl. D42—7 R



226,632
COMBINED CASH REGISTER AND DATA TERMINAL

Randall D. Jackson, Cincinnati, Ohio, assignor to Comp-Acct, Inc., Cincinnati, Ohio
Filed Apr. 29, 1971, Ser. No. 138,853
Term of patent 14 years
Int. Cl. D20—*99*

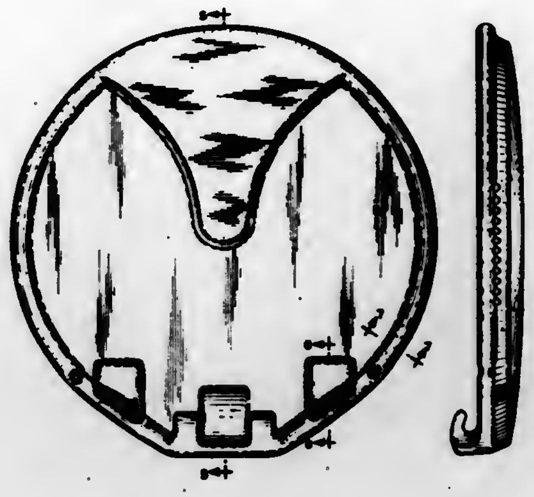
U.S. Cl. D52—4 A



226,633
WATER SLED

Nevitt S. Beck, 260 Bonnett St. SW.,
North Canton, Ohio 44720
Filed July 26, 1971, Ser. No. 165,884
Term of patent 14 years
Int. Cl. D12—*14*

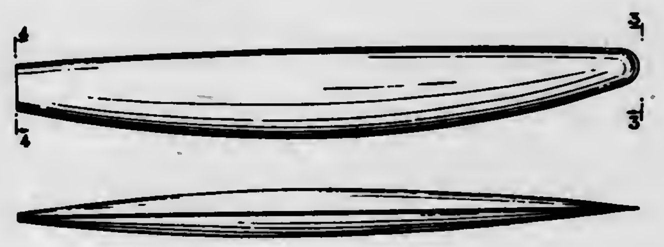
U.S. Cl. D71—1 CC



226,634
CATAMARAN HULL

Paul F. Swenson, Sr., and Paul F. Swenson, Jr., Cleveland, and David D. Dennis, Wickliffe, Ohio, assignors to Great Lakes Sports Mfg. Company
Filed Aug. 31, 1971, Ser. No. 176,800
Term of patent 14 years
Int. Cl. D12—*16*

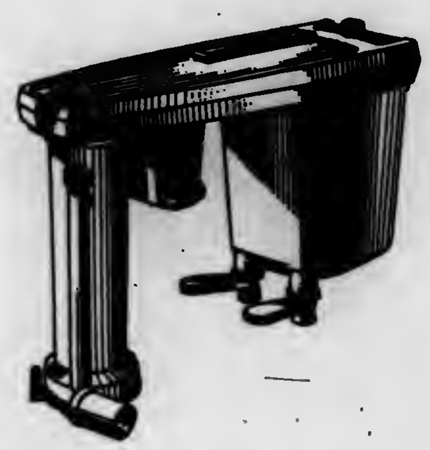
U.S. Cl. D71—1 BB



226,635
HYDROTHERAPY APPARATUS

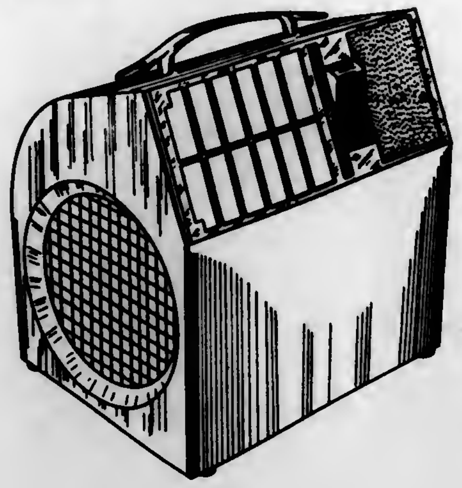
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed Mar. 27, 1972, Ser. No. 238,751
Term of patent 14 years
Int. Cl. D24—*04*

U.S. Cl. D83—1 T



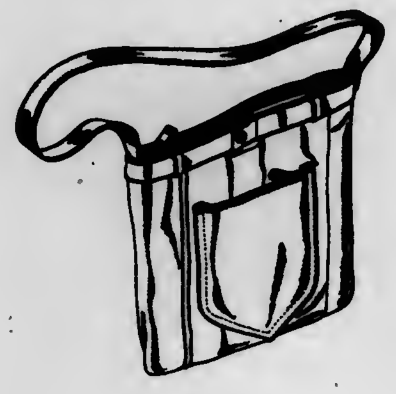
226,636
HAIR DRYER
George A. Van Doren, Jr., 5716 View Lane,
Edina, Minn. 55436
Filed Jan. 21, 1972, Ser. No. 219,922
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D86—10 F



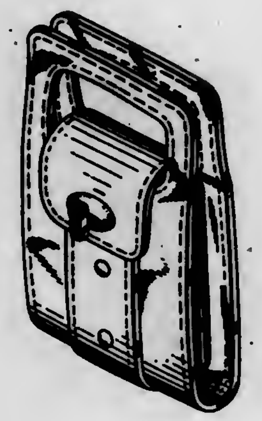
226,637
FABRIC POCKETBOOK
Margo Jeanette Rauch, 1657 E. 19th St.,
Brooklyn, N.Y. 11229
Filed May 10, 1971, Ser. No. 142,107
Term of patent 14 years
Int. Cl. D3—*02*

U.S. Cl. D87—3 F



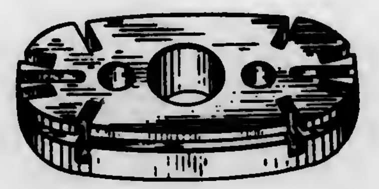
226,638
POCKETBOOK
Henry C. White, 67 Green Hill Road,
Springfield, N.J. 07081
Filed Jan. 14, 1972, Ser. No. 218,050
Term of patent 14 years
Int. Cl, D3—*02*

U.S. Cl. D87—3 A



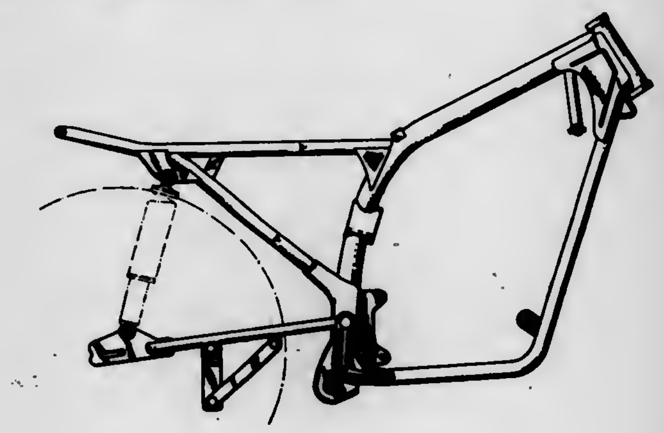
226,639
UMBRELLA CROWN
Heinz Weber, Hilden, Germany, assignor to Telesco
Brophey Limited, Montreal, Quebec Canada
Continuation-in-part of abandoned design application Ser. No. 24,600, Aug. 20, 1970. This application Aug. 10, 1971, Ser. No. 170,677
Claims priority, application Germany Feb. 20, 1970
Term of patent 14 years
Int. Cl. D3—*03*

U.S. Cl. D88—3 A



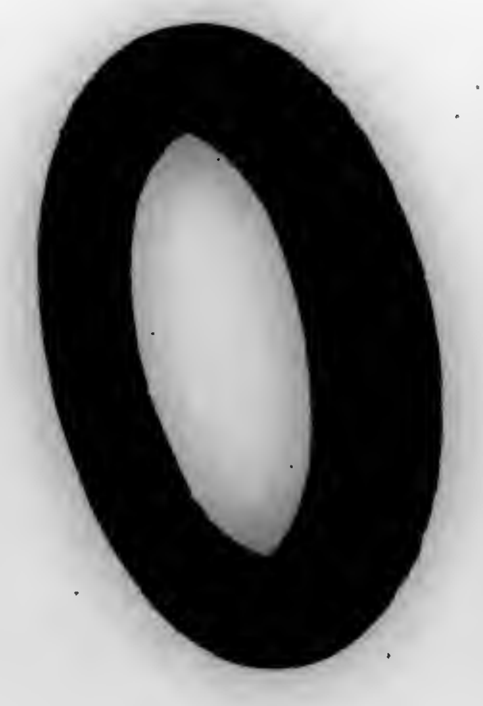
226,640
FRAME FOR A MOTORCYCLE
Ramo Vecchi and Carlo Vecchi, San Bartolo Nancalpan,
Mexico, assignors to Acer-Mex., S.A., Mexico, Mexico
Filed May 6, 1971, Ser. No. 141,084
Term of patent 14 years
Int. Cl. D12—*11*

U.S. Cl. D90—8



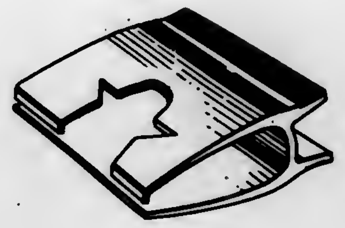
226,641
TIRE
Anthony M. Mills, Sutton Coldfield, England, assignor to
Dunlop Limited, Erdington, Birmingham, England
Filed July 30, 1971, Ser. No. 167,889
Claims priority, application Great Britain Feb. 8, 1971
Term of patent 14 years
Int. Cl. D12—*13*

U.S. Cl. D90—20 R



226,642
SAFETY RAZOR HEAD GUARD
Ted L. Ferrier, Jr., P.O. Box 1451, Dallas, Tex. 75221
Filed May 26, 1971, Ser. No. 147,279
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D95—3 A



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3D DAY OF APRIL, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- **Fuller, Sterritt R., Jr.; Munzel, Howard E.; and Woosley, Kenneth D., to International Business Machines Corporation.** Coated carrier particles with magnitude of triboelectric charge controlled and method of making same. 3,725,118, Cl. 117-100.00m.
- **Martin-Marietta Corporation:** *See—*
  - Peppler, Richard B.; and Roskopf, Philip A., 3,725,097.
- **Wavetek:** *See—*
  - Naive, Joel A.; and Van Benschoten, Peter J., 3,725,782.
- **AB Cator & Celsius:** *See—*
  - Eriksson, Folke, 3,724,660.
- **AB Cold Bound Pellets:** *See—*
  - Kihlstedt, Per Gudmar, 3,725,032.
  - Kihlstedt, Per Gudmar, 3,725,033.
- **AB Sveriges Forenade Trikafabriker:** *See—*
  - Eng, Kjell; and Salomonsson, Sven-Olof, 3,724,284.
- **Abbott Laboratories:** *See—*
  - Beck, Karl Maurice, 3,725,323.
  - Freiberg, Leslie Alan, 3,725,385.
  - Von Esch, Anne Mary; and Crovetti, Aldo Joseph, 3,725,424.
- **Abbratozzato, Salvatore R.:** *See—*
  - Leimbach, Wendell B.; Marshall, James W.; and Abbratozzato, Salvatore R., 3,725,707.
- **Abe, Iwao:** *See—*
  - Kawano, Akira; Sakakibara, Kozo; Abe, Iwao; and Chonan, Takayuki, 3,725,472.
- **Abe, Toshiro:** *See—*
  - Kojima, Kiyoshi; and Abe, Toshiro, 3,725,820.
- **Abitibi St. Anne Paper Ltd.:** *See—*
  - Zehavi, Samuel; Boivin, Joseph J. R.; Hamilton, Douglas D.; and Ranzenhofer, Raoul, 3,724,518.
- **Acepcion, Antonio T.:** *See—*
  - Malabanan, Alejandro L.; and Acepcion, Antonio T., 3,724,006.
- **Acme Visible Records, Inc.:** *See—*
  - Tomlinson, Charles W., 3,724,743.
  - Wood, Hamilton L., 3,724,793.
- **Adaks Products Incorporated:** *See—*
  - Heen, Helge K., 3,725,205.
- **Adams, Don L.; and Cotton, Louis S., to United Aircraft Corporation.** Aircraft ground speed control system. 3,724,786, Cl. 244-77.00g.
- **Adams Industries:** *See—*
  - Tilp, George E., 3,725,641.
- **Adams, Jack J., to Dow Chemical Company, The.** Process for polymerizing styrene and maleic anhydride. 3,725,360, Cl. 260-78.50r.
- **Adams, Nicholas S.:** *See—*
  - Lindner, Ronald J.; Lindner, Allen J.; and Adams, Nicholas S., 3,724,116.
- **Adams, William J., Jr., to FMC Corporation.** Convertible track system for wheeled vehicle. 3,724,580, Cl. 180-9.200.
- **Adamson, Donald; and Arthur, Frank Henry, to Envopak Limited.** Security sealing device. 3,724,890, Cl. 292-322.000.
- **Addmaster Corporation:** *See—*
  - Takenaka, George, 3,724,309.
- **Addressograph-Multigraph Corporation:** *See—*
  - Masiello, Felix R., 3,724,945.
  - Scopp, Howard A., 3,725,184.
- **Adkins, William B.; Bauer, Thomas F.; and Beane, James O., to Borden, Inc.** Method for producing foundry molds and foundry molding compositions. 3,725,333, Cl. 260-38.000.
- **Adler, Franklin P., to Pullman Transport Leasing Company.** Discharge arrangement for railway hopper cars. 3,724,909, Cl. 302-52.000.
- **Adler, Karl-Heinz, to Bosch, Robert, G.m.b.H.** Fuel injection regulator for internal combustion engines. 3,724,430, Cl. 123-32.0ea.
- **Adolf, Johann Ditrich:** *See—*
  - Mayr, Anton; Wagener, Kurt; Adolf, Johann Ditrich; Pette, Heinrich; and Petzoldt, Klaus, 3,725,542.
- **Aero Vac Corporated, mesne:** *See—*
  - Santeler, Donald J., 3,724,169.
- **Aerojet-General Corporation:** *See—*
  - DePree, David O., 3,725,259.
  - Erwin, Rudy, 3,725,055.
- **Aeroquip Corporation:** *See—*
  - Cooke, Gerhart M., 3,724,503.
  - Love, Fred W.; and Hunt, William J., 3,725,167.
- **AGA Aktiebolag:** *See—*
  - Ekstrom, Stefan Walter, 3,724,482.
  - Nies, Erik, 3,724,950.
  - Unger, Hans Peter Olof; Westberg, Eric J. H.; and Schwartz, Stephan L., 3,724,747.
- **Agfa-Gevaert Aktiengesellschaft:** *See—*
  - Knapp, Walter; and Schneider, Othmar, 3,724,946.
  - Kuffner, Karl; and Proeschel, Ernst, 3,725,077.
  - Paulus, Rudolf, 3,724,947.
- **Agfa-Gevaert N.V.:** *See—*
  - Verhille, Karel; and Conix, Andre Jan, 3,725,061.
- **Ahlborn, John C.:** *See—*
  - Slater, William L.; and Ahlborn, John C., 3,725,020.
- **Ahlquist, Harry Richard, to Erie Development Company.** Adjustable skip bridge valving mechanism for disc filter. 3,724,668, Cl. 210-331.000.
- **Air Factors, Inc.:** *See—*
  - Lambert, Robert R., 3,724,356.
- **Air LB:** *See—*
  - Blanchet, Lucien, 3,725,852.
- **Air Preheater Company Inc., The:** *See—*
  - Krumm, Eugene D., 3,724,401.
- **Air Products & Chemicals, Inc.:** *See—*
  - Mc Kinney, Ross E., 3,724,667.
- **Air Products and Chemicals, Inc.:** *See—*
  - Jones, Robert D., 3,725,040.
  - Spector, Marshall L.; Jones, Robert D.; and McDowell, Curtis S., 3,725,258.
- **Aisin Seiki Kabushiki Kaisha:** *See—*
  - Kobashi, Uichiro; and Kito, Masahiro, 3,724,210.
  - Kobayashi, Toyoaki, 3,724,606.
- **Aizawa, Tatsuo:** *See—*
  - Nihyakumen, Kouzi; Kouchi, Toshihiro; Yokoyama, Taizo; Ueda, Yasuo; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 3,725,066.
- **Akizuki, Kosuke:** *See—*
  - Mayuzumi, Harutaka; Shinoda, Motoyuki; and Akizuki, Kosuke, 3,724,046.
- **Aktiebolaget Bofors:** *See—*
  - Simmons, Bjorn Herman Olof, 3,724,380.
- **Aktiebolaget Electrolux:** *See—*
  - Leinfelt, Karl Eric, 3,724,179.
- **Aktiebolaget Hassle:** *See—*
  - Brandstrom, Arne Elof; Gustavii, Klas Ragnar; Junggren, Ulf Krister; and Kylberg, Kerstin, 3,725,006.
- **Aktiebolaget Svenska Flaktfabriken:** *See—*
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- **Aktiengesellschaft Brown, Boveri & Cie:** *See—*
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- **Alber, Hans.** Flow regulating valve. 3,724,494, Cl. 137-501.000.
- **Albert, David J.:** *See—*
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- **Albert, Dorothy S.:** *See—*
  - Albert, Harry Elmer, 3,725,363.
- **Albert, Harry Elmer; deceased (by Albert, Dorothy S.; executrix), to Pennwalt Corporation.** Method of curing elastomers with thiocarbamyl thiomethyl sulfides. 3,725,363, Cl. 260-79.50b.
- **Alberti, John; and Nanninga, William W., to Boeing Company, The.** Conveying caster means. 3,724,022, Cl. 16-45.000.
- **Albertini, Eugene J.; and Shu, Stephen K., to Computer Management Systems, Inc.** Automatic timekeeping and accounting unit. 3,725,947, Cl. 346-33.00r.
- **Albertson, Robert V.** Safety device for all terrain vehicle. 3,724,579, Cl. 180-5.00r.
- **Albinger, Walter; and Heitzer, Karl, to U.S. Philips Corporation.** Method of bonding a leader to magnetic tape. 3,725,164, Cl. 156-73.000.
- **Albiswerk Zurich AG:** *See—*
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- **Alcan Research and Development Limited:** *See—*
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  - Page, Clifford Frank, 3,724,247.
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- **Aldo, Novara:** *See—*
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  - Fischbein, Irwin W.; Alexander, Ben H.; and Sastri, Aiyaswami S., 3,725,238.
- **Alexander, Ronald Crawford.** Signal detecting apparatus for use in sound track rerecording. 3,725,604, Cl. 179-100.1vc.
- **Allard, Pierre; Laparre, Jacques; and Lemaitre, Claude, to Societe Nationale Industrielle Aerospatiale.** Device for securing a solid propellant grain in a combustion chamber. 3,724,219, Cl. 60-255.000.
- **Alleaume, Jean H., to Technigaz.** Support for a self-carrying storage or conveying tank. 3,724,411, Cl. 114-74.00t.
- **Allegheny Ludlum Industries, Inc.:** *See—*

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Allen, Ralph W.; and Marsh, Richard F., to Anaconda Aluminum Company. Bimetallic laminate and method of making same. 3,725,169, Cl. 156-184.000.
Allen, Richard W.; Maring, Donald G., Sr.; and Andrews, Henry J., Jr., to Rochester Telephone Corporation, The. Apparatus for protecting and testing telephone networks. 3,725,613, Cl. 179-175.300.
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Anderson, Albert E.; and Lum, Kin Kwong, to Eastman Kodak Company. Color diffusion processes utilizing hydroquinones which provide dye image materials upon oxidation in alkaline conditions. 3,725,062, Cl. 96-3.000.
Anderson, Albin R.; Jennings, John D.; and Killerby, Walter E., to Western Electric Company, Incorporated. Apparatus for frequency adjusting and assembling monolithic crystal filters. 3,724,739, Cl. 228-3.000.
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Anderson, Steven A.; Barker, Eugene C.; and Yang, Tung Han, to Pullman Incorporated. Hydraulic cushioning unit with boot type accumulator. 3,724,681, Cl. 213-43.000.
Anderson, William R. Heat shield. 3,724,024, Cl. 16-116.000.
Anderson, William R. Window shade bracket extension. 3,724,794, Cl. 248-268.000.
Andersson, Johan B.; and Lindbergh, Karl E. E., to Aktiebolaget Tudor. Method of making tubular battery electrode. 3,725,130, Cl. 136-63.000.
Andersson, Rune Siqvard. Valved pipe line connection. 3,724,810, Cl. 251-145.000.
Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, to Kanegafuchi Boseki Kabushiki Kaisha and Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A. Composite filaments and spinneret and method for producing same. 3,725,192, Cl. 161-175.000.
Ando, Tadanao; Kataoka, Seiichi; and Shiihara, Isao, to Industrial Science & Technology, Agency of. Linear polyamides having high glass transition temperature prepared 4-(3-amino-propoxy)-phenyl-3-propylamine. 3,725,347, Cl. 200-47.0cz.
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Andresen, Rolf, to International Business Machines Corporation. Method and apparatus for amplitude sensing and data gating in a magnetic-storage device with digital interface. 3,725,885, Cl. 340-174.10h.
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Angelucci, Thomas L.; Angelucci, Joseph L.; and Vilenski, Dan, to Kulicke and Soffa Industries, Inc. Electro-mechanical servo drive. 3,725,631, Cl. 219-69.00g.
Angold, Edward Barnabas, to International Computers Limited. Magnetic recording apparatus with edge erase members which erase area between tracks. 3,725,607, Cl. 179-100.20d.
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Arakawa, Takasi; Saeki, Kenji; Sato, Yoshikuni; and Kitazawa, Yoriya. Process for the oligomerization of ethylene. 3,725,497, Cl. 260-683.15d.
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Banin, Amos, to Yissum Research Development Company of the Hebrew University of Jerusalem. Quantitative ion exchange process for clay. 3,725,528, Cl. 423-112.000.
Baraconi, William V.: *See*—
  Baraconi, William V.; and LaFranca, Peter J., 3,724,716.
Baraconi, William V.; and LaFranca, Peter J., to Baraconi, William V. Bag dispenser. 3,724,716, Cl. 221-47.000.
Baral, William J.: *See*—
  Hass, Robert H.; Mickelson, Grant A.; Baral, William J.; Reeg, Cloyd P.; Attane, Edward C., Jr.; and Jones, Darryl L., 3,725,243.
Barber-Colman Company: *See*—
  Bailey, Ronald L., 3,725,644.
Barbin, Robert Lloyd, to RCA Corporation. Magnetic beam adjusting arrangements. 3,725,831, Cl. 335-212.000.
Barbulesco, Daniel J.; and Briar, John R., to General Motors Corporation. Spring clutch. 3,724,622, Cl. 192-105.0ce.
Bardiau, Roger, to Societe S.E.C.O.R. Frontal multi-spindle lathes. 3,724,300, Cl. 82-3.000.
Bargain, Michel, to Rhone-Poulenc S.A. Composition comprising an epoxy resin, acid anhydride and a N,N'-bis-imide. 3,725,345, Cl. 260-47.0ec.
Barham, Harold N.; and Barham, Harold N., Jr. Method of chemical treatment of cereal grains to make them more responsive to various grain processes. 3,725,081, Cl. 99-2.00r.
Barham, Harold N., Jr.: *See*—
  Barham, Harold N.; and Barham, Harold N., Jr., 3,725,081.
Barilli, Filippo: *See*—
  Cavenaghi, Carlo; Di Fiore, Lucio; Barilli, Filippo; and Calcagno, Benedetto, 3,725,257.
Barilli, Filippo; Lugo, Luigi; Di Fiore, Lucio; and Reni, Cesare, to Societa Italiana Resine S.p.A. Process for separating aromatic hydrocarbons from mixtures containing them by liquid-liquid extraction and azeotropic distillation. 3,725,255, Cl. 208-331.00.
Barker, Anthony Sydney Charles: *See*—
  Baker, William Albert; Barker, Anthony Sydney Charles; Holden, John James Edmund; and Winterburn, Stanley Pilkington, 3,724,252.
Barker, Eugene C.: *See*—
  Anderson, Steven A.; Barker, Eugene C.; and Yang, Tung Han, 3,724,681.
Barker, James E., to Cities Service Company. Manufacture of basic cupric compounds. 3,725,535, Cl. 423-419.000.
Barkow, August G. Wooden shipping containers. 3,724,701, Cl. 217-65.000.
Barmer Barmag Maschinenfabrik Aktiengesellschaf: *See*—
  Itter, Friedhelm, 3,724,492.
Barnes, Robert L.; and Grafstein, Daniel. High temperature bis(epoxyalkyl)carborane adhesives. 3,725,176, Cl. 156-330.000.
Barone, Bruno J.; and Brill, William F., to Petro-Tex Chemical Corporation. Production of cyclic acetals. 3,725,438, Cl. 260-340.900.
Barr, Floyd A. Sack cutting attachment for a material receiving hopper. 3,724,721, Cl. 222-83.500.
Barron, Rodger W.; Fellers, Paul J.; and Huggart, Richard L., to Citrus State of Florida, Department of. Process for the production of naturally occurring coloring material from citrus fruit and the product thereof. 3,725,083, Cl. 99-105.000.
Barrot, Jean-Pierre; Negrou, Jacques; and Pelte, Charles, to Commissariat a l'Energie Atomique. Time interval analyzer. 3,725,785, Cl. 324-188.000.
Bashaw, John Darrell: *See*—
  Leonard, Richard Lloyd; and Bashaw, John Darrell, 3,724,672.
Basic Incorporated: *See*—
  Jepsen, Tage L. B., 3,725,039.
Baskin, Ronald W.: *See*—
  Bishop, Dwight; and Baskin, Ronald W., 3,724,189.
Bates, Homer J.: *See*—
  Carstens, Marion R.; and Bates, Homer J., 3,724,691.
Bates, Homer J., to Georgia Tech Research Institute. Unloading device for a capsule-transport pipeline system. 3,724,690, Cl. 214-52.00c.
Batson-Cook Company: *See*—
  Cook, Harold E.; and Lanier, Harold H., 3,725,911.
Battaglini, Domenic; Beach, Richard G.; and Raquith, Howard R., to Sybron Corporation. Force balance variable condition transmitter. 3,724,275, Cl. 73-407.00r.
Batter, John F., Jr., to Polaroid Corporation. Method and apparatus for editing motion picture film. 3,724,935, Cl. 352-38.000.
Bauer, Peter, to Rohm & Haas G.m.b.H. Method for making an insulating body. 3,725,315, Cl. 260-2.50b.
Bauer, Thomas F.: *See*—
  Adkins, William B.; Bauer, Thomas F.; and Beane, James O., 3,725,333.
Baum, Lester A. H., to Mobil Oil Corporation. Process for producing electrode binder asphalt. 3,725,240, Cl. 208-7.000.
Baumann, Friedrich, to Osteo AG. Prosthetic hip enarthrosis. 3,723,995, Cl. 3-1.000.
Baumann, Hans D., to Masoneilan International, Inc. Valve with removable seating means. 3,724,813, Cl. 251-360.000.
Bausch & Lomb Incorporated, mesne: *See*—
  Lamb, Reginald T., 3,725,950.
Baxter, Brent, to General Instrument Corporation. Heating and cooling device. 3,724,536, Cl. 165-27.000.
Baxter Laboratories, Inc.: *See*—
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Bayer Aktiengesellschaft: *See*—
  Buchel, Karl-Heinz; Regel, Erik; Grewe, Ferdinand; Scheinpflug, Hans; and Kaspers, Helmut, 3,725,549.
  Erdmenger, Rudolf; Ullrich, Martin; Germerdonk, Rolf; Pedain, Josef; Quiring, Bernd; and Wingler, Frank, 3,725,340.
  Naumann, Gunter; Schon, Nikolaus; Schnoring, Hildegard; and Pampus, Gottfried, 3,725,313.
Bayer, Herbert, to Wandel u. Goltermann. Automatic calibrating and measuring system. 3,725,784, Cl. 324-130.000.
Beach, John M.: *See*—
  Beach, John M.; and Brown, Melvin A. (said Brown assor. to said), 3,724,608.
Beach, John M.; and Brown, Melvin A., said Brown assor. to said Beach, John M. Draft device. 3,724,608, Cl. 188-112.000.
Beach, Mary B.: *See*—
  Grote, George A., 3,724,177.
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  Battaglini, Domenic; Beach, Richard G.; and Raquith, Howard R., 3,724,275.
Beach, Willard C.: *See*—
  Grote, George A., 3,724,177.
Beal, Philip F.; and Shephard, Kenneth P., to Upjohn Company, The. 20,21-Acetonides of pregnenes, 16β-alkyl-17α, 20,21-trihydroxy pregnenes, and processes for the production thereof. 3,725,392, Cl. 260-239.55d.
Beal, Philip F., III; and Pike, John E., to Upjohn Company, The. Prostanoic acid derivatives. 3,725,454, Cl. 260-488.00r.
Bean, Kenneth E.; and Yeakley, Richard L., to Texas Instruments, Incorporated. High density integrated circuits. 3,725,160, Cl. 156-17.000.
Beane, James O.: *See*—
  Adkins, William B.; Bauer, Thomas F.; and Beane, James O., 3,725,333.
Beatty, Bobby D.; Butts, Gary D.; Herold, Stanley J.; and La Grange, Donald E., to United States of America, Navy. Fuze having a pneumatic and inertia arming system. 3,724,385, Cl. 102-81.000.

Beaulieu, Alexandre J.; Fortin, Roger; Johnson, Derwyn C.; and Robinson, Alexander, to Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Transverse electrode excitation o a molecular gas laser. 3,725,735, Cl. 315-249.000.
Beausoleil, William F., to International Business Machines Corporation. Key punch feature. 3,724,749, Cl. 234-18.000.
Bechtel International Corporation: *See*—
  Neville, Roy G., 3,725,346.
Bechtold, Charles Louis, to Colgate-Palmolive Company. Soap composition. 3,725,288, Cl. 252-91.000.
Beck, Karl Maurice, to Abbott Laboratories. Cyclohexylammonium N-cyclohexylsulfmate as resin catalygts. 3,725,323, Cl. 260-17.300.
Beck, Robert E., to Fellowes Manufacturing Company. Storage box for storing hanging file folders. 3,724,920, Cl. 312-184.000.
Beck, Walter: *See*—
  Blackwood, John C.; Hook, Edwin O.; and Beck, Walter, 3,725,476.
Becke, Edward G., to United States of America, Navy. Plug in antenna, antenna base and test probe system. 3,725,849, Cl. 339-92.00r.
Becker, Gordon D. Locking device for extensible tubes. 3,724,885, Cl. 287-58.0ct.
Beckman Instruments, Inc.: *See*—
  Jacobson, Kenneth E., 3,724,748.
  Matsuyama, George; and Lindell, Grover F., 3,725,237.
  Neary, Michael P., 3,724,956.
  Penhasi, Harry A., 3,725,010.
  Rohrbaugh, Donald G.; and Petersen, Everett J., Jr., 3,724,765.
Beckstrom, Daniel H., to Kimberly-Clark Corporation. Web strength and tensile tester and method. 3,724,266, Cl. 73-95.000.
Bedetti, Gianfranco: *See*—
  Pieri, Giovanni; Aldo, Novara; Held, Llewellyn John; and Bedetti, Gianfranco, 3,725,526.
Beecham Group Limited: *See*—
  Brown, David Maxwell; and Watts, Eric Alfred, 3,725,429.
Beelitz, Howard Raymond, to RCA Corporation. Voltage driver circuit. 3,725,801, Cl. 330-30.00d.
Beer, Carl C.; and Larson, Sherman L., to Sherman Car Wash Equipment Company. Car wash conveyor. 3,724,390, Cl. 104-172.00b.
Behrens, Gunter, to Stiegelmeyer, Joh., & Co., G.m.b.H. Adjustable bed. 3,724,004, Cl. 5-68.000.
Behringwerke Aktiengesellschaft: *See*—
  Mayr, Anton; Wagener, Kurt; Adolf, Johann Ditrich; Pette, Heinrich; and Petzoldt, Klaus, 3,725,542.
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Bell & Howell Company: *See*—
  Cox, Arthur, 3,724,927.
  Lancor, Joseph H., Jr.; and Cooper, Dexter P., Jr., 3,724,343.
  Nupnau, Irthur E., 3,724,775.
Bell, Alan, to Foster Wheeler John Brown Boilers Limited. Power plants. 3,724,212, Cl. 60-73.000.
Bell Canada: *See*—
  Cartwright, Delmar G., 3,725,594.
Bell, Christy W.; and Titus, Charles H., to General Electric Company. Electro-thermal process for production of off shore oil through on shore walls. 3,724,543, Cl. 166-248.000.
Bell, Stanley C.: *See*—
  McCaully, Ronald J.; Bell, Stanley C.; and Conklin, George L., 3,725,389.
Bell Telephone Laboratories, Incorporated: *See*—
  Ashkin, Arthur; Ippen, Erich Peter; and Kompfner, Rudolf, 3,725,810.
  Ault, Cyrus Frank; and Spencer, Robert Graham, 3,725,790.
  Braun, Edwin Julius; Meise, Henry August, Jr.; and Taylor, George William, 3,725,598.
  Brown, Earl Franklin; and Kaminski, William, 3,725,578.
  Cubbison, Richard James, Jr., 3,725,799.
  Darlington, Sidney, 3,725,806.
  Freimanis, Laimons, 3,725,863.
  Fulton, Theodore Alan, 3,725,819.
  Heightley, John Donnell, 3,725,687.
  Hoffman, Clifford James, 3,725,602.
  Ilegems, Marc; and Panish, Morton B., 3,725,149.
  Jetzt, John J.; and Sullivan, John Charles, 3,725,601.
  Lee, Tien Pei, 3,724,926.
  Maxon, Rodney Robert; and Meise, Henry August, Jr., 3,725,596.
  Mikulyak, Robert Michael, 3,725,008.
  Phillips, Earl Gordon, 3,725,793.
  Slana, Matthew Francis, 3,725,614.
  Streisand, Kenneth, 3,725,597.
  Ulrich, Reinhard; and Weber, Heinz Paul, 3,725,809.
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  Amiard, Yves; and Bellissent, Jean-Paul, 3,725,366.
Belyanov, Sergei Alexandrovich: *See*—
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Bemis Company, Inc.: *See*—
  Ayres, Richard H., 3,724,649.
Bender, John R., to Bendix Corporation, The. Compression fastener. 3,724,614, Cl. 188-218.0xl.
Bendix Corporation, The: *See*—
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  Bailey, Knight V., 3,725,760.
  Bender, John R., 3,724,614.
  Brown, Joseph W., 3,724,454.
  Burnett, Richard T., 3,724,616.
  Cutler, Hymie, 3,725,651.
  Graham, James T.; and Hackstock, Fred W., 3,724,052.
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  Klimchak, Edward George; and Rosenbaum, Erik, 3,725,928.
  Kosakowski, Henry R., 3,725,903.
  MacDuff, Stanley Irving, 3,724,915.
  Mc Keown, James E.; Gregoire, Stephen E.; and Michel, Donald E., 3,725,844.
  McKeown, James E.; and Michel, Donald E., 3,725,853.
  Miller, Donald L., 3,724,619.
  Reddy, Junuthula N., 3,725,678.
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  Sollami, Blase J.; Lundeen, Howard R.; and Gerth, Bruce F., 3,724,228.
  Thakore, Kaushik H., 3,725,732.
  Weidman, Joseph S.; Yee, Henry C.; Elliott, Jack G.; and Margosian, Zaven, 3,725,921.
  Winge, John L., 3,724,611.
Bendler, Hellmut: *See*—
  Gawlick, Heinz; Marondel, Gunther; Sieglein, Werner; Wasser, Wolfgang; and Bendler, Hellmut, 3,724,381.
Bengtson, Olle, to Imperial Chemical Industries Limited. Process for the manufacture of polyurethane foam by controlling the rate of heat generation. 3,725,318, Cl. 260-2.5bd.
Benjamin, Marshall E. Portable knock-down animal enclosure. 3,724,424, Cl. 119-16.000.
Bennett, Delora E.; and Packard, Roger A., to Delro Engineering Corporation. Method for reshaping a shoe last. 3,724,014, Cl. 12-146.001.
Bennett, Eugene E.; and Stansell, Alpheus F., to Burroughs Corporation. Modular disk file unit. 3,725,883, Cl. 340-174.10c.
Bennett, James Russell: *See*—
  Balogh, Edward, Jr.; Bennett, James Russell; Keenan, William F.; Logan, William A.; and Murphy, John S., 3,725,872.
Benson, Carl I., Jr., to Paragon Gears Incorporates. Releasable power-transmitting device of the friction plate type. 3,724,620, Cl. 192-70.230.
Benson, Harvey S., Jr., to Envirco Corporation. Process for separating particles from aerosols. 3,724,181, Cl. 55-432.000.
Benson, Ronald W.: *See*—
  Gallaghan, John A.; Benson, Ronald W.; and Carlson, Bertil V., 3,724,383.
Berding, Andrew R., to International Business Machines Corporation. Memory cell circuit. 3,725,878, Cl. 340-173.0ff.
Beregi, Laszlo; Hugon, Pierre; and Le Douarec, Jean-Claude, to Science-Union et Cie. Biphenylyl pyrozole compounds. 3,725,432, Cl. 260-310.00r.
Bereit, Arnold E. E. Device for the hydrostatic supporting of machine parts. 3,724,597, Cl. 184-5.000.
Berg, Allen Charles: *See*—
  Murthy, Nanjundiah Narasimha; Macura, Joseph Steven; Gergely, William, Jr.; and Berg, Allen Charles, 3,724,366.
Bergey, John M., to HMW Industries, Inc. Nuclear-paced solid state wristwatch. 3,724,201, Cl. 58-50.00r.
Bergmann, Rolf: *See*—
  Rogalski, Werner; Jonas, Rochus; Wahlig, Helmut; and Bergmann, Rolf, 3,725,390.
Bergwerksverband GmbH: *See*—
  Walkenhorst, Wilhelm, 3,724,174.
Beriger, Ernst, to Ciba-Geigy AG. Phosphoric acid ester. 3,725,513, Cl. 260-951.000.
Berkelhammer, Gerald; and Asato, Goro, to American Cyanamid Company. 2,5-Disubstituted 1,3,4-thiadiazoles. 3,725,396, Cl. 260-240.00g.
Bermingham, Peter D., to Goodyear Tire & Rubber Company, The. Brake disc with beryllium core and carbon wear faces. 3,724,613, Cl. 188-218.0xc.
Berney, Joseph C. Packing station for foldable carton handling apparatus. 3,724,185, Cl. 53-186.000.
Bernheim, Willy; and Deiner, Hans, to Chemische Fabrik Pfersee GmbH. Water-soluble or inherently water-dispersible condensation products. 3,725,502, Cl. 260-830.0tw.
Berry, Currie B., Jr.; and Valdo, Alex R., to Ethyl Corporation. Foamed aluminum. 3,725,037, Cl. 75-20.00f.
Berry, Elton L.: *See*—
  McClendon, Jack C.; and Berry, Elton L., 3,725,387.
Berta, Dominic A., to United States of America, Navy. Method of curing double base propellants. 3,725,157, Cl. 149-97.000.
Berthold, Rainer. Electro-optical determination of wear of paper making screen. 3,725,666, Cl. 250-219.0df.
Bertin & Cie: *See*—
  Bertin, Jean Henri; and Francois, Paul, 3,724,588.
Bertin, Jean Henri; and Francois, Paul, to Bertin & Cie. Cushion confining system. 3,724,588, Cl. 180-118.000.
Bertness, Theodore A.: *See*—
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Beryllium Corporation, The: *See*—
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Bethhehem Steel Corporation: *See*—
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Bevan, Ronald, to Imperial Chemical Industries, Limited. Sheet handling. 3,724,685, Cl. 214-8.50r.
Beyl, Jean Joseph Alfred. Heel hold-down device for ski boot. 3,724,868, Cl. 280-11.35t.
Biedermann, Kurt: *See*—
  Schenk, Erwin; and Biedermann, Kurt, 3,725,796.
Bier, Kenneth C., to Holley Carburetor Company. Remote metering system. 3,724,435, Cl. 123-139.00e.
Biffle, Morris S. Drill head and sealing apparatus therefore. 3,724,862, Cl. 277-31.000.
Bigelow, John Howard, to Du Pont de Nemours, E. I., and Company. Boranes as photographic stabilizers. 3,725,078, Cl. 96-109.000.
Biguenet, Charles, to CSF-Compagnie Generale de Telegraphie Sans Fil. Titanium filament for use in vacuum techniques. 3,724,049, Cl. 29-191.000.
Billot, Claude: *See*—
  Retali, Roger; Mercier, Andre; and Billot, Claude, 3,724,238.
Bilow, Norman; and Rosenberg, Harold, to United States of America, Air Force. Process for curing polyferrocenylenes. 3,725,175, Cl. 156-327.000.
Bio-Optronics, Inc.: *See*—
  Rose, Harold Bern; and Sand, Bruce Jay, 3,724,263.
Birkett, Samuel, Limited: *See*—
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Birkigt, Louis, to Brevets Aero-Mecaniques S.A. Shell cartridges. 3,724,377, Cl. 102-38.000.
Bishop, Dwight; and Baskin, Ronald W., to Southwire Company. Method and apparatus for stripping cable. 3,724,189, Cl. 57-2.500.
Bishop, Peter, to United Industrial Syndicate, Inc. Static neutralizer. 3,725,736, Cl. 317-2.00f.
Bitsura, Michael P.: *See*—
  Brevko, Robert; Bitsura, Michael P.; Mucka, John R.; and Zinski, Peter, 3,724,164.
Black and Decker Manufacturing Company: *See*—
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  Wood, John W., 3,724,237.
Black, Stanley H.; and Formeister, Richard B., to Sperry Rand Corporation. Direction finder system. 3,725,938, Cl. 343-120.000.
Blackmore, Kenneth A. E., to Georgia-Pacific Corporation. Preparation of ammonium sulfate fertilizer consultituent. 3,725,029, Cl. 71-28.000.
Blacksmith, Philipp: *See*—
  Sletten, Carlyle J.; Schell, Allan C.; Mack, Richard B.; Goggins, William B., Jr.; and Blacksmith, Philipp, 3,725,917.
Blackwood, John C.; Hook, Edwin O.; and Beck, Walter, to Stepan Chemical Company. Unsaturated amides of oxybis (benzenesulfonic acid). 3,725,476, Cl. 260-556.0ar.
Blahak, Johannes: *See*—
  Wirth, Wolf-Dieter; Muller, Erwin; Blahak, Johannes; and Rohr, Harry, 3,725,321.
Blakeley, Ronald Edward; and Turner, Robert, to Lucas, Joseph, (Industries) Limited. Method of testing the lubrication properties of a liquid. 3,724,259, Cl. 73-10.000.
Blanchet, Lucien, to Air LB. Waterproof electrical connector. 3,725,852, Cl. 339-198.00j.
Blangis, Jacques: *See*—
  Le Cheualier, Pierre; and Blangis, Jacques, 3,724,321.
Blecker, Joseph G. Mast for sailing vessels. 3,724,412, Cl. 114-90.000.
Bleiweiss, Mark H., to Raytheon Company. Visual display system. 3,725,897, Cl. 340-324.00a.
Blodgett, Stewart B. Method and apparatus for controlling product charge weights. 3,724,569, Cl. 117-1.000.
Bloom, Martin S., to Imperial Chemical Industries Limited. Foam laminates. 3,725,191, Cl. 161-160.000.
Bloom, Stanley M., to Polaroid Corporation. Sunglasses having novel plastic optical element for lenses. 3,724,934, Cl. 351-44.000.
Bodnar, Ernest Robert. Spreader for slit web materials. 3,724,737, Cl. 226-199.000.
Boehringer Ingelheim G.m.b.H.: *See*—
  Grell, Wolfgang; Griss, Gerhart; and Kleemann, Manfred, 3,725,388.
Boehringer Mannheim GmbH: *See*—
  Stoeck, Georg; Budka, Heinz-Gunter; Topfmeier, Fritz; and Gradel, Wolf-Dietrich, 3,725,465.
Boeing Company, The: *See*—
  Alberti, John; and Nanninga, William W., 3,724,022.
  Pogson, John T., 3,724,522.
Bogue, Joseph A. Closure assembly and emergency release locking mechanism therefor. 3,724,130, Cl. 49-141.000.
Bohm, Horst: *See*—
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Boissier, Jacques R.; and Ratouis, Roger, to Societe Anonyme dite: Societe Industrielle pour Li Fabrication des Antibiotiques (S.I.F.A.). 3-Tropanylidine derivatives of tricyclic compounds, their salts, and process of preparation. 3,725,415, Cl. 260-292.00.
Boivin, Joseph J. R.: *See*—
  Zehavi, Samuel; Boivin, Joseph J. R.; Hamilton, Douglas D.; and Ranzenhofer, Raoul, 3,724,518.
Boldt, Manfred; Arpe, Hans-Jurgen; and Hornig, Lothar, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of substituted phenyl esters and optionally substituted phenols. 3,725,462, Cl. 260-479.00r.
Bole, Hamilton B., to American Optical Corporation. Lens frangibility testing apparatus. 3,724,260, Cl. 73-12.000.
Bolgert, Edwin F.: *See*—
  Povalski, Eugene A.; and Bolgert, Edwin F., 3,724,480.
Bolliger, Andre, to Aktiengesellschaft Brown, Boveri & Cie. Semiconductor disc having tapered edge recess filled with insulation compound and upstanding cylindrical insulating ring embedded in compound to increase avalanche breakdown voltage. 3,725,750, C. 317-234.00r.
Bolte, Herbert; Wittmer, Paul; and Heil, Eduard, to Badische Anilin- & Soda Fabrik Aktiengesellschaft. Manufacture of copolymers of styrene and- methylstyrene. 3,725,506, Cl. 260-88.20c.
Boneck, Roger L. Window shade supports. 3,724,525, Cl. 160-28.000.
Bonjour, Emmanuel; and Couach, Michel, to Commissariat a l'Energie Atomique. Method for bringing a number of substances together by remote control and a device for carrying out said method. 3,724,820, Cl. 259-114.000.
Bonner, William A., to Rockford Servo Corporation. Web sensing and guiding apparatus. 3,724,732, Cl. 226-21.000.
Boose, Cesar Adrianus; Reidt, Maarten Johan; and Derksen, Evert Hermanus, to Reactor Centrum Nederland. Method for the blackening of aluminum alloys. 3,725,137, Cl. 148-6.200.
Borden, Inc.: *See*—
  Adkins, William B.; Bauer, Thomas F.; and Beane, James O., 3,725,333.
  Clark, Charles William, 3,724,655.
Borg-Warner Corporation: *See*—
  Clauss, Julius A., Jr.; Conley, Jack S.; and Lemon, Robert W., 3,724,626.
  Hallberg, Irving H., 3,724,205.
  Padgitt, Kenneth W., 3,725,668.
Borg-Warner Corporation, mesne: *See*—
  Dever, James L.; and Hodan, James J., 3,725,510.
Borgs Fabriks AB: *See*—
  Fonden, Per Borje; and Walander, Kar Ove Torgny, 3,724,333.
  Fonden, Per Borje; and Walander, Karl Ove T., 3,724,787.
Borinski, Adolfo Samuel Werner. Method for storing electric energy and an electric energy storing system. 3,725,705, Cl. 310-5.000.
Borman, August H., to General Motors Corporation. Transmission control. 3,724,292, Cl. 74-864.000.
Borrel, Marcel; Marion, Jacques; and Metzger, Jean, to Ugine Kuhlmann. Production of acetonitrile. 3,725,457, Cl. 260-465.100.
Borsuk, Pavel Afanasievich: *See*—
  Lyass, Abram Moiseevich; Snulova, Lidia Dorofeevna; Borsuk, Pavel Afanasievich; Tsyruleva, Anna Ivanovna; and Teplyakov, Sergei Dmitrievich, 3,725,090.
Bosc, Henri J.; Castets, Michel G.M.; and Debuisser, Jean-Claude A., to International Standard Electric Corporation. Coherent digital pulse doppler radar system with improved signal handling capacity. 3,725,923, Cl. 343-7.700.
Bosch, Robert, G.m.b.H.: *See*—
  Adler, Karl-Heinz, 3,724,430.
  Ellwanger, Hans; Kraisel, August; Kraus, Walter; and Zirps, Wilhelm, 3,724,003.
  Kobald, Walter, 3,724,609.
  Schneider, Karl-Heinz; Herker, Dietrich; Madgefrau, Herbert; Plockl, Alfons; and Horrwarth, Ernst, 3,725,620.
Boschung, Marcel; and Gisler, Hans, to Boschung, Marcel, Firma. Apparatus adapted to be coupled to a traction vehicle serving for the maintenance or construction of water-bound roads. 3,724,557, Cl. 172-197.000.
Boschung, Marcel, Firma: *See*—
  Boschung, Marcel; and Gisler, Hans, 3,724,557.
Bose, Elaine A.; and White, Earl R., to University of California, The Regents of the. Benzimidazole derivatives as fungicidal active compounds. 3,725,406, Cl. 260-249.500.
Bosland, James M., to Ketcham & McDougall, Inc. Shredder. 3,724,766, Cl. 241-100.000.
Bosshard, Walter: *See*—
  Purt, Gustav A.; and Bosshard, Walter, 3,725,011.
Bostick, Frank W., to Schick Electric Inc. Pad finger grip for electric shaver case. 3,725,190, Cl. 161-159.000.
Botsford, Samuel. Paper clip. 3,724,036, Cl. 24-261.0pc.
Bott, Lawrence L., to Nalco Chemical Company. Inverted latex water flooding method. 3,724,547, Cl. 166-274.000.
Boudry, Jean Marie: *See*—
  Moreau, Jean Pierre; and Boudry, Jean Marie, 3,725,791.
Boulanger, Henry J., to Texas Instruments, Incorporated. Pushbutton keyboard system. 3,725,907, Cl. 340-365.00a.
Boulton, William, Limited: *See*—
  Fahey, Denis; and Clarke, Reginald L., 3,724,146.
Bourez, Henri: *See*—
  Brocart, Rene; and Bourez, Henri, 3,724,051.
Bourg, Ronald G.: *See*—
  Chiasson, Randall J.; Bourg, Ronald G.; and Arceneaus, Tilton J., 3,724,555.
Bourgoin, Gerard; Kumurdjian, Pierre; Loitiere, Alain; and Pere, Jean-Francois, to Commissariat a l'Energie Atomique. System for adjusting the value of a resistance to a predetermined value. 3,725,685, Cl. 235-151.100.

Bourne, James G.: *See*—
  Roblin, John M.; Cole, Frank J.; and Bourne, James G., 3,725,045.
Boustany, Kamel; and Coran, Aubert Y. Inhibiting premature vulcanization of rubber with N-thio hydrazodicarboxylate. 3,725,361, Cl. 260-79.50b.
Bowden, Roy Dennis; and Seaton, Thomas, to Imperial Chemical Industries, Limited. Manufacture of halogenated pyridine derivatives. 3,725,414, Cl. 260-290.0hl.
Bowell, S. T.; Ashcroft, Robert; and Pekarek, G. E., to SCM Corporation. Latex coating composition having yield valves of 95-550 dynes/cm$_2$ and shear stress of at least 90 dynes/cm$_2$ at shear rate of about 0.1-0.2/sec. 3,725,328, Cl. 260-29.60r.
Bowen, Braxton C., to Du Pont de Nemours, E. I., and Company. Process for extracting and drawing a tow. 3,725,523, Cl. 264-210.00f.
Bowers, William S., to United States of America, Agriculture. Insect control process with synthetic hormones. 3,725,551, Cl. 424-282.000.
Box, Theodor M. Plastic carrying case for use with skatewheel conveyers. 3,724,628, Cl. 193-35.00r.
Boyd, Donald R. Apparatus for landing pipe. 3,724,683, Cl. 214-2.500.
Boyko, Eugene S.: *See*—
  Fink, Robert W.; and Boyko, Eugene S., 3,725,635.
Boyles, Robert L.; and Polonsky, Samuel, to General Electric Company. Pawl and ratchet mechanism for alarm clock time sleep switch cam. 3,725,615, Cl. 200-38.0fb.
Boyles, Robert L.; and Polonsky, Samuel, to General Electric Company. Alarm clock timer with switch actuating lever operable by cam or manual adjustment mechanism. 3,725,617, Cl. 200-38.0fb.
BP Chemicals Limited: *See*—
  Sturt, Alan Charles, 3,725,375.
Bradwell, Cyril; and Pope, Robert C. Sealbar for continuous grate sintering machines. 3,724,828, Cl. 266-21.000.
Brand, Oskar, to Daimler Benz Aktiengesellschaft. Mechanism for adjusting the height of seats especially of motor vehicles. 3,724,895, Cl. 297-348.000.
Brandstrom, Arne Elof; Gustavii, Klas Ragnar; Junggren, Ulf Krister; and Kylberg, Kerstin, to Aktiebolaget Hassle. Method of quantitative determination of anions. 3,725,006, Cl. 23-230.00r.
Brandt, William L., to Olin Corporation. Target launcher. 3,724,438, Cl. 124-11.00r.
Bratkowski, Walter V.; and Pittman, Paul F., to Westinghouse Electric Corporation. Direct current amplifier. 3,725,807, Cl. 330-185.000.
Braun Aktiengesellschaft: *See*—
  Messinger, Werner, 3,724,072.
Braun, Arthur R. Spray device. 3,724,763, Cl. 239-490.000.
Braun, Edwin Julius; Meise, Henry August, Jr.; and Taylor, George William, to Bell Telephone Laboratories, Incorporated. Digital register readout circuit. 3,725,598, Cl. 179-18.0eb.
Brechbuhler, Hans Ulrich; and Gubler, Kurt, to Geigy Chemical Corporation. 1-Piperidino-1-cyano-O-carbamoyl-formoxides. 3,725,418, Cl. 260-293.860.
Bregenzer, O., & Co.: *See*—
  Bregenzer, Otto, 3,724,148.
Bregenzer, Otto, to Bregenzer, O., & Co. Cable receiving floor conduit. 3,724,148, Cl. 52-221.000.
Breitfuss, Thomas K.; Wallace, Floyd L.; and Zicaro, Joseph P., to Hydro Conduit Corporation. Method of making wrapped tubular concrete. 3,724,768, Cl. 242-7.020.
Brennan, Francis P. Expendable pallet device. 3,724,398, Cl. 108-51.000.
Brennan, James A., to Mobil Oil Corporation. Recyclable liquid aluminum chloride and bromide complexes. 3,725,498, Cl. 260-683.15b.
Brennan, Lawrence E.; and Reed, Irving S., to Technology Service Corporation. Convergence rate improvement for adaptive receiving array antennas of higher order than 2-pulse MTI cancellers. 3,725,922, Cl. 343-7.00a.
Breslow, Donald H.; and Wingate, Sidney A., to Itek Corporation. Encoder with a redundant optical system. 3,725,904, Cl. 340-347.00p.
Breslow, Jeffrey D.: *See*—
  Glass, Marvin I.; and Breslow, Jeffrey D., 3,724,848.
Bretschneider, Hermann; Kaiser, Ado; and Hohenlohe-Oehringen, Kraft, to Hoffmann-La Roche Inc. Amino acid derivatives. 3,725,470, Cl. 260-519.000.
Brevets Aero-Mecaniques S.A.: *See*—
  Birkigt, Louis, 3,724,377.
Brevko, Robert; Bitsura, Michael P.; Mucka, John R.; and Zinski, Peter, to Ruburn Engineering, Inc. Shrink-wrapping apparatus. 3,724,164, Cl. 53-229.000.
Brewer, John C., to Garbalizer Corporation of America. Production of carbon from waste materials. 3,725,538, Cl. 423-449.000.
Briar, John R.: *See*—
  Barbulesco, Daniel J.; and Briar, John R., 3,724,622.
Brickley, Terence, to Rubery, Owen & Co., Limited. Suspension means for load handling equipment. 3,724,891, Cl. 294-67.00r.
Bride, John Edwin, to Du Pont de Nemours, E. I., and Company, mesne. Chromium plating medium for a portable plating device. 3,725,214, Cl. 204-15.000.
Bridenbaugh, Edwin R.: *See*—
  Moniak, John; and Bridenbaugh, Edwin R., 3,725,585.
Bridestone Liquefied Gas Company, Limited: *See*—
  Yamamoto, Katsuro, 3,724,703.
Brill, William F.: *See*—
  Barone, Bruno J.; and Brill, William F., 3,725,438.
Brisebarre, Marcel; and de Saint Sauveur, Xavier, to Control Data Corporation. Impact transducer keyboard apparatus. 3,725,908, Cl. 340-365.00a.
British Iron and Steel Research Association, The: *See*—
  Reed, Geoffrey Ronald, 3,724,159.
British Steel Corporation: *See*—
  Smith, Joseph Cyril, 3,724,035.
Broadt, David R.: *See*—
  Miller, Charles H.; Broadt, David R.; and Armstrong, Donald E., 3,725,692.
Brocart, Rene; and Bourez, Henri, to Manufacture d'Accumulateurs et d'Objets Moules and Societe Fulmen. Distributors components. 3,724,051, Cl. 29-204.000.
Brock-White Co.: *See*—
  Sels, Wally O.; and Paul, Alfred L., 3,724,801.
Brockmuller, Friedrich Franz, to Windmoller & Holscher. Process for manufacturing bags comprising a liner bag which protrudes from the opening. 3,724,340, Cl. 93-35.00r.
Brockway, Richard J.: *See*—
  Hayner, Paul F.; and Brockway, Richard J., 3,724,502.
Brookhyser, Byron B.; Erickson, Harold E.; and Perry, Glenn R., to Weyerhaeuser Company. Automatic plywood layup machine. 3,725,183, Cl. 156-563.000.
Brooks, Howard A.; and Burzan, Vernon J., to Leisure-Tron Corporation. Light responsive and directing extraterrestrial vehicles. 3,724,854, Cl. 273-101.100.
Brooks, Kenneth, to Celanese Corporation. Yarn take-up. 3,724,769, Cl. 242-18.0dd.
Brown & Root, Inc.: *See*—
  Jones, Jerry J.; and Lochridge, Joe C., 3,725,919.
Brown, David; and Saffer, Alfred, to Halcon International, Inc. Process for preparing a silver-supported catalyst. 3,725,307, Cl. 252-455.00r.
Brown, David Maxwell; and Watts, Eric Alfred, to Beecham Group Limited. Benzamidoimidazolines. 3,725,429, Cl. 260-309.600.
Brown, Deane David, to Itek Corporation. Electrical connector. 3,725,829, Cl. 333-84.00m.
Brown, Earl Franklin; and Kaminski, William, to Bell Telephone Laboratories, Incorporated. Digital video receivers. 3,725,578, Cl. 178-7.50r.
Brown, Harold J., to Lorain Products Corporation. Frequency compensating circuit for voltage regulators. 3,725,766, Cl. 321-5.000.
Brown, James D.: *See*—
  Mueller, Francis X., Jr.; and Brown, James D., 3,725,301.
Brown, James Marvin, to American Cyanamid Company. Softening agent for cotton and for synthetic textile substrates. 3,725,440, Cl. 260-400.000.
Brown, Joseph K. Combination of bar stool and refuse container. 3,724,745, Cl. 232-43.200.
Brown, Joseph W., to Bendix Corporation, The. Humidifier-nebulizer. 3,724,454, Cl. 128-194.000.
Brown, Melvin A.: *See*—
  Beach, John M.; and Brown, Melvin A., 3,724,608.
Brown, Omar L.; and Smyth, George F., to Fraze, Ermal C., mesne. Method of making riveted joint. 3,724,063, Cl. 29-509.000.
Brown, Verle H. Hydrothermal liquefied petroleum gas vaporization system. 3,724,426, Cl. 122-33.000.
Brownbuilt Limited: *See*—
  Greaves, Richard Johnson, 3,724,389.
Brownell, Roy D.; and Rogers, Richard E., to Clark Equipment Company, mesne. Indicator or control for cranes. 3,724,679, Cl. 212-39.0ms.
Browning, Vernon D.: *See*—
  Kleykamp, Donald L.; Gaster, Ivan; Browning, Vernon D.; and Holden, Homer N., 3,724,507.
  Kleykamp, Donald L.; Gaster, Ivan; Browning, Vernon D.; and Holden, Homer N., 3,725,178.
Bruck, Herbert: *See*—
  Busch, Josef; Bruck, Herbert; Schranz, Karl-Wilhelm; Schon, Erwin; and Frick, Hans-Dieter, 3,724,355.
Bruker Physik AG: *See*—
  Ratzel, Dieter, 3,725,772.
Bruno, Marshall J.: *See*—
  Parkhill, Vernon E.; and Bruno, Marshall J., 3,724,447.
Brunson, Glenn S.; Curran, Robert N.; and Just, Franklin H., to United States of America, Atomic Energy Commission. Digital subtraction device. 3,725,688, Cl. 235-176.000.
Bryant, Ozro, to Westinghouse Electric Corporation. Extraction control system for a turbogenerator set. 3,724,214, Cl. 60-73.000.
Bschorer, Konrad, to Friedrich Deckel Aktiengesellschaft. Gear motor or pump. 3,724,975, Cl. 418-10.000.
Buchanan, Robert A.; Tecotzky, Melvin; and Wickersheim, Kenneth A., to Lockheed Aircraft Corporation. Rare earth phosphors for X-ray conversion screens. 3,725,704, Cl. 250-71.00r.
Buchel, Karl-Heinz; Regel, Erik; Grewe, Ferdinand; Scheinpflug, Hans; and Kaspers, Helmut, to Bayer Aktiengesellschaft. N-tritylimidazoles for controlling plant fungi. 3,725,549, Cl. 424-273.000.
Buchholz, Donald E.; Bakala, Ronald L.; Miller, Robert E.; and Pickering, Richard W., to United States of America, Navy. Radar video recording system. 3,725,912, Cl. 343-5.0pc.
Buchstaller, Anton, to Dornier AG. Arrangement of jet lift engines in aircraft. 3,724,785, Cl. 244-55.000.
Buck, Fred H., Jr., to Arrowhead Industries, Inc. Perfume or deodorizer dispenser. 3,724,002, Cl. 4-222.000.
Buck, Leo V.: *See*—

Laue, Terry J.; and Buck, Leo V., 3,724,095.
Bucko, Edward P. Hand held pop tab opener. 3,724,297, Cl. 81-3.46a.
Bucky, Peter A. X-ray film cassette. 3,725,703, Cl. 250-65.00r.
Budd Company, The: *See—*
Wessells, Henry W., III; and Eggert, Walter S., Jr., 3,724,153.
Budka, Heinz-Gunter: *See—*
Stoeck, Georg; Budka, Heinz-Gunter; Topfmeier, Fritz; and Gradel, Wolf-Dietrich, 3,725,465.
Buechler, Guenter: *See—*
Kunde, Joachim; Ramlow, Gerhard; Buechler, Guenter; Pohlemann, Heinz; and Hendus, Hans, 3,725,503.
Buhk, Randall P.: *See—*
Faiks, Frederick S.; and Buhk, Randall P., 3,724,897.
Buhrer, Erwin, to Fischer, Georg, Aktiengesellschaft. Transport system for castings including a swingable, perforated transport bucket. 3,724,659, Cl. 209-238.000.
Bullis, Douglas E.; and Linde, John P., to Remington Arms Company, Inc. Firing pin mechanism for firearms. 3,724,112, Cl. 42-41.000.
Bullivant, Kenneth W., to K-Tron Corporation. Digital mass flow control system. 3,724,720, Cl. 222-55.000.
Bunker, Loomis O. Organic disposal machine. 3,724,187. Cl. 56-361.000.
Burbine, William G.: *See—*
Jordan, Merrill E.; Burbine, William G.; and Williams, Frank R., 3,725,103.
Burgess, Douglas P.; and Harkey, Johnny D., to Cannon Mills Company. Temple for terry looms and method of operating same. 3,724,509, Cl. 139-25.000.
Burgess, Ronald R., to F & E Manufacturing Company. Pressure-vacuum relief fuel filler cap. 3,724,707, Cl. 220-44.00r.
Burgess, Ronald R., to F & E Manufacturing Company. Pressure-vacuum relief fuel filler cap. 3,724,708, Cl. 200-44.00r.
Burlis, Norbert W.; and Corbett, Joseph H., to Sherwood Medical Industries, Inc. Extruding apparatus. 3,724,985, Cl. 425-132.000.
Burndy Corporation: *See—*
Feldberg, Leonard H., 3,725,842.
Burnett, Richard T., to Bendix Corporation, The. Tandem cylinder disc brake. 3,724,616, Cl. 188-345.000.
Burrough, Donald E.; Scheffler, David R.; and Seefeld, Dean E., to Gehl Company. Feed material handling apparatus. 3,724,908, Cl. 302-37.000.
Burroughs Corporation: *See—*
Balogh, Edward, Jr.; Bennett, James Russell; Keenan, William F.; Logan, William A.; and Murphy, John S., 3,725,872.
Bennett, Eugene E.; and Stansell, Alpheus F., 3,725,883.
Hauck, Erwin A., 3,725,876.
Kupsky, George A., 3,725,713.
Malmer, Michael M., Jr.; Perkins, Cornelius C.; Waldenmayer, Donald W.; Chowning, Patrick J.; and Gardner, Leonard R., 3,725,868.
Pasinski, Arthur M., 3,724,367.
Burt, F. N., Company, Inc.: *See—*
Jacobson, Leonard P., 3,724,741.
Burton, Dennis Ernest; Newbold, Geoffrey Tattersall; Percival, Albert; Lambie, Alan James; and Sencial, Ian Robert, to Fisons Limited. Benzimidazole compound, method of use, and compositions. 3,725,554, Cl. 424-273.000.
Burton, Maurice G., to Ute Linter, Inc. Adjustable tilt steering device. 3,724,290, Cl. 74-493.000.
Burzan, Vernon J.: *See—*
Brooks, Howard A.; and Burzan, Vernon J., 3,724,854.
Busch, Josef; Bruck, Herbert; Schranz, Karl-Wilhelm; Schon, Erwin; and Frick, Hans-Dieter. Apparatus for processing exposed photographic film or the like. 3,724,355, Cl. 95-94.00r.
Butler, Donald E. 1-Amino-3-aminoalkyl-3-phenylindoline compounds. 3,725,436, Cl. 260-326.110.
Butler, Gene R.; and Sipe, Gary L., to Sperry Rand Corporation. Bale relocator mechanism for a bale wagon. 3,724,684, Cl. 214-6.00b.
Butler National Corporation: *See—*
Perkins, Earl Stuart; and Hobbs, James, 3,725,933.
Buttner, Rolf: *See—*
Rassbach, Felix; and Buttner, Rolf, 3,724,030.
Butts, Gary D.: *See—*
Beatty, Bobby D.; Butts, Gary D.; Herold, Stanley J.; and La Grange, Donald E., 3,724,385.
Byrd, Wylie A. Silage loader. 3,724,635, Cl. 198-9.000.
Cabell, Robert G.; Yancey, Thomas A.; Linville, Roy Norman; and Harrington, Daniel J., to Arvonia-Buckingham Slate Company, Inc. Apparatus for trimming slate. 3,724,439, Cl. 125-23.000.
Cabot Corporation: *See—*
Jordan, Merrill E.; Burbine, William G.; and Williams, Frank R., 3,725,103.
Caero, Jose G. Brake load sensing and control device. 3,724,610, Cl. 188-181.00t.
Cain, Robert L.; and Rothrock, James S., to American Gage & Manufacturing Co., The, mesne. Economy hoist. 3,724,816, Cl. 254-164.000.
Caiola, Robert J.: *See—*
Schulz, Gerald L.; and Caiola, Robert J., 3,725,109.
Calamari, Timothy A., Jr.; Schreiber, Sidney P.; Cooper, Albert S., Jr.; and Reeves, Wilson A., to United States of America, Agriculture. Chainless mercerizer suitable for use with liquid ammonia. 3,724,243, Cl. 68-244.000.
Calcagno, Benedetto: *See—*
Cavenaghi, Carlo; Di Fiore, Lucio; Barilli, Filippo; and Calcagno, Benedetto, 3,725,257.
Lugo, Luigi; Calcagno, Benedetto; and Reni, Cesare, 3,725,256.
Caldwell, Alan K., to Rewop Company. Hydraulic motor and pump system. 3,724,583, Cl. 180-66.00r.
Calistrat, Michael M., to Koppers Company, Inc. Resilient coupling. 3,724,239, Cl. 64-13.000.
Calkins, Burton H.; Carstens, Dale L.; and Riester, James J., to United States of America, Navy. Illuminating flare having high drag configuration. 3,724,375, Cl. 102-31.000.
Callan, John G., to Knox, Inc. Scanning and control apparatus. 3,724,958, Cl. 356-160.000.
Callanan, Joseph R. Self-mounting electrical connection boxes. 3,724,795, Cl. 248-360.000.
Calvert, David W.: *See—*
Smith, Leon; Calvert, David W.; Robert, Andre; Viallet, Andre; and Pauw, Daniel R., 3,725,194.
Cameron, James H.: *See—*
Tygard, Charles M.; and Cameron, James H., 3,724,067.
Campanella, Samuel Joseph; Suyderhoud, Henri George; and Onufry, Michael, Jr., to Communications Satellite Corporation. Echo suppressor break-in circuit. 3,725,612, Cl. 179-170.600.
Campbell, James K.; and Musolf, Martin C., to Dow Corning Corporation. Spandex fiber reacted with isocyanato group containing siloxane. 3,725,000, Cl. 8-115.006.
Campbell, Lewis B.; and Pietrzak, Joe P., to General Motors Corporation. Flexible grid for freezing trays. 3,724,804, Cl. 249-128.000.
Campbell, Robert W., to Phillips Petroleum Company. Polyamide fibers from mixture of 1,3-bis-(4-piperidyl) propane and bis(p-aminocyclohexyl)methane. 3,725,358, Cl. 260-78.00r.
Campbell, William S.; and von Ohain, Hans J. P., to United States of America, Air Force. Wing with thrust augmentor. 3,724,784, Cl. 244-42.0cc.
Camps, Jean-Jacques. Heating apparatus using liquid fuel. 3,724,992, Cl. 431-154.000.
Camras, Marvin, to IIT Research Institute. Magnetic transducer system with head engaging slidably supported tape loop adjacent the capstan. 3,725,608, Cl. 179-100.20c.
Camusat Gueguen France: *See—*
Guequen, Michel Marie Francois, 3,725,946.
Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See—*
Beaulieu, Alexandre J.; Fortin, Roger; Johnson, Derwyn C.; and Robinson, Alexander, 3,725,735.
Canadian International Paper Company: *See—*
Zehavi, Samuel; Boivin, Joseph J. R.; Hamilton, Douglas D.; and Ranzenhofer, Raoul, 3,724,518.
Canion, Joseph R., to Texas Instruments, Incorporated. Temperature compensated multiple character electronic display. 3,725,898, Cl. 340-324.000.
Cannon Mills Company: *See—*
Burgess, Douglas P.; and Harkey, Johnny D., 3,724,509.
Cannon, William N., to Lilly, Eli, and Company. Bis (4-amino-or 4-substituted amino-3,5-dinitrophenyl) disulfide. 3,725,479, Cl. 260-576.000.
Cant, Noel W.; and Hall, William K., to Gulf Research & Development Company. Propylene oxidation in the presence of gold metal. 3,725,482, Cl. 260-604.00r.
Cantrell, Roger E.; and Sturiale, Louis A., to Westinghouse Electric Corporation. Explosively welded plug for leaky tubes of a heat exchanger and method of using the same. 3,724,062, Cl. 29-470.100.
Capes, Charles W.: *See—*
Felcheck, Marvin; Kirschner, Wallace; Jarosik, Robert J.; and Capes, Charles W., 3,725,870.
Capps, David B.; and Erdelyi, Alexander, to Parke, Davis & Company. Organic sulfur compounds and methods for their production. 3,725,422, Cl. 260-294.80e.
Carbajal, Bernard G., III; Gosney, William Milton; and Hall, Lou H., to Texas Instruments, Incorporated. Fabrication of an insulated gate field effect transistor device. 3,724,065, Cl. 29-571.000.
Carborundum Company, The: *See—*
Economy, James; and Matkovich, Vlado I., 3,725,533.
Parris, John L., 3,724,682.
Thut, Bruno H., 3,724,877.
Cardoz, John V., to Lessona Corporation. Spinning system. 3,724,192, Cl. 57-34.00r.
Carey, Gerald D.: *See—*
Roehl, Ernest R.; and Carey, Gerald D., 3,725,913.
Carlin, Edward T.; and White, Bobby L., to Gym-Dandy, Inc. Lock joint for fabricated platform assemblies. 3,724,078, Cl. 52-177.000.
Carlson, Bertil V.: *See—*
Gallaghan, John A.; Benson, Ronald W.; and Carlson, Bertil V., 3,724,383.
Carnahan, William M. Card holder for meter readers. 3,724,744, Cl. 231-2.00e.
Caron Compactor Co.: *See—*
Caron, Fred Joseph; Caron, James Oliver; and Gray, George Carrol, 3,724,342.
Caron, Fred Joseph; Caron, James Oliver; and Gray, George Carrol, to Caron Compactor Co. Compaction wheels for earth tampers. 3,724,342, Cl. 94-50.0pr.
Caron, James Oliver: *See—*

Caron, Fred Joseph; Caron, James Oliver; and Gray, George Carrol, 3,724,342.
Carpigiani, Poerio. Soft ice product machine with heating and cooling. 3,724,235, Cl. 165-61.000.
Carr, Norman L.; Kramer, Sheldon J.; and Stahlfeld, Donald L., to Gulf Research & Development Company. Apparatus for controlling chemical processes. 3,725,653, Cl. 235-151.120.
Carre, Jean-Claude: *See—*
Pruvot, Francois C.; and Carre, Jean-Claude, 3,724,618.
Carrier Corporation: *See—*
Shulock, Charles, 3,724,969.
Carrier Engineering Company Limited: *See—*
Knight, Howard Richard James, 3,724,415.
Carrock, Frederick E., to Dart Industries Inc. Acrylonitrile-butadiene-styrene compositions. 3,725,332, Cl. 260-31.80m.
Carroll, John T., to Allis-Chalmers Corporation. Control center with expandable frame cabinet. 3,725,746, Cl. 317-120.000.
Carroll, Robert L. Bobbin adapter. 3,724,770, Cl. 242-46.600.
Carson, Walter C., to Martin Stamping & Stove Company. Counterflow fireplace. 3,724,443, Cl. 126-121.000.
Carstens, Dale L.: *See—*
Calkins, Burton H.; Carstens, Dale L.; and Riester, James J., 3,724,375.
Carstens, Marion R.; and Bates, Homer J., to Georgia Tech Research Institute. Device to stop and to change direction of vehicles in a capsule-transport pipeline. 3,724,691, Cl. 214-52.00c.
Carter, Crawford F.; and Dreher, John L., to Chevron Research Company. Complex aluminum greases having relatively constant consistency at elevated temperatures. 3,725,275, Cl. 252-21.000.
Carter, Norman D.: *See—*
Wilson, Raymond F.; Peck, Reese A.; Carter, Norman D.; Cole, Edward L.; and Hess, Howard V., 3,725,250.
Cartwright, Delmar G., to Bell Canada. Telephone transfer circuit actuated by calling signal. 3,725,594, Cl. 179-18.0ad.
Caruso, Bernard E., to Hitco. Chromium oxide coating for siliceous articles. 3,725,117, Cl. 117-100.00s.
Caruso, Philip J., Jr. Microwave radiometric aircraft landing assist system. 3,725,930, Cl. 343-100.0em.
Carver, Fred S.: *See—*
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- Curtis, Frank W., to Lexsuco, Inc. Protected structural and construction materials. 3,725,185, Cl. 161-89.000.
- Cutler, Earl F., to Cutler Repaving Inc. Heater for asphalt concrete roadways and the like. 3,724,445, Cl. 126-271.20a.
- Cutler, Hymie, to Bendix Corporation, The. Numerical control system for a lathe. 3,725,651, Cl. 235-151.110.
- Cutler Repaving Inc.: *See—*
  - Cutler, Earl F., 3,724,445.
- Cutler, Thomas P., to Sanders Associates, Inc. Post storage range and doppler correlation method and apparatus. 3,725,916, Cl. 343-5.0dp.
- Cycle-Dyne, Inc.: *See—*
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- Cyclotron Corporation, The: *See—*
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- Da-Lite Screen Company, Inc.: *See—*
  - Potter, Fred S., 3,724,524.
- Dahl, Hans; and Kurz, Anton, to Escher Eyss GmbH. Headbox for a paper making machine containing multiple parallel ducts. 3,725,197, Cl. 162-343.000.
- Dahl, Rulon R., to Killebrew, Inc. Method of making combined catcher/projector for aerial projectiles. 3,724,058, Cl. 29-417.000.
- Daicel Ltd.: *See—*
  - Kawano, Akira; Sakakibara, Kozo; Abe, Iwao; and Chonan, Takayuki, 3,725,472.
- Daimler Benz Aktiengesellschaft: *See—*
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- Daimler-Benz Aktiengesellschaft: *See—*
  - Andres, Rudolf; Stolz, Albert; and Moller, Hermann, 3,724,752.
  - Gaus, Hermann, 3,724,294.
  - Schutzenauer, Hans-Dieter, 3,724,481.
- Dalziel, Thomas: *See—*
  - Masters, Leonard Kenneth Morgan; and Dalziel, Thomas, 3,724,359.
- Daman, Louis F., to Singer Company, The. Cam follower release mechanism for sewing machines. 3,724,282, Cl. 74-54.000.
- D'Amato, Salvatore F.; Guertin, Clifford D.; and Lednicer, Oliver, to American Bank Note Company. Portable lamp for viewing fluorescent material. 3,725,694, Cl. 240-6.40r.
- Dambrine, Francis: *See—*
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- Damon Corporation: *See—*
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- D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, to Pennwalt Corporation. Peroxy compounds containing a carbonate group. 3,725,455, Cl. 260-463.000.
- Daniel, Dorce L. Apparatus for anchoring a structure to earth matter. 3,724,145, Cl. 52-157.000.
- Dappen, Glen M.: *See—*
  - Wolfarth, Eugene F.; Smith, Donald A.; Farran, Charles F.; and Dappen, Glen M., 3,725,063.
- Darlington, Sidney, to Bell Telephone Laboratories, Incorporated. Distortion reduction in a repeatered transmission system. 3,725,806, Cl. 330-149.000.
- Darrow, John O. G., to Westinghouse Air Brake Company. Fail-safe signal shaping circuit. 3,725,679, Cl. 307-268.000.

- Darrow, John O. G., to Westinghouse Air Brake Company. Fail-safe electronic band-pass filter. 3,725,802, Cl. 330-31.000.
- Dart Industries Inc.: *See—*
  - Carrock, Frederick E., 3,725,332.
  - Wainwright, Ralph E.; and Liston, Edward R., 3,724,641.
  - Wang, Jerry Chi, 3,725,320.
- Dart Industries, Inc., mesne: *See—*
  - Huerta, James R.; and Meyer, Jeffrey G., 3,725,444.
- Davidson, Cliff I.; and Laing, Charles F., to Westinghouse Electric Corporation. Measurement of temperature inversions. 3,725,914, Cl. 343-5.00w.
- Davidson, William E., to General Electric Company. Attachment plug with cord grip. 3,725,848, Cl. 339-62.000.
- Davies, Robert William, to Molins Limited. Apparatus for applying tear strips to wrappers. 3,725,181, Cl. 156-519.000.
- Davies, Roy E.: *See—*
  - Gessner, Richard W.; and Davies, Roy E., 3,725,134.
- Davis, Dale M., to United States of America, Air Force. Warhead for guided missiles. 3,724,379, Cl. 102-49.300.
- Davis, Gordon Jerry, to Maytag Company, The. Washing additive dispenser. 3,724,242, Cl. 68-17.00a.
- Davis, Neville Ryland. Current-operated switch. 3,725,670, Cl. 307-117.000.
- Davis, Paul, to Sweetheart Plastics, Inc. Container lid. 3,724,710, Cl. 220-60.00r.
- Davis, Walter F. Candle mould. 3,724,982, Cl. 425-117.000.
- Davis, William John, to RCA Corporation. Simultaneous digital transmission in both directions over one line. 3,725,582, Cl. 178-58.000.
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  - Lesage, Jean; and Dawans, Francois, 3,725,331.
- Day, John J.; and Hirschman, Paul S., to Ocean Protein Corporation. Apparatus for growing crustaceans. 3,724,423, Cl. 119-4.000.
- Day, Robert W. Sub-caliber conversion unit. 3,724,326, Cl. 89-196.000.
- Dayco Corporation: *See—*
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- De Gier, Johannes; and Eisses, Reinhart Charles Willem, to U.S. Philips Corporation, mesne. Method of making a cathode-ray tube. 3,725,710, Cl. 313-64.000.
- De Good, Marnard J., to Rapistan Incorporated. Accumulator with braking. 3,724,642, Cl. 198-127.00r.
- De Laval Turbine Inc., mesne: *See—*
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- De Marco, John Gregory, to American Cyanamid Company. Process for methoxyethyl carbamate. 3,725,464, Cl. 260-482.00c.
- de Montigny, Raimbault M.A.T.; Liebergott, Norman; and Pounds, Derrick P.W., to Pulp and Paper Research Institute of Canada. Process and apparatus for the chemical reaction between a gas and a wood pulp. 3,725,193, Cl. 162-17.000.
- de Nora, Vittorio; and Trisoglio, Giovanni, to Electronor Corporation. Baffles for dimensionally stable metal anodes and methods of using same. 3,725,223, Cl. 204-99.000.
- De Puy, Robert P., to General Electric Company. Digital regulator and method of current regulation. 3,725,769, Cl. 321-14.000.
- de Saint Sauveur, Xavier: *See—*
  - Brisebarre, Marcel; and de Saint Sauveur, Xavier, 3,725,908.
- De Vale, Donald P., to Halogen Controls, Inc. Apparatus for monitoring and controlling halogen levels in a water treatment system. 3,724,474, Cl. 137-5.000.
- Deaton, Ronald L.; and Silver, Gary L., to United States of America, Atomic Energy Commission. Method for dissolving plutonium dioxide. 3,725,294, Cl. 252-301.10r.
- Debuisser, Jean-Claude A.: *See—*
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- Decca Limited: *See—*
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- Deerfield, Alan J., to Raytheon Company. Floating point number processor for a digital computer. 3,725,649, Cl. 235-156.000.
- Deffner, John F.; Tucci, Edmond R.; Thayer, Helen I.; and Ward, John V., to Gulf Research and Development Company. Process for the hydroformylation of olefins. 3,725,483, Cl. 260-604.0hf.
- Dehar, David C., to Ford Motor Company. Tube-to-hose connection. 3,724,882, Cl. 285-243.000.
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- Del Giudice, Frank Paul: *See—*
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- Delaunay, Jacques, to Societe de Fabrication d'Instruments de Mesure SFIM. Electronic devices for forming algebraic sums. 3,725,691, Cl. 235-186.000.
- Dell, Brian E., to Computer Optics, Inc. Image transfer device. 3,725,575, Cl. 178-6.70r.
- Dell, Ronald Michael: *See—*
  - Woodhead, James Louis; Dell, Ronald Michael; Junkinson, Anthony Richard; and Wilkinson, Raymond Westrop, 3,725,298.
- Dellor, Roger B., to Intersil Incorporated. Two terminal bipolar memory cell. 3,725,881, Cl. 340-173.0ff.
- Delro Engineering Corporation: *See—*
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- Denk, Hans H.; and Sabad, Joseph J., to International Business Machines Corporation. Magnetic coating compositions. 3,725,285, Cl. 252-62.540.
- Denker, James M., to Nutron Corporation. Mechanical driving. 3,724,334, Cl. 91-491.000.
- Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
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- DePree, David O., to Aerojet-General Corporation. Process for recovery of mineral pollutants from acidic waste streams. 3,725,259, Cl. 210-30.000.
- Derie, Clifford. Fishing device. 3,724,115, Cl. 43-15.000.
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- Dever, James L.; and Hodan, James J., to Borg-Warner Corporation, mesne. Phosphite-phosphates. 3,725,510, Cl. 260-927.00r.
- DeVilliers, John Laddier. Valves. 3,724,498, Cl. 137-607.000.
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  - Cavenaghi, Carlo; Di Fiore, Lucio; Barilli, Filippo; and Calcagno, Benedetto, 3,725,257.
- Diamond, Harold G.; and Gustine, Floyd L., to Allis-Chalmers Manufacturing Company. Electrostatic resin powder spray system having improved powder dispensing means. 3,724,416, Cl. 118-7.000.
- Diamond, Harold G.; and Gustine, Floyd L., to Allis-Chalmers Corporation. Powder-air venturi for electrostatic spray coating system. 3,724,755, Cl. 239-15.000.
- Dick, Ralph A.: *See—*
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- Dietrich, Henri, to Ciba-Geigy Corporation. Derivatives of p-aminoalkyl benzenesulfonamides. 3,725,430, Cl. 260-309.700.
- Dilick, Maurice D.: *See—*
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- Dill, Walter R., to Halliburton Company. Oil soluble diverting material and method of us for well treatment. 3,724,549, Cl. 166-282.000.
- Dille, Roger M.: *See—*
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- Dimmick, Roger F., to International Business Machines Corporation. Pneumatic valve. 3,724,479, Cl. 137-83.000.
- Disselnkotter, Hans, to Farbenfabriken Bayer Aktiengesellschaft. 3-Substituted-6-chloro-2H-1, 3-oxazine-2,4 (3H)-dione. 3,725,402, Cl. 260-244.00r.
- Dixon, Amers Ernest; and Proctor, Michael. Splints. 3,724,453, Cl. 128-87.00r.
- Dixon, Don P.; and Bertva, John T. Automobile air conditioning system. 3,724,232, Cl. 62-244.000.
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  - Koppen, Gerhard; Dobring, Wilfried; and Siebart, Manfred, 3,725,839.
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- Dogane, Iwao: *See—*
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- Doherty, William F., to Pyrotector, Incorporated. Fire detector with red and blue responsive photocells and regenerative feedback. 3,725,660, Cl. 250-83.30h.
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- Doll, Brendan L., to Cellu Products Company. Method of and apparatus for forming corner pads. 3,725,170, Cl. 156-217.000.
- Domenico, Penelope B., to Dow Chemical Company, The. (Thio-,sulfinyl-and sulfonyl) containing pyridine compounds. 3,725,421, Cl. 260-294.80f.

- Dominion Engineering Works, Limited: *See—*
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- Donahue, William J., to United States of America, Navy. Centrifugally armed fuze. 3,724,384, Cl. 102-79.000.
- Donche, Alain; Thibault, Claude; Arretz, Emmanuel; and Pfister, Alain, to Societe Nationale des Petroles d'Aquitaine. Methylenedithiolans. 3,725,394, Cl. 260-240.00f.
- Donner, Siegmar, to Kieninger & Oberfell, Firma. Electronic clock with low power consumption. 3,724,200, Cl. 58-41.00r.
- Donohue, Paul Christopher, to Du Pont de Nemours, E. I., and Company. Semiconducting cadmium, cadmium-zinc, and mercury phosphide halides. 3,725,310, Cl. 252-518.000.
- Dooley, Eddie W., to General Electric Company. Latching device. 3,724,889, Cl. 292-87.000.
- Dorchester, Edwin B. Vernier control knob. 3,724,281, Cl. 74-10.520.
- Dorion, Francis W., Jr., to Gillette Company, The. Dual razor blade assembly. 3,724,070, Cl. 30-47.000.
- Dorken & Mankel KG: *See—*
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- Dorsey, Robert L., Sr.; Gross, James C.; and Myers, H. George. Electric switches. 3,725,834, Cl. 337-44.000.
- Dortenzo, Alexander T., to Pennsylvania Engineering Corporation. Anti-pollution device for a metallurgical vessel. 3,724,827, Cl. 266-15.000.
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- Douros, John D., Jr.; and Kerst, Al Fred, to Gates Rubber Company, The. Alloxantin compounds as antibacterial and antifungal agents. 3,725,557, Cl. 424-251.000.
- Douty, Donald L., to United States Steel Corporation. Can end with bonded seal slide. 3,724,728, Cl. 222-541.000.
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  - McKinley, Suzanne V.; and Rakshys, Joseph W., Jr., 3,725,365.
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  - Niles, Eart T.; and Stevens, Don L., 3,725,152.
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  - Rogers, Morris Gwynne; and Tsai, James Hwa-San, 3,725,341.
  - Schulz, Gerald L.; and Caiola, Robert J., 3,725,109.
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  - Spangenberg, Stanley F., 3,725,539.
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- Dreeben, Jack. Throttle control apparatus. 3,724,287, Cl. 74-526.000.
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- Dresser Industries, Inc.: *See—*
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- Dreyfoos, Alex W., Jr., to Photo Electronics Corporation. Logarithmic circuit with automatic compensation for variations in conditions of operations. 3,724,954, Cl. 356-175.000.
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- Dryon, Jacques Max Charles, to Ateliers Heuze, Malevez et Simon Reunis Societe Anonyme. Apparatus for applying pressure to an advancing web of rigid material. 3,724,045, Cl. 29-90.000.
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  - Donohue, Paul Christopher, 3,725,310.
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- Duesberg, Joe D., to United States of America, Air Force. Method of preventing the plugging of liquid coolant passages of a regeneratively cooled rocket engine thrust chamber. 3,724,048, Cl. 29-157.00c.
- Duke, Buford W. Hydrostatic shock operated, fast closing valve and sabot. 3,724,320, Cl. 89-1.00r.
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- Dunn, Wendell E., Jr., to Dunn, Wendell E., Inc. Annular flow condenser. 3,724,171, Cl. 55-71.000.
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- Dutt, Edward A.: *See—*
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- Eads, Harold O., to McDonough Co. Leaf rake with improved molded head. 3,724,188, Cl. 56-400.170.
- Eager, George S., Jr.: *See—*
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- Eakman, Clarence. Bathtub shower splash plate. 3,724,000, Cl. 4-148.000.
- Earp, Charles William, to International Standard Electric Corporation. System for discrete marking and detecting a predetermined point in time within the envelope of a pulse modulated carrier. 3,725,786, Cl. 325-15.000.
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  - Martin, Wilhiam A.; and Saint Clair, John Q., II, 3,724,777.
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- Easton, Roger L., to United States of America, Navy. Intermittent CW system for satellite surveillance. 3,725,924, Cl. 343-10.000.
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- Ebling, Hilmer F., to Smith, A. O., Corporation. Method of making steel powder articles of select electrical resistivity. 3,725,521, Cl. 264-104.000.
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Edwards, Raymond S.; and Guy, Thomas L. Planing apparatus. 3,724,517, Cl. 144-116.000.

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  Wessells, Henry W., III; and Eggert, Walter S., Jr., 3,724,153.

Ehrens, Henry; and Slocum, Charles W., to Thermo-Electronics, Inc. Starting circuit for permanent split capacitor motor. 3,725,757, Cl. 318-221.00c.

Ehrreich, John E.; and Reti, Adrian R., to Grahim Magnetics, Inc. Process for making small particles. 3,725,036, Cl. 75-.50a.

Eisenberg, Melvin I. Container with self-closing one-way valve. 3,724,461, Cl. 128-227.000.

Eisses, Reinhart Charles Willem: *See*—
  De Gier, Johannes; and Eisses, Reinhart Charles Willem, 3,725,710.

Ekstrom, Stafan Walter, to AGA Aktiebolag. Breathing valve. 3,724,482, Cl. 137-102.000.

Elder Machinery and Tool Engineering Company: *See*—
  Elder, Raymond H., 3,724,270.

Elder, Raymond H., to Elder Machinery and Tool Engineering Company. Flag arm retaining system. 3,724,270, Cl. 73-267.000.

Electrohome Limited: *See*—
  Papay, Joseph, 3,725,800.

Electronic Engineering Co. of California: *See*—
  Hager, George S.; Keech, Eugene E.; and Dossett, Lawrence S., 3,724,772.

Electronic Processors, Inc.: *See*—
  Thompson, Kenneth C., 3,725,606.

Electronor Corporation: *See*—
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Ellerton, Norman V.; Paradise, William F.; and Sanford, Peter E., to Glaxo Laboratories Limited. Method of producing 7β-acylamido-3-methylceph-3-em-4-carboxylic acid ester. 3,725,399, Cl. 260-243.00c.

Elliott Brothers (London) Limited: *See*—
  Colston, John Matthew; and Machin, James Robert, 3,725,723.
  Nurmohamed, Amin Mulji; and Watters, Richard, 3,725,818.

Elliott, Jack G.: *See*—
  Weidman, Joseph S.; Yee, Henry C.; Elliott, Jack G.; and Margosian, Zaven, 3,725,921.

Elliott, John Scotchford; Crail, Ian Robert Henry; and Jayne, Gerald John Joseph, to Castrol Limited. Reaction products of a polyalkylene amine sulfonic acid and an alkenyl succinc acid or anhydride. 3,725,434, Cl. 260-326.300.

Ellis, John D., Jr.: *See*—
  Saccomano, Joseph M.; and Ellis, John D., Jr., 3,724,830.

Ellis, Peter H., to Rohr Industries, Inc. Drive mechanism. 3,724,759, Cl. 239-265.290.

Ellwanger, Hans; Kraisel, August; Kraus, Walter; and Zirps, Wilhelm, to Bosch, Robert, G.m.b.H. Hydraulic adjusting apparatus for hospital beds or the like. 3,724,003, Cl. 5-68.000.

Ellzey, Samuel E., Jr.: *See*—
  Lanoux, Sigred B.; Ellzey, Samuel E., Jr.; Drake, George L., Jr.; and Reeves, Wilson A., 3,725,001.

Elson, Edward E.; McQuary, Kenneth L.; Karlin, George H.; and Lane, Bert, to Automatic Helium Balloon Systems Inc. Gas dispenser and inflation gauge. 3,724,516, Cl. 141-95.000.

Emerson Electric Co.: *See*—
  Sugden, Harry, Jr., 3,724,808.

Eminger, Robert J., to Essex International, Inc. Apparatus for winding two pole dynamoelectric machine field coils. 3,724,515, Cl. 140-92.100.

Emmert, Reinhold: *See*—
  Kuhnlein, Dieter; Emmert, Reinhold; and Haag, Georg, 3,724,778.

Emmons, Robert J., to Dynamics Corporation of America. Rotary switch beater ejector. 3,725,624, Cl. 200-157.000.

Eng, Kjell; and Salomonsson, Sven-Olof, to AB Sveriges Forenade Trikafabriker. V-Belt and method of forming same. 3,724,284, Cl. 74-234.000.

Engelhard Minerals and Chemicals Corporation: *See*—
  Zentz, William E., Jr., 3,725,100.

Engineered Data Peripherals Corporation: *See*—
  Garfein, Irwin B., 3,725,884.

Engler, Joseph P.; and Paulsen, Glen E., to T. O. Plastics, Inc. Plate dispenser. 3,724,719, Cl. 221-279.000.

English Clays Lovering Pochin & Company Limited: *See*—
  Gwilliam, Ralph Derek, 3,724,663.

Enloe, Kenneth M., to Kimberly-Clark Corporation. Prefolded disposable diaper. 3,724,464, Cl. 128-284.000.

Enochian, Samuel H., to Unarco Industries, Inc. Interlocking device for inflatable bulkheads. 3,724,395, Cl. 105-369.0ba.

Ensign-Bickford Company, The: *See*—
  Zilcosky, Hector Joseph, 3,724,382.

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Envirco Corporation: *See*—
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Envopak Limited: *See*—
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Epshtein, Yakov Vulfovich: *See*—
  Kavepa, Alexandr Alexandrovich; Nitkovskikh, Anatoly Anatolievich; Grigoriev, Vladimir Andreevich; Pashkov, Arkady Borisovich; and Epshtein, Yakov Vulfovich, 3,725,013.

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Erdmenger, Rudolf; Ullrich, Martin; Germerdonk, Rolf; Pedain, Josef; Quiring, Bernd; and Wingler, Frank, to Bayer Aktiengesellschaft. Process for the production of crosslinkable powder lacquers. 3,725,340, Cl. 260-47.0ep.

Erickson, Albin R., to Textron, Inc. Front suspension for snowmobiles. 3,724,578, Cl. 180-5.00r.

Erickson, Harold E.: *See*—
  Brookhyser, Byron B.; Erickson, Harold E.; and Perry, Glenn R., 3,725,183.

Erickson, John S.; Curran, Patrick M.; and Owczarski, William A., to United Aircraft Corporation. Mold for casting single crystal articles. 3,724,531, Cl. 164-361.000.

Erie Development Company: *See*—
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Eriksson, Folke, to AB Cator & Celsius. Method of fractionating wood fiber pulp or the like and device for performing the method. 3,724,660, Cl. 209-250.000.

Eross, Bela, to Instrumentation Industries, Inc. Fractional inspiratory oxygen monitoring valve apparatus. 3,724,489, Cl. 137-322.000.

Erwin, Rudy, to Aerojet-General Corporation. Carbide-metal composites. 3,725,055, Cl. 75-134.00f.

Escher Eyss GmbH: *See*—
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  Kramer, George M., 3,725,500.
  Mancini, Paul A.; and May, Walter G., 3,724,225.
  Reisch, John C., 3,725,534.
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Ethyl Corporation: *See*—
  Berry, Currie B., Jr.; and Valdo, Alex R., 3,725,037.
  Worrel, Calvin J., 3,725,277.

Eustance, John W., to General Electric Company. Method of making a capacitor with a preimpregnated dielectric. 3,724,043, Cl. 29-25.420.

Evans, James P. Mud flaps. 3,724,871, Cl. 280-154.50r.

Eversberg, Gerhard; and Seelbach, Heinz, to Reininghaus & Co., Firma. Illumination device. 3,725,695, Cl. 240-52.00r.

EVG Entwicklungs- und Verwertungsgesellschaft m.b.H: *See*—
  Ritter, Josef; and Gott, Hans, 3,725,632.

Exceltronic Industries, Ltd.: *See*—
  Wright, Kenneth F. A., 3,724,636.

F & E Manufacturing Company: *See*—
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  Burgess, Ronald R., 3,724,708.

Fabian, Wolfgang; Franz, Joachim; and Polster, Rudolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Conversion of polyhalophthalocyanines into pigmentary form. 3,725,433, Cl. 260-314.500.

Fabio, Paul Frank: *See*—
  Tomcufcik, Andrew Stephen; Izzo, Patrick Thomas; and Fabio, Paul Frank, 3,725,407.

Fabris, Hubert Jakob; Maxey, Edwin Morgan; and Schmucker, Arden Everett, to General Tire & Rubber Company, The. Temperature stable flexible isocyanate-terminated polymers and polyisocyanurate polymers therefrom. 3,725,357, Cl. 260-77.5nc.

Fackenthal, Harry, to General Motors Corporation. Fluid unit with dump and fill control. 3,724,209, Cl. 60-357.000.

Fadner, Glenn Roland, Jr., to RCA Corporation. Method for making a kinescope comprising a color selection mask with temporary corridors. 3,725,065, Cl. 96-36.100.

Faethe, Manfred: *See*—
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Fagan, William F.: *See*—
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Fahey, Denis; and Clarke, Reginald L., to Boulton, William, Limited. Vibro-gyratory mills. 3,724,146, Cl. 51-163.000.

Faiks, Frederick S.; and Buhk, Randall P., to Steelcase Inc. Wire rod chair. 3,724,897, Cl. 297-446.000.

Fairchild, Anthony Prince, to Synectron, Inc. Electronic alarm system. 3,725,865, Cl. 340-172.000.

Faltico, Frank J., to Allied Trading Co. Door knob burglar alarm. 3,725,892, Cl. 340-274.000.

Fanella, Robert J.; Marcinkus, Donald W.; and Sterly, Glenn E., to Ampex Corporation. Cassette playback and/or recording apparatus with loading ease feature. 3,724,779, Cl. 242-198.000.

Farbenfabriken Bayer Aktiengesellschaft: *See*—
  Disselnkotter, Hans, 3,725,402.
  Gehrke, Gunter; Hederich, Volker; Neeff, Rutger; and Wegner, Peter, 3,724,998.
  Golitz, Hans Dietrich; Merten, Rudolf; Noll, Walter; and Simmler, Walter, 3,725,449.
  Rodi, Fritz; and Hund, Franz, 3,725,281.
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Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See*—
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  Hanschke, Ernst; Fester, Walter; and Jakob, Franz, 3,725,478.
  Hunger, Klaus, 3,725,278.
  Kleiner, Hans-Jerg, 3,725,227.
  Konig, Wolfgang; and Geiger, Rolf, 3,725,380.
  Kuch, Heinz; Schmitt, Karl; Seidl, Gunther; and Hoffmann, Irmgard, 3,725,404.
  Kuhne, Rudolf; Hamal, Heinrich; and Thilenius, Thilo, 3,725,101.
  Schimmelschmidtq Kurt; and Kleiner, Hans-Jerg, 3,725,515.
  Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindner, Ernst, 3,725,393.
  Voigt, Hartman; Schneck, Erich; Gunther, Klaus; and Noha, Klaus, 3,725,491.
  Von Der Eltz, Hans-Ulrich; and Gross, Richard, 3,724,997.

Farmer, William M., to United States of America, Air Force. Method of forming and cooling pinhole spatial filter for high power laser. 3,724,930, Cl. 350-320.000.

Farran, Charles F.: *See*—
  Wolfarth, Eugene F.; Smith, Donald A.; Farran, Charles F.; and Dappen, Glen M., 3,725,063.

Fasciati, Alfred: *See*—
  Zickendraht, Christian; and Fasciati, Alfred, 3,725,384.

Fathauer, George H., to Masco Corporation, mesne. Signal-selecting radio receiver. 3,725,788, Cl. 325-469.000.

Featherston, John Richard, to International Business Machines Corporation. Exigent multisatellite digital radio communications system. 3,725,787, Cl. 325-58.000.

Featherstone, Arthur H. Combination seal cap and valve. 3,724,488, Cl. 137-223.000.

Fedders Corporation: *See*—
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Federer, Fritz; and Neumann, Henning, to Metzeler Aktiengesellschaft. Storage system for gaseous fluids and the like. 3,724,497, Cl. 137-575.000.

Fegley, Richard F.: *See*—
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Fekete, Frank; Pulman, Leonard J.; and Thrash, David J., to Koppers Company, Inc. Method for producing laminates. 3,725,172, Cl. 156-252.000.

Felcheck, Marvin; Kirschner, Wallace; Jarosik, Robert J.; and Capes, Charles W., to Pitney Bowes-Alpex, Inc. Parallel-access data file system. 3,725,870, Cl. 340-172.500.

Feldberg, Leonard H., to Burndy Corporation. Connector for integrated package. 3,725,842, Cl. 339-17.0cf.

Feldman, Edward: *See*—
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Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung: *See*—
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Feller, Gilbert, to Metalem S.A. Ring member for a watch dial. 3,724,202, Cl. 58-127.00r.

Fellers, Paul J.: *See*—
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Fellowes Manufacturing Company: *See*—
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Fenity, Robert D.; deceased (by Fenity, Nancy; executrix), to Xerox Corporation. Electrostatographic developer containing uncoated glass-ceramic carrier particles. 3,725,283, Cl. 252-62.100.

Ferino, Ferdinand. Cafly. 3,724,577, Cl. 180-1.0fv.

Fernald, Charles Henry; and Chick, Joseph James, to AMP Incorporated. Machine for feeding a continuous strip of electrical connectors. 3,724,054, Cl. 29-203.00d.

Fernandes, Harold; and Walsh, William Henry, to Du Pont de Nemours, E. I., and Company. Process for removing oxidizable fumes from heated air used to treat textile fibers. 3,725,532, Cl. 423-245.000.

Fernschild, Gunter: *See*—
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  Hanschke, Ernst; Fester, Walter; and Jakob, Franz, 3,725,478.

Fichter, Walter; Armbruster, Otto; and Assmus, Friedrich, to Gebruder Junghans G.m.b.H., Firma. Starting control device for running events. 3,724,843, Cl. 272-59.00a.

Fiedler, William S., to United States of America, Air Force. Disappearing-reappearing radar chaff and method for production. 3,725,927, Cl. 343-18.00r.

Field, Nathan D.; and Freyermuth, Harlan B., to GAF Corporation. Photosensitive propargyl polymer composition an method of using. 3,725,064, Cl. 96-35.100.

Fink, Robert W.; and Boyko, Eugene S., to Westinghouse Electric Corporation. Method of and apparatus for welding an end plug onto a nuclear fuel element. 3,725,635, Cl. 219-121.00p.

Finkel, Abraham M.; and Surwill, Michael, to Lockheed Aircraft Corporation. Apparatus for performing axially-and-radially located operations on tubular construction. 3,724,053, Cl. 29-200.00b.

Finley, Carl E., to Olin Corporation. Camp stove tray to case mount. 3,724,441, Cl. 126-38.000.

Finnegan, Ronald A., to Veeder Industries Inc. Optical encoder. 3,725,902, Cl. 340-347.00p.

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  Halasa, Adel F.; and Schroeder, Ervin E., 3,725,370.

Fischbein, Irwin W.; Alexander, Ben H.; and Sastri, Aiyaswami S., to Gillette Company, The. Razor blades. 3,725,238, Cl. 204-298.000.

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Fischer, Frederick K., to Westinghouse Electric Corporation. Moisture removal device for a steam turbine. 3,724,967, Cl. 415-168.000.

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  Buhrer, Erwin, 3,724,659.

Fischer, William H.; and Cromer, Charles F., to Westinghouse Electric Corporation. Gas-blast downstream-type of high-voltage circuit breaker having field-controlling shields and single venting movable contact. 3,725,623, Cl. 200-148.00b.

Fisher, George, Aktiengesellschaft: *See*—
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Fisher, Robert C. Seat belt retractor. 3,724,773, Cl. 242-107.400.

Fisons Limited: *See*—
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Fizmaurice, Richard W., to FMC Corporation. Boom irrigation system. 3,724,758, Cl. 239-251.000.

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Flad, Karl. Knitting machine with device for jacquard patterning. 3,724,240, Cl. 66-50.00r.

Flanagan, Lindley E., Jr. Fishing jig having a flexible body. 3,724,117, Cl. 43-42.240.

Fleischer, Henry. Adjustable ladder and scaffold. 3,724,592, Cl. 182-27.000.

Fleischer, Herman J.; Lipsky, Philip; and Tiblin, Bert V., to Sperry Rand Corporation. Collision avoidance display apparatus for maneuverable craft. 3,725,918, Cl. 343-5.0em.

Fluor Corporation: *See*—
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  Cassady, Henry W., Jr.; and Stilwell, Robert E., 3,724,168.
  Fizmaurice, Richard W., 3,724,758.
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  Reimers, James L., 3,724,644.
  Zanpirri, Anthony P.; Trechock, Jack; and Joseph, Robert T., 3,725,019.

- Foley, Charles F.; McCarthy, Charles D.; and Hardin, Charles H., to Kusan, Inc. Robot push toy. 3,724,124, Cl. 46-97.000.
- Foley, Norman Leslie, to Auscoteng Pty. Ltd. Desalination plant. 3,725,206, Cl. 202-205.000.
- Fonden, Per Borje; and Walander, Kar Ove Torgny, to Borgs Fabriks AB. Operating system for aircraft barrier nets. 3,724,333, Cl. 91-411.00r.
- Fonden, Per Borje; and Walander, Karl Ove T., to Borgs Fabriks AB. Line or band for arresting aircraft. 3,724,787, Cl. 244-110.00a.
- Forbes, Hampton E., Jr., to Westvaco Corporation. Multi-product carton. 3,724,650, Cl. 206-45.190.
- Ford, John A. Flexible connector. 3,724,878, Cl. 285-93.000.
- Ford Motor Company: *See—*
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  - Kavthekar, Keshav S.; and Somers, Jess J., 3,724,357.
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- Forsberg, Albert G. Self adjusting window trim. 3,724,136, Cl. 49-505.000.
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  - Masumoto, Hakaru; Sawaya, Shohachi; and Michio, Kikuchi, 3,725,053.
- Fournier, Albert Anthony, to Johnson & Johnson. Thermally stable pressure-sensitive adhesive tape with polypropylene backing. 3,725,121, Cl. 117-122.0pf.
- Fraik, Robert D., to Minnesota Mining and Manufacturing Company. Method of providing and developing hidden entries. 3,725,104, Cl. 117-1.700.
- Fram Corporation: *See—*
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- Francini, Joseph P.; and Verdone, Michael A., to Singer Company, The. Twin disc pack. 3,724,652, Cl. 206-62.00p.
- Francois, Paul: *See—*
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- Franklin, Ivey: *See—*
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- Frantzen, Karl H., to Northern Natural Gas Company. Forced-draft furnace system. 3,724,403, Cl. 110-72.00r.
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- Fraze, Ermal C., mesne: *See—*
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- Freda, John F. Bearing lubricator. 3,724,596, Cl. 184-1.00d.
- Frederick, William N. Flexible chain for personal wear. 3,724,204, Cl. 59-80.000.
- Frederiksen, Thomas M.; and Russell, Ronald W., to Motorola, Inc. Switching circuit with hysteresis. 3,725,673, Cl. 307-235.00r.
- Frederiksen, Thomas M., to Motorola, Inc. Stabilized multivibrator circuit. 3,725,681, Cl. 307-273.000.
- Freed, Meier E.: *See—*
  - Potoski, John R.; and Freed, Meier E., 3,725,410.
- Freiberg, Leslie Alan, to Abbott Laboratories. Process for the demethylation of 3-amino macrolides. 3,725,385, Cl. 260-210.0ab.
- Freimanis, Laimons, to Bell Telephone Laboratories, Incorporated. Balanced semiconductor switching network circuit and construction. 3,725,863, Cl. 340-166.00r.
- Freimark, Ronald J.: *See—*
  - Gunderson, Philip D.; and Freimark, Ronald J., 3,725,583.
- Freitag, Herbert; and Westerteiger, Wilhelm, to Stabilus Industrie und Handelsgesellschaft mbH. Resilient seat. 3,724,797, Cl. 248-400.000.
- Fresard, Marcel; and Gabriel, Jean-Pierre, to Mefina S.A. Presser foot for a sewing machine. 3,724,406, Cl. 112-235.000.
- Freshour, Kenneth D.; and van Dyk, John C. Fluid discharge system. 3,724,762, Cl. 239-427.300.
- Fretague, William J.: *See—*
  - Mayo, Kenneth E.; and Fretague, William J., 3,725,663.
- Freyermuth, Harlan B.: *See—*
  - Field, Nathan D.; and Freyermuth, Harlan B., 3,725,064.
- Friberg, Jean-Marie; Maginot, Pierre; and Merigoux, Jean-Marie, to Compagnie Industrielle des Telecommunications CIT-ALCATEL. Axial supersonic compressor. 3,724,968, Cl. 415-181.000.
- Frick, Hans-Dieter: *See—*
  - Busch, Josef; Bruck, Herbert; Schranz, Karl-Wilhelm; Schon, Erwin; and Frick, Hans-Dieter, 3,724,355.
- Friedel, Christian; and Faethe, Manfred, to Veb Elektrogeratewerk Suhl. Process for pretreating decarbonized steel to be directly enamelled. 3,725,218, Cl. 204-34.000.
- Friedline, Leslie E.; Stevenson, Thomas E.; and Weber, Lee A., to Bailey Meter Company. Pneumatic instrument servomechanism. 3,725,949, Cl. 346-72.000.
- Friedman, Mendel, to United States of America, Agriculture. Removal of mercury from liquids using keratin derivatives. 3,725,261, Cl. 210-38.000.
- Friedrich Deckel Aktiengesellschaft: *See—*
  - Bechorer, Konrad, 3,724,975.
- Frigo, Richard J.; and Crowden, William F. Drum. 3,724,313, Cl. 84-452.00p.
- Frisch, Kurt C., to Owens-Corning Fiberglass Corporation. Low smoke generating plastic compositions. 3,725,319, Cl. 260-2.5aw.
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- George, William L., to Motorola, Inc. Process for making a fine geometry, self-aligned device structure. 3,725,150, Cl. 148-187.000.
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- Gillberg, Carl Edward, to Johns-Manville Corporation. Machine for grooving brake blocks. 3,724,327, Cl. 90-11.00c.
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- Glass, Marvin I.; and Breslow, Jeffrey D. Opposing pulling action game. 3,724,848, Cl. 273-1.00r.
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- Glosek, John J., to Western Electric Company, Incorporated. Logic circuitry for monitoring the cyclic operations of a pair of devices. 3,725,889, Cl. 340-259.000.
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- Gobatti, Edmond F. Diagonally oscillating concentrator. 3,724,661, Cl. 209-437.000.
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- Golden, William Donald. Waterbed bedstead. 3,724,008, Cl. 5-348.0wb.
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- Goldfarb, Adolph E.; and Ayala, Carl, said Ayala assor. to said Goldfarb, Adolph E. Push button doll. 3,724,125, Cl. 46-119.000.
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- Goodacre, Cecil, to Lansing Bagnall Limited. Pedestrian operated industrial truck. 3,724,586, Cl. 180-91.000.
- Gooderum, Leoda J. Channel insert attachment for a zipper foot. 3,724,408, Cl. 112-240.000.
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- Gouws, Wentzel Christoffel. Pressure moulding machine. 3,724,988, Cl. 425-348.000.
- Gower, George H. Apparatus for manufacturing high pressure inert gas. 3,725,012, Cl. 23-281.000.
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- Graham, James T.; and Hackstock, Fred W., to Bendix Corporation, The. Over travel linkage for assembly machine station. 3,724,052, Cl. 29-200.00p.
- Graham, William; and Wetherill, Lewis A., to Glaxo Laboratories Limited. Method of producing 7β-acylamido-3-methylceph-3-em-4-carboxylic acid esters and catalysts therefor. 3,725,397, Cl. 260-243.00c.
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- Grandjean, Philippe, to Sandoz Ltd. Difluoropyrimidylamino-group-containing metallized water-soluble reactive formazane dyes. 3,725,382, Cl. 260-146.00d.
- Grant, Whitney I., to Vilter Manufacturing Corporation. Single stage dry cylinder compressor having automatic oil drain from suction chamber to crankcase. 3,724,231, Cl. 62-157.000.
- Graver, Richard T. Jar opening fixture. 3,724,296, Cl. 81-3.30r.
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- Grebe, Konrad. Control for self-advancing hydraulic roof supports for longwall faces in mines. 3,724,329, Cl. 91-189.000.
- Green, George C., to Devlieg Machine Company. Double bladed cutting tool. 3,724,965, Cl. 408-183.000.
- Green, Jeffrey S. Tuna tower. 3,724,595, Cl. 182-118.000.
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- Grieger, Karl Heinz. Apparatus for illuminating transparent images, especially diapositives. 3,724,111, Cl. 40-106.100.
- Griffey, Donald E., to Motorola, Inc. Dual mode power supply protection circuit. 3,725,739, Cl. 317-16.000.
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- Hubert, Rene, to Cefilac. Extrusion of seamless tubing. 3,724,254, Cl. 72-264.000.
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- Huettner, Robert E.; Tymann, Edward B.; and Nolin, Richard, to Honeywell Information Systems Inc. Multi function pulling technique. 3,725,871, Cl. 340-172.500.
- Huffman, Richard D., to Gerity-Schultz Corporation. Molten metal strainer. 3,724,831, Cl. 266-38.000.
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- Hunsucker, Jerry H. Polymeric substances comprising the reaction product of melamine, aldehyde and oxazolidines. 3,725,350, Cl. 260-67.500.
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- Hunter, Irving R.; and Walden, Mayo K., to United States of America, Agriculture. 1,4,5,6-Tetrahydro-2-acetopyridine, its salts and bisulphite addition products, and synthesis thereof. 3,725,425, Cl. 260-297.00r.
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- Irby, James E. Impact receiving exercise device. 3,724,845, Cl. 272-76.000.
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- Jacobson, Leonard P., to Burt, F. N., Company, Inc. Sealable carton. 3,724,741, Cl. 229-38.000.
- Jacoby, Charles H., to International Salt Company. Solution mining of salt and storage of industrial fluids. 3,724,898, Cl. 299-5.000.
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- Johnson, Douglas, to General Motors Corporation. Combustion apparatus. 3,724,207, Cl. 60-39.74r.
- Johnson, Francis; and Nasutavicus, Wilmonte A., to Dow Chemical Company, The. Novel 3-amino-5-bromo-2H-1,4-thiazines. 3,725,401, Cl. 260-243.
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- Johnson, Lennart B., to Teradyne, Inc. Bussing construction for printed circuit connectors. 3,725,843, Cl. 339-19.000.
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- Johnson, Ray M., to Microdry Corporation, mesne. Microwave applicator with throughput suppression guides at input and output ports. 3,725,628, Cl. 219-10.550.
- Johnson, Roy A., to Mead Corporation, The. Synchronous cutter mechanism. 3,724,307, Cl. 83-337.000.
- Johnson, Stanley R.; and Forel, Sheldon H., to Baxter Laboratories, Inc. Gel diffusion device. 3,725,004, Cl. 23-230.00b.
- Johnston, Thomas F., Jr., to Lansing Research Corporation. Optical alignment device providing a virtual pivoting laser beam. 3,724,953, Cl. 356-153.000.
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- Jones, Kenneth W.; and Richie, Edward H. Non-lethal home defense implement. 3,724,114, Cl. 42-84.000.
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- Joos, Bernhard. Hair and nail hardening process. 3,725,525, Cl. 424-61.000.
- Jordan, John H., to Westinghouse Brake and Signal Company Limited. Selective control system for dispatching articles on a conveyor. 3,725,867, Cl. 340-172.500.
- Jordan, Merrill E.; Burbine, William G.; and Williams, Frank R., to Cabot Corporation. Carbon black pigments. 3,725,103, Cl. 106-307.000.
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- Kaesemeyer, Carl W., to Cincinnati Milacron Inc. Hydraulic actuator with arcuate expansible chambers. 3,724,335, Cl. 92-66.000.
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- Karel, Ernst Klatte. Bandaging means. 3,724,457, Cl. 128-171.000.
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- Kaufmann, Albert R., to Whittaker Corporation. Powder production by gas atomization of liquid metal. 3,725,517, Cl. 264-12.000.
- Kautz, William H., to United States of America, Navy. Cellular correlation array. 3,725,689, Cl. 235-181.000.
- Kavepa, Alexandr Alexandrovich; Nitkovskikh, Anatoly Anatolievich; Grigoriev, Vladimir Andreevich; Pashkov, Arkady Borisovich; and Epshtein, Yakov Vulfovich, to Proektno-Konstruktorskoe Bjuro po Proektirovani ju Oborudovania dlya Proizvodstva Plasticheskik Mass i ulitsa Kalinima. Multisection apparatus with conveying means for carrying out mass-exchange processes in solid-liquid systems. 3,725,013, Cl. 23-285.000.
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  - Putnam, Allen Lewis, 3,724,119.
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  - Santilli, Arthur A.; and Kim, Dong H., 3,725,405.
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- Klein, Peter, to Siemens Aktiengesellschaft. Apparatus for a telephone exchange system with conference equipment and having a video capability. 3,725,587, Cl. 179-2.0tv.
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- Kleykamp, Donald L.; Gaster, Ivan; Browning, Vernon D.; and Holden, Homer N., to Dayco Corporation. Continuously manufactured flexible conduit. 3,724,507, Cl. 138-122.000.
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  - Kliewer, George G.; Kliewer, Steven L.; and Kliewer, Michael G., 3,724,360.
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- Knaggs, Edward Andrew: *See*—
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- Knapp, Lester L.: *See*—
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- Knecht, Walter L. Method for repairing flooring construction. 3,724,158, Cl. 52-743.000.
- Knight, Bruce L., to Marathon Oil Company. Economical mobility control in oil recovery processes. 3,724,545, Cl. 166-273.000.
- Knight, Howard Richard James, to Carrier Engineering Company Limited. Controlling spray guns. 3,724,415, Cl. 118-2.000.
- Knight, Lee Ayers: *See*—
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- Knox, Inc.: *See*—
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- Knudsen, Bent: *See*—
  - Knudsen, Kai; and Knudsen, Bent, 3,724,491.
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- Knudsen, William C. Bubble pulse suppression with acoustic source optimization. 3,724,590, Cl. 181-.5xc.
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- Kobayashi, Akiyoshi, to Toyoda Koki Kabushiki Kaisha. Feed mechanism for machine tool. 3,724,331, Cl. 91-407.000.
- Kobayashi, Nobuki: *See*—
  - Ito, Ken; Kaminaka, Hiroshi; Kotera, Norio; Yamamoto, Shinji; Dogane, Iwao; Shigehiro, Kosuke; Kuruma, Hiroshi; Chinuki, Takashi; Yoshitake, Hiroshi; Tanimoto, Kenji; Hasegawa, Shinichi; and Kobayashi, Nobuki, 3,725,484.
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- Kobelt, Jack R. Apparatus for automatic pitch compensation in marine vessels. 3,724,970, Cl. 416-27.000.
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- Koepke, Horst, to Mindrill Limited. Core drill latch. 3,724,568, Cl. 175-246.000.
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  - Anderka, Gerold, 3,724,676.
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- Kohl, Robert E., to Diebold Incorporated. Tapered roll conveyor curve construction. 3,724,643, Cl. 198-127.00r.
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- Koizumi, Yutaka, to Ricoh Co., Ltd. Electrophotographic copying apparatus with means for erasing marginal images. 3,724,940, Cl. 355-3.00r.
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- Kolesova, Alvina Grigorievna: *See*—
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- Komp, Richard J., to Xerox Corporation. Method of cleaning an electrostatographic imaging surface. 3,725,059, Cl. 96-1.400.
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Konvalina, John, to Houdaille Industries, Inc. Computer controlled machine tool system with stored micro language program for effecting pattern type punching operations. 3,725,652, Cl. 235-151.110.

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Kordas, Martin W.; May, Robert C.; and Scanlon, John J., to Remington Arms Company, Inc. Expendable case shotshell. 3,724,376, Cl. 102-42.000.

Kornylak, Andrew T., to Kornylak Corporation. Endless belt conveyor. 3,724,646, Cl. 198-201.000.

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Koulicovitch, Maurice, to Societe Genevoise d'Instruments de Physique. High precision photoelectric microscope for reading the mark of a precision ruler. 3,724,959, Cl. 356-170.000.

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Kraft, Paul; and Altscher, Siegfried, to Stauffer Chemical Company. Fire retardant thermoplastic polymer compositions of a methyl methacrylate polymer with a copolymer of a halogenated ethylenically unsaturated monomer and a phosphorus containing vinyl monmer. 3,725,509, Cl. 260-899.000.

Kraisel, August: *See*—
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Kral, Erwin F.; and Eschrich, Dieter, to VEB Jenapharm. Test tube for the quantitative detection of the alcoholic strength of respiratory air and method for the preparation of said tube. 3,725,007, Cl. 23-254.00r.

Kramer, George M., to Esso Research and Engineering Company. Catalyst mixture of aluminum halo bromide and sulfur oxy halide and its use in isomerization. 3,725,500, Cl. 260-683.680.

Kramer, Sheldon J.: *See*—
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Krapcho, John, to Squibb, E. R., & Sons, Inc. Benzothiazine derivatives. 3,725,403, Cl. 260-243.00r.

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Krock, Elmer W.; and Simon, Charles J., to GTE Automatic Electric Laboratories Incorporated. Call pickup service for PABX telephone system. 3,725,599, Cl. 179-18.0bd.

Kroetch, Arthur A. Tube bender and cutter. 3,724,256, Cl. 72-332.000.

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Kropp, John L.: *See*—
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Krow, Cecil J. Spark plug. 3,725,715, Cl. 313-131.000.

Krumm, Eugene D., to Air Preheater Company Inc., The. Controls for incinerator. 3,724,401, Cl. 110-8.00r.

Kruse, Marvin A., to Littlefuse, Inc. Waterproof door-operated switch assembly. 3,725,626, Cl. 200-168.00g.

Kubota, Yasuharu: *See*—
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Kubotera, Haruo; Nakaoka, Kazuhide; Araki, Kenji; and Kurihara, Takao, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for water quenching metal strips. 3,724,826, Cl. 266-3.00r.

Kuch, Heinz; Schmitt, Karl; Seidl, Gunther; and Hoffmann, Irmgard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 2-Amino-4,4-di-substituted-4H-3,1-benzoxazines. 3,725,404, Cl. 260-244.00r.

Kuckhermann, Gustav, to Windmoller & Holscher. Stacking apparatus for sheet articles fed in overlapping formation on a continuously moving conveyor towards a stacking station. 3,724,840, Cl. 271-46.000.

Kuffner, Karl; and Proeschel, Ernst, to Agfa-Gevaert Aktiengesellschaft. Silver halide emulsions stabilized with nitroso derivatives of phenols. 3,725,077, Cl. 96-109.000.

Kuhne, Rudolf; Hamal, Heinrich; and Thilenius, Thilo, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Monoazo pigment mixtures and process for their preparation. 3,725,101, Cl. 106-288.00q.

Kuhnlein, Dieter; Emmert, Reinhold; and Haag, Georg, to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Inh. Max Grundig. Operating apparatus for a cartridge tape recorder. 3,724,778, Cl. 242-198.000.

Kulicke and Soffa Industries, Inc.: *See*—
Angelucci, Thomas L.; Angelucci, Joseph L.; and Vilenski, Dan, 3,725,631.

Kulka, Marshall: *See*—
Harrison, William A.; and Kulka, Marshall, 3,725,427.

Kumurdjian, Pierre: *See*—
Bourgoin, Gerard; Kumurdjian, Pierre; Loitiere, Alain; and Pere, Jean-Francois, 3,725,685.

Kunde, Joachim; Ramlow, Gerhard; Buechler, Guenter; Pohlemann, Heinz; and Hendus, Hans, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Polyamides with dispersed oxyalkyated grafted polyamides. 3,725,503, Cl. 260-857.0tw.

Kunz, Raymond W., to General Electric Company. Electric fan heater. 3,725,640, Cl. 219-370.000.

Kuper, Alan B. Oxidation of semiconductive alloys and produce obtained thereby. 3,725,161, Cl. 156-17.000.

Kupfer, Hanspeter; and Hossmann, Marcel, to Albiswerk Zurich AG. Distance measuring method and apparatus for the performance thereof utilizing two transmitter-receiver devices. 3,725,920, Cl. 343-6.50r.

Kupsky, George A., to Burroughs Corporation. Multi-position gaseous discharge display panel. 3,725,713, Cl. 313-108.00r.

Kuramochi, Shigeaki, to Marx, Louis, & Co., Inc., mesne. Typewriter. 3,724,632, Cl. 197-85.000.

Kurihara, Takao: *See*—
Kubotera, Haruo; Nakaoka, Kazuhide; Araki, Kenji; and Kurihara, Takao, 3,724,826.

Kurikawa, Hiromichi; and Kubota, Yasuharu, to Sony Corporation. Color television camera. 3,725,572, Cl. 178-5.4st.

Kurokawa, Isao; Kzawa, Nobuyuki; and Orita, Shunji, to Asahi Kasei Kogyo Kabushiki Kaisha. Gas-producing device for an inflatable body-protecting bag on a high-speed vehicle. 3,724,870, Cl. 280-150.0ab.

Kurozumi, Seizi: *See*—
Nagahama, Shizuo; Shimada, Keizo; and Kurozumi, Seizi, 3,725,490.

Kuruma, Hiroshi: *See*—
Ito, Ken; Kaminaka, Hiroshi; Kotera, Norio; Yamamoto, Shinji; Dogane, Iwao; Shigehiro, Kosuke; Kuruma, Hiroshi; Chinuki, Takashi; Yoshitake, Hiroshi; Tanimoto, Kenji; Hasegawa, Shinichi; and Kobayashi, Nobuki, 3,725,484.

Kurz, Anton: *See*—
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Kusan, Inc.: *See*—
Foley, Charles F.; McCarthy, Charles D.; and Hardin, Charles H., 3,724,124.

Kushmuk, Walter P.: *See*—
Hutchinson, William Y.; and Kushmuk, Walter P., 3,724,574.

Kuss, R. L., & Co., Inc.: *See*—
Kuss, Ralph L., 3,724,007.

Kuss, Ralph L., to Kuss, R. L., & Co., Inc. Adjustable support for a water mattress. 3,724,007, Cl. 5-236.000.

Kuster, Karl H., to GTE Automatic Electric Laboratories Incorporated. Voltage margining control circuit for program controlled power supplies. 3,725,740, Cl. 317-16.000.

Kutsay, Ali Umit. Force detecting and evaluating apparatus. 3,724,575, Cl. 177-211.000.

Kuwabara, Jun, to Atomic Power Development Associates, Inc. Metering apparatus for nuclear reactors. 3,724,268, Cl. 73-194.0em.

Kuwahara, Hirosi: *See*—
Suyama, Fujio; Yamamoto, Tokuo; Shimono, Kenichi; Kuwahara, Hirosi; Ishii, Masao; and Watanabe, Ichiro, 3,725,195.

Kydd, Paul H.; and Jernakoff, George, to General Electric Company. Device for measuring heat release in continuous calorimeter. 3,724,261, Cl. 73-190.00r.

Kylberg, Kerstin: *See*—
Brandstrom, Arne Elof; Gustavii, Klas Ragnar; Junggren, Ulf Krister; and Kylberg, Kerstin, 3,725,006.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Fujimoto, Yasuo; Masumura, Isao; Tatsukawa, Keizo; Koshimoto, Shinsuke; and Doiuchi, Toru, 3,725,353.

Kzawa, Nobuyuki: *See*—
Kurokawa, Isao; Kzawa, Nobuyuki; and Orita, Shunji, 3,724,870.

La Cellopane: *See*—
Weber, Guy, 3,724,028.

La Croix, Robert E.: *See*—
Schumacher, Berthold W.; and La Croix, Robert E., 3,725,633.

La Grange, Donald E.: *See*—
Beatty, Bobby D.; Butts, Gary D.; Herold, Stanley J.; and La Grange, Donald E., 3,724,385.

Laboratoires Jacques Logeais: *See*—
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Lacy, Mount, Enterprises, Inc., mesne: *See*—
Lacy, Mount L., 3,724,929.

Lacy, Mount L., to Lacy, Mount, Enterprises, Inc., mesne. Air free liquid variable light filter system. 3,724,929, Cl. 350-312.000.

Ladney, Michael, Jr. Plastic molding composition and method of preparation. 3,725,216, Cl. 204-30.000.

Ladouceur, Harold A.; and Steward, John H. Nut and panel assembly. 3,724,520, Cl. 151-41.730.

LaFranca, Peter J.: *See*—
Baraconi, William V.; and LaFranca, Peter J., 3,724,716.

Lagaholm AB: *See*—
Arvidsson, Carl-Eric, 3,724,697.

Lagally, Paul; and Nagy, Robert P., to United States of America, Navy. Low friction seawater lubricated bearing journal arrangement. 3,724,919, Cl. 308-238.000.

LaGrow, Alfred Cyrus. Toy hoop with stable platform for decorative display. 3,724,126, Cl. 46-220.000.

Laing, Charles F.: *See*—
Davidson, Cliff I.; and Laing, Charles F., 3,725,914.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Smith, Leon; Calvert, David W.; Robert, Andre; Viallet, Andre; and Pauw, Daniel R., 3,725,194.

Lake, Connie, to Mobil Oil Corporation. Door mounted, door operated holder for collapsible limp bags. 3,724,921, Cl. 312-237.000.

Lakomsky, Viktor Iosifovich: *See*—
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; and Pilipchuk, Viktor Romanovich, 3,725,559.

Lamb, Reginald T., to Bausch & Lomb Incorporated, mesne. Electrostatic printing apparatus. 3,725,950, Cl. 346-74.0es.

Lambert, Robert R., to Air Factors, Inc. Fire resistant air bar for use in a suspended ceiling structure. 3,724,356, Cl. 98-40.00d.

Lambie, Alan James: *See*—
Burton, Dennis Ernest; Newbold, Geoffrey Tattersall; Percival, Albert; Lambie, Alan James; and Sencial, Ian Robert, 3,725,554.

Lancor, Ellen B.: *See*—
Lancor, Joseph H., Jr.; and Cooper, Dexter P., Jr., 3,724,343.

Lancor, Joseph H., Jr.; deceased (by Lancor, Ellen B.; administratrix); and Cooper, Dexter P., Jr., to Bell & Howell Company. Analytical photographic exposure meter. 3,724,343, Cl. 95-10.00r.

Landgraf, William B.: *See*—
Anderson, Robert M.; Hanson, James M.; Lecrone, Richard C.; and Landgraf, William B., 3,725,693.

Lane, Bert: *See*—
Elson, Edward E.; McQuary, Kenneth L.; Karlin, George H.; and Lane, Bert, 3,724,516.

Lane, Kenneth H., to Kearney & Trecker Corporation. Method of forming T-slots in a machine tool table. 3,725,634, Cl. 219-121.0em.

Laney, Barton H., to Nuclear-Chicago Corporation. Method and apparatus for determining efficency in a liquid scintillation counting system. 3,725,657, Cl. 250-71.50r.

Lang, Ernest U., to National-Standard Company. Reducing and sintering furnace means. 3,724,977, Cl. 425-72.000.

Lang, Willi; and Sprenger, Manfred, to Audi Nsu Union Aktiengesellschaft. Airing device for motor vehicles. 3,724,358, Cl. 98-2.180.

Langan, Marion J., to Avco Corporation. Capacitance compensation circuit for differential amplifier. 3,725,804, Cl. 330-69.000.

Langdon, Michael J.: *See*—
Draugelis, Vaidevutis C.; Hartman, William R., Jr.; Langdon, Michael J.; and McCarroll, Alan F., 3,724,943.

Langguth, Arthur F.: *See*—
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Langner, Ralph Rolland: *See*—
Moore, William Ross; and Langner, Ralph Rolland, 3,725,125.

Lanier, Harold H.: *See*—
Cook, Harold E.; and Lanier, Harold H., 3,725,911.

Lanmon, C. P., II, to Schlumberger Technology Corporation. Methods for recompleting wells. 3,724,550, Cl. 166-285.000.

Lanoux, Sigred B.; Ellzey, Samuel E., Jr.; Drake, George L., Jr.; and Reeves, Wilson A., to United States of America, Agriculture. Phosphinidynetrimethanol triacetate and its application to cellulosic materials. 3,725,001, Cl. 8-189.000.

Lansing Bagnall Limited: *See*—
Goodacre, Cecil, 3,724,586.

Lansing Research Corporation: *See*—
Johnston, Thomas F., Jr., 3,724,953.

Laparre, Jacques: *See*—
Allard, Pierre; Laparre, Jacques; and Lemaitre, Claude, 3,724,219.

Lapeyre, James M. Conveyor drive. 3,724,285, Cl. 74-243.0fc.

Lapidus, Milton; and McGettigan, Marian M., to American Home Products Corporation. L-4'-cyano-3-(2,2,2-trifluoroacetamido) succinanilic acids. 3,725,453, Cl. 260-465.00d.

Larde, Raymond: *See*—
Queuille, Andre; and Larde, Raymond, 3,725,541.

Larionav, Igor Naumovich: *See*—
Roizin, Natan Moiseevich; Larionav, Igor Naumovich; and Kolesova, Alvina Grigorievna, 3,725,147.

Larsen, Richard J.: *See*—
Rodgers, John T.; Williams, Richard M.; and Larsen, Richard J., 3,725,110.

Larson, Sherman L.: *See*—
Beer, Carl C.; and Larson, Sherman L., 3,724,390.

Lassmann, Heribert; and Woog, Rudolf, to Maschinenfabrik Briem-Hengler & Cronemeyer K.G. Apparatus for cutting out forms from a ribbon of dough. 3,724,980, Cl. 425-102.000.

Latash, Jury Vadimovich; Medova, Boris Izrailevich; and Baglai, Vitaly Mikhailovich. Apparatus for electroslag remelting of metals. 3,724,530, Cl. 164-252.000.

Latone, Salvatore; and Stanley, Michael R., to Xerox Corporation. Magnetic brush developing apparatus. 3,724,422, Cl. 118-637.000.

Laue, Terry J.; and Buck, Leo V., to Fedders Corporation. Delicate goods tray. 3,724,095, Cl. 34-139.000.

Lauge, Raitis; and Hart, Edward Raymond, to Union Carbide Canada Limited. Rotatable extrusion apparatus. 3,724,978, Cl. 425-86.000.

Launer, Leland C.: *See*—
Putnam, Allen Lewis, 3,724,119.

Lauria, Richard J.: *See*—
Wagensommer, Joseph; Lauria, Richard J.; and Staib, John H., 3,725,364.

Lautenschlaeger, Karl, Jun., to Lautenschlaeger, Karl, KG. Snap hinge for furniture doors. 3,724,021, Cl. 16-163.000.

Lautenschlaeger, Karl, KG: *See*—
Lautenschlaeger, Karl, Jun., 3,724,021.

LaValle, Thomas Alvin, to Western Electric Company, Incorporated. Methods of testing the strength of wire bonds in electrical components. 3,724,264, Cl. 73-88.00b.

LaValle, Thomas Alvin, to Western Electric Company, Incorporated. Apparatus for testing the strength of the joint of a wire joined to a part. 3,724,265, Cl. 73-88.00b.

Lawjack Equipment Limited: *See*—
Jackson, Lawrence D. A., 3,724,807.

Lawler, Gerald J. Portable sample case. 3,724,617, Cl. 190-16.000.

Lawlor, Reed C. Computer utilizing random pulse trains. 3,725,677, Cl. 307-260.000.

Lawson, Maurice O.; and Willke, Theodore L., to United States of America, Air Force. Corona discharge electrode structure for electrofluid dynamic generator. 3,725,737, Cl. 317-3.000.

Le Blanc, Walter J.; and Rohrlack, Friedrich K. W., to Goodrich, B. F., Company, The. Segmented friction member for brake or clutch. 3,724,624, Cl. 192-107.00r.

Le Boeuf, Joe S., to Continental Carbon Company. Spring hanger. 3,724,178, Cl. 55-341.000.

Le Cheualier, Pierre; and Blangis, Jacques. Apparatus for positioning and securing a projectile holder on its pad. 3,724,321, Cl. 89-1.800.

Le Douarec, Jean-Claude: *See*—
Beregi, Laszlo; Hugon, Pierre; and Le Douarec, Jean-Claude, 3,725,432.

Lea-Ronal, Inc.: *See*—
Kessler, Richard B.; and Nobel, Fred I., 3,725,220.

Leary, David E.: *See*—
Marzocchi, Alfred; and Leary, David E., 3,725,123.

LeBlond, Inc.: *See*—
Goebel, Fred M., 3,724,291.

Lebourg, Pierre, to Thomson-CSF. System for magnetic recording and reproducing of a signal by means of a frequency-modulated retangular wave. 3,725,609, Cl. 179-100.20k.

Lecrone, Richard C.: *See*—
Anderson, Robert M.; Hanson, James M.; Lecrone, Richard C.; and Landgraf, William B., 3,725,693.

Lectus AB: *See*—
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Lednicer, Oliver: *See*—
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Lee, Max N. Y.: *See*—
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Lee, Tien Pei, to Bell Telephone Laboratories, Incorporated. Optical pulse modulator. 3,724,926, Cl. 350-160.00r.

Leeper, Charles G. Truss transporting body. 3,724,696, Cl. 214-512.000.

Lefebvre, Gerard, to Produits Chemiques Pechiney-Saint-Gobain, mesne. Binders for mortars. 3,725,335, Cl. 260-40.00r.

Lefebvre, Michel S. M.; and Hennion, Jean-Claude M. L., to Omnium de Prospective Industrielle. Process for the continuous treatment of threads using shock waves. 3,724,088, Cl. 34-16.000.

Legal, Casimer C., Jr., to Grace, W. R., & Co. Purification of waste water. 3,725,265, Cl. 210-45.000.

Lehari, Eckmar; and Schwarztrauber, Manfred, to Siemens Aktiengesellschaft. Method of and apparatus for representing measured values on the screen of a video apparatus. 3,725,901, Cl. 340-324.00a.

Leimbach, Wendell B.; Marshall, James W.; and Abbratozzato, Salvatore R., to Black and Decker Manufacturing Company. Field sub-assembly for universal electric motors. 3,725,707, Cl. 310-71.000.

Leinfelt, Karl Eric, to Aktiebolaget Electrolux. Self-sealing end closure for disposable dust bag. 3,724,179, Cl. 55-367.000.

Leistner, Rudolf; Roth, Johann; and Renndorfer, Alfred, to Niezoldi & Kramer GmbH. Motion picture camera. 3,724,936, Cl. 352-91.000.

Leisure-Tron Corporation: *See*—
Brooks, Howard A.; and Burzan, Vernon J., 3,724,854.

Leliovsky, Anton Felixovich; Ryabinin, Vladimir Alexandrovich; Terra, Karl Romanovich; and Yankevich, Kira Boleslavovna. Grid-controlled microwave thermionic device. 3,725,717, Cl. 313-302.000.

Lemaitre, Claude: *See*—
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Lemberger, Robert A.; and Gilmore, Jerry L., to Missouri Engineering Corporation. Sewage treatment system. 3,724,664, Cl. 210-104.000.

Lemelson, Jerome H. Flying model airplane. 3,724,123, Cl. 46-78.000.

Lemon, Robert W.: *See*—
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Lenfant, Rene; and Petitjean, Guy, to Compagnie Generale d'Electricite. Multiple focusing device. 3,724,924, Cl. 350-167.000.

Leng, John Lindley: *See*—
Austin, Peter William; Crabtree, Allen; Leng, John Lindley; Robert, Denis; Ridyard, Annesley; and Young, Elliott, 3,725,383.

Leonard, Richard Lloyd; and Bashaw, John Darrell. Asymmetric hollow fiber membranes and method of fabrication. 3,724,672, Cl. 210-500.000.

Leonard, Stephen C.; and Dilick, Maurice D., to General Electric Company. Testing apparatus having improved means for maintaining a constant density of magnetic flux induced in a moving strip of metal. 3,725,778, Cl. 324-34.00r.

Lesage, Jean; and Dawans, Francois, to Institut Francois du Petrole, des Carburants et Lubrifiants. Compositions containing amorphous 1,2-polybutadiene and cis-1,4-polybutadiene. 3,725,331, Cl. 260-33.6aq.

Lesiecki, Gerald, to Allis-Chalmers Manufacturing Company. Trapped bushing seal. 3,724,861, Cl. 277-25.000.

Lessona Corporation: *See*—
Cardoz, John V., 3,724,192.

Levenson, Nathan S. Housing assembly on a hillside. 3,724,147, Cl. 52-169.000.

Lever Brothers Company: *See*—
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Leverenz, John H., to Gehl Company. Blade sharpening device for rotatable chopping cylinders. 3,724,139, Cl. 51-249.000.

Levesque, Peter S., to Fischer & Porter Co. Hybrid process controller operable in the automatic and manual mode. 3,725,762, Cl. 318-591.000.

Levin, Martin E., to Varian Associates. Apparatus for loading cavity resonators of tunable velocity modulation tubes. 3,725,721, Cl. 315-5.430.

Levoin, Jacques, to Plastica Sudamericana. Writing device having a retractable writing element. 3,724,961, Cl. 401-110.000.

Levy, Jose, to Compagnie des Freins et Signaux Westinghouse. Electrodynamic self-lapping valve. 3,724,913, Cl. 303-20.000.

Levy, Newton, Jr.; Wirth, David Griffith, Jr.; and Rettew, Richard Raymond, to Grace, W. R., & Co. Doped alumina powder. 3,725,094, Cl. 106-62.000.

Lewandowski, Stephen H., to Hamilton Alloy Products, Inc. Annular cutter for tubing. 3,724,073, Cl. 30-347.000.

Lewis, Ernest E., to Gainesville Machine Company, Inc. Apparatus for killing poultry or other fowl. 3,724,029, Cl. 17-11.000.

Lewis, George R.: *See*—
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Lexsuco, Inc.: *See*—
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Li, Hsin Lang; Prevorsek, Dusan Ciril; and Rothmayer, Noel York, to Allied Chemical Corporation. Yarn texturizing apparatus and process. 3,724,039, Cl. 28-1.500.

Libbey-Owens-Ford Company: *See*—
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Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
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Rapparlie, Hans, 3,724,640.
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Lichte, Henry P., Jr., to Sperry Sun Well Surveying Company. Instrument mounting. 3,724,086, Cl. 33-304.000.

Liebergott, Norman: *See*—
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Liebrandt, Karl: *See*—
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Lilly, Eli, and Company: *See*—
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Lima, Jorge Rodrigues. Solid ovoscope. 3,724,448, Cl. 128-6.000.

Lindbergh, Karl E. E.: *See*—
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Lindner, Allen J.: *See*—
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Lindner, Ernst: *See*—
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Lindner, Ronald J.; Lindner, Allen J.; and Adams, Nicholas S. Fish hook for use with a plastic worm. 3,724,116, Cl. 43-42.240.

Link, Martin, to Johnson & Johnson. Peelable surgical package. 3,724,651, Cl. 206-56.0aa.

Link, William T., to Andros Incorporated. Fluorescent source non-dispersive infrared gas analyzer. 3,725,701, Cl. 250-43.500.

Linn, Bruce O.: *See*—
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Linn, Richard L., to Underwriters Safety Device Company. Connector for high amperage applications. 3,725,851, Cl. 339-198.00n.

Linville, Roy Norman: *See*—
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Lion Fat & Oil Co., Ltd.: *See*—
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Lipsky, Seymour R.: *See*—
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Littlefuse, Inc.: *See*—
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Littlehales, Herbert James, to Lucas, Joseph, (Industries) Limited. Fuel injection systems. 3,724,823, Cl. 261-69.00r.

Locante, John: *See*—
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Logan, William A.: *See*—
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Logman, Hendrik: *See*—
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Loison, Robert. Heads for hydrocyclonic separators. 3,724,674, Cl. 210-512.000.

Loitiere, Alain: *See*—
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Lok, Harmannus Henderikus, to Nereid N.V. Coupling submersible to service craft. 3,724,410, Cl. 114-16.00r.

Long, Marvin B.; and Crown, William A. Rotary lawnmower attachment. 3,724,182, Cl. 56-10.400.

Longstaff-Tyrrell, John, to Lucas, Joseph, (Industries) Limited. Fuel injection systems. 3,724,434, Cl. 123-117.00r.

Loomis, Donald C., to Sola Basic Industries, Inc. Telephone station connection system. 3,725,588, Cl. 179-5.00r.

Loop, Frederick M., to PPG Industries, Inc. Partial insulation of an electrodeposition tank. 3,725,234, Cl. 204-181.000.

Lorain Products Corporation: *See*—
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Lord Corporation: *See*—
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Lorenzini, Raymond; and Kinsella, Richard I., to Eastman Kodak Company. Misaligned end cap detecting mechanism for a capping device. 3,724,162, Cl. 53-78.000.

Lorinder, Hans Goran: *See*—
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Love, Fred W.; and Hunt, William J., to Aeroquip Corporation. Method of making wire braid hydraulic hose. 3,725,167, Cl. 156-143.000.

Lovelock, James Ephraim. Detection of trace gases utilizing an electron capture detector. 3,725,009, Cl. 23-232.00c.

Loyk, Victor, to United States of America, Navy. Automatic feedback closed loop system for forward speed control and braking control. 3,725,758, Cl. 318-269.000.

Lubrizol Corporation, The: *See*—
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Lucas, Joseph, (Industries) Limited: *See*—
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Littlehales, Herbert James, 3,724,823.
Longstaff-Tyrrell, John, 3,724,434.

Lucasey, Joseph A. Stand for supporting an appliance. 3,724,798, Cl. 248-418.000.

Luders, Walter; Steppan, Hartmut; and Klupfel, Kurt-Walter, to Kalle Aktiengesellschaft. Polymeric N-carbonyl sulfonamides in photopolymerizable compositions and process for preparation. 3,725,356, Cl. 260-77.5ch.

Ludlow, David L. Collision warning indicator. 3,725,934, Cl. 343-112.0ca.

Ludueni, Froilan P., to Sterling Drug Inc. Method of producing nasal vasoconstriction. 3,725,552, Cl. 424-330.000.

Ludwig Taprogge: *See*—
Thal, Heinz, 3,724,669.

Ludwig, Walter, to Schweizerische Industrie-Gesellschaft. Safety device for the firing pin of hand firearms or small arms. 3,724,113, Cl. 42-70.00f.

Lugo, Luigi: *See*—
Barilli, Filippo; Lugo, Luigi; Di Fiore, Lucio; and Reni, Cesare, 3,725,255.

Lugo, Luigi; Calcagno, Benedetto; and Reni, Cesare, to Societe Italiana Resine S.p.A. Process for separating aromatic hydrocarbons from mixtures thereof with paraffins and naphthene hydrocarbons. 3,725,256, Cl. 208-331.000.

Lukens, Alan Franck, to General Electric Company. Heat transfer system for dynamoelectric machine. 3,725,706, Cl. 310-62.000.

Lukianov, Roman E.: *See*—
Kefalas, John H.; and Lukianov, Roman E., 3,725,882.

Lum, Kin Kwong: *See*—
Anderson, Albert E.; and Lum, Kin Kwong, 3,725,062.

Lundeen, Howard R.: *See*—
Sollami, Blase J.; Lundeen, Howard R.; and Gerth, Bruce F., 3,724,228.

Lundquist Tool and Manufacturing Co., The: *See*—
Roider, Richard Harden, 3,724,884.

Lutter, Edward P.: *See*—
Edstrom, Gene H.; and Lutter, Edward P., 3,725,655.

Lyass, Abram Moiseevich; Snulova, Lidia Dorofeevna; Borsuk, Pavel Afanasievich; Tsyruleva, Anna Ivanovna; and Teplyakov, Sergei Dmitrievich. Method of preparing a liquid mixture for the production of foundry cores and moulds. 3,725,090, Cl. 106-38.350.

Lynch, John F., to National Beryllia Corporation. Composite ceramic articles. 3,725,186, Cl. 161-109.000.

Mac Donald, Donald J.: *See*—
Morrissey, James P.; and Mac Donald, Donald J., 3,724,271.

Mac Innis, Martin B.: *See*—
Martin, Brice E.; and Mac Innis, Martin B., 3,725,524.

MacDuff, Stanley Irving, to Bendix Corporation, The. Hydraulic pressure modulator. 3,724,915, Cl. 303-21.00f.

Machin, James Robert: *See*—
Colston, John Matthew; and Machin, James Robert, 3,725,723.

Mack, Michael E.; and Mongeon, Robert J., to United States of America, Navy, mesne. Ultrafast multiple flashlamp. 3,725,733, Cl. 315-228.000.

Mack, Richard B.: *See*—
Sletten, Carlyle J.; Schell, Allan C.; Mack, Richard B.; Goggins, William B., Jr.; and Blacksmith, Philipp, 3,725,917.

MacKelvie, Philip A., to Multi-Point Tool Co., Inc. Tool holder assembly. 3,724,301, Cl. 82-36.000.

Mackey, E. Scudder, to GAF Corporation. Coating formulations containing phosphate ester of glycidol polyethers. 3,725,079, Cl. 96-114.500.

Mackey, E. Scudder, to GAF Corporation. Coating formulations containing the reaction product of glycidol polyethers and sulfating agents. 3,725,080, Cl. 96-114.500.

MacLean, Alexander F.; Hobbs, Charles C., Jr.; and Dougherty, Edward F., to Celanese Corporation of America. Preparation of dihaloalkanes and related products. 3,725,487, Cl. 260-659.00r.

MacManus, John. Machines for producing and depositing aerated emulsion products. 3,724,417, Cl. 118-24.000.

Macura, Joseph Steven: *See*—
Murthy, Nanjundiah Narasimha; Macura, Joseph Steven; Gergely, William, Jr.; and Berg, Allen Charles, 3,724,366.

Madgefrau, Herbert: *See*—
Schneider, Karl-Heinz; Herker, Dietrich; Madgefrau, Herbert; Plockl, Alfons; and Horrwarth, Ernst, 3,725,620.

Maeder, Erwin: *See*—
Siegrist, Adolf Emil; Liechti, Peter; Maeder, Erwin; Guglielmetti, Leonardo; Meyer, Hans Rudolf; and Weber, Kurt, 3,725,395.

Maes, Roland. Enhancement of antibody production by nucleic acid-polycation complexes. 3,725,545, Cl. 424-180.000.

Maezawa, Shiro; Yoshikawa, Hiroshi; Sakamoto, Kenji; Fujii, Jun; and Hashimoto, Makoto, to Nippon Kayaku Company, Ltd. Process for purification of acrylic acid from aldehydes by distillation with a reagent. 3,725,208, Cl. 203-8.000.

Mageli, Orville Leonard: *See*—
D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, 3,725,455.

Mager, Donald V., to Sperry Rand Corporation. Temperature controlled clocking of logic circuits. 3,725,789, Cl. 328-3.000.

Magidson, Herbert. Insole structure. 3,724,106, Cl. 36-44.000.

Maginot, Pierre: *See*—
Friberg, Jean-Marie; Maginot, Pierre; and Merigoux, Jean-Marie, 3,724,968.

Maher, James Bernard; and Sudduth, Jackie Wayne, to Chicago Bridge & Iron Company. Method and apparatus for liquefying gases. 3,724,227, Cl. 62-40.000.

Maiear, William H., to Universal Oil Products Company. Desulfurization with subsequent H_2S absorption. 3,725,252, Cl. 208-213.000.

Main, Ralph R.: *See*—
Rohrlack, Friedrich K. W.; and Main, Ralph R., 3,724,625.

Makachev, Nikolai Ivanovich; and Parshin, Alexei Nikolaevich. Warp thread tension device in a loom. 3,724,514, Cl. 139-100.000.

Makarewicz, Antoni: *See*—
Balbatun, Jan; and Makarewicz, Antoni, 3,724,190.

Maki, Michiyoshi, to Hitachi, Ltd. Method for manufacturing semiconductor devices. 3,725,145, Cl. 148-175.000.

Makinen, Winnifred B.; and Srail, Raymond C., to Goodrich, B. F., Company, The. Elastic overshoes. 3,724,107, Cl. 36-7.300.

Makow, Abraham, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Spin-stabilised rocket projectile. 3,724,781, Cl. 244-3.230.

Mal, M. Kumar; and Tarkan, Stuart E., to Chromalloy American Corporation. Titanium carbide hard facing steel-base composition. 3,725,016, Cl. 29-182.300.

Malabanan, Alejandro L.; and Acepcion, Antonio T. Automatic motorized baby crib. 3,724,006, Cl. 5-109.000.

Malkiewicz, Wladyslaw F., to Tenneco Inc. Folded shell muffler. 3,724,591, Cl. 181-53.000.

Mallory, George R., to Mallory Hardware Products Limited. Combined squeegee and scouring pad window cleaning implement. 3,724,017, Cl. 15-121.000.

Mallory Hardware Products Limited: *See*—
Mallory, George R., 3,724,017.

Malmer, Michael M., Jr.; Perkins, Cornelius C.; Waldenmayer, Donald W.; Chowning, Patrick J.; and Gardner, Leonard R., to Burroughs Corporation. Small reconfigurable processor for a variety of data processing applications. 3,725,868, Cl. 340-172.500.

Malta, Jacob H.; and Cassel, Harrison E., to Schulmerich Manufacturing Co. Money clip alarm for a cash drawer. 3,725,893, Cl. 340-280.000.

Maltenfort, Martin S. Wick support and storage means for non-spillable safety wick dispenser bottles. 3,724,756, Cl. 239-47.000.

Mamaev, Igor Ivanovich: *See*—
Sokolsky, Valery Nikolaevich; and Mamaev, Igor Ivanovich, 3,725,738.

Mancini, Paul A.; and May, Walter G., to Esso Research and Engineering Company. Separation of carbon dioxide from a natural gas stream. 3,724,225, Cl. 62-12.000.

Mandeville, Arthur R., to Scott Paper Company. Apparatus for drying an electrophotographic support element. 3,724,096, Cl. 34-150.000.

Mann, George, to United Aircraft Corporation. Display centering system. 3,725,722, Cl. 315-21.00r.

Mansei Kogyo Kabushiki Kaisha: *See*—
Goto, Kenijiro, 3,724,993.

Mansell, Dennis N., to United States of America, Air Force. Fan geometry mixing laser. 3,725,816, Cl. 331-94.500.

Manson, Edwin E., to MI2, Inc. Input-output typewriter apparatus. 3,724,630, Cl. 197-19.000.

Manufacture d'Accumulateurs et d'Objets Moules: *See*—
Brocart, Rene; and Bourez, Henri, 3,724,051.

Marathon Oil Company: *See*—
Knight, Bruce L., 3,724,545.

Marcinkus, Donald W.: *See*—
Fanella, Robert J.; Marcinkus, Donald W.; and Sterly, Glenn E., 3,724,779.

Margosian, Zaven: *See*—
Weidman, Joseph S.; Yee, Henry C.; Elliott, Jack G.; and Margosian, Zaven, 3,725,921.

Maring, Donald G., Sr.: *See*—
Allen, Richard W.; Maring, Donald G., Sr.; and Andrews, Henry J., Jr., 3,725,613.

Maringer, Robert; and Cordelle, Claude, to Villeroy & Boch S.A. Installation for manufacturing ceramic bathroom pieces. 3,724,979, Cl. 425-88.000.

Marino, Albert J. Dice tumbler. 3,724,857, Cl. 273-145.00b.

Marion, Jacques: *See*—
Borrel, Marcel; Marion, Jacques; and Metzger, Jean, 3,725,457.

Marks, Ronald A., to Consulting Specialists, Inc. Fluid-powered alarm system. 3,725,886, Cl. 340-224.000.

Marondel, Gunther: *See*—
Gawlick, Heinz; Marondel, Gunther; Sieglein, Werner; Wasser, Wolfgang; and Bendler, Hellmut, 3,724,381.

Marquip, Inc.: *See*—
Marschke, Carl R.; and Thomas, Richard H., 3,724,687.

Marr, Peter A.: *See*—
Bailey, Joseph; Knott, Edward B.; and Marr, Peter A., 3,725,067.

Marrocco, Dominic A.: *See—*
Gomez, Eloy A.; Goodsir, Stephen W.; and Marrocco, Dominic A., 3,724,460.

Marschke, Carl R.; and Thomas, Richard H., to Marquip, Inc. Panel board feeding apparatus. 3,724,687, Cl. 214-8.50d.

Marsh, Richard F.: *See—*
Allen, Ralph W.; and Marsh, Richard F., 3,725,169.

Marsh, Walter H. W.; and Coulombe, Lionel J., to Singer Company, The. Fancy stitch zigzag sewing machines. 3,724,404, Cl. 112-158.00b.

Marsh, William D.: *See—*
Coddington, David M.; Marsh, William D.; and Cohen, Harvey, 3,724,521.

Marshall, Hamilton W., Jr.; and Smeaton, John R., to Perkin-Elmer Corporation, The. Reaction detector. 3,725,204, Cl. 195-127.000.

Marshall, James W.: *See—*
Leimbach, Wendell B.; Marshall; James W.; and Abbratozzato, Salvatore R., 3,725,707.

Martin, Brice E.; and Mac Innis, Martin B., to GTE Sylvania Incorporated. Rhenium and molybdenum separation from sulfide ores. 3,725,524, Cl. 423-49.000.

Martin, David H., to International Business Machines Corporation. Functional memory cell. 3,725,879, Cl. 340-173.0am.

Martin, Helmut: *See—*
Staschewski, Alfred; Pflaum, Rudolf; and Martin, Helmut, 3,725,139.

Martin, Ralph E. Imprinting cylinder with removable imprinting block. 3,724,370, Cl. 101-377.000.

Martin Stamping & Stove Company: *See—*
Carson, Walter C., 3,724,443.

Martin, Wilhiam A.; and Saint Clair, John Q., II, to Eastman Kodak Company. Motion picture projector apparatus. 3,724,777, Cl. 242-195.000.

Martin, William A., to Eastman Kodak Company. Tape recorder apparatus. 3,724,858, Cl. 274-4.00e.

Martini, Joseph C., to Gulf Research & Development Company. Separation of meta and para-cresol. 3,725,485, Cl. 260-621.00a.

Marukin Shoyu Company, Limited: *See—*
Sugimori, Tsunetake; Tsukada, Yoji; and Tazuke, Yasuhiko, 3,725,201.

Maruzen Oil Company, Limited: *See—*
Sakai, Yoshinori; and Hori, Takashi, 3,725,381.

Marvan, Petr: *See—*
Serbus, Ctibor; Rezac, Jan; Pribil, Stanislav; Marvan, Petr; Krejdirik, Libor; and Stoy, Artur, 3,725,291.

Marvel, Carl S.; and Chow, Roberta C. L., to United States of America, Agriculture. Copolymers of vinyl monomers and polyesters. 3,725,442, Cl. 260-405.000.

Marvin, Edgar S.: *See—*
Jenkins, Gerald L.; Jungjohann, Vernon H.; Marvin, Edgar S.; and Seely, Neil G., 3,724,937.

Marx, John W.: *See—*
Parker, Harry W.; and Marx, John W., 3,724,548.

Marx, Louis, & Co., Inc., mesne: *See—*
Kuramochi, Shigeaki, 3,724,632.

Marzocchi, Alfred; and Leary, David E., to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,725,123, Cl. 117-126.0ge.

Masaaki, Taimoto; and Satoru, Honjo, to Fuji Photo Film Co., Ltd. Hematein or hematoxylin-containing zinc oxide photoconsuctive layers. 3,725,060, Cl. 96-1.700.

Masanaru, Hasegawa: *See—*
Hayashi, Yoshiki; and Masanaru, Hasegawa, 3,725,058.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Japes, Manfred, 3,724,015.

Maschinenfabrik Briem-Hengler & Cronemeyer K.G.: *See—*
Lassmann, Heribert; and Woog, Rudolf, 3,724,980.

Masco Corporation: *See—*
Mitich, Stephen R., 3,724,824.

Masco Corporation, mesne: *See—*
Fathauer, George H., 3,725,788.

Mase, Jiro: *See—*
Sugawara, Tsunenori; and Mase, Jiro, 3,724,689.

Masiello, Felix R., to Addressograph-Multigraph Corporation. Sheet feeding and cutting device. 3,724,945, Cl. 355-29.000.

Maskery, Arthur, to Westinghouse Brake and Signal Company, Limited. Magnetic amplifiers and apparatus. 3,724,392, Cl. 105-61.000.

Mason, Paul A. Outrigger mount for fishing boats. 3,724,791, Cl. 248-42.000.

Mason, Ralph B.: *See—*
Hamner, Glen P.; and Mason, Ralph B., 3,725,242.

Mason, Richard K., to Textron, Inc. Self monitoring control system utilizing an electrical model for each control means. 3,724,330, Cl. 91-363.00a.

Masoneilan International, Inc.: *See—*
Baumann, Hans D., 3,724,813.

Massillon Measurements, Inc.: *See—*
Gessner, Richard W.; and Davies, Roy E., 3,725,134.

Massonne, Joachim: *See—*
Pauckach, Heinrich; Massonne, Joachim; Bohm, Horst; and Fernschild, Gunter, 3,725,475.

Masten, Michael K.: *See—*
Choate, William C.; and Masten, Michael K., 3,725,875.

Masters, Leonard Kenneth Morgan; and Dalziel, Thomas, to Hobbs, Russell, Limited. Beverage maker. 3,724,359, Cl. 99-281.000.

Masuda, Senichi. Method and apparatus for forming a beam of charged particles. 3,725,797, Cl. 328-228.000.

Masuda, Takao: *See—*
Inoue, Takashi; Masuda, Takao; and Harada, Takeshi, 3,724,431.

Masuko, Tatuo: *See—*
Miyadera, Yasuo; Masuko, Tatuo; Muroi, Tadashi; Noguchi, Hiroshi; and Kawashima, Hideo, 3,725,344.

Masumoto, Hakaru; Sawaya, Shohachi; and Kikuchi, Michio, to Foundation Research Institute of Electric and Magnetic Alloys, The. Nonmagnetic resilient manganese-copper alloy having a substantially temperature-free elastic modulus. 3,725,052, Cl. 75-134.00m

Masumoto, Hakaru; Sawaya, Shohachi; and Michio, Kikuchi, to Foundation Research Institute of Electric and Magnetic Alloys, The. Nonmagnetic resilient manganese-nickel alloy having a small temperature coefficient of elastic modulus and method for manufactuing the same. 3,725,053, Cl. 75-134.00m.

Masumura, Isao: *See—*
Fujimoto, Yasuo; Masumura, Isao; Tatsukawa, Keizo; Koshimoto, Shinsuke; and Doiuchi, Toru, 3,725,353.

Mateju, Vladimir: *See—*
Jekl, Frantiek; Mateju, Vladimir; Pech, Josef; and Hrdina, Karel, 3,724,508.

Mather, John: *See—*
Harrison, Albert Keith; and Mather, John, 3,725,348.
Harrison, Albert Keith; and Mather, John, 3,725,351.

Mathews, Harold F.; Reeder, Jack M.; and Ingram, James A. Audio visual program rating system. 3,725,603, Cl. 179-100.10r.

Matkovich, Vlado I.: *See—*
Economy, James; and Matkovich, Vlado I., 3,725,533.

Matsui, Kazuma; and Tsubouchi, Hideo, to Nippondenso Kabushiki Kaisha. Apparatus for establishing a variation of time delay between input and output fluid signals. 3,724,504, Cl. 138-46.000.

Matsui, Masao: *See—*
Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, 3,725,192.

Matsumoto, Seiji: *See—*
Honjo, Satoru; Matsumoto, Seiji; and Takimoto, Masaaki, 3,724,941.

Matsumoto, Toshiaki, to Minolta Camera Kabushiki Kaisha. Device for mounting electromagnetically attractable piece for latching electronic shutter in camera. 3,724,351, Cl. 95-53.00e.

Matsumoto, Toyosaku: *See—*
Yamada, Takashi; and Matsumoto, Toyosaku, 3,724,312.

Matsushita Denko Kabushiki Kaisha: *See—*
Kojima, Kiyoshi; and Abe, Toshiro, 3,725,820.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hayashi, Yoshiki; and Masanaru, Hasegawa, 3,725,058.
Tanaka, Yutaka, 3,725,592.
Wada, Mitsuo; Nishimoto, Kazuyuki; Aoki, Masaki; and Iida, Yoshio, 3,725,836.

Matsushita Electric Works, Ltd.: *See—*
Nakai, Kenichi; and Yamashita, Takehiko, 3,725,730.

Matsushita Electronics Corporation: *See—*
Hosokoshi, Kakuichiro, 3,725,106.

Matsuyama, George; and Lindell, Grover F., to Beckman Instruments, Inc. Apparatus for measuring ion activity of solutions. 3,725,237, Cl. 204-195.00l.

Mattel, Inc.: *See—*
Northrop, John H.; Jones, Eugene C.; Sioles, George W.; and Mellette, Gary W., 3,724,860.

Mattern, Konrad, to Metallgesellschaft Aktiengesellschaft. Tubular structure for film evaporators. 3,724,523, Cl. 159-13.00a.

Matthews, Jamie F., Jr., to Esso Production and Research Company. Method for installing double-walled pipelines. 3,724,224, Cl. 61-72.300.

Mattice, William G.; and Sanford, David A., to Waste Research and Reclamation Co., Inc. System and process for reclaiming forging compounds. 3,725,262, Cl. 210-42.000.

Mattson, Charles A., to Sunbeam Corporation. Lawn mower grass bag having a litter pocket. 3,724,186, Cl. 56-202.000.

Mattson, Richard A.: *See—*
Edwards, Norman W.; Derr, Vincent H.; and Mattson, Richard A., 3,724,704.

Mauer, Gerhard. Apparatus for testing the electrical conductivity of filaments. 3,725,779, Cl. 324-51.000.

Maxey, Edwin Morgan: *See—*
Fabris, Hubert Jakob; Maxey, Edwin Morgan; and Schmucker, Arden Everett, 3,725,357.

Maxon, Rodney Robert; and Meise, Henry August, Jr., to Bell Telephone Laboratories, Incorporated. PBX Automatic number identification system. 3,725,596, Cl. 179-18.0fh.

May, Robert C.: *See—*
Kordas, Martin W.; May, Robert C.; and Scanlon, John J., 3,724,376.

May, Walter G.: *See—*
Mancini, Paul A.; and May, Walter G., 3,724,225.

Mayer, Richard J.: *See—*
Kinberg, Benjamin; and Mayer, Richard J., 3,724,316.

Mayes, Nathan; Green, Joseph E.; and Michaels, Ronald, to Thiokol Chemical Corporation. Cured nitrosofluorocarbon rubber. 3,725,374, Cl. 260-92.100.

Mayo, Kenneth E.; and Fretague, William J., to Sanders Nuclear Corporation. Internally moderated heat sources and method of production. 3,725,663, Cl. 250-106.00s.

Mayr, Anton; Wagener, Kurt; Adolf, Johann Ditrich; Pette, Heinrich; deceased (by Pette, Christiane Wilhelmine; co-heiress); and Petzoldt, Klaus, to Behringwerke Aktiengesellschaft. Intramuscular vaccination program and vaccine against rhinopneumonitis and rocess for preparing it. 3,725,542, Cl. 424-89.000.

Maytag Company, The: *See—*
Davis, Gordon Jerry, 3,724,242.

Mayuzumi, Harutaka; Shinoda, Motoyuki; and Akizuki, Kosuke, to Isuzu Motors Limited. Shaving method and shaving cutter. 3,724,046, Cl. 29-104.000.

Mc Connell, Howard M.; and Zeewy, Abraham, to Harris-Intertype Corporation. Hoist static control. 3,725,756, Cl. 318-237.000.

Mc Cormick, Harold E.: *See—*
Prasse, Herbert F.; and Mc Cormick, Harold E., 3,725,017.

Mc Keown, James E.; Gregoire, Stephen E.; and Michel, Donald E., to Bendix Corporation, The. Hermaphroditic electrical contact. 3,725,844, Cl. 339-49.00r.

Mc Kinney, Ross E., to Air Products & Chemicals, Inc. Activated sludge process and system. 3,724,667, Cl. 210-195.000.

Mc Smith, Dwight G. Periodic table display device. 3,724,098, Cl. 35-18.00r.

McCarroll, Alan F.: *See—*
Draugelis, Vaidevutis C.; Hartman, William R., Jr.; Langdon, Michael J.; and McCarroll, Alan F., 3,724,943.

McCarroll, Raymond A. Wheel cover. 3,724,906, Cl. 301-37.00r.

McCarthy, Charles D.: *See—*
Foley, Charles F.; McCarthy, Charles D.; and Hardin, Charles H., 3,724,124.

McCaully, Ronald J.; Bell, Stanley C.; and Conklin, George L., to American Home Products Corporation. Adducts of delta-aminobenzylpenicillin and N-substituted-4-piperidones. 3,725,389, Cl. 260-239.100.

McCleerey, Earl W., to Westinghouse Electric Corporation. Portable hair dryer. 3,724,092, Cl. 34-99.000.

McClendon, Jack C.; and Berry, Elton L., to Dow Chemical Company, The. Aminoethylation of flour and starch with ethylenimine. 3,725,387, Cl. 260-233.30r.

McCord, Donald M., to Phillips Petroleum Company. Method of making reversible, non-woven material. 3,725,166, Cl. 156-148.000.

McCord, Henry L.: *See—*
Herman, Elvin E.; and McCord, Henry L., 3,725,915.

McCord, Wilfred M., Jr., to Vermont American Corporation. Collapsible saw. 3,724,519, Cl. 145-33.00e.

McCracken, William L.; Petering, Wilbur H.; Kircher, Charles E., Jr.; and Pinchak, Paul R., to Detrex Chemical Industries, Inc. Process for making 1,1-dichlorethylene from 1,1,2-trichlorethane. 3,725,486, Cl. 260-654.00d.

McCulloch, Charles R.; Moy, Bertram K.; and Randle, Thomas C., to United States of America, Navy. Mesa burning gas generator propellant. 3,725,154, Cl. 149-21.000.

McCurry, Robert E., to International Business Machines Corporation. Electro-ionic printing. 3,725,951, Cl. 346-74.0es.

McDermott, Michael S.; and Pederson, Carl A., to United States of America, Army, mesne. Electrical crowbar system with novel triggered spark gap devices. 3,725,729, Cl. 315-75.000.

McDonald, Allan J., to Thiokol Chemical Corporation. Rocket system. 3,724,217, Cl. 60-254.000.

McDonough Co.: *See—*
Eads, Harold O., 3,724,188.

McDonough, Thomas B., to Sylvania Electric Products Inc. Method of preparing fulminating material for photoflash lamp. 3,725,155, Cl. 149-31.000.

McDowell, Curtis S.: *See—*
Spector, Marshall L.; Jones, Robert D.; and McDowell, Curtis S., 3,725,258.

McElroy, Joseph A. Method of form tie removal. 3,724,060, Cl. 29-427.000.

McGettigan, Marian M.: *See—*
Lapidus, Milton; and McGettigan, Marian M., 3,725,453.

McGraw-Edison Company: *See—*
Kobler, Richard; Fagan, William F.; and Feldman, Edward, 3,724,859.
Rigert, Max, 3,725,830.
Stewart, Victor E., Jr., 3,725,774.

McInerney, F. Thomas, III: *See—*
Parker, John Henry; and McInerney, F. Thomas, III, 3,724,393.

McKee, Edward S., to Eastman Kodak Company. Film feeding apparatus. 3,724,776, Cl. 242-195.000.

McKeown, James E.; and Michel, Donald E., to Bendix Corporation, The. Electrical contact. 3,725,853, Cl. 339-252.00r.

McKibbin, Dean K., to Pittsburgh-Des Moines Steel Company. Expanding tube seal for floating roof structure. 3,724,705, Cl. 220-26.00r.

McKinley, Suzanne V.; and Rakshys, Joseph W., Jr., to Dow Chemical Company, The. Resins with phosphorane pendant groups and process for preparing same. 3,725,365, Cl. 260-80.710.

McKinnon, John P., to Westinghouse Electric Corporation. Electric disconnect switch having improved counter balance mechanism. 3,725,619, Cl. 200-48.00a.

McLain, John H. Solder coating apparatus. 3,724,418, Cl. 118-69.000.

McLean, Robert E., to Rival Manufacturing Company. Electric can opener with removable cutter mounting plate and pivotally attached hand lever. 3,724,069, Cl. 30-4.00r.

McMillan, Gilman C.: *See—*
Vogelhuber, Fred W.; Vogelhuber, Heather; and McMillan, Gilman C., 3,724,677.

McNaney, Joseph T. Electrically controllable light reflecting cell and means for utilization on a character presentation device. 3,725,910, Cl. 340-378.00r.

McNeece, Leonard D. Alignment apparatus. 3,724,084, Cl. 33-185.00r.

McNeil Laboratories, Inc.: *See—*
Poos, George Ireland, 3,725,435.

McPherson, Alexander W.: *See—*
Sendoykas, Jack J.; and McPherson, Alexander W., 3,724,836.

McPherson, Alexander W., to Dover Corporation De-Sta-Co Division. Retracting clamp. 3,724,837, Cl. 269-32.000.

McQuary, Kenneth L.: *See—*
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Mead Corporation, The: *See—*
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Mederer, Gerhard. Rotary piston engine. 3,724,428, Cl. 123-8.470.

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Sellers, Walter M., Jr., 3,725,203.

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Mefina S.A.: *See—*
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Mehl, Charles W. Magnetic strip drafting instrument. 3,724,083, Cl. 33-177.000.

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Meise, Henry August, Jr.: *See—*
Braun, Edwin Julius; Meise, Henry August, Jr.; and Taylor, George William, 3,725,598.
Maxon, Rodney Robert; and Meise, Henry August, Jr., 3,725,596.

Melchior, Gerard, to Compagnie Industrielle des Telecommunications CIT ALCATEL. Electronic amplifier circuit. 3,725,676, Cl. 307-255.000.

Mellette, Gary W.: *See—*
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Membrino, Hercules. Bag making machine for thermoplastic bags. 3,725,180, Cl. 156-515.000.

Memodyne Corporation: *See—*
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Menasco Manufacturing of Canada Ltd., mesne: *See—*
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Menissier, Pierre Lucien: *See—*
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Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Rogalski, Werner; Jonas, Rochus; Wahlig, Helmut; and Bergmann, Rolf, 3,725,390.

Merigoux, Jean-Marie: *See—*
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Merkel, Ronald F., to Texas Instruments, Incorporated. Infrared scanner system having increased resolution and method of using same. 3,725,662, Cl. 250-83.30h.

Merrels, Frederic Price. Multiple tool driving unit. 3,724,561, Cl. 173-50.000.

Merten, Rudolf: *See—*
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Mesenhimer, Lee O., to Lorain Products Corporation. A-C voltage detector. 3,725,795, Cl. 328-135.000.

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Metysova, Jirina: *See*—
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McKeown, James E.; and Michel, Donald E., 3,725,853.
Michelin, Marcel M. E. Wide web recorder with incremental tape transport and multiple transversally scanning heads. 3,725,605, Cl. 179-100.20t.
Michio, Kikuchi: *See*—
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Mickelson, Grant A.: *See*—
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Microdry Corporation, mesne: *See*—
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Mikulyak, Robert Michael, to Bell Telephone Laboratories, Incorporated. Method of regrowing crystals of cadmium sulphide for scintillation counters. 3,725,008, Cl. 23-294.000.
Mileahead Industries Incorporated: *See*—
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Miller, Alfred H.: *See*—
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Miller, Charles H.; Broadt, David R.; and Armstrong, Donald E., to GTE Sylvania Incorporated. Photographic flashlamp unit. 3,725,692, Cl. 240-1.300.
Miller, Donald L., to Bendix Corporation, The. Self-adjusting electromagnetic clutch-brake. 3,724,619, Cl. 192-81.00b.
Miller, Edward Francis: *See*—
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Miller, Elton W. Protective building structure. 3,725,891, Cl. 340-273.000.
Miller, Marvin, to Mileahead Industries Incorporated. Portable waste disposal unit. 3,723,999, Cl. 4-142.000.
Miller, Paul G.; Hsinchu, Taiwan; and Griffith, Francis C., to Rogers Brothers Company. Dehydrated potato pieces. 3,725,087, Cl. 99-207.000.
Miller, Robert E.: *See*—
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Mintz, Milton S., to United States of America, Interior. Dynamically formed electrodialysis membranes. 3,725,235, Cl. 204-180.00p.
Miram, Oleg V. Method of multi-level building construction. 3,724,157, Cl. 52-745.000.
Misencik, John J., to Westinghouse Electric Corporation. Differential transformer mounting arrangement particulary for ground fault interrupter apparatus. 3,725,741, Cl. 317-18.00d.
Miskin, Richard B., to Baled hay loading machine. . 3,724,634, Cl. 198-7.0bl.
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Miura, Taro; Nakamura, Kiichi; and Hashimoto, Tadashi, to T.D.K. Electronics Company, Ltd. Stripline circulator biased by a plurality of small pole pieces. 3,725,823, Cl. 333-1.100.
Miyadera, Yasuo; Masuko, Tatuo; Muroi, Tadashi; Noguchi, Hiroshi; and Kawashima, Hideo. Crosslinked copolymers of aromatic diaminodiames, aromatic diahydrides and aromatic diamines and method of preparation. 3,725,344, Cl. 260-47.0cp.
Miyamoto, Shinzo: *See*—
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Molino, Angelo R. Rolling and beading machine. 3,724,250, Cl. 72-171.000.
Molino, Angelo R. Duct forming apparatus. 3,724,255, Cl. 72-306.000.
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Moody, Paul E., to United States of America, Navy. Submarine outboard greasing system. 3,724,600, Cl. 184-70.000.
Moore, Francis C.; and Perkinson, Leon R., to Moore-Perk Corporation. Method of sterile packaging. 3,725,003, Cl. 21-58.000.
Moore, Robert P., to United States of America, Navy. Automatic integrator control for radiometric guidance. 3,725,931, Cl. 343-100.0me.
Moore, William Ross; and Langner, Ralph Rolland, to Dow Chemical Company, The. Fabrics sized with copolymers of sulfur dioxide and allyl epoxyalkane ethers. 3,725,125, Cl. 117-139.50a.
Moore, William S. Spindle assembly for textile machine. 3,724,195, Cl. 57-75.000.
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Morrison, Robert C.; and Kamienski, Conrad W., to Lithium Corporation. Preparation of polymers. 3,725,368, Cl. 260-84.700.
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Nagata, Senichi; Ogawa, Oyuki; and Hobo, Nobuhito, to Nippondenso Co., Ltd. Fuel feed control device for internal combustion engines. 3,724,436, Cl. 123-139.00e.

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Nakai, Kenichi; and Yamashita, Takehiko, to Matsushita Electric Works, Ltd. Flickerless three-phase lighting device for electric discharge lamps. 3,725,730, Cl. 315-144.000.

Nakajimatokyo, Mituo: *See—*
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Nakamura, Kiichi: *See—*
Miura, Taro; Nakamura, Kiichi; and Hashimoto, Tadashi, 3,725,823.

Nakamura, Kozo: *See—*
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Nakamura, Sunichi: *See—*
Nakano, Satoshi; Azuma, Keiichi; Oba, Seiichiro; Wakizaka, Samon; and Nakamura, Sunichi, 3,725,507.

Nakano, Satoshi; Azuma, Keiichi; Oba, Seiichiro; Wakizaka, Samon; and Nakamura, Sunichi, 1/2 to Tokuyama Soda Kabushiki Kaisha and 1/2 to Sun Arrow Chemical Co., Ltd. Process for the preparation of vinyl chloride graft polymers. 3,725,507, Cl. 260-896.000.

Nakaoka, Kazuhide: *See—*
Kubotera, Haruo; Nakaoka, Kazuhide; Araki, Kenji; and Kurihara, Takao, 3,724,826.

Nakazima, Atushi: *See—*
Chimura, Kazuya; Kaneko, Takashi; Nakazono, Ryuichi; Mukai, Takuma; Nakazima, Atushi; and Sakunaga, Kenichi, 3,724,038.

Nakazono, Ryuichi: *See—*
Chimura, Kazuya; Kaneko, Takashi; Nakazono, Ryuichi; Mukai, Takuma; Nakazima, Atushi; and Sakunaga, Kenichi, 3,724,038.

Nakazyo, Kiyoshi: *See—*
Yoshida, Makoto; Tsuda, Momotoshi; Oishi, Yasushi; and Nakazyo, Kiyoshi, 3,725,072.

Nalco Chemical Company: *See—*
Bott, Lawrence L., 3,724,547.
Shepard, John C., Jr., 3,725,447.
Troscinski, Edwin S.; and Stanford, James R., 3,724,551.

Nambu, Shyuya; and Aono, Shigeo, to Nissan Motor Company, Limited. Intake air control device for internal combustion engine of fuel injection type. 3,724,822, Cl. 261-43.000.

Nanninga, William W.: *See—*
Alberti, John; and Nanninga, William W., 3,724,022.

Napier, Roger P., to Mobil Oil Corporation. Pyrrole derivative fungidical agents and treatments. 3,725,550, Cl. 424-274.000.

Nara, Kiyoshi; Ohta, Kazuhiko; Katamoto, Kazuyoshi; Yamazaki, Osami; and Fukudi, Hideo, to Takeda Chemical Industries, Ltd. Method for separating citric acid. 3,725,474, Cl. 260-535.00p.

Narita, Kiichi; Mori, Takasuke; and Itoo, Takamichi, to Kobe Steel, Ltd. Method for manufacturing of sound killed steel ingots. 3,724,528, Cl. 164-58.000.

Nasutavicus, Wilmonte A.: *See—*
Johnson, Francis; and Nasutavicus, Wilmonte A., 3,725,401.

National Beryllia Corporation: *See—*
Lynch, John F., 3,725,186.

National Blank Book Company, Inc.: *See—*
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National Can Corporation: *See—*
Zundel, Arthur P., 3,724,727.

National Cash Register Company, The: *See—*
Hilbelink, Ronald D.; and Peters, Gavin H., 3,725,501.

National Central Bank of York Pennsylvania; Administrator: *See—*
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National Central Bank of York Pennsylvania; Administrator, d.b.n.c.t.a. of the estate of Beach, Willard C.; deceased and Administrator c.t.a. of the estate of Beach, Mary B.: *See—*
Grote, George A., 3,724,177.

National Distillers and Chemical Corporation: *See—*
Robinson, Robert E., 3,725,463.

National-Standard Company: *See—*
Lang, Ernest U., 3,724,977.

Naumann, Gunter; Schon, Nikolaus; Schnoring, Hildegard; and Pampus, Gottfried, to Bayer Aktiengesellschaft. Suspension stabilizers. 3,725,313, Cl. 260-2.10r.

Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; and Pilipchuk, Viktor Romanovich. Plasmatron drive. 3,725,559, Cl. 13-14.000.

Neary, Michael P., to Beckman Instruments, Inc. Demountable sample cell holder and cell for liquid scintillation counters. 3,724,956, Cl. 356-246.000.

Needham, Andrew W., Jr. Multiple stop for power tools. 3,724,964, Cl. 408-14.000.

Neeff, Rutger: *See—*
Gehrke, Gunter; Hederich, Volker; Neeff, Rutger; and Wegner, Peter, 3,724,998.

Negrou, Jacques: *See—*
Barrot, Jean-Pierre; Negrou, Jacques; and Pelte, Charles, 3,725,785.

Nelson, Douglas Carlyle; and Knaggs, Edward Andrew, to Stepan Chemical Company. Oxyacetic acid compounds as builders for detergent compositions. 3,725,290, Cl. 252-110.000.

Nelson, Forrest A., to Varian Associates. RF spectrometer having means for exciting RF resonance of a plurality of resonance lines simultaneously using a high speed scanning means. 3,725,773, Cl. 324-.5ac.

Nelson, John W., to Upjohn Company, The. Prostanoic acid derivatives. 3,725,469, Cl. 260-514.00d.

Nelson, Lloyd A., to Gerber Products Company. Glass jar handling system. 3,724,686, Cl. 214-8.50a.

Nelson, Nicholas R. Adjustable socket. 3,724,299, Cl. 81-128.000.

Nelson, William B., to Ames Rubber Corporation. Apparatus for making rolls. 3;724,983, Cl. 425-129.000.

Nepela, Daniel A. Variable contrast image projection. 3,724,938, Cl. 353-20.000.

Nereid N.V.: *See—*
Lok, Harmannus Henderikus, 3,724,410.

Neudecker, Joseph W.; and Cooper, Kenneth C., to United States of America, Atomic Energy Commission. Decomposed ammonia radioisotope thruster. 3,724,215, Cl. 60-203.000.

Neumann, Henning: *See—*
Federer, Fritz; and Neumann, Henning, 3,724,497.

Neville, Roy G., to Bechtel International Corporation. Thermally stable polyindanyl polymers derived from phenylene oxides and process for making the same. 3,725,346, Cl. 260-47.0ua.

Nevyas, Herbert J.; and Klein, Wilfred. Lighting system control for ophthalmic examinations. 3,724,931, Cl. 351-1.000.

Newallis, Peter E.; Poje, Albert J.; and Epstein, Peter F., to Chemagro Corporation. Limited plant growth with heterocyclic alkylthiocyante and isothiocyante. 3,725,030, Cl. 71-76.000.

Newbold, Geoffrey Tattersall: *See—*
Burton, Dennis Ernest; Newbold, Geoffrey Tattersall; Percival, Albert; Lambie, Alan James; and Sencial, Ian Robert, 3,725,554.

Nichols, Matthew, to Sauter Packaging Company. Apparatus for inserting tablets into blister packages. 3,724,165, Cl. 53-250.000.

Nichols, Matthew, to Sauter Packaging Company. Punch and die cutout station. 3,724,308, Cl. 83-557.000.

Nicholson, Bruce; and Mitchell, James, to T.M.M. (Research) Limited. Processes and apparatus for crimping synthetic filamentary materials. 3,724,037, Cl. 28-1.600.

Nielsen Engineering & Research, Inc.: *See—*
Schwind, Richard G., 3,724,276.

Niezoldi & Kramer GmbH: *See—*
Leistner, Rudolf; Roth, Johann; and Renndorfer, Alfred, 3,724,936.

Nihyakumen, Kouzi; Kouchi, Toshihiro; Yokoyama, Taizo; Ueda, Yasuo; Kamezawa, Yasutoki; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Diazo-type multicolor reproduction process. 3,725,066, Cl. 96-49.000.

Niklas, Ludwig. Method for adjusting swept gain on ultrasonic pulse-echo instruments for uniform sensitivity, irrespective of flaw depth. 3,724,262, Cl. 73-67.800.

Niles, Eart T.; and Stevens, Don L., to Dow Chemical Company, The. Polymeric binders for use in hybrid rocket propellents. 3,725,152, Cl. 149-19.000.

Nippendenso Co., Ltd.: *See—*
Okamoto, Atsutoshi; and Sugiura, Akio, 3,724,903.

Nippon Ekiki Seikei Kibushiki Kaisha: *See—*
Suzuki, Shigemasa; and Nakamura, Kozo, 3,725,520.

Nippon Electric Company, Limited: *See—*
Furuhashi, Tokio, 3,725,754.
Yasudi, Susumu; and Sato, Norio, 3,725,813.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kayaku Co., Ltd.: *See—*
Ohmori, Kaour; Nakajimatokyo, Mituo; Ishida, Shuichi; and Yamada, Osamu, 3,725,445.

Nippon Kayaku Company, Ltd.: *See—*
Maezawa, Shiro; Yoshikawa, Hiroshi; Sakamoto, Kenji; Fujii, Jun; and Hashimoto, Makoto, 3,725,208.

Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Sugawara, Tsunenori; and Mase, Jiro, 3,724,689.

Nippon Oil Company, Limited: *See—*
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Nippon Steel Corporation: *See—*
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Nippondenso Co., Ltd.: *See—*
Nagata, Senichi; Ogawa, Oyuki; and Hobo, Nobuhito, 3,724,436.

Tanasawa, Yasusi; Inoue, Tokuta; and Ishiguro, Kenji, 3,724,220.
Yamaguchi, Terumoto; and Amano, Yoshinao, 3,724,538.

Nippondenso Kabushiki Kaisha: *See—*
Matsui, Kazuma; and Tsubouchi, Hideo, 3,724,504.
Muto, Katsuya; and Kawashima, Yoshichi, 3,724,230.
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Nishimiya, Yutaka: *See—*
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Nishimoto, Kazuyuki: *See—*
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Nishimura, Kenji: *See—*
Yamada, Keisho; Nishimura, Kenji; Furusaki, Shinichi; Toshimitsu, Tatsuo; and Inaba, Yukio, 3,725,459.

Nishizawa, Hitoshi: *See—*
Shirato, Akira; Nishizawa, Hitoshi; and Sawada, Seizo, 3,725,330.

Nishizawa, Yoshihiko: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Ogawa, Taizo; Wakatsuki, Toshiyuki; and Nishizawa, Yoshihiko, 3,725,546.

Niss, Erik, to AGA Aktiebolag. Optical instrument for determining the distance between two measuring points. 3,724,950, Cl. 356-3.000.

Nissan Motor Company, Limited: *See—*
Nambu, Shyuya; and Aono, Shigeo, 3,724,822.

Nitkovskikh, Anatoly Anatolievich: *See—*
Kavepa, Alexandr Alexandrovich; Nitkovskikh, Anatoly Anatolievich; Grigoriev, Vladimir Andreevich; Pashkov, Arkady Borisovich; and Epshtein, Yakov Vulfovich, 3,725,013.

Nitschke, Robert O., to Greene, Ted J. Cervical brace. 3,724,452, Cl. 128-75.000.

Nitto Chemical Industry Co., Ltd.: *See—*
Suyama, Fujio; Yamamoto, Tokuo; Shimono, Kenichi; Kuwahara, Hirosi; Ishii, Masao; and Watanabe, Ichiro, 3,725,195.

Nixon, Charles Roy: *See—*
Nixon, Charles Roy; and Gasafi, Anton, 3,724,904.

Nixon, Charles Roy; and Gasafi, Anton, to Nixon, Charles Roy. Wheel balancing device. 3,724,904, Cl. 301-5.0ba.

Nobel, Fred I.: *See—*
Kessler, Richard B.; and Nobel, Fred I., 3,725,220.

Noguchi, Hiroshi: *See—*
Miyadera, Yasuo; Masuko, Tatuo; Muroi, Tadashi; Noguchi, Hiroshi; and Kawashima, Hideo, 3,725,344.

Noha, Klaus: *See—*
Voigt, Hartman; Schneck, Erich; Gunther, Klaus; and Noha, Klaus, 3,725,491.

Nolan, Thomas E., to RCA Corporation. High power laser system. 3,725,817, Cl. 331-94.500.

Nolan, William J., Jr.; and Alpers, Frederick C., to United States of America, Navy. Discriminatory missile guidance system. 3,724,783, Cl. 244-3.150.

Nolin, Richard: *See—*
Huettner, Robert E.; Tymann, Edward B.; and Nolin, Richard, 3,725,871.

Noll, Walter: *See—*
Golitz, Hans Dietrich; Merten, Rudolf; Noll, Walter; and Simmler, Walter, 3,725,449.

Nolt, Edwin B., to Sperry Rand Corporation. Feed mechanism for a crop baler. 3,724,363, Cl. 100-189.000.

Nongbri, Govanon: *See—*
Alpert, Seymour B.; Wolk, Ronald H.; Chervenak, Michael C.; and Nongbri, Govanon, 3,725,251.

North American Rockwell Corporation: *See—*
Ischer, John J., 3,724,923.

Northern Fibre Products Company: *See—*
Ambrose, Jere B., 3,724,009.

Northern Natural Gas Company: *See—*
Frantzen, Karl H., 3,724,403.

Northrop, John H.; Jones, Eugene C.; Sioles, George W.; and Mellette, Gary W., to Mattel, Inc. Optical disc drive for organ. 3,724,860, Cl. 274-9.00b.

Norton Company: *See—*
Rechberger, Franz F., 3,724,160.
Weaver, Gerald O., 3,725,015.

Notari, Gennaro V.; and Rickert, Royce J., to Combustion Engineering, Inc. Nuclear reactor organization and fuel assembly arrangement. 3,725,199, Cl. 176-61.000.

Notko, Michael F.; and Hylak, Peter J., to Sears, Roebuck and Co. Knockdown table. 3,724,399, Cl. 108-157.000.

Nouchy, Claude. Process for the manufacture of synthetic leather material. 3,725,171, Cl. 156-230.000.

Nozik, Arthur Jack; Tribit, Samuel; and Williams, Ferd E., to American Cyanamid Company. White silicon carbide solids. 3,725,099, Cl. 106-288.00b.

Nuclear-Chicago Corporation: *See—*
Laney, Barton H., 3,725,657.

Nupnau, Irthur E., to Bell & Howell Company. Film reel support assembly for projectors. 3,724,775, Cl. 242-180.000.

Nurmohamed, Amin Mulji; and Watters, Richard, to Elliott Brothers (London) Limited. Voter circuits for three-channel redundant systems. 3,725,818, Cl. 330-124.00d.

Nutron Corporation: *See—*
Denker, James M., 3,724,334.

N.V. Foco Nederland: *See—*
Weston, William A., 3,724,698.

N.V. Leidsche Apparatenfabriek: *See—*
Van Der Meer, Leonardus Petrus, 3,724,166.

Oba, Seiichiro: *See—*
Nakano, Satoshi; Azuma, Keiichi; Oba, Seiichiro; Wakizaka, Samon; and Nakamura, Sunichi, 3,725,507.

Obermann, George, to Controls Company of America. Timer. 3,724,248, Cl. 74-122.000.

Ocean Protein Corporation: *See—*
Day, John J.; and Hirschman, Paul S., 3,724,423.

Ogata, Fumimaro: *See—*
Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, 3,725,192.

Ogawa, Oyuki: *See—*
Nagata, Senichi; Ogawa, Oyuki; and Hobo, Nobuhito, 3,724,436.

Ogawa, Taizo: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Ogawa, Taizo; Wakatsuki, Toshiyuki; and Nishizawa, Yoshihiko, 3,725,546.

Oguri, Yoshitaka: *See—*
Muroi, Tadashi; Oguri, Yoshitaka; and Ishida, Masahiko, 3,725,075.

Ohayon, Gabriel, to Societe Rhodiaceta. Device and process for the production of yarns with interlaced strands. 3,724,040, Cl. 28-1.400.

Ohkage, Masashi. Tungsten disulfide lubricant. 3,725,276, Cl. 252-25.000.

Ohmann, Friedrich; Otto, Rudolf; and Wiedenmann, Wolfgang, to Siemens Aktiengesellschaft. Method and apparatus for the production of characters at will on the picture screen of a cathode ray tube and/or on record paper. 3,725,900, Cl. 340-324.00a.

Ohmori, Kaour; Nakajimatokyo, Mituo; Ishida, Shuichi; and Yamada, Osamu, to Nippon Kayaku Co., Ltd. Double salt of zinc ethylene-bis-dithiocarbamate and N-dodecylguanidine and preparation thereof. 3,725,445, Cl. 260-429.900.

Ohta, Jun: *See—*
Arai, Hiroshi; and Ohta, Jun, 3,725,858.

Ohta, Kazuhiko: *See—*
Nara, Kiyoshi; Ohta, Kazuhiko; Katamoto, Kazuyoshi; Yamazaki, Osami; and Fukudi, Hideo, 3,725,474.

Oil States Rubber Company: *See—*
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Richardson, Murl R., 3,724,338.

Oishi, Yasushi: *See—*
Yoshida, Makoto; Tsuda, Momotoshi; Oishi, Yasushi; and Nakazyo, Kiyoshi, 3,725,072.

Okamoto, Atsutoshi; and Sugiura, Akio, to Nippendenso Co., Ltd. Anti-skid control system for vehicles. 3,724,903, Cl. 303-21.00p.

O'Keefe, Dennis G. Rope climbing device. 3,724,593, Cl. 182-134.000.

O'Keefe, Ralph J. Semi automatic vehicle signal control device. 3,725,622, Cl. 200-61.270.

Okuno, Yositosi: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Kawano, Suminsri; Fjuimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami, 3,725,514.
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Ogawa, Taizo; Wakatsuki, Toshiyuki; and Nishizawa, Yoshihiko, 3,725,546.

Olah, Emery E., to Motorola, Inc. Manual tuning apparatus for radio receiver. 3,724,280, Cl. 74-10.330.

Oldfield, Homer R., Jr.; Rawson, Edward B.; and Schwarzkopf, Daniel B., to Searle Medidata, Inc. Data communication system. 3,725,866, Cl. 340-172.500.

Olechowski, Jerome Robert, to Cities Service Company. Catalyzed molecular sizing process. 3,725,371, Cl. 260-85.30r.

Olechowski, Jerome Robert, to Cities Service Company. Oximino ketones and method for manufacturing amino acids from said ketones. 3,725,477, Cl. 260-566.00a.

Olila, Howard E., to Haskon Incorporated. Heater for sealing carton containers. 3,724,093, Cl. 34-104.000.

Olin Corporation: *See—*
Brandt, William L., 3,724,438.
Finley, Carl E., 3,724,441.

Olin, Richard Emil. Portable miniature bulb tester having bristle brushes for contacting the bulb terminals. 3,725,780, Cl. 324-51.000.

Oliversas, Jose Ma Bonastre: *See—*
Streich, Federico; Gold, Alberto Vargas; Oliversas, Jose Ma Bonastre; and Ventura, Fernando Fernandez, 3,724,311.

Olivetti, Ing., C., & C., S.p.A.: *See—*
Veneria, Giovanni Bessolo, 3,724,802.

Olliges, William E.; Polanek, Edward L.; and Gurney, Robert, to Universal Research Laboratories, Incorporated. Switching system. 3,725,759, Cl. 318-467.000.

Olmsted, Claire G.: *See—*
Olmsted, Frederick S., 3,724,844.

Olmsted, Frederick S.; deceased (by Olmsted, Claire G.; and Hartford National Bank and Trust Company, executors). Exercise stand for bicycles. 3,724,844, Cl. 272-73.000.

Olney, Frederick Darwin, Jr., to Honeywell Information Systems Inc. Controllable tensioning devices for strand material. 3,724,409, Cl. 112-255.000.
Olsen, Harry C.; Tischler, Ludwig J.; and Wernecke, Heinz C., to Jacobs, F. L., Co. Car top luggage carrier. 3,724,730, Cl. 224-42.10d.
Olsen, Harry C.; Tischler, Ludwig J.; and Wernecke, Heinz C., to Jacobs, F. L., Co. Manually operated remote control truck mirror. 3,724,928, Cl. 350-289.000.
Olsen, Orrie C.: *See—*
  Pearson, Michael J.; Olsen, Orrie C.; and Murphy, James F., 3,725,531.
Olsen, Richard E., to Honeywell Information Systems Inc. Power sequencing control circuit. 3,725,675, Cl. 307-238.000.
Olsen, Willi; and Schlosser, Klaus, to Siemens Aktiengesellschaft. Gas-pressure-insulated high-voltage line. 3,725,567, Cl. 174-16.00b.
Olstowski, Franciszek: *See—*
  Parrish, Donald B.; and Olstowski, Franciszek, 3,725,355.
O'Malley, James J. Pyrene containing polymers prepared by anionic polymerization. 3,725,505, Cl. 260-879.000.
Omnium de Prospective Industrielle: *See—*
  Lefebvre, Michel S. M.; and Hennion, Jean-Claude M. L., 3,724,088.
Omote, Yuichi: *See—*
  Yamamura, Toshio; Omote, Yuichi; Sato, Shiro; and Kani, Hiyama, 3,725,527.
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Ono, Toru: *See—*
  Horiie, Shigeki; Morikawa, Hiroyasu; Fujii, Chiyuki; Kobayashi, Teruo; Kohno, Susumu; and Ono, Toru, 3,725,443.
Onopchenko, Anatoli; Schulz, Johann G. D.; and Seekircher, Richard, to Gulf Research & Development Company. Process for preparing hydroxybenzoic acid. 3,725,471, Cl. 260-521.00r.
Onufry, Michael, Jr.: *See—*
  Campanella, Samuel Joseph; Suyderhoud, Henri George; and Onufry, Michael, Jr., 3,725,612.
Onyx, Raymond C.: *See—*
  Kiss, Emil P.; Onyx, Raymond C.; and Fegley, Richard F., 3,725,179.
Ooishi, Tadashi: *See—*
  Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Kawano, Suminsri; Fjuimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami, 3,725,514.
Opderbeck, Fritz; Ploetz, Theodor; and Wistuba, Herbert, to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung. Copying sheet. 3,725,107, Cl. 117-36.700.
Orchard, Robert J.: *See—*
  Kilmer, Charlie C.; and Orchard, Robert J., 3,725,584.
Orita, Shunji: *See—*
  Kurokawa, Isao; Kzawa, Nobuyuki; and Orita, Shunji, 3,724,870.
Orlovsky, Vladimir W. Sheet folding apparatus and method. 3,724,838, Cl. 270-79.000.
Orne, Laurence E. Information enhancing amplifier. 3,725,805, Cl. 330-136.000.
Orozco, Gilbert H. Composition and method for preparing metal for cold-working. 3,725,274, Cl. 252-18.000.
Ortiz, Angel J. Control of oil pollution a sea apparatus and method. 3,724,662, Cl. 210-83.000.
Osano, Kumao. Device for tying fishing line. 3,724,034, Cl. 24-131.00c.
Oshikawa, Kiyomitsu: *See—*
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Osteo AG: *See—*
  Baumann, Friedrich, 3,723,995.
Oster Corporation: *See—*
  Weidner, Jack E., 3,725,642.
Ostolski, Marian J. Electrically conductive mass. 3,725,308, Cl. 252-513.000.
Ostrager, Seymour A. Spirit level with translucent spirit vial housings. 3,724,087, Cl. 33-348.000.
Oswald, Richard K., to International Business Machines Corporation. Servo positioning system for magnetic disk memory including radial runout servo compensation. 3,725,764, Cl. 318-629.000.
Otani, Kunio: *See—*
  Kawase, Butaro; Kojima, Iwao; and Otani, Kunio, 3,725,530.
Oton, Edward, Jr., Ceramic Foundation, The: *See—*
  Steele, Richard F., 3,724,272.
Otsuka, Eiji; Kanai, Kazumichi; Inoue, Shigeru; and Hashimoto, Novuyoshi, to Mitsui Toatsu Chemicals Incorporated. Method of removing unreacted materials remaining in urea synthesis effluent by plural stage distillation and CO_2 stripping. 3,725,210, Cl. 203-42.000.
Otsuka, Kozo, to Toitsu Kogyo Kabushiki Kaisha. System for detecting motion of a nearby target by continuous ultrasonic waves. 3,725,854, Cl. 340-1.00r.
Otto, Rudolf: *See—*
  Ohmann, Friedrich; Otto, Rudolf; and Wiedenmann, Wolfgang, 3,725,900.
Oushige, Takayoshi; Kinoshita, Yukio; Iizuka, Kikuo; and Nishimiya, Yutaka, to Hitachi, Ltd. Proximity sensitive on-off transistor oscillator for controlling a relay circuit. 3,725,808, Cl. 331-65.000.
Owczarski, William A.: *See—*
  Erickson, John S.; Curran, Patrick M.; and Owczarski, William A., 3,724,531.
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- Rosborough, Robert S., Jr.; and Wright, Luther M., to Eastman Kodak Company. Method of splicing the two ends of film strips. 3,725,168, Cl. 156-157.000.
- Rose, Harold Bern; and Sand, Bruce Jay, to Bio-Optronics, Inc. Electrical digital display tonometer. 3,724,263, Cl. 73-80.000.
- Rose, James: *See—*
  - Kitzner, Ernest W.; Rhodes, Alex; and Rose, James, 3,724,286.
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  - Wainer, Eugene; Rose, Selwyn H.; and Harkulich, Theodore M., 3,724,066.
- Rosemount Engineering Company Limited: *See—*
  - Fullager, Harry, 3,725,837.
- Rosenbaum, Erik: *See—*
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- Rosenberg, Harold: *See—*
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- Rosenwach, Wallace. Horizontally oriented planter. 3,724,127, Cl. 47-34.000.
- Ross, Melvin Andrew. Speed control apparatus for hot gas engine. 3,724,206, Cl. 60-24.000.
- Rossigno, Louis P., to Bendix Corporation, The. Cam operated control. 3,724,910, Cl. 303-12.000.
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  - Peppler, Richard B.; and Rosskopf, Philip A., 3,725,097.
- Roth, Carl W., to Vapor Corporation. Door system for high-low platforms. 3,724,396, Cl. 105-378.000.
- Roth, Johann: *See—*
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- Rothmayer, Noel York: *See—*
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- Rothrock, James S.: *See—*
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- Roup, Rolland R.: *See—*
  - Schor, Ferdinand William; and Roup, Rolland R., 3,724,834.
- Roussel, Jean, to Societe Anonyme: dite THIMONNIER & Cie. Machine for packing fluid products in bags. 3,724,163, Cl. 53-171.000.
- Roussel-UCLAF: *See—*
  - Queuille, Andre; and Larde, Raymond, 3,725,541.
- Rousselet, Joseph Antoine Noel. Continuous production centrifuge. 3,724,091, Cl. 34-58.000.
- Roylance, Donald C.: *See—*
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- Rubery, Owen & Co., Limited: *See—*
  - Brickley, Terence, 3,724,891.
  - Hawkins, John Charles; and Waite, William, 3,724,796.
- Rubin, David; and Seybold, John B., to United States of America, Navy. One shot multivibrator for variable width video edge detector. 3,725,682, Cl. 307-273.000.
- Rubin, Irving N.; and Jimenez, Ivan. Telescopic sight mounting. 3,724,800, Cl. 248-205.00r.
- Rubinstein, Solomon: *See—*
  - Robinson, Daniel E.; and Rubinstein, Solomon, 3,725,841.
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  - Brevko, Robert; Bitsura, Michael P.; Mucka, John R.; and Zinski, Peter, 3,724,164.
- Ruby, Burton B., to Jaymar-Ruby, Inc. Trousers waistband structure. 3,723,993, Cl. 2-237.000.
- Ruegg, Erwin A., to Stoffel Seals Corporation. Plastic tag-fastening element. 3,724,109, Cl. 40-22.000.
- Ruemens, Wilhelm: *See—*
  - Petersen, Harro; Fuchs, Friedrich; and Ruemens, Wilhelm, 3,725,272.
- Rumanowski, Edmund J., to Allied Chemical Corporation. Benzyl-N-(N-butyl) chlorophenoxythiobutyrimidates. 3,725,452, Cl. 260-453.00r.
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- Rundell, Herbert A.; and Pittman, Robert W., to Texaco Inc. Apparatus for controlling the rotary speed of a drill. 3,724,558, Cl. 173-1.000.
- Ruof, Edgar J., to Goodyear Tire & Rubber Company, The. Skid detector circuit. 3,724,902, Cl. 303-21.0cg.
- Rupert, Paul D.; and Rupert, Raymond D. Fire fighting system. 3,724,554, Cl. 169-2.00a.
- Rupert, Raymond D.: *See—*
  - Rupert, Paul D.; and Rupert, Raymond D., 3,724,554.
- Ruppel, James Harold, to Esso Production Research Company. Subsurface safety valve. 3,724,475, Cl. 137-67.000.
- Russell, Allen S.; Knapp, Lester L.; and Haupin, Warren E., to Aluminum Company of America. Production of aluminum. 3,725,222, Cl. 204-67.000.
- Russell, James G.: *See—*
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- Russell, Ronald W.: *See—*
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- Rust, John B.: *See—*
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- Ruzzo, Joseph G., Jr., to United States of America, Air Force. Method for preparing pasted nickel hydroxide electrode. 3,725,129, Cl. 136-29.000.
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  - Leliovsky, Anton Felixovich; Ryabinin, Vladimir Alexandrovich; Terra, Karl Romanovich; and Yankevich, Kira Boleslavovna, 3,725,717.
- Rydeski, Roman R.; and Conway, Richard F. Method of preparing puffable food pellets from pork skins. 3,725,084, Cl. 99-107.000.
- Rynbrandt, Ronald H., to Upjohn Company, The. Exo-bicycloalkane carboxamides. 3,725,423, Cl. 260-295.00k.
- Ryon, David M., to General Electric Company. Textured membranes for blood dialyzers, oxygenators and the like. 3,724,673, Cl. 210-500.000.
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  - Denk, Hans H.; and Sabad, Joseph J., 3,725,285.
- Saccomano, Joseph M.; and Ellis, John D., Jr., to Joslyn Mfg. and Supply Co. Molten metal reactor vessel. 3,724,830, Cl. 266-36.00p.

Sachs, Harald, to Siemens Aktiengesellschaft. Arrangement for the detection of faults in electronic circuits. 3,725,880, Cl. 340-173.0rc.
Sachtleben, Carl; and Steiner, Erich Hans, to RCA Corporation. Web transport. 3,724,734, Cl. 226-57.000.
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Santilli, Arthur A.; and Kim, Dong H., to American Home Products Corporation. 2,4,7-Trisubstituted-[pyrido 2,3-d] pyrimidine-6-carboxamides. 3,725,405, Cl. 260-247.20a.
Santo, Don. Portable massaging device. 3,724,451, Cl. 128-52.000.
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Saubestre, Edward B.; and Durney, Lawrence J., to Enthone, Incorporated. Chemical reduction metal plated diallylphthalate polymer and preparation process. 3,725,108, Cl. 117-47.00a.
Sauder, Kenneth D. Rotary internal combustion engine. 3,724,427, Cl. 123-8.070.
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Scarbrough, John D., to Piqua Engineering Inc. Shredder-grinder machine having an improved rotor. 3,724,767, Cl. 241-186.00r.
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Schafer, Leonhard. Pastry making machine. 3,724,361, Cl. 99-450.600.
Schaffer, Robert H.; and Crum, James N., to Harris-Intertype Corporation. Web infeed mechanism. 3,724,733, Cl. 226-25.000.
Schaller, Robert L., to Sundstrand-Engelberg, Inc. Bar feeder apparatus. 3,724,648, Cl. 198-211.000.
Schaumburg, Gunter, to Societe d'Exploitation des Brevets Neiman S.A. Lock actuated anti-theft device mainly for automobiles. 3,724,244, Cl. 70-360.000.
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Schenk, Erwin; and Biedermann, Kurt, to Siemens Aktiengesellschaft. Process for the measurement of the distortion in transmission systems which transmit data in parallel bit coded form. 3,725,796, Cl. 328-163.000.
Scherrer, Robert A.: *See—*
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Schiemann, Wolfram. Apparatus for the blowing of a two-compartment can. 3,724,987, Cl. 425-326.000.
Schimmelschmidtq Kurt; and Kleiner, Hans-Jerg, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of dialkyl phosphites from ahcohols and phosphorous acid. 3,725,515, Cl. 260-978.000.

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Schipper, Dirk A. Method and apparatus for pipeline connection. 3,724,061, Cl. 29-464.000.
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Schneider, Karl-Heinz; Herker, Dietrich; Madgefrau, Herbert; Plockl, Alfons; and Horrwarth, Ernst, to Bosch, Robert, G.m.b.H. Distributor plate structure and fixedly mounting attachment mean to distributor housing. 3,725,620, Cl. 200-19.00r.
Schneider, Michael, to Girdler-Sudchemie Katalysator G.m.b.H. Recovery of noble metals. 3,725,047, Cl. 75-108.000.
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Schumacher, Berthold W.; and La Croix, Robert E., to Westinghouse Electric Carporation. Corpuscular beam in the atmosphere. 3,725,633, Cl. 219-121.0eb.
Schupp, Lewis J., to General Electric Company. Photoflash lamp. 3,724,990, Cl. 431-93.000.
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Schuster, Wilhelm. Reinforcing structure for bodies with curved load-supporting surfaces. 3,724,144, Cl. 52-108.000.
Schutt, Hans U., to Shell Oil Company. Hydrocracking process with fluorine treat to avoid condensed polyaromatics. 3,725,244, Cl. 208-59.000.
Schutzenauer, Hans-Dieter, to Daimler-Benz Aktiengesellschaft. Control installation for balancing fuel levels in motor vehicle fuel tanks. 3,724,481, Cl. 137-101.250.
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  Oldfield, Homer R., Jr.; Rawson, Edward B.; and Schwarzkopf, Daniel B., 3,725,866.
Sears, Roebuck and Co.: *See—*
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Secrist, Walter S., to United States Steel Corporation. Cage and guide construction for a ball-type valve. 3,724,496, Cl. 137-533.130.
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Seekircher, Richard: *See—*
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- Seelbinder, David C., to Eastman Kodak Company. Method and apparatus for determining radiation transmission characteristics of a generally transparent medium. 3,724,951, Cl. 356-102.000.
- Seelbinder, David C.; and Ballard, Clinton S., to Eastman Kodak Company. Method and apparatus for controlling characteristics of fogged silver halide emulsions. 3,725,071, Cl. 96-94.000.
- Seely, Neil G.: *See*—
  - Jenkins, Gerald L.; Jungjohann, Vernon H.; Marvin, Edgar S.; and Seely, Neil G., 3,724,937.
- Seibelq Georg, to Schoeller & Co. Rotating coil magnetic indicator. 3,725,909, Cl. 340-373.00r.
- Seidl, Gunther: *See*—
  - Kuch, Heinz; Schmitt, Karl; Seidl, Gunther; and Hoffmann, Irmgard, 3,725,404.
- Seifried, Walter; and Klenk, Ludwig, to Kahle Aktiengesellschaft. Process for the continuous production of multiaxially stretched tubular films of linear polyesters. 3,725,519, Cl. 264-25.000.
- Seil, Kenneth F.; and Worth, Joseph H., to Eastman Kodak Company. Thermal processor. 3,725,639, Cl. 219-216.000.
- Seiler, Georg. Thrust safety in socket connections of pipes. 3,724,880, Cl. 285-105.000.
- Seldon, Martin M.; and Garbini, Leo J., to Varian Associates. Method and article for inhibiting gaseous permeation and corrosion of material. 3,725,719, Cl. 313-317.000.
- Seliber, Joseph, to Pacific Lighting Service Co. Combination liquefied natural gas expansion and desalination apparatus and method. 3,724,229, Cl. 62-52.000.
- Selle, Wolfgang H., to Lockheed Aircraft Corporation. Rotatable hatch cover for armored vehicles. 3,724,323, Cl. 89-36.001.
- Sellers, Walter M., Jr., to Media Services, Inc. Bacteria identification culture medium. 3,725,203, Cl. 195-100.000.
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  - Thorn, John E.; and Selman, Alan A., 3,724,571.
- Sels, Wally O.; and Paul, Alfred L., to Brock-White Co. Column form and clamp assembly. 3,724,801, Cl. 249-48.000.
- Semperit Aktiengesellschaft: *See*—
  - Eder, Otto; and Hascic, Wladimir, 3,724,104.
- Sencial, Ian Robert: *See*—
  - Burton, Dennis Ernest; Newbold, Geoffrey Tattersall; Percival, Albert; Lambie, Alan James; and Sencial, Ian Robert, 3,725,554.
- Senderoff, Seymour, to Union Carbide Corporation. Rechargeable electrochemical cell having complex metal fluoride electrolyte. 3,725,128, Cl. 136-6.000.
- Sendoykas, Jack J.; and McPherson, Alexander W., to Dover Corporation. Power operated swing clamp. 3,724,836, Cl. 269-32.000.
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- Servatius, John B. Fill material compensator for an automatic hydromechanical land leveler. 3,724,556, Cl. 172-4.500.
- Servo Labs, Inc.: *See*—
  - Cox, Robert M.; Crowley, Ernest W.; and Kilmer, Dan L., 3,724,485.
- Sescosem-Societe Europeenne de Semiconducteurs et de Microelectronique: *See*—
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- Shane, Charles: *See*—
  - Dennis, John M., Jr., 3,724,883.
- Shanly, Alan L., to Xerox Corporation. Wiper blade cleaning apparatus for xerographic machines. 3,724,019, Cl. 15-256.530.
- Sharp Kabushiki Kaisha: *See*—
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- Sharp, Stanley Gordon: *See*—
  - Sims, Arthur Albert; and Sharp, Stanley Gordon, 3,724,257.
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- Shell Oil Company: *See*—
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  - Schutt, Hans U., 3,725,244.
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- Shen, Tsung-Ying; Greenwald, Richard B.; Jones, Howard; Linn, Bruce O.; and Witzell, Bruce E., to Merck & Co., Inc. Substituted indenyl acetic acids in the treatment of pain fever or inflammation. 3,725,548, Cl. 424-303.000.
- Shepard, John C., Jr., to Nalco Chemical Company. Lead fluoroborates as redistribution catalysts. 3,725,447, Cl. 260-437.00r.
- Shephard, Kenneth P.: *See*—
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- Sheridan, David S., mesne: *See*—
  - Sheridan, David S.; and Jackson, Isaac S., 3,725,522.
- Sherman Car Wash Equipment Company: *See*—
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- Sherman, Robert P., to United States of America, Navy. VHF Travelling wave loop antenna. 3,725,936, Cl. 343-119.000.
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- Sherwood Medical Industries, Inc.: *See*—
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  - Gerard, William L.; and Pregont, Jack E., 3,724,654.
- Shevlin, Thomas S., to Minnesota Mining and Manufacturing Company. Casserole for storing and cooking foodstuffs. 3,725,645, Cl. 219-52.000.
- Shiba, Keisuke; Hinata, Masanao; Yamasue, Koutaro; and Kondo, Tokiharu, to Fuji Photo Film Co., Ltd. Fogged, direct positive silver halide emulsions containing hydroxyphthalein dyes and sulfonated compounds. 3,725,074, Cl. 96-122.000.
- Shigehiro, Kosuke: *See*—
  - Ito, Ken; Kaminaka, Hiroshi; Kotera, Norio; Yamamoto, Shinji; Dogane, Iwao; Shigehiro, Kosuke; Kuruma, Hiroshi; Chinuki, Takashi; Yoshitake, Hiroshi; Tanimoto, Kenji; Hasegawa, Shinichi; and Kobayashi, Nobuki, 3,725,484.
- Shigeru, Mitsui. Semiconductor negative resistance device. 3,725,821, Cl. 331-107.00g.
- Shiihara, Isao: *See*—
  - Ando, Tadanao; Kataoka, Seiichi; and Shiihara, Isao, 3,725,347.
- Shill, Karl. Surgical pump. 3,724,973, Cl. 417-326.000.
- Shim, Kyung S., to Stauffer Chemical Company. Oligomer composition from alkyl amine and sulfur chlorides. 3,725,481, Cl. 260-583.0ee.
- Shimada, Keizo: *See*—
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- Shimely, Jesse H.; and Archer, Edward D., to Texaco Inc. Silanized crystalline alumino-silicate. 3,725,302, Cl. 252-431.00r.
- Shimizu, Yoichi: *See*—
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- Shinoda, Motoyuki: *See*—
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- Shiomi, Masano; and Tadataka, Narumi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Collision force absorption device. 3,724,603, Cl. 188-1.00c.
- Shirai, Takeaki; Kato, Masumi; and Oshikawa, Kiyomitsu, to Nippondenso Kabushiki Kaisha. Means for opening and closing a window assembly of a vehicle. 3,724,133, Cl. 49-349.000.
- Shirato, Akira; Nishizawa, Hitoshi; and Sawada, Seizo, to Showa Electric Wire & Cable Co., Ltd. Self-adhesive insulating composition. 3,725,330, Cl. 260-33.6aq.
- Shoei Kakoh Co., Ltd.: *See*—
  - Kamata, Eitaro, 3,723,992.
- Shoemaker, James C., to Symons Corporation. Self-contained waler clamp for concrete wall form. 3,724,806, Cl. 249-219.00w.
- Shono, Tetsuji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera flashgun shoe. 3,724,344, Cl. 95-11.001.
- Short, Oliver A.; and Weaver, Richard V., to Du Pont du Nemours, E. I., and Company. Process for making gold powder. 3,725,035, Cl. 75-.50a.
- Showa Denko K.K.: *See*—
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- Showa Electric Wire & Cable Co., Ltd.: *See*—
  - Shirato, Akira; Nishizawa, Hitoshi; and Sawada, Seizo, 3,725,330.
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- Shriver, Seymour J.: *See*—
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  - Greubel, Waldemar, 3,725,899.
  - Hjorth, Bo, 3,725,690.
  - Kemper, Jurgen; and Schenk, Erwin, 3,725,860.
  - Klein, Peter, 3,725,587.
  - Koppen, Gerhard; Dobring, Wilfried; and Siebart, Manfred, 3,725,839.
  - Lehari, Eckmar; and Schwarztrauber, Manfred, 3,725,901.
  - Ohmann, Friedrich; Otto, Rudolf; and Wiedenmann, Wolfgang, 3,725,900.
  - Olsen, Willi; and Schlosser, Klaus, 3,725,567.
  - Sachs, Harald, 3,725,880.
  - Schenk, Erwin; and Biedermann, Kurt, 3,725,796.
  - Schmidt, Fritz, 3,725,565.
  - Touchy, Wolfgang, 3,725,284.
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- Silent Channel Products Limited: *See*—
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- Siles, Gregory, Co.: *See*—
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- Sills, Albert J. Swab with foam plastic wiping tip. 3,724,018, Cl. 15-244.00r.
- Silsby, Stanley D., to Colts Industries Operating Corporation, mesne. Rate reducer. 3,724,325, Cl. 89-131.000.
- Silva, John R., to General Signal Corporation. Apparatus for digitizing noisy time duration signals which prevents adverse effects of contact bounce. 3,725,680, Cl. 307-268.000.
- Silver, Gary L.: *See*—
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- Simmler, Walter: *See*—
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- Simmons, Bjorn Herman Olof, to Aktiebolaget Bofors. Device for a projectile. 3,724,380, Cl. 102-60.000.
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- Simon, Friedhelm, to Singer Company, The, mesne. Snap-on zipper foot. 3,724,407, Cl. 112-240.000.
- Simons, John C., to United States of America, Air Force. Long line loiter technique. 3,724,817, Cl. 258-1.400.
- Simpson, Glenn. Vehicle drawbar assembly. 3,724,874, Cl. 280-408.000.
- Sims, Arthur Albert; and Sharp, Stanley Gordon, to Vandervell Products Limited. Apparatus for manufacturing thin wall flexible bearing liners. 3,724,257, Cl. 72-324.000.
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  - Francini, Joseph P.; and Verdone, Michael A., 3,724,652.
  - Hare, George H., 3,725,873.
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- Siple, Ralph J., to United States of America, Atomic Energy Commission. Horizontal vehicle mounted omnidirectional loop antenna having a shorting stub. 3,725,940, Cl. 343-713.000.
- Sitges, F. J., to Asturiana de Zinc, S.A. Hydraulic process for removing the zinc deposited on zinc electrolysis cathodes. 3,724,471, Cl. 134-34.000.
- Sitts, Kenneth O. Device for forming box pleats. 3,724,729, Cl. 223-35.000.
- Sjoberg, Nils W.: *See*—
  - Perry, Reginald P.; and Sjoberg, Nils W., 3,724,013.
- Skijor Manufacturing Company: *See*—
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- Skorcz, Joseph A.; Suh, John T.; and Judd, Claude I., to Colgate-Palmolive Company. Derivatives of 2,1-benzisothiazoline. 3,725,426, Cl. 260-301.000.
- Skoyles, Derek Robert, to U.S. Philips Corporation. Anti-lock brake systems. 3,724,914, Cl. 303-21.00f.
- Slana, Matthew Francis, to Bell Telephone Laboratories, Incorporated. Communication arrangement allowing network path testing. 3,725,614, Cl. 179-175.20r.
- Slater, William L.; and Ahlborn, John C., to Texaco Inc. Fuel composition for producing synthesis gas or fuel gas. 3,725,020, Cl. 44-50.000.
- Slavinski, Antony. Spray devices for hair lacquer. 3,724,723, Cl. 222-[illegible]10.000.
- Sletten, Carlyle J.; Schell, Allan C.; Mack, Richard B.; Goggins, William B., Jr.; and Blacksmith, Philipp, to United States of America, Air Force. Radar phase comparison method and system for object recognition. 3,725,917, Cl. 343-55.00a.
- Slezak, Imogene F. Teaching garment. 3,724,101, Cl. 35-35.00r.
- Sloan, Cephas H.: *See*—
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- Sloan, Earl L., III: *See*—
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- Slobodnik, Andrew J., Jr., to United States of America, Air Force. High coupling low diffraction acoustic surface wave delay line. 3,725,827, Cl. 333-30.000.
- Slocum, Charles W.: *See*—
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- Slocum, Fred H., to Robroy Industries. Explosion proof junction box. 3,724,706, Cl. 220-3.800.
- Smaller, Philip. Double coated storage medium for contact transfer recording. 3,725,611, Cl. 179-100.20a.
- Smalley, Richard, to Smalley, Richard, (Engineering) Limited. Excavating and/or loading devices. 3,724,693, Cl. 214-138.00c.
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  - Smalley, Richard, 3,724,693.
- Smead, David E., to Minnesota Mining and Manufacturing Company. System for reproducing digital information. 3,725,646, Cl. 235-61.11d.
- Smeaton, John R.: *See*—
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- Smith, A. O.,-Inland, Inc.: *See*—
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- Smith, Donald F.: *See*—
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- Smith, E. Quimby, Jr., to United States of America, Navy. Combined rocket-ram-jet aircraft. 3,724,216, Cl. 60-245.000.
- Smith, Earl W. Adjustable shower fixture. 3,724,760, Cl. 239-282.000.
- Smith, Edson W., to American La France, Inc., mesne. Power transmission with lubricating means. 3,724,598, Cl. 184-6.100.
- Smith, Harry A.; and Kobel, Erwin H., to Dow Chemical Company, The. Phenol-formaldehyde adhesive resins containing poly(C3-C4 alkyleneoxy)glycols. 3,725,349, Cl. 260-58.000.
- Smith, Horace L., Jr., to Smitherm Industries, Inc. Apparatus for processing particulate solids. 3,724,090, Cl. 34-57.00d.
- Smith, Jack D., to American Broculture, Inc., mesne. Electro-osmosis system. 3,725,233, Cl. 204-180.00p.
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- Smith, James McC. Photographic processing apparatus. 3,724,354, Cl. 95-93.000.
- Smith, John Hugh: *See*—
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- Smith, Joseph Cyril, to British Steel Corporation. Chain retaining device. 3,724,035, Cl. 24-116.00r.
- Smith, Leon; Calvert, David W.; Robert, Andre; Viallet, Andre; and Pauw, Daniel R., to South African Pulp and Paper Industries, Limited and L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Treatment of alkaline pul with an acidic medium followed by oxygen bleaching and delignification. 3,725,194, Cl. 162-65.000.
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  - Smith, Horace L., Jr., 3,724,090.
- Smitherman, Eugene A. Apparatus for handling column of drill pipe or tubing during drilling or workover operations. 3,724,567, Cl. 175-203.000.
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- Snavely, Earl S., Jr., to Mobil Oil Corporation. Well treating method to remove paraffin deposition. 3,724,552, Cl. 166-304.000.
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- Sneider Electronic Systems, Inc.: *See*—
  - Sneider, Vincent R., 3,725,887.
- Sneider, Vincent R., to Sneider Electronic Systems, Inc. Radio transmitting alarm system. 3,725,887, Cl. 340-224.000.
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  - Ando, Satoshi; Matsui, Masao; and Ogata, Fumimaro, 3,725,192.
- Snulova, Lidia Dorofeevna: *See*—
  - Lyass, Abram Moiseevich; Snulova, Lidia Dorofeevna; Borsuk, Pavel Afanasievich; Tsyruleva, Anna Ivanovna; and Teplyakov, Sergei Dmitrievich, 3,725,090.
- Snyder, Clifford H., Jr. Tubing coupling. 3,724,879, Cl. 285-101.000.

Snyder, Stephen L. Ram air glide parachute. 3,724,789, Cl. 244-145.000.
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Bardiau, Roger, 3,724,300.
Soffer, Ernst. Power driven painting device. 3,724,016, Cl. 15-98.000.
Sokoloff, Boris Alexandre. Computer device. 3,725,869, Cl. 340-172.500.
Sokolsky, Valery Nikolaevich; and Mamaev, Igor Ivanovich. Device for preventing a corona discharge from assuming the form of a spark discharge in electrostatic painting apparatus. 3,725,738, Cl. 317-3.000.
Sola Basic Industries, Inc.: *See*—
Loomis, Donald C., 3,725,588.
Solin, Edward P.; and Post, Russell, to Arctic Roof Deicing Corporation. Heat radiating assembly and apparatus for permitting ice blocked water to drain off of house roofs. 3,725,638, Cl. 219-213.000.
Sollami, Blase J.; Lundeen, Howard R.; and Gerth, Bruce F., to Bendix Corporation, The. Composite insulation for cryogenic vessel. 3,724,228, Cl. 62-50.000.
Solomon, Elias E., to Pyrotector, Incorporated. Detector system. 3,725,888, Cl. 340-258.00a.
Solomon, Thomas S., to Goodrich, B. F., Company, The. EPDM rubber fire cord adhesive from dicyclopentadiene latex and resorcinol-aldehyde resin. 3,725,326, Cl. 260-29.300.
Somers, Jess J.: *See*—
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Sonnenfeld, Richard J.: *See*—
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Spain, Raymond G. Refurbishable brake disc. 3,724,612, Cl. 188-218.0xl.
Spangenberg, Stanley F., to Dow Chemical Company, The. Preparation of alkaline earth metal titanate. 3,725,539, Cl. 423-598.000.
Spanos, William M., to International Telephone and Telegraph Corporation. Steerable null antenna arrangement. 3,725,929, Cl. 343-844.000.
Spanos, William M., to International Telephone and Telegraph Corporation. Turnstile antenna. 3,725,943, Cl. 343-797.000.
Spector, Marshall L.; Jones, Robert D.; and McDowell, Curtis S., to Air Products and Chemicals, Inc. Activated sludge sewage treatment process and system. 3,725,258, Cl. 210-7.000.
Spectrol Electronics Corporation: *See*—
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Spencer, Robert Graham: *See*—
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Sperberg, Lawrence R. Method for manufacture of a more uniform pneumatic tire. 3,725,165, Cl. 156-123.000.
Sperry, Lowell L., to PPG Industries, Inc. Tempering glass sheets with liquid flows. 3,725,024, Cl. 65-114.000.
Sperry Rand Corporation: *See*—
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Staar, Anthony J.; and Spence, Gerald D., to Container Corporation of America. Container for bulk shipment of corrosive liquids or the like. 3,724,712, Cl. 220-63.00r.
Stabile, Lucio, to Vanguard U.S. Systems for driving reels at controlled speed and power and improved apparatus for effecting such driving. 3,725,755, Cl. 318-6.000.
Stabilus Industrie und Handelsgesellschaft mbH: *See*—
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Stache, Ulrich; Fritsch, Werner; Haede, Werner; Radscheit, Kurt; and Lindner, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 3-N-alkyl-amino-cardenolides and process for their manufacture. 3,725,393, Cl. 260-239.570.
Stackpole Carbon Company: *See*—
Quirk, Virgil P.; and Titlar, James M., 3,725,718.
Stadler, Siegfried. Device for flame treating surface. 3,724,761, Cl. 239-286.000.
Stadtmiller, Malcolm L. Quill stop and gauge therefor. 3,724,963, Cl. 408-14.000.
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Staley, A. E., Manufacturing Company: *See*—
Hanson, Cleo E.; and Tuschhoff, John V., 3,725,386.
Stalling, David L.; and Tindle, Roger C., to United States of America, Interior. Separation of pesticides from lipids by gel permeation chromatography. 3,725,260, Cl. 210-31.00c.
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Stamm, Walter, to Stauffer Chemical Company. Thiol derivatives of olefin-maleic anhydride copolymers. 3,725,508, Cl. 260-897.00c.
Standard Brands Incorporated: *See*—
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Stanke, Joseph G. Adhesive composition. 3,725,096, Cl. 106-90.000.
Stanley, Charles C.; and Kropp, John L., to TRW Inc. Apparatus and method for continuously detecting oxygen in a gas stream. 3,725,658, Cl. 250-71.00r.
Stanley, John Edwin, to Duo-Flex Corporation. Electrical ceiling raceway. 3,725,568, Cl. 174-48.000.
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Stansell, Alpheus F.: *See*—
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Starks, Charles M., to Continental Oil Company. Process for preparing cyano-compounds. 3,725,458, Cl. 260-465.100.
Staros, Filipp Georgievich. Device for ultrasonic broaching of a group of holes. 3,724,566, Cl. 175-108.000.
Staschewski, Alfred; Pflaum, Rudolf; and Martin, Helmut, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method for improving performance of high frequency cable. 3,725,139, Cl. 148-6.310.
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Stearns, Milo E.; and Taylor, Wilbur S., to Vanderbilt, R. T., Company, Inc. Zinc di (lower alkyl) dithiocarbamates as mold inhibitors for latex paints. 3,725,327, Cl. 260-29.6mm.
Steelcase Inc.: *See*—
Faiks, Frederick S.; and Buhk, Randall P., 3,724,897.
Steele, Richard F., to Oton, Edward, Jr., Ceramic Foundation, The. Self-supporting fusible pyrometric device. 3,724,272, Cl. 73-358.000.
Stefanucci, Arthur; Harnisch, Douglas R.; Coogan, Joseph E., III; and Scarsella, Edward L., to General Foods Corporation. Coffee of improved aroma and freshness retention. 3,725,076, Cl. 99-68.000.
Steiber, Theodore E. Safe. 3,724,400, Cl. 109-53.000.
Stein, Werner; Plapper, Jurgen; and Willmund, Wolf-Dieter, to Henkel & Cie G.m.b.H. Fat-liquoring agents for leather and skins. 3,724,999, Cl. 8-94.230.
Steiner, Erich Hans: *See*—
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Stenzel, Hans-Dieter, to Kabel- und Metallwerke Gutehoffnungshutte. Method and equipment for completing connection of cable ends. 3,725,162, Cl. 156-53.000.
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Blackwood, John C.; Hook, Edwin O.; and Beck, Walter, 3,725,476.
Nelson, Douglas Carlyle; and Knaggs, Edward Andrew, 3,725,290.
Stephenson, John, to United Kingdom Atomic Energy Authority. Particle separation in a gaseous fluid. 3,724,658, Cl. 209-143.000.
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Stevens, Robert. Racket with string tension adjusting means. 3,724,850, Cl. 273-73.00e.
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Stoneburner, Jerry L. Hot coil rack. 3,724,675, Cl. 211-13.000.
Stoner, Glenn E., to Research Corporation. Electrochemical inactivation of pathogens. 3,725,226, Cl. 204-149.000.
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Strain, Robert Allen, to International Telephone and Telegraph Corporation. Waterproof high voltage connection apparatus. 3,725,846, Cl. 339-61.00r.
Strauss, Leo; and Sobran, Michael J., to Glass Containers ONTAINERS Corporation, mesne. Apparatus for pick-up and transfer of containers from lehr conveyor to cross conveyor. 3,724,637, Cl. 198-21.000.
Streck, Friedrich, to Rigips-Stempel GmbH. & Co., KG. Insert for treating fluids and gases. 3,724,825, Cl. 261-95.000.
Streich, Federico; Gold, Alberto Vargas; Oliversas, Jose Ma Bonastre; and Ventura, Fernando Fernandez. Construction of mechanical presses. 3,724,311, Cl. 83-590.000.
Streisand, Kenneth, to Bell Telephone Laboratories, Incorporated. Calling line identification system. 3,725,597, Cl. 179-18.0fh.
Striegler, John H. Slim hole drilling electric power unit. 3,724,562, Cl. 173-57.000.
Stromer, Joseph R., to General Motors Corporation. Shock absorber with welded piston. 3,724,615, Cl. 188-322.000.
Stromnes, Axel, to Atlas Copco Aktiebolag. Drill boom with feed direction sensing and control. 3,724,559, Cl. 173-4.000.
Stromquist, Michael E., to Anthony's Manufacturing Company, Inc. Door and door mounting frame. 3,724,129, Cl. 49-70.000.
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Wood, Hamish C. S.; and Stuart, Alexander, 3,725,408.
Stuart, Charles Edward. Reference plate with outriggers for dental work. 3,724,099, Cl. 32-19.000.
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Sturzinger, Oskar Edwin, to Anstalt Europaische Handelsgesellschaft. Circuit for enciphering device. 3,725,579, Cl. 178-22.000.
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Sudribin, Leon P.; and Kaiser, Paul, to Pennwalt Corporation. Cathodic protection method. 3,725,225, Cl. 204-147.000.
Sugawara, Tsunenori; and Mase, Jiro, to Nippon Kokan Kabushiki Kaisha. Charge distributing apparatus for blast furnaces. 3,724,689, Cl. 214-36.000.
Sugden, Harry, Jr., to Emerson Electric Co. Two stage flow control system and pilot. 3,724,808, Cl. 251-30.000.
Sugimori, Tsunetake; Tsukada, Yoji; and Tazuke, Yasuhiko, to Marukin Shoyu Company, Limited. Manufacture of uridine-5-diphosphoglucuronic acid. 3,725,201, Cl. 195-28.00n.
Sugita, Keiji; Mochimaru, Hideaki; and Watanabe, Toshio, to Kabushiki Kaisha Ricoh. Light intercepting screen winding and paying-out device for copying machines. 3,724,944, Cl. 355-18.000.
Sugiura, Akio: *See*—
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- Sullivan, John Charles: *See—*
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- Sulzer Brothers Limited: *See—*
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- Sumitomo Chemical Company, Ltd.: *See—*
  - Ito, Ken; Kaminaka, Hiroshi; Kotera, Norio; Yamamoto, Shinji; Dogane, Iwao; Shigehiro, Kosuke; Kuruma, Hiroshi; Chinuki, Takashi; Yoshitake, Hiroshi; Tanimoto, Kenji; Hasegawa, Shinichi; and Kobayashi, Nobuki, 3,725,484.
  - Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Kawano, Suminsri; Fjuimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami, 3,725,514.
  - Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Ogawa, Taizo; Wakatsuki, Toshiyuki; and Nishizawa, Yoshihiko, 3,725,546.
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- Sun Arrow Chemical Co., Ltd.: *See—*
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- Sunbeam Plastics Corporation: *See—*
  - Gach, Peter P., 3,724,724.
- Sundby, Bjorn; Kenney, Edward J.; and Wixon, Harold E., to Colgate-Palmolive Company. N-(2-hydroxyhydrocarbonyl) iminodicarboxylates. 3,725,473, Cl. 260-534.00e.
- Sundholm, Norman K., to Uniroyal, Inc. Use of mixed polyamines formed by the acid-catalyzed condensation of an N-alkylaniline, 2-chloroaniline, and formaldehyde as curing agents for polyurethanes. 3,725,354, Cl. 260-75.0nh.
- Sundstrand-Engelberg, Inc.: *See—*
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- Superscope, Inc.: *See—*
  - Zielke, Darrell W., 3,724,771.
- Sure Lock Systems, Inc.: *See—*
  - Saltzstein, Julian I., 3,725,939.
- Surel, Emile G. Talking book. 3,724,100, Cl. 35-35.00c.
- Surwill, Michael: *See—*
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- Sussman, Alan, to RCA Corporation. Liquid crystal device with louver means located behind the liquid crystal device. 3,724,925, Cl. 350-160.01c.
- Susuki, Rinnosuke; Hoshi, Hiroshi; Araki, Shinichi; and Miyamoto, Shinzo, to Raion Yushi Kabushiki Kaisha. Pump for spraying. 3,724,726, Cl. 222-385.000.
- Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; Murakami, Keiichi; and Hirakawa, Michio, to Lion Fat & Oil Co., Ltd. Thermoplastic composition containing coprecipitated fillers and methods of making the fillers. 3,725,336, Cl. 260-41.00r.
- Suter, Charles A., to Goodyear Tire & Rubber Company, The. Polyurethane container. 3,725,120, Cl. 117-104.00r.
- Suyama, Fujio; Yamamoto, Tokuo; Shimono, Kenichi; Kuwahara, Hirosi; Ishii, Masao; and Watanabe, Ichiro, to Nitto Chemical Industry Co., Ltd. Paper making process comprising the incorporation of a polyacrylamide mucilaginous material. 3,725,195, Cl. 162-168000.
- Suyderhoud, Henri George: *See—*
  - Campanella, Samuel Joseph; Suyderhoud, Henri George; and Onufry, Michael, Jr., 3,725,612.
- Suzaki, Hideyuki: *See—*
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- Suzuki, Hisao: *See—*
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- Suzuki, Kenji: *See—*
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- Suzuki, Minoru, to Ricoh Co., Ltd. Copy sheet feed tray raising and lowering device for duplicator or the like. 3,724,839, Cl. 271-39.000.
- Suzuki, Seiya; Mizuhata, Yasuo; Kinoshita, Kunihiko; and Godo, Takanobu, to Toray Industries, Inc. Process for the preparation of lactams from cycloalkanone oximes. 3,725,391, Cl. 260-239.30a.
- Suzuki, Shigemasa; and Nakamura, Kozo, to Nippon Ekiki Seikei Kibushiki Kaisha and Sanyo Pulp Kabushiki Kaisha. Method of preparing a porous synthetic thermoplastic film or sheet. 3,725,520, Cl. 264-41.000.
- Svenska Alucrom AB: *See—*
  - Jonsson, Carldavid, 3,724,594.
- Sweetheart Plastics, Inc.: *See—*
  - Davis, Paul, 3,724,710.
- Swift, Harold E.: *See—*
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- Switching device for delivering sheet-like articles: *See—*
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- Sybron Corporation: *See—*
  - Battaglini, Domenic; Beach, Richard G.; and Raquith, Howard R., 3,724,275.
- Sygnator, Henry A., to Illinois Tool Works Inc. Extruding screw. 3,724,315, Cl. 85-47.000.
- Sylvania Electric Products Inc.: *See—*
  - McDonough, Thomas B., 3,725,155.
- Symons Corporation: *See—*
  - Shoemaker, James C., 3,724,806.
- Synectron, Inc.: *See—*
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- Szatmari, Franz; and Wernli, Max, to Fisher, George, Aktiengesellschaft. Apparatus for automatic regulation of the moisture content of granular material. 3,724,821, Cl. 259-149.000.
- T. O. Plastics, Inc.: *See—*
  - Engler, Joseph P.; and Paulsen, Glen E., 3,724,719.
- Taber, Robert C.: *See—*
  - Webster, Frank G.; and Taber, Robert C., 3,725,398.
- Taborne, Michael T. Planter. 3,724,128, Cl. 47-33.000.
- Tachimoto, Kazuo: *See—*
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- Tadataka, Narumi: *See—*
  - Shiomi, Masano; and Tadataka, Narumi, 3,724,603.
- Tahitian Products Co., Inc.: *See—*
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- Takahashi, Makoto; and Hashimoto, Takao, to Yashica Company, Ltd. Discrimination circuit of physical quantities. 3,724,955, Cl. 356-227.000.
- Takeda Chemical Industries, Ltd.: *See—*
  - Nara, Kiyoshi; Ohta, Kazuhiko; Katamoto, Kazuyoshi; Yamazaki, Osami; and Fukudi, Hideo, 3,725,474.
- Takeda, Hisami: *See—*
  - Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Kawano, Suminsri; Fjuimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami, 3,725,514.
- Takeda, Masao; Iida, Eiichi; Komatsubara, Tsuneo; and Kagoshima, Yutaka, to Japanese Geon Company, Ltd., The. Granulated viny chloride resin material. 3,725,325, Cl. 260-29.10r.
- Takenaka, George, to Addmaster Corporation. Tape punch. 3,724,309, Cl. 83-575.000.
- Takimoto, Masaaki: *See—*
  - Honjo, Satoru; Matsumoto, Seiji; and Takimoto, Masaaki, 3,724,941.
- Talamantez, Rudolph. Cart with automatic positioning handle and independently positionable wheels. 3,724,863, Cl. 280-5.200.
- Talmo, Robert Eugene, to International Telephone and Telegraph Corporation. Pulse generator. 3,725,665, Cl. 250-205.000.
- Tamate, Tokutaro; Habuchi, Hirokazu; and Hirayama, Tsutomu, to Yokogawa Electric Works, Limited. Concentration measuring apparatus. 3,724,957, Cl. 356-116.000.
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- Tanaka, Jinichi: *See—*
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- Tanaka, Katsutoshi: *See—*
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- Tanasawa, Yasusi; Inoue, Tokuta; and Ishiguro, Kenji, to Nippondenso Co., Ltd., Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho. Exhaust gas purifying device for internal combustion engines. 3,724,220, Cl. 60-303.000.
- Tanimoto, Kenji: *See—*
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- Tarshis, Lemuel A.; and Walker, James L., to General Electric Company. Grain size of metal castings. 3,725,057, Cl. 75-170.000.
- Tassoney, Joseph P.; and Dille, Roger M., to Texaco Inc. Pollution abatement process for refinery waste water. 3,725,270, Cl. 210-63.000.
- Tate, Jack F., to Texaco Inc. Secondary recovery method. 3,724,544, Cl. 166-271.000.
- Tate, John E., to American Air Filter Company, Inc. Fluid treating filter. 3,724,671, Cl. 210-484.000.
- Tatsukawa, Keizo: *See—*
  - Fujimoto, Yasuo; Masumura, Isao; Tatsukawa, Keizo; Koshimoto, Shinsuke; and Doiuchi, Toru, 3,725,353.
- Tatum, Joe F. Deep anode bed for cathodic protection. 3,725,669, Cl. 307-95.000.
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  - Braun, Edwin Julius; Meise, Henry August, Jr.; and Taylor, George William, 3,725,598.
- Taylor, Robert S. Self-contained gooseneck dumping trailer. 3,724,695, Cl. 214-505.000.
- Taylor, Wilbur S.: *See—*

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- Tazuke, Yasuhiko: *See—*
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- T.D.K. Electronics Company, Ltd.: *See—*
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- Te Velde, Harm Frank, to U.S. Philips Corporation. Overhead conveyor. 3,724,391, Cl. 104-172.500.
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- Telefonaktiebolaget L M Ericsson: *See—*
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- Tenneco Inc.: *See—*
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- Terrell, Harold. Tandem axle traction equalizer. 3,724,581, Cl. 180-24.120.
- Texaco Inc.: *See—*
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  - Patmore, Edwin L.; Siegart, William R.; and Chafetz, Harry, 3,725,468.
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- Thal, Heinz, to Ludwig Taprogge. Screen installation. 3,724,669, Cl. 210-409.000.
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- Thompson, John T.; and Gillemot, George W. Protective cable splice assembly and method. 3,725,580, Cl. 174-38.000.
- Thompson, Kenneth C., to Electronic Processors, Inc. Rotating magnetic tape head having air cushion support for the tape. 3,725,606, Cl. 179-100.20p.
- Thompson, Tommy Lewis, to Life Support, Inc. Ignition composition initiated by water. 3,725,156, Cl. 149-81.000.
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- Thorn, John E.; and Selman, Alan A., to Ford Motor Company. Hydraulic load indicating device. 3,724,571, Cl. 177-141.000.
- Thornton, Brian, to Birkett, Samuel, Limited. Valve actuating means. 3,724,753, Cl. 236-92.00c.
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- Thrower, Arthur J.; and Hotchkiss, Marvin E., to Goodrich, B. F., Company, The. Segmented friction member assembly for brake or clutch. 3,724,623, Cl. 192-107.00r.
- Thuron Industries, Inc.: *See—*
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- Tibbott, David W., to Ingersoll-Rand Company. Automatic throttle shut-off power tool. 3,724,560, Cl. 173-12.000.
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- Till, Henry R., to Xerox Corporation. Wiper blade cleaner for xerographic machines. 3,724,020, Cl. 15-256.530.
- Tillmann, Horst, to Dorken & Mankel KG. Automatic door closer. 3,724,023, Cl. 16-53.000.
- Tilp, George E., to Adams Industries. Electric cup heater. 3,725,641, Cl. 219-433.000.
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- Tomlinson, Charles W., to Acme Visible Records, Inc. Document carrier envelope construction. 3,724,743, Cl. 229-55.000.
- Tomlinson, Norfleet. Pollution-reducing fuel filter. 3,724,429, Cl. 123-25.00r.
- Tonnessen, Tonnes K. Nonpolluting engine. 3,724,432, Cl. 123-74.00r.
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Trancik, Ronald J.; Scherrer, Robert A.; and Harrington, Joseph Kenneth, to Riker Laboratories, Inc., mesne. Substituted benzoylhaloalkanesulfonanilides. 3,725,451, Cl. 260-456.00a.
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Yoo, Jin Sun, to Atlantic Richfield Company. Process for homopolymerizing acrylonitrile. 3,725,373, Cl. 260-88.70r.

Yoshida, Makoto; Tsuda, Momotoshi; Oishi, Yasushi; and Nakazyo, Kiyoshi, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive materials containing a novel yellow-forming coupler. 3,725,072, Cl. 96-55.000.

Yoshida, Susumu; and Ishigaki, Yoshio, to Sony Corporation. Oscilloscope apparatus. 3,725,725, Cl. 315-26.000.

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Zeingenberger, Arno; and Hagel, Adolf, to Liebrandt, Karl. Warp knitting machine. 3,724,241, Cl. 66-86.00r.

Zeitlin, Alexander. Pressure vessel with connector fitting. 3,724,881, Cl. 52-192.000.

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Zickendraht, Christian; and Fasciati, Alfred, to Ciba-Geigy AG. Substituted phenyl-azo-phenyl-azo-phenyl compounds. 3,725,384, Cl. 260-186.000.

Zielinski, Erich, to Rheinmetall G.m.b.H. Gun built into an armored turret with a rotating magazine. 3,724,324, Cl. 89-36.00k.

Zielke, Darrell W., to Superscope, Inc. Hub-platform assembly and loop-sizing method. 3,724,771, Cl. 242-55.19a.

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Zoschak, Robert J., to Foster Wheeler Corporation. Heat flux sensing device. 3,724,267, Cl. 73-190.00h.

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Zundel, Arthur P., to National Can Corporation. Aerosol safety can. 3,724,727, Cl. 222-397.000.

LIST OF DEFENSIVE PUBLICATIONS

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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Alliger, Glen, to The Firestone Tire & Rubber Co. Solution polymerization. T909,006, 4–3–73, Cl. 260—5.

Combs, Robert L., and W. C. Wooten, Jr. Heat stable microencapsulated fire extinguishing agents. T909,001, 4–3–73, Cl. 252—2.

Du Pont de Nemours, E. I., and Co.: *See—*
Fruehauf, Vernon P. T909,008.

Firestone Tire & Rubber Co., The: *See—*
Alliger, Glen. T909,006.

Fruehauf, Vernon P., to E. I. Du Pont de Nemours and Co. Netting member. T909,008, 4–3–73, Cl. 161—109.

Hercules Inc.: *See—*
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Hicks, Gordon C., and M. M. Norton. Pan granulation of urea. T909,003, 4–3–73, Cl. 260—555.

Holloway, Paul E., Jr., to Hercules Inc. Preparation of film via a tubular process. T909,007, 4–3–73, Cl. 264—95.

International Business Machines Corporation: *See—*
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Jones, Jean E., and W. E. Yoerger. Supersensitizing dye combination for electrophotographic composition and element. T909,009, 4–3–73, Cl. 96—1.6.

Kelch, John R. Spatial filter. T909,010, 4–3–73, Cl. 350—162.

Kraftco Corp.: *See—*
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McCollum, Anthony W. Novel 2,2-disubstituted-4-(1,1-dialkyl-2-ethanol)-1,3-dioxolanes and process for their production. T909,012, 4–3–73, Cl. 260—340.9.

Meisner, Donald F., and R. G. Robertson, to Kraftco Corp. Continuous manufacture of bread. T909,005, 4–3–73, Cl. 99—90.

Mosman, Richard R.: *See—*
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Neuffer, Wilfred K., to International Business Machines Corp. Calendering doctor blade cast ceramic sheets to control anisotropic firing shrinkage. T909,004, 4–3–73, Cl. 264—56.

Norton, Melvin M.: *See—*
Hicks, Gordon C., and Norton. T909,003.

Robertson, Raymond G.: *See—*
Meisner, Donald F., and Robertson. T909,005.

Schwier, John R. Dyeing process. T909,011, 4–3–73, Cl. 8—168.

White, Neil S., and R. R. Mosman. Identification printer for plastic parts. T909,002, 4–3–73, Cl. 101—27.

Wooten, Willis C., Jr.: *See—*
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LIST OF REISSUE PATENTEES

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Brunner, Augusto J., F. Costa, and L. Falcone, to Flexa Industria Materie Plastiche S.p.A. Waterproof fabric and method for forming the same. Re. 27,614, 4–3–73, Cl. 16—53.

Controls Company of America: *See—*
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Hofer, Heinz K., and F. Rehmsmeier, to Stubbe Maschinenfabrik G.m.b.H., mesne. Device for stroke limitation on hydraulically displaced mold carrier units on injection molds. Re. 27,607, 4–3–73, Cl. 425—450.

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Mignore, Albert E., deceased, by Addressograph-Multigraph Corp., assignee. Master making and duplicating machine. Re. 27,613, 4–3–73, Cl. 101—132.5.

Montecatini Edison S.p.A.: *See—*
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Pappalardo, Salvatore: *See—*
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Rausing, Hans A., and T. L. Lindh. Packaging material including at least three lamination layers of materials having different viscosities, and a package produced therefrom. Re. 27,610, 4–3–73, Cl. 161—166.

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Reinhart, Norman E.: *See—*
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Strathearn, Donald M., J. M. Thornbery, and D. F. Willcox, to Controls Company of America. Timer. Re. 27,609, 4–3–73, Cl. 307—141.

Stubbe Maschinenfabrik G.m.b.H.: *See—*
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Thornbery, James M.: *See—*
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CLASS 49	
70	3,724,129
141	3,724,130
181	3,724,131
349	3,724,133
364	3,724,132
379	3,724,134
504	3,724,135
505	3,724,136
CLASS 51	
106	3,724,137
163	3,724,146
165R	3,724,138
249	3,724,139
332	3,724,140
CLASS 52	
22	3,724,149
73	3,724,142
79	3,724,141
	3,724,143
108	3,724,144
157	3,724,145
169	3,724,147
177	3,724,078
192	3,724,881
221	3,724,148
	3,724,150
295	3,724,151
378	3,724,152
543	3,724,154
588	3,724,153
613	3,724,156
741	3,724,155
743	3,724,158
745	3,724,157
CLASS 53	
3	3,724,159
	3,724,168
26	3,724,160
42	3,724,161
78	3,724,162
171	3,724,163
186	3,724,185
229	3,724,164
250	3,724,165
334	3,724,166
390	3,724,167
CLASS 55	
20	3,724,169
67	3,724,170
71	3,724,171
89	3,724,173
97	3,724,172
123	3,724,174
158	3,724,175
269	3,724,176
316	3,724,177
341	3,724,178
367	3,724,179
410	3,724,180
432	3,724,181
CLASS 56	
10.4	3,724,182
14.3	3,724,183
51	3,724,184
202	3,724,186
361	3,724,187
400.17	3,724,188
CLASS 57	
2.5	3,724,189
18	3,724,190
34HS	3,724,191
34R	3,724,192
	3,724,193
75	3,724,195
77.4	3,724,196
93	3,724,197
140R	3,724,198
156	3,724,194
157S	3,724,199
CLASS 58	
41R	3,724,200
50R	3,724,201
127R	3,724,202
130R	3,724,203
CLASS 59	
80	3,724,204
CLASS 60	
19	3,724,205
24	3,724,206
39.27	3,724,213
39.74R	3,724,207
54.6E	3,724,210
54.6P	3,724,211
73	3,724,212
	3,724,214
203	3,724,215
245	3,724,216
254	3,724,217
255	3,724,219
282	3,724,218
303	3,724,220
343	3,724,208
357	3,724,209
CLASS 61	
3	3,724,221
4	3,724,237
46	3,724,222
53	3,724,223
72.3	3,724,224
CLASS 62	
12	3,724,225
39	3,724,226
40	3,724,227
50	3,724,228
52	3,724,229
133	3,724,230
157	3,724,231
244	3,724,232
285	3,724,233
308	3,724,234
419	3,724,236
CLASS 64	
7	3,724,238
13	3,724,239
CLASS 65	
3	3,725,021
27	3,725,022
72	3,725,023
114	3,725,024
134	3,725,025
156	3,725,026
158	3,725,027
182R	3,725,028
CLASS 66	
50R	3,724,240
86R	3,724,241
CLASS 68	
17A	3,724,242
244	3,724,243
CLASS 70	
360	3,724,244
431	3,724,245
	3,724,246
CLASS 71	
28	3,725,029
76	3,725,030
105	3,725,031
CLASS 72	
60	3,724,247
146	3,724,249
171	3,724,250
203	3,724,251
241	3,724,252
253	3,724,253
264	3,724,254
306	3,724,255
324	3,724,257
332	3,724,256
342	3,724,258
CLASS 73	
10	3,724,259
12	3,724,260
67.8	3,724,262
80	3,724,263
88B	3,724,264
	3,724,265
95	3,724,266
190H	3,724,267
190R	3,724,261
194EM	3,724,268
207	3,724,269
267	3,724,270
336	3,724,271
358	3,724,272
389	3,724,273
398AR	3,724,274
407R	3,724,275
422R	3,724,276
431	3,724,277
432HA	3,724,278
462	3,724,279
CLASS 74	
10.33	3,724,280
10.52	3,724,281
54	3,724,282
122	3,724,248
234	3,724,284
243FC	3,724,285
492	3,724,286
493	3,724,290
526	3,724,287
572	3,724,288
711	3,724,289
815	3,724,291
863	3,724,294
864	3,724,292
866	3,724,293
	3,724,295
CLASS 75	
.5A	3,725,035
	3,725,036
2	3,725,039
3	3,725,032
	3,725,033
4	3,725,034
20F	3,725,037
60	3,725,040
	3,725,041
	3,725,042
72	3,725,043
74	3,725,044
93	3,725,045
101BE	3,725,046
108	3,725,047
122	3,725,048
123D	3,725,049
126	3,725,050
130.5	3,725,051
134F	3,725,054
	3,725,055
134M	3,725,052
	3,725,053
154	3,725,056
170	3,725,057
CLASS 81	
3.3R	3,724,296
3.46A	3,724,297
63	3,724,298
128	3,724,299
CLASS 82	
3	3,724,300
36	3,724,301
47R	3,724,302
59R	3,724,303
CLASS 83	
3	3,724,304
14	3,724,305
210	3,724,306
337	3,724,307
435	3,724,310
557	3,724,308
575	3,724,309
590	3,724,311
CLASS 84	
1.01	3,725,560
1.15	3,725,561
1.24	3,725,562
95	3,724,316
193	3,724,312
447	3,724,317
452P	3,724,313
465	3,724,314
CLASS 85	
47	3,724,315
CLASS 86	
1	3,724,318
CLASS 89	
1M	3,724,319
1R	3,724,320
1.8	3,724,321
1.811	3,724,322
36K	3,724,324
36L	3,724,323
131	3,724,325
196	3,724,326
CLASS 90	
11C	3,724,327
62R	3,724,328
CLASS 91	
189	3,724,329
363A	3,724,330
391R	3,724,332
407	3,724,331
411R	3,724,333
491	3,724,334
CLASS 92	
66	3,724,335
166	3,724,336
241	3,724,337
	3,724,338
CLASS 93	
1C	3,724,339
35R	3,724,340
	3,724,341
CLASS 94	
50PR	3,724,342
CLASS 95	
10R	3,724,343
11L	3,724,344
	3,724,346
11.5R	3,724,345
12	3,724,347
31R	3,724,348
44R	3,724,349
53E	3,724,350
	3,724,351
71	3,724,352
89D	3,724,353
93	3,724,354
94R	3,724,355
CLASS 96	
1.4	3,725,059
1.5	3,725,058
1.7	3,725,060
1.8	3,725,061
3	3,725,062
29D	3,725,063
35.1	3,725,064
36.1	3,725,065
49	3,725,066
55	3,725,072
56.5	3,725,067
66HD	3,725,068
75	3,725,069
87R	3,725,070
94	3,725,071
108	3,725,073
109	3,725,077
	3,725,078
114.5	3,725,079

	3,725,080
122	3,725,074
CLASS 98	
2.11	3,724,357
2.18	3,724,358
40D	3,724,356
CLASS 99	
2R	3,725,081
14	3,725,075
68	3,725,076
—	3,725,082
105	3,725,083
107	3,725,084
140R	3,725,085
189	3,725,086
207	3,725,087
281	3,724,359
342	3,724,360
450.6	3,724,361
516	3,724,362
CLASS 100	
189	3,724,363
214	3,724,364
CLASS 101	
40	3,724,365
93C	3,724,366
110	3,724,367
132.5	Re.27,613
248	3,724,368
327	3,724,369
377	3,724,370
401.1	3,724,371
CLASS 102	
.1R	3,724,372
4	3,724,373
7	3,724,374
31	3,724,375
38	3,724,377
42C	3,724,376
	3,724,378
49.3	3,724,379
60	3,724,380
65	3,724,381
	3,724,382
70.2A	3,724,383
79	3,724,384
81	3,724,385
105	3,724,386
CLASS 104	
71	3,724,015
93	3,724,387
148MS	3,724,388
162	3,724,389
172B	3,724,390
172.5	3,724,391
CLASS 105	
61	3,724,392
174	3,724,393
368R	3,724,394
369BA	3,724,395
378	3,724,396
CLASS 106	
12	3,725,088
15FP	3,725,089
38.35	3,725,090
39.6	3,725,091
42	3,725,092
53	3,725,093
62	3,725,094
75	3,725,095
90	3,725,096
	3,725,097
180	3,725,098
288B	3,725,099
	3,725,100
	3,725,102
288Q	3,725,101
307	3,725,103
CLASS 108	
51	3,724,398
157	3,724,399
CLASS 109	
53	3,724,400
CLASS 110	
8R	3,724,401
72R	3,724,403
CLASS 112	
158B	3,724,404
221	3,724,405
235	3,724,406
240	3,724,407
	3,724,408
255	3,724,409
CLASS 114	
16R	3,724,410
74T	3,724,411
90	3,724,412
220	3,724,413
CLASS 117	
1.7	3,725,104
2R	3,725,105
33.5CM	3,725,106
36.7	3,725,107
37	Re.27,606
46CA	3,725,038
46CG	3,725,110
47A	3,725,108
	3,725,109
54	3,725,111
75	3,725,112
82	3,725,113
93.1CD	3,725,114
93.31	3,725,115
	3,725,116
100M	3,725,118
100S	3,725,117
104R	3,725,119
	3,725,120
122PF	3,725,121
122P	3,725,122
126GE	3,725,123
138.8UA	3,725,124
139.5A	3,725,125
235	3,725,126
CLASS 118	
1	3,724,414
2	3,724,415
7	3,724,416
24	3,724,417
69	3,724,418
119	3,724,419
505	3,724,420
630	3,724,421
637	3,724,422
CLASS 119	
4	3,724,423
16	3,724,424
72	3,724,425
CLASS 122	
33	3,724,426
CLASS 123	
8.07	3,724,427
8.47	3,724,428
25R	3,724,429
32EA	3,724,430
	3,724,431
74R	3,724,432
102	3,724,433
117R	3,724,434
139E	3,724,435
	3,724,436
CLASS 124	
1	3,724,437
11R	3,724,438
CLASS 125	
23	3,724,439
CLASS 126	
9R	3,724,440
38	3,724,441
85B	3,724,442
121	3,724,443
237	3,724,444
271.2A	3,724,445
350R	3,724,446
360R	3,724,447
CLASS 127	
16	3,725,127
CLASS 128	
2.06A	3,724,455
6	3,724,448
20	3,724,449
25R	3,724,450
52	3,724,451
75	3,724,452
87R	3,724,453
133	3,724,456
171	3,724,457
	3,724,458
194	3,724,454
200	3,724,459
218M	3,724,460
227	3,724,461
263	3,724,462
269	3,724,463
284	3,724,464
285	3,724,465
290R	3,724,466
418	3,724,467
CLASS 131	
21D	3,724,468
266	3,724,469
CLASS 132	
46R	3,724,470
CLASS 134	
34	3,724,471
93	3,724,472
CLASS 135	
4R	3,724,473
CLASS 136	
6	3,725,128
29	3,725,129
43	3,725,130
86A	3,725,131
90	3,725,132
114	3,725,133
234	3,725,134
CLASS 137	
5	3,724,474
67	3,724,475
83	3,724,479
98	3,724,480
101.25	3,724,481
102	3,724,482
106	3,724,483
110	3,724,484
117	3,724,485
190	3,724,486
218	3,724,487
223	3,724,488
322	3,724,489
340	3,724,490
375	3,724,491
459	3,724,493
501	3,724,494
533.13	3,724,496
547	3,724,495
575	3,724,497
597	3,724,492
607	3,724,498
615	3,724,499
624.18	3,724,500
630.19	3,724,501
812	3,724,478
838	3,724,477
842	3,724,476
CLASS 138	
41	3,724,502
45	3,724,503
46	3,724,504
92	3,724,505
96	3,724,506
122	3,724,507
CLASS 139	
1	3,724,513
12	3,724,508
25	3,724,509
66R	3,724,510
	3,724,511
85	3,724,512
100	3,724,514
CLASS 140	
92.1	3,724,515
CLASS 141	
95	3,724,516
CLASS 144	
116	3,724,517
247	3,724,518
CLASS 145	
33E	3,724,519
CLASS 148	
1.5	3,725,135
	3,725,136
6.14	3,725,138
6.2	3,725,137
6.31	3,725,139
12.1	3,725,140
16	3,725,141
	3,725,142
36	3,725,143
127	3,725,144
175	3,725,145
	3,725,146
183	3,725,147
186	3,725,148
	3,725,149
187	3,725,150
	3,725,151
CLASS 149	
19	3,725,152
	3,725,153
21	3,725,154
31	3,725,155
81	3,725,156
97	3,725,157
CLASS 151	
41.73	3,724,520
CLASS 152	
340	3,724,521
CLASS 156	
14	3,725,158
	3,725,159
17	3,725,160
	3,725,161
53	3,725,162
64	3,725,163
73	3,725,164
123	3,725,165
143	3,725,167
148	3,725,166
157	3,725,168
184	3,725,169
217	3,725,170
230	3,725,171
250	3,725,173
252	3,725,172
305	3,725,174
327	3,725,175
330	3,725,176
333	3,725,177
393	3,725,178
448	3,725,179
515	3,725,180
519	3,725,181
527	3,725,182
563	3,725,183
CLASS 159	
13A	3,724,523
13B	3,724,522
CLASS 160	
24	3,724,524
28	3,724,525
368R	3,724,526
368	3,724,527
371	3,724,402
CLASS 161	
6	3,725,184
53	Re.27,614
89	3,725,185
109	3,725,186
111	3,725,187
116	3,725,188
146	3,725,189
159	3,725,190
160	3,725,191
166	Re.27,610
175	3,725,192
CLASS 162	
17	3,725,193
65	3,725,194
145	3,725,196
168	3,725,195
343	3,725,197
CLASS 164	
58	3,724,528
154	3,724,529
252	3,724,530
361	3,724,531
CLASS 165	
1	3,724,532
7	3,724,533
12	3,724,534
26	3,724,535
27	3,724,536
61	3,724,235
133	3,724,537
152	3,724,538
CLASS 166	
89	3,724,539
100	3,724,540
224	3,724,541
246	3,724,542
248	3,724,543
271	3,724,544
273	3,724,545
274	3,724,546
	3,724,547
275	3,724,548
282	3,724,549
285	3,724,550
295	3,724,551
304	3,724,552
	3,724,553
CLASS 169	
2A	3,724,554
2R	3,724,555
CLASS 172	
4.5	3,724,556
197	3,724,557
CLASS 173	
1	3,724,558
4	3,724,559
12	3,724,560
50	3,724,561
57	3,724,562
163	3,724,563
CLASS 174	
6	3,725,564
13	3,725,565
15R	3,725,566
16B	3,725,567
38	3,725,580
	3,725,581
48	3,725,568
CLASS 175	
72	3,724,564
	3,724,565
108	3,724,566
203	3,724,567
247	3,724,568
293	3,724,576
CLASS 176	
37	3,725,198
61	3,725,199
CLASS 177	
1	3,724,569
4	3,724,570
141	3,724,571
210	3,724,572
	3,724,573
	3,724,574
211	3,724,575
CLASS 178	
5.2A	3,725,569
5.2R	3,725,570
	3,725,571
5.4ST	3,725,572
6.6DD	3,725,573
6.6A	3,724,028
6.7R	3,725,574
	3,725,575
6.8	3,725,576
7.3R	3,725,577
7.5R	3,725,578
22	3,725,579
58	3,725,582
CLASS 179	
1HF	3,725,585
1VL	3,725,583
1C	3,725,584
1G	3,725,586
2TV	3,725,587
5R	3,725,588
6E	3,725,589
15AF	3,725,591
15BF	3,725,593
15BS	3,725,590
15.55R	3,725,592
17B	3,725,595
18AD	3,725,594
18BD	3,725,599
18EB	3,725,598
18FH	3,725,596
	3,725,597
90R	3,725,602
99	3,725,600
	3,725,601
100.1VC	3,725,604
100.1R	3,725,603
100.2A	3,725,611
100.2C	3,725,608
	3,725,610
100.2D	3,725,607
100.2K	3,725,609
100.2P	3,725,606
100.2T	3,725,605
170.6	3,725,612
175.2R	3,725,614
175.3	3,725,613
CLASS 180	
1FV	3,724,577
5R	3,724,578
	3,724,579
9.2	3,724,580
9.54	3,724,397
	3,724,587
24.12	3,724,581
33R	3,724,582
66R	3,724,583
79	3,724,584
79.2C	3,724,585
91	3,724,586
118	3,724,588
CLASS 181	
.5BI	3,724,589
.5XC	3,724,590
53	3,724,591
CLASS 182	
27	3,724,592
36	3,724,594
118	3,724,595
134	3,724,593
CLASS 184	
1D	3,724,596
5	3,724,597
6.1	3,724,598
6.5	3,724,599
7D	3,724,600
56A	3,724,601
CLASS 187	
8.54	3,724,602
CLASS 188	
1C	3,724,603
2D	3,724,604
71.8	3,724,605
72.5	3,724,606
79.5K	3,724,607
112	3,724,608
170	3,724,609
181T	3,724,610
216	3,724,611
218XL	3,724,612
	3,724,613
	3,724,614
322	3,724,615
345	3,724,616
CLASS 190	
16	3,724,617
CLASS 192	
.07	3,724,618
18B	3,724,619
70.23	3,724,620
84C	3,724,621
105CE	3,724,622
107R	3,724,623
	3,724,624
	3,724,625
109F	3,724,626
110B	3,724,627
CLASS 193	
35R	3,724,628
	3,724,629
CLASS 195	
28N	3,725,201
28R	3,725,200
66R	3,725,202
100	3,725,203
127	3,725,204
CLASS 197	
19	3,724,630
49	3,724,631
85	3,724,632
151	3,724,633
CLASS 198	
7BL	3,724,634
9	3,724,635
19	3,724,636
21	3,724,637
24	3,724,638
31R	3,724,639
35	3,724,640
40	3,724,641
127R	3,724,642
	3,724,643
131	3,724,644
193	3,724,645
201	3,724,646
211	3,724,648
220BC	3,724,647
224	3,724,649
CLASS 200	
19R	3,725,620
38FB	3,725,615
	3,725,617
38R	3,725,616
46	3,725,618
	3,725,621
47CZ	3,725,347
48A	3,725,619
61.27	3,725,622
148B	3,725,623
157	3,725,624
159R	3,725,625
168G	3,725,626
CLASS 202	
181	3,725,205
205	3,725,206
CLASS 203	
6	3,725,207
8	3,725,208
24	3,725,209
42	3,725,210
74	3,725,211
CLASS 204	
1T	3,725,212
15	3,725,213
	3,725,214
	3,725,215
30	3,725,216
32R	3,725,217
34	3,725,218
37R	3,725,219
52R	3,725,220
61	3,725,221
67	3,725,222
99	3,725,223
141.5	3,725,224
147	3,725,225
149	3,725,226
158HA	3,725,227
159.14	3,725,228
	3,725,229
	3,725,231
159.2	3,725,230
180G	3,725,232
180P	3,725,233
	3,725,235
181	3,725,234
195L	3,725,237
195R	3,725,236
298	3,725,238
CLASS 206	
45.19	3,724,650
56AA	3,724,651
62P	3,724,652
65R	3,724,653
72	3,724,654
CLASS 208	
7	3,725,240
10	3,725,239
	3,725,241
46	3,725,242
59	3,725,243
	3,725,244
86	3,725,245

100	3,725,246
111	3,725,247
138	3,725,248
139	3,725,249
208R	3,725,250
210	3,725,251
211	3,725,253
213	3,725,252
314	3,725,254
331	3,725,255
	3,725,256
	3,725,257
CLASS 209	
73	3,724,655
	3,724,656
74	3,724,657
143	3,724,658
238	3,724,659
250	3,724,660
437	3,724,661
CLASS 210	
7	3,725,258
30	3,725,259
31C	3,725,260
38	3,725,261
42	3,725,262
	3,725,263
44	3,725,264
45	3,725,265
	3,725,266
48	3,725,267
53	3,725,268
59	3,725,269
63	3,725,270
65	3,725,271
83	3,724,662
85	3,724,663
104	3,724,664
130	3,724,665
169	3,724,666
195	3,724,667
331	3,724,668
409	3,724,669
448	3,724,670
484	3,724,671
500	3,724,672
	3,724,673
512	3,724,674
CLASS 211	
13	3,724,675
69.7	3,724,676
96	3,724,677
148	3,724,678
CLASS 212	
39MS	3,724,679
CLASS 213	
43	3,724,681
212	3,724,680
CLASS 214	
1QG	3,724,682
2.5	3,724,683
6B	3,724,684
8.5A	3,724,686
8.5D	3,724,687
8.5R	3,724,685
16.4A	3,724,688
36	3,724,689
52C	3,724,690
	3,724,691
83.36	3,724,692
138C	3,724,693
450	3,724,694
505	3,724,695
512	3,724,696
515	3,724,697
518	3,724,698
730	3,724,699
CLASS 215	
46A	3,724,700
CLASS 217	
65	3,724,701
CLASS 219	
10.55	3,725,627
	3,725,628
10.79	3,725,629
	3,725,630
52	3,725,645
69G	3,725,631
116	3,725,632
121EB	3,725,633
121EM	3,725,634
121P	3,725,635
131R	3,725,636
136	3,725,637
213	3,725,638
216	3,725,639
370	3,725,640
433	3,725,641
441	3,725,642
	3,725,643
494	3,725,644
CLASS 220	
3.8	3,724,706
4F	3,724,702
9LG	3,724,703
26R	3,724,704
	3,724,705
27	Re.27,611
44R	3,724,707
	3,724,708
54	3,724,709
60R	3,724,710
63R	3,724,711
	3,724,712
71	3,724,713
113	3,724,714
CLASS 221	
4	3,724,715
47	3,724,716
155	3,724,717
267	3,724,718
279	3,724,719
CLASS 222	
55	3,724,720
70	3,724,746
83.5	3,724,721
105	3,724,722
110	3,724,723
153	3,724,724
240	3,724,725
385	3,724,726
397	3,724,727
541	3,724,728
CLASS 223	
35	3,724,729
CLASS 224	
42.1D	3,724,730
42.23	3,724,731
CLASS 226	
21	3,724,732
25	3,724,733
57	3,724,734
95	3,724,735
145	3,724,736
199	3,724,737
CLASS 227	
147	3,724,738
CLASS 228	
3	3,724,739
6	3,724,740
CLASS 229	
38	3,724,741
51BP	3,724,742
55	3,724,743
CLASS 231	
2E	3,724,744
CLASS 232	
43.2	3,724,745
CLASS 233	
3	3,724,747
21	3,724,748
CLASS 234	
18	3,724,749
CLASS 235	
61.11D	3,725,646
61.12R	3,725,647
92C	3,725,648
145R	3,724,750
151.1	3,725,685
151.11	3,725,651
	3,725,652
	3,725,654
151.12	3,725,653
151.3	3,725,650
151.32	3,725,655
151.33	3,725,656
152	3,725,684
156	3,725,649
	3,725,686
164	3,725,687
176	3,725,688
181	3,725,689
183	3,725,690
186	3,725,691
CLASS 236	
59	3,724,751
86	3,724,752
92C	3,724,753
CLASS 238	
349	3,724,754
CLASS 239	
15	3,724,755
47	3,724,756
205	3,724,757
227	Re.27,612
251	3,724,758
265.29	3,724,759
282	3,724,760
286	3,724,761
427.3	3,724,762
490	3,724,763
587	3,724,764
CLASS 240	
1.3	3,725,692
	3,725,693
6.4R	3,725,694
41SB	3,725,698
52R	3,725,695
84	3,725,696
93	3,725,697
CLASS 241	
46.06	3,724,765
100	3,724,766
186R	3,724,767
CLASS 242	
7.02	3,724,768
18DD	3,724,769
46.6	3,724,770
55.19A	3,724,771
68.3	3,724,772
107.4	3,724,773
180	3,724,774
	3,724,775
195	3,724,776
	3,724,777
198	3,724,778
	3,724,779
206	3,724,780
CLASS 244	
3.15	3,724,783
3.23	3,724,781
3.27	3,724,782
42CC	3,724,784
55	3,724,785
77G	3,724,786
110A	3,724,787
137R	3,724,788
145	3,724,789
CLASS 246	
114	3,725,699
CLASS 248	
4	3,724,790
42	3,724,791
205R	3,724,800
223	3,724,792
247	3,724,793
264	3,724,794
360	3,724,795
361	3,724,796
400	3,724,797
418	3,724,798
450	3,724,799
CLASS 249	
48	3,724,801
67	3,724,802
102	3,724,803
128	3,724,804
171	3,724,805
219W	3,724,806
CLASS 250	
41.9DS	3,725,700
43.5R	3,725,702
43.5	3,725,701
65R	3,725,703
71R	3,725,658
	3,725,659
	3,725,704
71.5R	3,725,657
83.3H	3,725,660
	3,725,662
83.6R	3,725,661
106S	3,725,663
205	3,725,664
	3,725,665
219DF	3,725,666
219DQ	3,725,667
231R	3,725,668
CLASS 251	
7	3,724,807
9	3,724,818
30	3,724,808
58	3,724,809
145	3,724,810
148	3,724,811
306	3,724,812
360	3,724,813
CLASS 252	
8.1	3,725,272
13	3,725,273
18	3,725,274
21	3,725,275
25	3,725,276
46.7	3,725,278
51.5A	3,725,279
51.5R	3,725,277
59	3,725,280
62	3,725,282
62.1	3,725,283
62.3GA	3,725,284
62.51	3,725,281
62.54	3,725,285
78	3,725,287
89	3,725,286
91	3,725,288
95	3,725,289
110	3,725,290
180	3,725,291
300	3,725,292
301.1R	3,725,293
	3,725,294
	3,725,295
	3,725,296
301.4P	3,725,297
317	3,725,298
411S	3,725,299
412	3,725,300
429R	3,725,305
430	3,725,306
431R	3,725,301
	3,725,302
439	3,725,303
441	3,725,304
455R	3,725,307
512	3,725,309
513	3,725,308
518	3,725,310
522	3,725,311
CLASS 254	
133	3,724,814
164	3,724,816
169	3,724,815
CLASS 258	
1.4	3,724,817
CLASS 259	
29	3,724,819
114	3,724,820
149	3,724,821
CLASS 260	
2BP	3,725,312
2N	3,725,342
2.1R	3,725,313
2.3	3,725,314
2.5AJ	3,725,316
2.5AW	3,725,319
2.5BD	3,725,318
2.5B	3,725,315
	3,725,320
2.5E	3,725,317
2.5R	3,725,321
3	3,725,322
17.3	3,725,323
17.4ST	3,725,324
29.1R	3,725,325
29.3	3,725,326
29.6MM	3,725,327
29.6R	3,725,328
31.8M	3,725,332
32.8R	3,725,329
33.6AQ	3,725,330
	3,725,331
38	3,725,333
	3,725,334
40R	3,725,335
41R	3,725,336
45.75K	3,725,338
45.8R	3,725,337
46.5R	3,725,339
47CP	3,725,344
47EC	3,725,345
47EP	3,725,340
	3,725,341
47UA	3,725,346
47C	3,725,343
58	3,725,349
67.5	3,725,350
75NH	3,725,354
75NK	3,725,353
75R	3,725,352
75S	3,725,348
	3,725,351
77.5AP	3,725,355
77.5CR	3,725,356
77.5NC	3,725,357
78R	3,725,358
78.5BB	3,725,359
78.5R	3,725,360
79	3,725,362
79.5B	3,725,361
	3,725,363
80.71	3,725,365
80.78	3,725,364
	3,725,366
80.81	3,725,367
84.7	3,725,368
85.1	3,725,369
	3,725,370
85.3R	3,725,371
88.2C	3,725,506
88.2D	3,725,372
88.7R	3,725,373
92.1	3,725,374
92.8W	3,725,375
94.2R	3,725,377
94.3	3,725,376
94.9E	3,725,379
94.9R	3,725,378
112.5	3,725,380
137	3,725,381
146D	3,725,382
146T	3,725,383
186	3,725,384
210AB	3,725,385
233.3R	3,725,386
	3,725,387
239B	3,725,388
239.1	3,725,389
	3,725,390
239.3A	3,725,391
239.55D	3,725,392
239.57	3,725,393
240CA	3,725,395
240F	3,725,394
240G	3,725,396
240.6	3,725,398
243C	3,725,397
	3,725,399
	3,725,400
243R	3,725,403
243	3,725,401
244R	3,725,402
	3,725,404
247.2A	3,725,405
249.5	3,725,406
250A	3,725,407
251.5	3,725,408
268BC	3,725,410
268BZ	3,725,412
268TR	3,725,409
	3,725,411
287R	3,725,413
290HL	3,725,414
292	3,725,415
293.53	3,725,419
293.58	3,725,416
293.77	3,725,417
293.86	3,725,418
294.8E	3,725,422
294.8F	3,725,420
	3,725,421
295K	3,725,423
296R	3,725,424
297R	3,725,425
301	3,725,426
302R	3,725,427
305	3,725,428
309.6	3,725,429
309.7	3,725,430
310C	3,725,431
310R	3,725,432
314.5	3,725,433
326.11	3,725,436
326.3	3,725,434
326.5D	3,725,435
340.5	3,725,437
340.9	3,725,438
397.4	3,725,439
400	3,725,440
	3,725,441
405	3,725,442
429K	3,725,443
	3,725,444
429.7	3,725,446
429.9	3,725,445
437R	3,725,447
438.5R	3,725,448
448.8R	3,725,449
453P	3,725,450
453R	3,725,452
456A	3,725,451
463	3,725,455
465D	3,725,453
	3,725,456
465.1	3,725,457
	3,725,458
465.8R	3,725,459
470	3,725,460
475P	3,725,461
479R	3,725,462
	3,725,463
482C	3,725,464
488R	3,725,454
501.11	3,725,465
502.4R	3,725,466
504A	3,725,467
514D	3,725,469
514G	3,725,468
519	3,725,470
521R	3,725,471
530N	3,725,472
534E	3,725,473
535P	3,725,474
544F	3,725,475
556AR	3,725,476
566A	3,725,477
570.5P	3,725,478
576	3,725,479
583EE	3,725,481
583P	3,725,480
604HF	3,725,483
604R	3,725,482
610B	3,725,484
621A	3,725,485
654D	3,725,486
659R	3,725,487
665R	3,725,488
666P	3,725,489
674N	3,725,490
679R	3,725,491
680B	3,725,492
680E	3,725,493
	3,725,494
683D	3,725,496
683R	3,725,495
683.15B	3,725,498
683.15D	3,725,497
683.62	3,725,499
683.68	3,725,500
824R	3,725,501
830TW	3,725,502
857TW	3,725,503
876R	3,725,504
879	3,725,505
896	3,725,507
897C	3,725,508
899	3,725,509
927R	3,725,510
940	3,725,511
946	3,725,512
951	3,725,513
964	3,725,514
978	3,725,515
CLASS 261	
43	3,724,822
69R	3,724,823
92	3,724,824
95	3,724,825
CLASS 264	
3B	3,725,516
12	3,725,517
24	3,725,518
25	3,725,519
41	3,725,520
104	3,725,521
138	3,725,522
210F	3,725,523
CLASS 266	
3R	3,724,826
15	3,724,827
21	3,724,828
34T	3,724,829
36P	3,724,830
38	3,724,831
CLASS 267	
64R	3,724,832
140	3,724,833
159	3,724,834
CLASS 269	
21	3,724,835
32	3,724,836
	3,724,837
CLASS 270	
79	3,724,838
CLASS 271	
39	3,724,839
46	3,724,840
68	3,724,841
CLASS 272	
29	3,724,842
59A	3,724,843
73	3,724,844
76	3,724,845
84	3,724,846
CLASS 273	
1R	3,724,847
	3,724,848
2	3,724,849
73E	3,724,850
85D	3,724,851
94R	3,724,852
98	3,724,853
101	3,724,855
101.1	3,724,854
131AB	3,724,856
145B	3,724,857
CLASS 274	
4D	3,724,859
4E	3,724,858
9B	3,724,860
CLASS 277	
25	3,724,861
31	3,724,862
CLASS 280	
1.177	3,724,872
5.2	3,724,863
5.28	3,724,864
7.11	3,724,865
11.13C	3,724,867
11.13W	3,724,866
11.35T	3,724,868
124B	3,724,869
150AB	3,724,870
154.5R	3,724,871
203	3,724,873
408	3,724,874
457	3,724,875
CLASS 281	
33	3,724,876
CLASS 285	
55	3,724,877
93	3,724,878

101 3,724,879
105 3,724,880
243 3,724,882
291 3,724,883

CLASS 287
52.08 3,724,884
58CT 3,724,885
189.36D 3,724,886
189.36 3,724,887

CLASS 292
74 3,724,888
87 3,724,889
322 3,724,890

CLASS 294
67R 3,724,891

CLASS 296
1S 3,724,892
23R 3,724,893

CLASS 297
284 3,724,894
348 3,724,895
369 3,724,896
446 3,724,897

CLASS 299
5 3,724,898
26 3,724,899
39 3,724,900
84 3,724,901

CLASS 301
5BA 3,724,904
37P 3,724,905
37R 3,724,906
105R 3,724,907

CLASS 302
37 3,724,908
52 3,724,909

CLASS 303
12 3,724,910
13 3,724,911
16 3,724,912
20 3,724,913
21BE 3,724,916
21CG 3,724,902
21F 3,724,914
3,724,915
21P 3,724,903

CLASS 307
95 3,725,669
117 3,725,670
141 Re.27,609
202 3,725,671
208 3,725,672
235R 3,725,673
237 3,725,674
238 3,725,675
255 3,725,676
260 3,725,677
264 3,725,678
268 3,725,679
3,725,680
273 3,725,681
3,725,682
305 3,725,683

CLASS 308
10G 3,724,918
72 3,724,917
238 3,724,919

CLASS 310
5 3,725,705
62 3,725,706
71 3,725,707
179 3,725,708

CLASS 312
184 3,724,920
237 3,724,921

CLASS 313
62 3,725,709
64 3,725,710
66 3,725,711
70C 3,725,712
108R 3,725,713
110 3,725,714
131 3,725,715
185 3,725,716
302 3,725,717
313 3,725,718
317 3,725,719
344 3,725,720

CLASS 315
5.43 3,725,721
21R 3,725,722
22 3,725,723
24 3,725,724
26 3,725,725
27GD 3,725,726
27TD 3,725,727
65 3,725,728
75 3,725,729
144 3,725,730
169R 3,725,731
209T 3,725,732
228 3,725,733
241P 3,725,734
249 3,725,735

CLASS 317
2F 3,725,736
3 3,725,737
3,725,738
16 3,725,739
3,725,740
18D 3,725,741
33SC 3,725,742
101CC 3,725,744
101A 3,725,743
104 3,725,745
120 3,725,746
123 3,725,747
146 3,725,748
234R 3,725,749
3,725,750
235R 3,725,751
3,725,752
3,725,753
235 3,725,754

CLASS 318
6 3,725,755
221C 3,725,757
237 3,725,756
269 3,725,758
467 3,725,759
568 3,725,760
577 3,725,761
591 3,725,762
600 3,725,763
629 3,725,764

CLASS 321
2 3,725,765
5 3,725,766
3,725,767
6 3,725,768
14 3,725,769
45R 3,725,770

CLASS 323
20 3,725,771
105 3,725,772

CLASS 324
.5AC 3,725,773
.5R 3,725,775
3,725,776
8 3,725,777
34R 3,725,778
51 3,725,779
3,725,780
83A 3,725,781
98 3,725,782
101 3,725,783
130 3,725,784
142 3,725,774
188 3,725,785

CLASS 325
15 3,725,786
58 3,725,787
469 3,725,788

CLASS 328
3 3,725,789
37 3,725,790
41 3,725,791
60 3,725,792
63 3,725,793
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U. S. GOVERNMENT PRINTING OFFICE : O - 1973

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R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 20, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.................... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-02-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.................... Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-10-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director.............. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-15-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	12-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.......... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-08-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director.................... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-31-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.............. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-26-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-15-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.................... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-04-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.................... Industrial Arts; Household, Personal and Fine Arts.	5-26-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director.................... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-03-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.............. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-05-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director...... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-10-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.................... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director.............. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-23-72

Expiration of patents: The patents within the range of numbers indicated below expire during April 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.................... Numbers 2,740,117 to 2,743,441, inclusive
Plant Patents.................... Numbers 1,467 to 1,471, inclusive

PATENTS

GRANTED APRIL 10, 1973

GENERAL AND MECHANICAL

3,725,953

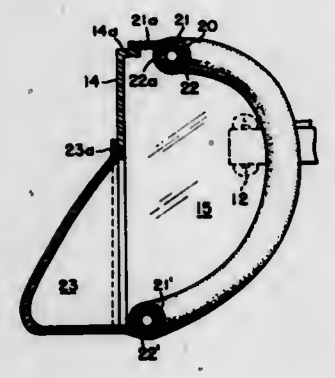
FULL VIEW DIVER'S MASK

Clarence S. Johnson, and Arthur F. Langguth, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 24, 1972, Ser. No. 220,026

Int. Cl. A61f *9/00*

U.S. Cl. 2—14 W **3 Claims**



A face mask having a rigid transparent member defining a frontal portion and two curved side portions allows for wide-angle vision with little distortion. An outwardly bulging nose portion is provided to permit a close fitting on the face and to reduce the mask's entrained mass. A resilient seal formed with an annular cross-sectional configuration is fitted about the periphery of the transparent member to ensure a sealed fitting on a number of differently contoured faces by resiliently compensating for the dissimilar facial features. Including the disclosed seal minimizes discomfort when the mask is worn for prolonged periods of time since the seal does not dig into the fleshy portions of the face.

3,725,954

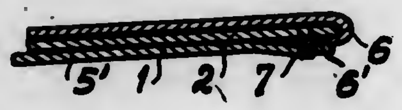
METHOD OF MANUFACTURING GARMENT COLLARS OR LAPELS

Walter Baldini, Via Raffaello Sanzio 2/A, Milan, Italy

Filed Sept. 15, 1970, Ser. No. 72,286

Int. Cl. A41b *3/00*

U.S. Cl. 2—143 **1 Claim**



An intermediate textile article for the fabrication of garment collars or lapels is produced by thermally bonding a first layer of textile material in uninterrupted surface-to-surface contact to one side of an inner layer of bonding material and by thermally bonding a second layer of textile material to the other side of the inner layer, but only at several spaced locations. The bond between portions of the inner layer and the second textile layer is thereupon destroyed to allow for insertion of a portion of an upper collar which consists of cloth and is secured to the first and second textile layers by sewing. Those portions of the inner layer and the second textile layer which are not overlapped by the inserted portion of the upper collar are bonded to each other in uninterrupted surface-to-surface contact.

3,725,955

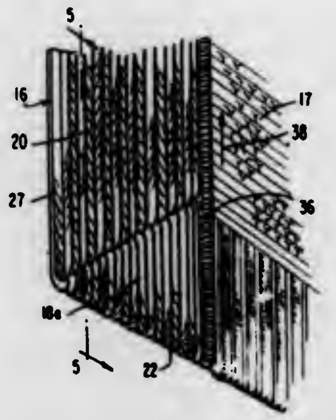
CONNECTION OF TUBULAR ELEMENT TO A GARMENT

Donald S. Grant, Des Plaines, Ill., assignor to The Merrow Machine Company, Hartford, Conn.

Filed Jan. 7, 1972, Ser. No. 216,008

Int. Cl. A41d *1/04*; **A41h** *9/00*

U.S. Cl. 2—90 **10 Claims**



A tubular garment element has a front panel folded transversely upon itself and provided with a diagonally cut end which is attached to a diagonally cut end of a foreshortened rear panel. The tubular garment element is sewn to another garment element along a line of stitching which intersects the connected diagonal ends at a point spaced from the edge of the garment to reduce the difficulty of maintaining alignment between the garment elements during sewing.

3,725,956

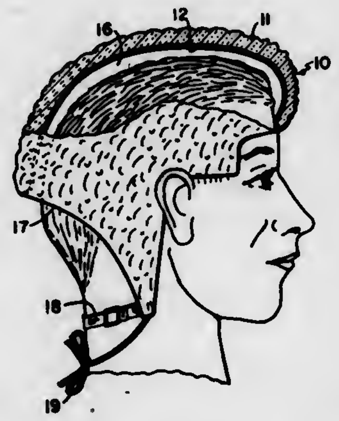
LAMINATED HELMET

Dorothy Ann Carrier Reisen, 772 Greenfield Avenue, Pittsburgh, Pa.

Filed May 11, 1971, Ser. No. 142,163

Int. Cl. A42b *1/02*

U.S. Cl. 2—200 **3 Claims**



The specification discloses a head covering in the form of a helmet of unique construction adapted for wear indoors by persons of either sex during leisure time or while sleeping. The helmet is multi-layered, with an outer layer of lambs wool, long-haired fur or other similar heat insulating material and an inner layer of woven fabric. The helmet is constructed so as to be supported at each side on the bridge of the wearer's ears and in front on the wearer's brow so as to provide an air space between the crown of the wearer's head and the inside of the helmet. The rear portion of the helmet has an essentially inverted V-shaped opening for ventilation of the space above the wearer's head within the helmet by ambient air. The two extremities of the rear portion of the helmet are held snugly to the back of the wearer's neck by an adjustable strap of elastic material connecting them. Additional tie strings sewn to the rear extremities of the helmet serve, when tied, to insure clearance between the rear portion of the helmet and the head of the wearer, notwithstanding variations in the wearer's head size.

3,725,957

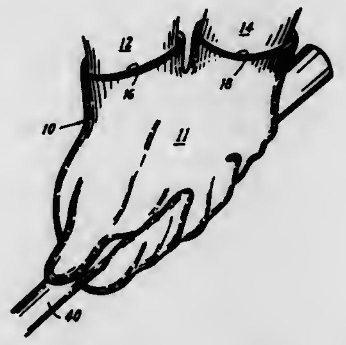
GOLF GLOVE

Albert Shotmeyer, c/o Shotmeyer Brothers Co., 10 Wagarow Road, Hawthorne, N.J.

Filed July 19, 1971, Ser. No. 163,616

Int. Cl. A41d *19/00*

U.S. Cl. 2—161 A **5 Claims**



A glove made from a suitable flexible, resilient material has a plurality of cavities or pockets to receive the hands and fingers of both hands of a golf player. The pockets are so arranged as to dispose the fingers in interrelating and interdigitating juxtaposition, and are molded to conform with the form of a golf club handle.

3,725,958

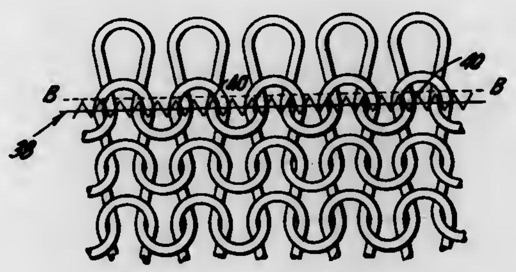
METHOD OF SEWING KNITTED FABRICS

Joseph Lawrence Katz, New York, N.Y., assignor to Alphabet Unlimited

Filed April 5, 1971, Ser. No. 130,889

Int. Cl. A41d *27/00*

U.S. Cl. 2—243 B **2 Claims**



A method which permits the cutting and home sewing of knitted fabrics. A pattern outline is traced on the knitted fabric and then the traced outline is sewn. The knitted fabric is then cut beyond the outer portion of the sewn outline. Parts of the knitted fabric prepared in this manner may be assembled into a finished garment by sewing or other means.

3,725,959

PIPED OPENING FOR USE IN GARMENTS AND METHOD OF MAKING SAME

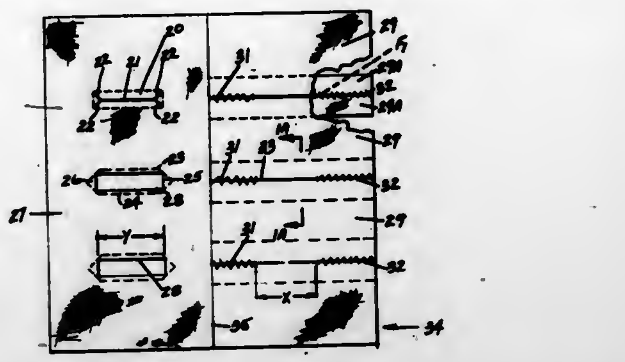
John L. Cruden, R.D. #1 Marvin Hollow Road, Walton, N.Y.

Continuation-in-part of Ser. No. 747,632, July 25, 1968, abandoned. This application Oct. 29, 1970, Ser. No. 85,025

Int. Cl. A41d *27/20*; **A41f** *1/02*

U.S. Cl. 2—247 **17 Claims**

This disclosure is directed to the piped or bound garment opening and a method of making the opening; and to a welt construction for use in making such openings. The disclosure describes the forming of an opening in a portion of a garment substantially free of raw edges, and backing such opening with an improved welt construction. The welt construction comprises essentially of a pair of complementary reversely folded welt strips suitably secured to the back side of the opening so that the reverse folds of the welt strips are contiguously disposed and extend along a medial portion of the formed opening.



3,725,960

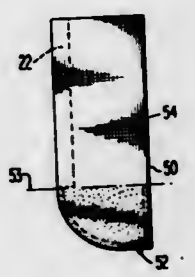
POCKET ARTICLE AND METHOD OF MAKING THE SAME

Richard H. Hall, Rt. No. 3, Old Natches Trace Road, Franklin, Tenn.

Filed Aug. 7, 1970, Ser. No. 62,096

Int. Cl. A41d *27/20*

U.S. Cl. 2—248 **1 Claim**



A one piece pocket constructed from a blank of a woven fabric essentially consisting of spaced yarns defining open areas therebetween, the blank being in the shape of a pocket pattern. The blank is folded and seamed at least along a length of adjacent overlapping free edges of the blank to define a pocket with a folded periphery and a seamed free edge periphery. The yarns of a portion of the pocket are essentially fully impregnated with a fiber locking, abrasion resistant substance to render that portion of the pocket resistant to abrasion. The blanks are cut in a conventional manner, such as simultaneously from a plurality of layers of woven material in a stack, utilizing a pattern and minimizing waste material. Impregnation of the fabric fibers may be accomplished by passing the fabric through a roller assembly in communication with treating fluid. Spraying or dipping for purposes of impregnation may also be utilized.

3,725,961

PROSTHETIC HEART VALVE HAVING FABRIC SUTURING ELEMENT

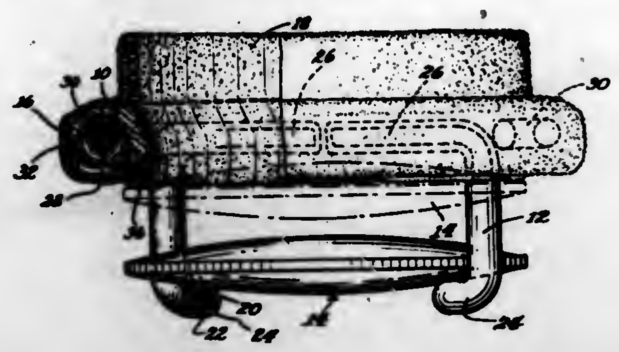
George J. Magovern, and Harry W. Cromie, both of Pittsburgh, Pa., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Dec. 29, 1970, Ser. No. 102,347

Int. Cl. A61f *1/22*

U.S. Cl. 3—1 **6 Claims**

A prosthetic heart valve is disclosed having a support ring which carries means for retaining a movable closure element in positions adjacent one side of the ring. The support ring has a fabric wrapping which defines, as a suturing element, an annular protrusion of fabric of double thickness extending from



the side of the ring which is opposite the side adjacent the closure element.

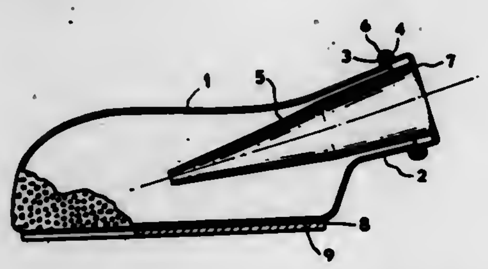
3,725,962
SAFETY URINAL

Jacques Maurice Gouget, 3 d'Auteuil Street, Paris, France
Filed Oct. 12, 1970, Ser. No. 79,944

Claims priority, application France, Oct. 15, 1969, 6935310; April 22, 1970, 7014668; July 28, 1970, 7027705; Sept. 7, 1970, 7032386

Int. Cl. A47k *11/00*; A61g *9/00*

U.S. Cl. 4—110 14 Claims



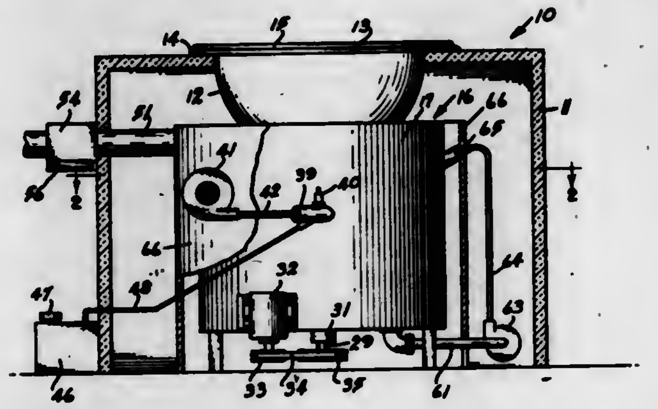
A urinal comprising a container and a hollow member having one end communicating with an opening in the container and an opposite end within the container. The member provides a passage for urine into the container and the arrangement is such that when the urinal is filled to its normal level it cannot be drained through the hollow member; it can be drained only after at least a portion thereof is appropriately destroyed.

3,725,963
LIQUID WASTE TREATING MEANS FOR INCINERATOR TOILETS

Philip C. Speer, Staten Island, N.Y., assigner to Tekmar Corporation, Stamford, Conn.
Filed Oct. 26, 1971, Ser. No. 191,974

Int. Cl. A47k *11/02*

U.S. Cl. 4—131 6 Claims



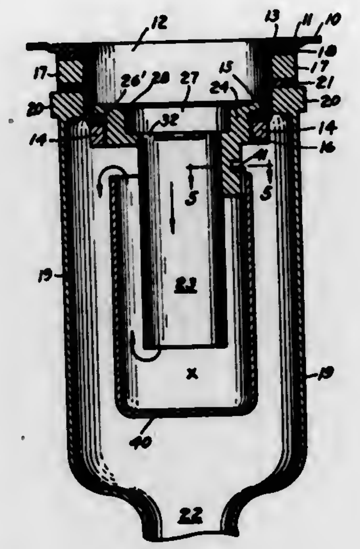
Apparatus for disposing of liquid waste matter in an incinerator toilet by evaporation of such liquid, as well as providing means for accelerating the cooling of the toilet so that the toilet can be used in a relatively short time.

3,725,964
PLUMBING TRAP

Gilbert E. Whitsett, Route 3, Box 514, Hermiston, Oreg.
Filed Dec. 17, 1970, Ser. No. 99,146

Int. Cl. E03c *1/29*

U.S. Cl. 4—197 6 Claims



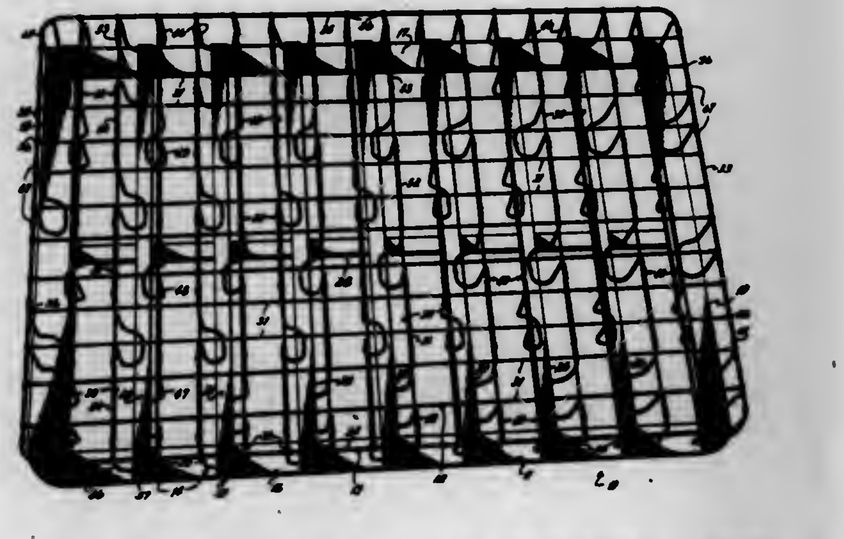
This trap can be used as a replacement for many traps now commonly used in connecting sinks and like water receptacles to drain pipes and it can be quickly and easily detached from and lifted out of the receptacle with which it is used for cleaning purposes without getting under the receptacle or disconnecting the receptacle from the drain pipe with which it is connected and when removed from the receptacle it can be quickly and easily cleaned. Small metal objects accidentally dropped into it are retained there and are readily recovered.

3,725,965
BOX SPRING ASSEMBLY

Richard A. Smith; Larry Higgins, both of Carthage, and John King, Sarcoxie, all of Mo., assignors to Leggett & Platt, Inc., Carthage, Mo.
Filed March 10, 1972, Ser. No. 233,491

Int. Cl. A47c *23/02*

U.S. Cl. 5—260 24 Claims



A box spring comprising a wooden bottom frame, a border wire, a welded top grid located within and attached to the border wire, and a plurality of modular spring units interconnecting the bottom frame and the grid. Each modular spring unit comprises a single strand of wire extending between the sides of the assembly and interconnecting the top grid to the bottom frame through a plurality of individual spring units formed in the single strand of wire. Each spring of the modular

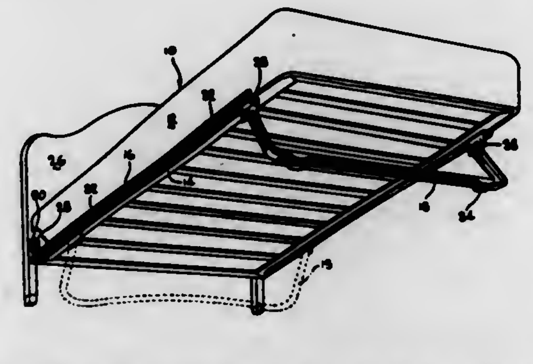
spring unit comprises a loop formed in the single strand of wire. An arcuate spring section is formed in the loop to provide the resiliency of the spring. In the preferred embodiment the modular spring units are attached to the wooden frame by staples, and the welded grid is attached to the border wire by welding the ends of the wires of the grid to the border wire and by wrapping the ends of the grid wires around the border wire.

3,725,966
BED

Raymond H. Blecker, Homewood, Ill., assignor to Simmons Company, New York, N.Y.
Filed Jan. 1[illegible], 1971, Ser. No. 107,086

Int. Cl. A47c *19/22*

U.S. Cl. 5—312 8 Claims



A bed comprising a box spring having secured to each lower side framing member of the spring frame a structural rail connected to the like rail on the opposite side of the bed by a leg structure which is pivoted to the said rails, foldable against the underside of the box spring to provide a compact package for shipment but ready for immediate use by unfolding to a locked, erected position.

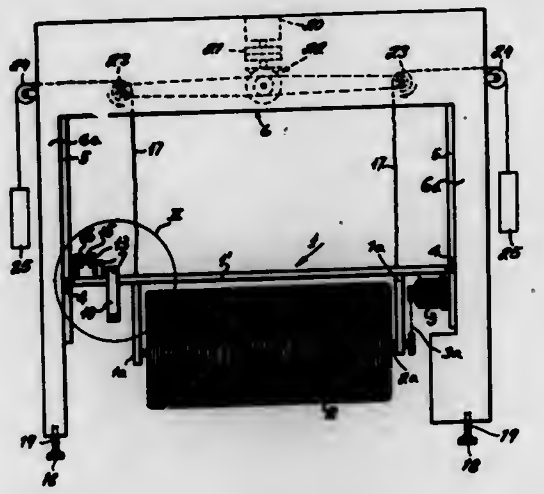
3,725,967
CONTROL SYSTEM FOR HORIZONTAL SCRUBBING BRUSH OF VEHICLE-WASHING STATION

Uberto Capra, Alte Ceccato (Vicenza), Italy
Filed May 24, 1971, Ser. No. 146,285

Claims priority, application Italy, July 10, 1970, 27254 A/70

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 E 8 Claims



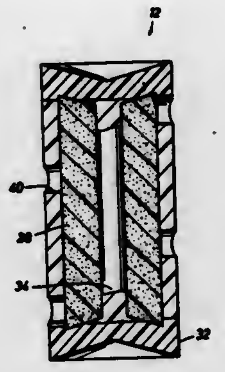
A portal frame in a vehicle-washing station has two vertical tracks engaged by a pair of coaxial rollers at the ends of a supporting bar having a horizontal scrubbing brush suspended therefrom, the brush and its support being nearly balanced by counterweights so as to rest only lightly on a horizontal vehicular surface to be scrubbed. The brush is continuously rotated in such a sense that, upon relative motion of frame and vehicle, the brush spontaneously creeps up any moderately inclined surface it encounters. Steeply inclined or vertical surfaces cause the brush support to swing about its vertical axis, in the direction of relative vehicle motion, whereupon an inclination-responsive switch cuts in a drive to elevate the brush. The switch may comprise a weighted cam carrier freely pivoted on the support and coacting with a follower mounted on the bar thereof.

3,725,968
DOUBLE-DISHED PIPELINE PIG

Mary M. Knapp, and Kenneth M. Knapp, both of 1209 Hardy, Houston, Tex.
Filed May 27, 1971, Ser. No. 147,433

Int. Cl. B08b *9/04*

U.S. Cl. 15—104.06 R 10 Claims



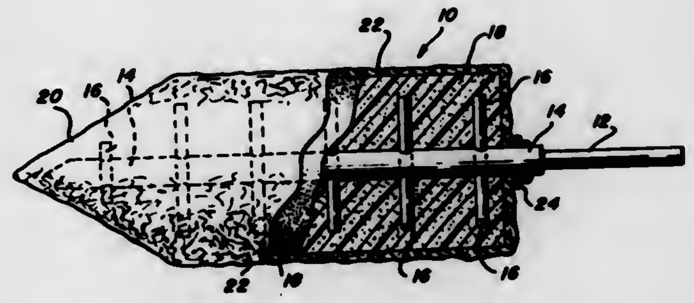
A pipeline pig having a dished face at each end, the dished face improving the wiping action of the periphery of the pig as it passes through the pipeline, there being a slightly compressible axial member cast internally of the pig extending from the dished face at one end to the dished face at the other end to protect the pig against pressure surges which tend to rupture the pig in transit in the pipeline. The invention also relates to a method of forming for such pigs.

3,725,969
POLISHING DEVICE

Edward R. Horeni, 2433 South Pulaski Road, Chicago, Ill.
Filed Aug. 10, 1971, Ser. No. 170,461

Int. Cl. A47l *11/19*

U.S. Cl. 15—230 1 Claim



A polishing device in which a generally cylindrical molded member encapsulates an elongated drive shaft to form a solid, generally cylindrical mass for supporting a polishing cloth.

3,725,970
DEVICE FOR REMOVABLY HOLDING A VEHICLE WINDSHIELD WIPER ON THE WINDSHIELD WIPER ARM

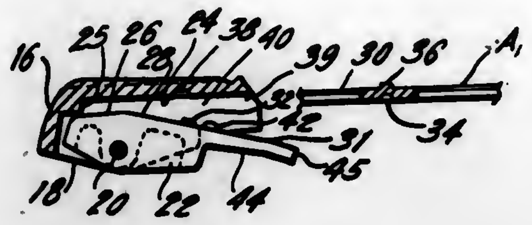
Eugenio Allaria, Milano, Italy, assignor to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy
Filed Jan. 11, 1971, Ser. No. 105,264

Claims priority, application Italy, Jan. 12, 1970, 19252 A/70

Int. Cl. B60s *1/40*

U.S. Cl. 15—250.32 8 Claims

Device for joining the windshield wiper blade to the wiper arm including a pivotable latch that pivots to snap into place



to lock the wiper arm into position and that pivots in another direction to release the wiper arm.

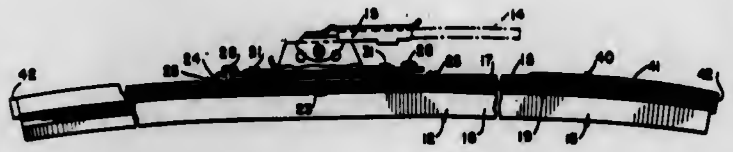
3,725,971
WINDSHIELD WIPER ASSEMBLY

William J. Quinlan, and Lawrence L. Haver, both of Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.

Continuation-in-part of Ser. No. 90,987, Nov. 19, 1970. This application Oct. 18, 1971, Ser. No. 190,067

Int. Cl. B60s *1/32*

U.S. Cl. 15—250.36 **4 Claims**



A wiper blade unit has fasteners extending through clearance apertures in an arm connector so that the blade unit may become laterally canted within limits relative to the arm connector in both wiping directions. The blade unit includes a resilient blade body having a crown portion with a cavity containing metallic leaf springs. Straps inserted into end portions of the cavity are provided with closure caps which abuttingly engage the leaf springs and prevent longitudinal movement of the springs relative to the blade body.

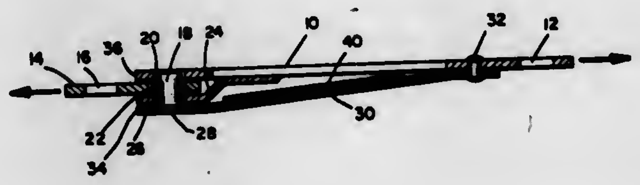
3,725,972
FIRE LINK AND METHOD OF ACTUATING SAME

Francis J. McCabe, Hollow Horn Road & Cafferty Hill, Erwinna, Pa.

Continuation-in-part of Ser. No. 103,467, Jan. 4, 1971, abandoned, and a continuation-in-part of Ser. No. 133,196, April 12, 1971, abandoned. This application Sept. 7, 1971, Ser. No. 178,111

Int. Cl. E05f *15/20*

U.S. Cl. 16—48.5 **18 Claims**



A releasable link is provided to open under predetermined conditions; said link having the capacity to be reset under predetermined temperature conditions. The link includes a bimetallic element for effecting opening and closing. The link may also include heating means for actuating the bimetallic element, and secondary circuit control means for actuating signals or controlling current to the heating means.

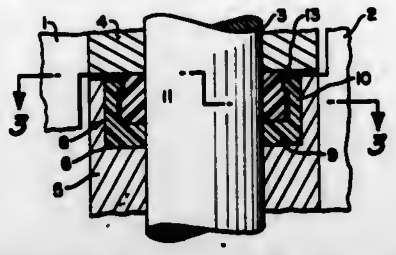
3,725,973
HINGE WITH RADIAL AND THRUST BEARINGS

Joseph W. Gwozdz, Clark Summit, Pa., assignor to McKinney Manufacturing Company, Scranton, Pa.

Filed Oct. 28, 1970, Ser. No. 84,589

Int. Cl. E05d *11/04*; **B65d** *7/48*

U.S. Cl. 16—136 **12 Claims**



A hinge leaf knuckle has in at least one end a socket around the pin that connects two leaves together. Fitting in this socket around the pin is a thrust bearing retainer that has a base engaging the inner end of the socket and the pin to form a radial bearing. The retainer side wall is spaced from the pin. A thrust bearing is disposed in the retainer around the pin and projects from the socket and retainer into engagement with the adjoining knuckle. At least one of these bearings is an anti-friction plastic. Preferably, both are.

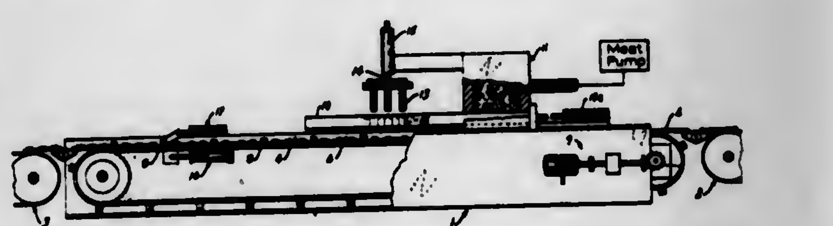
3,725,974
MOLDABLE FOOD DEPOSITING APPARATUS

Harvey G. Kuhlman, 21466 Silver Spring Rd., Menomonee Falls, Wis.

Filed April 27, 1970, Ser. No. 32,029

Int. Cl. A22c *7/00*

U.S. Cl. 17—32 **5 Claims**



A transfer plate having metering openings is slidably mounted between a pressurized meat source and a plurality of hollow transfer pins within which heaters are mounted. An air cylinder unit is coupled to momentarily jog the push bars, and a second fluid cylinder motor means is interconnected to the supporting bed to simultaneously jog the bed and then wipe the meat patties from the ends of the pins. Alternatively, an air chamber is mounted on top of the meat chamber connected by air tubes to bottom openings in the meat chamber. The metering plate selectively aligns the filled openings with the air tubes to positively force the patties onto the bases. The meat patties may also be transferred by rapidly moving the pins downwardly into engagement with a resilient means which stops the pins in spaced relation to the bases to cause the meat pattie to transfer under the inertia forces.

3,725,975
APPARATUS FOR HIGH SPEED STRIPPING OF CARDED COTTON WEBS

Andre Varga, Toronto, Ontario, Canada; John M. J. Varga, Brighouse, and George Marshall, Huddersfield, both of England, assignors to Carding Specialtists (Canada) Limited, Toronto, Ontario, Canada

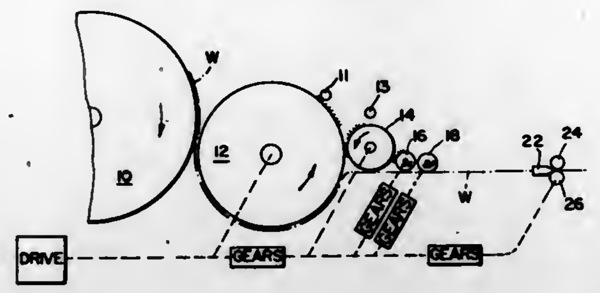
Continuation of Ser. No. 520,537, Dec. 6, 1965, abandoned, which is a continuation of Ser. No. 206,812, July 2, 1962, abandoned. This application Sept. 19, 1968, Ser. No. 766,365

Claims priority, application Great Britain, July 20, 1961, 26,271/61

Int. Cl. D01g *15/46*

U.S. Cl. 19—106 R **5 Claims**

An apparatus for converting carded fibers into a web comprises a card clothed doffer, a card clothed stripper roll, and a bare roll mounted respectively one after the other in the direction of movement of the web. The stripper roll is mounted with its teeth close to, but without penetrating, the teeth of the doffer so that the teeth of the stripper roll engage the fibers on the doffer for transferring the fibers from the doffer to the stripper roll. Means are provided, for detaching the fibers from the stripper roll in the form of a web, comprising a pair of superposed bare rolls rotating at a speed higher than that of the stripper roll and gripping the web therebetween to pull on the web with a force sufficient to detach it from the stripper roll.



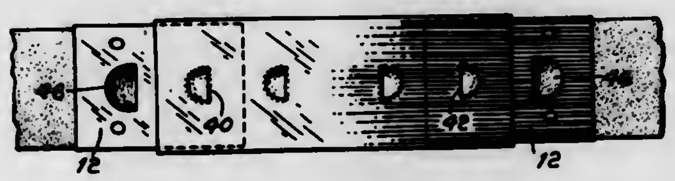
3,725,976
DETACHABLE ADJUSTABLE DRIVE BELT

Graeme J. MacKeown, 1100 Parsippany Boulevard, Apt. 30, Parsippany, N.J.

Filed July 20, 1971, Ser. No. 164,318

Int. Cl. F16g *7/02*

U.S. Cl. 24—31 C **10 Claims**



A drive belt used for power transmission, such as an automobile fan belt, has metal bands secured around the side walls at opposite ends. In one embodiment, the bands have shaped openings or slots in thin metal walls extending beyond each end of the belt. A metal connector sleeve having like shaped wedged embossments or depressions in corresponding side walls is adapted to slidingly engage the bands at the opposite ends of the belt and interlock with the openings to provide a secure coupling and form a detachable continuous belt. A plurality of such shaped embossments spaced along the sleeve at opposite ends permit selection of different lengths for the connected belt which can be adjusted for varying size requirements. Worn, loose and broken belts can thus be easily replaced or tightened without difficult mechanical operations and only a limited stock of belts can accommodate a wide range of different sizes.

3,725,977
LAMINATE LEATHER BUTTON WITH PRONG-TYPE ANCHOR

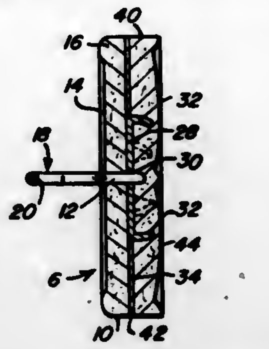
Max Wolfeld, Dobbs Ferry, N.Y., assignor to Hemisphere Novelties, Inc., New York, N.Y.

Filed June 28, 1971, Ser. No. 157,370

Int. Cl. A44b *1/24, 1/04*

U.S. Cl. 24—90 TB **5 Claims**

A composite leather button characterized by symmetrical inward and outward laminations having confronting adhesive-coated mating faces adhesively bonded face-to-face. A readily applicable shank is provided and is preferably of a cotter-pin type and is, accordingly, provided at one end with an attaching eye accessibly located beyond the garment confronting face of the inward lamination and is adapted, to be sewed to the garment. Novel means is sandwiched between confronting faces of the laminations and functions, to prevent the laminations from accidentally coming apart and separating under ordinary circumstances and particularly when subjected to agitation,



that is, while the button is being dry cleaned and during which time the adhesive media may be undesirably subjected to deleterious chemicals.

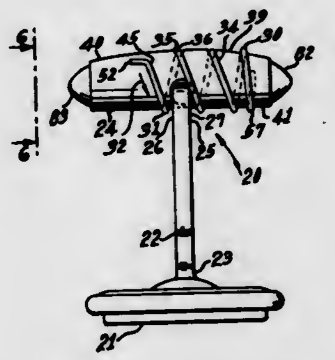
3,725,978
CUFF LINK LOCK

Lawrence E. Bodkin, 1833 Ryan Road, Jacksonville, Fla.

Filed May 3, 1971, Ser. No. 139,790

Int. Cl. A41c *19/00*

U.S. Cl. 24—97 **23 Claims**



The lock includes a spiral member surrounding the cuff link pivot arm, the member being movable into an operative position in the way of both sides of the cuff link post and into an inoperative position clear of one side of the post to permit free pivoting of the arm. In one embodiment the member has portions disposed in an arm guideway and an end portion engages spaced shoulders on the arm to inhibit inadvertent removal therefrom, while in another embodiment no guideway is provided and opposite end portions of the member prevent inadvertent removal from the arm.

3,725,979
BUTTON

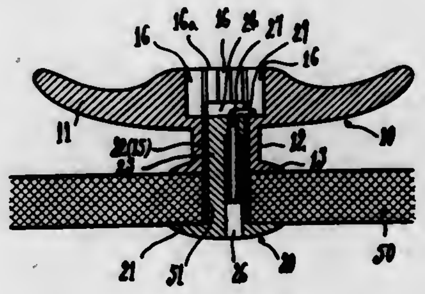
Shigeru Otsuru, 12-3 Kandacho, Higushi, Osaka, Japan

Filed Oct. 8, 1971, Ser. No. 187,751

Claims priority, application Japan, Dec. 31, 1970, 45/126517

Int. Cl. A44b *1/30*

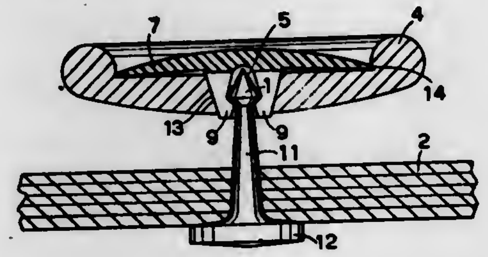
U.S. Cl. 24—105 **1 Claim**



A button comprises in combination a main body and a holding member to be screwed thereinto for securing the main body to the fabric of clothing or the like. An arrangement for locking the main body and the holding member in screw-thread engagement as desired is provided therebetween so as to keep the button secured in position without using thread or sewing.

3,725,980
SEPARABLE BUTTON ASSEMBLY

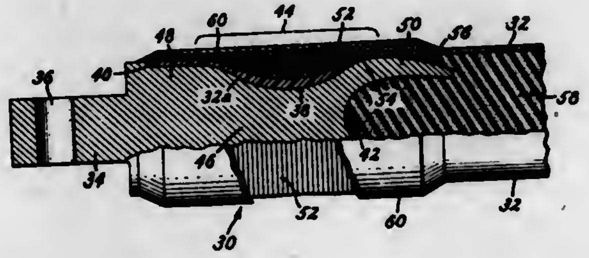
Antonio Burgio, P.za Arduino, Milan, Italy
Filed Feb. 17, 1971, Ser. No. 115,983
Claims priority, application Italy, Feb. 24, 1970, 21077 A/70
Int. Cl. A44b *1/38, 1/04*
U.S. Cl. 24—108 4 Claims



A button structure is disclosed, which can be applied to, and removed from, any fabric or garment without sewing or unstitching operations, the structure comprising a pointed stem adapted to penetrate a fabric and having a retaining base portion, a capsule which is composed by a button shield and a recessed boss integral therewith, the recess of the boss being capable of holding the pointed end of the stem by elastic reaction. The button structure successfully withstands virtually any pulling force tending to remove the button from the fabric. The subject structure can be easily dismembered whenever so desired, by merely pressing the component parts, i.e. the capsule and the stem together.

3,725,981
JOINT CONSTRUCTION AND METHOD OF FABRICATION

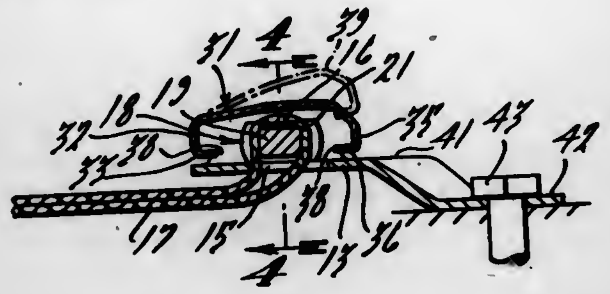
Robert L. Pinckney, Glen Mills, Pa., assignor to The Boeing Company, Seattle, Wash.
Filed Oct. 7, 1970, Ser. No. 78,727
Int. Cl. F16g *11/00*
U.S. Cl. 24—122.3 11 Claims



A structural joint construction for connecting a first member of composite material to a second member which may be of composite material or of some other material. The construction enables tensile, compressive, torsional, and bending loads to be transmitted from the first member to the second member with a high degree of efficiency. One end of the first member is in abutting relationship with a free end of the second member such that a plurality of ends of first filament material integral with the core extends beyond its end and overlies the outer surface of the second member. The outer surface of the second member is contoured to include a central portion of minimal cross-sectional area bounded by opposing portions of greater cross-sectional areas. Other filament material is wrapped around the first filament material in a direction transverse to the axes of the first and second members such that the ends of the first filament material conform to the contour of the outer surface of the second member and are held fast to the second member.

3,725,982
BELT ADJUSTER

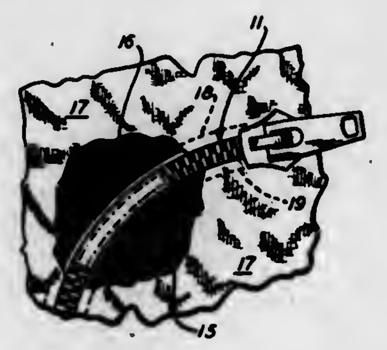
Robert C. Fisher, 580 E. Long Lake Road, Bloomfield Hills, Mich.
Filed June 9, 1971, Ser. No. 151,273
Int. Cl. A44b *11/10*
U.S. Cl. 24—196 2 Claims



A belt adjusting and locking device has a channel shaped housing embodying a base web and upstanding sides. A spool-like belt bar has a rectangular central portion and end walls located above a rectangular aperture in the base web. An inverted channel shaped cover plate is forced down over the upstanding sides of the housing to enclose the bar and a belt loop extending through said aperture and about said bar.

3,725,983
SLIDE FASTENER

Victor E. Selvaggi, 1631 83rd St., Brooklyn, N.Y.
Filed Jan. 21, 1971, Ser. No. 108,285
Int. Cl. A44b *19/04*
U.S. Cl. 24—205 R 8 Claims

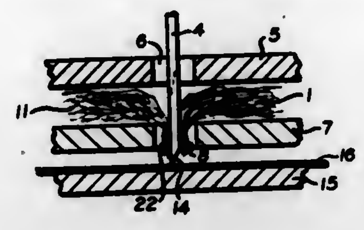


A slide fastener for attachment in a non-linear course, without puckering, in which the tapes are capable of planar, multiform, elongation by virtue of being formed of loosely-woven, bias-woven strips of slick, wiry filaments, the interstices in the weave decreasing or enlarging in response to arcuate planar deflection of the slide fastener.

3,725,984
PROCESS AND APPARATUS FOR THE MANUFACTURE OF PILE FABRICS

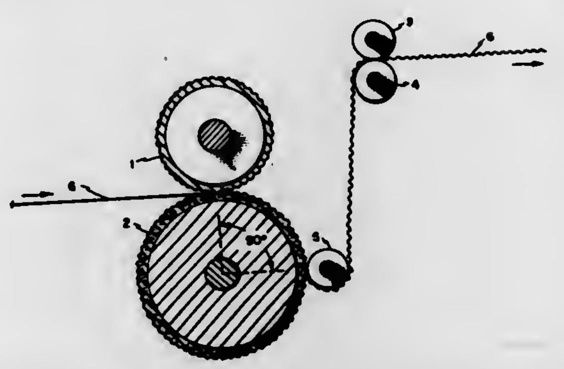
Adolf Wilhelm Graber, Thuringer Str. 1, Wald-Olling/Bergstr., Germany
Filed Aug. 26, 1971, Ser. No. 175,112
Claims priority, application Germany, Sept. 2, 1970, P 20 43 465.5
Int. Cl. D04h *15/00*
U.S. Cl. 28—4 R 9 Claims

Improvements in the art of making pile fabrics by needle looming a non-woven fabric. The conventional needle loom is modified to use needles in which the conventional barbed end is replaced with a knife edge end so that a filament or fiber pushed out of the non-woven fabric by the needle is cut as the needle reaches its maximum throw between the needle knife edge and an anvil means placed below the tufting plate. The anvil means provides a surface against which to cut the filaments or fibers which are needled into the "pile" position at substantially uniform pile length. A disposable material such as paper or the like may be disposed on the anvil for the needle and knife edge to bear against.



3,725,985
APPARATUS FOR IMPARTING CRIMP TO TEXTILE MATERIALS OF THERMOPLASTIC YARN

Harold Dean Yarber, Wallace, N.C., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Filed May 27, 1971, Ser. No. 147,559
Int. Cl. D02g *1/14*
U.S. Cl. 28—1.8 10 Claims

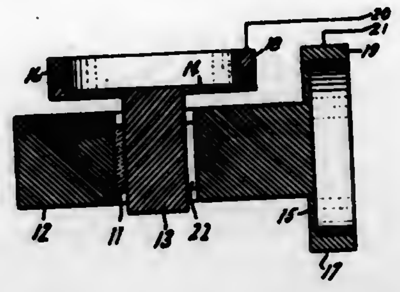


Thermoplastic textile material, either fabrics or yarns, are crimped by passing through a pair of crimping elements, one of which is a heated, engraved, metal roll and the other preferably an unheated roll which has the engraving embossed in it, but instead of leaving this second element after crimping it runs along this element for a considerable distance sufficient to cool the thermoplastic material to its setting point. Preferably where the embossed element is an embossed roll the textile material is carried in the depressions of the roll by a takeup roll or guide positioned below the plane of crimping. After passing over this takeup roll or guide, the material then goes between a pair of conventional outfeed rolls. As the material is heated by the heated roll and softened, it is supported for a longer portion of the periphery of unheated mating roll until it has cooled to a temperature at which the yarn reached its setting temperature, i.e., has lost most of its thermoplasticity and no longer stretches significantly under the very slight tension of outfeed. The result is that the crimp amplitude is maintained more uniform and is deeper, for example 0.03 inch instead of 0.02 inch. This increases bulk and improves dyeability.

3,725,986
METHOD OF MAKING POWER TRANSDUCERS

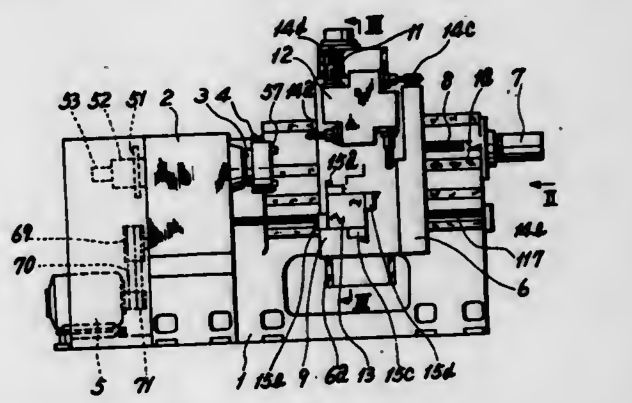
Leo Hoogenboom, Ballston Lake, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.
Division of Ser. No. 26,950, April 9, 1970, Pat. No. 3,657,581. This application Nov. 8, 1971, Ser. No. 196,628
Int. Cl. B01j *17/00*; H04r *17/00*
U.S. Cl. 29—25.35 11 Claims

A method of making a power transducer device by thermally shrink-fitting a transducer element and a metallic transducer element support member within an opening in a metallic supporting body member so that the body member, the transducer element and the transducer element support member are disposed in a mechanical interference-fit stress producing relationship with each other to subject the transducer element to, and maintain it at, a desired compressive loading.



3,725,987
MACHINE TOOL WITH SPACED TURRET HEADS MOUNTED ON A CROSS SLIDE

Mikichi Kurimoto, Nagoya; Yoshiki Ochiai, Okazaki; Kenji Nomura, Aichi-ken, and Akira Tsubei, Hekinan, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed Oct. 13, 1971, Ser. No. 189,051
Int. Cl. B23b *7/04*
U.S. Cl. 29—27 C 12 Claims

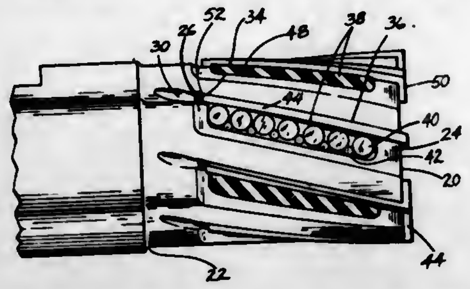


A machine tool is provided with two turret heads indexably mounted in spaced relation on a common carriage. One of the turret heads rotatably mounts a plurality of tool spindles for drivingly receiving rotary cutting tools. The other of the turret heads fixedly supports a plurality of stationary cutting tools. The tool spindles are rotated by a driving device having a power source common to a workpiece driving device wherein the workpiece is rotatable about its own axis. The common carriage is movable either in the axial direction or in the radial direction of the workpiece. An indexing device is selectively connected to a main spindle mounting the workpiece supporting device for angularly indexing the workpiece and another indexing device selectively indexes the turret heads for angularly positioning a desired tool in a machining zone.

3,725,988
TOOL

Elwin Sunderman, Inglewood, and Merle Hilliard, Los Angeles, both of Calif., assignors to Sennet Tool and Manufacturing Company, Hawthorne, Calif.
Filed Dec. 7, 1970, Ser. No. 95,539
Int. Cl. B26d *1/00, 1/12*
U.S. Cl. 29—105 R 20 Claims

A cylindrical support for a cutting tool is provided with a plurality of grooves. A series of alternate sized cylindrical rollers are mounted in each groove and the cylindrical rollers are all in abutting relationship to each other. In addition, a helical cutting blade is mounted in each groove with one surface of the cutting blade bearing against a support wall of the groove and the other surface of the cutting blade facing and abutting the larger cylindrical rollers in each groove. The smaller cylindrical rollers in the grooves bear against the wall of the groove opposite to the wall that the cutting blade bears against. Each groove is provided with a threaded bore extending parallel to a longitudinal dimension of the groove. A set screw is threadedly mounted in each bore. The inner end of the set screw bears against the end cylindrical roller in each of the series of rollers. By screwing the set screw inwardly against the end roller the cylindrical rollers move relative to each other and transverse to the direction of the force exerted by the screw so that they move against the helical blade at spaced distances along the length of the blade forcing the helical blade against the supporting wall of the groove and locking the blade in the groove.



This invention relates generally to a tool and more particularly to a mounting structure for helical carbide blades on a cutting tool.

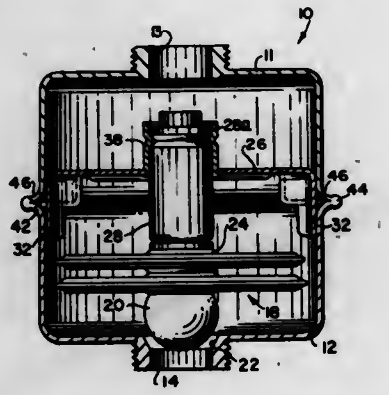
3,725,989
STEAM TRAP

Samuel J. Reid, Winchester; Edward J. Mullett, Melrose, and John B. Hogan, Milton, all of Mass., assignors to Barnes & Jones, Inc., Newtonville, Mass.

Filed Feb. 16, 1971, Ser. No. 115,604

Int. Cl. F16t *1/10*

U.S. Cl. 29—157.1 R **1 Claim**



A metal steam trap comprising a relatively light metallic housing including a thermally responsive valve. The valve is held in a generally concentric relationship with the housing by means of a support bracket adapted for a friction fit with the housing. The bracket also includes a plurality of horizontally projecting tabs arranged to aid in the proper vertical positioning of the valve. In the preferred embodiment of the invention the metallic housing contains not more than about 60 percent of the total mass of the trap.

3,725,990
METHOD FOR MAKING NON-RETURN VALVES

Jorgen Hartvig Petersen, Nordborg, and Leif Viggo Sturlason, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

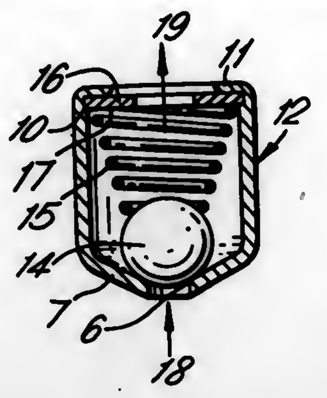
Filed May 12, 1971, Ser. No. 142,553

Claims priority, application Germany, April 30, 1970, P 20 21 283.3

Int. Cl. B21d *53/00*

U.S. Cl. 29—157.1 **4 Claims**

The invention relates to a one-way valve and to a method for manufacturing a one-way valve. The method involves drawing a cup-shaped housing from sheet metal in several stages and punching a valve seat in the bottom of the cup. A shoulder is formed in the housing by means of a profiled drawing mandrel and by fitting a washer against the shoulder to serve as a backing member for a tapered spring.



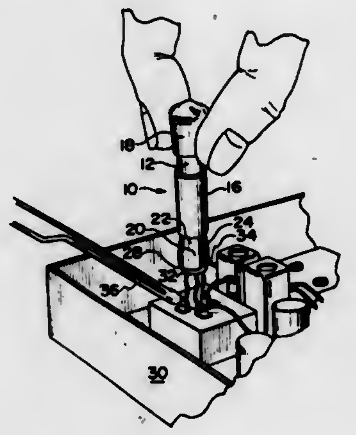
3,725,991
CIRCUIT BOARD TOOL

Leonard J. Lynch, 939 South Seventh Street, Dekalb, Ill.

Filed Oct. 26, 1971, Ser. No. 192,086

Int. Cl. H01r *43/00*

U.S. Cl. 29—203 H **10 Claims**



This circuit board tool is designed to hold many different outlines of transistors, resistors and capacitors and not only enables removal of such components from a cluster of closely spaced components, being only approximately 0.028 inches over the dimensions of the component, but acts as a heat transfer radiator or heat sink in a soldering operation. When the tool is clamped in place, both hands of the operator are free to solder or unsolder leads, and with the tool still holding the component, a slight pull on the tool will remove the component when the leads are free. Diametrically opposed slots between the jaws on the one end of the tool allow wire terminals of the component to extend outwardly for soldering or unsoldering while the jaws grip the component, being forced against the component by a sleeve that slides over a taper near the jaws to move the jaws together. A knob of heat-resistant insulating material on the other end of the tool retains the slidable sleeve in place and limits its travel, while providing a good grip.

3,725,992
VEHICLE WHEEL MANUFACTURING APPARATUS

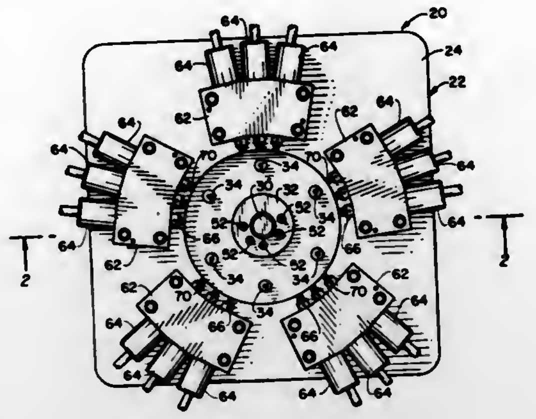
Dalton M. Davis, 3433 Via La Selva, Palos Verdes Estates, Calif.

Filed March 11, 1971, Ser. No. 123,329

Int. Cl. B23p *19/04*

U.S. Cl. 29—208 D **17 Claims**

A vehicle wheel manufacturing apparatus to connect a wheel rim and a spider by accurately press fitting the spider into the rim and then cold working portions of the rim into a plurality of depressions within the periphery of the spider. The cold working is accomplished by a separate actuator for each portion with the manifold assembly connecting together all of the actuators so the actuators all act simultaneously.

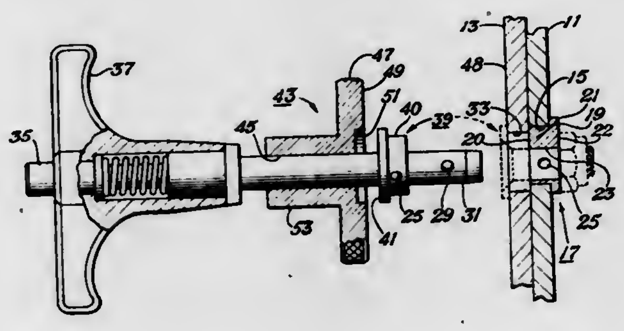


3,725,993
FASTENER ALIGNMENT MEANS WITH ADJUSTMENT BUSHING

Joseph T. Siler, 1678 Columbia Drive, Mountain View, Calif. Continuation-in-part of Ser. No. 785,323, Dec. 19, 1968, Pat. No. 3,590,461. This application Dec. 14, 1970, Ser. No. 97,540

Int. Cl. B25b *27/14*

U.S. Cl. 29—271 **2 Claims**



Following are disclosed methods and apparatus for facilitating the alignment of the eccentric bores of "work side" and "blind side" bushings used in the misaligned, fastener receiving holes of structural members. A shaft is sized to extend into the eccentric bores, and a latch element is laterally carried by the shaft and adapted to extend into, and retract from at least one indentation in the bore of a selected bushing for rotational orientation thereof. An adjustment bushing is carried by the shaft and has a uniform cylindrical wall thickness equal to the minimum wall thickness of the work side bushing. An alignment collar is also carried by the shaft and has an aperture that receives the shaft, the collar having a larger diameter than the diameter of an engaged bushing to enable application of torque and visual reference for detecting axial angularity misalignment between said bushing and its receiving hole in the structural member. When used with the alignment collar, the adjustment bushing gauges and establishes the position of the blind side bushing to enable insertion of the work side bushing and a fastener in a more efficient manner without need for additional rotation of either the blind side or the work side bushing. Hence, the work side and blind side bushings may be accurately aligned through the utilization of both the alignment collar and the adjustment bushing.

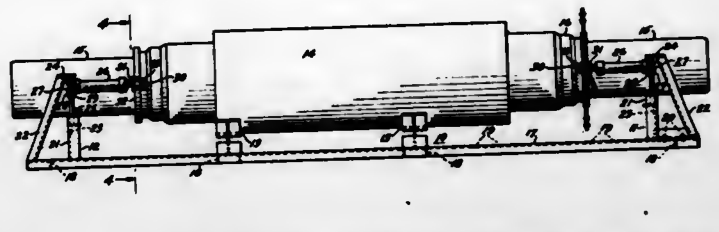
3,725,994
METHOD OF SHRINKING COLLARS ON A SHAFT

Richard L. Wechsler, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 6, 1970, Ser. No. 61,531

Int. Cl. B23p *11/02*

U.S. Cl. 29—447 **2 Claims**



Method and apparatus for shrinking a metallic collar onto a shaft, with means provided for applying a coolant to the circumference of the collar while maintaining pressure thereon.

3,725,995
MOULDING PLASTIC ARTICLES

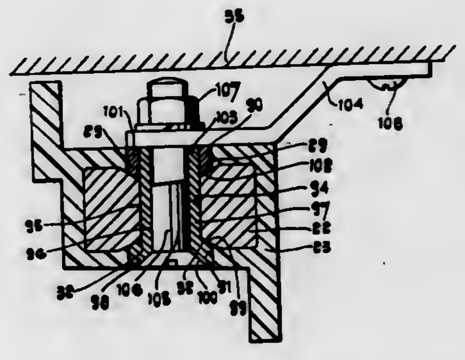
Herbert John Sharp, Greenford, and Victor William Stanley Humphrey, Radlett, both of England, assignors to GKN Sankey Limited, Bilston, Staffordshire and Aro Plastic Building Supplies Limited, London, both of England

Filed May 3, 1971, Ser. No. 139,379

Claims priority, application Great Britain, May 5, 1970, 21,522/70

Int. Cl. B23q *17/00*

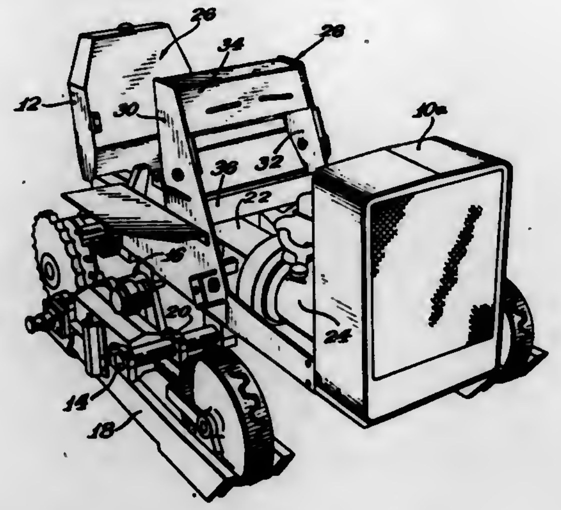
U.S. Cl. 29—407 **5 Claims**



The specification discloses a method of making an aperture-defining frame member e.g. a window frame, comprising a rigid, frame-shaped reinforcement embedded in synthetic resinuous material. The method comprises placing the reinforcement in a mould cavity having the shape of the required frame member, at least partly locating the reinforcement in the cavity by engaging the reinforcement between a plurality of pairs of pin-like projections, the projections of each pair extending from the cavity walls in opposite directions and being located directly opposite to one another, filling the mould cavity with synthetic resinuous material to embed the reinforcement therein while the reinforcement is located in the cavity by the projections, subsequently opening the cavity and withdrawing the projections from the completed frame member after moulding of the member is complete thus to leave bores in the material at the positions occupied by the projections during moulding, providing an aperture through the reinforcement in alignment with the bores left by at least one pair of projections and fixing a bushing to extend through said bores and said aperture, the bushing being in sealing engagement with said bores. The bushing may be used to receive a fastener to secure the frame member to another member and the bushing may be in two parts, a first part having a hollow shank with a collar at one end thereof and a second part arranged to engage the end of the shank remote from the collar.

3,725,996
PROCESS OF MANUFACTURING FIRST AND SECOND TRACTOR VEHICLES FOR DIFFERENT WORK IN THE FIELD

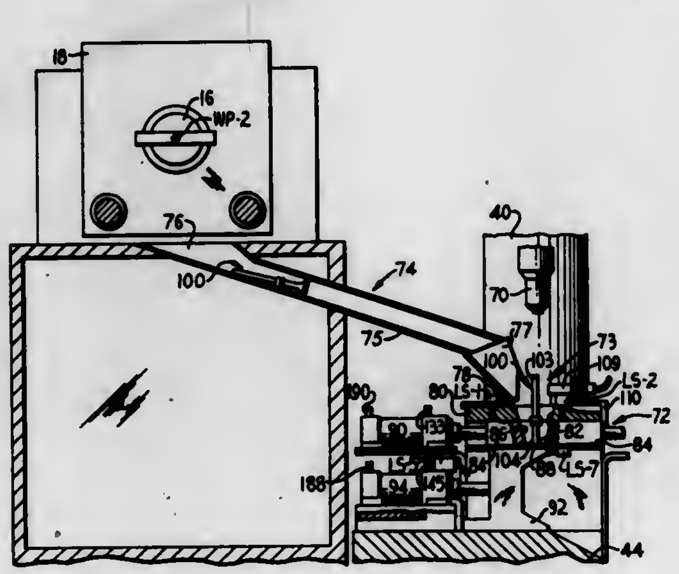
Frederick A. Skanes, Burlington; Roy O. Ayranto, Grimsby, and Ronald G. Kraemer, Mitchell, all of Calif., assignors to International Harvester Company, Chicago, Ill.
Filed Sept. 11, 1969, Ser. No. 857,109
Int. Cl. B23p *19/00*
U.S. Cl. 29—428 **1 Claim**



Crawler dozer and crawler loader having a common design in which the same basic upright frame in the center serves as the implement-linkage mounting structure and, at the same time, forms an integral part of the crawler tractor body. The frame is an A-frame disposed in a transverse vertical plane. It has two double walled legs in the case of the loader and, in either case, has side plates forming those two legs of the frame and clamped at four points on front and rear tractor gage bars by individual, longitudinally and transversely spaced apart, clamping joints.

3,725,997
METHOD FOR FLASH REMOVAL FROM HEAT AND PRESSURE WELDED ARTICLES

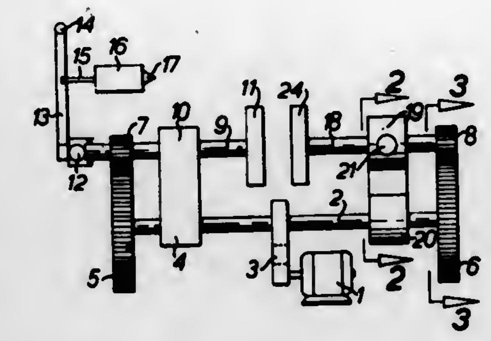
Jozef Kiwalle, Peoria; Paul H. Merritt, East Peoria, and Edward J. Sluetz, Peoria, all of Ill., assignors to Production Technology Inc., Peoria, Ill.
Filed Jan. 28, 1971, Ser. No. 110,558
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **11 Claims**



Flash is removed from a friction welded article while the flash still has residual heat from the welding operation. The welded article is rapidly transferred from the weld zone to a flash removal tool after the weld is made. The flash removal tool is automatically actuated as the article is transferred to the tool.

3,725,998
FRICTION WELDING

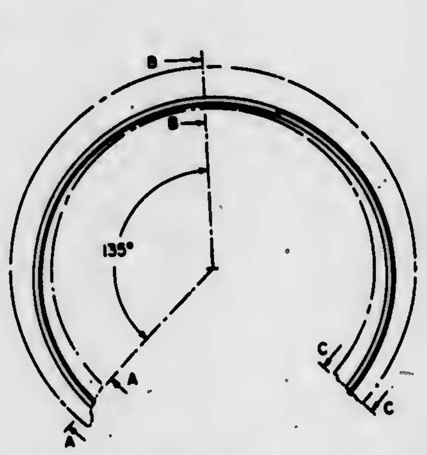
John Gilbert Searle, Hednesford, England, assignor to Allwood, Searle & Timmney Limited, Digbeth, Walsall, Staffordshire, Great Britain
Filed March 17, 1970, Ser. No. 20,376
Claims priority, application Great Britain, March 18, 1969, 14,134/69
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **6 Claims**



In friction welding the two components to be welded are rotated about spaced parallel axes at the same angular velocity and in the same rotational sense. Adjacent end faces of the components rub against each other so that heat is generated. When welding temperature is reached the rotational axes of the components are aligned and the components are pressed together, normally while still rotating, to effect welding.

3,725,999
METHOD OF PRESTRESSING CONCRETE PRESSURE TANKS

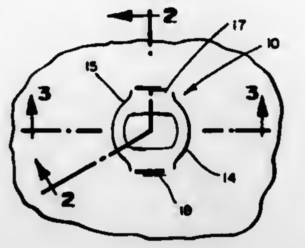
Max Birkenmaier; Antonio Brandestini, both of Sophienstrasse 16, Zurich, Switzerland; Mirko Robin Ros, deceased, late of Zurich, Switzerland; Erika Emma Ros nee Marti, Schwendenhausstrasse, 8702 Zollikon ZH, Switzerland; Franziska Jelena Saager nee Ros, Schwendenhausstrasse, 8702 Zollikon ZH, Switzerland, and Cornelia Erica Ros, Schwendenhausstrasse 9, 8702 Zollikon ZH, Switzerland (heirs)
Continuation-in-part of Ser. No. 667,402, Sept. 13, 1967, abandoned. This application Aug. 12, 1970, Ser. No. 63,170
Claims priority, application Switzerland, Sept. 14, 1966, G 13369/66
Int. Cl. B21d *39/00*
U.S. Cl. 29—505 **5 Claims**



A method of preparing parallel-wire cable for use in prestressed concrete pressure tanks comprises the steps of cutting the cable in lengths with each wire of equal length, twisting the lengths of cable at least twice about the longitudinal axis of the cable, and preferably from two to five times, and positioning the lengths of cable within the tank wall prior to stressing the cable. The cable is preferably twisted before it is placed in position in the tank. However, it may be twisted after insertion into passageways within the concrete wall of the tank.

3,726,000
MEANS FOR FASTENING OVERLYING METAL SHEETS

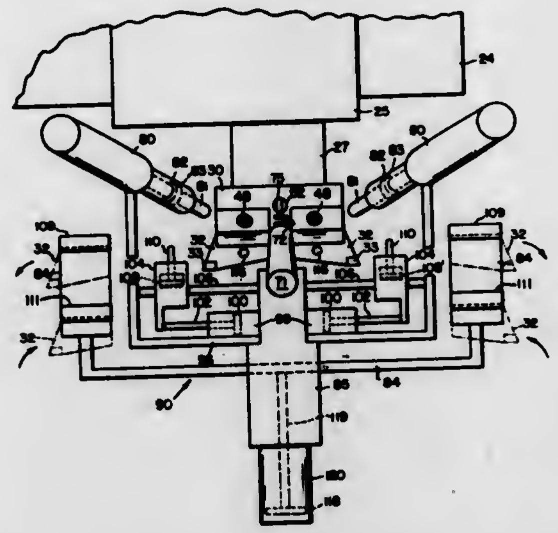
Otto Paul Hafner, 1321 Paddock Way, Cherry Hill, N.J.
Filed May 25, 1971, Ser. No. 146,639
Int. Cl. B23p *17/00*
U.S. Cl. 29—21.1 **8 Claims**



A longitudinally extending pierce and forming punch having a free end face is mounted on the base of a double-acting press that has first and second independently actuatable rams. Rigidly mounted on the first ram is a pierce and forming die having a punch receiving aperture into which the pierce and forming punch is receivable when the first ram is actuated. De-actuation of the first ram clears the die from the pierce and forming punch exposing its free end face. A flattening punch rigidly mounted on the second ram is slideably mounted in the punch receiving aperture in the die and is cooperable with the end face of the pierce and forming punch when the second ram is actuated.

3,726,001
QUICK CHANGE TOOLING

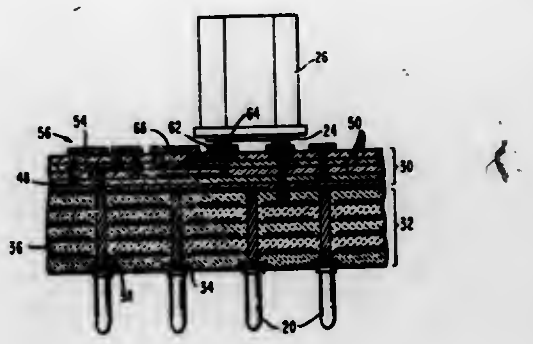
George B. Anderson, Rochester, and Derek Aspin, Henrietta, both of N.Y., assignors to USM Corporation, Rochester, N.Y.
Filed Feb. 18, 1971, Ser. No. 116,513
Int. Cl. B23q *3/155*
U.S. Cl. 29—568 **10 Claims**



A pair of tool blocks is mounted at opposite sides of the shank of each ram of a boring mill. Each tool block is formed with a tongue or projection that engages in a groove in the shank; and the two tool blocks are releasably held in place by clamps and a rotatable clamping bar. The clamping bar is basically cylindrical but has two axially spaced tongues projecting from its periphery, each extending part-way only around its periphery. The tongues locate the tool blocks laterally on the shank. The clamping bar transmits pressure from the clamps to the tool blocks to press the tool blocks against right angular shoulders that are formed on the ram shank to lock the tool blocks in position when the bolts, which secure the clamps to the ram shank, are threaded in to tighten the clamps against the tool blocks. Electrically-controlled hydraulic or pneumatic means are provided to rotate the clamping bar and the bolts to release the tool blocks or to clamp tool blocks in place.

3,726,002
PROCESS FOR FORMING A MULTI-LAYER GLASS-METAL MODULE ADAPTABLE FOR INTEGRAL MOUNTING TO A DISSIMILAR REFRACTORY SUBSTRATE

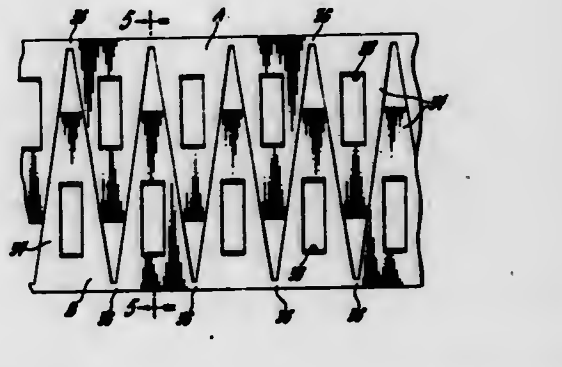
Bernard Greenstein, Toledo, Ohio; Perry Robert Langston, Jr., Poughkeepsie, N.Y.; Bernt Narken, Poughkeepsie, N.Y., and Melvin Norris Turetzky, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 27, 1971, Ser. No. 175,530
Int. Cl. B01j *17/00*
U.S. Cl. 29—577 **7 Claims**



A process for fabricating a high performance electrical interconnection package for a plurality of semiconductor chips including the steps of selecting an appropriate dissimilar refractory substrate, forming a plurality of bubble-free layers of glass over the substrate, depositing a plurality of planar metallization patterns on each layer of deposited glass, selectively depositing vertical studs for electrical interconnection between various conductive patterns, and bonding a plurality of integrated circuit chips to the upper surface of the glass package.

3,726,003
METHOD OF MAKING A DISK TAPE COMMUTATOR

John V. Hellmann, Anderson, and Carl L. Richwine, Daleville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 36,322, May 11, 1970, abandoned. This application Aug. 5, 1971, Ser. No. 169,306
Int. Cl. H01r *43/00*
U.S. Cl. 29—597 **1 Claim**



A disk type commutator for a direct current motor comprising a plurality of wedge-shaped conductive members carried by an annular insulating member that provide commutator segments for the commutator. The conductive members and the insulating member have aligned apertures through which the ends of the rotor windings are inserted for connection with the conductive members at the face of the commutator. The face of the commutator is machined to provide a surface that engages the motor brushes. Both the conductive members and the rotor winding ends contact the motor brushes in operation.

3,726,004
METHOD OF MAKING PRINTED CIRCUIT MAGNETIC FIELD COILS

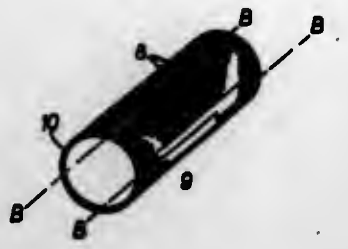
Ernest Oliver Holland, Sandon, and Leslie James Sadler, Chelmsford, both of England, assignors to The Marconi Company Limited, London, England

Filed Dec. 28, 1970, Ser. No. 101,854

Claims priority, application Great Britain, March 20, 1970, 8,166/70

Int. Cl. H01f *7/06*

U.S. Cl. 29—602 **10 Claims**



A printed circuit coil consisting of two portions to be made in cylindrical form is manufactured by joining the adjoining edges of the portions in the region of the end turns of the coil.

3,726,005
METHOD OF MANUFACTURING FLAT-WIRE FIELD COILS

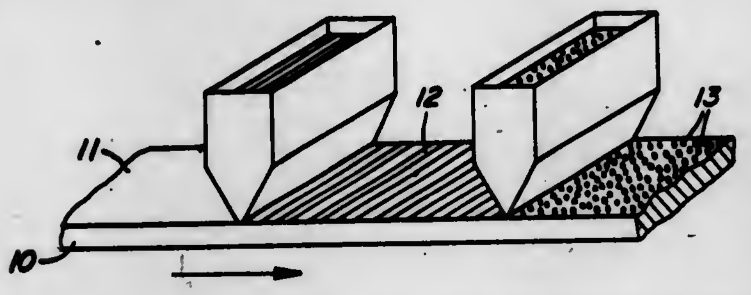
Edo Prostor, Ljubljana, Yugoslavia, assignor to Iskra-Lavod Za Avtomatizacijo v Zdruzenem podjetju Iskra, Kranj, Trzaska c. 2, Ljubljana, Yugoslavia

Filed March 17, 1971, Ser. No. 125,190

Claims priority, application Yugoslavia, March 20, 1970, P 708/70

Int. Cl. H01f *7/06*

U.S. Cl. 29—605 **8 Claims**



A method of manufacturing flat-wire field coils for an electric machine, especially a starter for an internal combustion engine, wherein one metallic surface only of a metal strip is coated with an adhesive lacquer and particles of rigid insulating material are disposed upon this surface and adhere to the adhesive lacquer thereof. Non-adherent particles are removed and the metal strip is coiled so that the adherent particles space apart the successive turns. The last turn is fixed to the coil which is heated and contacted with a suspension of thermoplastic or duroplastic resin powder to form a sheath around the coil. The coil is then bent to the desired shape of the field coil.

3,726,006
METHOD FOR SINTERING THICK-FILM OXIDIZABLE SILK-SCREENED CIRCUITRY

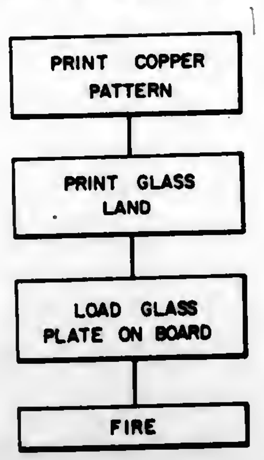
William L. Muckelroy, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army

Filed April 28, 1971, Ser. No. 138,051

Int. Cl. B41m *3/08*; **H05k** *3/28*

U.S. Cl. 29—625 **16 Claims**

A method for sintering thick-film oxidizable silk-screened circuitry comprising printing a glass land surrounding the microcircuit, thereby forming a bridge, on the substrate and covering the same with a glass plate in a non-oxidizing atmosphere, and sintering the same is disclosed.



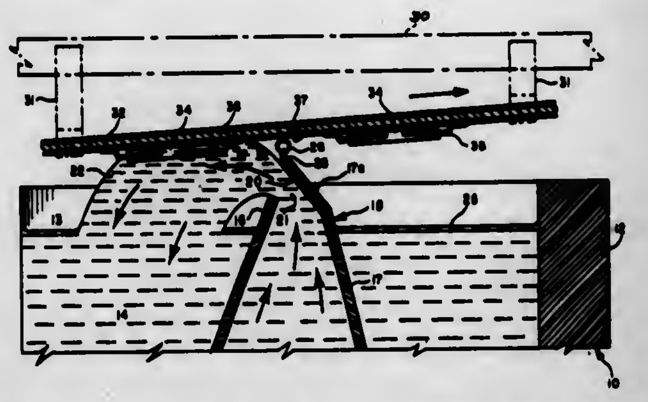
3,726,007
COMPONENT SIDE PRINTED CIRCUIT SOLDERING

Joseph D. Keller, Orange County, Fla., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Feb. 2, 1971, Ser. No. 111,965

Int. Cl. H05k *330*

U.S. Cl. 29—626 **16 Claims**



A method of securing at least one multilead electronic component upon a supporting medium in an electrically correct manner, involving the leads of the component to a large extent disposed on the same side of the supporting medium or board as the component, with the component itself being passed through molten solder during the soldering of the component leads to the circuitry of the supporting medium. Because the necessity of through-holes in the supporting medium is thus essentially eliminated, the practice of my method can result in the manufacture of circuit boards having an extremely high component density, with this method also making possible the use of wave solder techniques, and therefore the production of high density circuit boards and the like in a very rapid manner.

A novel circuit board is also taught herein, involving at least one multilead component placed on a supporting medium with its lead terminations to a large extent located on the same side of the supporting medium as the component itself. Single sided as well as double sided boards of high density can be made in this manner.

3,726,008
METHOD FOR PREPARING AN OIL-FILLED CABLE HAVING A CORRUGATED SHEATH FOR CUTTING AND CABLE SO PREPARED

Vittorio Buroni, Milan, Italy, assignor to Industrie Pirelli Societa Per Azioni, Milan, Italy

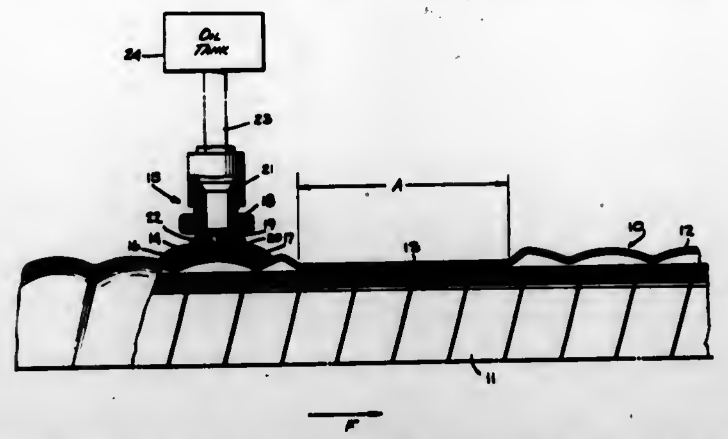
Filed Sept. 15, 1971, Ser. No. 180,553

Claims priority, application Italy, Sept. 17, 1970, 29822 A/70

Int. Cl. H01r *43/00*

U.S. Cl. 29—628 **5 Claims**

An oil-filled cable having a corrugated sheath is prepared for cutting transversely of its length by drawing the sheath down to cylindrical form at the cutting zone and on both sides thereof so that only a small annular space remains between the sheath and the insulation of the cable core. Prior to cutting, an apertured support is secured to the sheath upstream of the cutting zone by welding and the sheath is punctured through the support. A valve is secured to the support and is connected to a source of oil under pressure. When the cable is cut, oil flowing out of the space between the sheath and the insulation is compensated for, at least in part, by oil supplied through the valve.



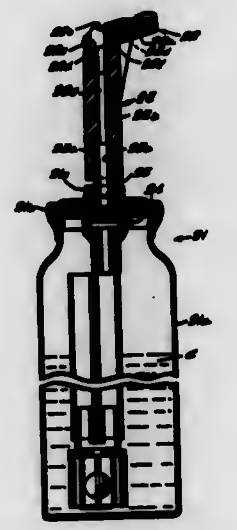
3,726,009
SELF-LATHERING SHAVER

Saul A. Hackmyer, 2335 N.E. 172nd St., Miami Beach, Fla.

Filed April 12, 1971, Ser. No. 133,108

Int. Cl. B26b *21/44*; **B65d** *83/00*

U.S. Cl. 30—41 **5 Claims**



A holder for a razor blade and guard is directly mounted on the valve stem of an aerosol lather dispenser can which serves as a handle for the shaver. The valve stem has a bore communicating with a fan-shaped passageway formed in the holder for feeding the lather to the skin along the length of the cutting edge of the blade and in advance thereof. Pressure exerted as the guard is stroked along the skin serves to tilt the valve stem and release lather from the can.

3,726,010
CARPET CUTTER

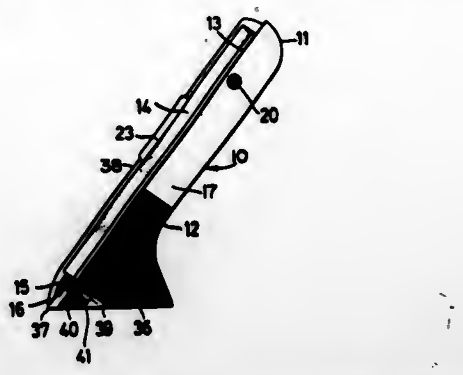
Kiyofumi Yokoyama, No. 83, Nakazaki-cho, Kita-ku, Osaka, Japan

Filed April 13, 1971, Ser. No. 133,676

Int. Cl. B26b *1/08, 3/08*

U.S. Cl. 30—293 **5 Claims**

A carpet cutter has a body having a handle or grip in the upper part thereof, and a blade which is retentively secured in such a manner that its position is variable, if necessary, within a range of positions from the front face of the handle or grip to the front face of the body. The blade is provided with an edge on a lateral side thereof. The underside of the body is a plane making an acute angle in relation to the edge of the blade. The front end of the blade is adapted to be upwardly protrudable beyond the front edge of the underside of the body.



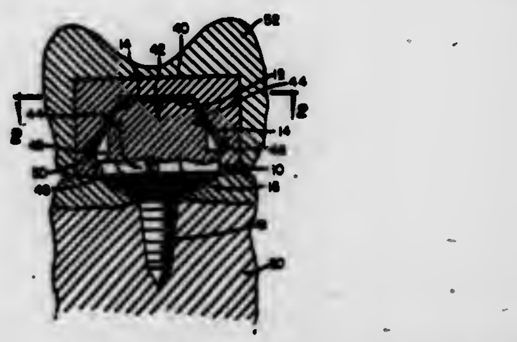
3,726,011
APPARATUS FOR SECURING ARTIFICIAL TOOTH TO A JAW

Joseph Richard Savignano, c/o Fred's Trailer Court, P. O. Box 285, R. D. No. 4, Scotia, N.Y.

Filed July 19, 1971, Ser. No. 163,590

Int. Cl. A61c *13/00*

U.S. Cl. 32—10 A **7 Claims**



Apparatus for securing an artificial tooth to a jaw including a threaded stud member which screws into the jawbone, a spring-type clasp preferably having projecting studs and with the clasp screwed to the stud, and a housing for the tooth which engages with a snap-type arrangement with the clasp, the exterior tooth surfaces being molded to the housing.

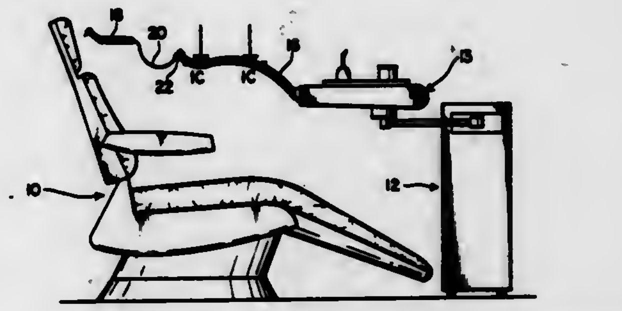
3,726,012
DENTAL APPARATUS WITH ENHANCED HANDPIECE MANIPULABILITY

Barry H. Grayson, and Allan S. Grayson, both of 334 East 25th St., New York, N.Y.

Filed April 5, 1971, Ser. No. 130,986

Int. Cl. A61c *19/02*

U.S. Cl. 32—22 **21 Claims**

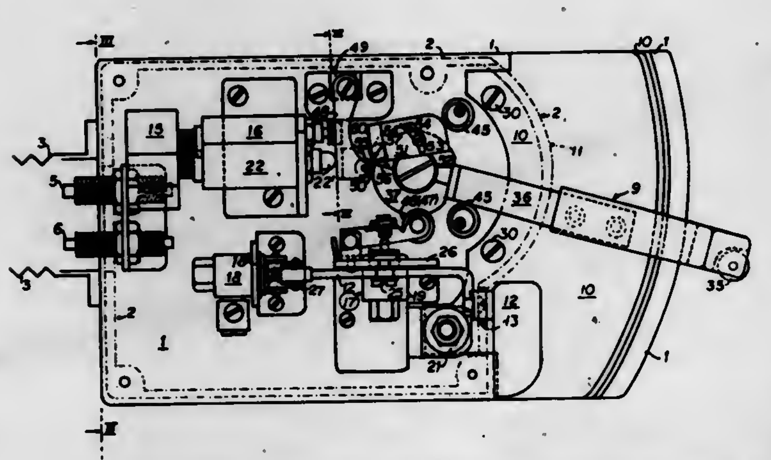


Structure is provided for a dental handpiece comprising an operating instrumentality driven to perform dental operations within the oral cavity. The handpiece is of the air rotor type and hose means delivering air and water to the operating instrumentality is comprised of a flaccid material for an unsupported portion of its length between the handpiece and an adjustable supporting element through which the major portion of the air-water hosing extends. The adjustable supporting element enables placement of the handpiece proximate a working location while supporting the major portion of the hosing length. The flaccid hose portion in combination with the adjustable supporting element enables manipulation of the handpiece with elimination of much of the torque and drag normally encountered. By a second aspect of the invention, a weight is adjustably mounted within the handpiece to enable achievement of a balanced feel to suit the individual choice of an operator, as well as precise manipulation and control.

3,726,013
FOOT CONTROLLER FOR DENTAL INSTRUMENTS

Richard W. Page, P.O. Box 258B, Chatham, Mass.
Filed March 1, 1971, Ser. No. 119,538
Int. Cl. A61c *19/02*

U.S. Cl. 32—22 **5 Claims**

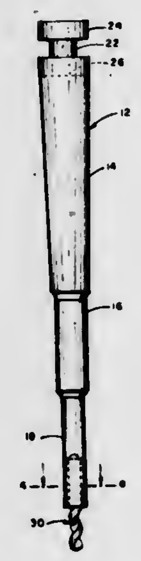


A compact and completely air-operated foot controller for dental instruments has a peddle operated by lateral pressure against a roller so as to have constant leverage, cam means for turning on air syringe and water syringe control air and for initiating flow of drill turbine drive air, together with means for adjusting the ratio between angle of peddle movement and extent of opening of turbine air regulator valve means. The initiation of flow is not affected by this adjustment.

3,726,014
COMPOSITE DRILL

Bernard Weissman, 304 Ashland Place, Brooklyn, N.Y.
Filed March 11, 1971, Ser. No. 123,135
Int. Cl. A61c *3/02*

U.S. Cl. 32—48 **14 Claims**

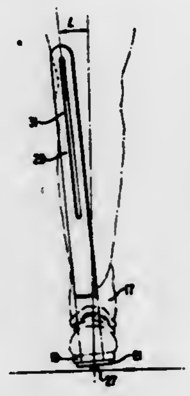


A composite drill for drilling channels in teeth, the drill comprising a drill bit retaining body and a drill bit connected to the drill bit retaining body, the drill bit retaining body having a heat conductive capacity of greater magnitude than that of the drill bit. The drill bit retaining body and drill bit are interconnected such as by means which is self-collapsible upon subjection of the drill bit to frictional resistance of lesser magnitude than that magnitude required for causing tooth fracture. The method of forming the composite drill comprises anodizing the drill bit retaining body to permanently color the latter for distinguishing the nature of the drill bit associated therewith.

3,726,015
APPARATUS FOR DETERMINING THE BIAS OF THE SOLE OF A SKI BOOT

Dennis E. Neumann, 1998 South Columbine, Denver, Colo.
Filed May 6, 1971, Ser. No. 140,885
Int. Cl. A43d *1/00*

U.S. Cl. 33—3 A **9 Claims**

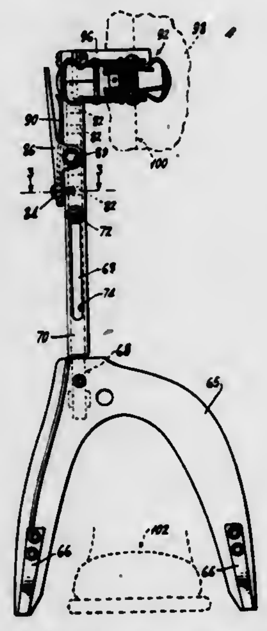


A device for determining the bias or angle between the bottom of the sole of a ski boot and the wearer's knee. A flat base plate includes nub extensions centrally located on the underside and a rigid wand extending upwardly from one end thereof. When the wearer places the boot on the base plate, any bias will be indicated by the angle between the longitudinal centerline of the wand and the wearer's knee. Auxiliary clamping means may be added to the wand to check the accuracy of the subsequent correction of the boot sole.

3,726,016
TAILOR'S TROUSER LENGTH AND TROUSER CUFF MARKER

John J. Sullivan, 3920 Grady Street, Norfolk, Va.
Filed Oct. 26, 1970, Ser. No. 83,996
Int. Cl. A41h *1/04*

U.S. Cl. 33—8 **3 Claims**

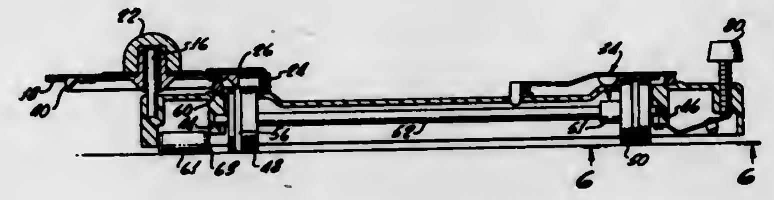


A tailor's trouser length and cuff marker comprising a baseboard having indicia related to trouser lengths and cuffs, and having a device for positioning marked trouser's legs thereon in relation to said indicia. Spaced above the base, for positioning over the trousers is a two-part adjustable guide one part of which is hingedly mounted to the base to enable the guide to be raised and lowered. The other guide part has a straight-edge to guide a marking chalk or crayon. The two parts are adjustably connected to enable the straight-edge to be variously positioned for effecting different markings on the trousers. In conjunction with the baseboard and two-part guide there is also a trouser marker device adapted to stand on the floor and extend upward alongside the leg of a customer who has donned the trousers for measuring purposes. The marker device has an upright post on which there is carried a vertically movable slider provided with a stapler. The post and slider have cooperable indicia arranged to provide for short, medium or long trouser lengths, either with or without cuffs. By setting the slider to the particular indicia which corresponds to the customer's choice, the stapler will be properly positioned the right distance above the floor surface; it is then used to apply a staple to the crease portion of the trousers. Then the customer removes the trousers, and the applied staple now constitutes a correctly placed marker for providing the desired trouser length, either with or without cuffs. Such a marked pair of trousers, when placed on the baseboard and utilized with the two-part guide, can now be accurately chalked or lined so that, for either cuffs or no cuffs as desired, the proper cut off and folding can be effected.

3,726,017
DRAFTING INSTRUMENT

Leslie L. De Mathe, Buena Park, Calif., assignor to Stanley J. Adler, Culver City, Calif.
Filed Oct. 23, 1970, Ser. No. 83,320
Int. Cl. B43l *13/02*

U.S. Cl. 33—109 **6 Claims**



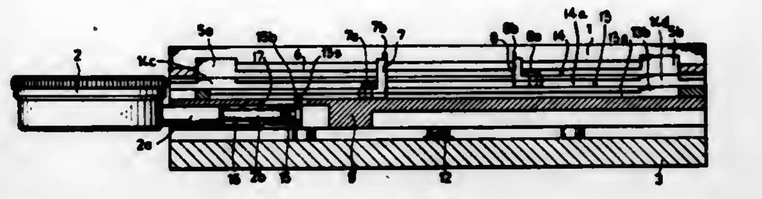
A dial drafting device having a friction drive connection between a transfer wheel and an indexing plate. The drive ratio between the wheel and the plate can be carefully controlled by driving the plate with a beveled friction surface on the wheel. The plate receives calibrated discs for use in moving the device by an accurate spacing. Blank discs can be used for special programming.

3,726,018
MEASURING DEVICE

Manfred Brenneisen, 774 Triberg, Germany, assignor to Schwanog Schwarzwalder Normteile Siegfried Guntert KG, Villingen/Black Forest, Germany
Filed April 23, 1970, Ser. No. 31,238
Claims priority, application Germany, Oct. 27, 1969, G 69 41 682.6
Int. Cl. G01b *5/00*

U.S. Cl. 33—147 J **14 Claims**

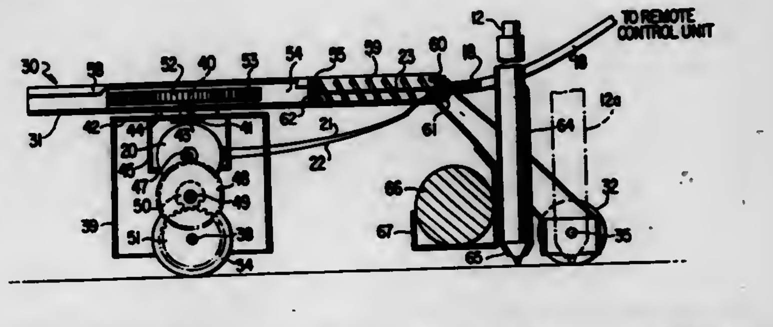
A measuring device has a base member provided with the surface in which an elongated slot is formed. A dial gauge is connected with the base member and has an exposed measuring spindle which is axially displaceable by a predetermined distance corresponding to the maximum dial reading of the dial gauge. A slide member is guided for movement lengthwise of the slot by a distance corresponding to the predetermined distance and coupling means couples the spindle with the slide member for axial displacement of the former in response to movement of the latter. A first measuring jaw projects beyond the aforementioned surface and is guided in the slide member for movement lengthwise of the slot and arrestable at desired locations, and a second measuring jaw projects beyond the surface out of the slot.



3,726,019
REMOTE CONTROLLED DRAWING DEVICE

Ronald E. Adler, 1410 35th Street N.W., Washington, D.C.
Filed Aug. 25, 1970, Ser. No. 66,666
Int. Cl. B43l *13/00*

U.S. Cl. 33—18 R **4 Claims**

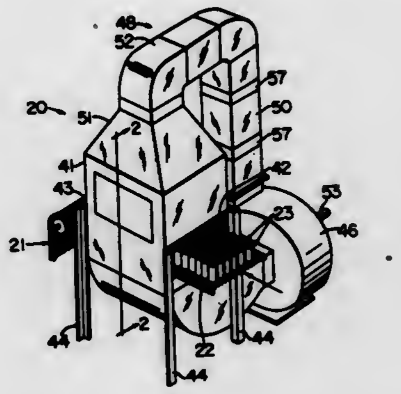


This disclosure relates to a drawing device comprising a three wheel power driven vehicle which carries a marking pen adapted to trace lines on a paper as the vehicle is driven thereover. Remote controls permit the operator to steer the vehicle as well as drive it forward and in reverse to draw selected patterns and pictures on the paper.

3,726,020
DRYING METHOD

Harry W. Lee, Jr., Richmond, Va., assignor to Reynolds Metal Company, Richmond, Va.
Division of Ser. No. 818,215, April 22, 1969, Pat. No. 3,574,952. This application Jan. 15, 1971, Ser. No. 106,904
Int. Cl. F26b *7/00*

U.S. Cl. 34—21 **7 Claims**



An apparatus for and method of drying articles such as tubular containers each having a bottom wall, an adjoining side wall, and an open end wherein said containers are supported in an inverted position and a drying gas moved therepast in such a manner that it circulates around and within the containers and provides efficient drying of both the interiors and exteriors thereof.

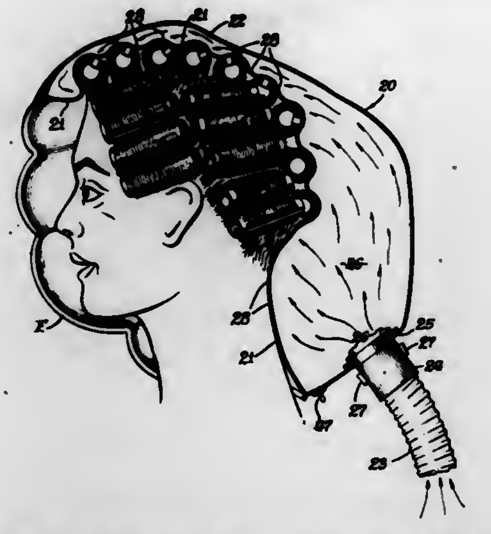
3,726,021
HAIR DRYER

Robert S. Waters, Oakbrook, Ill., and Ronald R. Liedtke, Manhattan Beach, Calif., assignors to Sunbeam Corporation, Chicago, Ill.

Filed June 30, 1970, Ser. No. 51,112

Int. Cl. A45d *20/00*

U.S. Cl. 34—99 11 Claims



A collapsible, inflatable, head supported hair dryer bonnet formed of a pair of thin flexible sheets sealed around the outer edges to provide an air holding, plenum chamber when pressurized with air. The air chamber includes a first bladderlike portion along the rearward portion of the bonnet and having an inwardly bulging inside surface for holding contact against the neck of the wearer. The bonnet includes a plurality of fingerlike bladder portions extended forwardly and downwardly from a common line or apex above the wearer's head, each of said second fingerlike bladders having an inwardly bulging inside surface when inflated for providing a degree of longitudinal stiffness to the fingers. The inside surfaces of the fingers contact the wearer's head intermediate the ends whereby the outer ends of the fingers are maintained outwardly of the wearer's head, leaving clear access to the ears from the front of the bonnet.

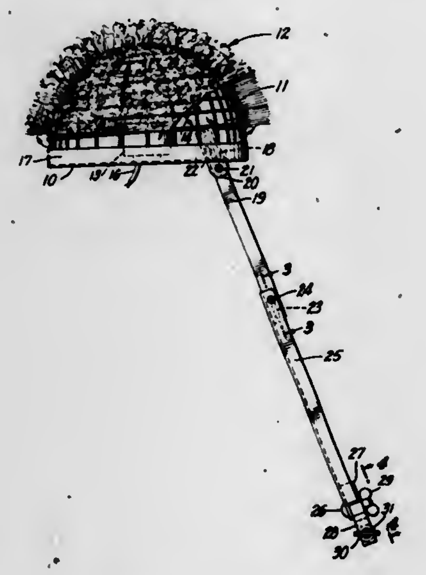
3,726,022
PORTABLE WIG DRYER

Carl W. Helwig, 906 Crestview Ave., Glendale, Calif.

Filed Aug. 12, 1971, Ser. No. 171,257

Int. Cl. F26b *25/00*

U.S. Cl. 34—103 3 Claims



An electrically operated portable wig dryer comprising a base and an upwardly extending hemispherical dome preferably formed of wire mesh coated with plastisol. Mounted within the dome is an electric fan having its blade directed downwardly. A flange extends vertically upwardly around the entire periphery of the base. A wig is removably mounted on the dome and held in place by the resilient band of the wig and frictional engagement between the wig and the dome. In use, the fan draws air into the dome through the upper portion of the wig and then outwardly against the lower portion of the wig. Air strikes the flange and is directed upwardly and outwardly between the wig and the flange. The drying action is thus concentrated on the hard to dry lower portion of the wig. Collapsible supporting means are provided for the dryer.

3,726,023
WEB DRIER

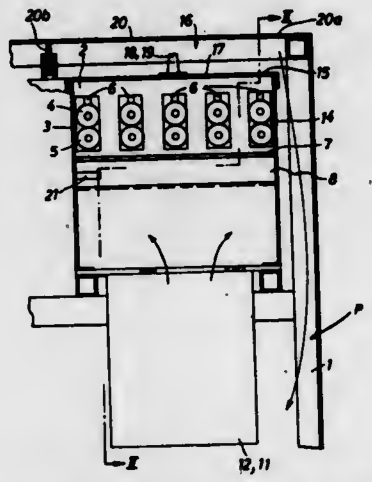
Erwin Geyken, and Peter Dawidowitsch, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 3, 1970, Ser. No. 94,790

Claims priority, application Germany, Dec. 10, 1969, P 19 61 873.6

Int. Cl. F26b *13/00*

U.S. Cl. 34—151 6 Claims



A drier for sheet-shaped photographic web materials has a housing in which first and second transport rollers are located for engaging the web at opposite major surfaces thereof to advance it in a predetermined path. One or more blowers with associated heating devices are provided for blowing warm air towards one of the major surfaces of the web. Perforated sheet metal walls establish adjacent this one surface intermediate the same and the blowers a pressure chamber which extends at least substantially over the cross-sectional area of the housing and which in the direction of flow of the airstream or airstreams has a dimension substantially smaller than its dimensions transversely to this direction. Thus, warm air enters the chamber from the blower or blowers and leaves it in direction towards the major surface of the web substantially evenly distributed over substantially the entire cross-sectional area of the housing.

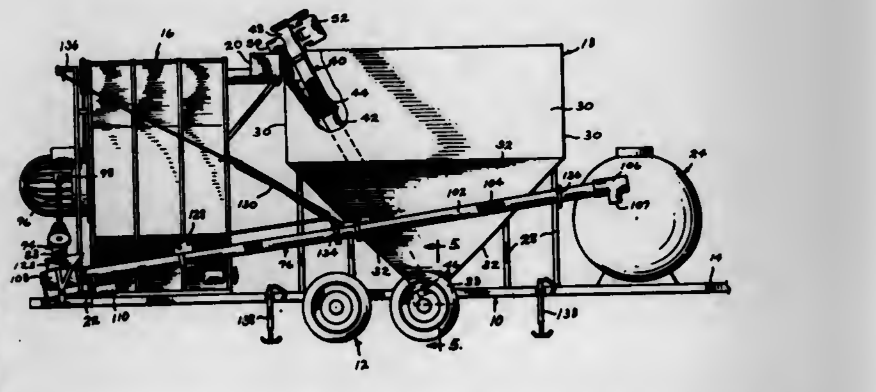
3,726,024
PORTABLE GRAIN DRYER

Donald S. Erwin, Route 1, Star City, Ind.

Filed Sept. 28, 1970, Ser. No. 75,970

Int. Cl. F26b *19/00*

U.S. Cl. 34—236 7 Claims



An improved portable grain dryer which includes a wheel-supported frame and a conveyor-connected grain holding bin and grain drying unit carried by the frame. A conveyor is carried by the frame and is connected to the grain drying unit outlet with the discharge end of the conveyor being shiftable to enable the grain issuing from the drying unit to be deposited at a selected location spaced from the unit.

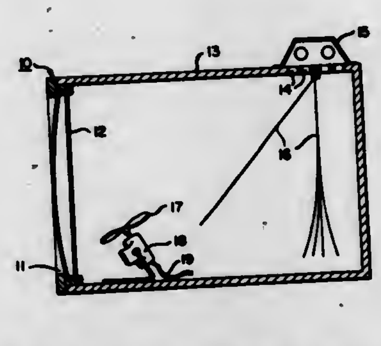
3,726,025
METHODS AND APPARATUS FOR VISUALLY ILLUSTRATING SOUND WAVES

Kenneth G. Salem, 226 Belmont Street, Johnstown, Pa.

Continuation-in-part of Ser. No. 853,088, Aug. 26, 1969, Pat. No. 3,597,859. This application Aug. 6, 1971, Ser. No. 169,675

Int. Cl. G09b *23/14*; G09f *13/14*

U.S. Cl. 35—19 R 8 Claims



An apparatus is provided for visually detecting the motion of sound waves based on macroscopic effects which ordinary sound has upon a fluid's velocity at high Reynolds numbers, such as flows from fans, in which a box-like enclosure consisting of a screen, receives fluctuating rays of light from a plurality of side-by-side multi-colored reflective strips suspended vertically in a fluid flowing from a fan situated in the box-like enclosure, said enclosure having upon a portion of its rear top-side, a large number of small perforations to receive light from a lightsource in order that the light can be vertically reflected by the fluctuating strips and horizontally directed to a screen for amplification of the strips fluctuations.

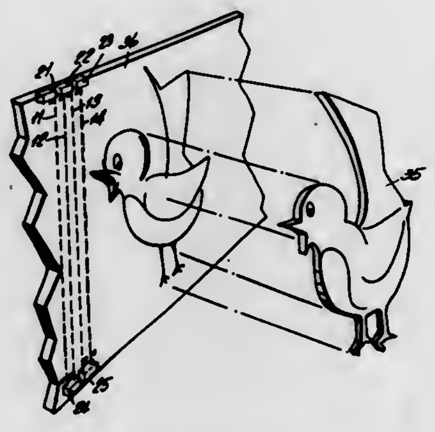
3,726,026
MAGNETIC EDUCATIONAL TOY

Elsa Borcherding, Whittier, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,616

Int. Cl. G09b *1/08*

U.S. Cl. 35—62 6 Claims



An educational toy for young children consisting of a magnetized board in which objects may be fastened which are cut-out in the shape of characters of childrens' stories or cut-out in the shape of animals, etc. The magnetic board is fabricated of a non-metal base in which iron wires terminating in magnets are embedded. The objects to be fastened to the board may be fabricated of a soft steel, or of non-magnetic material with embedded bits of soft iron or steel.

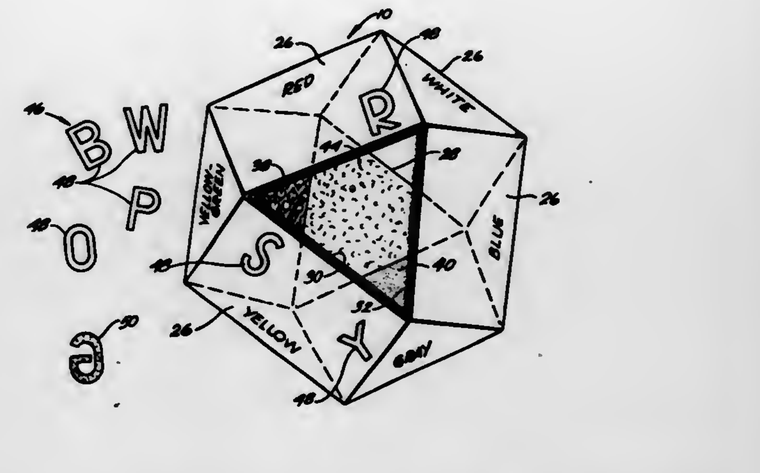
3,726,027
TEACHING AID AND EDUCATIONAL TOY

Lael I. Cohen, 6720 Dwight Way, San Bernardino, Calif.; William F. Elko, 133 N. University Avenue, Apt. 35, Redlands, Calif., and Gerald Cohen, 6720 Dwight Way, San Bernardino, Calif.

Filed Jan. 21, 1971, Ser. No. 108,339

Int. Cl. A63h *33/04*

U.S. Cl. 35—72 13 Claims



A teaching aid and educational toy includes a hollow box preferably shaped as a cuboctahedron having its outer faces covered with sheets of fabric in various colors. In one form of the invention, a plurality of illustration objects, such as cutouts of numerals or letters of the alphabet, are made of or backed with a material which adheres to the fabric covering the outer faces of the box to permit a student to attach the objects to specific faces of the box when learning to associate the objects with certain of the colors appearing on the box. In another form of the invention, at least one face of the box is open, and the inner faces of the box are covered with materials of different textures so a student may reach through the opening and touch a given inner face when learning to form word associations with the various textures.

3,726,028
DEVICE FOR NEGOTIATING INCLINED SURFACES

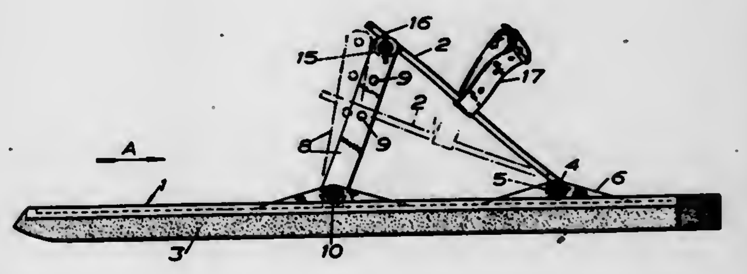
Herbert Joseph Stokes, Fairfield View, 16 Sea Road, Abergele, Wales

Filed June 3, 1971, Ser. No. 149,570

Claims priority, application Great Britain, June 4, 1970, 26,949/70

Int. Cl. A43b

U.S. Cl. 36—2.5 D 8 Claims

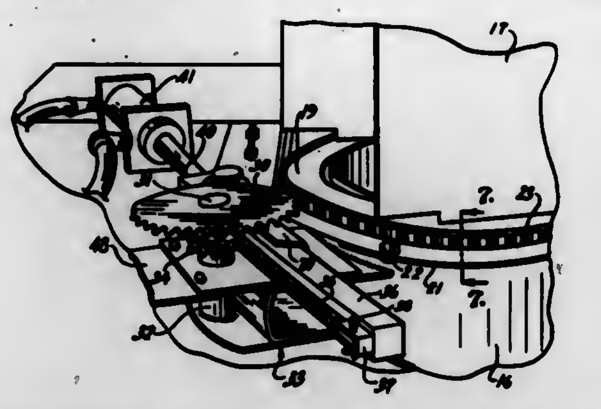


A device in the form of an elongate base member having a non-slip surface on the lower face thereof and carrying a foot support platform, the inclination of which can be varied with respect to the base member. A pair of such devices or "shoes" enable a user to negotiate an inclined surface, such as a roof, without recourse to ladders and other aids.

3,726,029

TRACTOR MOUNTED SNOW THROWER WITH POWERED SWIVEL CHUTE

Darrel B. Doon, Whiting; F. John Roost, and James E. Hrdy, both of Sioux City, all of Iowa, assignors to American Equipment Corporation, Sioux City, Iowa
Filed Jan. 14, 1971, Ser. No. 106,435
Int. Cl. E01h *5/00*; F16h *27/02*
U.S. Cl. 37—43 R 2 Claims

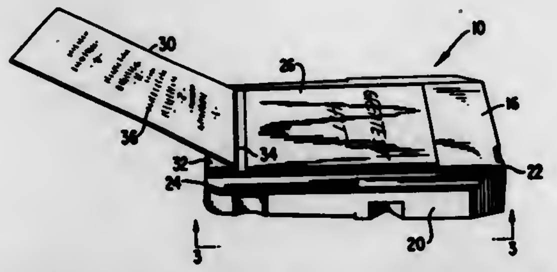


The snow thrower has a snow impeller mounted within a housing and operating to discharge snow through a discharge throat on the housing to a guide chute. The chute is rotatably mounted with respect to the throat. A double acting hydraulic cylinder reciprocates a drive member which represents part of a drive assembly so connected with the chute as to rotate the chute in one direction or the other, depending on the direction of the movement of the drive member, thereby to change the direction of snow discharge relative to the tractor.

3,726,030

TAPE CARTRIDGE LABEL

Ronal E. Wilson, P.O. Box 5296, Bossier City, La.
Filed Dec. 17, 1971, Ser. No. 209,079
Int. Cl. A44c *3/00*
U.S. Cl. 40—2 R 4 Claims

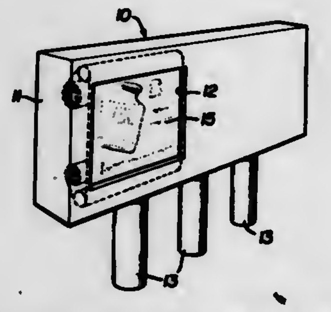


A magnetic tape cartridge having a novel label structure which displays the complete program contained on the tape while the cartridge is in a play position within a tape player.

3,726,031

ADVERTISING SIGN

Karl Singer, 26126 Meadowcrest, Huntington Woods, Mich.
Filed June 21, 1971, Ser. No. 154,879
Int. Cl. G09f *11/28*
U.S. Cl. 40—31 3 Claims

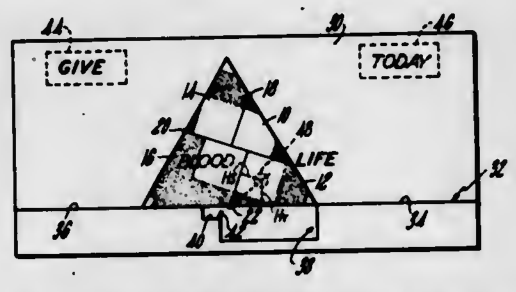


A large outdoor advertising sign formed of a vertical support panel having a pair of horizontally axised idler rollers, with one arranged at the upper end and the other at the lower end of the panel, and a pair of horizontal wind-up rollers arranged upon the rear face of the panel. A long, flexible, cloth-like message carrying sheet is arranged upon the forward face of the panel, with its opposite ends extending around the idler rollers and wound upon the wind-up rollers for moving the sheet and thereby exposing different portions of it upon the panel forward face. The wind-up rollers each are mounted for pivoting upon a horizontal axis which is centered upon and perpendicular to the center point of the roller central axis, for keeping the edges of the sheet aligned with the edges of the idler rollers. A vacuum means upon the forward face of the panel at the vertical edges of the sheet, holds the sheet against wrinkling.

3,726,032

DISPLAY DEVICE

Henry M. Atkins, Newington, Conn., assignor to The Connecticut Bank and Trust Company, Hartford, Conn.
Filed March 5, 1971, Ser. No. 121,486
Int. Cl. G09f *11/00*
U.S. Cl. 40—33 7 Claims

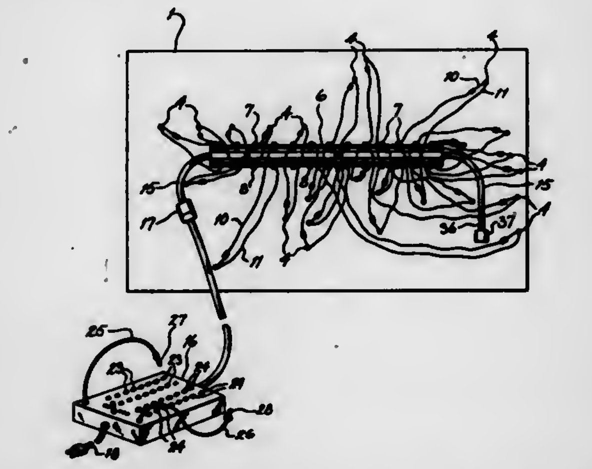


An active display device which varies between recognizable geometric shapes and presents continuously moving, unrecognizable shapes intermediate of the two recognizable shapes. The device may also carry indicia which is alternately covered by the recognizable shapes, and/or is alternately electrically actuated by the moving portions of the display and indicia may be carried directly on the moving portions.

3,726,033

ELECTRIC VISUAL DISPLAY

Lawrence M. Benton, Jr., 1727 North 34th Street, Milwaukee, Wis.
Filed Jan. 29, 1971, Ser. No. 110,838
Int. Cl. G09f *13/00*
U.S. Cl. 40—52 R 6 Claims

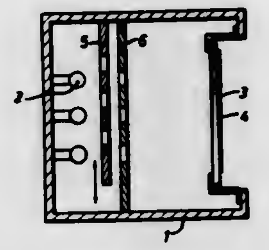


An electric visual display device includes a chart board with display indicia and a separate light for each indicia. Each light is connected by a pair of leads to different coil spring terminals on a terminal bar on the back of the board, and the spring terminals are connected through a separable connector to a switching box having a plurality of female switch portions. A pair of male switch portions are connected to a low voltage DC power supply. Each light circuit is energized, one at a time, by selectively closing a pair of switches formed by said male and female portions. The circuitry provides that N pairs of female switch portions will control at least N^2 lights.

3,726,034

X-RAY IMAGE VIEWER

Maurice Hector De Belder, Mechelen; Romain Henri Bollen, Hove; Emile Frans Stievenart, Hoboken, and Albert Frans Thiels, Mortsel, all of Belgium, assignors to Gevaert-AGFA, N.V. Mortsel, Belgium
Filed Jan. 12, 1971, Ser. No. 105,810
Claims priority, application Belgium, Jan. 12, 1970, 1470
Int. Cl. G09f *13/10*
U.S. Cl. 40—106.1 4 Claims

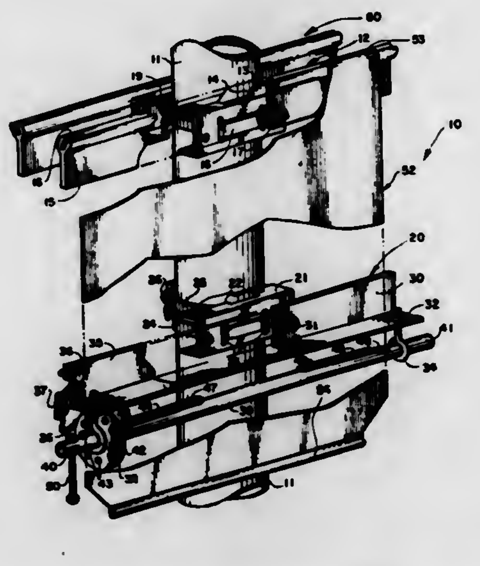


A light-projecting system for projecting light through a transparent colored image. The system comprises a light source or light sources from which light is directed through at least a portion of said image, and filters which can be progressively exposed in the path of light travelling to at least said portion of said image. The filters have light absorption characteristics such that said progressive filter exposure results in a progressive increase in the amount of irradiating light which lies in that part of the visible spectrum which is complementary of that part of such spectrum containing the wavelengths in the said same image color.

3,726,035

BANNER HANGER

H. W. Bower, 5422 Catherine Avenue, Van Nuys, Calif., and Glenn Brannan, 6309 W. 79th Street, Los Angeles, Calif.
Filed June 1, 1971, Ser. No. 148,725
Int. Cl. G09f *17/00*
U.S. Cl. 40—125 G 8 Claims

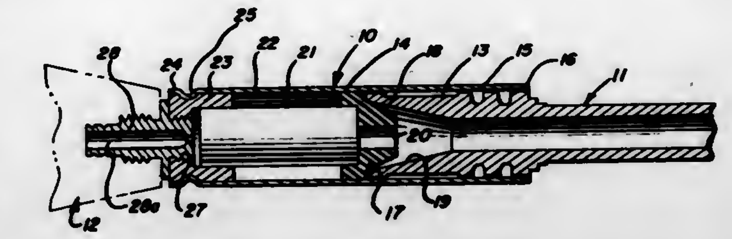


Upper and lower sections of a banner hanger have retaining means for retaining upper and lower attachment elements of a banner. A tightening mechanism can be operated to wind up a lower banner portion on a roller until a predetermined degree of tautness is achieved at which time the tightening mechanism can be locked to maintain the tautness.

3,726,036

LAUNCH TUBE ASSEMBLY

Norman L. Jennings, and Keith J. Conklin, both of Muskegon, Mich., assignors to Brunswick Corporation, Skokie, Ill.
Filed July 9, 1970, Ser. No. 53,423
Int. Cl. F41c *27/06*; F42b *11/42*
U.S. Cl. 42—1 F 10 Claims

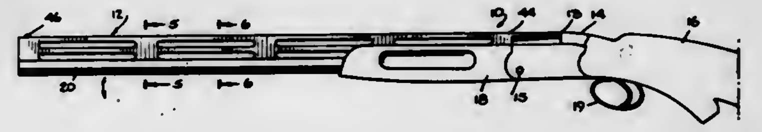


A launch assembly having a payload secured thereto so arranged to be discharged from a gun, such as a conventional rifle. The launch assembly is adapted to be mounted on the end of the barrel and to utilize forces generated in firing of a bullet, or missile, from the gun to effect the throwing of the payload. The assembly is adapted for selective variation in the range of throwing thereof under the control of the user. The launch assembly incorporates a unique bullet trap device that safely and effectively captures the propelled bullet.

3,726,037

SHOTGUN

Richard C. Wolff, Croton-on-Hudson, N.Y., assignor to The Garcia Corporation, Teaneck, N.J.
Filed Dec. 15, 1970, Ser. No. 98,362
Int. Cl. F41g *1/52*; F41c *21/00*
U.S. Cl. 42—40 3 Claims

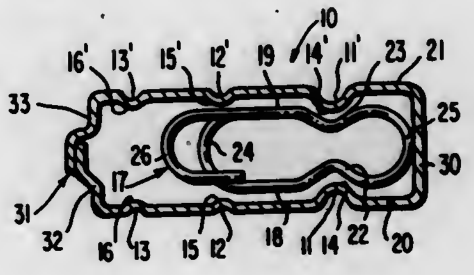


The disclosure relates to a shotgun of the tilting breech type having a barrel assembly with the barrel mounted in a cavity in the lowermost part of the breech block and provided with a ventilating rib of a substantial depth of at least one barrel diameter. In one form of the invention, movable balance weight is provided along the rib to permit varying gun balance and weight as desired. Also in another form of the invention, an extension is provided on the ventilating rib to increase sighting radius without increase in barrel length.

3,726,038

RECTILINEAR MAGAZINE

David O. Bradbury, Christmas Hill Road, Guilford, Conn.
Continuation-in-part of Ser. No. 868,310, Oct. 22, 1969, abandoned. This application Oct. 12, 1971, Ser. No. 187,954
Int. Cl. F41c *25/04*
U.S. Cl. 42—50 8 Claims

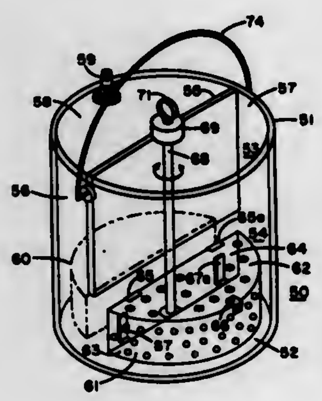


A small arms magazine has a rectilinear form and the arcuate segmental configuration of a stack of nested tapered cartridges is accommodated by a follower loaded by a biasing spring. The spring has a plurality of turns and at each turn a pair of opposed re-entrant portions freely engage opposed complementary internal ridges in opposed side walls of the magazine. The last half turn of the spring is raised at a greater angle than the other turns with the spring in a free state. When full, the follower is inclined at a maximum angle to the closed end of the magazine and this angle decreases progressively toward zero as the magazine is emptied.

3,726,039

MINNOW PAIL

Patsy J. Borrelli, 104 Ambrose Street, Rochester, N.Y.
Filed Feb. 24, 1971, Ser. No. 118,324
Int. Cl. A01k *97/04*
U.S. Cl. 43—56 **5 Claims**

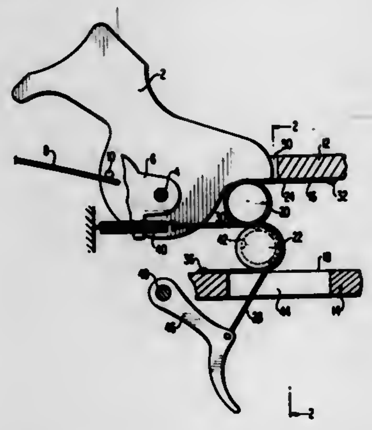


A minnow pail is disclosed wherein minnows and other forms of bait are moved by gating means between two juxtaposed chambers, one of which is pressurized by a gas mixture or gas for supporting life such as oxygen and the other one of the chambers is opened at the top for withdrawing the bait from the pail and at the bottom for the passage of the bait between the juxtaposed chambers.

3,726,040

GUN TRIGGER MECHANISM

Dean H. Cranston, Albuquerque, N. Mex., assignor to Rolamite Incorporated, San Francisco, Calif.
Filed June 10, 1970, Ser. No. 45,065
Int. Cl. F41c *19/00*
U.S. Cl. 42—69 R **13 Claims**



A gun trigger mechanism in which a spring loaded striker is held in a cocked position by a sear. The sear engages a sear notch on the striker. The sear includes a roller that releases the striker by rolling relative to the notch. The trigger is connected with the roller so that movement of the trigger causes the roller to roll along the striker notch until the striker is released from the cocked position.

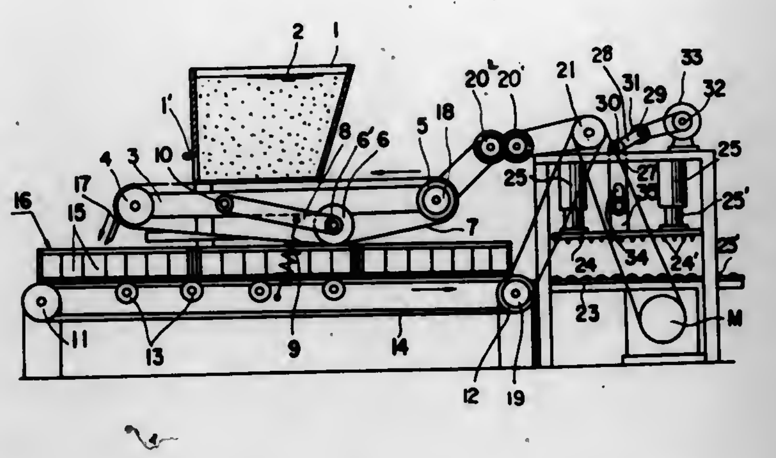
ERRATUM

For Class 43—56 see:
Patent No. 3,726,039

3,726,041

APPARATUS FOR FILLING AND PACKING SOIL

Akira Ota; Nobutaka Nakamura, both of Sapporo, and Ryuzo Tsuru, Hokkaido, all of Japan, assignors to Nippon Tensai Seito Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 27, 1971, Ser. No. 212,221
Claims priority, application Japan, Dec. 30, 1970, 45/139901
Int. Cl. A01g *9/08*
U.S. Cl. 47—1 **6 Claims**

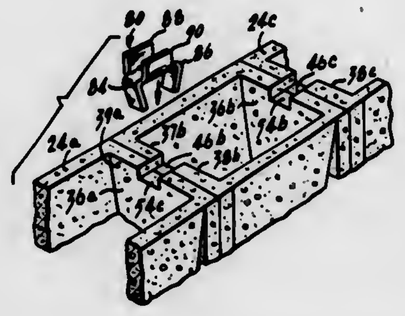


The present invention relates to an apparatus for filling and packing soil in containers adapted to temporarily receive seeds or plant seedlings. The apparatus includes means for compressing the soil in the containers by pressing the lower lap of a conveyor belt downwardly thereon and means for packing the soil in the containers and forming an opening therein.

3,726,042

PLANTING WALL

Ernest Haile, 30 Cadwalader Terrace, Trenton, N.J.
Filed Nov. 12, 1970, Ser. No. 88,757
Int. Cl. A01g *9/02*
U.S. Cl. 47—34.12 **1 Claim**

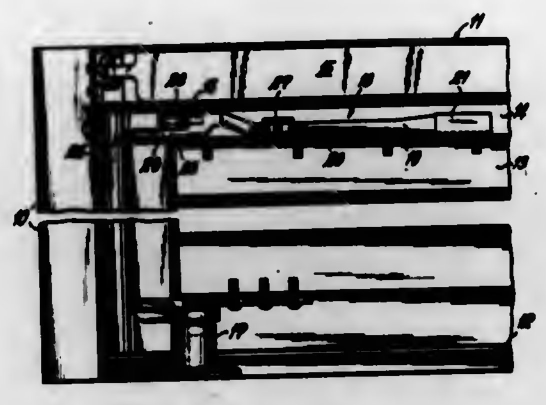


Apparatus is provided for forming a planting wall including a plurality of prefabricated planting blocks. Each of the planting blocks may comprise a pair of spaced end walls arranged in mutual parallel relationship. A second pair of walls may be provided in each block to interconnect the first pair of walls. The planar extension of each of the second pair of walls may be generally normal to the planar surfaces of the end pair of walls. The second pair of walls may be formed coincident with planes which converge along the downward extensions thereof. Notches may be formed in the upper and lower marginal edge portions of the spaced end walls for receiving a clip member which is operable to hold two similar planting blocks in end-wall-to-end wall abutting relationship. The clip member may be formed with an upwardly extending portion which is received in the lower notch of a next upper adjacent planting block. The clip member is further provided with downwardly extending portions which may be hooked over the upper notches of the next adjacent lower planting block.

3,726,043

ARRANGEMENT FOR CLOSING DOORS AND THE LIKE

Dietrich Jentsch, Ennepetal-Voerde, Germany, assignor to Firma Dorken & Mankel KG, Ennepetal-Voerde, Germany
Filed March 16, 1971, Ser. No. 124,503
Claims priority, application Germany, March 18, 1970, P 20 12 825.0
Int. Cl. E05d *7/08*
U.S. Cl. 49—388 **7 Claims**

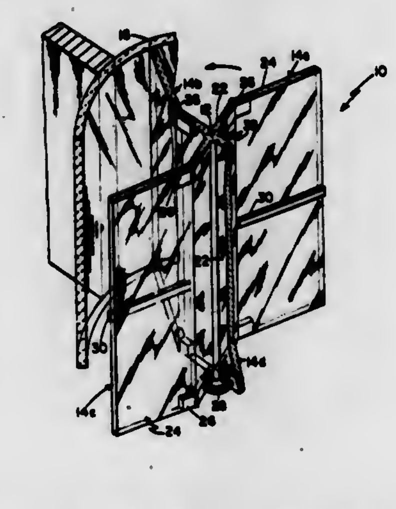


A frame has an upper frame member and a door is swingably mounted in the frame and has an upper part adjacent this frame member. A door-closing unit is mounted in the frame member with a shaft projecting downwardly towards the upper part of the door and permanently biased for turning movement towards a rest position. A coupling arrangement couples the shaft with the door so that the shaft is turned from rest position when the door swings. The coupling arrangement has a coupling member which extends along the upper part of the door and which has two portions at opposite axial sides of the shaft, a pair of screws which are connected with both portions and draw the same together so that they clamp the shaft between them to prevent it from rotating relatively to the door, and a bushing which surrounds at least one of the screws and axially spaced sections of which are received in corresponding recesses provided in the aforementioned portions of the coupling member.

3,726,044

REVOLVING DOOR

George J. Economou, 8 Elm St., Norton, Mass.
Filed Jan. 26, 1971, Ser. No. 109,788
Int. Cl. E05d *15/02*
U.S. Cl. 49—42 **5 Claims**

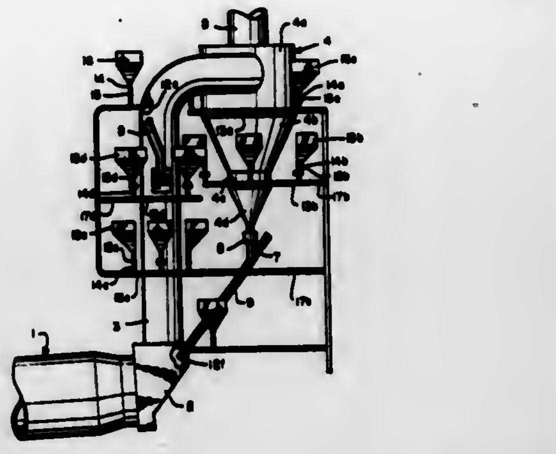


Improvements in vanes such as used in doors and similar mechanisms having movable partitions connecting or separating two or several regions. The vane construction is characterized by a predetermined angular conjunction of a plurality of portions and is to be used in revolving doors, turnstyles, etc., and/or as replacement of conventional swinging doors.

3,726,045

ABRASION OF CAKING

Gundorph Albertus, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., New York, N.Y.
Filed March 17, 1969, Ser. No. 807,852
Claims priority, application Great Britain, March 20, 1968, 13,455/68
Int. Cl. B24c *3/32*
U.S. Cl. 51—8 **14 Claims**

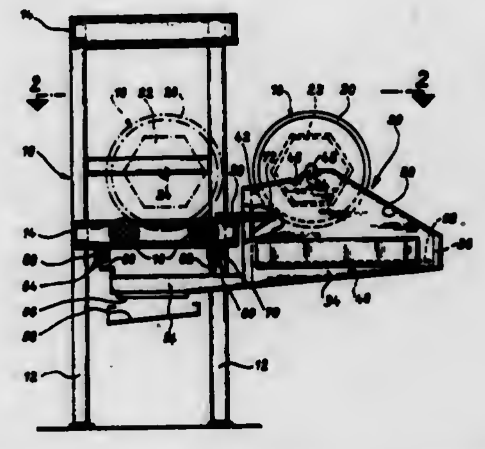


In a system for the manufacture of cement having a preheater for preheating raw material fed to a heated rotary kiln, apparatus is disclosed for removing caked raw material from those internal wall surfaces of the preheater which are likely to build up such caked material. Cement clinker particles are fed into the preheater and are caused to impinge upon wall areas which are normally subject to caking. Such impingement is at sufficient velocity to dislodge the caking.

3,726,046

DRUM TRANSFER APPARATUS

Manfrid Dreher, Salmbach, Germany, assignor to Dr.-Ing. Manfrid Dreher KG, Engelsbrand, Germany
Filed Sept. 1, 1971, Ser. No. 176,854
Claims priority, application Germany, Sept. 2, 1970, P 20 43 573.8; Jan. 30, 1971, P 21 04 418.8
Int. Cl. B24b *31/02*
U.S. Cl. 51—164 **16 Claims**



A frame is provided with at least two axially parallel cylindrical rollers on which a drum can be supported on its axially spaced wheels. The drum has axially projecting central pins, and a servicing arrangement is adjacent the frame so that the drum may be moved into the servicing arrangement and back to the frame, for servicing and operating purposes. The servicing arrangement has a guide surface extending from the region of the cylindrical rollers outwardly of the frame and having a free edge remote from the rollers. Two or more support elements are provided having edge faces provided with notches into which the axially projecting pins of the drum can engage when the drum rolls on its wheels over the guide surface and off the free edge.

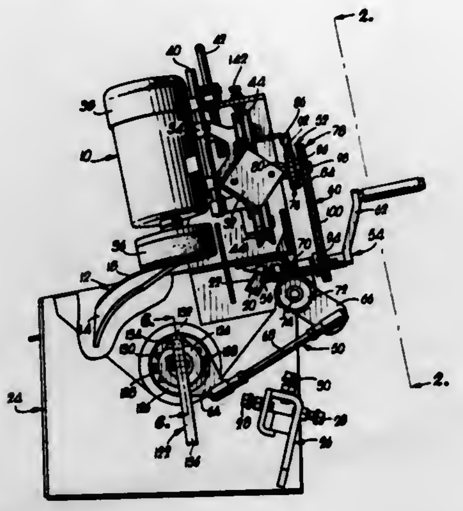
3,726,047
MOTOR DRIVEN KNIFE GRINDER FOR FORAGE HARVESTER CUTTERS

William D. Long, Hesston, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed May 24, 1971, Ser. No. 146,144

Int. Cl. B24b *3/42*

U.S. Cl. 51—249 **2 Claims**



The beveled edges of the spiral blades of a reel cutter are sharpened by advancing a rotatable grinder therealong as the reel is advanced at the same time, all through use of but a single, crank operated drive shaft. Power is transmitted from the crank to a shiftable support for the grinder through a pair of operably interconnected chain and sprocket wheel units. Power is also transmitted from the crank to the reel through a worm and worm gear arrangement, a pair of levers, an indexing assembly on the driven shaft of the reel and an adjustable link between the levers.

3,726,048
GRINDING WHEEL GUARD DEVICE

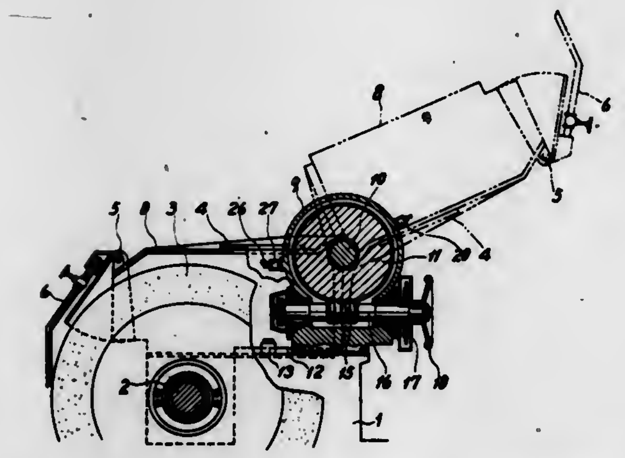
Hiroshi Ota, and Tuneji Fujii, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed March 11, 1971, Ser. No. 123,223

Claims priority, application Japan, March 13, 1970, 45/24701

Int. Cl. B24b *55/04*

U.S. Cl. 51—269 **6 Claims**



A grinding machine is provided with a grinding wheel guard pivotally mounted on the rear end of a grinding wheel head and a driving means is operatively connected to the grinding wheel guard for automatically raising the grinding wheel guard by pivotally rotating the same to the opposite side of the normal grinding position and for lowering the guard to its closed position, whereby the guard is readily displaced for permitting a worn grinding wheel to be replaced.

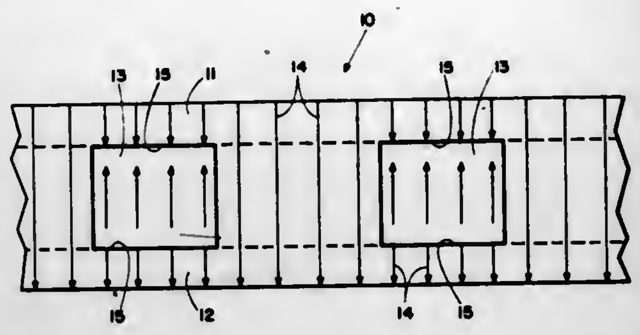
3,726,049
METHOD OF PRODUCING MAGNETIC BUBBLE DOMAIN DEVICES

John Martin Lucas, Ottawa, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Sept. 30, 1971, Ser. No. 185,331

Int. Cl. B24b *1/00*

U.S. Cl. 51—323 **6 Claims**



Surface layers of platelets of magnetic bubble domain material are polished while the platelet is subjected to a magnetic field. Considerably lower value magnetic fields are used, compared with conventional methods in which the platelets are exposed to high value magnetic field after polishing.

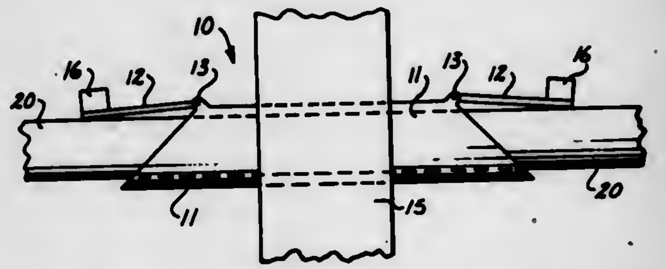
3,726,050
FIRE PREVENTION DEVICE

Eugene H. Wise, Newhall, and Alden E. Friend, Arleta, both of Calif., assignors to R & G Sloane Manufacturing Company, Inc., Los Angeles, Calif.

Filed Dec. 11, 1970, Ser. No. 97,234

Int. Cl. F16k *13/00, 17/38*

U.S. Cl. 52—1 **17 Claims**



Apparatus for preventing the spread of fire in a plastic article such as a pipe section extending through a fire-resistant wall or floor is hereby disclosed. The apparatus generally includes a sleeve member which surrounds the plastic pipe extending through the wall, the sleeve being provided with a shutter device which is pivotally mounted on the sleeve and which is biased against the plastic pipe so that the shutter serves to block the passage through the sleeve member when the pipe is sufficiently softened in the presence of fire. The shutter device may be any of several configurations including a flapper valve or a rotary plate construction. Such apparatus may be installed on either or both sides of the wall or floor through which the plastic pipe section passes.

3,726,051
GUTTER WITH PROTECTIVE COATING

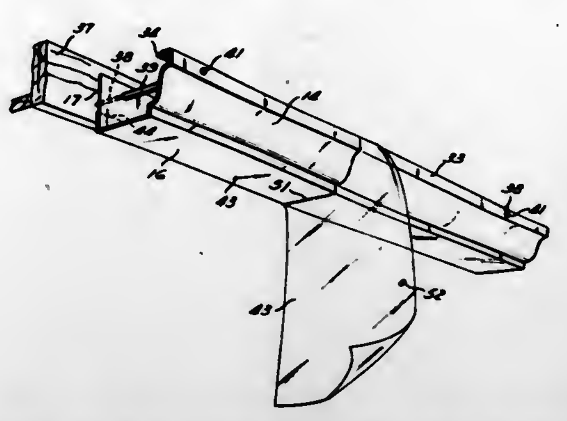
Warren D. Kellis, Franklin, and Elmer B. Wilson, Canton, both of Ohio, assignors to Alsco Anaconda, Inc., Akron, Ohio

Filed Aug. 24, 1970, Ser. No. 66,251

Int. Cl. E04d *13/00*

U.S. Cl. 52—11 **3 Claims**

A gutter or eaves trough is disclosed having a strippable protective coating which covers all exposed portions of the exterior finish when the gutter is installed. The strippable coating, preferably a sheet of polyethylene bonded to the exterior finish by heat and pressure, is removed from the gutter after the gutter is installed. The protective coating is sufficiently stretchable, has sufficient tensile strength, and tear-resistant, so that it slips out from between the back face of the gutter and the fascia board and between the heads of the nails and the adjacent front face of the gutter when the coating is pulled away from the gutter.



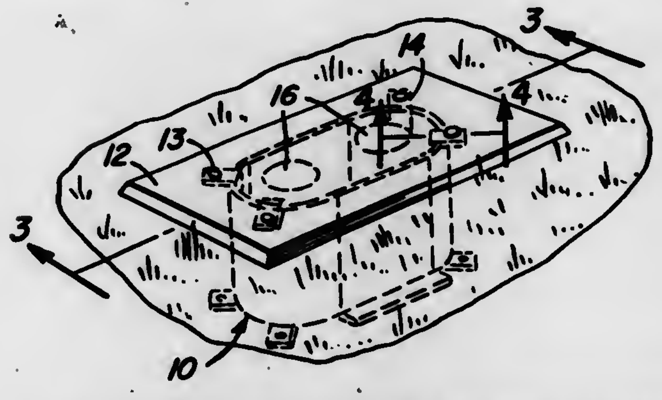
3,726,052
BASE FOR CEMETERY MONUMENTS WITH URN RECEIVING CAVITIES

John R. Thompson, 415 West Marine Drive, Astoria, Oreg.

Filed March 15, 1971, Ser. No. 124,199

Int. Cl. E04h *13/00*

U.S. Cl. 52—103 **5 Claims**



A cemetery monument base is provided which is relatively inexpensive to produce, yet long lasting and impervious to the elements. The base includes an attractive, durable housing of stainless steel, or other non-corrosive materials, which jackets a heavy concrete core having several urn receiving cavities therein, and with a plurality of mounting brackets extending therefrom.

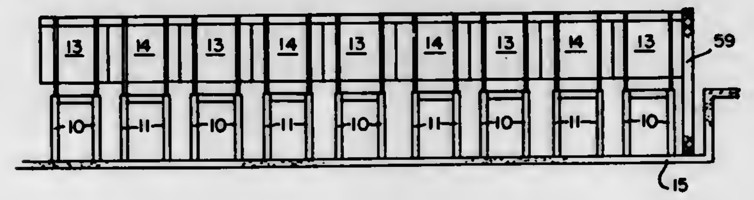
3,726,053
METHOD AND APPARATUS FOR ERECTING MODULAR HIGH-RISE BUILDING

Stanley J. Filipek, and Frank Caspo, both of Avon, N.Y., assignors to Stirling Homex Corporation, Avon, Livingston County, N.Y.

Filed July 13, 1970, Ser. No. 54,230

Int. Cl. E04g *21/14*; B66f *1/00*

U.S. Cl. 52—126 **3 Claims**



A method and apparatus for erecting a high-rise building comprising a plurality of stacked modules. A wheeled delivery platform transports each module from a truck or the like on rails which extend parallel to a wall of the building and at right angles to the ultimate direction of module insertion in the building. The module is supported on a plurality of wheeled dollies each supported on rails carried by the platform, and these rails extend across the platform at right angles to the direction of movement of the platform. The platform, when properly positioned, has its rails aligned with corresponding rails carried by supporting means in the building structure so that the module can be rolled on said dollies off the delivery platform and into its predetermined position in the building. Alternate vertical columns of modules are provided with jacking means to permit the raising of the entire building by the height of one module plus suitable clearance space to permit the insertion of additional modules which will then comprise the next-lower floor of the building. Auxiliary jacking means provides for the raising of each module once it has been placed in its desired position by the amount of the predetermined clearance space to permit it to be secured to the module above it in the stack, and wedges maintain each such module in the elevated position after the auxiliary jacks are removed, thereby eliminating the necessity of at any time lowering the building structure to take up the clearance space.

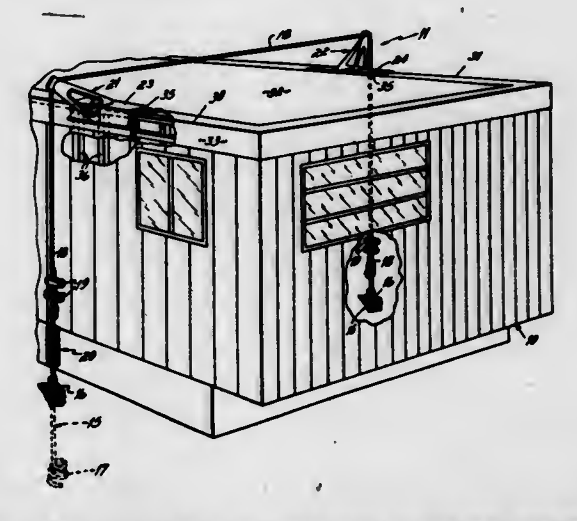
3,726,054
MOORING APPARATUS

Foy S. Anderson; William L. Davis, and William G. Loye, Jr., all of Memphis, Tenn., assignors to Mobile Home Mooring, Inc., Memphis, Tenn.

Filed June 18, 1971, Ser. No. 154,317

Int. Cl. E04h *9/14*

U.S. Cl. 52—148 **3 Claims**



A mooring apparatus, for securely mooring mobile homes and other portable structures and the like against windloads, includes anchors generally disposed on opposite sides of the structure and a cable positioned generally over the structure and secured at its ends to the anchors. Brackets are provided on the structure which hold the cable away from the structure so as not to damage it, and yet impart a mooring force from the cable to the structure. The brackets are provided with gripping surfaces for engaging the cable and halting descent of the bracket should it fall from its position. A tensioning device is included for adjusting the tension on the cable.

3,726,055
SCREENS

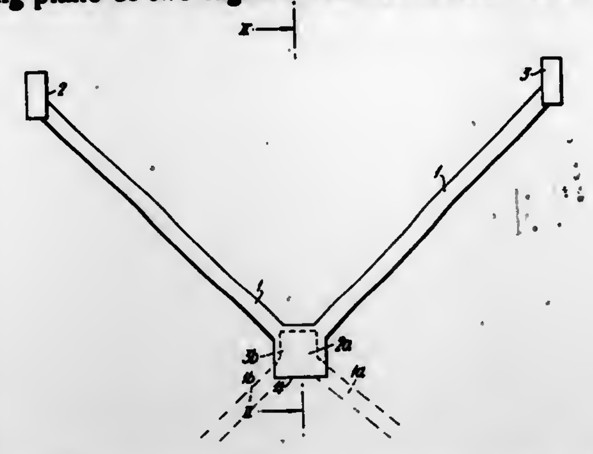
Victor George Brant, Farley House, The Broadway, Sandhurst, near Camberley, England

Filed Jan. 13, 1971, Ser. No. 106,099

Int. Cl. E04c *1/30, 2/42*

U.S. Cl. 52—581 **6 Claims**

The invention consists in a structural element adapted to be connected with other elements to form a screen or like structure, the elements being arranged in staggered rows. Each element is provided with attachment means which comprises two spaced-apart lugs and a socket to house two adjacent lugs of similar adjoining elements of a lower row. The lugs and the sockets have parallel axes and are located at the corners of an isosceles or equilateral triangle so that the lines between the socket and the two lugs form equal sides of the triangle. Each socket has a pair of aligned holes centrally in register with the meeting plane of two lugs housed therein and each lug has a semi-circular groove so as to form with that of an adjacent lug a circular bore to receive a locking pin pushed through the socket holes. In its simplest form each element is constructed so that each lug is joined to the socket by a single bar member and can include rebated or grooved members forming glazing bars for supporting glazing panels or other sheets in the interstices of the screen formed by the elements.



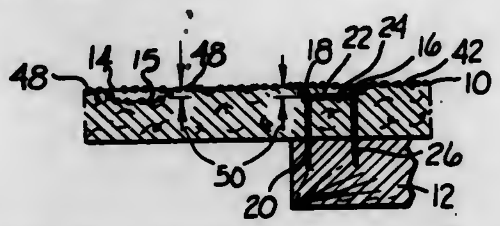
3,726,056
TEXTURAL PANEL

David Andrew Harris, Bedminster, N.J., and Bruce Edward Hart, Milton, Pa., assignors to Johns-Manville Corporation, New York, N.Y.

Filed May 12, 1971, Ser. No. 142,705

Int. Cl. E04b *1/82*; **E04c** *2/26*

U.S. Cl. 52—506 **5 Claims**



A fibrous panel having granular particulate material adhered to an exterior surface by a film of hardened liquid is provided with a plurality of indentations extending from the exterior surface and penetrating into the panel body. Mechanical fasteners entering the exterior surface to secure the panel to a supporting structure displace part of the surface on which the liquid coated granules are located into portions of walls defining additional indentations. Indentations produced by the fasteners are sufficiently similar in appearance to indentations not containing the fasteners that the fasteners are not visually apparent.

3,726,057
SUTURE PACKAGING

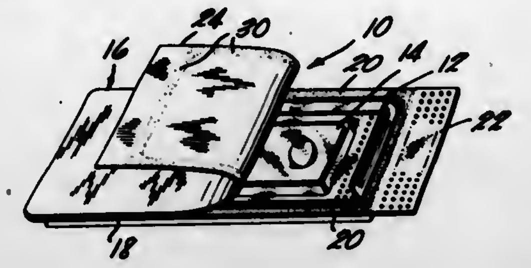
Mern S. Kemble, Deerfield, Ohio, assignor to Cenco Medican Industries, Inc., Chicago, Ill.

Division of Ser. No. 851,166, Aug. 19, 1969, Pat. No. 3,613,879. This application April 1, 1972, Ser. No. 130,485

Int. Cl. B65b *55/18*

U.S. Cl. 53—21 FC **5 Claims**

A package for objects such as sutures which are to be contained under conditions of complete sterilization is disclosed along with a method for in-line sterilization packaging of the objects on mass production basis. The package includes an inner packet in which is received a sterile surgical object such as a coil of suture material, the inner packet being substantially hermetically sealed and at least initially having a sterilizing gas confined therein. The sealed inner packet in turn is received in an outer packet of the same general construction as the inner packet and which also is substantially hermetically sealed and initially has a sterilizing gas confined therein. Both the inner and outer packets can be opened readily by peelably removing the respective packet closure lids from associated packet blisters which form the bottoms of the packets. The package is made by filling the inner packet blister with a sterile surgical object, then tacking a lid onto the blister and confining the inner packet in a vacuum chamber to remove air from the inner packet. A positive pressure of a sterilizing gas is then admitted to the chamber so as to initiate killing any bacteria on the surgical object and render it and the interior of the inner packet sterile. The lid is then completely sealed to its associated blister while still in the chamber so that a quantity of the sterilizing gas is captured within the sealed inner packet. The sealed inner packet is then removed from the vacuum chamber and placed in the outer packet blister and a closure lid is tacked in place on the blister. The outer packet and its contents is then placed in a chamber and subjected to a vacuum to remove air from the outer packet after which, a positive pressure of sterilizing gas is admitted to chamber to render the interior of the outer packet and exterior of the inner packet sterile. The lid of the outer packet is then completely sealed to its associated blister while still in the chamber and under pressure of the sterilizing gas thereby to capture within the sealed outer packet a quantity of such gas.



3,726,058
METHOD OF PRODUCING PACKAGES HAVING PARALLELEPIPED SHAPE

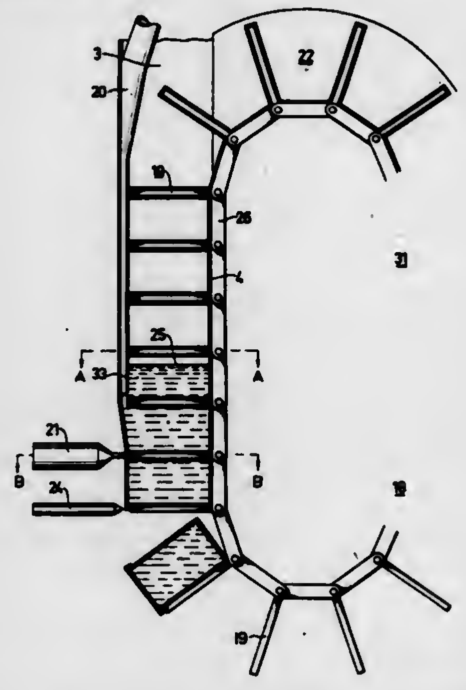
Sven Olof Soren Stark, Sodra Sandby, Sweden, assignor to Tetra Pak Developpement SA.

Division of Ser. No. 43,119, June 3, 1970. This application Jan. 15, 1971, Ser. No. 106,673

Claims priority, application Sweden, Aug. 13, 1969, 11242/69

Int. Cl. B65b *43/10*

U.S. Cl. 53—29 **8 Claims**



A method of producing packaging containers in which a channel-shaped portion of a member is placed around an element having at least one transverse channel-shaped portion and is sealed to the edges of the legs of the transverse channel-shaped portions to form at least one closed packaging container.

3,726,059
SEMI-AUTOMATIC APPARATUS FOR FILLING FOODSTUFF INTO TUBULAR NETTINGS

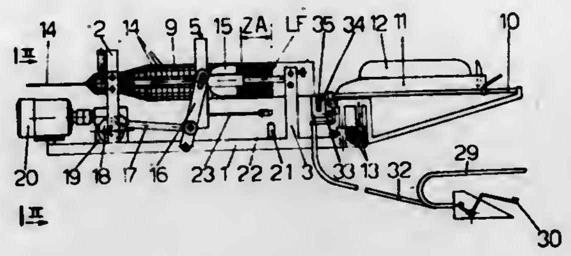
Vittoria Cherio, and Giuseppe Mignone, both of Valle San Matteo, Cisterna D'Asti, Italy

Filed Dec. 15, 1971, Ser. No. 208,179

Claims priority, application Italy, July 2, 1971, 69248 A/71

Int. Cl. B65d *39/06*

U.S. Cl. 53—64 **9 Claims**



The continuous presence and availability of gathered netting for filling of foodstuff into a receiving net by means of a tubular extruder is ensured by the present semi-automatic apparatus, which provides for the automatic reciprocating motion of a carrier which gathers the net around the outlet of the extruder while at the same time, a photo electric eye controls the unfolding of the net and the stuffing operation of the process, by stopping the motor which drives the carriage and causing a fresh length of netting to be automatically positioned at the outlet of the extruder.

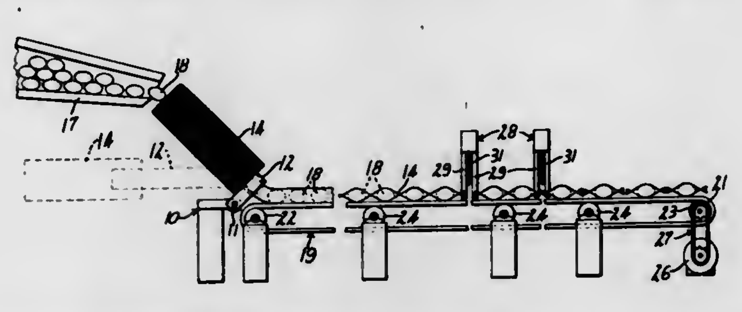
3,726,060
APPARATUS FOR ENCASING PRODUCT

Allen G. McMillan, Route One, Munford, Ala.

Filed June 23, 1971, Ser. No. 155,942

Int. Cl. B65b *51/04*, *39/06*

U.S. Cl. 53—138 A **5 Claims**



Product encasing apparatus having housing which supports casing for longitudinal movement along outer surface thereof with a passageway through housing for passing casing. Products passed sequentially through passageway and move inwardly of casing. Conveyor adjacent discharge end of passageway receives casing with products therein and draws same away from housing. Securing means retains casing closed at both ends of each product and casing is severed between securing means located between adjacent products.

3,726,061
TAB SLITTING AND FLAP FOLDING APPARATUS

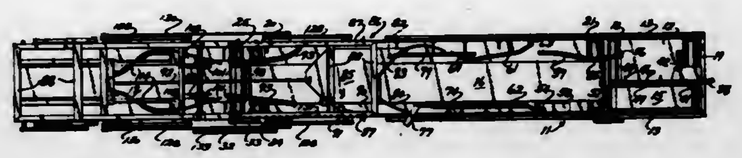
William G. Pagdin, Milwaukee; Robert F. Risley, Wauwatosa, and Wayne A. Smith, Shorewood, all of Wis., assignors to Jos. Schlitz, Brewing Company, Milwaukee, Wis.

Filed May 18, 1971, Ser. No. 144,611

Int. Cl. B65b *7/20*

U.S. Cl. 53—167 **22 Claims**

An apparatus for severing the connecting tabs between edges of outwardly downturned closure flaps of a paperboard carton and for folding the flaps inwardly over the interior of the carton and sealing the same. The apparatus includes a conveyor to support and move the carton and a knife blade is located in the path of travel of one of the connecting tabs and acts to sever the tab. The case is then rotated 90°, and further advancement of the carton moves the second connecting tab into engagement with a second knife to sever that tab. Guide members are positioned above the conveyor and act to fold the end flaps upwardly over the interior of the carton, while other guide members hold the side flaps in a generally horizontal position so that an adhesive can be applied to the side flaps. Following the application of the adhesive, the carton moves through a pair of guide members which act to fold the side flaps downwardly over the interior of the carton. To accommodate cartons of different heights, the flap folding members and the adhesive applying unit are mounted on a vertically movable frame that can be manually elevated or lowered depending upon the height of the carton passing through the apparatus.



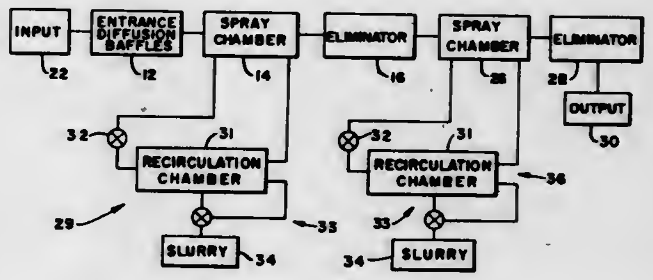
3,726,062
METHOD OF CONTROLLING THE EMISSION OF ODORS AND PARTICULATE MATTER

Ernest C. Hungate; Harold A. Ogletree, and Grason T. Nickell, all of Greensboro, N.C., assignors to Air Conditioning Corporation, Greensboro, N.C.

Filed Dec. 31, 1970, Ser. No. 103,039

Int. Cl. B01d *47/06*

U.S. Cl. 55—89 **11 Claims**



A method of controlling the emission of odors and particulate matter, for example, from a rendering and meat packing plant. The method comprises the steps of providing a source of gas, for example air, containing an undesirable level of odor and particulate matter, causing the gas to pass through a chamber containing a densely sprayed chemical solution which contacts the gas at a high contact efficiency between the gas and the liquid to collect and suspend particulate matter in the solution and absorb odors, and causing the gas again to be placed into forced intimate contact with the solution while simultaneously separating the chemical solution from the cleansed gas. The method may also include the step of creating a uniform gas velocity prior to treatment, and, in an alternate embodiment, the gas may be subjected to a plurality of spraying treatments with the same or different solutions. The solutions may be acidic, basic, masking, oxiodizing, neutralizing, or reacting. Specific solutions disclosed include solutions of water with sodium bicarbonate, sodium bisulfite, sodium hydroxide, chlorine dioxide, potassium permanganate, and calcium hypochlorite. Chlorine gas may also be introduced into the air stream for the same purpose.

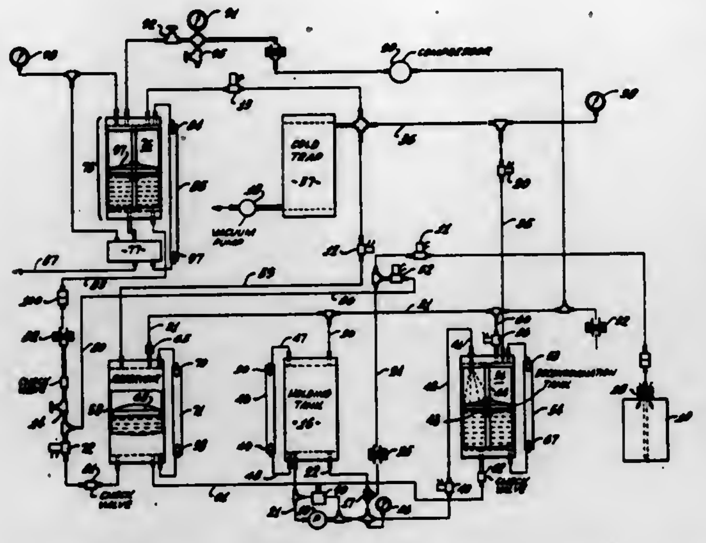
3,726,063
SYSTEM FOR FLUID DECONTAMINATION

Vincent G. Magorien, Granada Hills, and John A. Huffman, Northridge, both of Calif., assignors to Seaton-Wilson Incorporated, Burbank, Calif.

Filed Jan. 28, 1971, Ser. No. 110,477

Int. Cl. B01d *19/00*

U.S. Cl. 55—194 **12 Claims**



A system for removing contaminants such as dissolved and entrained gas, water and solids from fluids. Contaminated fluid is atomized and filmed in a very low pressure vacuum to remove gas and water. Filters are provided for removal of solids. Decontaminated fluid may be transferred within the system and withdrawn from the system without recontamination.

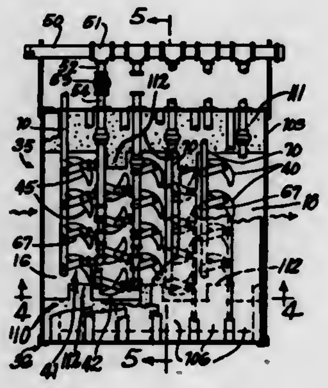
3,726,064
SCRUBBING APPARATUS FOR POLLUTED GASES

Harold A. Rowley, Palos Heights, Ill., assignor to M. H. Detrick Company, Chicago, Ill.

Filed June 3, 1970, Ser. No. 43,042

Int. Cl. B01d *47/12*

U.S. Cl. 55—241 **1 Claim**



A liquid screen scrubbing apparatus for effectively and efficiently removing insoluble and soluble solid, liquid and gaseous pollutants and materials valuable for by-product recovery from gases such as products of combustion and other atmospheres of industrial processes. The apparatus is located in a flue between one or more sources of polluted gases and a point of discharge, the apparatus including longitudinally spaced rows of vertically disposed elongated tanks, the rows extending transversely of the flue. The tanks in a row are angularly oriented and spaced from each other, and the tanks in adjacent rows are staggered. Each tank is crescent-shaped in horizontal cross section, and the concave wall thereof faces generally upstream toward the gas source. Liquid such as water continuously flows down the concave upstream walls of the tanks forming liquid screens, and when gases moving through the flue impinge on the flowing liquid, the insoluble and soluble pollutants such as dust, liquid droplets, SO_2, SO_3, Co, etc. and by product materials are entrained or dissolved in, and carried away by, the liquid. The tanks may be mounted for rotation on vertical axes, and thus subject to variation of the angular orientation in the manner of an adjustable damper between substantially closed position and desired open positions. The gases have tortuous travel paths through the apparatus, and the paths and pressure drop in the apparatus are determined by the angular orientation of the tanks. There are optimum angular settings for the crescent-shaped tanks to provide the most efficient removal of the solid and soluble pollutants and by-product materials of given gases under given conditions of gas velocity.

3,726,065
APPARATUS FOR CLEANING FLUE GASES OF BLAST FURNACES AND THE LIKE

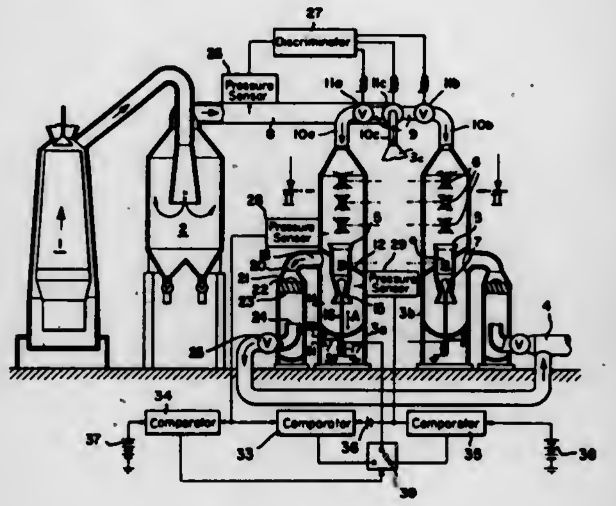
Gerhard Hausberg, Essen-Bredeney, and Karl-Rudolf Hegemann, Essen-Bergerhausen, both of Germany, assignors to Gottfried Bischoft Bau Kompl. Gasreinigungsund Wasserruckkuhlanlagen Kommanditgesellschaft, Essen, Germany

Filed Oct. 12, 1971, Ser. No. 188,557

Claims priority, application Germany, Oct. 10, 1970, P 20 49 903.0

Int. Cl. B01d *47/10*

U.S. Cl. 55—223 **10 Claims**



Flue gases from a high-pressure blast furnace are led from above through a dustbin to a wash tower containing several spray heads above a nozzle forming an annular accelerator gap of adjustable width. Adjustment of the gap width is carried out continuously, under the control of pressure sensors upstream and downstream of the gap, to maintain a constant output pressure, except with abnormally low flue-gas pressure in which case an alternate control circuit takes over to maintain a constant pressure differential across the gap. A group of such nozzles, in separate towers or in a common tower, may operate with different and mutually complementary pressure characteristics and may be selectively activated by an upstream pressure sensor whenever the flue-gas pressure fails within the linear range of its characteristic.

3,726,066
DUST COLLECTOR

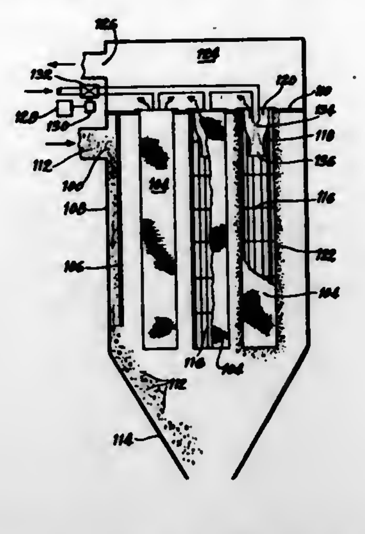
Donald G. Colley, Huxley, Alberta, Canada; Raymond M. Leliaert, South Bend, and Clyde A. Snyder, Mishawaka, both of Ind., assignors to Wheelabrator Frye Inc., New York, N.Y.

Continuation of Ser. No. 849,443, Aug. 12, 1972, abandoned. This application Dec. 14, 1970, Ser. No. 98,199

Int. Cl. B01d *46/04*

U.S. Cl. 55—302 **5 Claims**

Apparatus for removal of solids from gaseous medium by the use of a filter surface in the form of filter tubes from which the filter cake is removed by a reverse burst of high pressure gas without stopping filter flow and in which the gaseous medium with suspended solids is baffled for introduction into the filter section in a manner not to interfere with the disposal of the removed filter cake and to enhance solids separation.



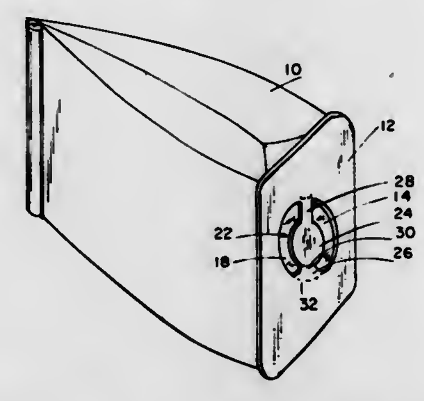
3,726,067
SELF-SEALING DUST BAG

John E. Fesco, South Hempstead, N.Y., assignor to Studley Paper Company, Inc., Inwood, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,155

Int. Cl. B01d *46/02*

U.S. Cl. 55—367 **10 Claims**



A self-sealing dust bag for a vacuum cleaner provided with an inlet tube. The bag includes a body of relatively porous pliable dust-impermeable material and a relatively stiff plate portion provided with an aperture for the reception of the inlet tube. A patch of resilient elastic, dust-impermeable material is secured to the inner side of the stiff plate portion. The patch is provided with an aperture smaller than and in registry with the plate portion aperture. A bridge is integral with the stiff plate portion and extends over the aperture therein. The bridge includes a bulbous central section and two oppositely located connecting sections. The bulbous section is larger than the patch aperture and smaller than the stiff plate portion aperture. The bulbous section is frangible at the junction line between the bulbous section and one of the connecting sections to allow for the reception of the inlet tube in the stiff plate portion aperture.

3,726,068
SEPARATOR

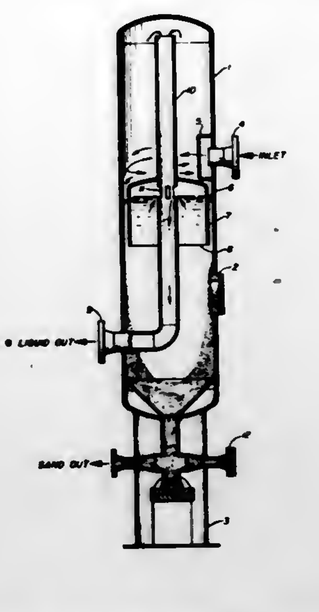
Neely E. Lowrie, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,559

Int. Cl. B01d *45/12*

U.S. Cl. 55—421 **1 Claim**

A vertically extended cylindrical vessel has an inlet for a mixture of fluidized materials arranged to develop centrifugal force upon the mixture. The mixture descends between the outside of an inverted cup structure mounted symmetrically within the vessel and the interior wall of the vessel. The flow of the lighter material phase of the mixture is reversed and



removed near the top of the cup interior. The heavier material phase of the mixture continues to travel down the vessel wall interior and is removed near the bottom of the vessel.

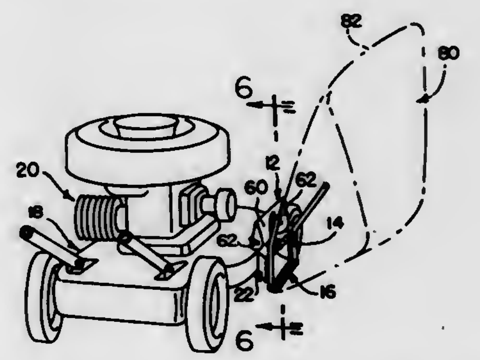
3,726,069
PIVOTING DEFLECTOR COMBINATION

John M. Cope, Livonia, Mich., assignor to Sturdevant Manufacturing Corporation, Livonia, Mich.

Filed Feb. 28, 1972, Ser. No. 229,920

Int. Cl. A01d *35/22*

U.S. Cl. 56—202 **10 Claims**



A pivoting deflector combination is provided, comprising a deflector, a bracket member, and a collector frame support adapted to be removably secured to the bracket member affixed to the housing of a power lawn mower adjacent the exit end of the discharge chute. The bracket is provided with means for removably securing a bag-type collector of grass cuttings and debris swept up by the rotating blade of the mower, the deflector being maintained out of normal deflecting position while the collector is secured by and upon the bracket. Resilient means biasing the deflector to normal grass deflecting posture and detent means to hold the deflector away from the collector are also provided in the combination.

3,726,070
STAGGERED BLADE MOWER

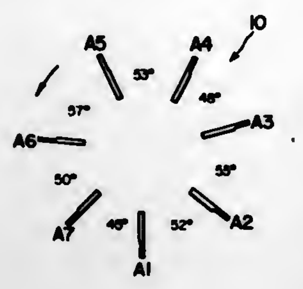
Albert L. Klosterman, Cincinnati, Ohio, and Dale A. Klemenhagen, Minneapolis, Minn., assignors to Toro Manufacturing Corporation, Minneapolis, Minn.

Filed Aug. 11, 1969, Ser. No. 849,034

Int. Cl. A01d *55/20*

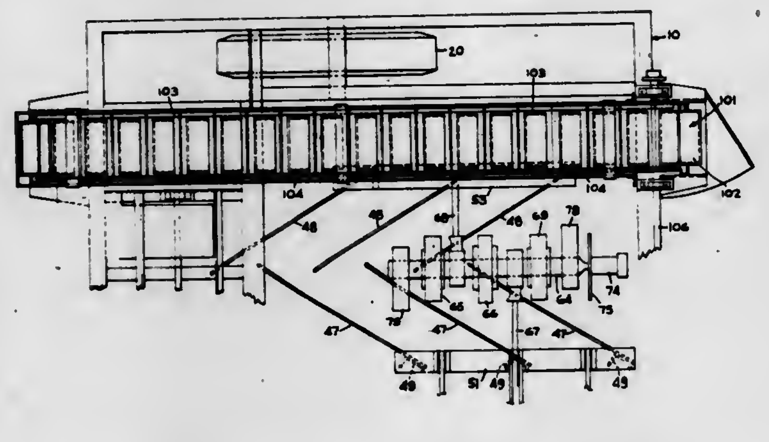
U.S. Cl. 56—294 **7 Claims**

A reel for a reel type mower having unequally spaced blades, in which the distance or angle between each pair of adjacent blades is different from the distance or angle between every other pair of adjacent blades on the reel.



3,726,071
FOLIAGE AGITATING MEANS FOR HARVESTING MACHINES

Vito M. Mecca, North Collins, N.Y., assignor to Mecca Bros., Inc., North Collins, N.Y.
Filed July 23, 1971, Ser. No. 165,083
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **9 Claims**

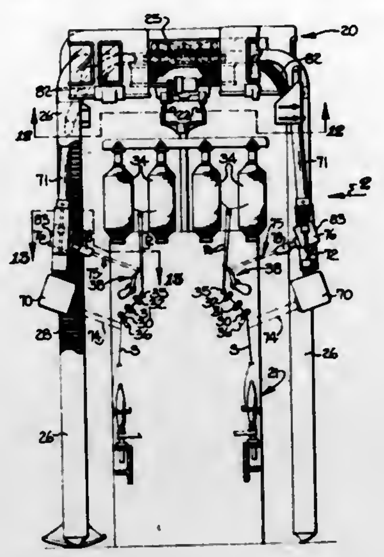


An ambulatory supporting frame provided with wheels is adapted for longitudinal movement along a row of plants by a separate vehicle. A shaker means carried by the frame includes a plurality of beater elements, in the form of plates or slats, which extend toward opposite sides of the row of plants and bear against the foliage of the plants. The beater elements on one side of the row are staggered relative to the beater elements on the opposite side of the row, and the beater elements are arranged in a plurality of vertical series of elements on each side of the row. A motive means carried by the frame moves the beater elements toward and away from the row to shake the crops off the plants. The removed crops are collected by a movable floor and conveyor system provided on the frame.

3,726,072
APPARATUS AND METHOD FOR INTERRUPTING TEXTILE YARN FORMING OPERATIONS

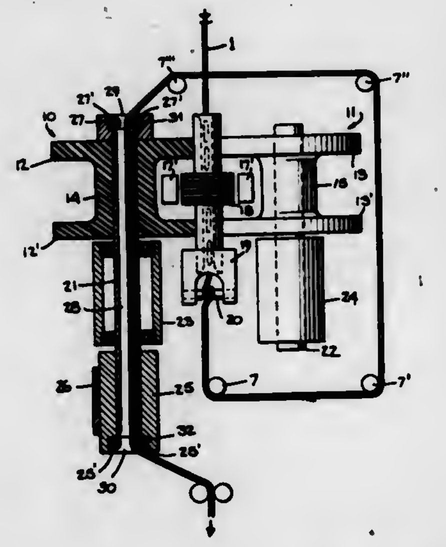
Maynard Ford, Fitchburg, Mass., and Charles Dixon Lee, Jr., Charlotte, N.C., assignors to Parks-Cramer Company, Fitchburg, Mass.
Filed Nov. 23, 1971, Ser. No. 201,303
Int. Cl. D01h *13/16*
U.S. Cl. 57—34 R **29 Claims**

Normal feeding of supply strands into drafting systems of a textile yarn forming machine, for delivery as attenuated strands, is interrupted in response to breakage of the corresponding attenuated strands. Interruption of supply strand feeding is actuated by redirection of flowing air from a traveling pneumatic cleaner to impinge upon strand interrupting members and selectively displace those members from first positions to second positions in which corresponding supply strands are engaged and restrained against movement into corresponding drafting systems.



3,726,073
COMBINED TWIST TUBE AND FRICTION SPINDLE AND PROCESS

Otto Titus Stutz, Wattwil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Canton of St. Gall, Switzerland
Filed May 28, 1971, Ser. No. 147,852
Claims priority, application Switzerland, June 5, 1970, 8423/70
Int. Cl. D02g *1/02, 1/04*
U.S. Cl. 57—34 HS **5 Claims**

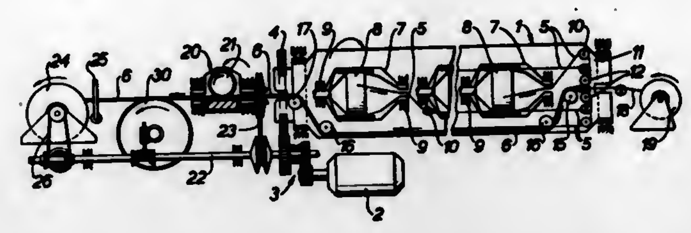


False-twist device for treating yarn that has been textured by means including a twist tube positioned in the throat between two axially parallel rollers, wherein one of the rollers is formed with an axial bore with friction members in the bore, the yarn being directed through the bore and in contact with the friction members after leaving the twist tube, and process for treating the yarn.

3,726,074
METHOD AND APPARATUS FOR MANUFACTURE OF STRANDS AND CABLES

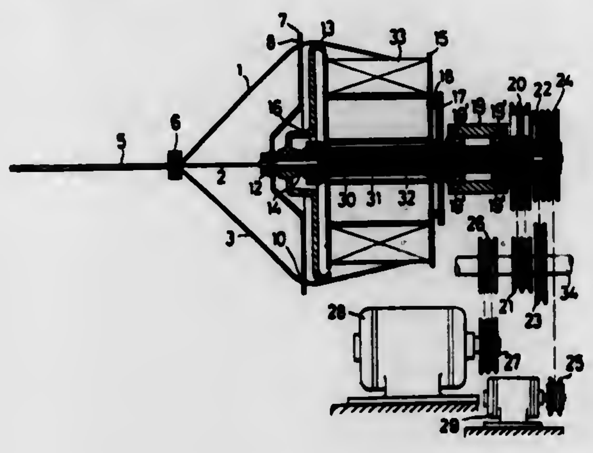
Guido Peene, Zwevegem, Belgium, assignor to N. V. Bekaert S. A., Zwevegem, Belgium
Filed May 28, 1970, Ser. No. 41,316
Claims priority, application Great Britain, June 2, 1969, 27,827/69
Int. Cl. D07b *3/04, 3/12;* **H01b** *13/02*
U.S. Cl. 57—58.34 **17 Claims**

Strands or cables made of filamentary material, metallic or non-metallic, particularly intended for use as reinforcing elements in flexible sheet material. Method and apparatus for assembling and twisting together the elements of the strand or cable to produce strands and cables having a high capacity for elastic elongation when tensioned, and thus high resistance to fatigue.



3,726,075
VARIABLE PITCH-TYPE CABLE CORE TWISTER

Hisateru Akachi, Kanagawa-ken, Japan, assignor to Oki Densen Kabushiki Kaisha, Kanagawa-ken, Japan
Filed March 18, 1971, Ser. No. 125,630
Claims priority, application Japan, April 7, 1970, 45/30023
Int. Cl. D07b *3/02*
U.S. Cl. 57—59 **4 Claims**

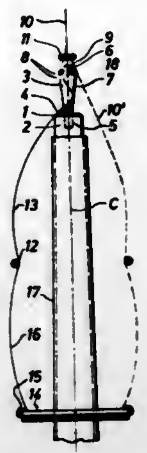


A variable pitch-type cable core twister comprising a frame, a reel rotatably supported in said frame and having a supply roll of core elements wound thereon, a core element paying-out flyer fixedly mounted on a shaft rotatably supported in said frame for rotational movement relative to said reel to pay said core elements out of said reel, a brake or tensioning flyer fixedly mounted on a separate shaft rotatably supported in said frame for rotational movement relative to said reel and paying-out flyer and having a plurality of guide holes through which said core elements pass in separated relationship while being braked thereby, a core element twisting-together die fixedly mounted in said frame for twisting the core elements together to form a quad while the core elements are passing through the guide, and drive means for said reel, paying-out flyer and brake flyer.

3,726,076
SPINDLE TIP EXTENSION FOR SPINNING WITH A REDUCED BALLOON

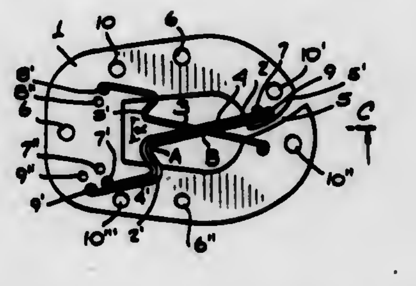
Arthur Wurmli, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed Nov. 19, 1970, Ser. No. 91,012
Claims priority, application Switzerland, Nov. 21, 1969, 17347/69
Int. Cl. D01h *7/18*
U.S. Cl. 57—73 **24 Claims**

The spindle tip extension is sized so that the length of the shaft between the spindle tip and the transition of the crown cone to the shaft is one-half times to three times longer than the shaft diameter and the crown length between the point of maximum crown diameter and the transition of the crown cone to the shaft is 1½ to 4 times more than the length of the shaft, while the crown cone forms an angle of 8° to 13° with the axis of rotation of the spindle.



3,726,077
APPARATUS FOR PREVENTION OF CRINKLING IN TEXTILE YARNS

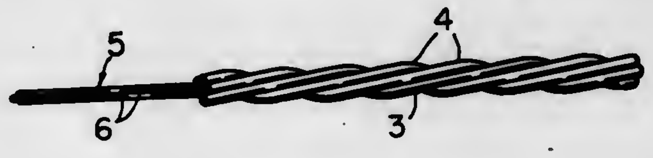
Franz Nyfeler, Kaltbrunn, Switzerland, assignor to Heberlein & Co. AG, Wattwil, St. Gall, Switzerland
Filed Sept. 10, 1971, Ser. No. 179,286
Claims priority, application Switzerland, March 12, 1971, 3677/71
Int. Cl. D01h *13/04;* **B65h** *57/00*
U.S. Cl. 57—106 **13 Claims**



Crinkle-preventer for textile yarns comprising a support and three bars arranged on the support so that one bar passes at a given angle between the other two which two are parallel, the bars being formed of a straight part and an S-shaped end part.

3,726,078
STEEL CORD AND ARTICLE INCLUDING THE SAME

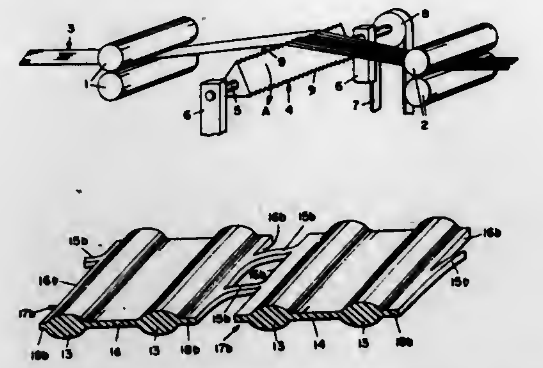
Yoshimi Nakamura, Ashiya, Japan, assignor to Kobe Steel, Ltd., Fukiai-ku, Kobe, Japan
Filed Sept. 10, 1970, Ser. No. 71,151
Int. Cl. B60c *9/16*
U.S. Cl. 57—145 **3 Claims**



Steel cord and article including the same, the steel cord consisting of a center core and a plurality of outer strands twisted around the center core. The center core has a plurality of filaments or twisted strands which are arranged substantially in parallel to each other to form a parallel or non-twisted strand, thereby permitting the production processes to be greatly simplified while the mechanical properties of the steel cord are improved by virtue of the parallel strand forming the center core.

3,726,079
SYNTHETIC TEXTILE YARN

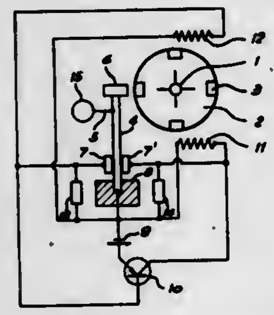
George B. Feild, Stone Harbor, N.J., and Charles W. Kim, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.
Continuation of Ser. No. 746,522, July 22, 1968, abandoned. This application July 12, 1971, Ser. No. 161,680
Int. Cl. D02g *3/02, 3/06*
U.S. Cl. 57—155 **2 Claims**



This invention relates to forming synthetic textile yarn by the fibrillation of a thermoplastic ribbon, and particularly to a yarn having increased bulk, resilience and luster formed by the fibrillation of a striated ribbon, and comprises engaging the ribbon by edge means having teeth on a gauge equal to a whole number multiple in excess of two of the gauge of the striations of the film, and the teeth on the successive edge means are aligned angularly whereby the teeth will engage the film continuously between the same two striations to split the ribbon into continuous filaments each of which consists of two or more striations.

3,726,080
CONTROL APPARATUS FOR AN ELECTRIC TIMEPIECE

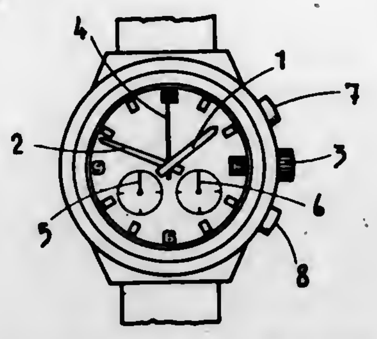
Gerhard Vosseler, Basel, Switzerland, assignor to Mueller & Co. A.G., Oberdorf, BL, Switzerland
Filed Jan. 14, 1971, Ser. No. 106,360
Claims priority, application Switzerland, Jan. 16, 1970, 617/70
Int. Cl. G04c *3/02*
U.S. Cl. 58—23 D **10 Claims**



Control apparatus of an electric timepiece, particularly a watch, of the type including an electric motor synchronized by an oscillating device and the drive winding of said electric motor being connected in the motor circuit of a transistor, and including a member controlling the timing train of the timepiece, in which apparatus the oscillating device includes a piezo-electric crystal and a piece of magnetic material which when oscillated causes oscillation of said piezo-electric crystal, said magnetic material being disposed in proximity to the circumference of a rotor fixed for rotation with the electric motor and around the periphery of which rotor are disposed one or more permanent magnets so arranged that rotation of the rotor causes said magnetic material and said piezo-electric crystal to be oscillated, said piezo-electric crystal being connected in the control circuit of said transistor so that electric impulses from the oscillating piezo-electric crystal are superimposed on the motor circuit of said transistor.

3,726,081
ELECTRIC TIME-PIECE WITH CHRONOGRAPH INDICATOR

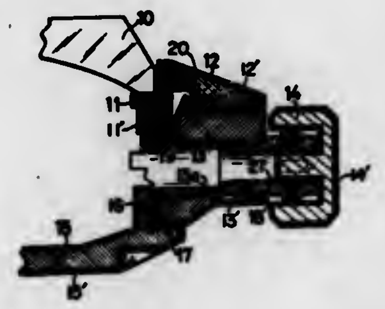
Ali Schneiter, Neuchatel, Switzerland, assignor to Ebauches S.A., Cantón of Neuchatel, Switzerland
Filed July 28, 1971, Ser. No. 166,726
Claims priority, application Switzerland, Aug. 7, 1970, 11905/70
Int. Cl. G04f *3/06*; **G04b** *27/00*
U.S. Cl. 58—39.5 **8 Claims**



An electric time-piece with a chronograph indicator, the chronograph indicating organ or organs of which can be put on and off by means of a controlling member operable manually, characterized by the fact that the circuit sustaining the resonator oscillations of said time-piece is designed so as to have a characteristic curve modifiable by adjustment, this adjustment being controlled by the control member for putting on and off the chronograph indicator, the whole being so arranged that said adjustment compensates for the extra energy consumed by the clockwork when the chronograph indicator is on and keeps the amplitude of the resonator oscillations unchanged.

3,726,082
WATCH CASE

Hachiro Kushida, Tokorozawa, Japan, assignor to Citizen Watch Company, Limited, Tokyo, Japan
Filed Jan. 12, 1971, Ser. No. 105,865
Claims priority, application Japan, Jan. 13, 1970, 45/3641
Int. Cl. G04b *37/00*
U.S. Cl. 58—88 G **5 Claims**

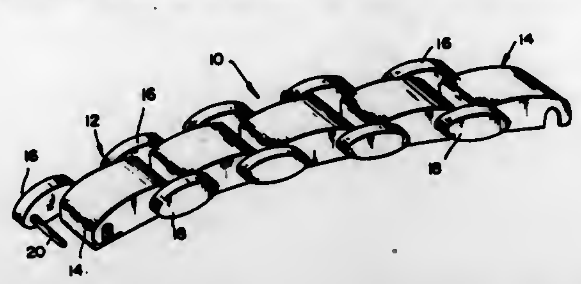


A watch case, with the exception of the non-metallic crystal, is predominately made from aluminum or an aluminum alloy upon which a thin layer of fine crystalline $\gamma \mathrm{AL}_2\mathrm{O}_3$.$\mathrm{H}_2\mathrm{O}$. The casing may also be subjected to a dyeing step and a crystal pore-filling step followed by a final polishing step.

3,726,083
LINK CHAIN

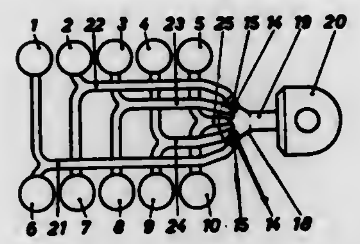
Louis Pompeo, Bloomfield, N.J., assignor to Duchess Mfg. Corp., Hoboken, N.J.
Filed Feb. 3, 1971, Ser. No. 112,175
Int. Cl. F16g *15/04*
U.S. Cl. 59—85 **10 Claims**

A link chain utilized for wrist watch bands, bracelets, necklaces, and other items of jewelry. The link chain includes a series of readily detachable and removable end links so that the length of the chain can readily be adjusted. Each link of the series has a twin rod link-half and a central link-half. The twin rod link-half has a pair of spaced rods positioned between and permanently fixed in a pair of end lugs. The central link-half of each link of the series joins the rod link-halves of adjacent links and fits between the end lugs of the twin rod link-halves. The central link-half is essentially a hollow box which forms one closed bearing and one selectively closable bearing. The selectively closable bearing of the central link-half is closed or latched to captively engage one of the twin rods of a twin rod link-half of the adjacent link by means of a sliding panel or door. When an end link is to be removed, the panel of the second from the end central link-half is shifted to its open or disconnect position to remove or disconnect the rod of the twin rod link-half of the adjacent end link from this central link-half.



3,726,084
APPARATUS FOR SUPERCHARGING AN INTERNAL COMBUSTION ENGINE

Erwin Meier, Zurich, and Gottlieb Zehnder, Kirchdorf, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Nov. 25, 1970, Ser. No. 92,603
Claims priority, application Switzerland, Dec. 4, 1969, 18060/69
Int. Cl. F02b *37/04*
U.S. Cl. 60—13 **4 Claims**

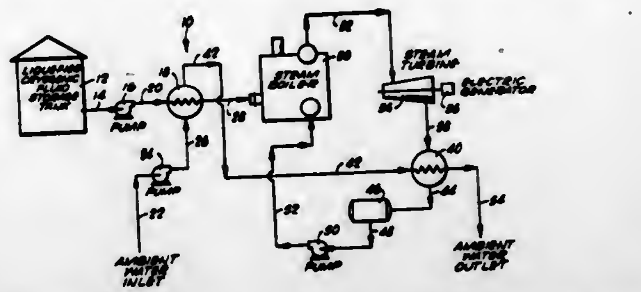


An arrangement for supercharging an internal combustion engine with an improved pulse-turbocharging system wherein the exhaust pipes from the engine cylinders terminate in nozzles which are connected by way of a combining section with the inlet to a mixing tube, the outlet end from this tube being connected with the inlet to the supercharger. The preexhaust pressure waves from the cylinders are decomposed, during a gas change period, into a main pressure wave component and an auxiliary wave component, and the main and auxiliary pressure wave components are so modulated in the combining section that an admissible backpressure in the exhaust pipe of the respective scavenged cylinders is not exceeded.

3,726,085
PREVENTING THERMAL POLLUTION OF AMBIENT WATER USED AS A PROCESS COOLING MEDIUM

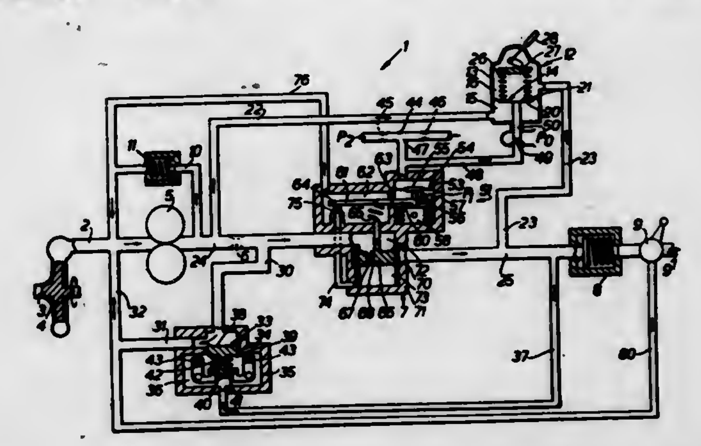
Edwin M. Arenson, El Reno, Okla., assignor to Back, Sivalls & Bryson, Inc., Oklahoma City, Okla.
Filed June 7, 1971, Ser. No. 150,448
Int. Cl. F01k *25/00*
U.S. Cl. 60—36 **7 Claims**

The present invention relates to improvements in processes where a stream of liquefied cryogenic fluid is vaporized and superheated and utilized as fuel or the like, and one or more streams within the process are cooled. By the present invention, the stream of liquefied cryogenic fluid is passed in heat exchange relationship with a stream of ambient water so that the liquefied cryogenic fluid is vaporized and superheated and the water is cooled. The cooled stream of ambient water is then used to cool the one or more streams within the process so that the stream of ambient water is heated. The cooling and heating of the stream of ambient water are controlled so that the temperature of the stream exiting the process is substantially the same as the temperature of the stream entering the process thereby preventing thermal pollution of the ambient water source.



3,726,086
ENGINE FUEL SUPPLY CONTROL SYSTEM

Karl Herbstritt, Chellaston, England, assignor to Rolls Royce Limited, Derby, England
Filed April 9, 1971, Ser. No. 132,777
Int. Cl. F02c *9/04*
U.S. Cl. 60—39.28 R **8 Claims**

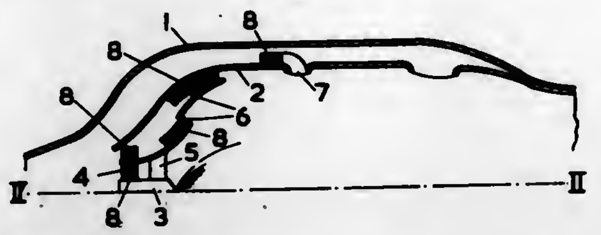


A gas turbine engine fuel control system comprising a main fuel conduit having a fuel pump, whose output is dependent upon engine speed, and a fuel metering device. A governor is provided which has a pressure-responsive member oppositely disposed pressure surfaces of which are open to the pressures prevailing in the main fuel conduit upstream and downstream of the fuel meter device. A control system is responsive to the position of the pressure-responsive member and controls the fuel supply passing to the downstream end of the main fuel conduit so as to maintain the engine speed at a predetermined value. A flow restrictor is provided in the main fuel conduit upstream of the fuel metering device, and downstream of the flow restrictor and upstream of the fuel metering device there is arranged a spill duct having means for varying the flow through the spill duct inversely with variations in the fuel density.

3,726,087
COMBUSTION SYSTEMS

William Dean Bryce, Farnham, England, assignor to Minister of Aviation Supply in Her Britannic Majesty's Government of the United Kingdom of Great Britian and Northern Ireland, London, England
Filed March 19, 1971, Ser. No. 126,158
Claims priority, application Great Britain, March 20, 1970, 13,576/70
Int. Cl. F02c *7/26*
U.S. Cl. 60—39.65 **6 Claims**

An air inlet for an internal combustion engine comprises a plurality of tubes, each tube being so dimensioned that airflow therethrough changes from laminar to turbulent at a predetermined Reynolds number. Such an inlet is particularly useful in the combustion chamber of a gas turbine engine, where it can

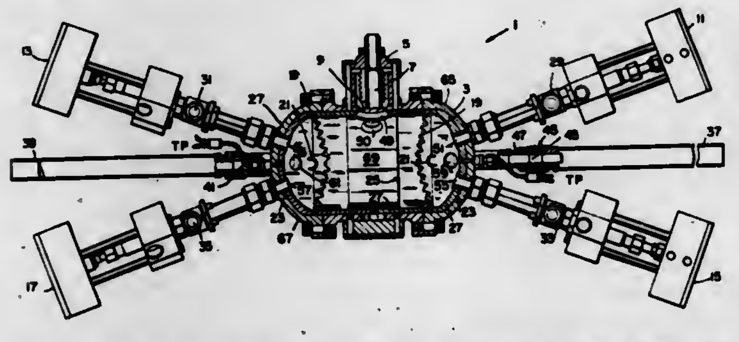


be used to slow down air velocity in engine-out flight conditions, while offering little resistance to flow when the engine is operating. The reduction in velocity assists in the engine relight procedure.

3,726,088
ON-DEMAND VARIABLE FLOW CLOSED LOOP GAS GENERATOR SYSTEM WITH A VARIABLE AREA INJECTOR

Willi K. Kretschmer, Santa Cruz, and Paul A. Heady, Jr., Mount Herman, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 20, 1971, Ser. No. 173,510
Int. Cl. F02k *9/02*
U.S. Cl. 60—39.74 A 10 Claims

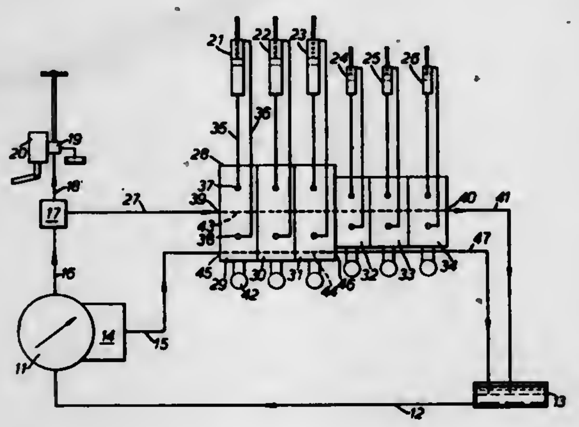


A closed loop monopropellant on-demand fuel feeding system for firing a reaction control device. The system includes a single bellows variable area injector having no valves other than an explosive disc in the propellant supply system separating the gas generator from the fuel storage tanks. The injector comprises a stationary pintle with swirl slots and a movable orifice plate attached to the bellows to vary the area of the swirl slots.

3,726,089
FLUID-PRESSURE-OPERABLE SYSTEMS

Kenneth Raymond Boydell, Tewkesbury, England, assignor to Dowty Technical Development Limited, Brockhampton, Cheltenham, England

Filed April 8, 1971, Ser. No. 132,480
Int. Cl. F15b *11/16*
U.S. Cl. 60–422 13 Claims

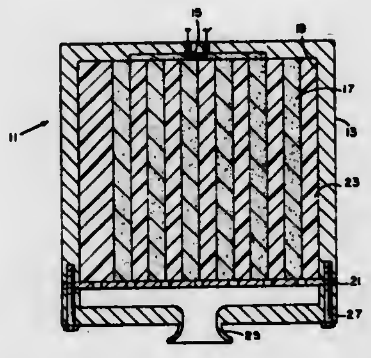


A fluid-pressure-operable system including a variable-delivery pump, a pressure-responsive element operable to vary pump displacement, and a selector valve for controlling supply of fluid from the pump to a service. The pressure to which the element is subjected is changed upon movement of the selector valve from a neutral position to a service-selecting position, whereby the pump is adjusted from a first displacement setting to another displacement setting.

3,726,090
SUPPORT AND PRESSURE SEALANT FOR CARPET-ROLL TYPE SOLID PROPELLANT GRAIN

Robert E. Betts, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 3, 1971, Ser. No. 149,433
Int. Cl. F02k *9/04*
U.S. Cl. 60—255 3 Claims

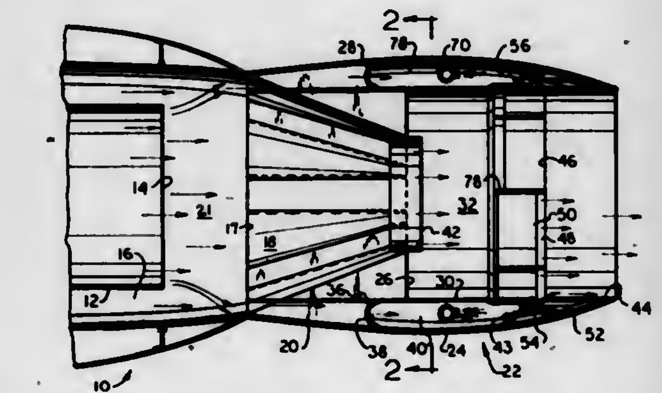


A rocket motor that has a cartridge type propellant with a foam material about the propellant grain to support the propellant grain and provide a pressure sealant until the propellant grain has been ignited.

3,726,091
SOUND SUPPRESSING APPARATUS

Remo Tontini, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Feb. 16, 1971, Ser. No. 115,246
Int. Cl. F02k *11/00*; F01n *1/00*
U.S. Cl. 60—264 17 Claims

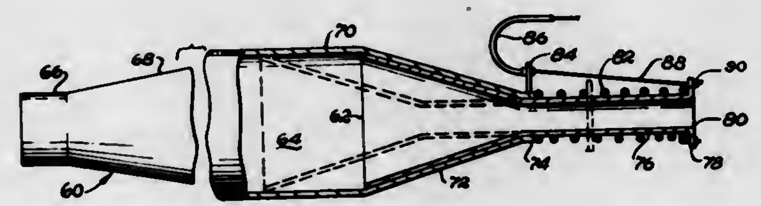


Engine of either turbo fan or turbo jet type is provided with multiple lobed exhaust nozzle. An ejector barrel defining a mixing zone is connected at its leading edge to the lobe tips adjacent to the nozzle exit plane to receive engine gases and free stream air. A plenum chamber in the forward portion of the barrel has inlet ports in flow communication with tip portions of lobes, and guide vanes extend forward into lobes to split the mixed engine gases and guide outer streams into plenum chamber inlet ports while inner streams flow directly to mixing zone. An annular exhaust slot is formed at the aft end of the plenum chamber to discharge high pressure gas into the intermediate section of the mixing zone. A plurality of control valve plates extend around the periphery of the slot and are individually controlled to open all or any part of the slot. When lower plates are open, the slot discharges an elongate stream of high pressure gas in the form of a trough-shaped shield to surround lower part of propulsion stream and reflect sound waves upward. Valves at one side may be opened to shield fuselage from noise. When all valves are opened, a complete gas sleeve is formed around the propulsion stream and improves thrust in addition to sound suppression. Gas for slot may be taken from turbine tail pipe for increased temperature. When air is used, afterburner may be employed to produce even higher temperature to enhance the reflective effectiveness of the shield.

3,726,092
VARIABLE EXHAUST SYSTEM FOR COMBUSTION ENGINE

Richard Charles Raczuk, 17218 Index Street, Granada Hills, Calif.

Filed March 29, 1971, Ser. No. 128,770
Int. Cl. F01n *7/08*
U.S. Cl. 60—314 4 Claims

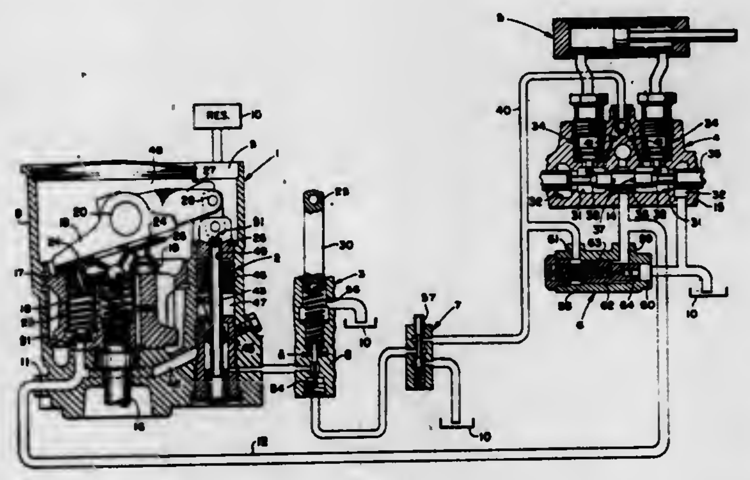


An exhaust system is disclosed with movable elements to accommodate various operating states of an associated engine. In one embodiment a diverging megaphone faces a reflector which may be variously positioned in relation to the end of the megaphone, while in a second embodiment an expansion chamber is provided of various effective size in accordance with engine operation. Manual control means is disclosed as a part of the system for accomplishing various positions, as well as a structure for controlling the state of the exhaust system in accordance with the position of the engine throttle.

3,726,093
PUMP CONTROL SYSTEM

Thomas J. Malott, Mentor, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 15, 1971, Ser. No. 198,747
Int. Cl. F15b *15/18, 15/22*
U.S. Cl. 60—445 11 Claims

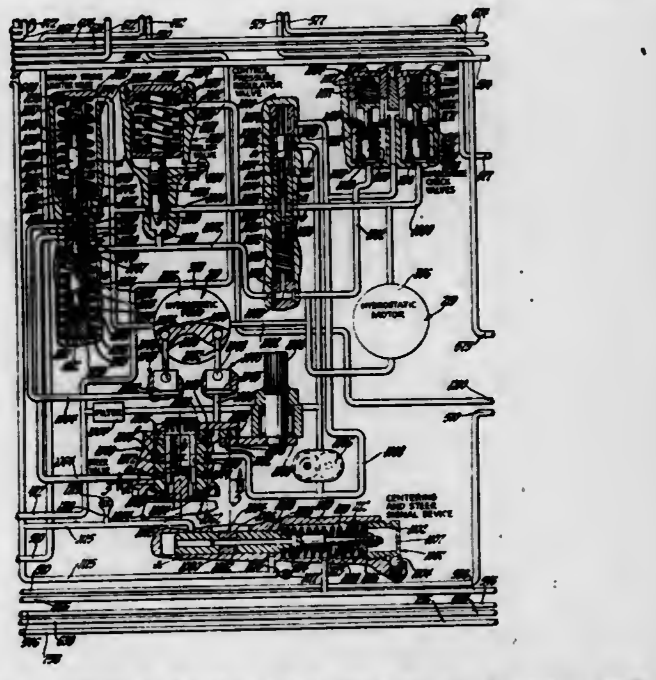


A pump control system characterized in that the pressure drop across a variable area orifice embodied in a directional control valve for a fluid motor is utilized to vary the displacement of the pump so that the fluid motor is actuated at desired speed irrespective of variation of pump speed and motor load. The system is further characterized in that it embodies a power limiting device which senses increasing motor load pressure to decrease the displacement of the pump as the horsepower requirement approaches the maximum available horsepower. Yet a further characterizing feature of the present system is the provision of a pump de-stroking valve which is disposed in the pump output circuit upstream of the directional control valve to provide a bypass to the reservoir to maintain standby power drain at a low value.

3,726,094
POWER TRAIN CONTROL SYSTEM

Robert H. Schaefer, Westfield, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 779,502, Nov. 27, 1968, Pat. No. 3,640,157
Filed Aug. 7, 1970, Ser. No. 61,981
Int. Cl. F16d *31/06*; B62d *11/00*
U.S. Cl. 60—488 2 Claims



A control system is shown for a multispeed forward and reverse track-laying vehicle power train, the control system having a manual forward and reverse control for effecting manual shifts between forward and reverse, a manual drive range control and an automatic drive range control for effecting manual and automatic drive range shifting operation and a steering control for effecting a steering operation. The manual forward and reverse control provides selection between forward and reverse drive in the lowest drive range and prevents such shifting by the operator in all of the higher drive ranges. The manual drive range control provides selection between the drive ranges with the selected drive range being established immediately on an upshift and by speed governed automatic shifting operation on a downshift. The automatic drive range control provides automatic shifting using separate speed controlled upshift biases, an engine torque demand controlled upshift inhibiting bias and an engine torque demand controlled downshift bias. Both the manual forward and reverse control and the manual drive range control are electrically activated and in the event there is an interruption in electrical power, the directional drive selected by the manual forward and reverse control is maintained while the range control, if under manual control, is automatically conditioned for automatic control to maintain power train control. A sequence control is effective to disengage the range drive to the load in the lowest drive range during shifting between forward and reverse to provide for engagement of the directional drive under no-load conditions. The steer control operates on a hydrostatic unit to control steering by controlling hydrostatic pump displacement while assuring straight vehicle no-drift motion when there is no steer demand. The controlling force effecting this pump displacement control is varied according to hydrostatic pump output to meet the varying steer load demands in both directions of steer. There is also provided a stroke or pump displacement limiter for limiting pump displacement regardless of the steer demanded by the operator to prevent pump overload. Hydrostatic system pressure is controlled by a pressure relief control in accordance with engine torque demand and vehicle speed to both prevent overloading of the hydrostatic pump and limit the degree of steer bias. The steer control signals the range control to inhibit automatic range shifting during steering operation. The hydrodynamic torque converter in the power train has a lockup drive which is normally disengaged on range shifting and is held engaged during low speed operation in each range to provide for utilization of vehicle momentum to provide power for steering while preventing engine stall.

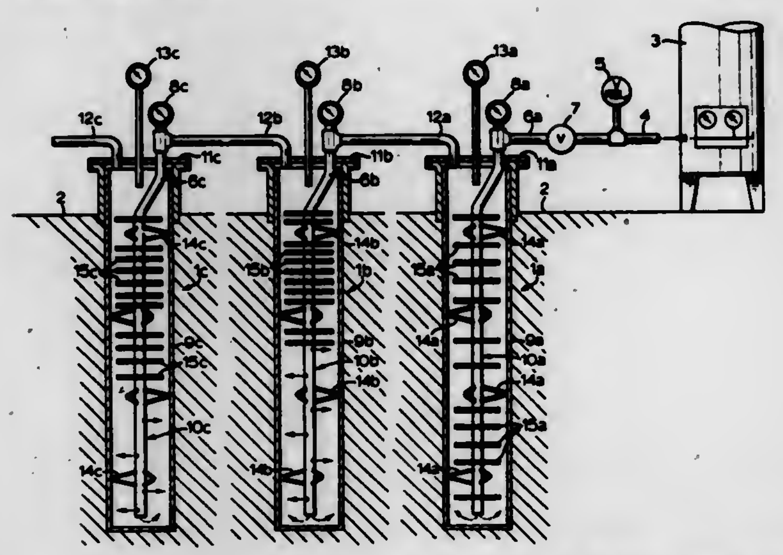
3,726,095
GROUND FREEZING METHOD AND APPARATUS

John William Ross, Toronto, Ontario, Canada, assignor to Union Carbide Canada Limited, Toronto, Ontario, Canada

Filed Dec. 31, 1970, Ser. No. 103,089

Int. Cl. E02d *3/12*

U.S. Cl. 61—36 A **2 Claims**



An apparatus and method of freezing a large volume of ground for tunnel construction and the like utilizing liquified nitrogen is described. The apparatus consists generally of a series of freeze pipes embedded in the ground, each of the freeze pipes consisting of a conductor tube and an inner header tube. The header tube of each of the succeeding freeze pipes in the series have discharge holes of a predetermined cross-section so that greater control of gaseous and liquified nitrogen pressure can be maintained throughout the system. By means of this method and apparatus more accurate control of ground freezing can be made by merely controlling the inlet liquified nitrogen pressure and the exhaust gaseous nitrogen temperature.

3,726,096
FASCINES

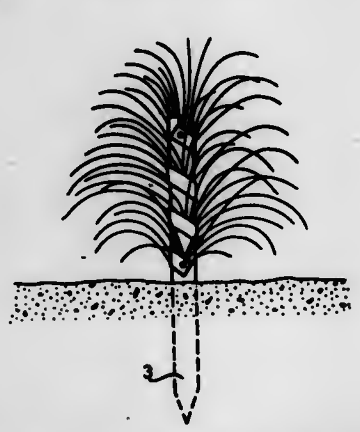
Ernst August Bahre, Frankfurt/Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius - Bruning, Frankfurt/Main, Germany

Filed May 17, 1971, Ser. No. 143,822

Claims priority, application Germany, May 19, 1970, P 20 24 255.1

Int. Cl. E02b *3/12*

U.S. Cl. 61—37 **4 Claims**



There are disclosed fascines which can be easily installed and which give a lasting support to sand sedimentation from quicksands. Said fascines consist of a pile and a sheet made from thermoplastic material and cut like a comb into narrow strips wrapped around and fastened to said pile.

3,726,097
CONVEYOR GUIDING AND ANCHORING PROPS FOR MINING INSTALLATIONS

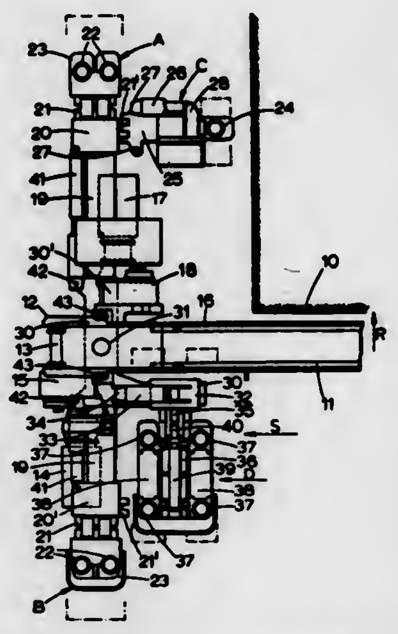
Horst Linke, Lunen, and Herbert Beyer, Werne, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed July 16, 1971, Ser. No. 163,308

Claims priority, application Germany, Sept. 22, 1970, P 20 46 624.4

Int. Cl. E21d *23/04*

U.S. Cl. 61—45 D **12 Claims**



A mineral mining installation composed of a conveyor having a drive station arranged in a cross-heading passage or roadway extending perpendicularly to said conveyor and a beam extending beneath the drive station and generally perpendicular to the conveyor. The beam is connected to roof support units at its ends and an L-shaped guide plate has one arm slideably mounted on the beam and pivotably connected to the drive station. Piston and cylinder units are connected between the guide plate and the beam so as to be capable of displacing the drive station along the beam. The guide plate has its other arm extending alongside the drive station and parallel to the conveyor. On this other arm is slidably mounted a guide piece which is connected to a roof support unit via a piston and cylinder unit.

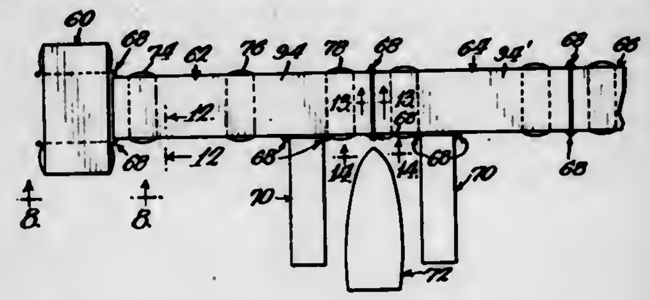
3,726,098
MODULAR DOCK FLOAT

Erhard E. Alms, Barrington, and James E. Mitchell, Cary, both of Ill., assignors to AFE Industries, Inc., Lake Zurich, Ill.

Filed March 30, 1970, Ser. No. 23,688

Int. Cl. E02b *3/06, 3/20*

U.S. Cl. 61—48 **6 Claims**



A floating structure supported in water by floating pontoons and having a flat deck which can be used as a swim float and a plurality of floating dock sections interconnected to provide a floating dock are disclosed. The dock sections are interconnected by mating connectors having openings therethrough which slidably receive an elongated vertical rod secured to the bottom of a body of water on which the dock is floating. A rod-mating connector pair at each corner of a dock section prevents tipping of the dock section by unbalanced loads or the like while allowing for vertical motion of the dock.

3,726,099
APPARATUS FOR DIGGING DITCHES

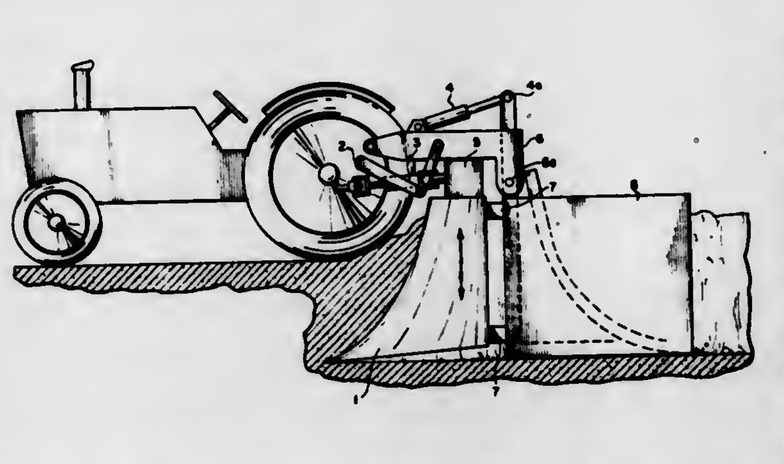
Hans Ruge, Wardenburg, Germany, assignor to Firma Klaus-Gerd Hoes, Oldenburg, Donnerschweerstr., Germany

Filed June 3, 1971, Ser. No. 149,492

Claims priority, application Germany, Aug. 19, 1970, P 20 41 105.6

Int. Cl. A01b *3/64, 11/00;* **F16l** *1/00*

U.S. Cl. 61—72.6 **3 Claims**



An apparatus for digging ditches consisting of a pipe laying device mountable on a tractor, a plough share coupled to the pipe laying device, and an oscillator for oscillating the plough share. The pipe laying device is positioned behind the tractor and supports the digging apparatus on the bottom of the ditch being dug.

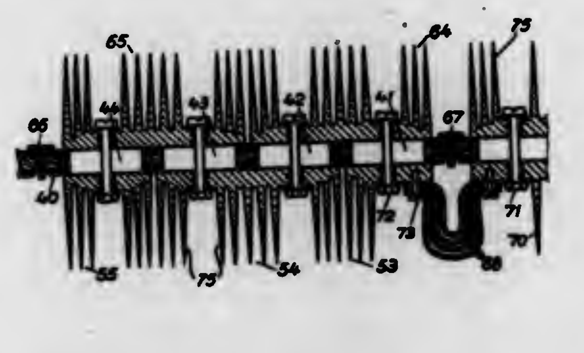
3,726,100
THERMOELECTRIC APPARATUS COMPOSED OF P-TYPE AND N-TYPE SEMICONDUCTOR ELEMENTS

Marius Widakowich, Bromma, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 28, 1968, Ser. No. 771,195

Int. Cl. F25b *21/02*

U.S. Cl. 62—3 **4 Claims**



A thermoelectric apparatus is formed of a plate of heat-insulating material having holes therethrough in which are positioned a plurality of P-type and N-type thermoelectric elements. The members of the two types are alternately connected by heat-transfer members on both sides of the plate and in contact with the elements. Bolts extending through the thermoelectric elements connect two of the heat-transfer members and press them against the elements.

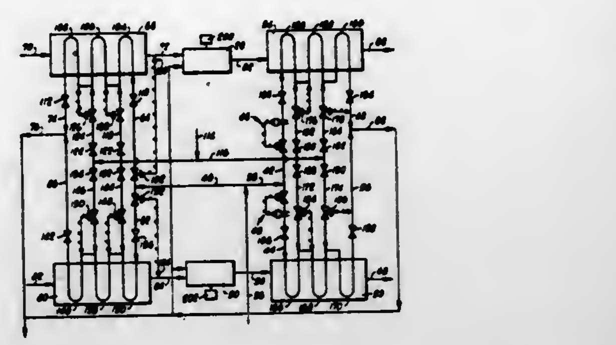
3,726,101
METHOD OF CONTINUOUSLY VAPORIZING AND SUPERHEATING LIQUEFIED CRYOGENIC FLUID

Edwin M. Arenson, El Reno, Okla., assignor to Black, Sivalls & Bryson Inc., Oklahoma City, Okla.

Filed May 20, 1971, Ser. No. 145,217

Int. Cl. F17c *7/02;* **F02m** *31/00*

U.S. Cl. 62—52 **9 Claims**



The present invention relates to an improved method of continuously vaporizing and superheating a stream of liquefied cryogenic fluid wherein the stream is vaporized and then superheated to a desired temperature level by exchange of heat with gas turbine exhaust gases. By the present invention, the vaporized cryogenic fluid is passed in heat exchange relationship with the turbine exhaust gases in successive serially connected heat exchange stages. A quantity of liquefied cryogenic fluid is combined with the vaporized cryogenic fluid passing through each of the stages so that the liquefied cryogenic fluid is vaporized and the resulting combined vapor is cooled prior to passing through the next successive heat exchange stage. By the present invention, smaller and less expensive heat exchange apparatus is required and the maximum heating capacity of the turbine exhaust gases is utilized for vaporizing and superheating the cryogenic fluid.

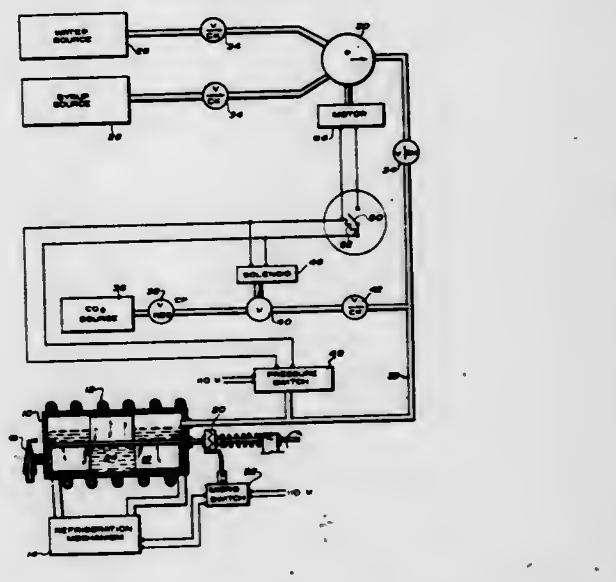
3,726,102
ICY BEVERAGE MACHINE

Charles K. Parks, P.O. Box 998, Abilene, Tex.

Filed Aug. 3, 1971, Ser. No. 168,632

Int. Cl. F25c *7/16*

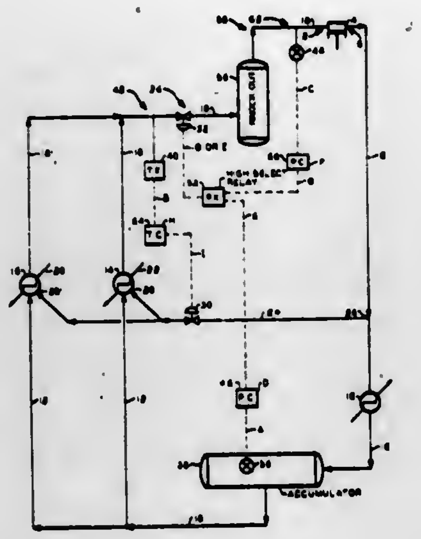
U.S. Cl. 62—70 **6 Claims**



To maintain a balanced liquid-gas charge in the cooling chamber of an icy beverage machine, gas is introduced when the pressure in the cooling chamber falls below about 25 psi. Then after about a 3-to-8 second delay, liquid is charged into the cooling chamber until the pressure in the cooling chamber reaches about 30 psi.

3,726,103
REFRIGERATION SYSTEM

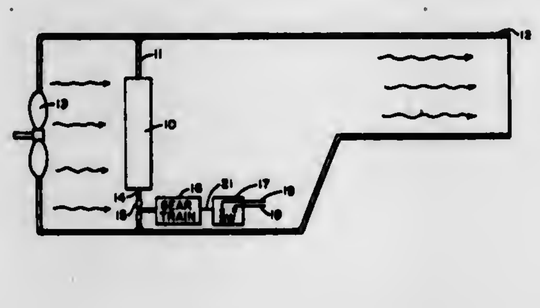
John E. Anderson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Oct. 21, 1971, Ser. No. 191,250
Int. Cl. F25b *5/00*
U.S. Cl. 62—117 7 Claims



In an improved refrigeration system having a refrigerant stream, a compressor, a condenser, and a heat exchanger, the temperature of the heat exchanger is maintained at a value greater than a preselected value by controllably passing a portion of the refrigerant stream from a location upstream of the condenser to the refrigerant stream at a location downstream of the condenser and the pressures of the refrigerant stream at locations adjacent preselected locations are maintained at values less than respective preselected values by controlling the flow rate of the refrigerant stream between the heat exchanger and the compressor.

3,726,104
REFRIGERATION SYSTEM DEFROST INITIATION APPARATUS

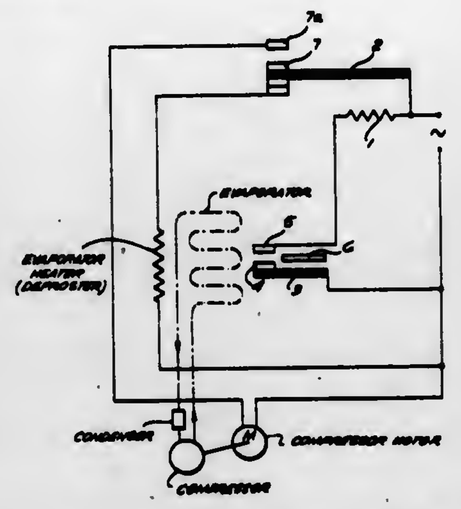
Leland L. Howland, Rosemount, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.
Filed Feb. 12, 1971, Ser. No. 114,882
Int. Cl. F25d *21/02*
U.S. Cl. 62—140 1 Claim



A defrost initiation apparatus for a refrigeration system having an evaporator coil to be occasionally defrosted is comprised of an impeller to be revolved by a fluid of the system that is in motion while the system operates and a switch responsive to conditions of revolution of the impeller such as the speed or length of time of revolution to thereby initiate a defrost signal.

3,726,105
CONTROL ARRANGEMENT FOR AUTOMATICALLY DEFROSTING A REFRIGERATOR

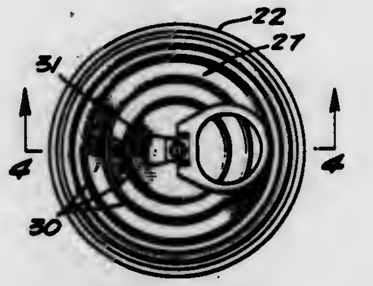
Robert Auracher, Stuttgart-Stammheim, Germany, assignor to Europaische H.O. Canfield Co., GmbH, Gartenberg/Off., Germany
Filed March 8, 1971, Ser. No. 121,928
Claims priority, application Germany, March 6, 1970, P 20 10 717.9
Int. Cl. F25d *21/06*
U.S. Cl. 62—156 7 Claims



A control arrangement for automatically defrosting a refrigerator in which a normally open bi-metal switch is arranged in the circuit of the motor driving the compressor of the refrigerator. The bi-metal switch closes upon heating thereof by a resistor arranged adjacent thereto. The resistor is arranged in a control circuit in series with a normally straight bi-metal strip arranged adjacent the evaporator of the refrigerator to sense the temperature of the evaporator and the bi-metal strip curves to close the control circuit upon sensing of a temperature of about between 3°–5°C to thereby energize the resistor and cause closing of the bi-metal switch. An elongated permanent magnet cooperates with the bi-metal strip to expedite closing of the latter.

3,726,106
SELF-REFRIGERATING AND HEATING FOOD CONTAINERS AND METHOD FOR SAME

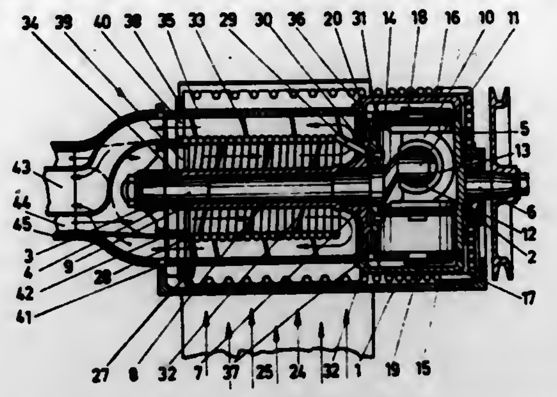
Wilbert J. Jaeger, 345 N. Batavia Ave., Apt. 30, Orange, Calif. Continuation-in-part of Ser. No. 737,121, June 14, 1968, abandoned. This application Jan. 7, 1970, Ser. No. 1,239
Int. Cl. F25d *3/10*
U.S. Cl. 62—294 23 Claims



A self heating or cooling container having in one embodiment two separable sections of the container, one for enclosing a cooling or heating chemical and the other for enclosing the product to be cooled or heated, and in another embodiment a cooling or heating section within the product section. The section for enclosing the coolant or heating agent has a conical portion and two different diameter cylindrical portions while a closure for the product section has a closely parallel shape. The coolant-heating agent section also has a valve assembly responsive to the section's position and when activated causes the product to change temperature. The separable sections allow forming and filling each section individually during the manufacturing process with combination of the sections achieved as a last step.

3,726,107
COOLING UNIT WITH ROTATING COMPRESSOR-CONDENSOR EVAPORATOR-COMBINATION

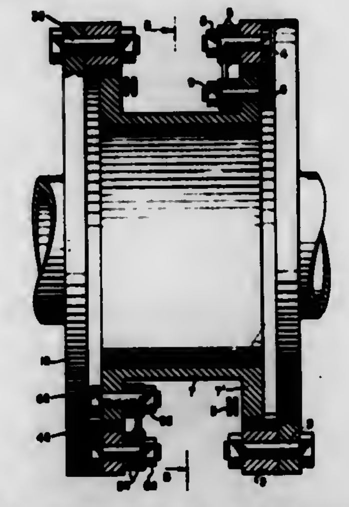
Rudolf Hintze, Lessingstr. 32, Heusenstamm, Germany
Filed Jan. 13, 1971, Ser. No. 116,716
Claims priority, application Germany, Jan. 14, 1970, P 20 01 421.5
Int. Cl. F25b *3/00*
U.S. Cl. 62—499 8 Claims



An air conditioning unit is disclosed, particularly for use in a motor vehicle, which includes a stationary crankshaft having a double acting thereon. A rotatable casing receives the piston in double acting cylinder which is elongated transversely to the axis of rotation. Mounted on and rotatable with the casing are as condenser and evaporator through which refrigerant flows from the compressor to produce refrigeration.

3,726,108
ELASTIC COUPLING

Leonhard Geislinger, Hofelgasse 26, Salzburg, Austria
Filed April 22, 1971, Ser. No. 136,539
Claims priority, application Austria, April 27, 1970, A 3803/70
Int. Cl. F16d *3/56*
U.S. Cl. 64—15 R 12 Claims

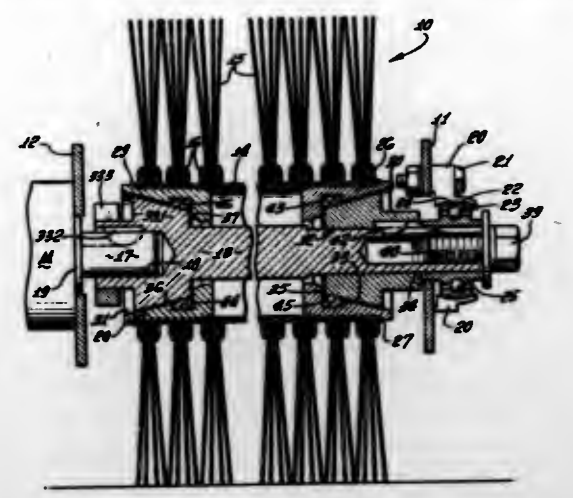


A plurality of flexible leaf springs, with pairs of intersecting, superposed springs, have their ends bolted to annular mounting flanges of a driving and a driven element for transmitting torque from the driving element rotating about an axis to the driven element. The leaf springs extend in respective planes perpendicular to the axis of rotation. The bolts are sufficiently tensioned to exert a holding pressure on the leaf spring ends sufficient to transmit the torque by friction.

3,726,109
STREET SWEEPER POWER TRANSMISSION COUPLINGS

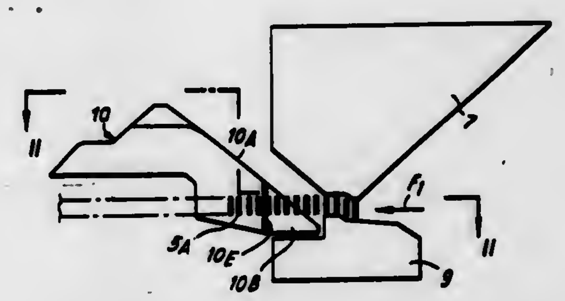
Donald G. Mortensen, Upland, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.
Filed Sept. 27, 1971, Ser. No. 183,984
Int. Cl. F16b *7/02*
U.S. Cl. 64—30 A 6 Claims

A rotational power transmission connection for use in street sweepers to couple together driving and driven parts one of which is subject to abnormal rotative resistances, the parts having opposed conical surfaces one of which contains a deformed elastomeric ring engaging and capable of slippage on the opposing conical surface. The coupling has particular applicability for use in pairs to mount a replaceable broom core.



3,726,110
NEEDLE RAISING CAMS FOR CIRCULAR KNITTING MACHINES

Gianni Conti, Firenze, Italy, assignor to G. Billi & Co. S.p.A., Firenze, Italy
Filed Nov. 12, 1970, Ser. No. 88,759
Int. Cl. D04b *15/32*
U.S. Cl. 66—40 1 Claim

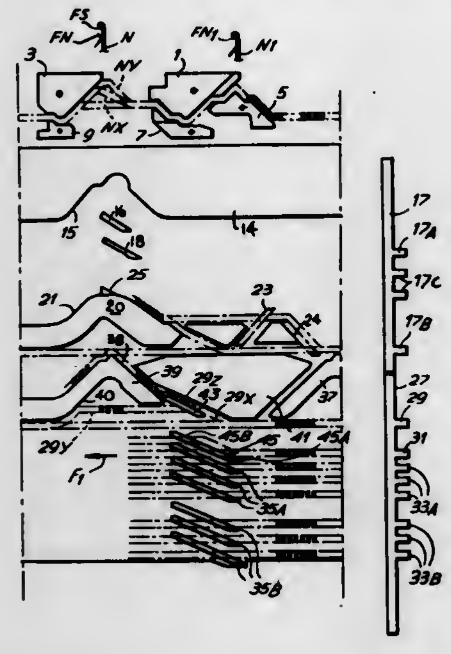


A radially movable needle raising cam to be used in a circular knitting machine having a revolving needle cylinder and a circle of needles therein, the cam being movable radially inwardly of the cylinder during passage thereby of the low butts of a first group of needles in the cylinder, whereby the cam is in a position to engage the high butts of an adjoining group of needles in the cylinder to raise the latter needles. The forward end portion of the cam has its inner peripheral surface undercut provide an inner cam face adapted to engage the radially extending outer ends of the low butts of any of the first group of needles which may have had their butts inadvertently displaced radially outwardly, thereby to move the displaced needles and their butts radially inwardly of the cylinder. Such inward movement of the displaced needles prevents the raising thereof by the cam.

3,726,111
METHOD OF REINFORCING A HEEL IN KNITTED STOCKINGS AND THE LIKE

Ettore Negri, Firenze, Italy, assignor to G. Billi & C. S.p.A., Firenze, Italy
Filed Sept. 25, 1970, Ser. No. 75,333
Claims priority, application Italy, Sept. 29, 1969, 4790-A/69
Int. Cl. D04b *9/18*
U.S. Cl. 66—49 6 Claims

Needle selecting apparatus for the selective raising of the needles of circular knitting machines wherein the needles are raised by jacks individually associated with the needles, the jacks having selecting butts of a plurality of progressively varying lengths disposed at a pair of levels on the shanks of the jacks, and wherein three pattern drum controlled radially positionable cams act progressively upon the selecting butts to raise selected jacks which, in turn, raise their associated needles. The selected needles knit a reinforce yarn in addition to the body yarn thereby to provide visible reinforce areas in hosiery while the non-selected needles knit only the body yarn. The jacks are arranged in a plurality of adjacent groups of jacks, each group of which contains a plurality of jacks and each of which has a common length selecting butt, at a first of the two levels thereof, with the length of the common length selecting butt being progressively varied in adjacent ones of the groups of jacks. Individual ones of the plurality of jacks of each group thereof, have progressively varying lengths of selecting butts at the second of the two levels thereof. A first of the jack-raising cams progressively raises the groups of jacks as a whole to an intermediate level, after which a second of the jack-raising cams progressively raises individual ones of the jacks of each group thereof to a higher level, and the remaining one of the jack-raising cams raises to the higher level those groups of jacks which have previously been raised to the higher level by the first two jack-raising cams.



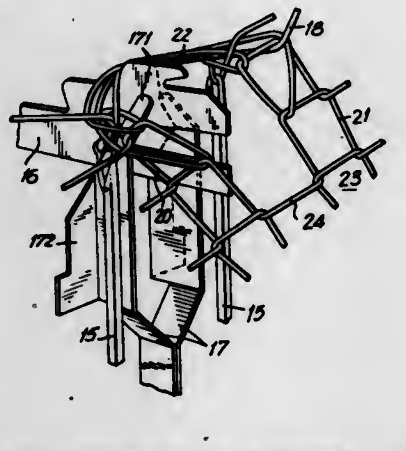
3,726,112
METHOD AND APPARATUS FOR KNITTING A NET FABRIC

Ramon Masriera Roque, Calle San Esteban, 53 Malgrat, Barcelona, Spain

Continuation-in-part of Ser. No. 780,433, Dec. 2, 1968, abandoned. This application March 26, 1971, Ser. No. 128,234

Int. Cl. D04b *15/02*

U.S. Cl. 66—95 7 Claims



A method and apparatus for knitting a circular weft knit fabric composed of helically knitted courses. The stitch wales of the fabric are interconnected only by sinker loops located at predetermined points along the wales so that the latter can separate from each other between the sinker loops to form the orifices of the net fabric. At predetermined courses during the knitting of the fabric sinker loops extend around pairs of consecutive needles while jacks coact therewith to retain sinker loops at locations determined by the pattern mechanism around the pairs of adjoining wales with at least some of the loops being knitted with subsequently knit stitches of the wales. The apparatus includes between each pair of consecutive needles a pair of jacks having upper operating tips and longitudinally movable with respect to the needles to bring about the proper passing of the sinker loops around the pair of consecutive needles and thus around a pair of wales respectively knit thereby, so that in this way during subsequent knitting of loops through the sinker loops the interknitting of the sinker loops and the wale stitches can be achieved.

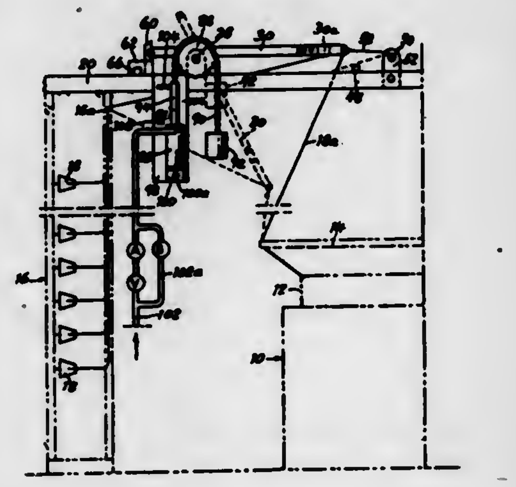
3,726,113
STOP MOTION APPARATUS FOR KNITTING MACHINES

Nathan Levin, Trenton, N.J., and Thomas Anderson Oliver, Jr., Jenkintown, Pa., assignors to Oliver Knitting Company, Philadelphia, Pa., by said Oliver

Filed Feb. 4, 1971, Ser. No. 112,687

Int. Cl. D04b *35/12*

U.S. Cl. 66—163 10 Claims



An automatically resettable yarn actuated stop motion apparatus for use with multi-feed circular knitting machines comprising a pivotally mounted yarn arm for the yarn of each feed of the machine, each arm is latched in normal position so long as there is no excess tension in each of the running yarns being used by the machine, each of the yarn arms being unlatched and turned to down position by its yarn when there is excess tension therein, thereby to stop the machine, and air operated means to yieldingly return the yarn arms to normal latched position thereby to automatically reset the apparatus and to re-start the machine. The yarn arms are each journalled on a shaft to individually turn from the normal to the down position, and the yarn arms in down position are returned to normal position by turning movement of the shaft.

3,726,114
AGITATOR STRUCTURE FOR CENTERPOST AGITATOR WASHING MACHINES

Bashir Ahmad, Burlington, Ontario, Canada, assignor to Canadian Westinghouse Company, Limited, Hamilton, Ontario, Canada

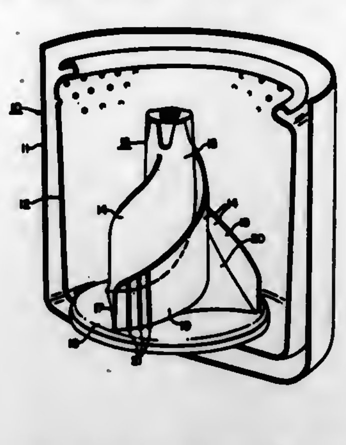
Filed April 20, 1971, Ser. No. 135,641

Claims priority, application Canada, Sept. 14, 1970, 92,990

Int. Cl. D06f *17/10*

U.S. Cl. 68—134 8 Claims

A spiral ramp agitator for a centerpost washer is disclosed which has a plurality of small ribbed-shaped protuberances extending from the outwardly facing surface of the vane and generally adjacent the leading edge thereof to provide a dragging effect on the clothes, especially during the rearward portion of the oscillatory cycle of the agitator.



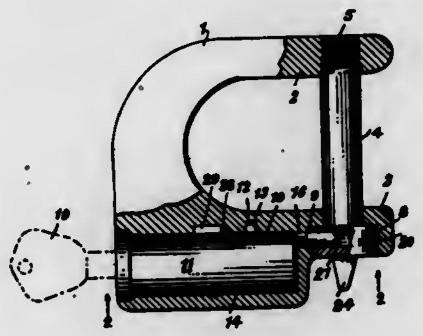
3,726,115
LOCKS

John F. Wellekens, 51 East 42nd St., New York, N.Y.

Filed June 11, 1971, Ser. No. 152,227

Int. Cl. E05b *67/34*

U.S. Cl. 70—33 3 Claims



A lock mechanism including a cylindrical lock casing containing cylinder lock mechanism, the casing having an axially arranged stem extending from one of its ends, said stem, extending into a hole in a transversely extending pin to thereby hold the pin against both rotative and axial movement thus coupling any element to which the pin is secured to the lock and holding such element against movement until the lock is opened and the lock casing is axially shifted.

3,726,116
CYLINDER LOCK

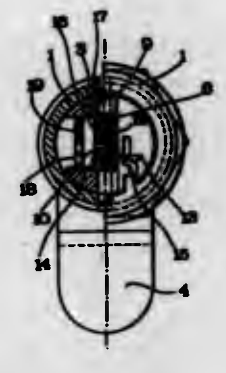
Benito Di Motta, via Parmenide 130, Salerno, Italy

Filed Oct. 12, 1971, Ser. No. 188,342

Claims priority, application Italy, Oct. 15, 1970, 64826 A/70

Int. Cl. E05b *15/14, 25/00*

U.S. Cl. 70—364 A 6 Claims



A cylinder lock comprising an outer cylindrical casing, a cylindrical inner member rotatably mounted within the outer casing, and adjustable pins extending diametrically through the inner cylindrical member and into the outer cylindrical casing, the adjustment of the pins being effected by screwing them into a spiral spring surrounding a threaded portion of the pins, actuation of the lock being effected by a key inserted therein and acting upon a projecting straight end of the spiral spring to thereby move the pins through the cylindrical inner member and into and out of the outer cylindrical casing.

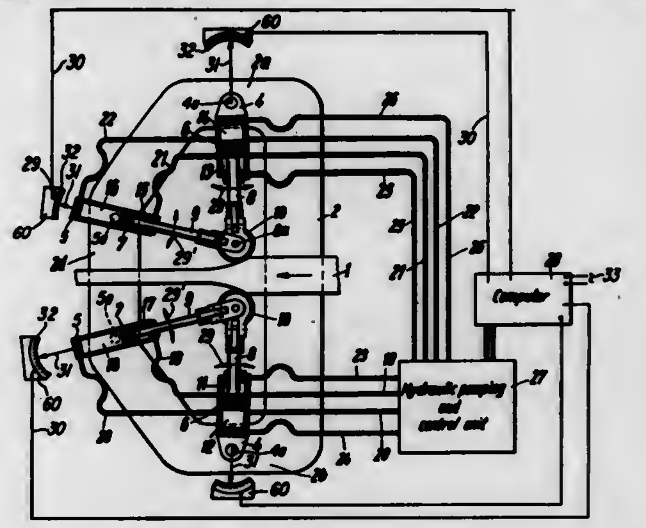
3,726,117
DEVICE AND METHOD FOR CONTROLLING THE MOVEMENT OF A DEFORMATION ROLL

Otto Braun, Duisburg-Grossenbaum, and Hans Weber, Duisburg, both of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Continuation-in-part of Ser. No. 785,721, Dec. 20, 1968, abandoned. This application June 7, 1971, Ser. No. 150,693

Int. Cl. B21b *37/14, 31/32*

U.S. Cl. 72—7 1 Claim



A device and method for controlling the movement of a deformation roll, particularly for the formation of steel casting rods by drawing and reducing, comprises one or more deformation rollers arranged around the circumference of the rod to be formed. Each deformation roller is pivotally connected at its center to at least two separate piston rods. One of the piston rods is contained in a pivotally mounted cylinder and operates in an up and down direction for shifting the center of the deformation roller in an upward and downward direction and permitting its shifting in transverse directions or longitudinal directions. The other of the piston rods is mounted in an oblique position and may be reciprocated for shifting the deformation roller in longitudinal directions in the range of pivotal movement of the cylinder containing the piston for the other one of the rods. The complete system includes a hydraulic system including pumps and valves for selectively connecting respective sides of each cylinder to pressure conditions for causing the desired reciprocation of its associated piston in order to properly position the deformation roller so that it will engage the rod to be formed in the desired manner during the movement of the rod thereby. The system includes a computer or programmer with means such as a programmed magnetic tape for carrying out the operation of the necessary hydraulic valves and pumping elements to effect the desired positioning of the deformation rollers during the working pass.

3,726,118
MACHINE FOR ROLLING SCREWTHREADS ON BLANKS

Gerardus C. van de Meerendonk, Helmond, Netherlands, assignor to Nedschroef Octrooi Maatschappij N.V., Helmond, Netherlands

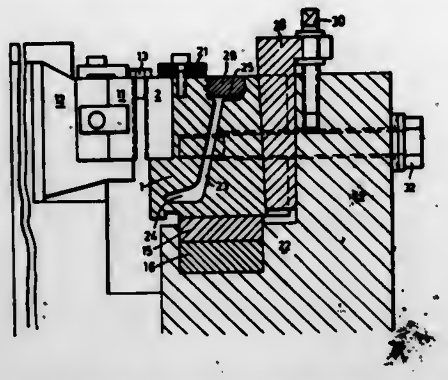
Filed April 7, 1971, Ser. No. 132,053

Claims priority, application Netherlands, April 9, 1970, 7005082

Int. Cl. B21h *3/06*

U.S. Cl. 72—90 8 Claims

The machine for forming threads on bolts, and the like blanks by means of thread rolling tools, as described, comprises a frame, a thread rolling tool movable in the frame of the machine, said rolling tool being reciprocal along a cooperating stationary rolling tool mounted on a holding means in the frame, means for adjusting the holding means and the stationary tool; in vertical direction with respect to the direction of reciprocation of the movable tool so as to obtain the desired pitch of the screwthread on the blank; in a transverse direction perpendicular to the direction of the reciprocation so as to obtain the desired diameter of the screwthread



on the blank; and in an inclined position in order to provide for the same diameter over the entire length of the threads on the blank. In this construction the holding means in the form of a block is provided with a cleft substantially in its longitudinal direction parallel to the direction of movement of the reciprocable rolling tool, said cleft ending at its bottom in a slit-shaped bore also extending in said longitudinal direction, said holding means being provided at its topside with a groove opening into said cleft, and an adjusting member in the groove for controlling the width of said groove.

3,726,119
ROLLING MILLS

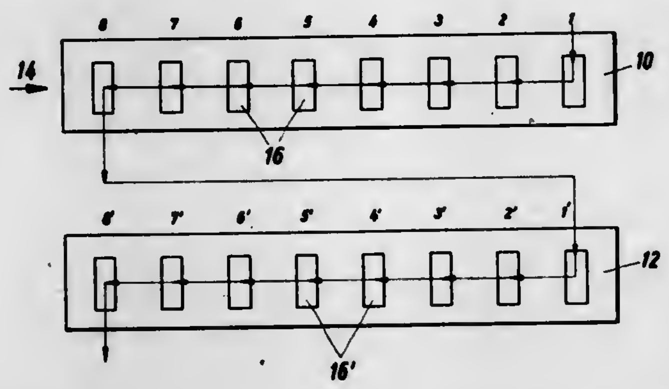
Ali Bindernagel, 4 Dusseldorf, Germany, assignor to Friedrich Kocks, Dusseldorf, Germany

Filed April 14, 1971, Ser. No. 133,970

Claims priority, application Germany, April 16, 1970, P 20 18 157.1

Int. Cl. B21b *13/08, 31/08*

U.S. Cl. 72—234 **4 Claims**



A multi-stand rolling mill comprises two or more selectively interchangeable rows of rolling stands such that only one row is operatively arranged in the rolling line while the other is being serviced. The spacing of the roller axes in all the stands of one row is substantially uniform but somewhat greater than that in the stands of the other row. To enable the rollers to be re-used a large number of times, new rollers of a first larger nominal diameter are initially used in the last stage at the delivery end of the row of stands with the larger roller axes spacing. Thereafter they are progressively transferred from stage to stage, together with the stand itself, to the first stage at the input end of the row, the rollers being refinished at each transfer. The worn rollers from the first stage are turned down to a second smaller nominal diameter and used successively in the second row of roller stands, whose roller axes spacing is smaller, in the same way as in the first row.

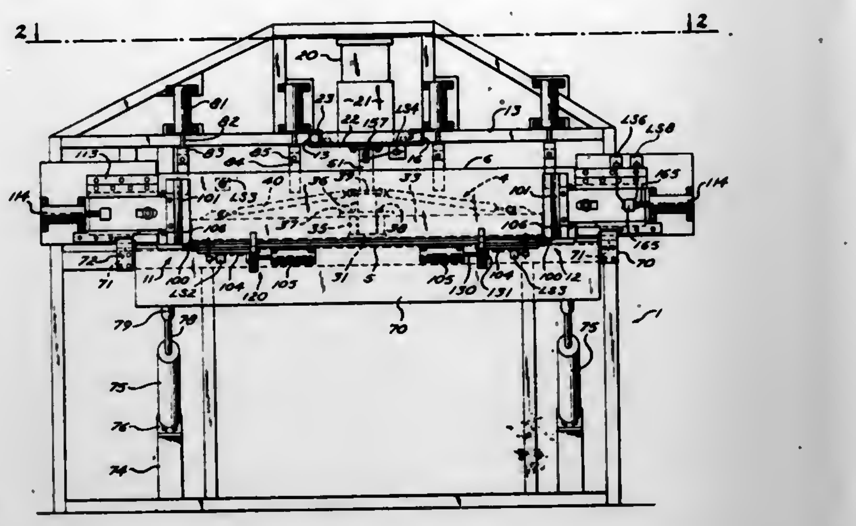
3,726,120
DUCTWORK FORMING MACHINE

George J. Hugert, Medina, Ohio, assignor to Hugert Manufacturing Company, Medina, Ohio

Filed Dec. 2, 1971, Ser. No. 204,277

Int. Cl. B21d *39/02*

U.S. Cl. 72—306 **40 Claims**



There is disclosed herein a machine with control means for automatically carrying out a plurality of ductwork forming operations on a substantially flat blank of precut sheet metal. The blank is clamped down on a horizontal bed by an elongated clamping member. A generally X-shaped press forming device or cross break creases the metal to form a slightly frustopyramidal crown in that portion of the metal which projects on one side of the clamping member, and individual dies punch offset strap locks in the metal at one lateral edge of the blank adjacent to the crown. A pivotable table folds the metal which projects on the opposite side of the clamping member upwardly at right angles to the crowned portion whereupon die members form right angle bends in the side edges of the upwardly bent portion of the metal and then move inwardly to form inwardly folded cleat connector flanges. The die members then retract and the table returns to a horizontal position.

3,726,121
APPARATUS FOR PRODUCING CORRUGATIONS IN A HOLLOW BODY

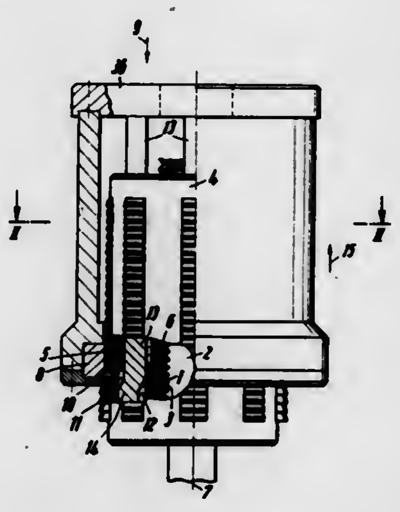
Hans Arnold, and Carl-Heinz Reiche, both of Lage/Lippe, Germany, assignors to Reiche & Co., Lage/Lippe, Germany

Filed May 27, 1971, Ser. No. 147,464

Claims priority, application Germany, June 5, 1970, P 20 27 638.4

Int. Cl. B21d *15/00*

U.S. Cl. 72—402 **12 Claims**



Apparatus for producing in the walls of hollow bodies of revolutions, such as tubes or the like, wavelike corrugations. The apparatus comprises adjacent groups of pressure tools surrounding the body and movable toward the axis thereof to thereby deform with a profiled working end the wall of the body into wavelike corrugations.

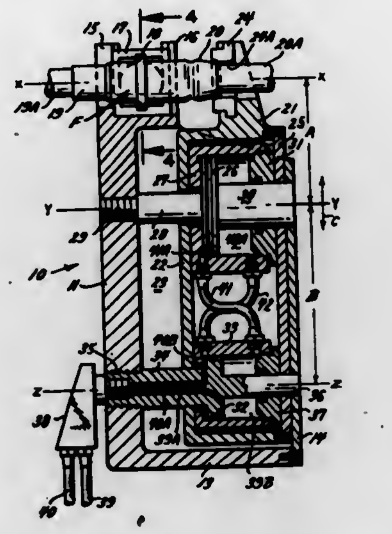
3,726,122
SWAGING TOOL

James A. Dawson, Hazelwood, Mo., assignor to McDonnell Douglas Corporation, St. Louis County, Mo.

Filed March 10, 1971, Ser. No. 122,915

Int. Cl. B21d *41/00*

U.S. Cl. 72—412 **9 Claims**



The swaging tool performs the swaging operation by moving axially along a fitting sleeve to join the sleeve to a conduit inserted in the sleeve. The tool includes a support for the fitting and for a swaging die, leverage arms extending from the supports, and force applying means connected between the leverage arms to move the arms in directions relative to each other to move the swaging die axially along the fitting sleeve to radially swage the sleeve onto the end portion of the conduit located within the sleeve. The force applying means include means to control the movement of the leverage arm so the swaging die does not deviate substantially from axial travel.

3,726,123
FORGING PRESS WITH ADJUSTABLE WORKING GAP

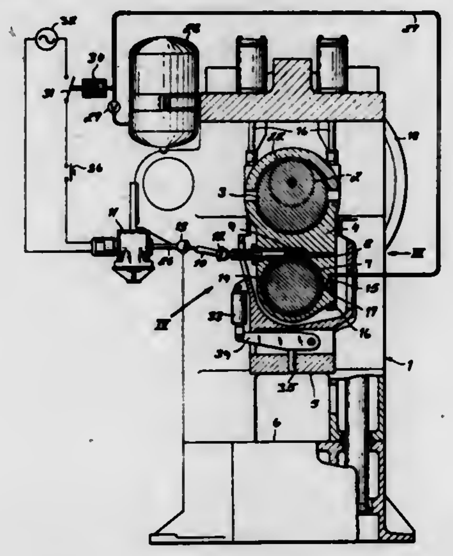
Werner Bothe, Dusseldorf, Germany, assignor to Maschinenfabrik Hasenclever GmbH, Dusseldorf, Germany

Filed Sept. 28, 1971, Ser. No. 184,378

Claims priority, application Germany, Sept. 30, 1970, P 20 48 109.8

Int. Cl. B21j *9/20*

U.S. Cl. 72—441 **10 Claims**



A rotating horizontal shaft of a forging press carries an eccentric disk engaging a vertically reciprocable pressure block bracketed by arms of a yoke-shaped forging hammer. A pin spanning the arms of the forging hammer of the press passes eccentrically through a cam sleeve, lodged in the force-transmitting member, whose angular position determines the relative spacing of the hammer and the block. The sleeve is designed in part as a worm wheel meshing with a worm which is rotatable, via an articulated telescoping shaft, by a servomotor fixedly mounted on the press frame. The pressure block is split to form two bearing halves for the sleeve which are normally held together by elastic tie rods to clamp the sleeve and prevent its rotation. A hydraulic cylinder can be operated to separate the bearing halves, thereby allowing adjustment of the working gap between hammer and anvil by actuating the servomotor.

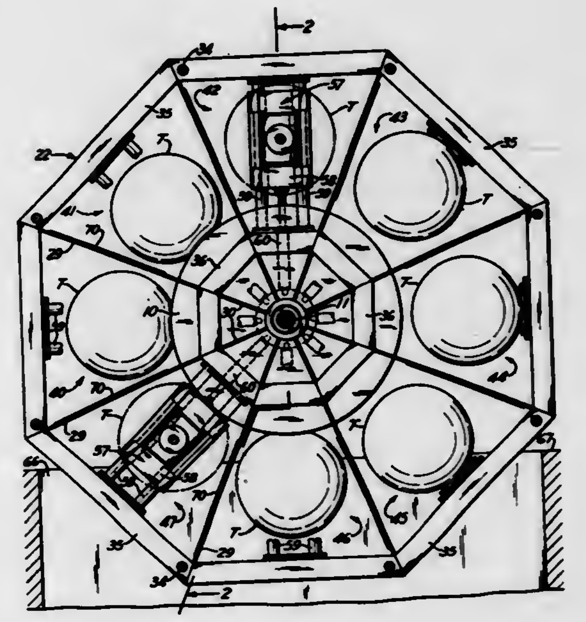
3,726,124
TESTING MACHINE FOR TIRES AND THE LIKE

Richard W. Obarski, Stow, Ohio, assignor to United Engineering and Foundry Company, Pittsburgh, Pa.

Filed March 24, 1971, Ser. No. 127,488

Int. Cl. G01n *3/56*

U.S. Cl. 73—8 **5 Claims**



The disclosure of this invention relates to a testing machine for tires and, more particularly, to such machines capable of simultaneously performing various testing operations on a number of tires wherein the testing pressures are accurately maintained and recorded. The disclosed tire tester includes an upright frame which for a given fly wheel diameter is constructed and arranged to allow for the simultaneous testing of eight ordinary maximum size automobile tires and to provide two convenient loading and unloading stations. This is accomplished, in part, by providing a compact slidable carriage for each of the eight tire stations mounted on stiff rod assemblies extending parallel to the radius of the fly wheel, which carriages fall within the diameters of the maximum tires to be tested and support the tires in a rigid cantilever manner.

3,726,125
METHOD AND APPARATUS FOR MEASURING SHRINKAGE

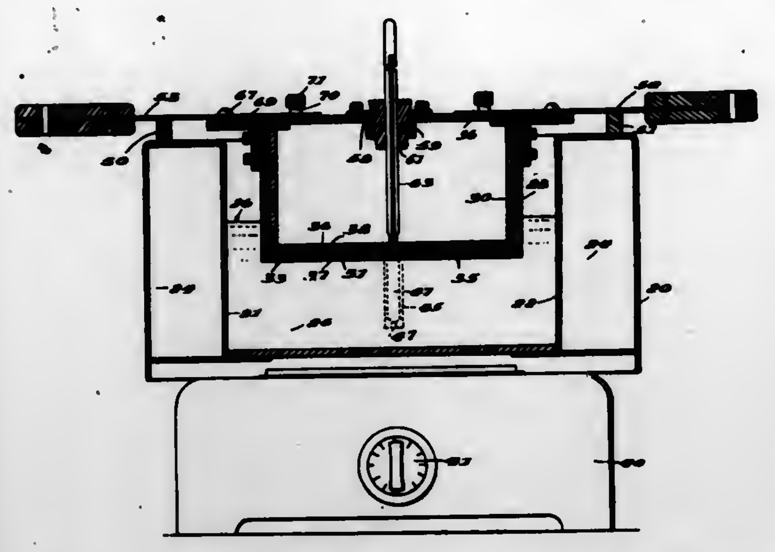
Albert A. Heyman, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed July 7, 1971, Ser. No. 160,330

Int. Cl. G01n *25/00*

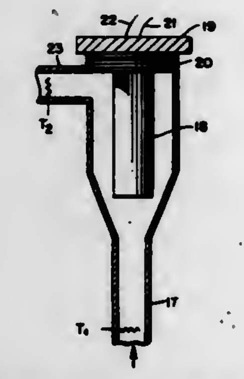
U.S. Cl. 73—15 R **12 Claims**

Method and apparatus for testing sample discs cut from extruded sheets of polystyrene and the like to determine percentage of shrinkage. Sample discs are cut from the parent extruded sheet, each sample is identified as to location and direction of extrusion, then heated in the test apparatus at the expected temperature which products are to be formed from the parent sheet and the shrinkage in the extrusion direction is then measured.



3,726,126
DETERMINATION OF NON-VOLATILE COMPONENTS IN A LIQUID

Joseph M. De Vittorio, Homewood, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio
Continuation of Ser. No. 663,771, Aug. 28, 1967, abandoned. This application Jan. 11, 1971, Ser. No. 105,680
Int. Cl. G01n *25/20*
U.S. Cl. 73—15 R **13 Claims**

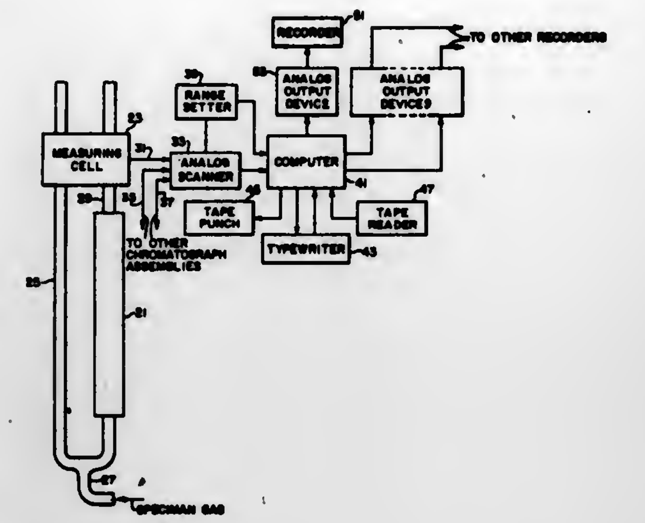


The non-volatile matter content of a point is determined by passing a sample at a predetermined rate through a passage way containing inlet and outlet resistors, adding a predetermined amount of heat and measuring the resultant change in the resistors.

3,726,127
METHODS FOR DETECTING PRESENCE AND MEASURING THE CONCENTRATION OF MINOR OVERLAPPED COMPONENTS IN GAS CHROMATOGRAPHY

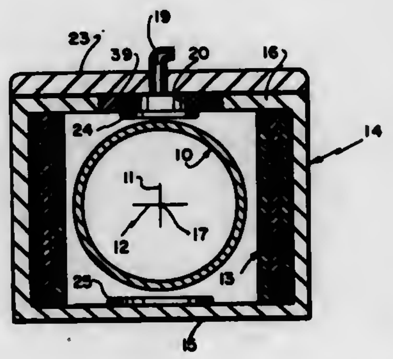
Richard E. Putnam, and Richard M. Augusty, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 25, 1968, Ser. No. 747,666
Int. Cl. G01n *31/08*
U.S. Cl. 73—23.1 **5 Claims**

Gas chromatography is disclosed in which the signal (FIGS. 2 and 3 derived from the resulting gas emitted by the absorbent column is evaluated by a digital computer (41 FIG. 1). Minor components of gas associated with a major component are detected by observing a difference between the area on one side of a major peak or maximum of a curve or time function corresponding to the major component and the area on the other side of the peak (FIGS. 5; *6a*, *6b*). The evaluation also includes determination of the number of points of inflexion (FIGS. *6a*, *6b*) on each side of a major peak of a curve, one or no points on one side and two on the other (FIGS. *6a*, *6b*) indicates a minor component. Chromatographic apparatus is disclosed in which the recorders 51 are isolated from the gas measuring cell 23 and receive the signal to be recorded directly from the computer 41.



3,726,128
DENSITY MEASURING INSTRUMENT HAVING ELECTROMAGNETIC SUSPENSION WITH A VARIABLE SPRING CONSTANT

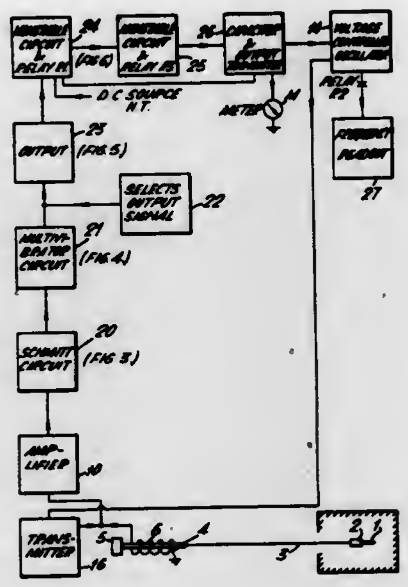
Owen Orlando Fiet, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed March 29, 1971, Ser. No. 129,030
Int. Cl. G01n *9/20*
U.S. Cl. 73—30 **7 Claims**



An electric coil is provided for the purpose of carrying alternating current. An electrically conducting sphere placed within the magnetic field of the coil incurs eddy currents resulting in magnetic repulsion between the sphere and the coil which is maintained at a null position by means of an autoregulation or feedback circuit. Voltage or current applied to the coil to maintain the sphere at a null position is an indication of the buoyant forces acting upon the sphere and thus is representative of the density of the gas or liquid surrounding the sphere. The coil and sphere are enclosed in a magnetic enclosure to provide a flux path and the top plate of the enclosure is provided with an opening of a size selected to alter the magnetic field of the coil and thereby the equivalent spring constant of the system.

3,726,129
SYSTEM FOR MEASURING THE RESONANT FREQUENCY OF A BODY

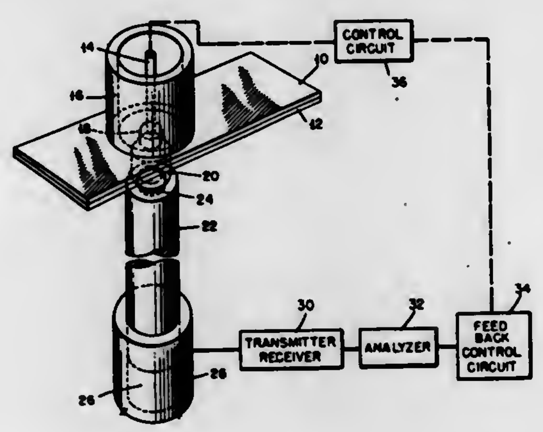
Ernest Alexander Thorne, Winfrith, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Nov. 16, 1970, Ser. No. 89,667
Claims priority, application Great Britain, Nov. 25, 1969, 57,729/69
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.2 **7 Claims**



Various physical characteristics of a solid body are dependent upon its natural frequency of vibration and the invention describes a method whereby a body may be excited to resonance through the operation of a remote transducer, and once resonance is achieved it may be preserved, even though the value thereof alters. By measuring the variations in resonance, environment conditions, such as temperature, may be deduced.

3,726,130
METHOD OF MONITORING A WELDING OPERATION

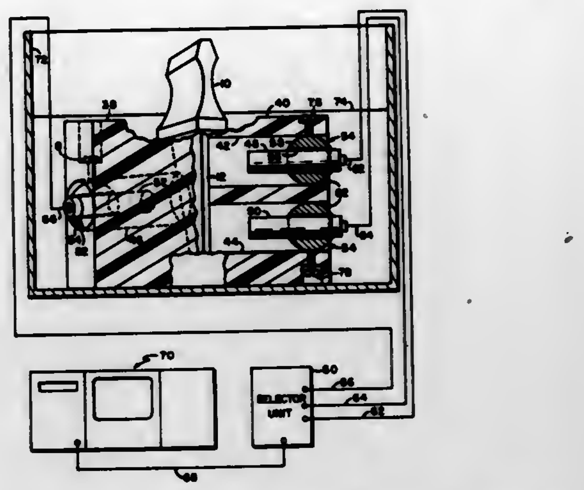
Richard P. Hurlebaus, Huntingdon Valley, Pa., assignor to The Budd Company, Philadelphia, Pa.
Filed Dec. 9, 1970, Ser. No. 96,374
Int. Cl. G01n *29/00*
U.S. Cl. 73—67.8 R **6 Claims**



A method of monitoring a spot welding operation of two overlapping pieces includes transmitting and receiving ultrasonic shear wave pulse signals into and from the two pieces while the welding operation is being performed. Means are then provided to indicate the degree of penetration of the weld into the pieces.

3,726,131
ULTRASONIC TEST FIXTURE AND METHOD OF MAKING THE SAME

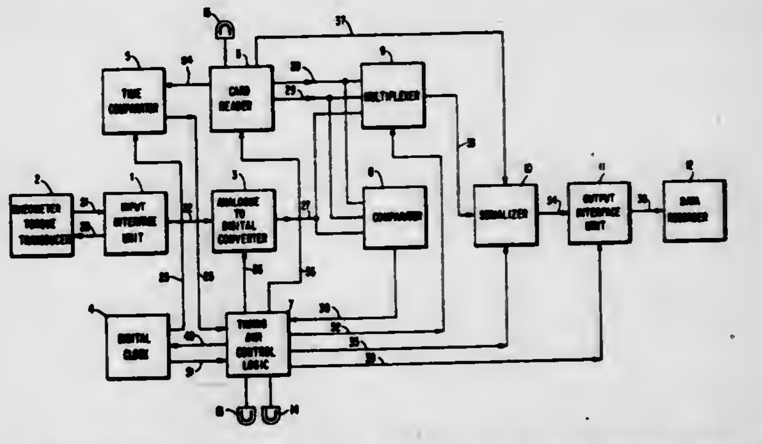
Brooke A. Galloway, Monroe, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Nov. 22, 1971, Ser. No. 200,684
Int. Cl. G01a *29/04*
U.S. Cl. 73—71.5 U **11 Claims**



An ultrasonic test fixture for determining the thickness of a turbomachine blade is made by attaching the heads of nails to predetermined positions on the outer surface of the blade. Generally cylindrical cores are positioned over the shank of the nails and a room-temperature curable material is poured around the blade and cylindrical cores and allowed to cure to form a base. When the base has hardened the cylindrical cores are removed, thus providing cylindrical passages extending generally at right angles to the surface of the blade at the predetermined positions. A transducer is positioned in each passage by a sleevelike element. The transducer is displaced and pivoted to a predetermined position and orientation relative to the blade to produce an optimum signal. The sleevelike element is secured in place in the passages to form a permanent guide for the transducer.

3,726,132
APPARATUS FOR INDICATING DEPARTURE FROM PREDETERMINED LIMITS

Malcolm M. Bibby, and Raleigh W. Wise, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.
Filed April 28, 1969, Ser. No. 819,732
Int. Cl. G01n *25/00*
U.S. Cl. 73—101 **13 Claims**



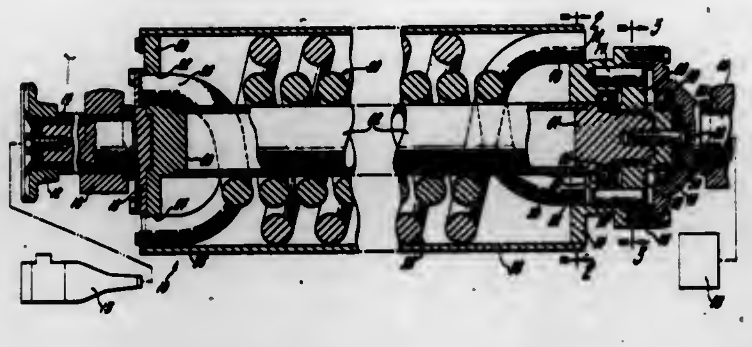
Testing apparatus which converts an electrical analog signal to digital form and then by the application of digital logic indicates and records departure from predetermined limits is disclosed. The apparatus also records in decimal form identification of the test composition specification limits and actual values at each test point over a selected testing range, over which range a parameter varies with time, and the value of the parameter is received in the form of an electrical analog signal.

3,726,133
FLEXIBLE TORQUE TRANSMITTING UNIT

John D. Morgan, Speedway, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed July 13, 1971, Ser. No. 162,164
Int. Cl. G01m *13/02*

U.S. Cl. 73—118 **7 Claims**

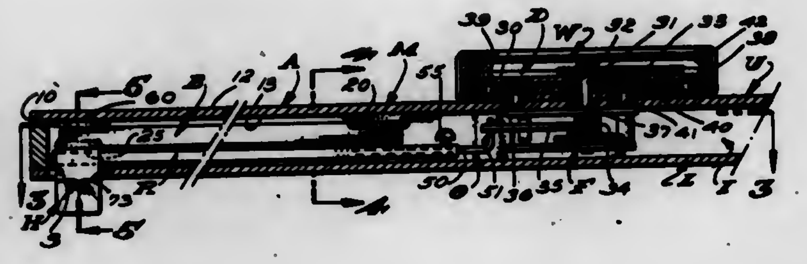


This power transmitting unit has concentrically arranged helical springs drivingly connecting input and output members. The springs selectively windup in response to counterclockwise or clockwise torque applied to the input to simulate the torsional deflection in a vehicle drive line.

3,726,134
DIAL TORQUE WRENCH

Bosko Grabovac, c/o 818 East Broadway, San Gabriel, Calif.
Continuation-in-part of Ser. No. 803,737, March 3, 1969, abandoned. This application Feb. 22, 1971, Ser. No. 117,259
Int. Cl. G01l *5/24*

U.S. Cl. 73—139 **11 Claims**



A dial torque wrench including an elongate manually engagable lever arm coextensive with the wrench, an elongate deflection beam of limited longitudinal extent in parallel relationship with and between the ends of the arm means fixing one end of the beam to the arm, a work-engaging head at the other end of the beam, an elongate operating rod in spaced parallel relationship with the beam with an end fixed to the head, a dial means carried by the arm and operatively related to the other end of the rod. The longitudinal extend of the beam being a fraction of the effective length of wrench and is shrouded and protected by the lever arm throughout its longitudinal extent.

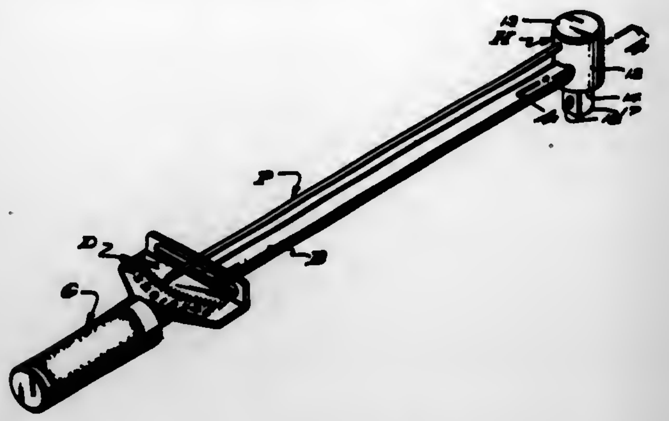
3,726,135
BEAM TORQUE WRENCH

Ivan N. Vuceta, San Gabriel, Calif., assignor to Consolidated Devices, Inc., San Gabriel, Calif.

Filed April 12, 1971, Ser. No. 133,015
Int. Cl. G01l *5/24*

U.S. Cl. 73—139 **6 Claims**

A novel connecting means between the ends of an elongate deflection and work-engaging head and hand gripping parts related thereto, said means comprising socket openings in said parts in axial alignment with the beam and having substantially flat bottoms opposing substantially flat ends on the beam, radially inwardly opening lock grooves in the socket openings adjacent the bottoms thereof and lock beads forged on the beam adjacent the ends thereof and projecting radially into the lock grooves. The inner faces of the beam ends and socket bottoms and the inner faces of the lock beads and lock grooves being welded.

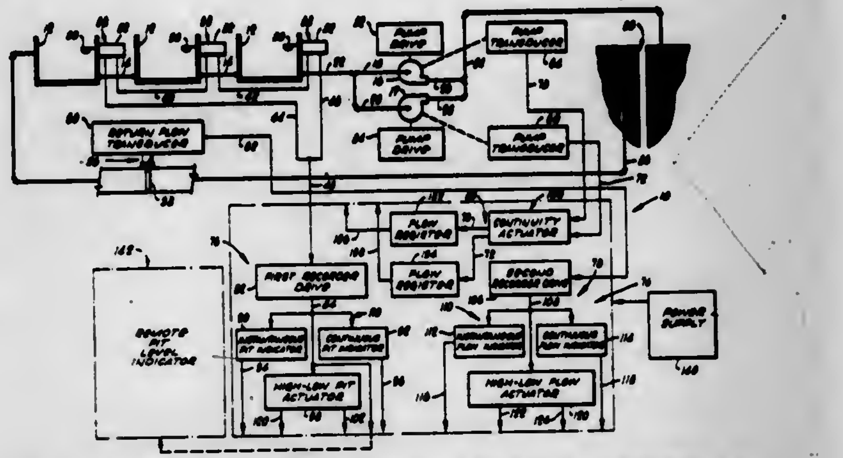


3,726,136
DRILLING-FLUID CONTROL-MONITORING APPARATUS

George W. McKean, and Hugh H. Benson, both of Oklahoma City, Okla., assignors to Petro-Electronics, Inc., Oklahoma City, Okla.

Filed Dec. 17, 1970, Ser. No. 99,136
Int. Cl. E21b *47/04*

U.S. Cl. 73—155 **33 Claims**



A control-monitoring apparatus, which is adapted to cooperate in a drilling-fluid circulation system, having a level indicating apparatus to sense the level change of the drilling-fluid in the fluid-pits and to provide an output level-signal in response thereto; a pump transducer is connected to each pump, each pump transducer being connected to a flow register which provides an indication of the total volume of drilling-fluid being moved through a pump; and a return-flow indicator to provide an output return flow-signal indicative of the flow of drilling-fluid through the return flow line. The control-monitoring apparatus being constructed to provide the necessary drilling-fluid parameters during the drilling operation when the drilling-fluid is being circulated through the borehole, and during the initial filling of the borehole with drilling-fluid prior to the beginning of the drilling operation.

3,726,137
TESTING TEXTURIZED YARN

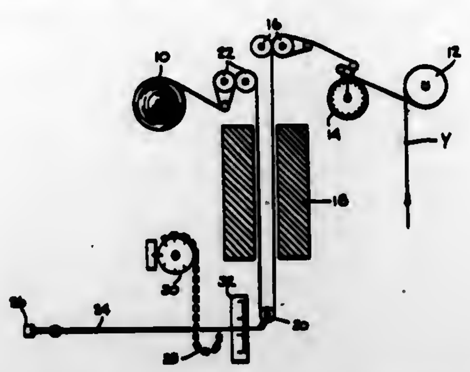
Michael James Denton, Didsbury, England, assignor to Heberlein & Co. AG, Wattwil, St. Gall, Switzerland

Filed May 4, 1971, Ser. No. 140,146
Int. Cl. G01l *5/06*

U.S. Cl. 13—160 **8 Claims**

Method and means for obtaining a comparative assessment

of crimping forces of textured yarn wherein the yarn is advanced between two sets of feed rolls, is heated in the region therebetween and the magnitude of its crimping force is determined in such region.

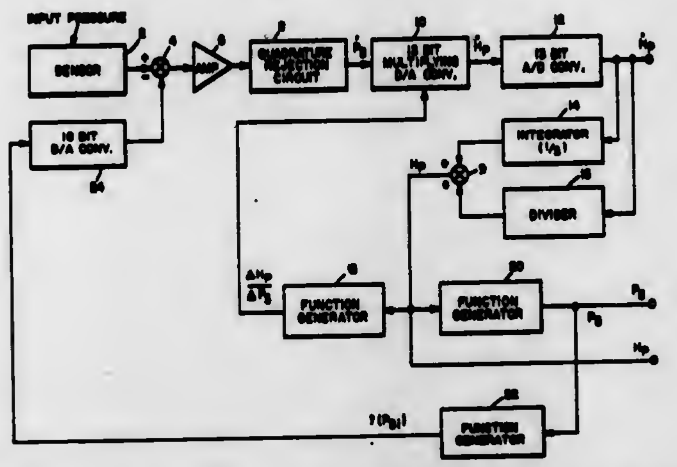


3,726,138
DIGITAL DISPLACEMENT AND DISPLACEMENT RATE GENERATOR

Henry Robert Koszkowski, Denville, and Casimir Stanley Smialowicz, Livingston, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 16, 1971, Ser. No. 181,021
Int. Cl. G01c *21/00*

U.S. Cl. 73—179 **7 Claims**



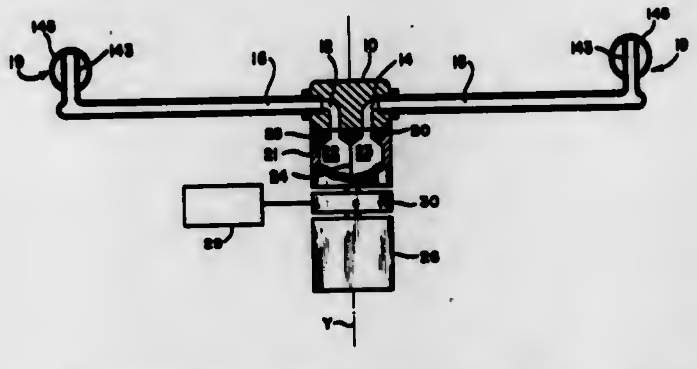
Apparatus for generating digital displacement and displacement rate signals directly from a sensed condition and as a closed loop function of the condition for increased accuracy and stability.

3,726,139
FLUID SPEED INDICATING APPARATUS

John L. Beilman, Lancaster, N.Y., assignor to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.

Filed Nov. 18, 1970, Ser. No. 90,552
Int. Cl. G01c *21/10*

U.S. Cl. 73—181 **2 Claims**



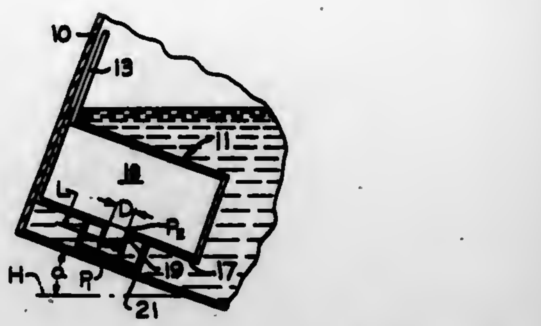
A fluid speed indicating apparatus having one or more rotating arms that are driven by a constant speed motor, each arm having a velocity sensing tip which is located out of the plane of rotation of the arm.

3,726,140
LIQUID LEVEL INDICATING MEANS

Gail G. Barbee, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 7, 1971, Ser. No. 150,644
Int. Cl. G01f *23/14*

U.S. Cl. 73—299 **11 Claims**

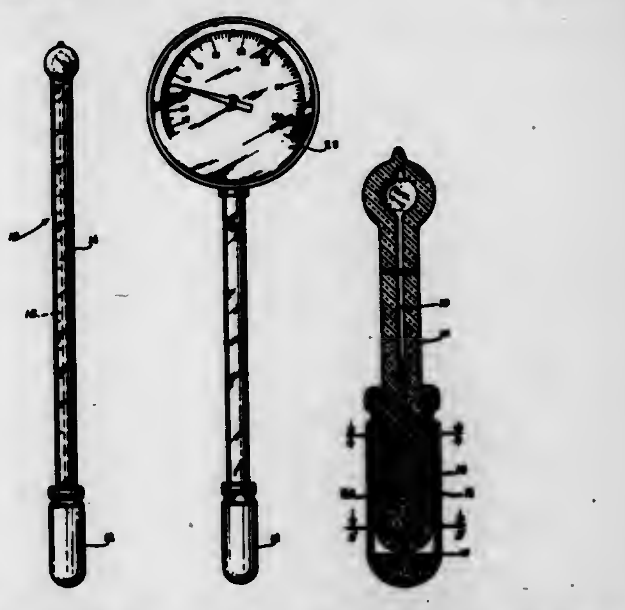


A closed fuel tank comprises a liquid level indicating means having a transducer cell mounted adjacent the bottom thereof. The cell comprises a bottom wall having a centrally disposed opening formed therein to communicate fuel to an internal, air-filled chamber of the cell. A tube forms an extension of the opening and extends downwardly from the bottom wall to form a "bubble trap." A perforated baffle member encapsulates the tube to retard ingress of fuel into the chamber to prevent pressure surges therein. The air pressure level in the cell, proportional to the head of fuel in the tank, is communicated to a calibrated fuel gage mounted externally of the tank.

3,726,141
FAST-RESPONSE TWO-PHASE THERMOMETER

Norman C. Bremer, Ithaca, N.Y., assignor to Maury Wallace, Ithaca, N.Y., a part interest
Continuation-in-part of Ser. No. 120,825, March 4, 1971. This application April 2, 1971, Ser. No. 130,666
Int. Cl. G01k *5/32*

U.S. Cl. 73—368.3 **27 Claims**

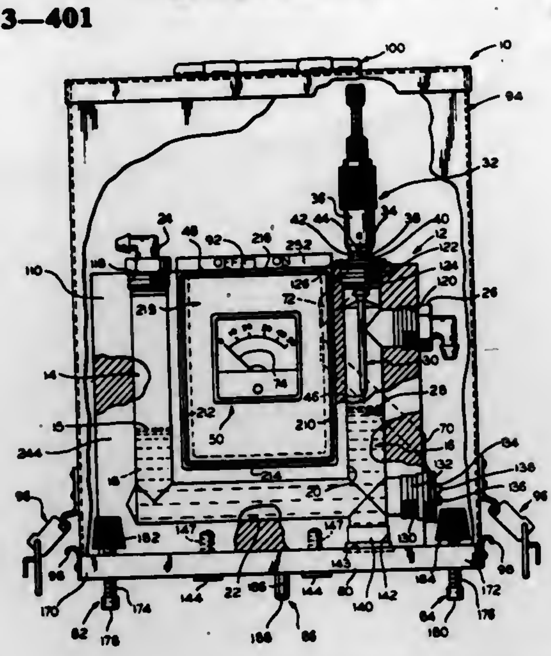


A thermometer having a first low boiling point or thermally-expansive fluid within a probe and a second relatively incompressible fluid at the thermometer calibrations, the first fluid and the second fluid being in pressure communication with each other through an intermediate elastomeric or porous medium such as a diaphragm or a multiple capillary porcelain plug. Vapor pressure or thermal expansion of the first fluid in response to the temperature of the probe environment will move the second fluid proportionately through a calibrated capillary bore whereby the temperature-related pressure of the first fluid may be read in calibrations of temperature. In a preferred embodiment the first fluid is a gas or gas-liquid equilibrium and the second fluid is a substantially incompressible liquid.

3,726,142
ELECTRONIC HOOK GAUGE MANOMETER

Robert H. Ashton, Coloma, Mich., and James W. Phillips, Michigan City, Ind., assignors to Dwyer Instruments, Inc., Michigan City, Ind.

Filed Nov. 25, 1970, Ser. No. 92,660
Int. Cl. G01l ***7/18***
U.S. Cl. 73—401 **5 Claims**

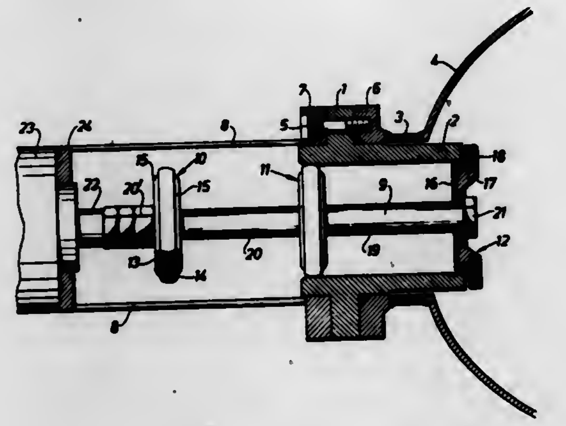


A hook gauge manometer provided with a micrometer mounted probe incorporated in an electrical circuit in which a pen light cell provides a direct current power source, with the direct current from the power source being electronically converted to provide an alternating current signal that is transmitted through the gauge liquid when the hook gauge probe is moved to its read out position, with the alternating current signal being electronically converted to a direct current signal that is sensed by a direct current detector and provides a visible signal that the instrument is to be read. The unit is portable and measures positive, negative, or differential pressures in the zero to two inches water column range.

3,726,143
DEVICE FOR WITHDRAWING SAMPLES FROM A SUSPENSION FLOWING THROUGH A CONDUIT

Knut Enarsson, Saffle, Sweden, assignor to Aktiebolaget Kalle-Regulatorer, Saffle, Sweden

Filed Feb. 16, 1971, Ser. No. 115,559
Claims priority, application Sweden, March 4, 1970, 2864/70
Int. Cl. G01n ***1/10***
U.S. Cl. 73—422 TC **2 Claims**

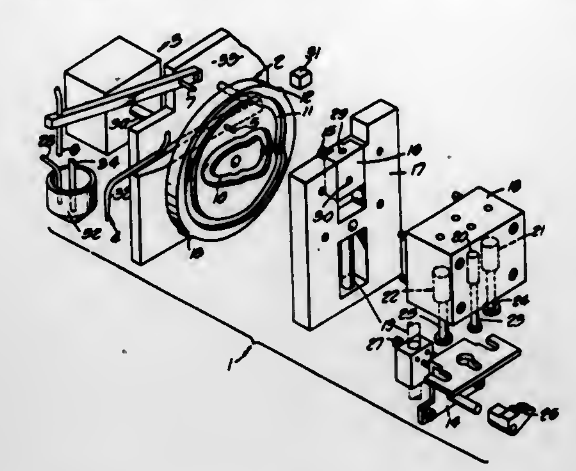


A device for withdrawing samples of a suspension flowing through a conduit comprises an open-ended cylinder adapted to be inserted through the wall of the conduit. A spindle movable axially through the cylinder carries two spaced pistons as well as a cover plate, the latter being adapted for sealing engagement with the inner end of the cylinder.

3,726,144
SYNCHRONOUSLY PROGRAMMED SAMPLE DILUTOR APPARATUS

Gerald L. Klein, Orange, Calif., assignor to Beckman Instruments, Inc.

Filed Aug. 2, 1971, Ser. No. 168,279
Int. Cl. G01n ***1/14***
U.S. Cl. 73—423 A **15 Claims**

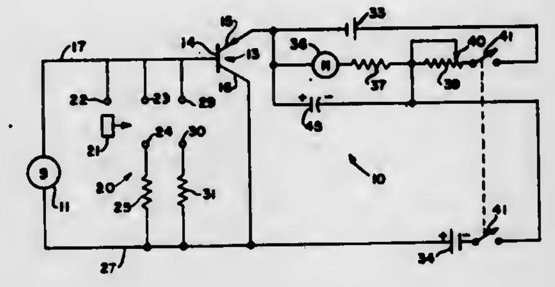


A single rotary cam in a liquid sample dilutor has multiple mechanical actuator program cycle profiles, which during one cam cycle sequentially actuate the cam arc intervals which determine the liquid volume inputs into and the outputs from a mixing cup in which a selected sample liquid volume, a selected diluent liquid volume, the sample and diluent liquid mixture volume, the diluted liquid sample volume aspiration time interval, the waste diluted sample liquid volume removal, and the diluent liquid volume waste rinse and ejection are controlled. The cam member mechanically actuates the pistons of the three liquid volume measuring syringes, the system slider valve, the aspirator probe, and the sample probe, operatively cooperating in sample and diluent volume measurement, and diluted sample volume withdrawal from the dilutor.

3,726,145
APPARATUS FOR INDICATING MAGNITUDE OF VIBRATIONS

Edward F. Bedford, North Olmsted, and Thomas C. Russo, Brookpark, both of Ohio, assignors to ATCO, Inc., Cleveland, Ohio

Filed June 18, 1970, Ser. No. 47,445
Int. Cl. G01m ***1/22, 1/28***
U.S. Cl. 73—457 **13 Claims**

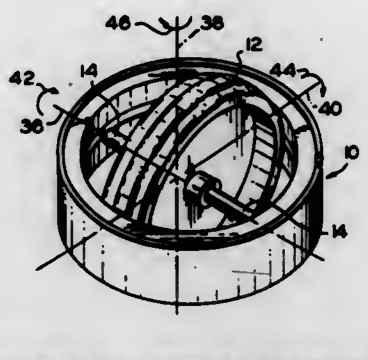


A circuit and apparatus for detecting vibration in rotating parts and a method of using the circuit and apparatus which is particularly useful in connection with the balancing of wheels and tires on a vehicle. The circuit includes a sensor, preferably a seismic geophone, in circuit with a reverse-biased transistor. Means are provided in circuit with the input of the transistor for adjusting the range of response of the circuit to signals from the geophone. The output of the transistor is connected in circuit with a meter having a zero-adjusting circuit associated therewith. A capacitor is provided for damping the signals applied to the meter. The apparatus for using the meter in connection with a method of balancing wheels includes a portable probe for housing the geophone which may be magnetically secured to the body of the vehicle. A stable stand includes a triangularly shaped base member, an upstanding member, and means for adjustably securing a housing which incorporates the circuit according to the invention. The method of using such circuit and apparatus is also disclosed in connection with the method of balancing the tires and wheels on a vehicle.

3,726,146
GYROSCOPIC DEVICE

Archie L. Mishler, Clackamas, Oreg., assignor to Wornoto Incorporated, Williamia, Oreg.

Filed April 12, 1971, Ser. No. 133,259
Int. Cl. G01c ***19/04***
U.S. Cl. 74—5 **9 Claims**

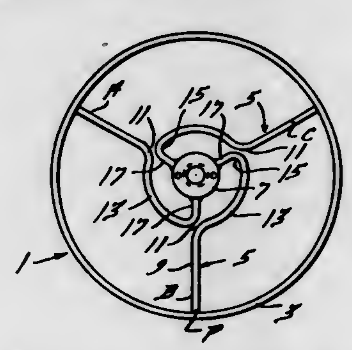


A rotor is positioned in a support structure which has an internal circular portion provided with an internal groove. The rotor is mounted on a shaft extending diametrically across the circular portion with its ends received in the groove. A ring is positioned in the groove so as to be rotatable circumferentially of the groove. The ring has diametrically spaced notches in its inner periphery also receiving the ends of the rotor shaft for maintaining them 180° apart in the groove. The rotor can thus rotate about the axis of the rotor shaft as a first or spin axis and also about the axis of rotation of the ring which constitutes a second axis at right angles to and intersecting the spin axis. By giving the rotor an initial spin and then holding the support structure in the hand and manually applying a torque to the support structure and a third axes at right angles to both the spin and second axis, the rotor will precess about the second axis and produce a torque about the third axis opposing the manually applied torque. By manually gyrating the axis of the applied torque about the second axis at the same rate and in the same direction as the precession of the rotor, the opposite ends of the rotor shaft are continuously pressed against the opposite sides of the groove by the opposing torques and the precession is continuous and causes the ends of the rotor shaft to roll on the sides of the groove in a direction which increases the rate of spin of the rotor. A skillful operator can cause the rotor to attain high speed of rotation about its spin axis.

3,726,147
ENERGY ABSORBING STEERING WHEEL

Frederick C. Spietz, Highland Park, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed July 14, 1971, Ser. No. 162,378
Int. Cl. B62d ***1/08***
U.S. Cl. 74—552 **4 Claims**

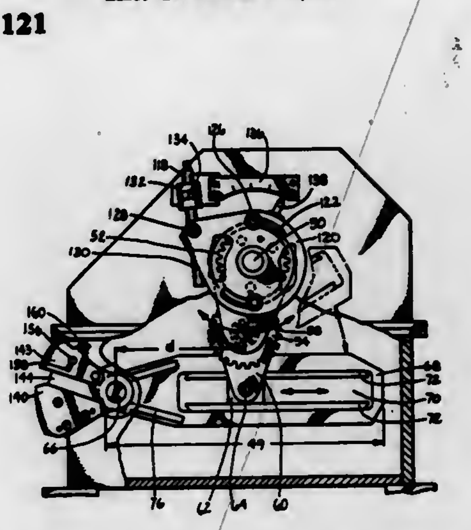


A steering wheel having a plurality of spokes each of which include two generally radially extending portions connected by a generally arcuate portion, the two radially extending portions being circumferentially offset from one another. The inner portions are subject to torsion upon impact against the wheel and will deform to absorb energy when the impact is of a predetermined magnitude.

3,726,148
SHEET ADVANCE APPARATUS

Bruce T. Jope, South Glastonbury, and Leonard J. Witkowski, Windsor Locks, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 860,874, Sept. 25, 1969, Pat. No. 3,613,979. This application Feb. 22, 1971, Ser. No. 117,254
Int. Cl. F16h ***29/08***
U.S. Cl. 74—121 **4 Claims**

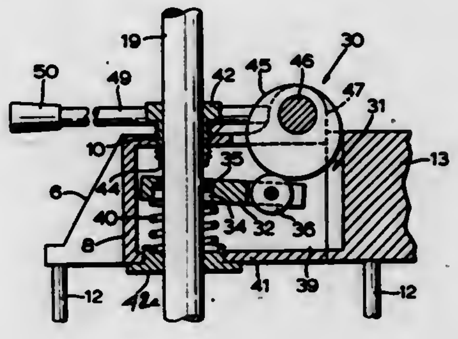


Apparatus for intermittently advancing successive equivalent length portions of a generally continuous sheet through an upstream article forming station. A gear assembly intermediate drive means and a sheet advance roll includes oscillating arm means which, in combination with a brake on the roll, controls its acceleration and deceleration to provide smooth sheet movement. The extent of sheet displacement may be quickly changed by a lever having a portion mounted exterior to the housing of the gear assembly which, when rotated, changes the center distance between a rotary crank in the input drive train and a pivot shaft of the oscillating arm means which receives power from the input drive train.

3,726,149
PRESSURE RELIEF APPARATUS FOR POTATO DOUGH EXTRUDER

Laurence James Ilines, 7 Feldbar Court, Willowdale, Ontario, Canada

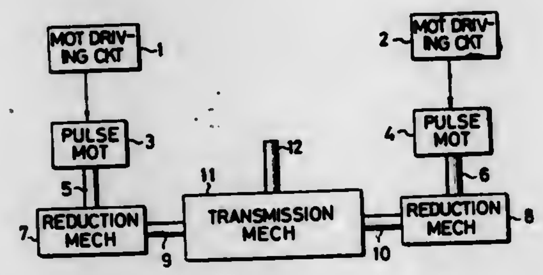
Continuation-in-part of Ser. No. 819,801, April 28, 1969, abandoned. This application Aug. 17, 1970, Ser. No. 64,357
Int. Cl. F16h ***27/02, 31/00***
U.S. Cl. 74—141.5 **11 Claims**



A potato dough extruder incorporating an incremental manually operable pressure apparatus for manually extruding potato dough through an extrusion die which forms the dough into the shape of french fried potatoes, in which the potato dough is contained in a cylindrical container and pressure is applied to a pressure piston in the cylinder through a smooth cylindrical pressure shaft, the incremental pressure apparatus incorporating a ring-like gripping device which is slidable up and down the shaft so long as the ring is located in a plane substantially normal to the shaft, and in which the ring gripping device is tiltable out of such a plane and grasps the shaft at any point along its length thereby doing away with teeth, sprockets, and notched gripping devices and at the same time incorporating the improvement that as soon as the tilting force applied to the ring gripping device is released the pressure on the pressure shaft is also released. This particular improvement eliminates the tendency for the extrusion of the dough to continue after a single serving of french fries has been obtained from the machine.

3,726,150
PULSE RESPONSE-DRIVING APPARATUS

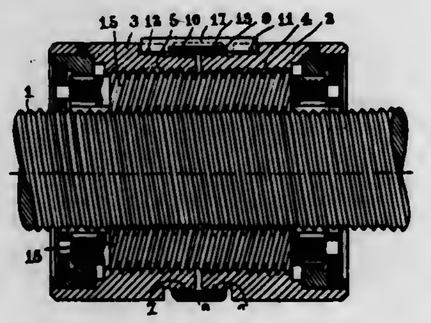
Tetsusaburo Ikedá, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed April 2, 1971, Ser. No. 130,706
Claims priority, application Japan, April 2, 1970, 45/29036
Int. Cl. F16h *35/02*
U.S. Cl. 74—394 **7 Claims**



A pulse-responsive drive apparatus comprising a first electro-mechanical energy converter responsive to one pulsating signal, a second electro-mechanical energy converter responsive to another pulsating signal, and a combined power transmission mechanism having inputs coupled to the respective mechanical outputs of the converters with the output of the transmission mechanism being the composite of said two mechanical outputs of the first and the second electro-mechanical energy converters respectively whereby an improvement of pulse response characteristics and an output variation are made possible.

3,726,151
ADJUSTABLE SCREW AND NUT DEVICE

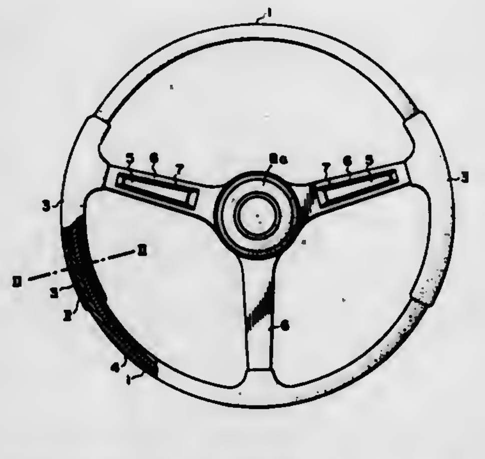
Pierre C. Lemor, Ville D'Avray, France, assignor to SKF Industrial Trading and Development Company, Amsterdam, Switzerland
Filed May 26, 1971, Ser. No. 147,017
Claims priority, application France, June 1, 1970, 7019978
Int. Cl. F16h *1/18, 55/18*
U.S. Cl. 74—424.8 A **2 Claims**



This screw and nut device with precision play adjustment characteristic comprises two nuts engaging a commonscrew, for example through the medium of satellite rollers. These nuts are connected by a coupling ring engaging screw-threaded adjacent end portions of said nuts which have the same directions but slightly different pitches. The play is adjusted by rotating said ring after locking said nuts against rotation by means of a key clearing said ring. The desired adjustment is then maintained by replacing said key with another key adapted to lock said ring against rotation with respect to said nuts.

3,726,152
STEERING WHEEL FOR MOTOR CAR

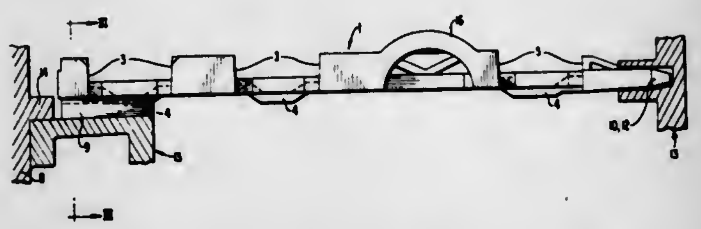
Hikosaburo Tsuneizumi, Tokyo, Japan, assignor to Izumi Jidosha Kabushiki Kaisha (Izumi Motor-Car Co., Ltd.), Tokyo, Japan
Filed May 18, 1971, Ser. No. 144,576
Claims priority, application Japan, May 18, 1970, 45/47773
Int. Cl. B62d *1/06*
U.S. Cl. 74—552 **1 Claim**



A pair of portions of a steering wheel which are normally gripped by a driver's hands are slightly reduced in diameter or cross sectional area as compared with the other portions thereof and are integrally covered with a soft, elastic and non-slippery material such as foamed synthetic plastic or leather to have a diameter or cross sectional area greater than that of the other portions of the wheel so that the driver may grip the steering wheel easily and firmly without slippage. Transmission of vibrations from the steering wheel to the driver's hands may be sufficiently dampened, and the appearance of the steering wheel may be enhanced materially when the color of the grip portions is different from that of the other portions.

3,726,153
MOUNTING SUPPORTS FOR THE ENDS OF BRAKE BANDS OF AUTOMATIC TRANSMISSIONS

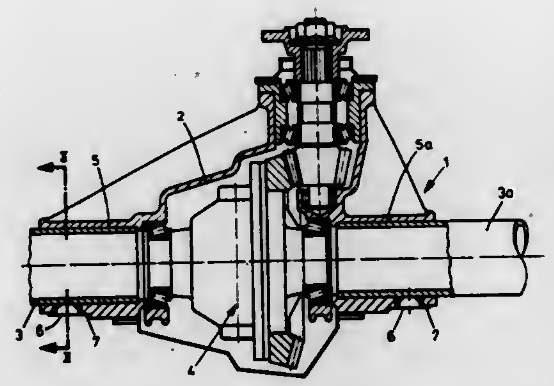
Josef Helmer, Aich, Germany, assignor to Daimler-Benz AG, Stuttgart, Unterturkheim, Germany
Filed Dec. 15, 1970, Ser. No. 98,239
Claims priority, application Germany, Jan. 14, 1970, P 20 01 440.8
Int. Cl. F16h *57/02*
U.S. Cl. 74—606 **21 Claims**



A mounting support for the ends of brake bands of automatic transmissions, especially for motor vehicles, which is made from synthetic resinous material and is interchangeably secured in the transmission housing by a dovetail guidance; the mounting support is secured against sliding out of the dovetail guidance by means of a housing part adjoining the same and provided with a projection.

3,726,154
ARRANGEMENT FOR SECURING HOUSINGS IN A REAR AXLE ASSEMBLY

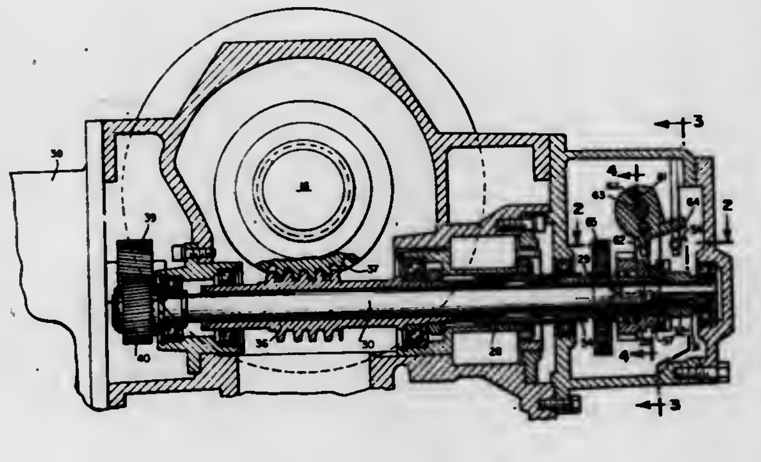
Eberhard Diessner, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, West Germany
Filed Jan. 26, 1972, Ser. No. 220,739
Claims priority, application Germany, Feb. 17, 1971, P 21 07 474.8
Int. Cl. F16h *57/02*
U.S. Cl. 74—607 **7 Claims**



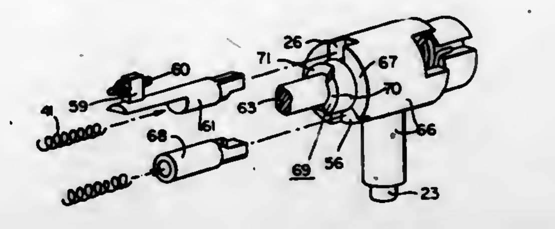
Arrangement for preventing relative rotation between a differential gear housing and an axle housing tube in a motor vehicle rear axle assembly. The differential gear housing, which may be made of cast non-weldable material, is provided with a sleeve-like portion in the direction of the axle, surrounding and supporting one end of the axle housing tube. According to the invention, the sleeve-like portion has an opening therein extending substantially radially inward. A pin-like device is arranged in the opening in contact with the sides thereof and is welded to the axle housing tube. This device thereby attaches the axle housing tube to the differential gear housing without the necessity of forming a weld with the differential gear housing.

3,726,155
DE-CLUTCH MECHANISM IN VALVE OPERATOR

Walter J. Denkowski, and John Zouzoulas, both of King of Prussia, Pa., assignors to Philadelphia Gear Corporation, King of Prussia, Pa.
Filed Nov. 17, 1971, Ser. No. 199,427
Int. Cl. F16h *25/00*
U.S. Cl. 74—625 **10 Claims**



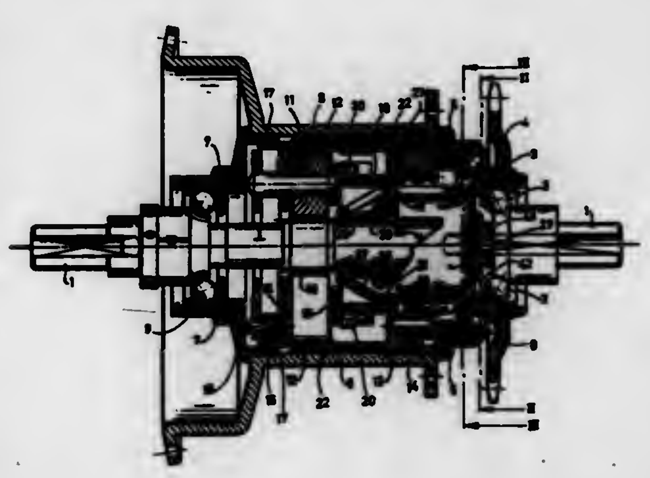
In a de-clutch mechanism for shifting automatically between a primary drive and a secondary drive and in which the secondary drive actuates a cam and flipper mechanism to shift a clutch fork to shift a spring-loaded slidable sleeve clutch from primary drive to secondary drive, a secondary clutch mechanism is provided between the flipper mechanism and the clutch fork for assuring that the clutch fork can be returned from secondary drive to primary drive even though the flipper mechanism happens to be in such position relative



to the flipper cam that the cam tends to block return movement of the flipper mechanism. As an additional feature, an anti-clicking arrangement is provided to prevent the flipper mechanism from being repeatedly struck by the flipper cam during secondary drive operation.

3,726,156
HUBGEAR FOR A PEDALDRIVEN VEHICLE SUCH AS A BICYCLE

Reinder Van Tijen, and Hermanus Johannes Van Waveren, both of Dieren, Netherlands, assignors to N.V. Gazelle Rijwielfabriek V/H Arentsen & Kolling, Dieren, Netherlands
Filed Aug. 31, 1971, Ser. No. 176,635
Int. Cl. F61h *3/44;* **F16d** *67/00*
U.S. Cl. 74—750 B **7 Claims**

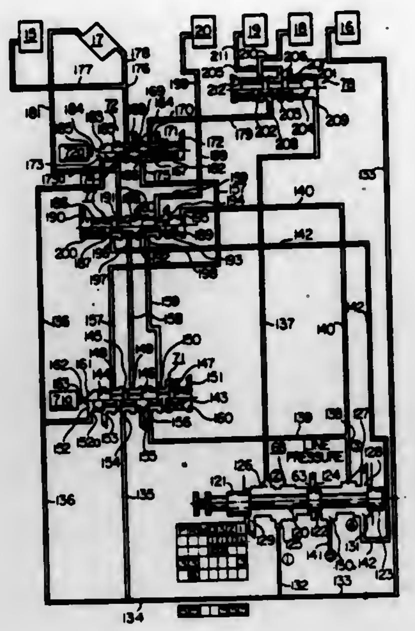


A three-speed hubgear for a bicycle of the back pedalling type, comprising a planetary gear with an axially displaceable gear ratio changing member, the position of which is determined by a cylindrical sleeve having a stepped profile at one front edge thus forming a gear ratio selector cam with which a follower of said gear ratio changing member is constantly in contact.

3,726,157
CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

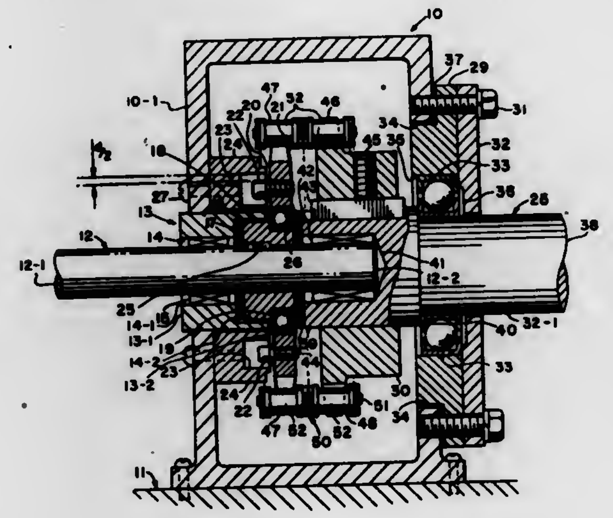
Nagayuki Marumo, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan
Filed March 30, 1971, Ser. No. 129,446
Claims priority, application Japan, April 4, 1970, 45/28374
Int. Cl. F16h *57/10;* **B60k** *21/02*
U.S. Cl. 74—753 **3 Claims**

A control system for an automatic power transmission of a motor vehicle providing basically four forward drive ratios, which control system includes two shift valves for controlling the fluid flow to one fluid pressure operated servo means of a first set of friction elements thereby to selectively provide those drive ratios. The control system also includes first speed and second speed control valves for controlling the fluid flow to the other fluid pressure operated servo means a second set of friction elements providing first speed and second speed drive ratios respectively thereby to selectively provide free wheel driving and engine brake driving at first and second speed drive ratios, respectively. Each of the shift valves has two principal positions which are combined so as to selectively pass a fluid pressure from a source of fluid pressure to fluid pressure operated servo ratio.



3,726,158
SPEED-REDUCING COUPLING

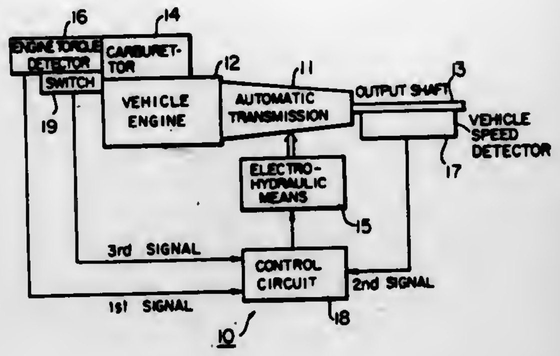
Henry C. Brown, 410 Crusader Drive, Dallas, Tex.
Filed Feb. 4, 1971, Ser. No. 112,749
Int. Cl. F16h *1/28*
U.S. Cl. 74—804 **11 Claims**



Disclosed is a device for coupling a rotary input of a first speed to a load which utilizes the input at a reduced speed, and wherein apparatus embodying the principles of a harmonic drive are combined with novel adjustable restraining elements and coupling means between the input and output of the apparatus to provide a speed-reducing coupling which has great strength, is simple, is inexpensive, and delivers smooth and continuous, vibrationless motion to the load.

3,726,159
TRANSMISSION SHIFT PATTERN GENERATOR

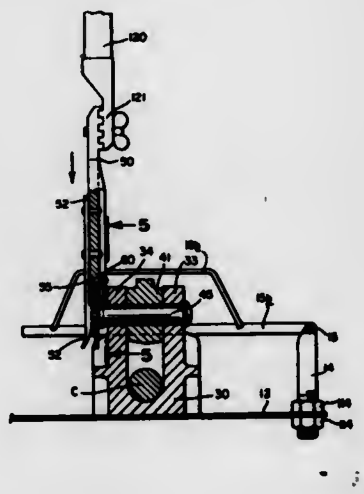
Masanori Mizote, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan
Filed March 15, 1971, Ser. No. 124,146
Claims priority, application Japan, March 18, 1970, 45/22484
Int. Cl. B60k *21/00*; **F16h** *3/74*
U.S. Cl. 74—866 **6 Claims**



An electronic control system for shifting an automotive automatic transmission between two adjacent speed ranges. An electronic circuit or shift pattern generator of the control system includes a trigger circuit having two transistors cascaded and a feedback circuit between the input and output of the trigger circuit. Upon reception of voltage signals representative respectively of engine torque, vehicle speed and, if any, a forced downshift of the transmission, the electronic circuit produces a variety of transmission speed changes or shift patterns, the slope and hysteresis of which can be changed by selecting the resistances of the input resistors and/or of the feedback circuit.

3,726,160
TOOL FOR APPLYING SUSPENSION CLAMPS TO POWER LINES

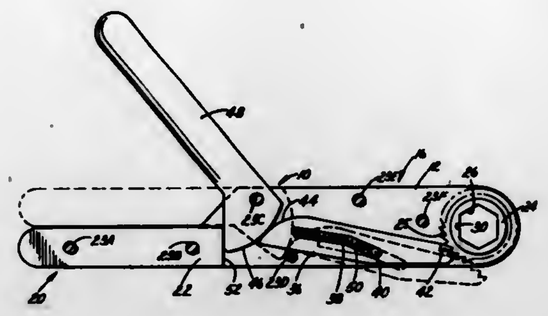
Leonard M. Brzoska, 627 Old Elm Street, Conshohocken, Pa.
Division of Ser. No. 69,869, Sept. 4, 1970, Pat. No. 3,670,390. This application Feb. 1, 1972, Ser. No. 222,597
Int. Cl. B26b *27/08*
U.S. Cl. 81—3 CP **1 Claim**



A special tool at the end of an elongated insulated pole manipulates the suspension clamp and facilitates installation thereof on high voltage electric power line conductors without de-energizing the lines. A cotter key tool facilitates inserting the cotter key in the clevis pin.

3,726,161
MECHANICALLY DRIVEN RATCHET WRENCH

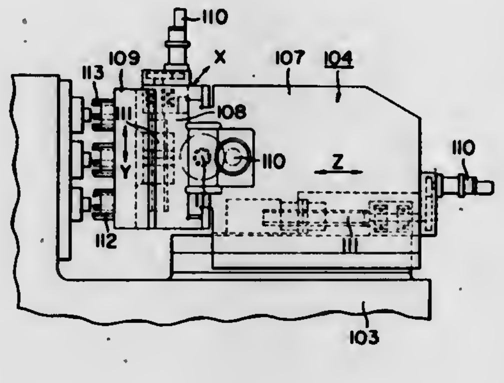
James C. Williams, Cypress; Karl T. Purdy, Chula Vista, and Le Moyne D. Gobel, Norwalk, all of Calif., assignors to Consumer & Industrial Tools Corporation, Cerritos, Calif.
Filed Sept. 27, 1971, Ser. No. 184,006
Int. Cl. B25b *13/46*
U.S. Cl. 81—60 **3 Claims**



A mechanically driven ratchet wrench which has a main body and handle rotatably mounted thereon. The handle coacts with a slide member which in turn acts upon a gear rotatably mounted on the main body. The gear receives socket inserts. Thus, squeezing of the handle rotates the socket inserts which will tighten or loosen bolts or nuts. The wrench can also be used by physically twisting it.

3,726,162
NUMERICALLY CONTROLLED LATHE

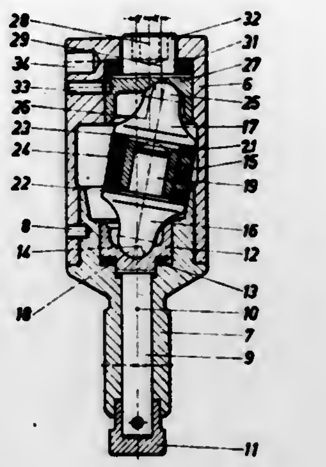
Yoshikazu Sato, Tokyo, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 16, 1970, Ser. No. 98,664
Claims priority, application Japan, Dec. 27, 1969, 44/104849; Oct. 2, 1970, 45/85853
Int. Cl. B23b *9/00*
U.S. Cl. 82—3 **3 Claims**



A numerical control lathe of the invention includes a head stock containing a main spindle and its driving means and having a workpiece positioned thereon by a chuck, and a took post having a tool mount having no indexing function, a vertical slide and a saddle movable back and forth with respect to the bed along X-axis. The vertical slide is driven to move vertically along Y-axis. The vertical slide is driven to move vertically along Y-axis on the saddle by a driving means and the saddle is driven by other driving means. Said head stock moves along Z-axis. This invention also provides an automatic multiple spindle numerical control lathe. In this case, the main tool post having two or more control axes movable in accordance with a command from the numerical control means; a plurality of auxilliary tool posts fixed to the main tool post; work spindle means equal in number to the auxiliary tool posts are provided. Workpieces chucked by work spindle means are machined simultaneously.

3,726,163
RAPID ACTION CLAMP

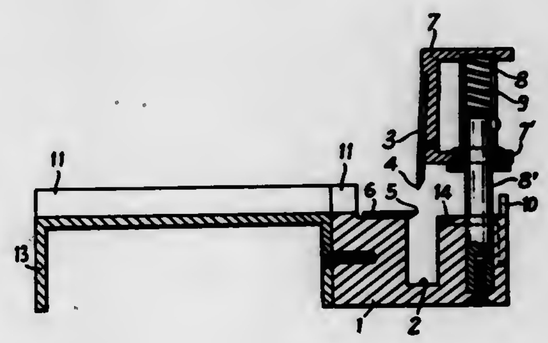
Bernhard Plath, Eiserfeld, Germany, assignor to Amsted-Siemag Kette GmbH, Betzdorf/Sieg, Germany
Filed Sept. 8, 1971, Ser. No. 178,559
Claims priority, application Germany, Jan. 22, 1971, P 21 02 955.0
Int. Cl. B23b *29/00*
U.S. Cl. 82—36 A **6 Claims**



A rapid action clamp is of the kind which comprises a housing containing a axially slidable thrust plunger for applying thrust to the part which is to be clamped, the plunger being pivotally connected to one end of a clamping strut the other end of which fits in a recess in an axially fixed actuator which is mounted so that it is rotatable about an axis eccentric to the axis of the thrust plunger. Rotation of the actuator moves the clamping strut between a position in which it is skewed to the plunger axis and a position in which it extends along this axis so that in so doing it moves the thrust plunger along its axis to apply the clamping thrust. The clamping strut or another part through which the clamping thrust is transmitted is compressible in the direction of thrust transmission against spring loading so that during the movement of the clamping strut towards its axially extending position, the springs are compressed so that the thrust is gradually increased and as the strut reaches its axial position, the spring becomes fully compressed so that the thrust is transmitted through rigid members.

3,726,164
SEPARATOR GUILLOTINE

Andre Ernest Cocquebert, 14 Avenue de General Clavery, Paris, France
Filed June 16, 1970, Ser. No. 46,762
Claims priority, application France, June 20, 1969, 6920638
Int. Cl. B26d *5/10, 7/16*
U.S. Cl. 83—1 **2 Claims**



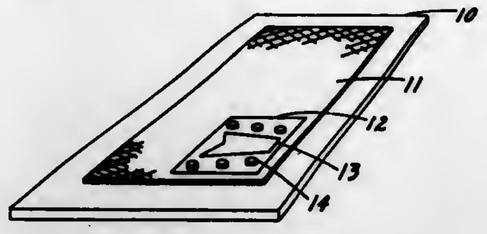
A separator guillotine for cutting the edges along one part of the length of a stationery set with the aid of two blades acting obliquely, the effective course of one with respect to the other being limited so that the set remains attached to the edge over a short distance after cutting.

3,726,165
METHOD OF CUTTING CLOTH FOR MAKING CLOTHES FROM PATTERNS AND APPARATUS THEREFOR

Sandra E. Hendrickson, 1924 Rosedale Drive, Indianapolis, Ind.

Filed July 9, 1971, Ser. No. 161,113
Int. Cl. B26d *3/00*; A41h *3/06*

U.S. Cl. 83—13 **3 Claims**



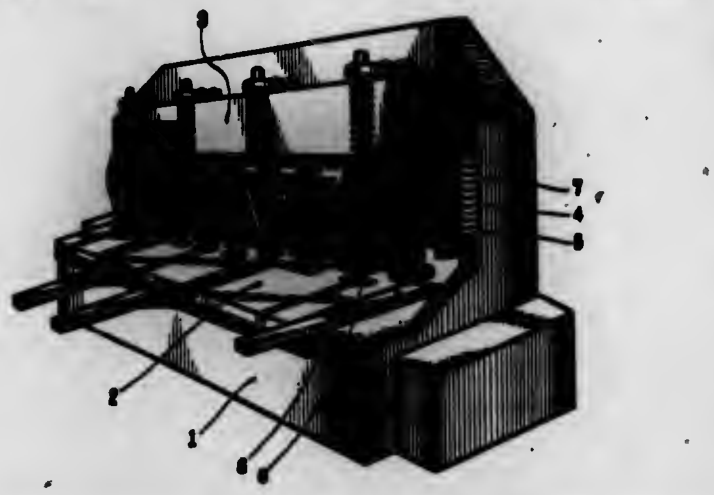
A method of cutting cloth with a rotary blade cutter for making clothes. A blank piece of cloth is positioned atop a support base and a paper pattern is then positioned atop the blank piece of cloth. The blank piece of cloth and paper pattern are secured to the fiberboard by flat headed push pins. A rotary blade cutter is then forced against the base and through the pattern and cloth. The rotary blade cutter is forced around the outline of the pattern. A finger receiver and shield are integrally formed in the cutter.

3,726,166
SAFETY DEVICE OF A SHEARING MACHINE

Bunji Iwatsu, Furukawa-shoten-nai, 62 Tomijim-cho, Nishi-ku, Osaka, Japan

Filed April 23, 1971, Ser. No. 136,863
Claims priority, application Japan, Feb. 16, 1971, 46/008901
Int. Cl. B26d *5/00, 7/24*

U.S. Cl. 83—58 **3 Claims**



A safety device of a shearing machine comprising a pair of upper and lower edged blades for cutting off a sheet metal to the required width thereof, a driving means adapted to vertically move said upper blade, a front plate mounted on the front of said upper blade and provided with gates for the observation of said blades, a bracket fixed to said front plate, and safety guards of said safety device each mounted on said bracket and arranged to cover the gate thereby ensuring the better safety during the operation to the operator.

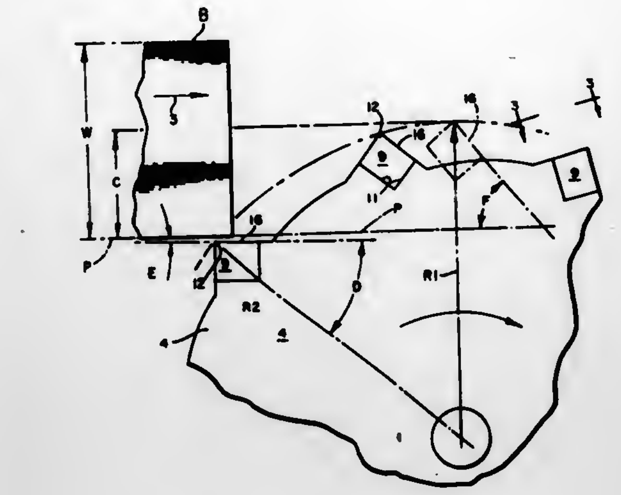
3,726,167
METHOD OF CUTTING THICK BOOKS

Richard H. Barbour, Jr., Milton, Mass., assignor to Comstock and Wescott, Inc., Cambridge, Mass.

Filed July 22, 1971, Ser. No. 165,273
Int. Cl. B23d *25/02*

U.S. Cl. 83—37 **4 Claims**

A group of collated book signatures or other layers of paper are cut with bevel edged bits spaced around the circular periphery of a wheel by feeding the paper in the same direction as the teeth rotate such that an exposed side of the paper advances in a plane intersecting normal to the circular radius more than half an inch from the outer end of the radius, and such that the bevelled outer corner of the cutting edge enters through the paper plane first and with the edge inclined away from the paper plane at an angle of zero to 20°. At its furthest penetration each cutting edge is inclined at less than 60° to the cutting plane.

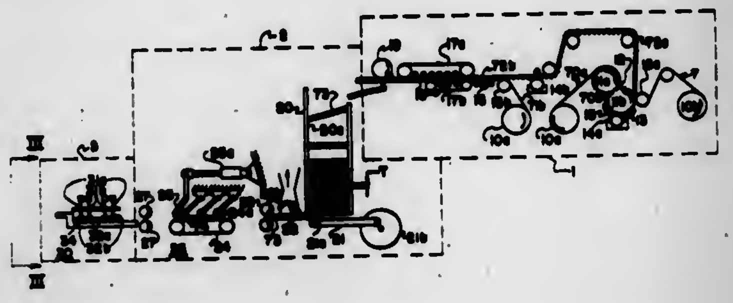


3,726,168
DIRECTION CHANGE APPARATUS FOR SHEET CONVEYANCE SYSTEMS

Ronald P. Glanz, and Clifford D. Shelor, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed July 22, 1971, Ser. No. 165,851
Int. Cl. B65h *35/02*

U.S. Cl. 83—79 **18 Claims**



Apparatus for changing the flow direction of a spaced series of planar sheets relative to the orientation of said sheets and subsequently closing the space therebetween under continuous flow conditions of said sheet series.

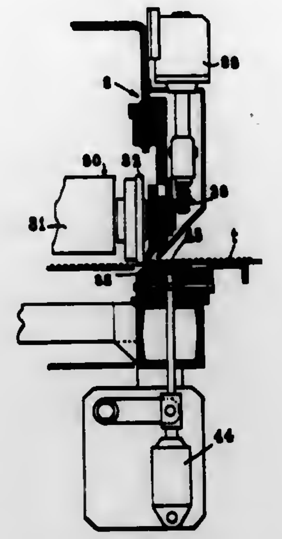
3,726,169
WIRE GAUZE CUTTING MACHINE

Georges Gazuit, Chemin Chauveau, 03 Montlucon, France

Filed June 21, 1971, Ser. No. 154,730
Claims priority, application France, Jan. 22, 1971, 7102138
Int. Cl. B26d *7/16*

U.S. Cl. 83—247 **8 Claims**

In this machine for cutting wire gauze web a magnetic-pull bar is movable along a feed beam for transferring the wire gauze web to be cut, for example obliquely with an angle of, say, 14° to 90°, towards the cutting beam, comprises a cutting carriage provided with a disk cutter mounted for free rotation thereon and adapted, during the cutting stroke, to be resiliently pressed along its periphery adjacent to the cutting edge against the downstream face of a cutting bar supporting with its upper face, upstream of the cutting line, the edge of the wire gauze web to be cut, which is resiliently clamped against said upper face of said cutting bar by a series of presser members, said disk cutter being adapted, during the return stroke of said cutting carriage and subsequent to a cutting operation, to be shifted automatically forwards and upwards so that its cutting edge is completely clear of the cutting bar.

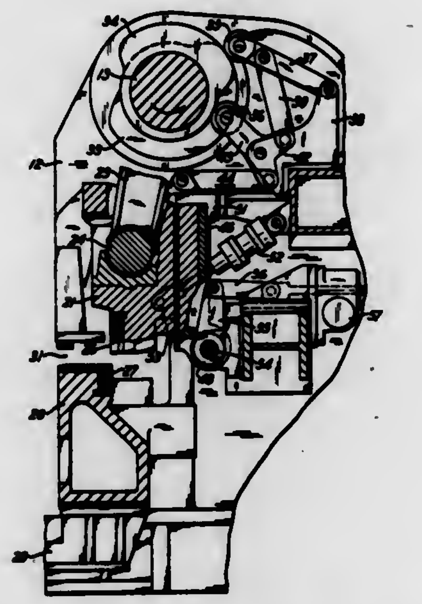


3,726,170
SHEAR

John R. Von Hofen, Pittsburgh, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.

Filed Jan. 13, 1971, Ser. No. 106,078
Int. Cl. B23d *31/00*; B26d *5/14*

U.S. Cl. 83—556 **9 Claims**



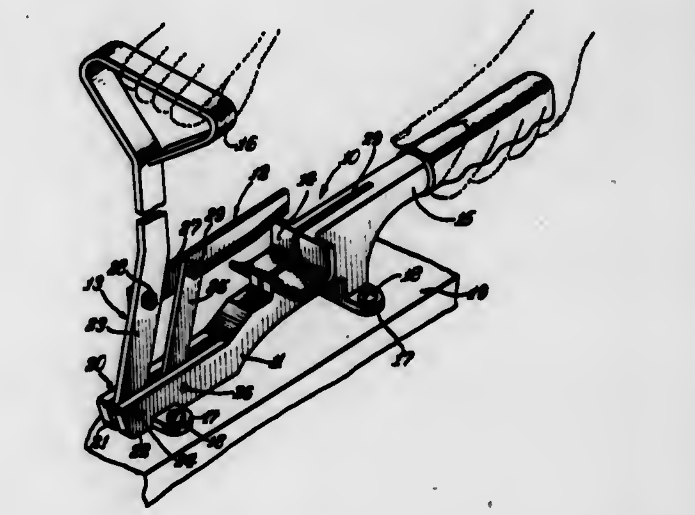
The disclosure of this invention relates to a shear for side trimming or dividing steel plates produced by a rolling mill. It illustrates and describes a stationary lower knife head to which there is secured a lower knife and a vertically movable upper knife head that supports the upper knife. The upper knife head is connected to a crank shaft by pitmans and through which means the upper knife is moved towards and away from the lower knife to effect a cut. The path of the shearing and return stroke of the upper knife head is controlled so that during the cutting portion of the shearing stroke, the upper knife is caused to move perpendicular to the plate over the entire range of plate thicknesses adapted to be sheared and immediately thereafter the upper knife is displaced away from the sheared edge of the plate. This control is achieved by providing a guide for the upper knife head in which the guide is held perpendicular to the plate during the shearing stroke and displaced laterally immediately after shearing and during the first portion of its return stroke in a manner that the lower portion of the head is tilted away from the sheared edge of the plate. A cam mounted on the crank shaft engaged by a cam roller connected to the guide is employed to control the positioning of the guide in timed sequence to the rotation of the crank shaft.

3,726,171
TUBE CUTTER

Richard V. Strybel, Elk Grove Village, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Oct. 9, 1970, Ser. No. 79,400
Int. Cl. B26d *5/10*

U.S. Cl. 83—643 **1 Claim**



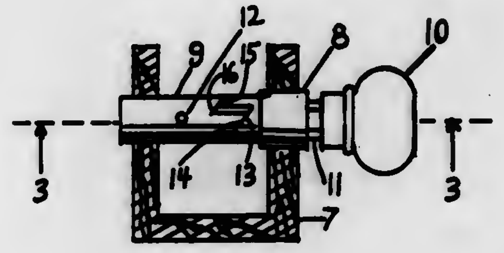
A tube cutter having a knife and means for moving the knife across a tube to be cut. The knife is movable so as to have a maximum slicing action at the beginning of the cut.

3,726,172
STRING TENSIONING DEVICE

Morris Sorkin, 363-19th St., Santa Monica, Calif.

Filed July 12, 1971, Ser. No. 161,568
Int. Cl. G10d *3/14*

U.S. Cl. 84—304 **12 Claims**



A string tensioning device is described which selectably provides a coarse turning mode which permits the device to be turned as a whole, and a fine turning mode which provides a rotational and torque reduction between the rotatable section of the device to which the string is attached and a second rotatable section.

Two embodiments of the device are described as applied to the tuning pegs used in stringed musical instruments such as the violin, viola, and cello. In these embodiments both the rotational reduction and the torque reduction provided by the device greatly facilitates the tuning of the string in comparison to the tuning action of the standard tuning peg.

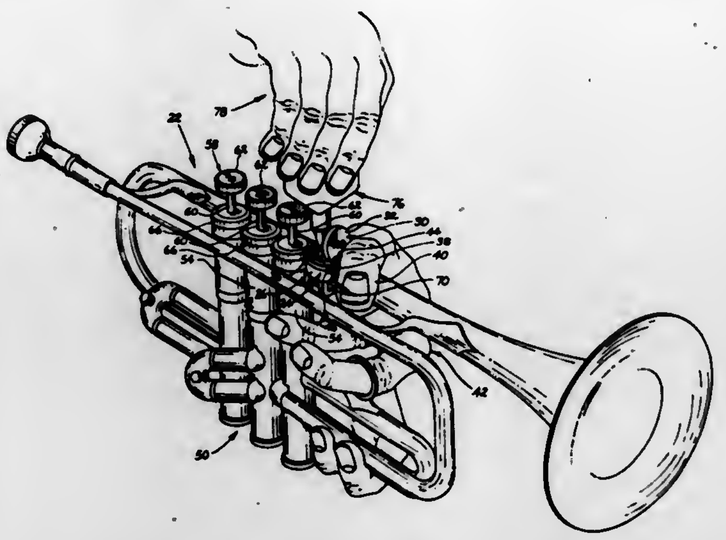
3,726,173
MUSICAL INSTRUMENT VALVE-OILING APPARATUS

Thomas S. Cortez, c/o D. Wright, Wells Park Road, Sturbridge, Mass.

Filed May 5, 1972, Ser. No. 250,743

Int. Cl. G10d *7/10*

U.S. Cl. 84—388 **10 Claims**



A musical instrument valve-oiling apparatus for conveniently oiling a plurality of musical instrument valves, each, in a preferred form, including a valve casing and valve cap and a movable valve plunger mounted within the valve casing and connected to a valve-operating member which extends to a finger-accessible position exterior of the valve casing and valve cap for digital operation. The valve oiling apparatus is mounted at a position conveniently accessible by the fingers or thumb of a musician holding the instrument so that the valve-oiling operation can be performed (usually by the other hand of the musician manually holding an operating and oil dispenser), thus making it possible to oil the multiple valve between playing periods, or between sequential musical passages to be played by the instrument or otherwise during the playing of the instrument or at times when the valves are in need of lubrication and without the necessity of disassembling any of the valves as has been required in the past.

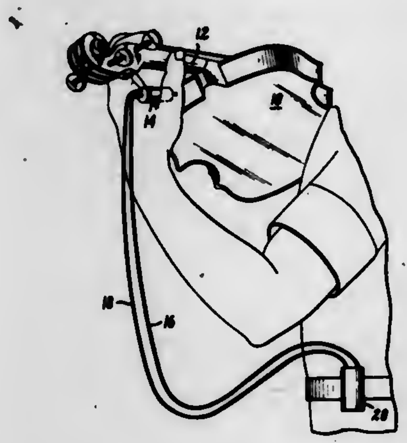
3,726,174
METHOD AND APPARATUS FOR THE INSTRUCTION OF FINGER SPACING IN PLAYING STRINGED INSTRUMENTS

Burton Kaplan, 817 West End Avenue, New York, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,307

Int. Cl. G09b *15/06*

U.S. Cl. 84—470 **13 Claims**



A finger spacing sensor is disposed between the thumb and forefinger of the student's hand and an indicator responsive to the sensor provides indication to the student of each departure of his thumb and forefinger from desired spacing during play.

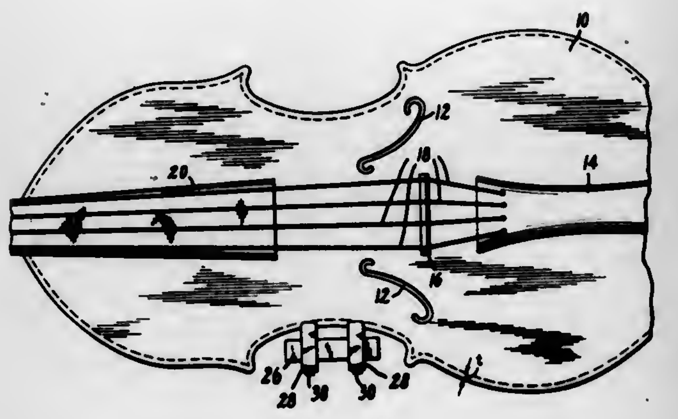
3,726,175
APPARATUS FOR INSTRUCTION OF STRINGED INSTRUMENT POSITIONING

Burton Kaplan, 817 West End Avenue, New York, N.Y.

Filed Oct. 28, 1971, Ser. No. 193,412

Int. Cl. G09b *15/00*

U.S. Cl. 84—470 **10 Claims**



An attitude sensor is secured to a stringed instrument and an indicator responsive to the sensor provides indication to a student of each departure of the instrument from desired instrument positioning during play.

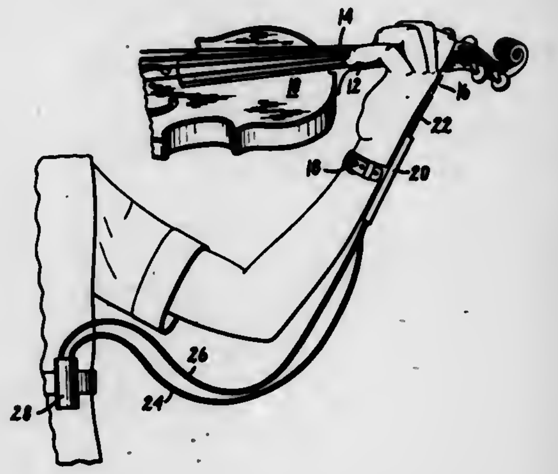
3,726,176
APPARATUS FOR THE INSTRUCTION OF HAND ANGULATION IN PLANING STRINGED INSTRUMENTS

Burton Kaplan, 817 West End Avenue, New York, N.Y.

Filed Oct. 28, 1971, Ser. No. 193,364

Int. Cl. G09b *15/00*

U.S. Cl. 84—470 **8 Claims**



A hand angulation sensor is secured to the body of a student and an indicator responsive to the sensor provides indication to the student of each departure of his string-fingering hand from desired angulation during play.

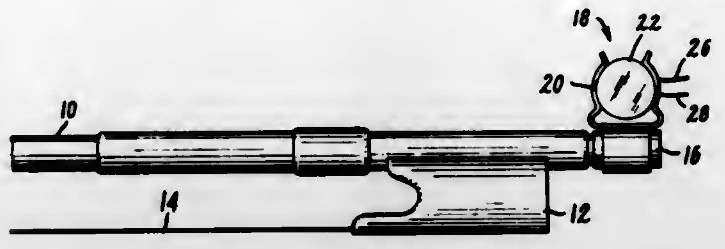
3,726,177
METHOD AND APPARATUS FOR INSTRUCTION OF STRINGED INSTRUMENT BOW STICK ANGULATION

Burton Kaplan, 817 W. End Avenue, New York, N.Y.

Filed Nov. 23, 1971, Ser. No. 201,404

Int. Cl. G09b *15/00*

U.S. Cl. 84—470 **10 Claims**



An attitude sensor is secured to the bow of a stringed instrument and an indicator responsive to the sensor provides indication to a student of each of his departures from proper bow stick angulation during play.

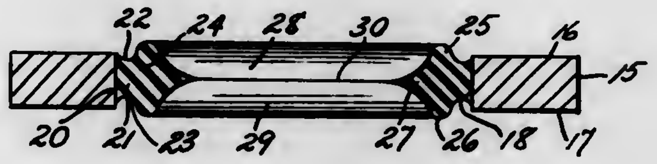
3,726,178
MULTIPLE PURPOSE SEALING WASHER FOR THREADED AND CYLINDRICAL SHANKS

Edward A. Dimitry, Hillsdale, N.J., assignor to APM Corporation, Englewood, N.J.

Filed June 25, 1971, Ser. No. 156,668

Int. Cl. F16b *43/00*

U.S. Cl. 85—1 JP **1 Claim**



A multiple purpose sealing washer for use in effecting a seal between a nut or fastener head and a parallel planar surface by selectively surrounding the threaded or unthreaded shank of said fastener. The device includes an outer, relatively rigid washer element, and an inner concentric elastomeric element having a relatively wide outer peripheral surface bonded to said rigid washer element at an inner peripheral surface thereof, and an inner periphery which is tapered to a sharp edge, corresponding to the interstice between two adjacent threads on said shank, whereby when said inner periphery engages a smooth cylindrical shank, said continuous edge forms a complete seal therebetween by radial expansion, and when said inner periphery is engaged with a threaded shank, the continuous threads thereon will deform said edge at one point on the periphery thereof to permit the other points on said edge to resiliently extend into the interstice between adjacent threads to prevent leakage along said interstice.

3,726,179
CLIP DEVICE

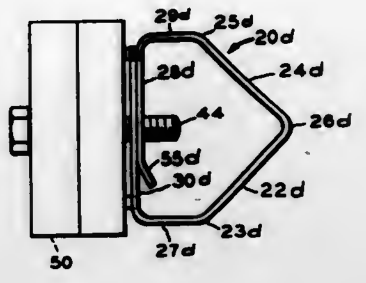
Harrison L. Friese, Jr., 1605 Southeast Twelfth St., Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 42,751, June 2, 1970, abandoned. This application Feb. 3, 1971, Ser. No. 112,301

Int. Cl. F16b *37/02*

U.S. Cl. 85—36 **7 Claims**

A clip device in the form of a closed strip of springy metal preferably having a generally triangular shape and having four legs, two of which overlap at the base of the triangle, the strip having first and second legs merging together in a bend at the apex of the triangle, and third and fourth overlapping legs at the base of the triangle, all of the legs being perpendicular to the plane of the triangle. The third and fourth legs each have an aperture, and the apertures can be aligned by pressure exerted on the legs to grip a member inserted in the apertures at diametrically opposite portions thereof. The boundary edges of these apertures are preferably tapered. The outer leg at the base of the triangle has projecting portions for contacting a surface to which the clip is bolted and bending to lock the clip in a fixed position. A reverse turn will release the device for easy removal.



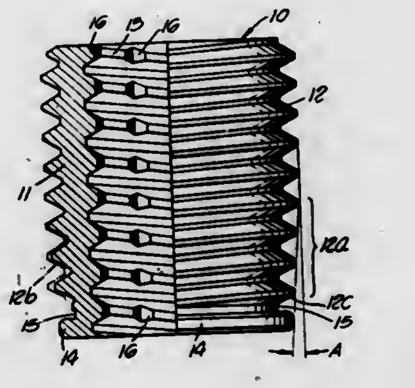
3,726,180
INSERT WITH CHIP ENTRAPMENT MEANS

Jose Rosan, Sr., Rancho San Juan, San Juan Capestrano, Calif.

Continuation of Ser. No. 117,083, Feb. 19, 1971, abandoned. This application July 26, 1972, Ser. No. 275,429

Int. Cl. F16b *33/02*

U.S. Cl. 85—46 **10 Claims**



The invention herein disclosed is a self-tapping threaded fastener provided with forming threads, the external diameters of which progressively uniformly reduce to join a retainer means comprised of an outwardly protruding pilot means and the lead thread of the forming threads so as to provide an annular groove means having a constant axial height for capturing and maintaining the severed workpiece material resulting from the tapping operation of said forming threads.

3,726,181
EXPANSION SHELL ASSEMBLY

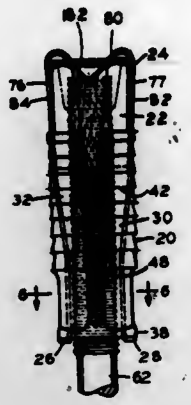
Frederick P. Dickow, R.D. No. 6, Auburn, N.Y., and Clifford H. Lambert, 112 Bridge St., Naugatuck, Conn.

Filed March 24, 1971, Ser. No. 127,701

Int. Cl. F16b *13/10*

U.S. Cl. 85—75 **4 Claims**

Mine roof expansion shell assembly having a one piece shell with annular ring and four expansion fingers with external gripping teeth extending from the ring, and an internal flat wedge engaging surface adjacent the other end, an expanding wedge having a threaded aperture for a mine roof bolt and wedge faces for each of the fingers, the fingers being spaced apart on opposite sides of the shell to form a slot for a wedge retaining U-shaped strap extending over the large diameter end of the wedge with its ends extending through the ring in grooves aligned with the slots, the ends being bent outwardly to engage the underside of the ring, the bent ends being held in place by resiliency of the strap, or the presence of a mine roof bolt threaded into the wedge, and extending through the ring.

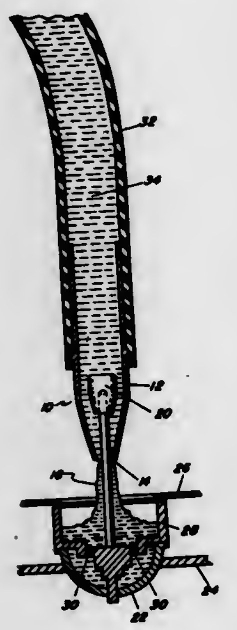


3,726,182
METHOD FOR MELT LOADING EXPLOSIVES

Kenneth L. Fichter, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed March 27, 1972, Ser. No. 238,596
Int. Cl. C06b ***21/02***

U.S. Cl. 86—1 R **4 Claims**



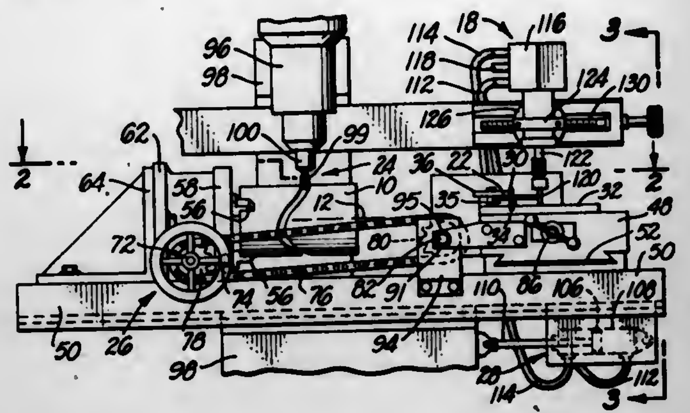
A new method for melt loading explosives is provided by the use of a nozzle with a substantially cylindrical hollow body open at one end and having a restricted orifice at the other end which is provided with a plunger or poppet valve. The plunger has an actuating rod at one end and a plunger head at the other end. The plunger is slidably disposed in the nozzle with the actuating rod extending through the restricted orifice. The plunger head is of complementary shape to the restriction so that when the nozzle is in a normally upright position the plunger head due to hydraulic pressure of molten explosive normally seats against the nozzle restriction to prevent liquid flow therefrom. The actuating rod extending through the restricted orifice, when moved upward, causes the plunger head to move out of contact with the restriction to permit liquid explosive flow. This apparatus is used to facilitate the melt loading of explosives.

3,726,183
CAM-FORMING METHOD AND APPARATUS

John C. McKusick, 3495 E. Rice Boulevard, Los Angeles, Calif.

Continuation-in-part of Ser. No. 752,217, Aug. 13, 1968, Pat. No. 3,601,005. This application Aug. 18, 1970, Ser. No. 172,818
Int. Cl. B23c ***1/18***

U.S. Cl. 90—13.9 **11 Claims**



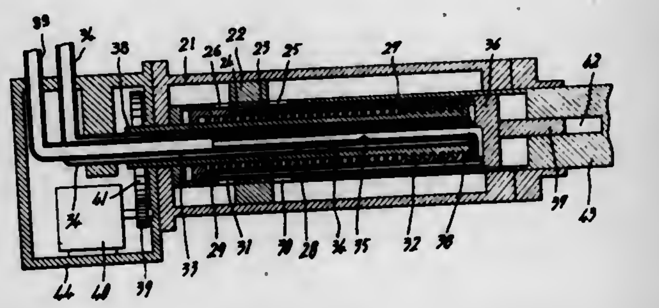
A method and apparatus wherein a predetermined linear pattern is scanned at a given rate while a cylindrical cam blank is rotated at a related rate and cut or marked at an axial cutting position which varies instantaneously with lateral changes in the linear pattern whereby the end of or marking on the finished cylindrical cam forms a helical pattern corresponding to the linear pattern.

3,726,184
STRUCTURE OF FLUID PULSE CYLINDER FOR NUMERIC CONTROL AND A METHOD OF MAKING THE SAME

Tadashi Saito, 25-5 5-chome, Ohmori-Nishi, Tokyo, Japan

Filed Nov. 25, 1970, Ser. No. 92,806
Claims priority, application Japan, Aug. 27, 1970, 45/74792
Int. Cl. F15b ***21/02, 9/10***

U.S. Cl. 91—35 **8 Claims**



A fluid pulse cylinder for numeric control in an oil pressure or air pressure cylinder includes the combination of a pulse motor and a fluid cylinder. A slider having a pressurized fluid path, a return fluid path and a guide port is provided on the inside of a hollow cylindrical rod, the slider being driven by a pulse motor which rotates in either the forward or backward direction in response to an instruction pulse. An injection port and a return port are provided on opposite sides of a piston, the ports being opened or closed to instantaneously effect the forward or backward movement or stoppage of the piston, or to control either application or release of pressure by the same principle, to allow positioning of the piston.

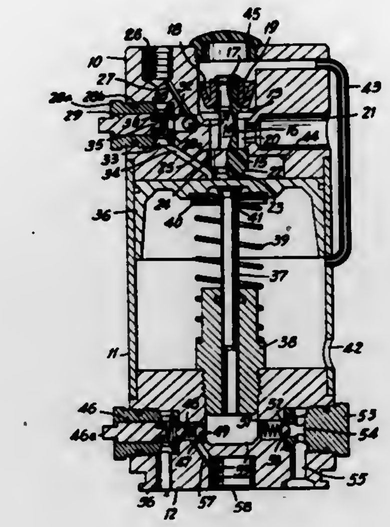
3,726,185
COMPRESSED-AIR PUMP

Bengt Erik Orr, Nas, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed March 15, 1971, Ser. No. 124,188
Claims priority, application Sweden, March 13, 1970, 3337/70
Int. Cl. F01l ***25/04***

U.S. Cl. 91—290 **12 Claims**

This invention relates to a compressed-air pump which has a compressed-air motor and operates with compressed air and has a cylinder and a cooperating block or head therefor. A piston moves forward and backward in the cylinder space. The supply of compressed air to the motor is controlled by a valve movable between first and second positions in a bore of the block. The block is formed with passageways for supplying compressed air to the piston when it is in one position in the cylinder space and the valve body is in its first position, and for terminating such supply of compressed air when the valve body moves to its second position responsive to the supply of compressed air. In the second position of the valve body communication is established between the cylinder space and the atmosphere. In order to reduce malfunction of the compressed-air motor all of the compressed air supply passageways are formed in the block and the valve body is characterized by the absence of passageways.

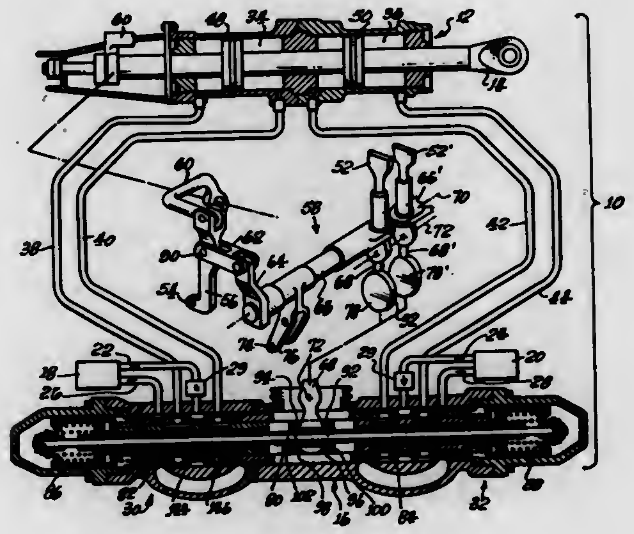


3,726,186
TANDEM CONTROL VALVE

Mildred S. Wheeler, Long Beach, and Robert D. Rothi, Rolling Hills, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed June 1, 1971, Ser. No. 148,612
Int. Cl. F15b ***13/16, 9/10***

U.S. Cl. 91—384 **4 Claims**



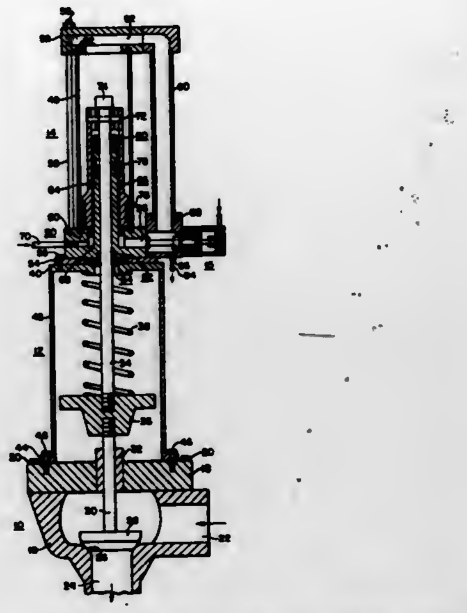
A control valve for a hydraulic actuator assembly which includes two valve slides which are resiliently connected in tandem to a control input. If one of the slides jams, the other slide can be moved to cause hydraulic lock of the hydraulic actuator.

3,726,187
SERVO-ACTUATOR MECHANISM

Ivor James Lewis, Aston, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 22, 1971, Ser. No. 117,252
Int. Cl. F15b ***11/08, 13/042***

U.S. Cl. 91—468 **4 Claims**



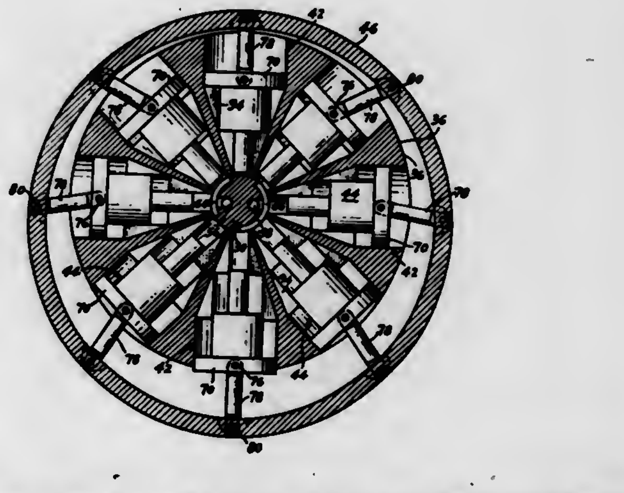
In a servo-actuator mechanism of a pull type, fluid pressure is applied to the annular area of an annular piston guided on its inside and outside diameters by an internal cylindrical portion and an outer tube, respectively, of the actuator cylinder structure. High pressure seals are provided at the inside and the outside diameters of the annular piston. A piston rod, which extends through the internal cylindrical portion, is attached to the low pressure end of the piston, and two low pressure piston rods seals are provided to prevent leakage of the fluid from the actuator cylinder. A fast dumping action is achieved by means of a hydraulically closed, spring and hydraulically opened dump valve.

3,726,188
FLUID-OPERATED ENGINE

Raymond J. Siebelt, Largo, Fla., assignor to Corinne Siebelt Guntner, Chicago, Ill.

Filed March 16, 1971, Ser. No. 124,734
Int. Cl. F01b ***1/06, 13/06***

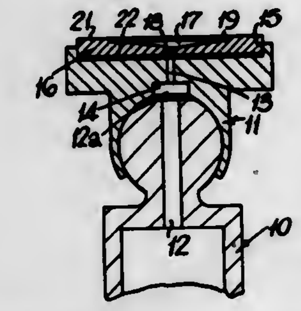
U.S. Cl. 91—482 **7 Claims**



The engine comprising this invention comprises a rotatable power takeoff drum which encloses a cylindrical cylinder block rotatable with said drum about an axis which is eccentric to that of said drum. A shaft for said block extends through a bore in a main shaft and contains longitudinal fluid inlet and exhaust passages for operating fluid which communicate at the inner ends with the radially innermost ends of cylinder bores which extend radially within said block and said bores have aligned bore sections which have progressively larger diameters outward from the inner ends thereof to provide multi-stage cylinder sections. Connecting rods connect the outer ends of pistons in said bores to the inner surface of the rim of said drum to rotate it as said cylinders communicate successively with said fluid inlet and exhaust passages.

3,726,189
PISTONS FOR HYDRAULIC PISTON TYPE PUMPS AND MOTORS

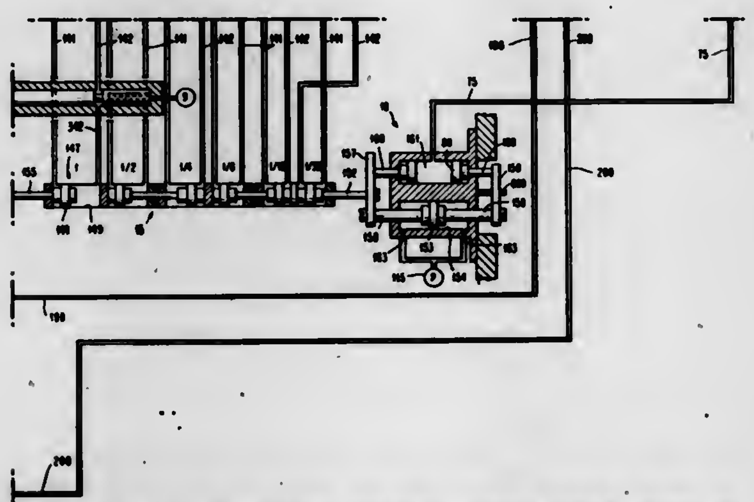
Alfred Moffatt Rubery, Ormskirk, England, assignor to Joseph Lucas Industries Limited, Birmingham, England
Continuation of Ser. No. 844,280, July 24, 1969, abandoned. This application June 22, 1971, Ser. No. 155,618
Int. Cl. F04b *7/00*
U.S. Cl. 91—506 **6 Claims**



A piston slipper for an hydraulic pump or motor comprises a main portion and an insert of different materials, the running face of the insert having a recess which is conical, and the recess terminates at its inner edge at a drilling for entry of lubricant, and at its outer edge at a step.

3,726,190
INTEGRATED ADDER DRIVE ASSEMBLY INCLUDING DAMPER, HYDRAULIC POWER SUPPLY, AND PAPER TAPE FEED

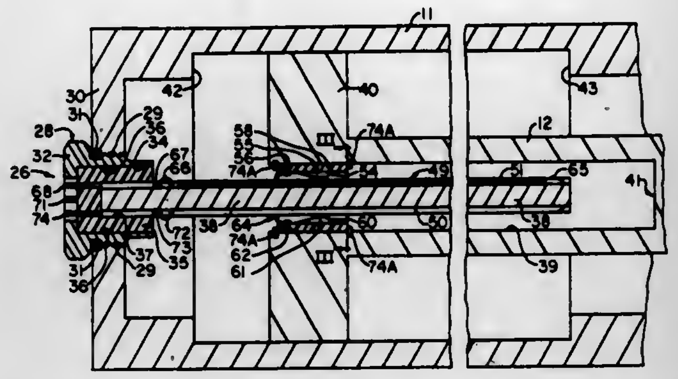
Hugo A. Panissidi, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 14, 1969, Ser. No. 824,424
Int. Cl. F15b *15/22*
U.S. Cl. 92—9 **6 Claims**



A digital hydraulic system converts binary digital input information into displacement of a digital drive. An air reader is used to operate binary latch valves through an air hydraulic interface. A flow sensing system and a hydraulic logic unit cooperate to provide high speed exchange between the piston adders of the digital drive prior to displacement of the load. A hydraulic cylinder sweeps the load about a vertical axis. A self-cooling, air-driven hydraulic pump with an accumulator, provides relatively constant pressure. A damper secured to the piston adders has an additional drive for providing precise location at the end of damping. An incremental paper tape feed with a four motion rack with toggle action indexes the air reader.

3,726,191
ELECTRICALLY CONTROLLED HYDRAULIC SYSTEM AND TRANSDUCER THEREFOR

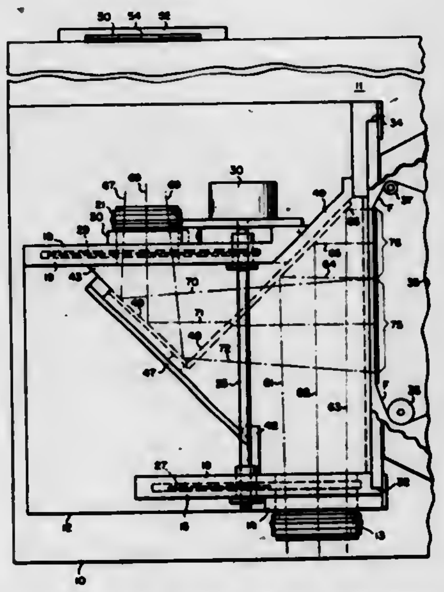
Samuel A. Johnston, Fontana, and Henry J. Riedmayer, Ft. Atkinson, both of Wis., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Feb. 8, 1971, Ser. No. 113,193
Int. Cl. F15b *9/03, 9/04*
U.S. Cl. 92—5 R **8 Claims**



Hydraulic system in which the application of fluid to a cylinder is controlled electrically by circuitry connected to an elongated resistance element mounted within a hydraulic cylinder and to a slider contact carried by a piston within the cylinder. The resistance element is part of a first assembly supported from one end of the cylinder and extending within a passage within a piston rod and is wound on and connected at a first end to a metal rod disposed in a longitudinal slot of an insulating support. A second metal rod is in a diametrically opposed slot and is engaged by a second slider contact, the contacts being part of a second assembly and being at the ends of resilient arms supported within the tubular insulating member which is mounted within the open end of the piston rod passage. Terminal means are connected to the metal rods and to a second end of the resistance element at one end of the first assembly which is at one end of the hydraulic cylinder.

3,726,192
PHOTOGRAPHIC CAMERA

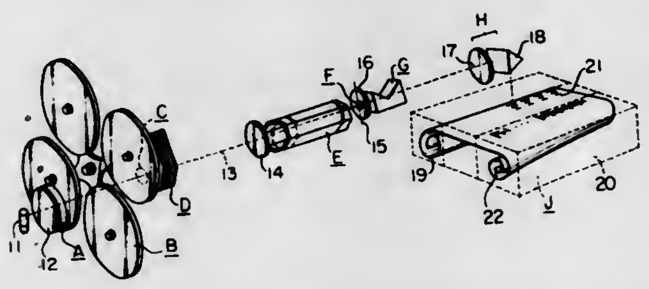
Robert L. Dalton, Pittsford, N.Y., assignor to R. D. Products, Inc., Farmington, N.Y.
Filed March 24, 1971, Ser. No. 127,608
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **4 Claims**



With this camera a photograph of an individual and of a card bearing identifying data concerning that individual are taken simultaneously on a film frame. A two-lens system is used in the camera. One lens is the usual front lens of a camera and is focused on the subject. The other lens is mounted intermediate front and back of the camera and is focused on the data card which is inserted in the rear of the camera. Separate shutters for the two lenses are opened simultaneously; and the image of the data card is reflected by a mirror onto a semi-transparent mirror which transmits that image onto the film frame while the image of the subject is transmitted by this same semi-transparent mirror onto a portion of the same film frame.

3,726,193
APPARATUS FOR PHOTO-TYPESETTING

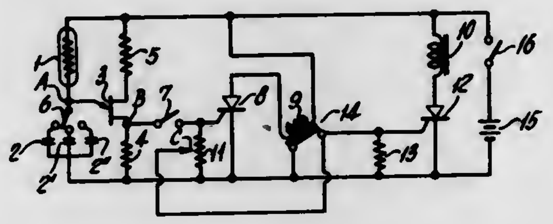
Kiyoshi Ishii, Tokyo, Japan, assignor to Shashin Shokujiki Kenkyusho Co., Ltd., Tokyo, Japan
Filed Feb. 4, 1970, Ser. No. 8,619
Claims priority, application Japan, Feb. 10, 1969, 44/9296; Aug. 9, 1969, 44/62753; Feb. 10, 1969, 44/9298
Int. Cl. B41b *15/18*
U.S. Cl. 95—4.5 R **5 Claims**



A photo-typesetting apparatus operates at speeds of more than 500 characters per minute. The apparatus includes an optical system for selecting devised characters from a large number of character groups arranged on the character disc and focussed the sleected characters at the same position on a focussing plane. If necessary, ruby characters and address figures are added to the character thus selected in accordance with a selected typesetting type either for horizontal typesetting or vertical typesetting and the desired characters are arranged and photographed one after another in accordance with either the horizontal typesetting technique or vertical typesetting.

3,726,194
CAMERA SHUTTER MECHANISM

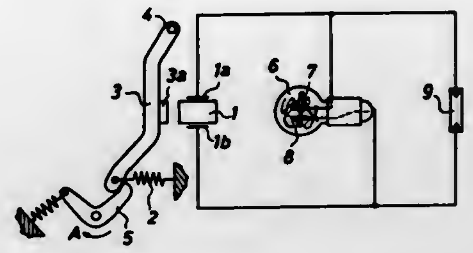
Tsukumo Nobusawa, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed July 7, 1969, Ser. No. 839,535
Claims priority, application Japan, July 12, 1968, 43/48441; July 12, 1968, 43/58944
Int. Cl. G03b *7/08, 9/62*
U.S. Cl. 95—10 CT **11 Claims**



An automatic shutter timing mechanism includes a shutter opening release electromagnet controlled by a first solid state switch and a shutter closure release electromagnet controlled by a second solid state switch. A relaxation pulse output oscillator includes a unijunction transistor and a period control timing network comprising a light exposed photoconductor and one or more timing capacitors selectively connected in series with the photoconductor. The solid state switch inputs are coupled to the oscillator so that one pulse actuates the first switch and the second pulse actuates the second switch which is enabled by the actuation of the first switch. The solid state switch and electromagnets are energized by a common voltage source.

3,726,195
PHOTOFLASHUNIT FOR PHOTOGRAPHIC APPARATUS

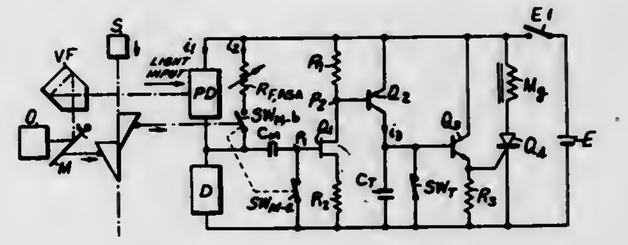
Karl Wagner, Ottobrunn, and Josef Ganser, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 12, 1970, Ser. No. 88,929
Claims priority, application Germany, Nov. 12, 1969, P 19 56 764.7
Int. Cl. G03b *15/04*; **H01h** *57/00*
U.S. Cl. 95—11 L **18 Claims**



The photoflashbulb is fired by the voltage generated by a piezoelectric crystal when the crystal is struck by a hammer released by a shutter when the latter is operated. Shunted across the crystal and bulb is a photoresistor, the resistance of which is sufficiently small, when scene brightness is adequate to permit taking pictures without the flash of the bulb, to dampen the crystal so that the voltage generated is too small to fire the bulb. In a second embodiment the conductivity of a transistor, connected in shunt with the crystal, is controlled by the photoresistor, the transistor being conductive whenever the scene brightness is adequate.

3,726,196
SHUTTER-CONTROL OF SINGLE-LENS REFLEX CAMERAS

Chiharu Mori, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed June 29, 1971, Ser. No. 157,962
Claims priority, application Japan, July 2, 1970, 45/58022
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **10 Claims**



An electrical system for automatically determining exposure time in a single-lens reflex camera. An electrical circuit includes a storage capacitor and a logarithmic compression element. Through the latter the storage capacitor is charged sequentially to provide a pair of voltages, and the electrical circuit utilizes the difference between these voltages for controlling the exposure time. One of these voltages is determined at least in accordance with the light intensity coming from the object to be photographed and the other of these voltages is determined at least in accordance with the film speed. Thus, the signals according to light intensity and film speed are logarithmically compressed prior to charging of the storage capacitor by way of the logarithmic compression element. In addition, one of the latter signals is modified in accordance with the selected diaphragm setting, so that the modified signal is logarithmically compressed prior to charging of the capacitor.

3,726,197
APPARATUS FOR AUTOMATIC ELECTRONIC FLASH PHOTOGRAPHY

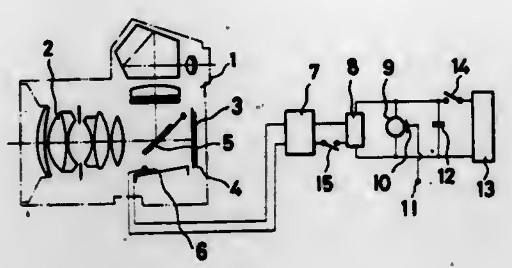
Goro Hasegawa, and Keizo Yamazaki, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed March 26, 1970, Ser. No.

Claims priority, application Japan, March 26, 1969, 44/26230; March 2, 1970, 45/20704; Jan. 28, 1970, 45/7437; Jan. 29, 1970, 45/9251

Int. Cl. G03b *7/08, 15/05*

U.S. Cl. 95—10 CE **1 Claim**



In the apparatus disclosed a photocell is mounted inside the camera and directed toward the film of the camera. After the shutter of the camera is snapped a flash is set off. A control system responds to the output of the photocell to control the amount of light produced by the flash.

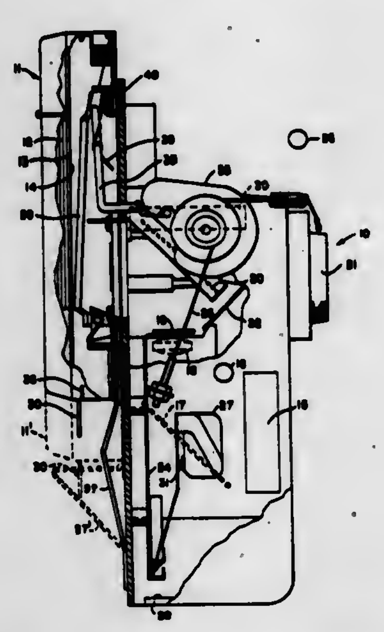
3,726,198
CAMERA SYSTEM INCLUDING OPERATION SEQUENCE CONTROL

Albion P. Bjork, Lincoln, Mass., and James M. Conner, Mamaroneck, N.Y., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 5, 1970, Ser. No. 77,916

Int. Cl. G03b *19/02*

U.S. Cl. 95—37 **8 Claims**



A camera system which, on a single sheet of photographic material, exposes first one area of such sheet of photographic material and thereafter another area of such sheet of photographic material. An optical system for forming images on such photographic material during such exposures. A film holder movable to present such photographic material sheet areas in sequence to such optical system. A system of operational control of such camera system including such movement of such film holder. One part of such control system including indicator lights responsive to various steps of operation of such camera system, including such movement of such film holder. Another part of such control system comprising a covering device which prevents film removal when such film holder is at one point of such movement. A camera system in which each such exposure comprises a subject image and the image of a data card on mutually exclusive portions of each such photographic material sheet areas. A camera system in which two separate pictures may be provided, one in of each of two separate areas of photographic material, using a single optical system and movable photographic material, in which each picture may comprise a subject image and a data image on mutually exclusive portions of such picture, and in which each such single optical system comprises two independent optical paths.

3,726,199
SHUTTER RELEASE MECHANISM OF PHOTOGRAPHIC CAMERAS, PREFERABLY PROVIDED WITH ROLLER-BLIND SHUTTER

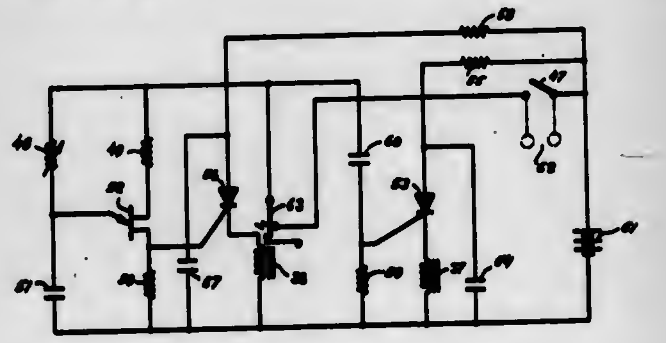
Alf Ingvar Alfredsson, Savedalen, and Paul Ingemar Nilsson, Floda, both of Sweden, assignors to Fritz Victor Hasselblad, Goteborg, Sweden

Filed Dec. 7, 1970, Ser. No. 95,636

Claims priority, application Sweden, May 6, 1970, 6234/70

Int. Cl. G03b *9/62*

U.S. Cl. 95—53 EA **1 Claim**



A camera shutter of the focal plane shutter type having first and second shutter parts which are released individually with a controlled relative time difference to provide a gap between the shutter parts which is proportional to a preselected shutter speed. A separate electromagnetic release means is provided for each shutter part. Upon initiation of shutter operation, the electromagnetic release means for the first shutter part is energized and, at the same time, an electronic timing means is set into operation. At the end of the interval demarcated by the electronic timing means, the electromagnetic release means associated with the second shutter part is energized to release the second shutter part, thereby terminating the exposure period.

3,726,200
ELECTRONIC SHUTTER FOR CAMERAS

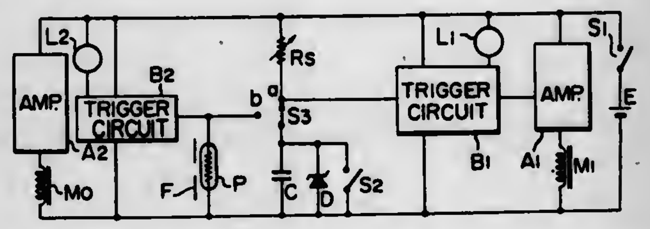
Mitsutoshi Ogiso, and Mitsuo Ishikawa, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1970, Ser. No. 90,580

Claims priority, application Japan, Nov. 24, 1969, 44/94529; Nov. 24, 1969, 44/94530

Int. Cl. G03b *9/64, 9/62*

U.S. Cl. 95—53.3 **10 Claims**



The electronic shutter for cameras incorporates a self-timer which comprises a time constant circuit and a control circuit for controlling the delayed time so that just before the completion of the action of the self-timer a warning device such as a lamp, buzzer or the like is actuated for giving the warning signal.

3,726,201
DEVICE FOR TREATING PHTOGRAPHIC MATERIAL

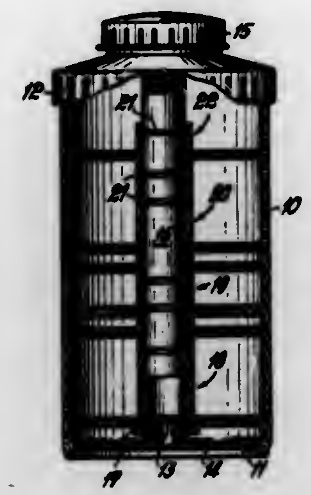
Helmut Berchtold, Derschlag, and Friedrich Vollrath, Bergneustadt, both of Germany, assignors to Firma Johannes Bockemuhl, Derschlag, Germany

Filed June 17, 1971, Ser. No. 153,963

Claims priority, application Germany, June 19, 1970, G 70 23 034.1

Int. Cl. G03d *3/10*

U.S. Cl. 95—100 **9 Claims**



A tank for treating photographic material contains an elongated upright support member on which a plurality of axially spaced pairs of disks members are surroundingly carried. A retaining element also surrounds the support member for retaining the disk members against axial movement and cooperating engaging portions in form of recess and projections or the like are provided on the retaining element and at a plurality of axially spaced locations of the support member so that the retaining element can be connected with the support member at different locations.

3,726,202
ARRANGEMENT AT VENTILATION INSTALLATIONS IN ROOMS WITH HIGH AIR COMFORT REQUIREMENTS

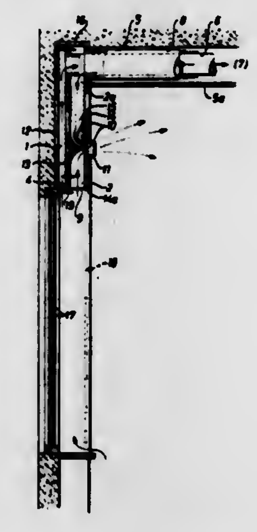
Armand Ahlberg, Taby, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed July 14, 1971, Ser. No. 162,419

Claims priority, application Sweden, July 21, 1970, 10099/70

Int. Cl. F24f *13/00*

U.S. Cl. 98—32 **5 Claims**



An arrangement at ventilation installations with high air comfort requirements including a supply of large fresh air quantities without draught and a removal of exhaust air at an outer wall of a room with a window, said wall being equipped with at least two spaces formed by planeparallel plates, the space located farthest away from the room forming an exhaust air passageway to the room, and the other space located closest to the room interior being provided with a duct for the supply of fresh air adjacent the ceiling and at its lower part being in direct connection with the interior for introducing room air, and with an air diffuser with a damper means between said inlets for the introduction of supply air to the room in a proportion of fresh air and co-ejected room air which is balanced by said damper means.

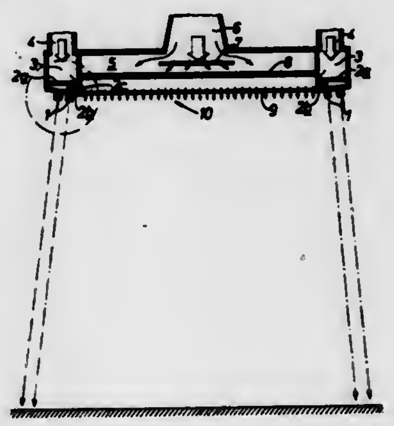
3,726,203
DEVICE FOR MAINTENANCE OF A DUSTFREE, BACTERIA-FREE ZONE IN A ROOM

Lars-Erik Lindestrom, Jonkoping, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed June 23, 1971, Ser. No. 155,972

Int. Cl. F24f *9/00*

U.S. Cl. 98—36 **7 Claims**



A device for maintenance of a dust and bacterial free zone in a room by means of one or more nozzles having a number of preferably straight sides and meeting in a corresponding number of corners and placed one beside the other so as to produce a corresponding number of curtains surrounding the zone, wherein an impulse means is arranged to produce separately a preferably rather more powerful jet of air in each of said corners between the pairwise meeting exhaust nozzles for ensuring an unbroken air curtain around the zone also in the corners.

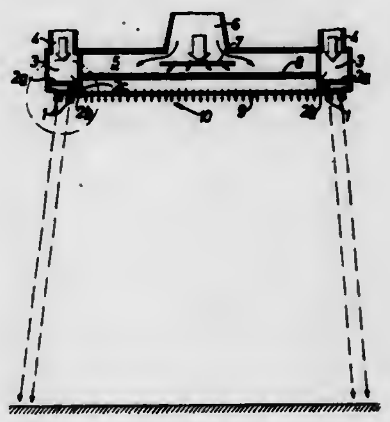
3,726,204
DISTRIBUTING DEVICE IN PLANTS FOR THE MAINTENANCE OF A DUSTFREE, BACTERIAFREE ZONE IN A ROOM

Lars-Erik Lindestrom, Jonkoping, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed June 23, 1971, Ser. No. 155,786

Int. Cl. F24f *9/00*

U.S. Cl. 98—36 **4 Claims**



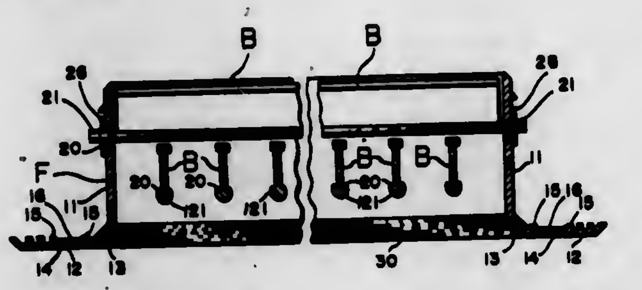
A distributing device in ventilating plants for the maintenance of a dust and bacteria free zone in a room by means of a number of air curtains surrounding the zone under simultaneous supply of ventilating air to said zone, said ventilating air then being discharged together with the air curtains, wherein means are arranged for a uniform distribution of the ventilating air, said means consisting of an inlet air channel terminating in a chamber of known type with an area essentially corresponding to that of the zone and containing a first perforated plate covering the entire area of the chamber, and being comparatively thick and having a low degree of perforation, and a second plate likewise covering the entire area of the chamber and preferably having a high degree of perforation and being comparatively thin, and wherein further means known per se are arranged for producing the air curtains surrounding said zone.

3,726,205
AIR DIFFUSER AND THE LIKE

Alexander Miller, Coral Gables, Fla., assignor to Miller Industries, Inc., Miami, Fla.

Filed Jan. 20, 1970, Ser. No. 4,213
Int. Cl. F24f *13/00*

U.S. Cl. 98—110 **3 Claims**



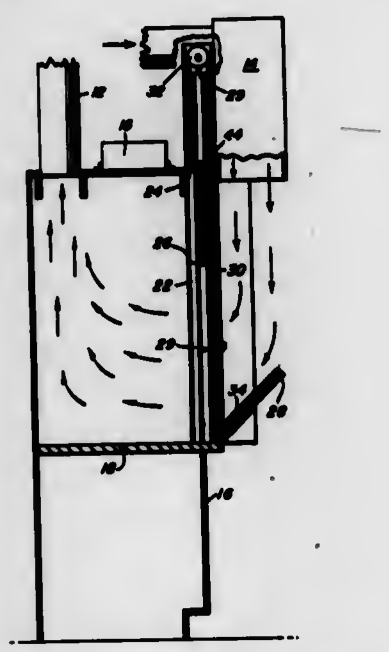
An air diffuser for discharging a maximum volume of air without creating drafts and the like having a rectangular shaped frame with a plurality of pivoted blades extending across the frame; the blades each having a head portion at the free end for creating a turbulence of air as the air is discharged by the diffuser and the frame being flared outwardly at the outlet to permit the turbulent air to flow laterally as it leaves the diffuser.

3,726,206
LABORATORY FUME HOOD

Ralph E. Worick, Jr., 264 North Liberty Street, Delaware, Ohio

Filed July 19, 1971, Ser. No. 163,773
Int. Cl. F23j *11/00*

U.S. Cl. 98—115 LH **6 Claims**



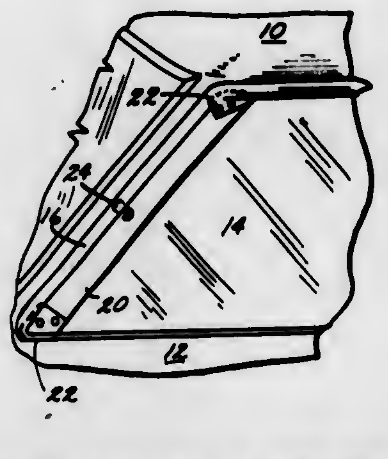
An adjustable sash assembly for use with fume hoods and the like, said sash assembly comprising three generally rectangular sash members which are slidably mounted for vertical adjustment and which define a face opening for passage of room or auxiliary air into a fume hood. Two of the sash members are interconnected by way of a pulley mechanism which automatically provides a constant face opening for several sash positions defining access openings through which a user may reach into the interior of the fume hood. One of the pulley-connected sashes may be selectively tilted outwardly to entrain additional air from an auxiliary supply.

3,726,207
VEHICLE AIR DEFLECTOR

S. N. Jack Young, 1248 Schir Dr., Bossier, La.

Filed Oct. 18, 1971, Ser. No. 189,843
Int. Cl. B60h *1/24*

U.S. Cl. 98—2.12 **10 Claims**



An attachable and detachable air deflecting apparatus for a vehicle, mounted in a conventional vehicle window frame having a movable window pane capable of being raised and lowered. The air deflecting apparatus comprises an elongated body of transparent planar material having a length substantially equal to the length of the forward edge of the vehicle window. Insert edges are secured to each end of the elongated body and adapted to be inserted into the frame of the window to mount the air deflecting apparatus to the window. A center spring clip defining a recess is secured to the middle section of the elongated body to engage the window pane of the vehicle and hold the elongated body to the window pane flush against the window frame.

3,726,208
COMMINUTING METHOD AND APPARATUS

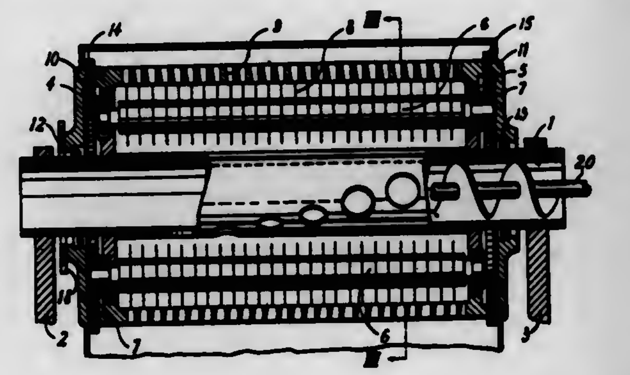
Fred C. Brengman; Keith Brengman, both of Carroll, and James L. Anderson, Marysville, all of Ohio, assignors to Societe D' Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Filed Dec. 29, 1970, Ser. No. 102,362

Claims priority, application Switzerland, Nov. 4, 1970, 16342/70

Int. Cl. B02c *18/00*

U.S. Cl. 99—233.11 **14 Claims**



A comminuting apparatus comprises a central feeding means, cutting discs mounted on rotatable shafts disposed around the feeding means, a cage surrounding the discs and movable relative thereto and a housing around the cage for collecting comminuted material. In operation the discs and cage are rotated and the material, fed centrally, is subdivided between the discs and the cage so that once pieces of the desired size are obtained they leave through openings in the cage. Other features of the invention appear in the following specification and drawings.

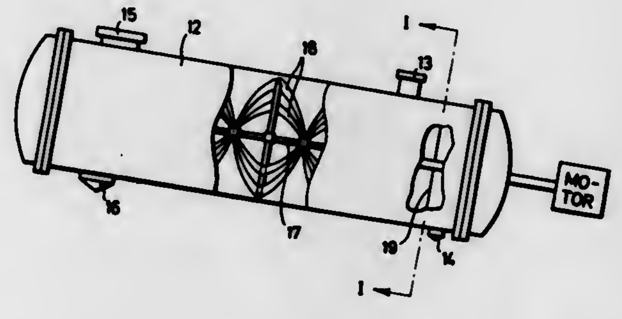
3,726,209
APPARATUS FOR EXTRACTING SOLUBLE MATTER FROM A COMMINUTED MATERIAL

Asbjorn Stoltze, Holte; Knud Larsen, Hillerod, and Erik Houghton-Larsen, Fredensborg, all of Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark

Filed Jan. 7, 1970, Ser. No. 1,086

Claims priority, application Denmark, Jan. 9, 1969, 139/69
Int. Cl. A47j *31/00*

U.S. Cl. 99—289 **2 Claims**



A method of extraction of soluble matter together with colloidal particles from a comminuted material, preferably ground, roasted coffee-beans, by means of a filter which permits the passage of a substantial part of the colloidal particles present and in the immediate vicinity of which the comminuted material is introduced in the extraction container. An apparatus for carrying out the method and having a filter plate with circular slits, and associated rotatable scraper members for stirring the material to be extracted, and rotatable knife members for cleaning said slits.

3,726,210
BALE BANDER

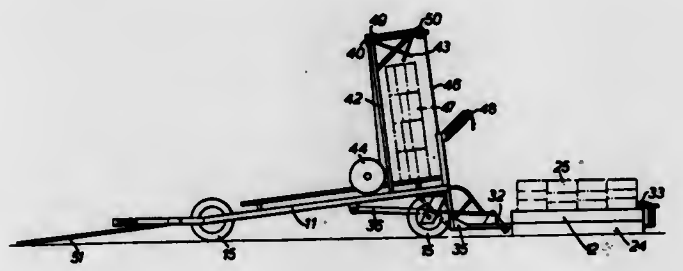
Peter A. Taylor Hawkins, Cholsey, near Wallingford, England, assignor to Pattersons Venture Limited, Wallingford, Berkshire, England, a part interest

Filed Feb. 16, 1971, Ser. No. 115,336

Claims priority, application Great Britain, Feb. 16, 1970, 7398/70; May 21, 1970, 24600/70

Int. Cl. B65b *13/18*

U.S. Cl. 100—7 **13 Claims**



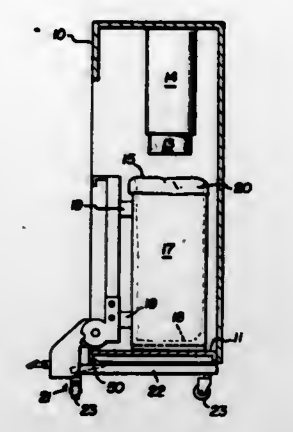
A machine for stacking a number of bales of straw or other type commodity into a large package and banding the package while the bales are urged tightly together by the stacking means, which conveniently stacks by lifting and pushing horizontally with a pivoting movement against a restraint provided by the support on which stacking takes place.

3,726,211
TRASH COMPACTOR

Floyd R. Gladwin, 14500 Eureka Road, Southgate, Mich.

Filed Dec. 23, 1971, Ser. No. 211,299
Int. Cl. B30b *15/00*

U.S. Cl. 100—100 **9 Claims**



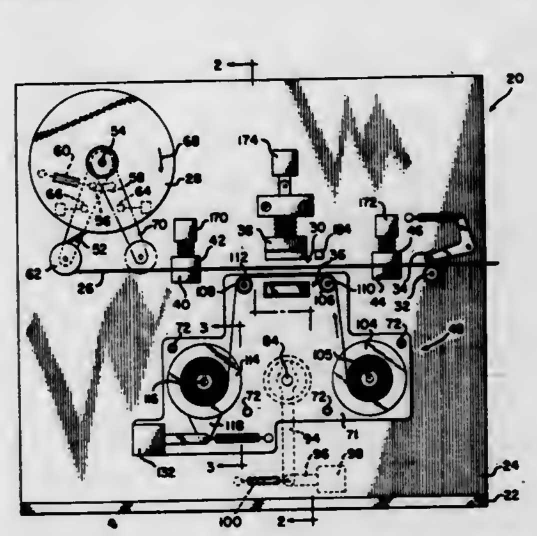
A trash compactor formed of a cabinet having a raised support floor upon which an open top trash bag is rested in upright position beneath a compacting ram, and a movable dolly formed of a roller supported frame arranged beneath the support floor and locked thereto by a releasable locking means. A cabinet door is hingedly connected to the frame and has a bag support means upon which the bag is mounted. The door is arranged to tilt forwardly of the cabinet for raising the bag above the floor, for thereby removing the bag, door and frame as a unit, from the cabinet. The door hinge includes a locking means which releasably locks the door in tilted position and simultaneously causes the frame locking member to unlock. A manual control unlocks the door for swinging upright, thereby permitting the frame locking member to reengage the cabinet door.

3,726,212
METHOD AND APPARATUS FOR PRINTING CODED MEDIA

Ollah Combs, Morrow, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Sept. 21, 1970, Ser. No. 73,699
Int. Cl. B41j *7/54*; **B41f** *1/44*; **B41m** *5/20*

U.S. Cl. 101—21 **5 Claims**



A method and apparatus for printing at least first and second indicia on a record medium. The apparatus includes a print station to which the medium is incrementally fed. The print station uses a thermally operated print head having a plurality of separately energizable resistive elements which heat up, when energized, to print a "colored" bar code on the medium, which may be a label. A shiftable carriage member supplies first and second heat-activatable "color ribbons" to the print station. When the first ribbon is at the print station, the print head and the medium are pressured together with the first ribbon therebetween, and selected ones of the resistive elements are energized to transfer the first color to the medium. The medium is then held stationary while the first ribbon is removed and the second color ribbon is shifted by the carriage member to the print station. The print head and the medium are then pressured together with the second ribbon therebetween, and selected ones of the resistive elements are energized to transfer the second color to the medium.

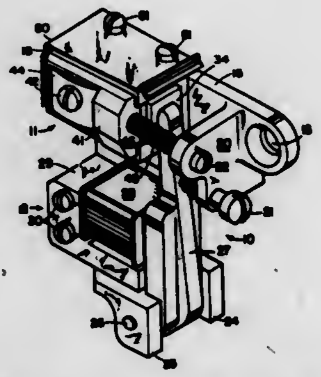
3,726,213
PRINT HAMMER WITH HIGH REPETITION RATE

Donald G. Herbert, Pittsford, N.Y., assignor to The Singer Company, San Leandro, Calif.

Filed Dec. 7, 1970, Ser. No. 95,645

Int. Cl. B41j 9/42

U.S. Cl. 101—93 C **16 Claims**



A print hammer having a repetition rate of at least a few hundred cycles per second is disclosed. The high repetition rate is achieved by employing an actuating arm which is electromagnetically driven but most is non-magnetic. The actuating arm is designed to have a small moment of inertia and so that the center of percussion strikes the electromagnet. The electromagnet is a low inductance device. The longitudinal motion of the printing hammer is at least twice the distance travelled by the center of percussion of the actuating arm. The moment of inertia of the printing hammer is kept low by making it of lightweight material and providing a central cavity therein. Impression control is provided by having an energy absorbing means included in the cavity of the hammer. The actuating arm is inhibited from rebounding from its home position because the backstop includes an anti-rebound material. A single spring means is provided to restore the hammer and the actuating arm to their at rest position. Circuit means are provided to open circuit the electromagnet before the hammer has reached the printing position.

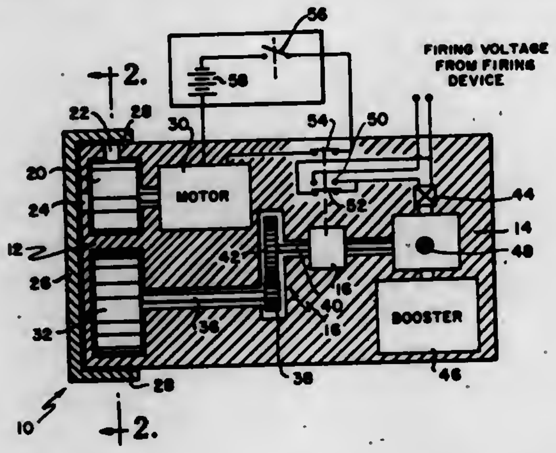
3,726,214
SHALLOW WATER ARMING MECHANISM

Henderson W. Wright, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 26, 1971, Ser. No. 203,113

Int. Cl. F42b *21/34, 5/08*

U.S. Cl. 102—16 **6 Claims**



A safing and arming device for arming a weapon in the presence of water including a pair of fluidly couplable impellers housed within a chamber which, when the device is immersed, becomes filled with water. Upon rotation of the first impeller by a conventional electric motor, the second impeller, positioned parallel to and beneath the first impeller, is caused to rotate by fluid momentum. Rotation of the second impeller simultaneously positions an explosive element to complete an explosive train and closes a firing circuit. If the chamber contains only air, rotation of the first impeller will not cause the second impeller to rotate and the weapon does not become armed.

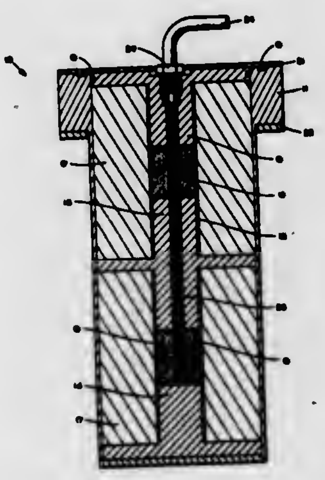
3,726,215
EXPLOSIVE DESTRUCT DEVICE

David A. Colpitts, and Ronald R. Vigneault, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 16, 1971, Ser. No. 163,228

Int. Cl. F42b *3/00*

U.S. Cl. 102—24 R **4 Claims**



A compact destruct device which is designed to fit into the filler opening of a fuel cell in a critical airframe structure of an aircraft, for example. The device may be remotely controlled to terminate the flight of the aircraft if desired.

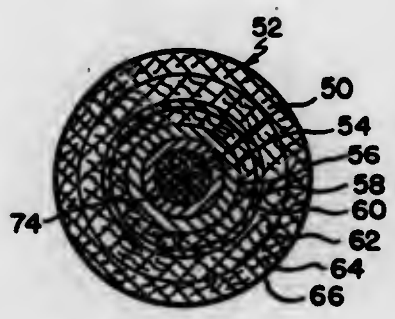
3,726,216
DETONATION DEVICE AND METHOD FOR MAKING THE SAME

Brooke J. Calder, Jr.; Bernard L. Risko, both of Solon, and Robert J. Belock, Twinsburg, all of Ohio, assignors to Austin Powder Company, Cleveland, Ohio

Filed Jan. 22, 1971, Ser. No. 108,712

Int. Cl. F42h *3/10*

U.S. Cl. 102—27 R **21 Claims**



A detonation device and method for making the same for use in explosive hook-up systems of the type having interconnected trunk and down lines. A core of pentaerythritol tetranitrate is compounded and constructed to substantially reduce detonation cut-offs when the lines are connected at an acute angle with respect to one another, particularly in the low grain load sizes.

3,726,217
DETONATING DEVICES

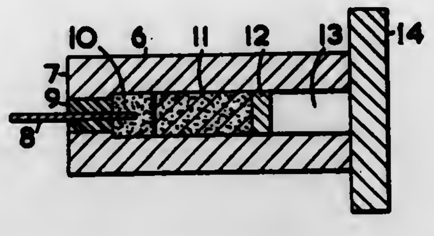
Arthur John Dedman, Nazeing, and Albert Leonard Lovecy, London, both of England, assignors to Minister of Technology in Her Britannic Majesty's Government of the Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 27, 1970, Ser. No. 6,305

Claims priority, application Great Britain, Jan. 30, 1969, 5,183/69

Int. Cl. F42c *19/12*

U.S. Cl. 102—28 R **10 Claims**



A detonating device consisting of a container closed at one end and having a barrier at the other end, a secondary explosive within the container spaced by a gap from the barrier and means for ignition whereby after ignition the explosive composition is impelled against the barrier before it is completely burnt and thereby detonated.

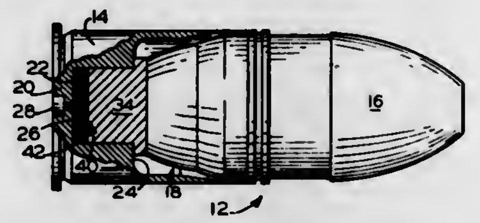
3,726,218
LOW VELOCITY CARTRIDGE HAVING TOTAL PROPELLANT IGNITION

Walter H. Austin, Jr., Castleton, N.Y., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 2, 1971, Ser. No. 111,895

Int. Cl. F42b *13/16*

U.S. Cl. 102—38 **1 Claim**



An ammunition round is provided with a high pressure chamber containing the propellant which is contained therein by a piston or pusher sabot having contact with the projectile. The inertia of the projectile is applied against the force of the propellant gasses when the propellant is ignited to delay the release of the propellant gases from the high pressure chamber to a low pressure chamber rearwardly of the projectile until the propellant is entirely ignited.

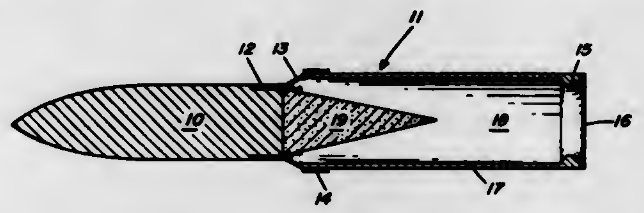
3,726,219
INTEGRAL PROPELLANT CASE RAMJET PROJECTILE

Ranse G. Bolick, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 24, 1970, Ser. No. 24,898

Int. Cl. F42b *9/10*

U.S. Cl. 102—38 **10 Claims**



A gun launched projectile utilizing the cartridge case as a ramjet burner. The round is loaded into the gun in normal fashion and the igniter is introduced through the rear of the cartridge case. Upon ignition the entire unit is ejected from the gun at high velocity with air inlets opening to allow ramjet engine operation.

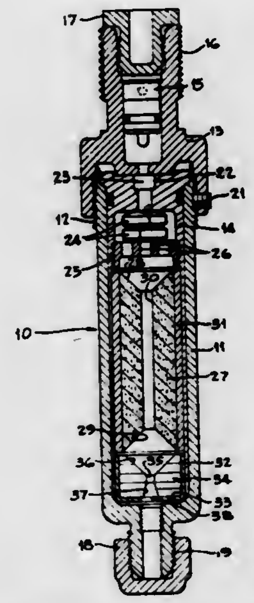
3,726,220
CARTRIDGE

Hugh D. MacDonald, Cinaminson, N.J.; Roger L. Schultz, Philadelphia, and Lennord L. Pitney, Levittown, both of Pa., assignors to The United States of America as represented by the Secretary of the Army

Filed June 1, 1971, Ser. No. 148,561

Int. Cl. F42b *5/20*

U.S. Cl. 102—39 **3 Claims**



A low impulse sustained power cartridge for an initiator power source of energy to accurately and flexibly control the gas output to a system demand. The cartridge has a metering nozzle or throat constriction mounted in the forward end of the cartridge case adjacent the propellant grain by which a low impulse initial gas pressure is delivered that rounds off at peak pressure to sustain an even slow decay.

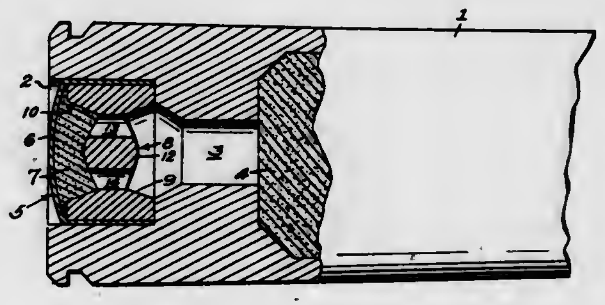
3,726,221
PERCUSSION PRIMER ANVIL

Wilmer White, Haddonfield, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed June 2, 1971, Ser. No. 149,304

Int. Cl. F42b *5/26*

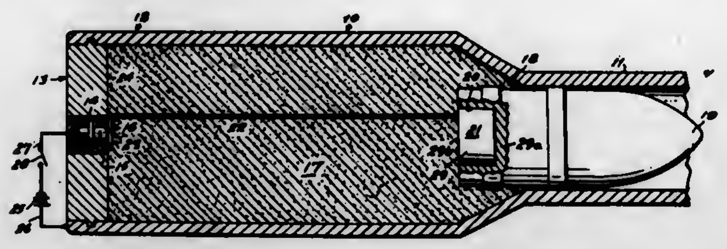
U.S. Cl. 102—45 **3 Claims**



A fail-proof anvil for use in a percussion type primer of a cartridge consisting of a cylindrical metal member having both ends of identical configuration. Each end is recessed then converging towards its center to a rounded point. Flash passages are provided to permit combustion products of the initiating charge to initiate the cartridge propellant. The anvil design prevents accidental inverted insertion thereof in a primer during its assembly.

3,726,222
IGNITION SYSTEM FOR CASELESS AMMUNITION

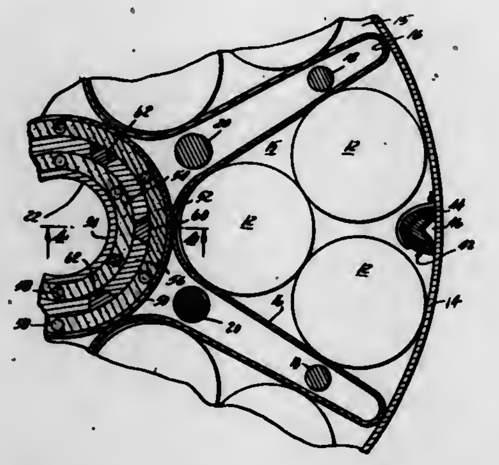
Wilmer White, Haddonfield, N.J., and James F. Kowalick, Southhamptom, Pa., assignors to The United States of America as represented by the Secretary of the Army
Filed June 2, 1971, Ser. No. 149,305
Int. Cl. F42b *9/08*
U.S. Cl. 102—46 2 Claims



Disclosed is an improved ignition for caseless ammunition wherein the primer is positioned in the projectile end of the caseless propellant. This results in an increase in projectile muzzle velocity as well as minimization of the cook-off problem of the weapon while maintaining the advantages of the caseless ammunition system.

3,726,223
ADAPTIVE WARHEAD

Richard G. Moe, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Feb. 16, 1970, Ser. No. 14,832
Int. Cl. F42b *13/50*
U.S. Cl. 102—56 7 Claims

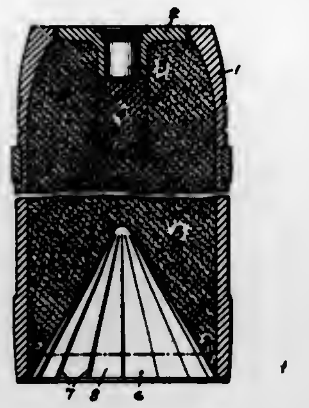


Lethality of a missile warhead is made selective by packing a plurality of submunitions or submissiles in the warhead and adjusting the submissile impact pattern according to intelligence received by the missile during its flight to target. The mechanism comprises a collapsed diaphragm of sheet material surrounding a staged gas generator. The staged gas generator, when peripherally initiated, allows the application of a predetermined force over a relatively long time period against the submissiles with a resultant high ejection velocity in a radial direction. The same gas generator, if centrally initiated, will exhibit a short impulse duration to cause a low ratio ejection velocity.

3,726,224
FLUTED LINERS FOR SHAPED CHARGES

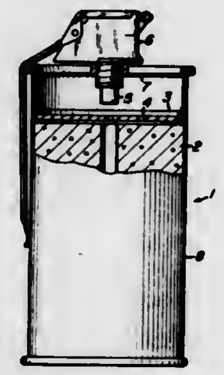
Emerson M. Pugh, and Robert J. Eichelberger, both of Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Army
Filed Aug. 23, 1950, Ser. No. 180,981
Int. Cl. F42b *13/10*
U.S. Cl. 102—56 4 Claims

1. In a spin stabilized shaped charge projectile, a hollow cylindrical casing, means closing the rear end of said casing and a driving band secured thereabout, a high explosive charge filling said casing and having a generally conical cavity in its forward end, a generally conical liner contiguous with said cavity and closing the forward end of said casing, there being a plurality of circumferentially spaced identical flutes on and integral with the walls of said liner, each said flute comprising a generally radially offset surface and a canted surface merging into the next adjacent offset surface, said offset surface facing in the direction of rotation of said projectile, each said offset surface lying in a plane making an angle θ with its respective radial plane and parallel with the axis of said liner.



3,726,225
PLASTIC BONDED SMOKE

Melvin N. Gerber, Randallstown, and Woodrow W. Reaves, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army
Filed Nov. 27, 1970, Ser. No. 93,207
Int. Cl. F42b *27/06*
U.S. Cl. 102—65 4 Claims

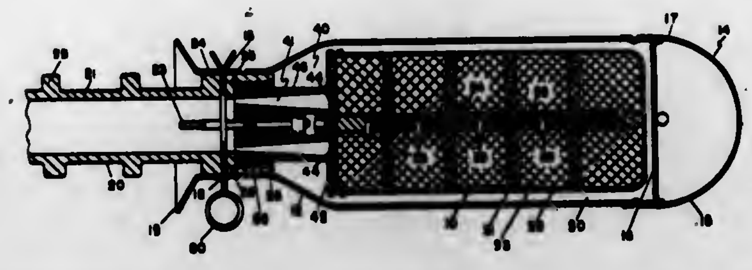


An improved method of manufacture of a smoke mix and a smoke mix composition for use in munitions; the improvement being a structure having a smoke producing material and an oxidizing material, such as potassium chlorate, bonded together by a polymer system. The bonding is accomplished by mixing the oxidizing material, smoke producing material, and polymer system to a homogeneous mixture which is a castable or extruable mass; casting or extruding the mass into a desired geometric configuration for use in muntions; and allowing the mass to cure.

3,726,226
UNIVERSAL SMOKE MARKING GRENADE FOR DRY AND INUNDATED AREAS

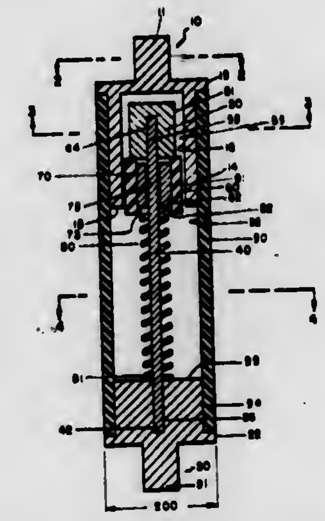
Andrew J. Grandy, North Hills, Pa., assignor to The United States of America as represented by the Secretary of the Army
Filed Aug. 31, 1971, Ser. No. 176,450
Int. Cl. F42b *27/06*
U.S. Cl. 102—65 8 Claims

A bouyant self righting, smoke marking grenade adapted for use either by firing from common infantry weapons or by hand initiation having, in cooperating combination, an outer waterproof flotation vessel closed on one end, a water permeable cup mounted on the closed end to provide a self righting capability by lowering the center of gravity of the floating grenade when the cup is filled with liquid; a smoke cannister, filled with a smoke producing pyrotechnic, supported in and spaced from the flotation vessel; an elongated tubular support member mounted in watertight relation across the open end of the flotation vessel and fixedly supporting the smoke cannister, the support member adaptable for mounting on the outside of certain weapons and the inside of others and having enough length and weight to provide drag stabilization when the grenade is fired; a double acting, spring controlled firing mechanism mounted in the support means communicating and in operable relation with the smoke cannister to activate the same and formed with smoke vents intermediate the smoke cannister and the interior of the support member, the firing mechanism being operable, manually by direct gas impingement or by inertial setback forces.



3,726,227
ARM SAFE DEVICE FOR ARTILLERY PROJECTILES

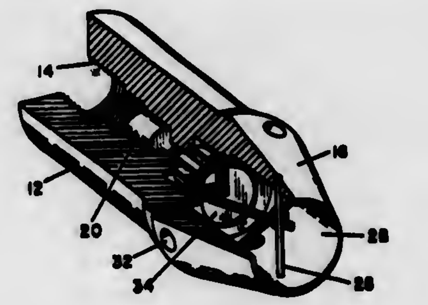
Alexander G. Wagnecz, Mine Hill, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed July 26, 1971, Ser. No. 166,146
Int. Cl. F42c *11/00*
U.S. Cl. 102—70.2 R 2 Claims



An electrical normally open single pole single throw switch for safing and arming projectiles has a forward terminal means, a hollow insulator proximately fixed to the forward terminal means and concentric therewith, a rear terminal means proximately fixed to the other end of the insulator and axially aligned therewith, an electrically conducting cantilever pole means having one end concentric with and fixed to the rear terminal, and a free end extending longitudinally toward and into the forward terminal means, an interlocking pole restraining means is axially mounted on the cantilever pole means intermediate to the free end and fixed end of the cantilever pole means. The interlocking pole restraining means is sequentially responsive only to first a linear accelerating force followed by an angular accelerating force. This combination of linear and angular accelerating forces, which are present in the normal launch of an artillery projectile, affect the switch closure thereby changing the projectile from a safe position to an arm position. Whenever the projectile experiences a decay in angular acceleration or spin the interlocking pole restraining means will open the electric switch and place the projectile once again in the safe mode.

3,726,228
DENSITY INTEGRATING FUZE HEAD

Wilhelm J. Lehninger, Rockaway, and Joseph J. Matt, Lake Mohawk, both of N.J., assignors to The United States of America as represented by the Secretary of the Army
Filed Nov. 23, 1970, Ser. No. 91,740
Int. Cl. F42c *1/00*
U.S. Cl. 102—73 R 1 Claim

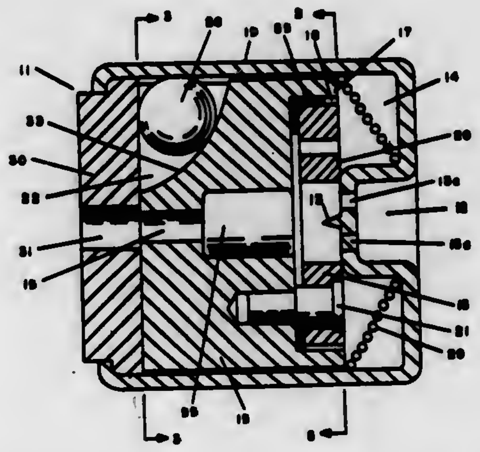


A protective shield for an impact fuze that will permit penetration of foliage, rain, and other material without premature explosion. This protective shield is capable of discriminating between the ground and other material while permitting the firing device to retain its high impact sensitivity by providing a mesh like structure for protection against solid objects and drainage holes to protect against fluid build up.

The invention described herein may be manufactured, used and licensed by or for the Government for governmental purposes without the payment to us of any royalty thereon.

3,726,229
INERTIAL DELAY FUZE

Stephen Kosonocky, Whippany, and Lloyd D. Post, Mount Fern, both of N.J., assignors to The United States of America as represented by the Secretary of the Navy
Filed Feb. 4, 1971, Ser. No. 112,639
Int. Cl. F42c *1/00*
U.S. Cl. 102—73 R 1 Claim



An in-line delay fuze mechanism wherein an inertial plunger having the plunger. central aperture therethrough, is free to slidingly move within a closed housing under the forces generated by the deceleration of the mechanism. The housing is provided at its forward end with a central inwardly facing firing pin having by-pass openings, and a formed inner annular recess. The plunger carries on its forward face, pivotally mounted, cooperating detents which are normally biased to close across the plunger central aperture and prevent the intrusion of the pin into a delay detonator disposed in said aperture immediately behind the detents. A spring located in said recess biases the plunger rearwardly and whose restraining force must be overcome by the inertial forces exerted on the plunger The rear face of the plunger is formed with a plurality of forwardly and radially extending recesses in which are disposed weighted spheres that are free to move therein. Under the spin action of the projectile, carrying the mechanism, the detents pivotally separate and expose the firing pin to the aligned detonator. Upon the sudden deceleration of the projectile, as by direct, lateral or grazing impact, inertial forces act on the spheres and/or the plunger causing the plunger to translate forward carrying with it the detonator which is impaled on the pin and activated thereby.

3,726,230
PERCUSSION FUSE FOR PROJECTILES

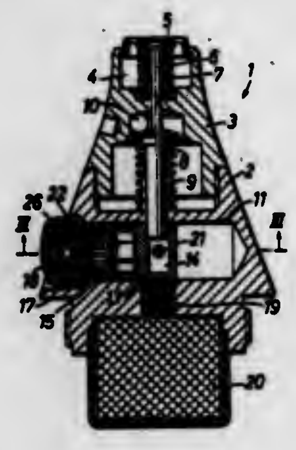
Niilo Kalervo Asikainen, Tampere, Finland, assignor to Oy Sampolla Ab, Tampere, Finland

Filed Nov. 30, 1970, Ser. No. 93,533

Claims priority, application Germany, Dec. 1, 1969, P 19 60 184.4

Int. Cl. F42c *15/24*

U.S. Cl. 102—78 **5 Claims**



A percussion fuse for use in projectiles includes a cylindrical bore in a housing and a carrier in the bore for supporting at least one primer and which is moved to a fusing position where it may be detonated following firing of the projectile. A resilient deformable seal ring is attached to the carrier and is deformed by the walls of the bore during movement therethrough to retard movement of the carrier and delay fusing. A multiple position stop device may be used to stop a selected one of a plurality of different primers at the fusing position.

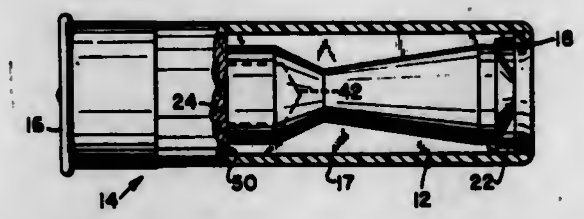
3,726,231
SABOT BULLET

Ward L. Kelly, and William L. McAlvain, both of Sebastopol, Calif., assignors to Ballistic Research Industries, San Francisco, Calif., by said Kelly

Filed May 18, 1970, Ser. No. 38,102

Int. Cl. F42b *13/16*

U.S. Cl. 102—93 **10 Claims**



An improved sabot bullet particularly designed for loading in a standard shotgun shell. The bullet is provided with a diametrically constructed portion intermediate its ends, and the sabot segments are provided with matching and complementary inner surfaces so that axial stresses or pressures created during firing on the sabot segments and/or the bullet are readily transferred from one to the other.

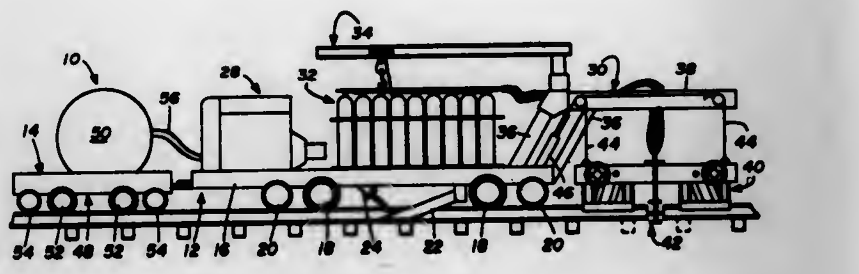
3,726,232
TRACK WELDING SYSTEM

John F. Bryan, Jr., Dallas, Tex., assignor to Trakwork Equipment Company, Irving, Tex.

Filed July 16, 1970, Ser. No. 55,470

Int. Cl. E01b *31/18*

U.S. Cl. 104—15 **11 Claims**



A track welding system includes a welding assembly comprising oxyacetylene torches and a pair of gripping mechanisms. In the use of the system, the torches heat the adjacent ends of a pair of rails, and the gripping mechanism engage the heated ends under sufficient force to form a welded joint between the rails. The gripping mechanisms include vertical and horizontal locating assemblies for aligning the nails prior to heating. The vertical and angular positioning of the gripping mechanisms is adjustable to assure proper orientation of the rails after the welded joint is formed.

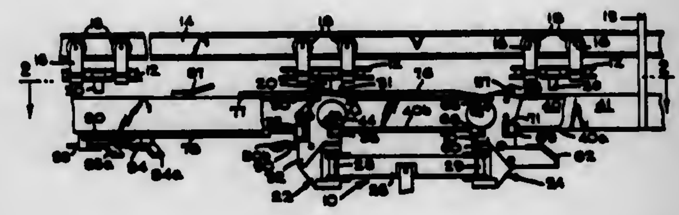
3,726,233
REAR TROLLEY DOG FOR POWER AND FREE PUSH THROUGH TRANSFER

Horace M. Swartz, Doylestown, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed April 5, 1971, Ser. No. 131,332

Int. Cl. B61b *9/00*; E01b *25/26*

U.S. Cl. 104—172 S **6 Claims**



A conveyor trolley for use in a conveyor system of the type referred to as "power-and-free systems" is provided with a driving pawl at its forward end and with means for lowering the pawl as the trolley is moved through a transfer station from a powered main line to a powered secondary storage or processing line. The trolley is also provided at its rearward end with an upright dog which normally pivots to inoperative position when struck by a forwardly-moving pusher. The dog is locked in an upright operating position in the path of the pushers of the main line only at the transfer station. This occurs when the driving pawl on the front of the trolley has been diverted onto a secondary line and moved out of contact with the pusher on the main line. The next following pusher on the main line will engage the raised dog and positively move the trolley through the transfer station and onto the secondary line.

3,726,234
TWO-RAIL CONVEYOR WITH A DEVICE FOR DRAWING, ENGAGING AND DISENGAGING THE LOAD-BEARING TROLLEY

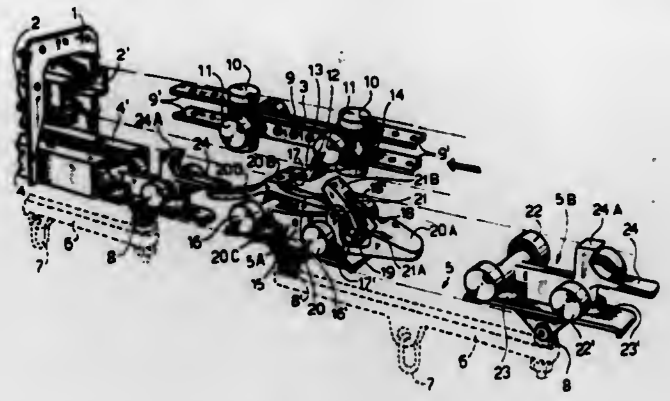
Andrea Dema; Aldo Pulcini, and Ernesto Rossotti, all of Via Villadeati 4 (main office), Turin, Italy

Filed Jan. 26, 1971, Ser. No. 109,814

Claims priority, application Italy, Aug. 4, 1970, 69674 A/70

Int. Cl. B65g *17/42*

U.S. Cl. 104—172 S **8 Claims**



An overhead conveyor comprising a drive being guided for movement in longitudinal direction in an upper track and having a plurality of downwardly projecting driving members spaced in longitudinal direction of the chain from each other, and a plurality of trolley means guided for movement in said direction on a lower guide track extending spaced from and substantially parallel to the upper guide track. Each of the trolley means has a lever pivotable about a horizontal pivot axis and being provided with an upwardly extending tooth located forwardly of the pivot axis and held by biasing means in the path of movement of a respective driving member to be engaged by the latter. The engaging faces of driving member and tooth being inclined in such a manner that the line of thrust imparted by the driving member to the tooth passes below the pivot axis to keep said faces in engagement with each other. The lever has on a portion projecting forwardly beyond said tooth an upper inclined cam face adapted to cooperate with a rearwardly projecting spur of a preceding trolley to disengage the faces on the tooth and the corresponding drive member from each other during movement of two adjacent trolley means toward each other.

3,726,235
CARRIAGE STRUCTURE FOR COORDINATE GAS CUTTING MACHINES

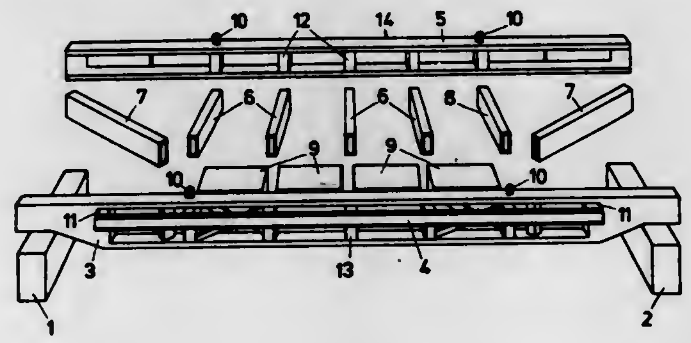
Erich Neander, Weisskirchen, Germany, assignor to Messer Griesheim GmbH, Frankford/Main, Germany

Filed Aug. 10, 1970, Ser. No. 62,374

Claims priority, application Germany, Aug. 28, 1969, P 19 43 686.3

Int. Cl. B61d *49/00*

U.S. Cl. 105—396 **4 Claims**



The carriage is assembled of prefabricated structural parts in the form of section pipes of rectangular cross-section. The parts are joined by simple angle irons which have one side machined and bolted to a corresponding machined side of another angle iron. The remaining sides of the bolted angle irons are welded in unmachined condition to the preassembled and aligned structural parts.

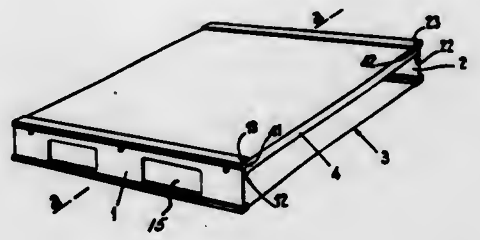
3,726,236
LOAD-CARRYING PALLET

Francois Colas, 92 Bourg La Reine, France, assignor to Cegedur GP, Paris, France

Division of Ser. No. 779,740, Nov. 29, 1968. This application May 11, 1970, Ser. No. 48,711

Int. Cl. B65d *19/00*

U.S. Cl. 108—51 **8 Claims**



A pallet for supporting materials comprising a pair of end sections of similar construction formed of a vertically disposed end plate, a pair of flanges extending inwardly substantially perpendicularly from the upper end portion of the end plate in vertically spaced apart parallel relation and a slideway in the form of a tubular section on the lower end portion of each of the end plates, a panel dimensioned for its ends to be received between the respective flanged pairs of the end plates and a base plate extending across the pallet with the ends of the base plate received in engagement within the slideways and means for securing the elements in their assembled relationship to form the pallet.

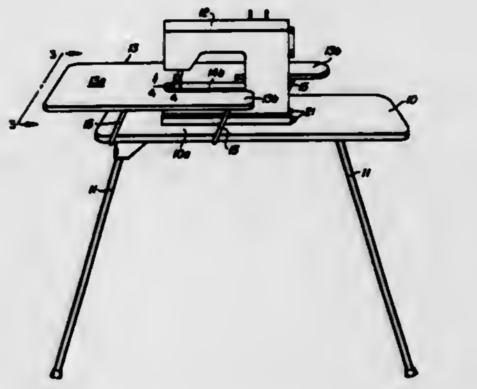
3,726,237
WORK TABLE FOR OPEN-ARM SEWING MACHINE

Wayne A. Devey, and Kent S. Roberts, both of American Fork, Utah, assignors to Roberts Mfg. Inc., American Fork, Utah

Filed Feb. 14, 1972, Ser. No. 226,070

Int. Cl. A47b *29/00*

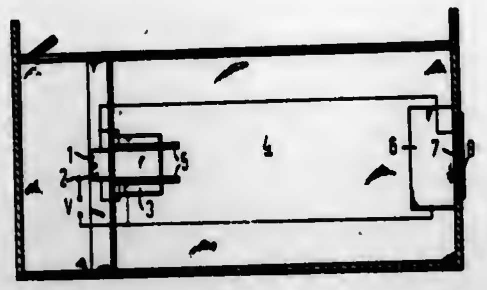
U.S. Cl. 108—92 **9 Claims**



An elongate table top supported by legs is adapted to receive an open-arm type of sewing machine. A second table top is mounted upon one end portion of the first or base table top at open-arm working level for raising to normal working level with respect to a received sewing machine and for lowering back down to open-arm working level. The second table top is longitudinally recessed to accommodate the open arm of the received sewing machine at both working levels.

3,726,238
SECURITY SYSTEM

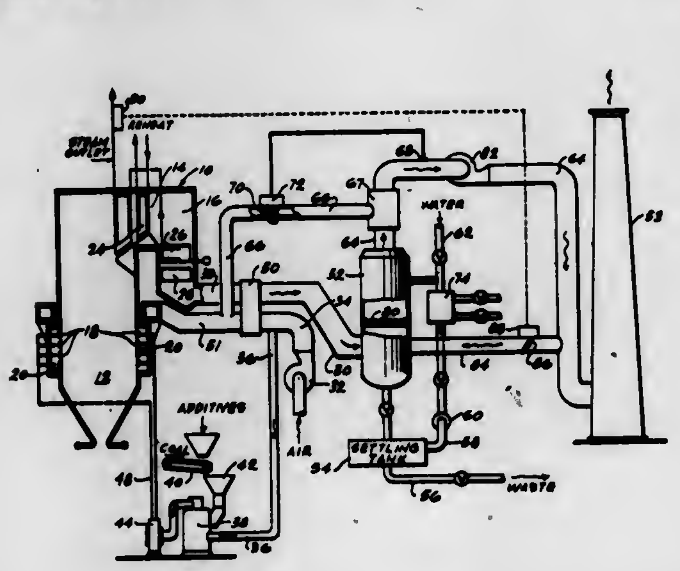
Aby Abraham Gordon, Am Malafelsen 3, 6651 Kirrberg (Saar), Germany
Filed Jan. 31, 1972, Ser. No. 222,212
Int. Cl. E05g *3/00*
U.S. Cl. 109—2 **13 Claims**



Security systems for the protection of rooms containing valuables against the exit of unauthorized persons, particularly for cashier's boxes in banks, strong rooms or similar business premises, including electrodes in a position to come into contact with an intruder and means to secure the intruder to the electrode to thereby prevent escape.

3,726,239
METHOD AND APPARATUS USEFUL IN COMBUSTION GAS PURIFICATION

Henry Edward Burbach, Avon, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 29, 1971, Ser. No. 213,439
Int. Cl. F23b *1/00*
U.S. Cl. 110—1 J **8 Claims**

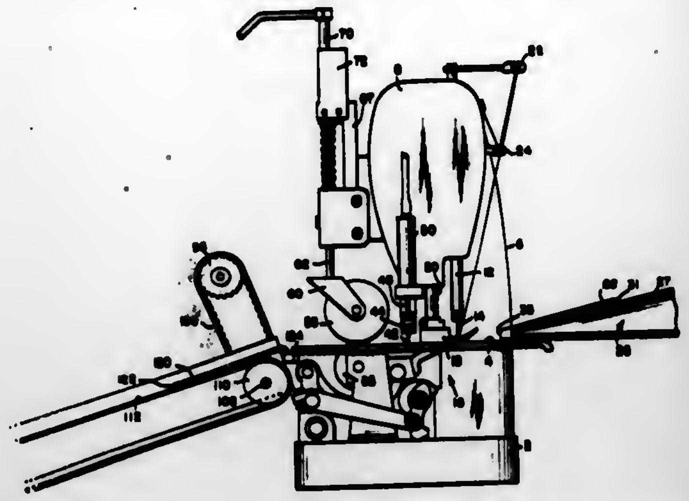


Method and apparatus are disclosed that are useful in the operation of a system in which combustion gases from a steam generator are cleansed of their sulfurous and particulate impurities by wet scrubbing prior to being discharged to the atmosphere. Some of the processed gas is recycled through the scrubber under conditions of low load in order that the effectiveness of the scrubber will not be impeded by reduced gas flow.

3,726,240
AUTOMATIC SEWING MACHINE

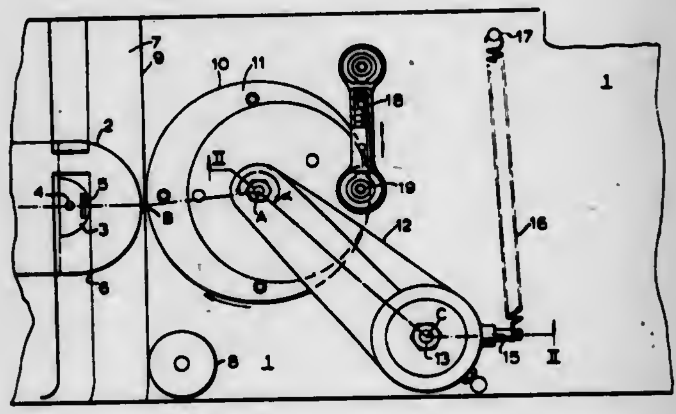
William Emich, Greenville, S.C., assignor to Swirl, Inc., Easley, S.C.
Filed Feb. 12, 1971, Ser. No. 114,822
Int. Cl. D05b *19/00*
U.S. Cl. 112—121.11 **6 Claims**

A sewing machine for producing sash belts is provided with a timer-operated control means which, following manual initiation by an operator, produces an initially slow operation of the machine to allow proper operation of an automatic thread cutter; effects formation of a gap for turning the sash belt at a mid-point between first and second aligned seams; and finally stacks the completed product by means of an air blast.



3,726,241
MATERIAL STITCHING APPARATUS

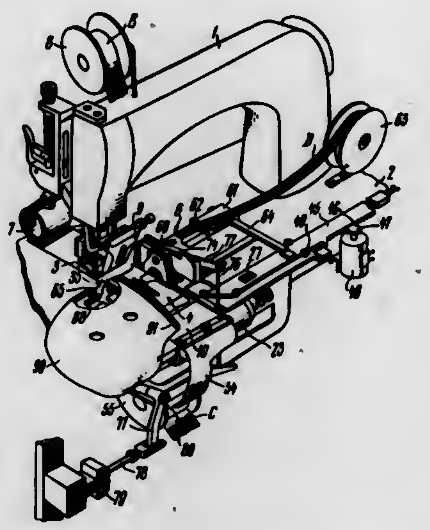
Michael Newstead Bennison, Leeds, England, assignor to W. J. Clarkson Limited, Leeds, England
Filed Oct. 26, 1971, Ser. No. 192,667
Claims priority, application Great Britain, Oct. 29, 1970, 51,440/70; Oct. 29, 1970, 51,441/70
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.15 **17 Claims**



Apparatus for facilitating the stitching together of layers of material comprising in combination, a template capable of holding superposed layers of material, and being formed with a guide track; and a sewing machine having a guide member engageable with said guide track, and driving means for driving said template so that said guide track moves about said guide member, said driving means comprising a member pivotally mounted on a fixed bed of said sewing machine, a roller rotatably mounted on said member, biasing means for biasing said roller in a direction such that it can frictionally engage an edge of said template, and means for driving said roller in a given sense of rotation, the arrangement being such that when said roller is in engagement with said template, the angle between (a) the line joining the axis of rotation of said roller and the joint of contact between said roller and said template, and (b) the line joining said axis of rotation and the pivotal axis of said member, measured in the sense of rotation of said roller, lies between 190° and 270°. This relationship ensures good frictional engagement between the roller and the template. The drive means may include two or more concentric rollers of different diameter, and said template then has a guide track including straight and curved sections, an edge lying outside said guide track and shaped substantially complementary to said guide track, and drive parts in the region of said curved sections and displaced from said edge; one of said rollers being engageable with said edge and the other engageable with one or more of said drive parts, said edge and drive parts being shaped so that when one is engaged by one of said rollers the other is not engaged by any of said rollers. This arrangement can be designed to ensure that the speed of the guide track past the sewing machine needle is constant whether drive is applied to a straight or to a curved section of the template.

3,726,242
SEMI-AUTOMATIC SEWING MACHINE FOR OPERATING ON GARMENT BELTS HAVING BELT-LOOPS

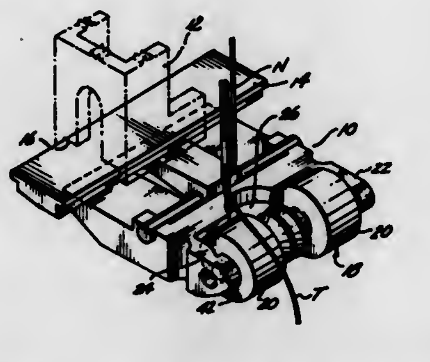
Ilia Jurievich Eskin, Polosk; Ilia Samuilovich Zak, Moscow; Sergei Vasilievich Kuznetsov, Moscow; Vladimir Sergeevich Khlebalin, Moscow, and Mikhail Srulevich Lozovsky, Moscow, all of U.S.S.R., assignors to Tsentralny Nauchno-Issledovatelsky Institut Shveinoi Promyshlennosti, Moscow, U.S.S.R.
Filed March 17, 1971, Ser. No. 125,025
Int. Cl. D05b *23/00*
U.S. Cl. 112—121.27 **7 Claims**



A semi-automatic sewing machine for operating on garment belts having belt-loops for example skirts or trousers in which a belt guide and a belt-loop forming means are mounted in front of the needles of a double-needle sewing head on a movable plate with the plate being movable towards the needles in synchronism with the movement of a feed dog of the sewing machine. The belt-loop forming means consists of two jaws spaced somewhat apart and being pivotable in two mutually perpendicular planes.

3,726,243
THREADING FEATURE FOR ROLLER TYPE PRESSER FOOT

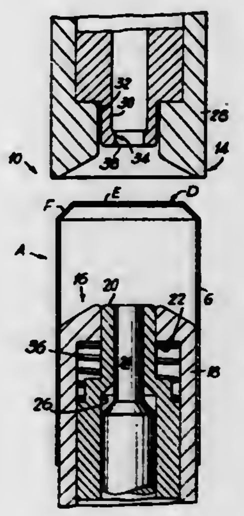
Robert B. Howell, 3132 Rocky Point Road, Bremerton, Wash.
Filed Aug. 13, 1971, Ser. No. 171,532
Int. Cl. D05b *29/10*
U.S. Cl. 112—235 **9 Claims**



The foot includes a pair of forwardly projecting support tines having coaxially openings therein for receiving and journaling short live axles at the opposite ends of a presser roller. One of the supports has a horizontally convex inner surface which intersects and forms a cleft with a surface portion of rounded end on the near axle. The roller is easily installed and removed by exerting a force on it causing the rounded end of the axle to slide along said curved support surface. A vertical channel is formed in the support surface immediately endwise of the roller. A thread from a needle positioned behind the roller may be brought forwardly over the roller, placed into said cleft and then moved downwardly and swung outwardly below the support, and then be moved rearwardly of the foot. The thread is cammed rearwardly through the cleft and into the channel and then out from the channel and around the rounded end of said axle into a position behind the roller.

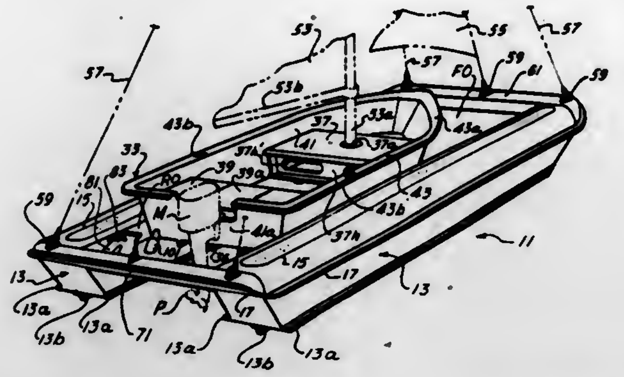
3,726,244
METHOD AND APPARATUS FOR FORMING A FULLY CURLED NECK ON A DRAWN AND IRONED PRESSURE CAN

Dan Arangelovich, Arlington Heights, and Walter Charles Dahl, Wauconda, both of Ill., assignors to American Can Company, Greenwich, Conn.
Filed April 12, 1971, Ser. No. 133,149
Int. Cl. B21d *51/26, 45/00*
U.S. Cl. 113—7 A **12 Claims**



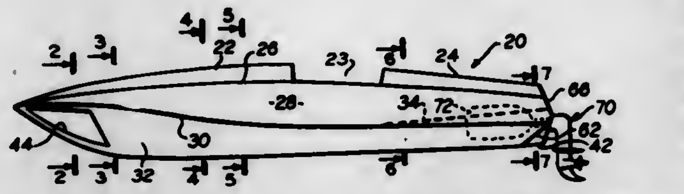
A method and apparatus for forming a conical shoulder and a fully curled neck on an end of a preformed metal cup wherein external and internal mating die assemblies are provided at a first station which operate to reform the end panel of said cup into a conical shoulder and a top flat central panel formed integral with said shoulder, draw said top central panel into an upstanding cylindrical throat, having a first predetermined height, and a top flat center panel formed integral with said throat, remove a centrally-located, circular portion of said top flat center panel to leave a top annular rim formed integral with said upstanding cylindrical throat, and draw said cylindrical throat having said integrally-formed top annular rim into an open-ended upstanding cylindrical throat having a second predetermined height which is greater than said first predetermined height, and wherein, at a second station, a mating internal support mandrel and a mating external sleeve member support said conical shoulder of said reformed end panel and align said open-ended upstanding cylindrical throat, integrally-formed with said shoulder, with an external curling groove surface, having a toroidal profile, on an external curling member, said mating internal support mandrel and mating external sleeve member being displaceable relative to said external curling member to force said open-ended throat in contact with said groove surface along the toroidal path defined by said surface to form an outwardly-extending, fully curled neck on said conical shoulder.

3,726,245
WATERCRAFT
John L. Critcher, Cockeysville, Md., assignor to Reginald F. Pippin, Jr., a part interest
Filed Aug. 3, 1970, Ser. No. 60,351
Int. Cl. B63b *3/00, 35/00*
U.S. Cl. 114—61 **22 Claims**



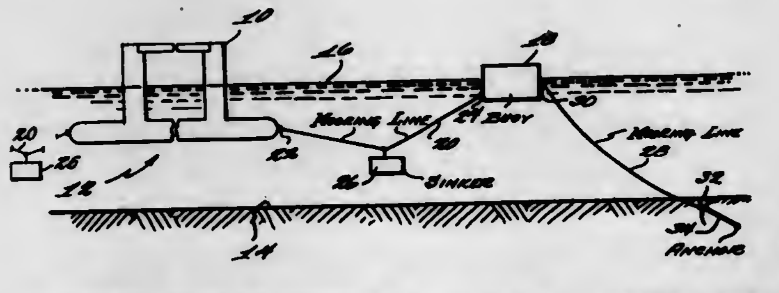
A multipurpose watercraft having spaced bouyant foam-filled pontoons with wide flat bottoms, laterally extending longitudinal stabilizing flanges, and supporting therebetween an open suspended cockpit mid-hull with rear sloping bottom and spaced corner self-bailers spaced above the normal flotation waterline of the craft. A mast is removably inserted in a laterally reinforced mast socket disposed beneath and connecting through a seat in the cockpit.

3,726,246
GROUND EFFECT CRAFT WITH DIVERGENT CHANNEL
Edward Wukowitz, 29 Wells Avenue, Congers, N.Y.
Filed April 7, 1971, Ser. No. 131,858
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 A **14 Claims**



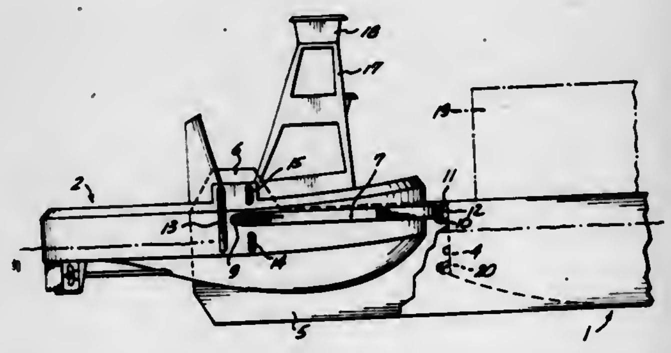
This invention relates to an advanced marine ground effect design concept achieving aerodynamic lift with thrust contributing forces by fluid flow through a divergent channel in the bottom of the craft. The invention is illustrated as applied to a motor boat hull having catamaran sections on both sides of the divergent channel. Velocity head of air is converted into pressure head in the channel to develop lift and forward thrust.

3,726,247
MOORING SYSTEM
John F. Dalzell, Berkeley Heights, N.J., assignor to The Offshore Company, Houston, Tex.
Filed June 8, 1970, Ser. No. 44,201
Int. Cl. B63b *21/24, 21/00*
U.S. Cl. 114—206 R **5 Claims**



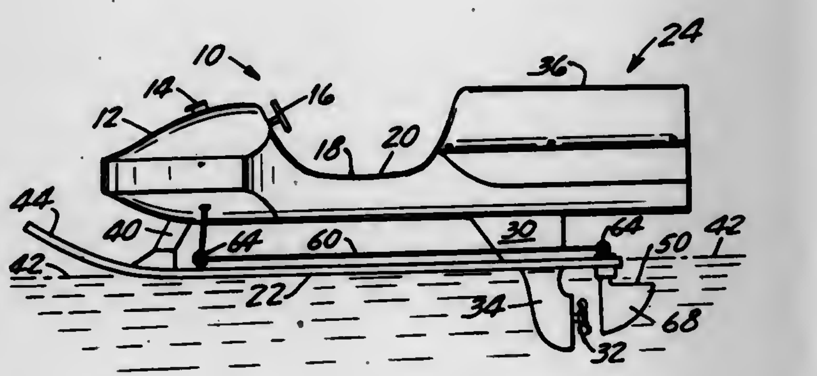
A resilient mooring system for maintaining a vessel in a substantially fixed lateral position in a body of water wherein the system includes a float member for disposition on the surface of the body of water a distance away from the vessel, a first mooring line adapted to be coupled to the vessel and to the float member, a sinker member attached substantially midway between the ends of the first mooring line, and a second mooring line coupled to the float member and to an anchor member adapted to be secured to the floor beneath the body of water.

3,726,248
NOTCHED STERN BARGE AND TOWBOAT COMBINATION
Lawrence R. Glosten, Rt. 4, P.O. Box 4740, Brainbridge Island, Wash.
Filed Aug. 17, 1970, Ser. No. 64,169
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 R **11 Claims**



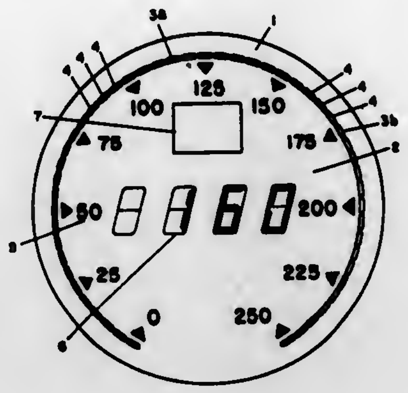
A towboat having its bow portion received in a rearwardly opening notch in the stern of a barge is connected to the barge by a bifurcated yoke strut. The root ends of the strut bifurcations are pivotally connected to the forward or closed end of the notch, the yoke straddles the bow of the towboat and the aft ends of the bifurcations are pivotally connected to the opposite sides of the towboat amidships. Vertically elongated bumper ribs interposed between the opposite sides of the towboat and the adjacent sides of the barge notch may be carried either by the towboat or by the barge to cushion lateral engagement of the towboat sides with the sides of the barge notch.

3,726,249
WATER CRAFT
James David Watkins, 307 20th St., S.W., Austin, Minn.
Filed July 20, 1970, Ser. No. 56,268
Int. Cl. B63b *35/00*
U.S. Cl. 115—70 **5 Claims**



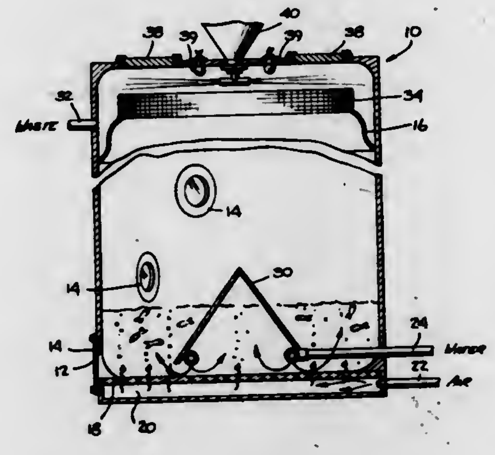
A self-propelled water craft including a unitary water-planing board, a unitary buoyant body which includes a seat and which is spacedly connected to the planing board so as to resist movement tending to displace the alignment of the longitudinal axis of the board relative to the body, and propulsion means for propelling the craft.

3,726,250
INDICATOR
Paul Joseph Merk, Chomedey, Quebec, Canada, assignor to Canadian Marconi Company, Montreal, Quebec, Canada
Filed March 18, 1971, Ser. No. 125,498
Int. Cl. G09f *9/00*
U.S. Cl. 116—129 **3 Claims**



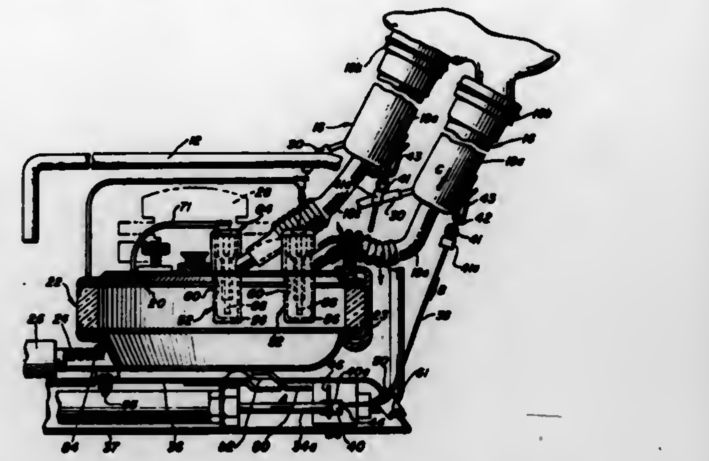
In an indicator device, the usual pointer is replaced, in accordance with the invention, by a path of moving light which comprises an illuminatable path. The path is illuminatable from one end to the other in such a manner that, when a portion of the path is illuminated, then all of the path from one end thereof to the portion is illuminated while the remainder of the path, from the other end thereof to the portion, is not illuminated. The illuminatable path preferably comprises a plurality of individually illuminatable elements, and, preferably, each of the elements comprises strands of optical fiber.

3,726,251
FISH REARING TANK
Howard J. Fremont, New York, N.Y., assignor to Marine Protein Corporation, New York, N.Y.
Filed Oct. 23, 1970, Ser. No. 83,356
Int. Cl. A01k *63/00*
U.S. Cl. 119—3 **11 Claims**



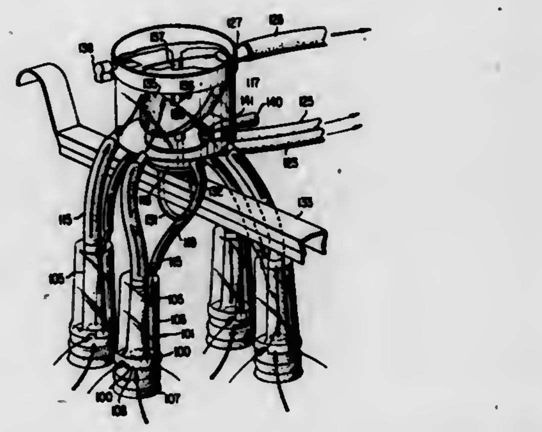
A large silo-like tank with a closed top and an interior overflow arrangement in which fish are grown at very high densities in an environment of substanially continuously flowing water and with a continuous input of additional oxygen. A series of portholes are disposed in the wall of the tank and vertically or diagonally spaced from one another. These portholes are normally covered with porthole covers. When harvesting the fish, the porthole covers are successively removed and the water in the respective portions of the tank flows out carrying the fish therewith to the level of the bottom of the porthole. Successive porthole covers are removed until all or a desired portion of the fish in the tank are harvested. In this fashion, the rate of flow of water during harvesting is minimized and consequently damage to the fish is minimized.

3,726,252
AUTOMATIC MILKER
Lyle L. Needham, Bellwood; Robert J. Shulick, St. Charles, and Harold V. Swanson, Downers Grove, all of Ill., assignors to Babson Bros. Co., Oak Brook, Ill.
Filed Jan. 11, 1971, Ser. No. 105,170
Int. Cl. A01j *7/00*
U.S. Cl. 119—14.08 **22 Claims**



An automatic shutoff milker including four teat cup assemblies connectable with an animal's teats and a milk flow passage from each assembly through an accumulation well and into a milk receiving bowl. Four piston and cylinder devices are mounted generally horizontally within a recess on the underside of a base portion for the apparatus, and a flexible cable is connected between each piston and a teat cup assembly for applying pull to the assembly in response to movement of the piston. A sensing probe is disposed within each accumulation well to sense a flow of milk through said passage. The sensing probe is operably connected electrically to the respective piston and cylinder device to actuate the piston for applying a pull to the teat cup assembly when there is a predetermined flow condition of milk in said passage. The flexible cable is removably connected by universal joints to the piston and to the teat cup assembly.

3,726,253
MILKING DEVICE
Lloyd P. Duncan, Rainbow Drive, Washington, Mo.
Continuation-in-part of Ser. No. 864,042, Oct. 6, 1969, abandoned. This application June 24, 1971, Ser. No. 156,308
Int. Cl. A01j *05/04*
U.S. Cl. 119—14.18 **10 Claims**



A milking apparatus in which the teat cups have washing and raining holes that can be uncovered by unfolding a portion of their flexible inflations. The claw and teat cup assembly can be disconnected from its milking circuits and connected to a washing manifold in a vacuum line, inverted and immersed in wash solution. Valves in the vacuum lines are manipulated so that the solution is drawn through the entire apparatus of a dual vacuum pipe and milking claw system.

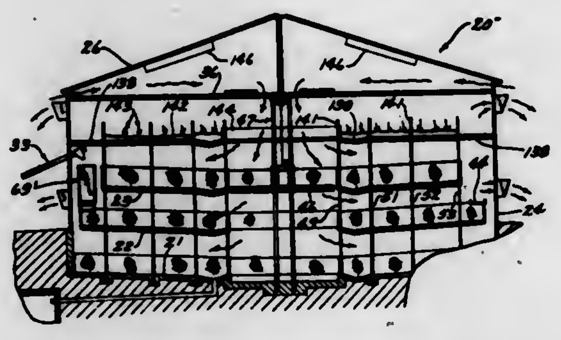
Washing and complete draining of the interior of the apparatus, including the space between the shell and the inflation of the teat cup, together with all pipes and lines in the system is accomplished without further disassembly. The washing and/or rinsing of the claw and teat cup assembly between cows without disconnecting any of the vacuum lines can also be effected without disassembly so that essentially, only the teat cups are contacted by solution. By unfolding the inflations from their shells, exits are exposed at the lowest part of the entire system to insure total drainage.

3,726,254
METHOD OF AND HOUSING APPARATUS FOR FARROWING AND FINISHING OF FARM ANIMALS

William J. Conover, Rhodes, Iowa

Filed March 8, 1971, Ser. No. 121,660
Int. Cl. A01k *1/00*

U.S. Cl. 119—16 **10 Claims**



This invention relates to a farm animal farrowing and finishing house having a plurality of floors, a portion of each floor sloping downwardly from an outer boundary toward the center of the house, a plurality of pens arranged side-by-side, a sanitation trough formed on each floor and disposed within all of the plurality of pens for receiving uneaten feed and animal excretion as waste from each of the pens, the trough sloped from one end to the other end thereof, apparatus for transmitting fluid material from the lowest end of each trough on each floor to the highest end of each trough on the next lower floor, a device for draining the fluid material from the house, and means operable to discharge fluid into a trough on an uppermost floor at the highest end thereof, and of a quantity sufficient to maintain for a predetermined period of time movement of the waste within the trough and the troughs therebelow to the draining device.

The invention also comprises a method of immunizing newborn swine against a disease commonly called the "scours" by utilizing a gravity flow of a composite of uneaten feed and excrement, combined as waste, from newborn pigs to the feeding area of pregnant sows such that the sows eat from the waste thereby ingesting the germ of the scours disease if had by the newborn pigs whereby antibodies are built up by the sows for subsequent transfer through their nursing milk to their litter of pigs, which antibodies immunize the newborn pig litters against the said disease.

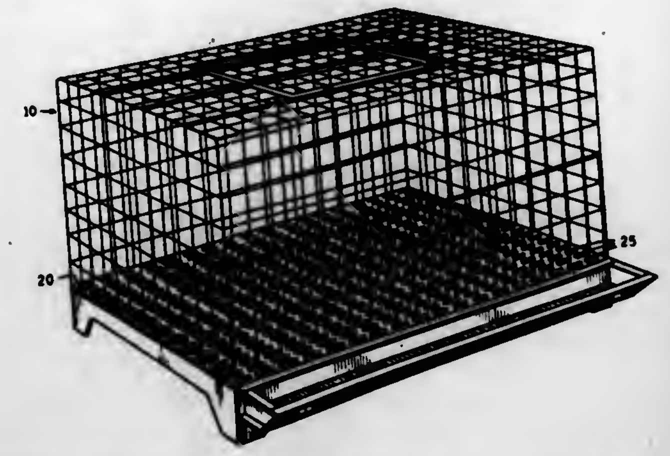
3,726,255
CAGE MAT

James E. Marr, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed July 8, 1970, Ser. No. 53,068
Int. Cl. A01k *31/00*

U.S. Cl. 119—17 **9 Claims**

A method of controlling and substantially preventing breast blisters and swollen hocks in the raising of poultry in cages is disclosed. A resilient mat unit is placed in the interior of a standard cage such that the poultry are not in direct contact with a hard surface bottom. In addition, the resilient mat member is provided with openings through which body waste, feathers, waste water and feed materials are allowed to pass.



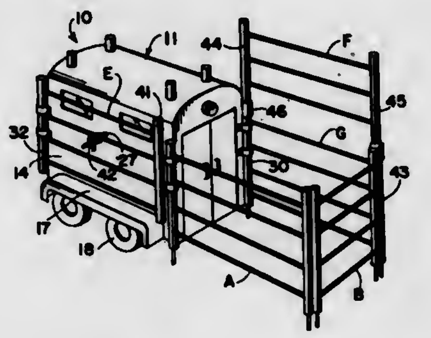
Further, the resilient nature of the mat produces a flexing action so that a self-cleansing action occurs with the normal movement of the poultry.

3,726,256
DEMOUNTABLE HORSE CORRAL AND TRAILER STRUCTURE

Blaise Bernhardt, Woodland Hills, and Donald House, Sun Valley, both of Calif., assignors to said Bernhardt, by said House

Filed July 12, 1971, Ser. No. 161,740
Int. Cl. A01k *1/02*

U.S. Cl. 119—20 **7 Claims**



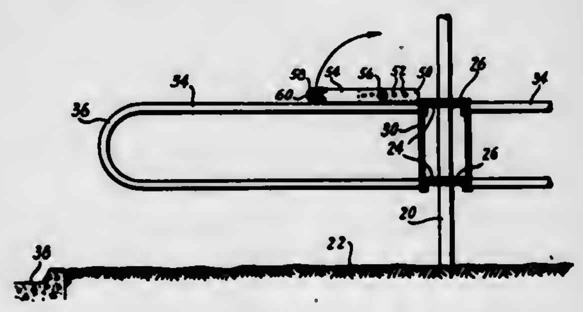
A series of fence panels carried by a vehicle for transporting animals may be assembled to a vehicle wall and linked with one another to constitute a corral enclosure. To minimize problems in connection with storage and assembling the fence panels, some fence panels are pivotally secured directly to the vehicle for movement between retracted positions against the vehicle wall and selected extended positions.

3,726,257
FREE STALL DIVIDER TRAINING RAIL

Benedict Robert Andersen, 834 South California St., Lodi, Calif.

Filed Jan. 15, 1971, Ser. No. 106,748
Int. Cl. A01j *1/00*

U.S. Cl. 119—27 **3 Claims**



Loop-shaped dividers transversely connected to a pair of horizontal beams which are supported off the ground by means of vertical poles spaced at long intervals and having longitudinal rails pivotally mounted along an adjustable horizontal axis immediately adjacent the uppermost portion of the dividers.

3,726,258
FIN HEAT EXCHANGER

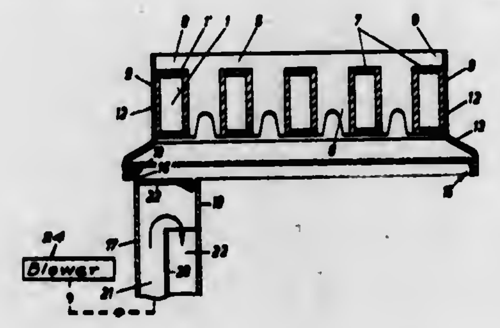
Horst Reichmann, Wuppertal-Elberfeld, and Gernot Rottmann, Wermelskirchen, both of Germany, assignors to Joh. Vaillant KG

Filed Oct. 18, 1971, Ser. No. 190,094

Claims priority, application Germany, April 8, 1971, P 21 17 222.9; Austria, Nov. 4, 1970, 9940/70

Int. Cl. F22b *27/06*

U.S. Cl. 122—250 R **7 Claims**



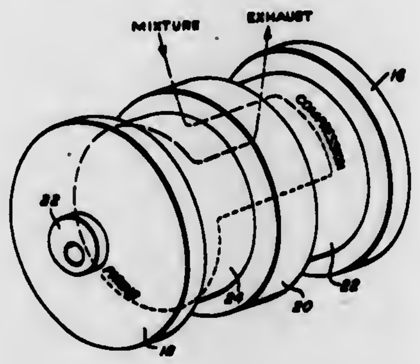
A plurality of iron tubes are positioned horizontal, parallel and across the top of a combustion chamber. An outer frame holds the tubes and directs the products of combustion about the outer side of the tubes. The interiors of the tubes are connected in series. The tubes are rectangular in cross-section. The first and last tubes of the series have their outer sides abutting and welded to adjacent sides of the frame. On these first and last tubes there are fins extending about only the top and the sides opposite said outer sides. Said fins are welded to the tube and to the frame. On the intermediate tubes there are fins extending about only the vertical sides and top sides of the tubes and being welded thereto.

3,726,259
ROTARY INTERNAL COMBUSTION ENGINE

Paul D. Graves, c/o Chesterfield Yarn Mills Inc., P.O. Box 127, Pageland, S.C.

Filed Jan. 14, 1971, Ser. No. 106,354
Int. Cl. F02b *53/08*

U.S. Cl. 123—8.23 **7 Claims**



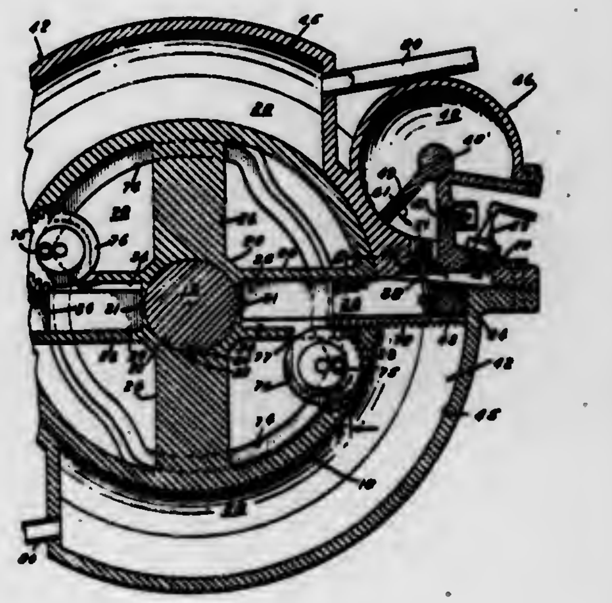
A rotary internal combustion engine including a substantially cylindrical casing closed by removable end plates and divided into a compressor portion and a power portion by a central partition with the partition and end plates journalling a shaft in eccentric relation to the center of the casing with the shaft supporting a pair of rotors thereon in concentric relation to the shaft and in eccentric relation to the two compartments formed by the partition. Each rotor includes a plurality of radial vanes guidingly and slidably received in slots in the rotor with the radial movement of the vanes being restrained by an annular ring journalled on bearing surfaces concentric with the casing to restrain the vanes from engaging the interior of the casing due to centrifugal forces exerted thereon during rotation of the rotor. The partition includes passageways admitting a combustible mixture into the compressor compartment, transfer of the compressed combustible mixture into the power compartment, a passageway receiving an igniting device for igniting the combustible mixture between adjacent vanes to apply torque to the rotor and shaft, and a passageway enabling exhaust of combustion products after expansion thereof.

3,726,260
ROTARY COMBUSTION RECIPROCATING PISTON ENGINE

Chu Yuen Sheung, 5429 11th Avenue, Los Angeles, Calif.

Filed Feb. 8, 1971, Ser. No. 113,459
Int. Cl. F02b *53/06*

U.S. Cl. 123—8.31 **6 Claims**



This disclosure is directed to an internal combustion rotary engine having a plurality of rotating piston plates slidably mounted to reciprocate during rotation of the rotor wheel housing which is adapted to receive the piston plates. For each piston arrangement there is a corresponding compressor assembly for compressing fuel into a combustion chamber wherein the fuel is ignited in a conventional manner. Each piston is provided with a piston control gear whereby the piston plates may be positioned within the rotary housing to cause the proper stable rotation thereof. A piston cylinder is formed by the channel portions of the rotor housing and a corresponding stationary channel housing wherein the piston plate may travel along the piston cylinder's radial length, thereby causing rotation of the central drive shaft.

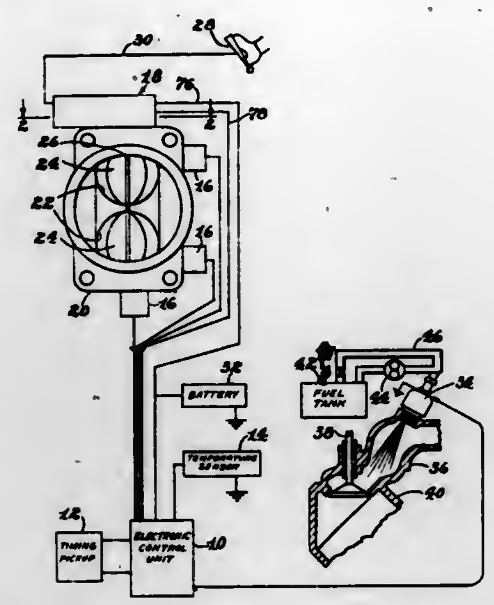
3,726,261
ACCELERATION ENRICHMENT SIGNALLING MEANS FOR ELECTRONIC FUEL SYSTEMS

Rudolf G. Sauer, Ithaca, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 25, 1971, Ser. No. 109,278
Int. Cl. F02m *51/00*

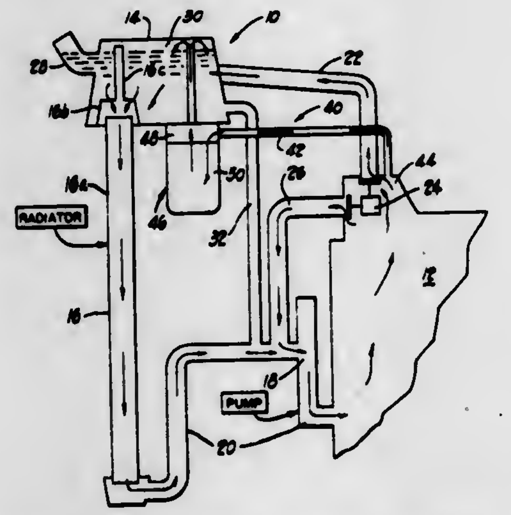
U.S. Cl. 123—32 EA **3 Claims**

An acceleration enrichment signalling means for a fuel system used to supply fuel to an internal combustion engine in which the additional fuel requirement signal is generated so that additional fuel may be provided to the engine before air flow to the engine increases. The present invention provides mechanical and electrical means for working in combination with specialized circuitry to provide an increase in the fuel flow to the engine prior to any increase in air flow to thereby prevent any discontinuity in engine operation which may be caused by lags in fuel flow due to the electrical and mechanical characteristics of the main fuel system and of the engine.



3,726,262
ENGINE COOLING SYSTEM

Charles L. Moon, Brecksville, Ohio, assignor to White Motor Corporation, Cleveland, Ohio
Filed Dec. 9, 1970, Ser. No. 96,302
Int. Cl. F28f *19/00*
U.S. Cl. 123—41.1 13 Claims

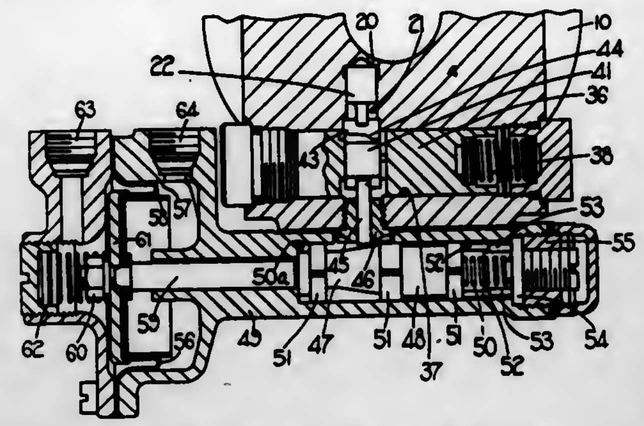


A cooling system for an internal combustion engine includes a coolant treatment system connected in a coolant degassing line between the engine and a coolant tank in the system. The coolant treatment system includes a throw-away filter and when the filter has been removed or is clogged, flow through the degassing conduit to the tank is uninterrupted.

3,726,263
LIQUID FUEL PUMPING APPARATUS

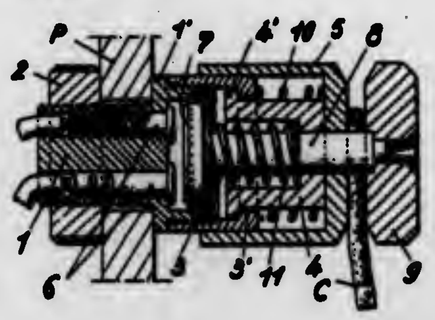
Kenneth Albert Walters Kemp, 26a Castlebar Park, London, England
Filed March 15, 1971, Ser. No. 124,181
Claims priority, application Great Britain, March 18, 1970, 12,927/70
Int. Cl. F02m *39/00;* F02d *1/04*
U.S. Cl. 123—139 BD 4 Claims

A liquid fuel pumping apparatus including a shuttle the excursion of which determines the maximum quantity of fuel which can be supplied to an engine, the extent of outward movement of the shuttle being omitted by a stop in the form of a piece having a contoured surface, the stop being mounted in a fluid pressure operable piston. The position of the piston depends upon the speed at which the apparatus is driven. In addition the setting of the piece is determined by axially movable member the axial position of which is determined by a diaphragm to which is applied air under pressure from the inlet manifold of the associated engine.



3,726,264
SAFETY STOPPING DEVICE FOR MARINE ENGINES

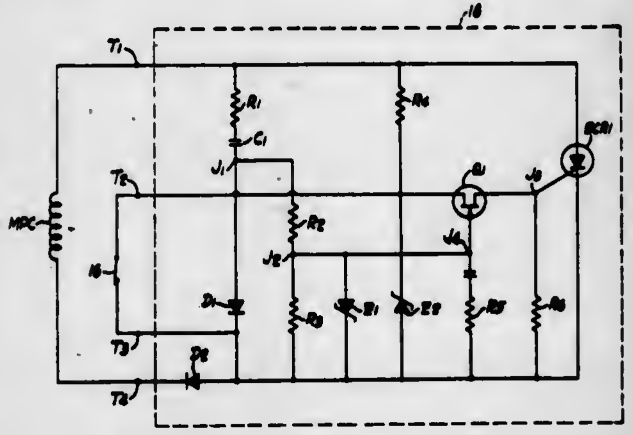
Alice Louise Rosalie Lariviere, widow Giroux, 55, rue de Turbigo, Paris, France
Filed March 24, 1971, Ser. No. 127,526
Int. Cl. B60l *3/02;* F02p *11/06*
U.S. Cl. 123—148 S 7 Claims



The present invention refers to a safety stopping device for marine engines and employs a cord connected at one end to the pilot of the boat and at its other end to the safety device for the grounding of the ignition circuit of the engine either by operating a pushbutton, or by ripping off said cord held between said pushbutton and a retaining head traversing said button and connected by a stem to a metallic head capable by its axial movement to connect two fixed contact terminals interposed in said ignition circuit.

3,726,265
IGNITION MAGNETO SAFETY INTERLOCK

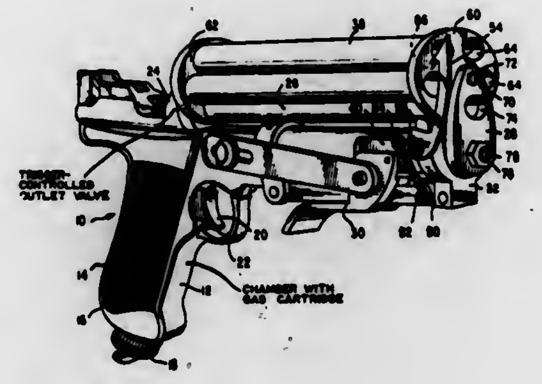
William A. Howard, Novelty, Ohio, assignor to BRI Corporation, Cleveland, Ohio
Filed March 18, 1971, Ser. No. 125,538
Int. Cl. F02n *17/00;* F02b *77/00;* F02p *9/00*
U.S. Cl. 123—179 K 27 Claims



Circuits for controlling the starting of an internal combustion engine that has a magneto ignition system including a primary winding that can be shorted to prevent ignition. The circuits include a position-responsive switch and an electronically controlled switch to selectively control a shorting switch that is, in use, connected across the primary winding of a magneto. In the preferred arrangement, the shorting switch is normally nonconductive and is maintained nonconductive (1) when the position-responsive switch is closed, indicative of a condition in which it is acceptable to start the engine, or (2) when the electronically controlled switch is changed from its normal level of conductivity in response to the running of the engine. When the position-responsive switch is opened before the motor is started, the normal condition of the electronically controlled switch permits the shorting switch to be made conductive by the spark producing pulse and thereby prevents ignition. The position-responsive switch is actuated through a transmission of the engine being controlled and in the embodiment shown is normally closed when the transmission is in neutral.

3,726,266
GAS-OPERATED MULTIPLE SHOT PROJECTILE FIRING DEVICE

Harold C. Palmer, Douglasville, Ga., assignor to Palmer Chemical & Equipment Company, Inc., Douglasville, Ga.
Filed Oct. 28, 1970, Ser. No. 84,854
Int. Cl. F41b *11/06;* F41f *1/04;* F41c *21/00*
U.S. Cl. 124—11 R 7 Claims

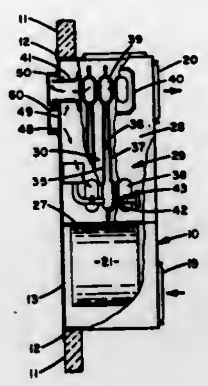


A gas-operated multiple shot projectile firing device with a circular and rotatable magazine which includes a plurality of chambers, each of which holds a dart-like projectile. A lever is associated with the projectile device and performs the dual function of cocking the firing mechanism and rotating the dart-filled magazine such that a plurality of projectiles can be successively fired upon a single loading. The device is particularly suited for short range firing and may be designed for dart projectiles of various calibers.

3,726,267
FLUE GAS VENTING ARRANGEMENT

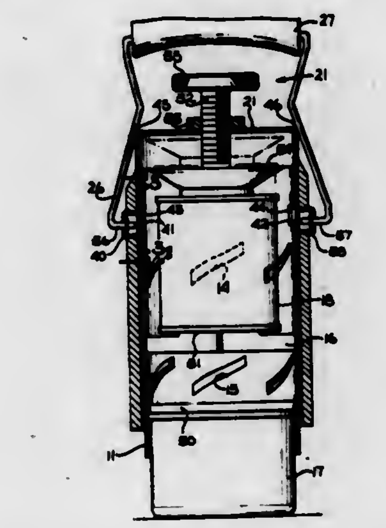
Adrian V. Cavestany, Pasadena, and Issac Berger, Hacienda Heights, both of Calif., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 6, 1971, Ser. No. 205,228
Int. Cl. E04f *17/02*
U.S. Cl. 126—85 B 4 Claims

A gas furnace having a combustion air compartment sealed from an air heating compartment therein, is provided with an air inlet opening communicating with the combustion air compartment and a flue gas outlet tube projecting outwardly from the front side of the furnace housing. A relief air opening communicating with the combustion air compartment is provided in the side of the housing adjacent to the flue gas outlet tube. A flue gas cap is disposed on the side of the housing over the flue gas outlet tube and the relief air opening. The flue gas cap has an internal baffle parallel with the side of the housing and spaced therefrom to form a buffer air passage. The flue gas outlet tube extends through the parallel baffle so that flue gas is discharged on the side of the parallel baffle away from the housing and escapes through the ends of the flue gas cap. Air from the combustion air compartment passes outwardly from the housing through the relief air openings into the buffer passage and escapes from the sides of the flue gas cap to form a rising curtain of air which inhibits the flue gas from directly contacting the side of the furnace housing, thereby reducing scorching of the paint.



3,726,268
COOKING APPARATUS

Rex L. Stansell, 411 W. Lexington Drive, Glendale, Calif.
Filed May 3, 1971, Ser. No. 139,504
Int. Cl. A47g *23/04*
U.S. Cl. 126—262 11 Claims

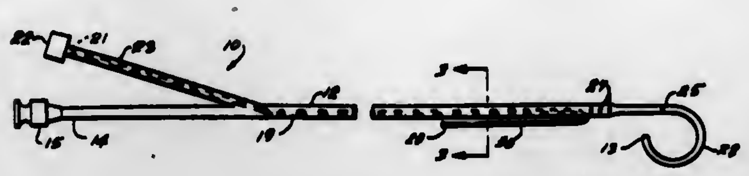


A cooking apparatus is disclosed herein having a pair of coaxial telescoping sleeves formed with a plurality of slits or openings adapted to be in or out of registry by sliding the sleeves relative to one another. The inner sleeve of the pair includes a platform midway between its opposite ends for defining a heating chamber on one side and a food container chamber on the other side thereof. An adjustable securement mechanism is carried on one end of the outer sleeve which is responsive to expansion of the heated container for extinguishing ignited fuel in the heating chamber terminating the cooking procedure.

3,726,269
CARDIOVASCULAR CATHETER FOR THERMAL DILUTION MEASUREMENT

Wilton W. Webster, Jr., P.O. Box 237, Altadena, Calif.
Filed Nov. 24, 1971, Ser. No. 201,791
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 F 19 Claims

A catheter for use in measuring blood massflow or ventricular volume by thermal dilution techniques is of the double lumen type in which the inner lumen is of very small diameter and is essentially flaccid. The inner lumen extends for the major portion of its length along a coolant liquid flow passage formed in a larger, more robust outer lumen of the catheter, but terminates in an anterior terminal portion outside the outer lumen adjacent the anterior end of the catheter. Apertures are formed through the outer lumen from the coolant flow passage. A dilution temperature sensor, such as a thermistor, is carried by the external anterior portion of the inner lumen in such relation to the apertures that the sensor is spaced from the apertures along a blood vessel, for example, regardless of whether the anterior terminal portion of the outer lumen trails back along the catheter in retrograde flow cases or forwardly toward the anterior end of the catheter in antegrade flow cases. The posterior end of the catheter carries means for injecting coolant liquid into the outer lumen and for connecting the temperature sensor to appropriate readout equipment, such as Wheatstone bridge circuit.

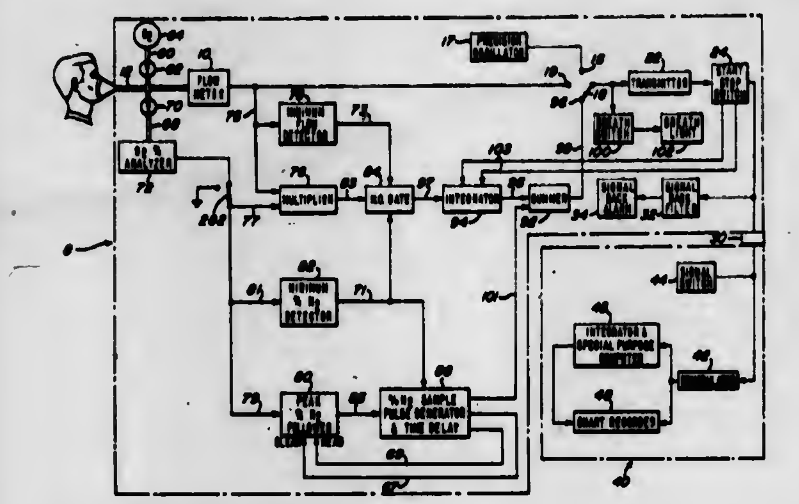


3,726,270
PULMONARY INFORMATION TRANSMISSION SYSTEM

Roy A. Griffis; L. Thomas Rauterkus, and Terence Torzala, all of Dayton, Ohio, assignors to Systems-Research Laboratories, Inc., Tran-Med Systems Inc., both of Dayton, Ohio, part interest to each

Filed Sept. 20, 1971, Ser. No. 182,053
Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **22 Claims**



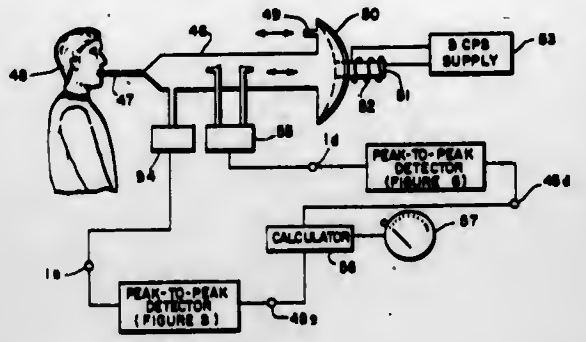
A system by which signals pertaining to the pulmonary condition of a patient are transmitted to a location which is remote from the location of the patient. The signals are transmitted as the patient is being tested. pulmonary information in the form of spirometry data and total lung capacity volume are transmitted by means of telephone lines or the like to a location remote from the patient, and at the remote location the transmitted information may be studied by a person who is well acquainted in the art of analysis of such information. Patients at various locations provide information to a central location at which studies of the information are conducted. Thus, a specialist in the art of such studies is in a position to receive information from various patients who may be located at numerous widespread places and who may be many miles from the specialist.

3,726,271
SPIROMETER WITH AUTOMATIC ELECTRONIC ZEROING CIRCUIT

William G. Mondshine, and Charles D. Bishop, both of Houston, Tex., assignors to Cardio-Pulmonary Instrument Corporation, Houston, Tex.

Filed July 2, 1970, Ser. No. 51,906
Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **4 Claims**


9 CPS SUPPLY
PEAK-TO-PEAK DETECTOR (FIGURE 6)
CALCULATOR
PEAK-TO-PEAK DETECTOR (FIGURE 8)
46
47
48
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52
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56
57
18
48a
48b

A pulmonary function measuring system incorporating an automatic electronic zeroing circuit to provide accurate pulmonary measurements irrespective of any initial offset value. The system eliminates tedious and inaccurate manual calibration and is adapted for use in air volume, pressure and flow measurements such as in spirometric-plethyamographic systems.

3,726,272
ENDOSCOPE

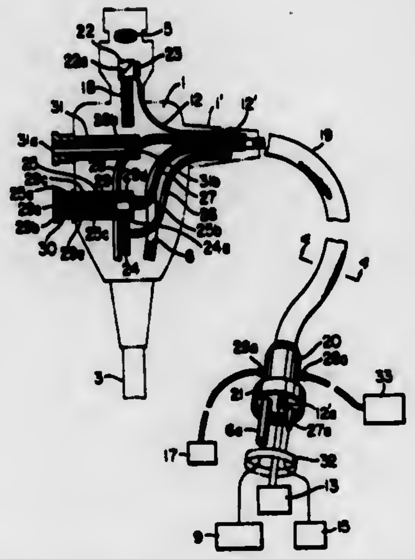
Masaharu Fukami; Masaki Sato, and Toshiyuki Mori, all of Tokyo, Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 760,151, Sept. 17, 1968, abandoned. This application March 27, 1971, Ser. No. 126,941

Claims priority, application Japan, Sept. 21, 1967, 42/80171; Feb. 1, 1968, 42/6414

Int. Cl. A61b *1/06*

U.S. Cl. 128—6 **7 Claims**



An endoscope comprising a control housing and a forward end portion connected to said control housing by an elongated tube and adapted to be inserted into a hollow portion of a living body for inspection and/or photographing thereof. The endoscope comprises a flexible sheath secured at its one end to the control housing and various extension means of the endoscope to be connected to the respective various exterior devices for effecting various functions such as for illuminating the object, supplying air and/or water into the hollow portion into which the forward end portion of the endoscope is inserted, sucking undesired material such as phlegm out of the hollow portion, and controlling the photographing device of the endoscope for the proper exposure are extended together through the flexible sheath from the control housing to the free outer end of the flexible sheath. The various extension means are connected to the respective corresponding exterior devices at the free outer end of the flexible sheath so that the entanglement of the various extension means during the operation of the endoscope is prevented while the connection of the extension means to the respective exterior devices is facilitated.

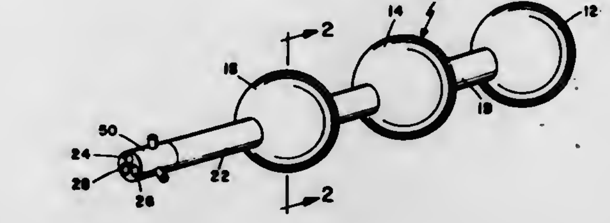
An air supplying device for use with an endoscope for supplying desired quantity of air into a hollow portion of a living body into which the forward end portion of the endoscope is inserted for the inspection thereof so that the hollow portion is inflated appropriately for the proper inspection and/or photographing of the hollow portion. The air supplying device comprises a foot switch, a timer and an air pump actuated by closing the foot switch through the timer for supplying air to the endoscope to which the air pump is connected. The timer is actuated each time the foot switch is closed for actuating the air pump so that the timer deenergizes the air pump after a predetermined time period set in the timer so that a predetermined quantity air is supplied to the endoscope each time the foot switch is closed while the air pump is stopped at any desired moment during the actuation of the timer by opening the foot switch so that the excess quantity of air is prevented from being supplied to the endoscope.

3,726,273
MUSCLE EXERCISING DEVICE

Ned S. Cole, 770 Boiling Springs Tract, Mount Laguna, Calif.

Filed July 21, 1971, Ser. No. 164,706
Int. Cl. A61b *5/00*

U.S. Cl. 128—2 S **11 Claims**



A muscle exercising device for exercising the muscles of the vagina, which device has a plurality of separated, flexible, inflatable bulbs that are interconnected and supported by a stem of connecting tubes. The muscular pressures in separate zones of the vagina muscles contract the bulbs causing a change in pressure in the bulbs that is detected by pressure detecting devices connected to the tubes. The pressure transducers or bulbs facilitate tactile cognizance and show the contraction pressures.

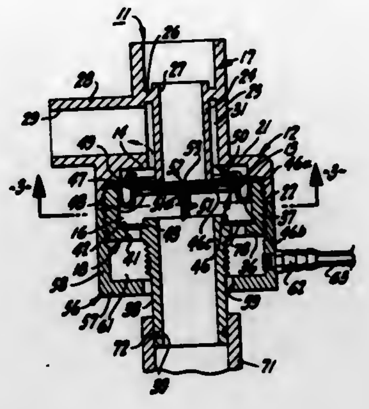
3,726,274
NON-REBREATHING VALVE ASSEMBLY AND COMPRESSION BULB RESUSCITATOR USING SAME

Forrest M. Bird, 212 N.W. Cerritos, and Henry L. Pohndorf, Mark 7, both of Palm Springs, Calif.

Filed Sept. 27, 1971, Ser. No. 183,823
Int. Cl. A62b *7/00*

U.S. Cl. 128—145.8 **25 Claims**

A non-rebreathing valve assembly having a body formed of first and second parts with a circular diaphragm assembly disposed between the parts. The diaphragm assembly has a flexible circular diaphragm having its outer margin secured to the first and second parts. The diaphragm is provided with a plurality of holes spaced between the inner portion and the outer margin of the diaphragm which are normally closed by a one-way flapper valve member carried by the diaphragm assembly. The first part is provided with a centrally disposed exhaust opening which is adapted to be closed by the diaphragm assembly. The first part is also provided with a flow passage adapted to be placed in communication with a patient and with said holes in said diaphragm when said flapper valve is in open position. The second part has an inlet opening which is in communication with the other side of the diaphragm assembly. The second part if provided with a plurality of



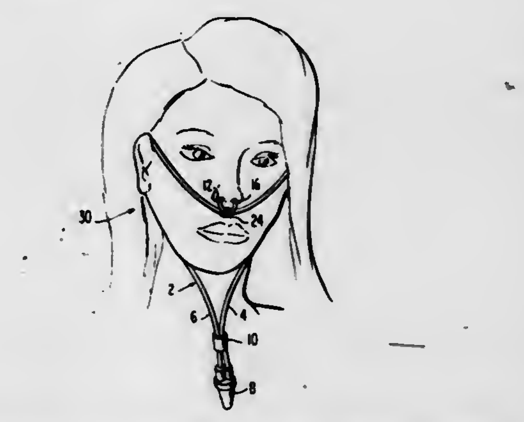
openings which open to ambient. A one-way flapper valve is carried by the second part and normally closes the openings. When utilized as a resuscitator, a compression bulb is secured to the inlet of the second part. For automatic operation, the inlet, in addition, is secured to a source of gas under pressure which is controlled by a controller.

3,726,275
NASAL CANNULAE

Isaac S. Jackson, Hook Road, Greenwich, and David S. Sheridan, RFD No. 3, Argyle, both of N.Y., assignor to Said Sheridan by said Jackson

Filed Dec. 14, 1971, Ser. No. 207,930
Int. Cl. A61m *15/08*

U.S. Cl. 128—206 **4 Claims**



Nasal cannulae are formed of two flexible narine tubes which are permanently bent near their outlet ends and fixed together at the bends in a cross-over arrangement that creates a nares entrance unit without use of a bridge member or similar tube holding means. Such nasal cannulae are extremely light and inconspicuous providing maximum comfort during use for administration of oxygen or other gas into the nares of a person.

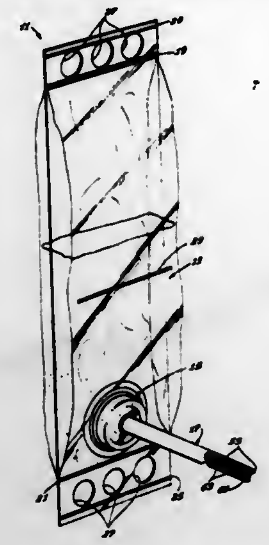
3,726,276
DISPOSABLE SYRINGE

Joseph M. Schumann, Redondo Beach; Paul J. Stayboldt, Los Angeles, and John Alphonso Corbin, Redondo Beach, all of Calif., assignors to Trionics, Inc., Torrance, Calif.

Filed March 22, 1971, Ser. No. 126,410
Int. Cl. A61m *3/00*

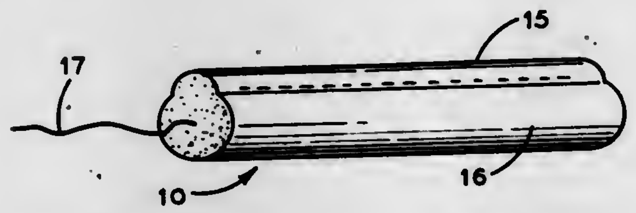
U.S. Cl. 128—227 **21 Claims**

A disposable syringe comprising a collapsible bag, a nozzle mounted on the bag, and an openable compartment on the bag for containing an ingredient. The compartment has an aperture for receiving the base of the nozzle and a portion of the compartment is accessible through the aperture to permit opening of the compartment to expose the ingredient therein to the interior of the bag.



3,726,277
FEMININE HYGIENIC PAD

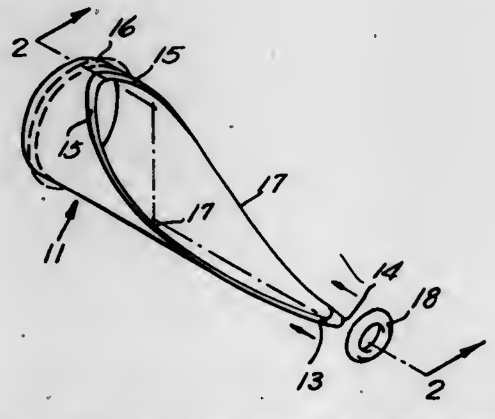
Shalom Z. Hirschman, 110-11 Queens Boulevard, Forest Hills, N.Y.
Filed Aug. 31, 1970, Ser. No. 68,301
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 5 Claims



A feminine hygienic pad having a configuration for locating the same in the area of the female urethral meatus for absorbing urine and the like, as an incident to stress incontinence, together with dimensional parameters which may be of an order to locate the pad in the area of the vaginal orifice for absorbing vaginal secretions or discharges; or, to extend such pad so as to receive and absorb discharges from both the meatus and the vaginal orifice.

3,726,278
DOCKING DEVICE FOR YOUNG ANIMALS

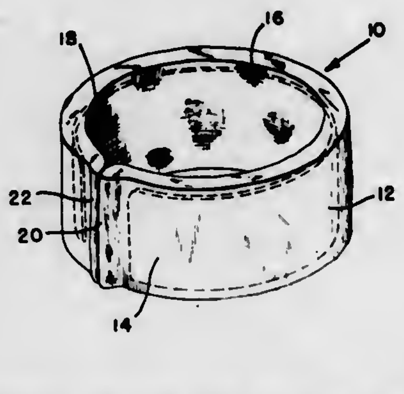
Fred W. Scott, R.D. No. 3, Bellville, Ohio
Filed March 26, 1971, Ser. No. 128,265
Int. Cl. A61b *17/00*
U.S. Cl. 128—303 A 2 Claims



A device for expanding elastic rings so that they can be transferred to an appendage of an animal for ultimate removal of the appendage. The device consists of an originally cylindrical tube which is adapted to fit over the appendage. The forward portion of the tube is cut away to define a tapered front point and side walls having upwardly and rearwardly inclined upwardly concave top edges leading to the cylindrical rear end portion of the tube to facilitate the mounting of the elastic rings on the rear end of the tube, from which they can be rolled off to embrace the appendage to be removed.

3,726,279
HEMOSTATIC VASCULAR CUFF

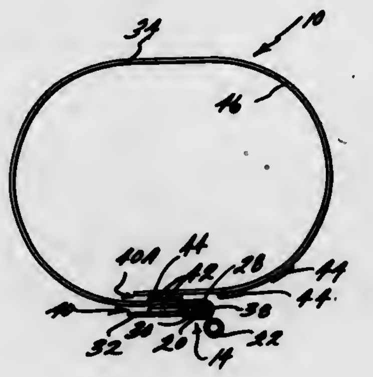
Charles A. Barefoot, Winston-Salem, N.C., and Bryn T. Williams, Birmingham, England, assignors to Carolina Medical Electronics, Inc., King, N.C.
Filed Oct. 8, 1970, Ser. No. 79,115
Int. Cl. A61b *17/12*
U.S. Cl. 128—327 3 Claims



A hemostatic vascular cuff for controlling hemorrhage to induce tissue healing and reinforcing vessel walls embodying preferably an open section and resilient annulus which is nonreactive to biological tissues. The cuff can be constructed to encircle and remain secured to blood vessels and organs during expansion and contraction and yet continually exert gentle pressure thereagainst. The cuff may be provided with an inner antiskid surface for contact with slippery vessel or organ walls and may be further secured about the vessel or organ by connecting the free ends of the annulus with dissolvable sutures or other suitable means.

3,726,280
CATHETER SUPPORT

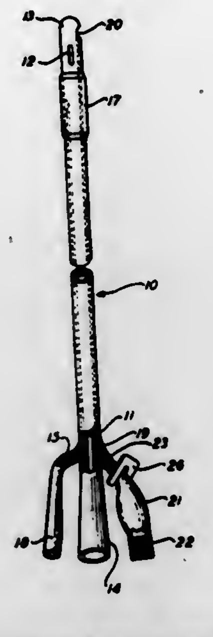
Allen L. Lacount, 1725 N. 18th Street, Grand Junction, Colo.
Filed May 28, 1971, Ser. No. 147,792
Int. Cl. A61m *25/02*
U.S. Cl. 128—349 R 3 Claims



This invention relates to a catheter support comprising an elongate elastic band carrying a pair of two-part fastener sets adapted when fastened to define a small tube-receiving loop and a larger limb-receiving loop arranged in figure "8" relation to one another.

3,726,281
SELF-LUBRICATING CATHETER

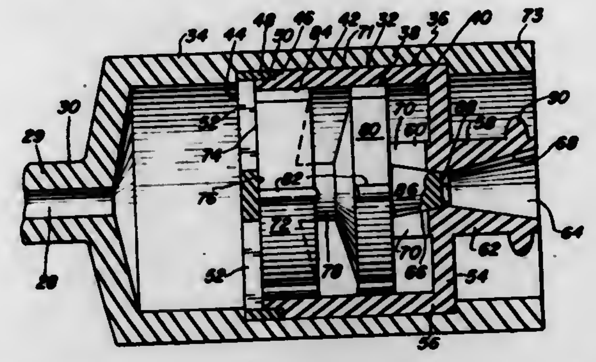
William J. Norton, Berkeley Heights, and Keith Ferguson, Rutherford, both of N.J., assignors to C. R. Bard Inc., Murray Hill, N.J.
Filed Dec. 8, 1971, Ser. No. 205,827
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 R 8 Claims



A urinary catheter provided with a lubrication lumen extending from an eye adjacent the distal tip to a reservoir adjacent the drainage funnel, with means for permitting, causing and controlling the flow of lubricant from the reservoir to the eye as the catheter is inserted into a patient.

3,726,282
INFLATION VALVE FOR CATHETER RETENTION BALLOON

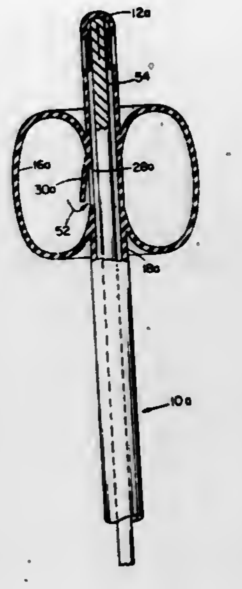
Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Sept. 30, 1971, Ser. No. 185,018
Int. Cl. A61m *25/02*
U.S. Cl. 128—349 BV 8 Claims



An inflation valve for a retention balloon in a catheter having an inflation lumen communicating with the balloon. The valve has a housing defining a chamber, opening means at one end of the housing communicating between the chamber and the inflation lumen, and an inwardly directed flange at the other end of the housing. A rim is secured to the flange and has a first portion projecting into the chamber, a second portion projecting outwardly from the flange, and a tapered passageway extending through the rim. The valve also includes a compressible plug received in the chamber and having a first shoulder, a neck extending from the first shoulder, a second shoulder extending from the neck, and a tapered stopper extending from the second shoulder and received in the passageway. The plug biases the stopper against the tapered portion of the passageway in sealing engagement to prevent passage of fluid from the chamber, and the plug compresses responsive to the insertion of a syringe tip into the passageway from its outer end to permit passage of fluid from the syringe into the chamber and inflation lumen.

3,726,283
BODY-RETAINED CATHETER

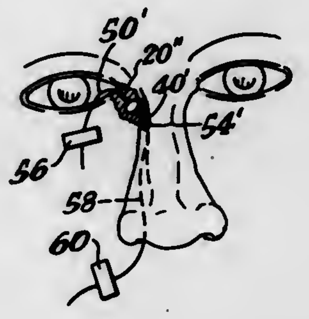
John F. Dye, and William J. Binard, both of Barrington, Ill., assignors to The Kendall Company, Boston, Mass.
Filed Oct. 7, 1971, Ser. No. 187,370
Int. Cl. A61m *25/00, 31/00*; A61b *17/34*
U.S. Cl. 128—349 BV 17 Claims



An improved Foley-type catheter which is inflated through the drainage lumen. One-way valves separating both the retention balloon and the drainage lumen eyes from the drainage lumen permit a permanent, flexible and unobstructed construction of the catheter which thus lacks side arms and separate inflation lumen. An alternative arrangement provides for both inflation and deflation of the balloon through both the drainage lumen and a short passageway in the distal end of the catheter.

3,726,284
REPLACEMENT TUBE FOR THE LACRIMAL DRAINAGE DUCTS

Ralph W. Parker, 908 Frey Road, Pittsburgh, Pa.
Filed April 5, 1971, Ser. No. 131,269
Int. Cl. A61m *25/00*
U.S. Cl. 128—350 R 20 Claims

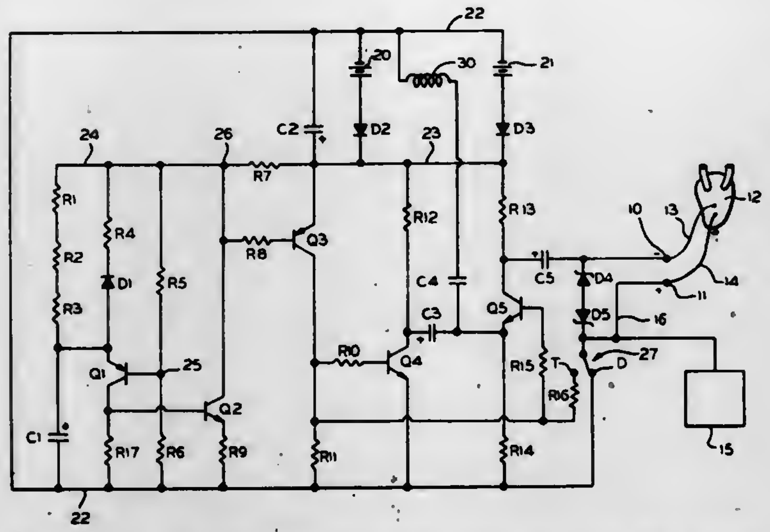


A replacement tube for the lacrimal drainage ducts includes a pair of elongated end portions. An expanded portion having a drain passage adjoins adjacent ends respectively of the end portions. Each of the end portions has a drain passage extending therethrough and communicating with the drain passage of the expanded portion. The expanded portion forms relatively abrupt junctions at generally opposite sides thereof with the end portions to prevent rejection of the replacement tube.

3,726,285
BODY ORGAN STIMULUS PULSE GENERATOR WITH DECOUPLED TIMING CIRCUIT AND VOLTAGE MULTIPLIER

David L. Bowers, and Theodore P. Adams, both of Wauwatosa, Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed April 26, 1971, Ser. No. 137,545
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **16 Claims**

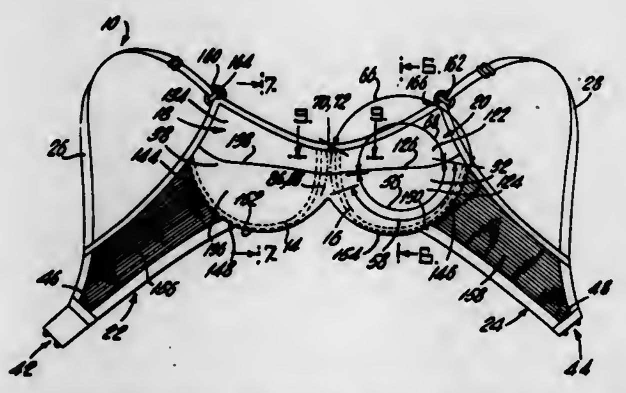


A timing circuit establishes pulse repetition rate and pulse width and cooperates with a pulse generating output circuit which delivers to an organ a series of stimulating pulses at one of several available pulse energy levels. Low voltage d-c sources are used for driving the timing and output circuits. The output circuit is adapted to selectively double or triple the source voltage and raise the output pulse amplitude to above the response threshold of the organ with an adequate margin of safety. Interaction between the pulse timing and output circuits is minimized. An externally operable magnetic reed switch is used to transfer the stimulus pulse generator from the doubler to the tripler mode.

3,726,286
UNDERWIRE BRASSIERE

Frank C. Wolfson, New York, N.Y., assignor to International Playtex Corporation, New York, N.Y.

Filed May 10, 1971, Ser. No. 141,470
Int. Cl. A41c *1/14*
U.S. Cl. 128—473 **8 Claims**

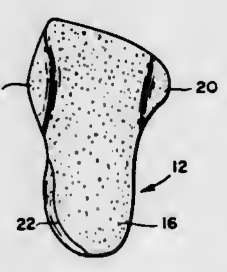


A brassiere is disclosed in which each of the breast cups thereof includes inner and outer layers of material between which is defined an interior pocket. The pocket of each cup contains a stiffening means, preferably in the form of a generally U-shaped fabric enclosed underbust wire stay. Preferably, such stiffening means are secured for a major portion of their length to lower edge portions of the inner and outer layers of the breast cups which edge portions extend into the aforedescribed pockets whereby each stiffening means is free to float with respect to the major surface area of the inner and outer layers of each breast cup. Minor portions of the lengths of each stiffening means are loosely joined to one another (through a fabric joining member) but are free to float within a passageway joining the interior pocket of each breast cup. In this manner, the brassiere of the invention is free to accomodate itself to the size and shape of the bust of the wearer rather than restraining the bust in the manner of a conventional wire bra. A horizontally seamed breast cup construction which eliminates the vertical center section of a typical wire bra further permits the bra of the invention to adopt itself to a woman's bust and provide in a wire bra the newer, soft, unaccentuated look.

3,726,287
SHOE CONSTRUCTION WITH FOOT-STABILIZING APPLIANCE

Simon J. Wikler, 423 N. Federal Highway, Hollywood, Fla.

Filed July 16, 1970, Ser. No. 55,405
Int. Cl. A61f *5/14*
U.S. Cl. 128—617 **13 Claims**



To stabilize the foot against movement within the foot-receiving cavity of the shoe, and particularly fore and aft movement, abutments are located at the outer and inner sides thereof, extending upwardly from the region of the insole to engage the foot. One abutment is located at the outer side with its rearward foot-engaging extremity positioned in front of the tuberosity of the fifth metatarsal and its forward foot-engaging extremity positioned behind the fifth metatarsal phalangeal joint. A second abutment is located so as to engage the foot at the region of the inner arch, with the forward foot-engaging extremity of this abutment located behind the first metatarsal phalangeal joint and the rearward foot-engaging extremity located at the scaphoid. A third abutment is located to engage the back and inside of the heel of the foot, with the rearward foot-engaging extremity of this abutment located at the middle of the back of the heel and the forward foot-engaging extremity located in the talus-scaphoid joint region.

3,726,288
PROCESS FOR SETTING HAIR USING A PREPARATION COMPRISING A SINGLE FIXATIVE-THICKENER

Frank A. Nowak, Bound Brook; Albert L. Micchelli, Middletown, and Gerard J. Legato, Stirling, all of N.J., assignors to National Starch and Chemical Company, New York, N.Y.

Filed Aug. 4, 1971, Ser. No. 169,148
Int. Cl. A45d *7/04*
U.S. Cl. 132—7 **6 Claims**

A process for setting hair is disclosed comprising the steps of applying to the hair an aqueous or aqueous-alcoholic solution of an interpolymer which functions both as a fixative for the hair and a thickening agent for the preparation, setting the hair in the desired configuration, and allowing the hair to dry while it is retained in the desired configuration.

3,726,289
HAIR TREATING APPARATUS AND METHOD

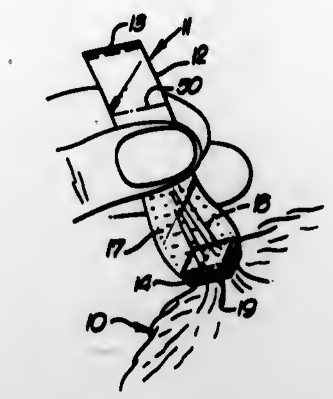
Russell L. Thompson, 3101 Third Ave., Corona Del Mar, Calif.

Filed May 17, 1971, Ser. No. 144,005
Int. Cl. A45d *19/00*
U.S. Cl. 132—9 **6 Claims**

A method of treating human hair and employing a pressure displaceable treating agent in a collapsible flexible container, comprises:

a. locally confining hair strand in said container out of contact with said agent,

b. progressively collapsing said container along a path such



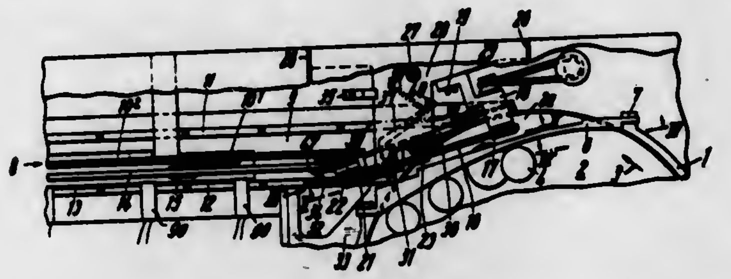
that the agent is displaced toward and into contact with the confined hair strands, and

c. thereafter effecting removal of the confined hair strands from the container.

3,726,290
DEVICE FOR SEPARATING DISC-LIKE OBJECTS, PARTICULARLY COINS

Gert Zimmermann, Auf dem Grat 28-30, Berlin, Germany

Filed March 27, 1972, Ser. No. 238,494
Claims priority, application Germany, April 22, 1971, P 21 20 353.2
Int. Cl. G07d *3/00*
U.S. Cl. 133—3 R **8 Claims**

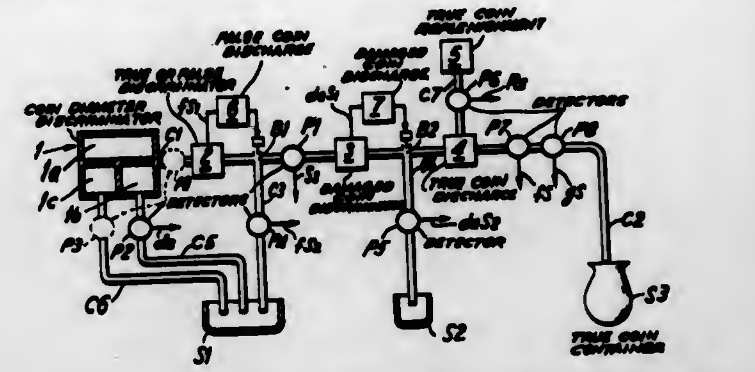


A device for sorting disc-like objects, particularly coins, comprises a rotatable centrifugal plate onto which the objects to be separated or sorted are placed. One portion of the periphery of the plate defines a discharge for the separated coins which move below a stripper bar which is located to overlie a portion of the periphery of the plate and permit objects of a thickness below a maximum selected thickness to pass below the stripper and through the discharge. A guide track is arranged to extend substantially to the periphery of the plate at the discharge and a plurality of dropout openings for objects of various size are located at spaced locations along the length of the track. In addition, a relatively large size dropout opening and collecting chute is located a slight distance away from the periphery of the plate in a position to receive coins which are fed below the stripper in an overlapping condition. For this purpose, the track includes a guide bar which runs along one side of the track and against which the coins are directed and which includes a flat step wall portion of a thickness corresponding to the minimum thickness of an object to be sorted. The mechanism includes a first conveyor which overlies the plate at the discharge and engages and feeds coins into the discharge obliquely toward engagement against the running edge. When any coins are fed which are in an overlapping relationship with one on top of the other, the uppermost one is fed by the conveyor over the step wall and into the overlying coin receiving opening. The device includes a transfer conveyor for moving the coins delivered against the running edge in an initial movement along the trackway and a second conveyor which moves them completely along the trackway until they fall down an opening corresponding to the size thereof.

3,726,291
AUTOMATIC COIN DISPOSING SYSTEM

Masami Onda, Chita, and Kazutaka Ogasawara, Tsushima, both of Japan, assignors to Mitsubishi Tukogyo Habushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1971, Ser. No. 208,338
Claims priority, application Japan, Dec. 29, 1970, 45/128032
Int. Cl. G07d *5/00*
U.S. Cl. 133—4 R **5 Claims**

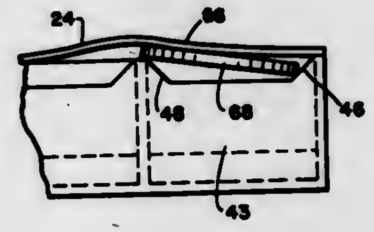


The system comprises a discriminator, operable to check coins as to their relative dimensions or diameters, and to reject coins not having the proper relative dimensions or diameters, a discrimination path extending from the discriminator, and a true coin receiver at the end of the path. A true or false discriminator checks coins, passing along the path, as to whether they are genuine or counterfeit, and rejects and discharges counterfeit coins. This is followed by a damaged coin detector which detects damaged coins and discharges the same, after which the coins pass to a genuine coin discharge coupled to a genuine coin replenisher. The replenisher operates to supply, to the true or genuine coin receiver, a number of coins equal to the number of coins rejected and discharged by the true or false detector and the damaged coin detector. Interrelated control circuits, signal lamps and counters are provided. The dispensing operation is terminated when a predetermined number of coins have been dispensed, the termination of the dispensing operation requiring agreement between two successive detectors positioned along a discrimination path immediately in advance of the genuine coin receiver.

3,726,292
POCKET COIN DISPENSER

Conrad N. Larson, Admiral Hotel, 608 O'Farrell Street, San Francisco, Calif.

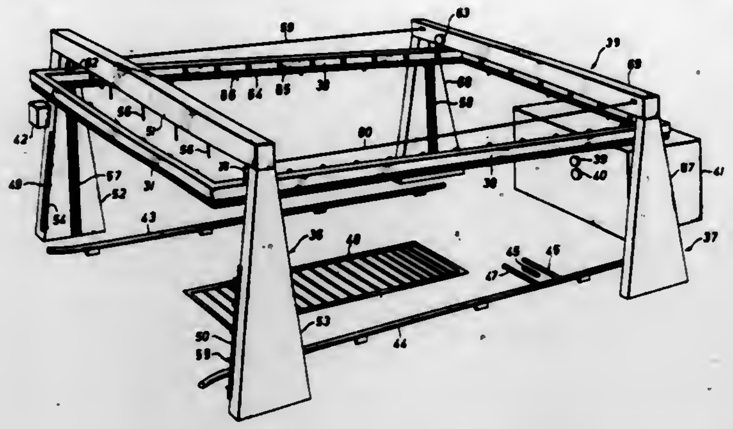
Filed March 10, 1971, Ser. No. 122,848
Int. Cl. G07d *1/00*
U.S. Cl. 133—6 **3 Claims**



An apparatus for containing and dispensing coins of different denominations. An apparatus having separate compartments to store each size coins. Access to each compartment is afforded through a separate slot located in the walls of the dispenser. Each access slot has two upwardly diverging lateral sides and is open at the top of the wall. Covering the dispenser across the top of both the walls and slots is a deformable cover which prevents the coins from being inadvertently passed through the slots. During insertion and withdrawal through the slot, the coin makes both horizontal sliding and pivotal contact along the lateral sides of the slot and also slides upward along their diverging sides. This upward motion causes the deformable cover to flex and thereby to effect passage of the coin.

3,726,293
VEHICLE CLEANING SYSTEM

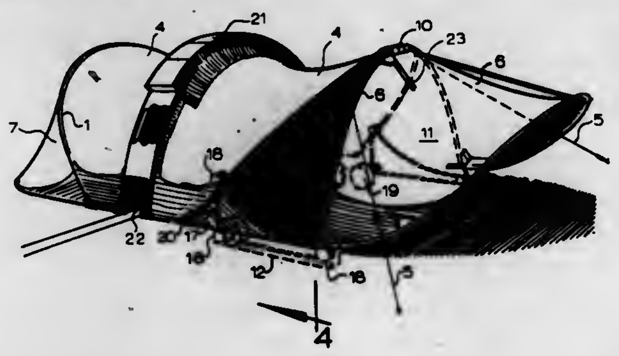
Ted Padek, Tulsa, Okla., assignor to Detergent Engineering Corporation, Tulsa, Okla.
Continuation of Ser. No. 815,319, April 11, 1969, abandoned. This application Nov. 11, 1971, Ser. No. 197,790
Int. Cl. B08b *3/02*
U.S. Cl. 134—45 **8 Claims**



An automatic vehicle cleaning system suitable for use in the bay of a service station, or the like, and having a pre-soak cycle, a wash cycle, a regular rinse cycle, and a de-ionized rinse cycle, in that order. The vehicle is first driven into the bay through a gentle spray curtain of heated fluid containing a wetting agent. Next, a rectangular overhead rack is lowered and then raised about the vehicle while discharging a heavy spray of detergent solution, and then lowered and raised about the vehicle a second time while rinsing the vehicle with tap water or the like. When the rectangular rack is restored to its overhead position the second time, it then automatically flushes the vehicle with de-ionized water to wash away the tap water, and the vehicle may then be backed out of the bay and air dried.

3,726,294
MOVABLE CLOSURE FOR PAVILION

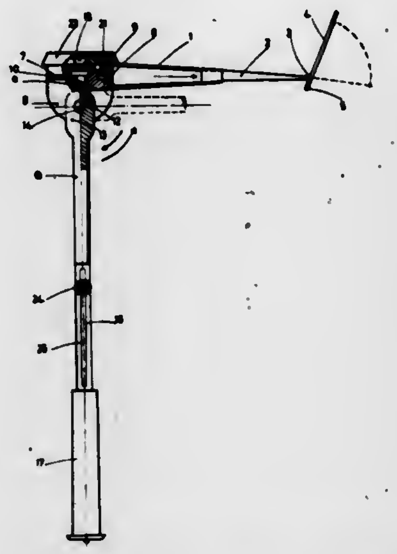
Carl F. Huddle, 3 Kenberton Drive, Pleasant Ridge, Mich.
Filed July 13, 1971, Ser. No. 162,124
Int. Cl. E04b *1/347;* **E06b** *3/34*
U.S. Cl. 135—4 R **3 Claims**



A closure for an end of a pavilion which includes two arches which are inclined away from each other and mounted on the ground or another base to swing toward and away from this position and a membrane which extends between the arches and is attached to them. The closure is arch-like in end view and trianguloid in side view and mounted on one of the inclined arches to swing lengthwise of the pavilion between two positions. In one of these positions, the inner end of the closure is in contact with the arch on which it swings and the outer end thereof is in contact with the base and the end of the pavilion is closed. In the other position, the outer end of the closure extends angularly upwardly from the base so that the closure constitutes an extension of the pavilion and the end of the pavilion is open. The closure includes a frame which defines its inner and outer ends and a membrane attached to the frame and so tailored and tensioned that it assumes a concave curvature longitudinally as well as a convex curvature laterally. A track and a chain which follows the track are provided to move the closure between its closed and open positions and control its movement vertically, laterally and lengthwise of the pavilion.

3,726,295
POCKET UMBRELLA WITH ROTARY OPENING AND CLOSING MECHANISM

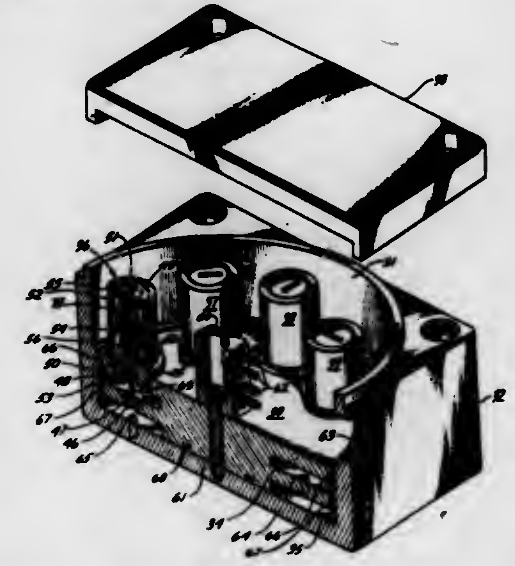
Rosendo Seoane Diaz, 18-20 Medico Rodriquez, La Coruna, Spain
Filed Feb. 1, 1971, Ser. No. 111,582
Claims priority, application Spain, Feb. 13, 1970, 155.861
Int. Cl. A45b *19/04*
U.S. Cl. 135—25 **7 Claims**



A collapsible umbrella, having a telescoping main shaft and a unique umbrella cloth supporting rib arrangement, wherein all ribs are telescoping and foldable and are slidable annularly about the shaft; the ribs are slidable between a collapsed condition where all ribs are bunched together and an open condition where the ribs are spread apart.

3,726,296
FLUIDIC CONTROL SYSTEM AND METHOD FOR CALIBRATING SAME

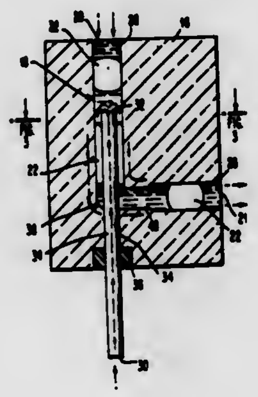
Harry Friedland, and Addison W. Langill, Jr., both of Salt Lake City, Utah, assignors to Process Systems, Inc., Salt Lake City, Utah
Continuation-in-part of Ser. No. 142,681, May 12, 1971, abandoned. This application Aug. 9, 1971, Ser. No. 169,940
Int. Cl. G05d *7/03*
U.S. Cl. 137—1 **27 Claims**



A source of a fluid at a constant pressure is coupled to a manifold and the manifold is coupled to a receiver of the fluid at a constant pressure lower than the source pressure. One of the couplings comprises an orifice having a fixed cross-sectional area. The other coupling comprises a plurality of individually actuatable, digital valve elements. A device that is movable responsive to pressure, such as an actuator for an analog valve plug, is coupled to the manifold. The states of the digital valve elements are controlled by digital signals representative of a command, so the movement of the member is representative of the command. Each digital valve element is designed so its effective orifice area in the open state can be adjusted after assembly. The arrangement is calibrated by individually adjusting the digital valve elements to compensate for the effects of tolerance variations.

3,726,297
METHOD AND DEVICE FOR INTRODUCING FOR MIXING A FIRST LIQUID INTO A SECOND LIQUID

Richard H. Heimann, Flushing; Aaron Kassel, Tarrytown, and Donald F. Kopelman, New York, all of N.Y., assignors to Technicon Instruments Corporation, Tarrington, N.Y.
Filed April 14, 1971, Ser. No. 133,989
Int. Cl. F17d *1/08;* **F16k** *19/00*
U.S. Cl. 137—1 **10 Claims**

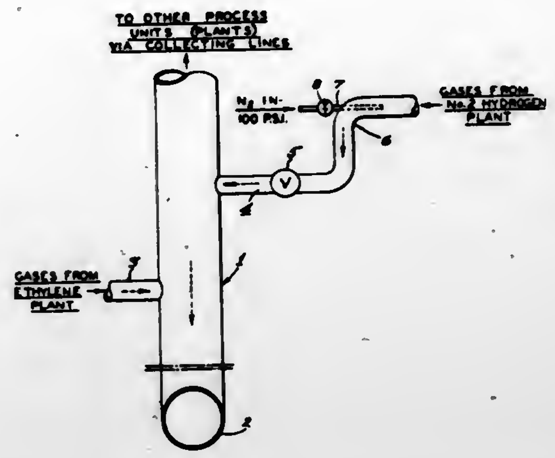


Method and device for introducing for mixing a first liquid into a second liquid for use in automated apparatus for the quantitative analysis of a treated substance. The device includes a body defining an elongated passageway portion. One end of the passageway portion provides an inlet for the first liquid, and the other end provides an outlet for the first liquid to which the second liquid has been admixed in the passageway portion. A tube, carrying the second liquid in a countercurrent direction, has a discharge end directed axially within the passageway portion and spaced from the wall structure thereof for mixing impact of the two liquids in substantially the central area of the passageway portion, and so arranged that the intermixed liquids flow around the last-mentioned tube end substantially throughout the cross section of the cavity between the tube and the passageway portion before exiting from the last-mentioned portion.

3,726,298
PRESSURE CONTROL FOR FLARE SYSTEMS

Arthur D. Meritt, Newark, Del., assignor to Sun Oil Chemical Company, Claymont, Del.
Filed July 27, 1971, Ser. No. 166,515
Int. Cl. G05d *1/16*
U.S. Cl. 137—13 **3 Claims**

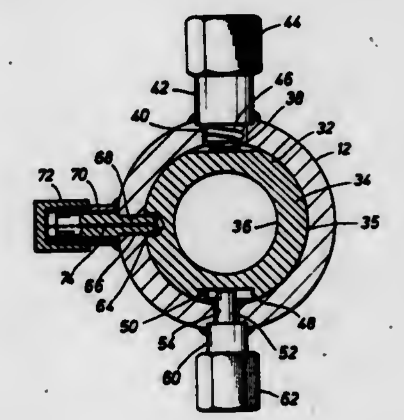
A small positive pressure is maintained on a flare system by injecting a stream of gas at high velocity into the flare line at a location downstream of all other connections to the line and in a direction counter to the direction of flow of gases in the line.


TO OTHER PROCESS UNITS (PLANTS) VIA COLLECTING LINES
N2 IN-100 PSI.
GASES FROM No.2 HYDROGEN PLANT
V
GASES FROM ETHYLENE PLANT

The gas injected is a non-reactive gas free of uncombined oxygen, and may typically be nitrogen.

3,726,299
HEAT RESPONSIVE SAFETY VALVE

Thomas Wheatley, Jr., 3717 Pinemont St., Houston, Tex.
Filed Jan. 21, 1971, Ser. No. 108,345
Int. Cl. F16k *17/38*
U.S. Cl. 137—75 **7 Claims**

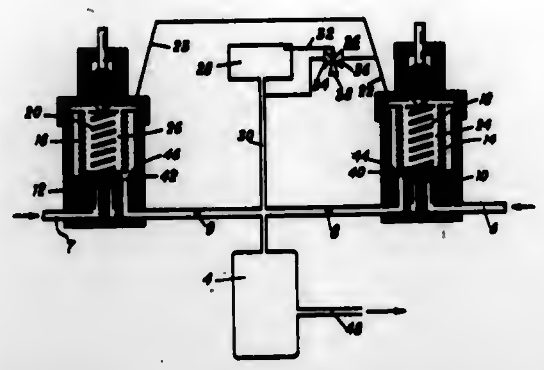


A valve assembly for use in a pipeline which is to be closed in response to the occurrence of high temperature conditions such as a fire. The valve is of a type which effectively closes the pipe without the use of seal forming elements likely to be rendered ineffective by fire. The assembly includes means for yieldingly urging the valve toward closed position and heat responsive means is provided for releasably holding the valve in open position and for releasing the same when the temperature rises above a predetermined value. Means is also provided for arresting the opening movement of the valve when the valve reaches its fully closed position.

3,726,300
GAS MIXING DEVICE

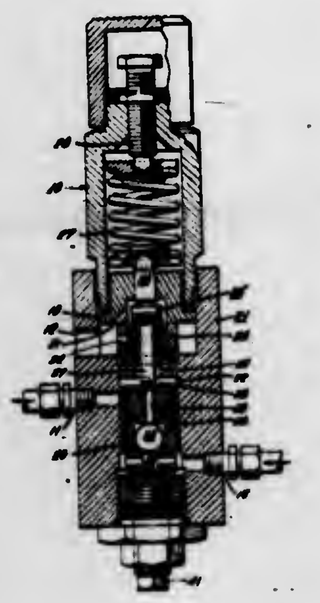
Marcel Chevalier, Paris, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Explitation Des Procedes Georges Claude, Paris, France
Filed Oct. 26, 1970, Ser. No. 83,886
Claims priority, application France, Nov. 3, 1969, 6937711
Int. Cl. F16k *19/00*
U.S. Cl. 137—88 **8 Claims**

A device for supplying a container with a mixture of gases in fixed proportions and comprising, at each gas inlet, a pressure-reducing valve and a flow constriction. The difference in the pressures at the two sides of each flow constriction is the same; it is kept substantially constant by controlling the pressure-reducing valves by a pressure which follows the pressure in the container.



3,726,301
PILOT VALVE

Alvin J. Schmidt, Elkins Park, Pa., assignor to J. E. Lonergan Company, Philadelphia, Pa.
Filed Dec. 21, 1970, Ser. No. 100,193
Int. Cl. F16k *17/10*
U.S. Cl. 137—102 **11 Claims**

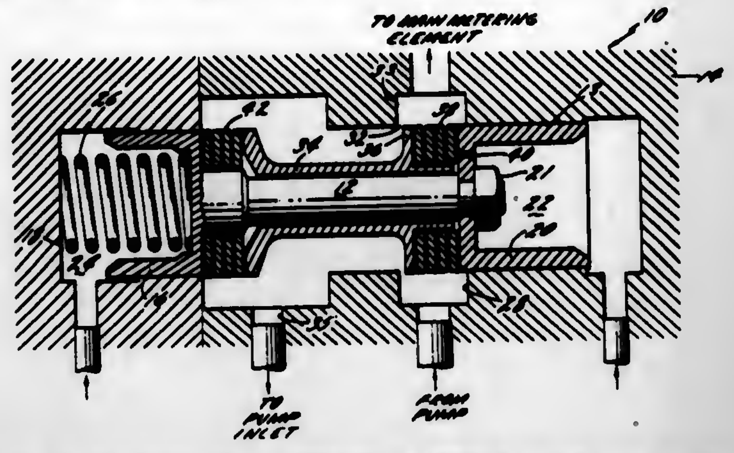


A pilot valve in which the control port is connected alternatively to a pressure port and a vent port, including two valve seats and interconnected valve elements cooperating with the seats. The structure of the valve seats forms a pressure-building chamber upon initial movement of the valve elements in which the pressure fluid is trapped to generate a pressure on the interconnected valve elements tending to displace said elements abruptly toward their limit positions. This abrupt action is provided at one seat by a ported rod interconnecting the valve elements and providing a restriction in the flow passage between the pressure port and the pressure chamber which enables build-up of pressure in the chamber upon initial movement of the valve elements toward the position disconnecting the vent port and connecting the pressure port.

3,726,302
PRESSURE REGULATING VALVE

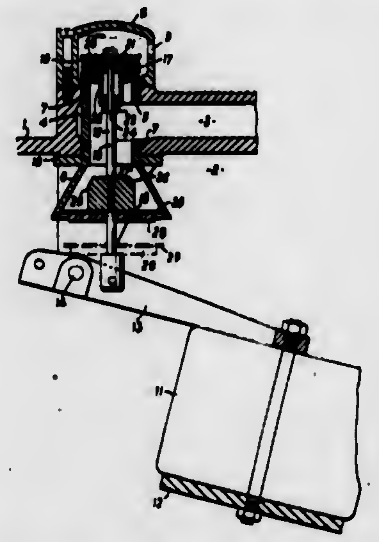
Joseph V. Lawsing, Windsor Locks, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 12, 1972, Ser. No. 217,113
Int. Cl. G05d *11/00*
U.S. Cl. 137—117 **7 Claims**

The time responsiveness of a pressure regulating valve is increased by including a metering element mounted on the main valve element being movable therewith and relative thereto so as to respond to changes in pressure in the system independently of the main valve element. Pressure droop can be adjusted independently of flow droop, thereby permitting optimum performance.



3,726,303
FLUID FLOW CONTROL VALVES

Ronald Noel Allen, and Harold Lloyd Dagwell, both of London, England, assignors to Henry Sykes Limited, London, England
Filed April 19, 1971, Ser. No. 135,087
Claims priority, application Great Britain, April 27, 1970, 20,178/70
Int. Cl. F04b *21/00*; **F04f** *3/00*
U.S. Cl. 137—205 **3 Claims**

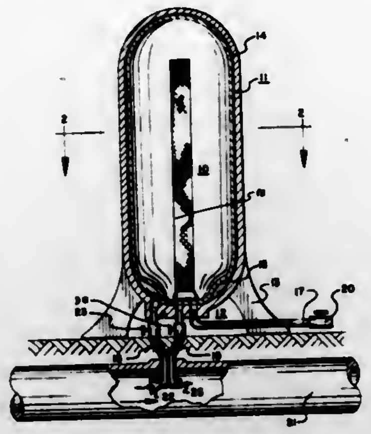


A fluid flow control valve intended to be connected between a chamber containing liquid and gas and a suction pump comprises a valve member coupled to float means located in said chamber and a branched passageway communicating on the one hand with atmosphere and on the other with said chamber, the float means serving to move the valve member in the branched passageway whereby in accordance with the liquid level in said chamber the suction pump is connected either with the chamber or with atmosphere.

3,726,304
FERTILIZER DISPENSER

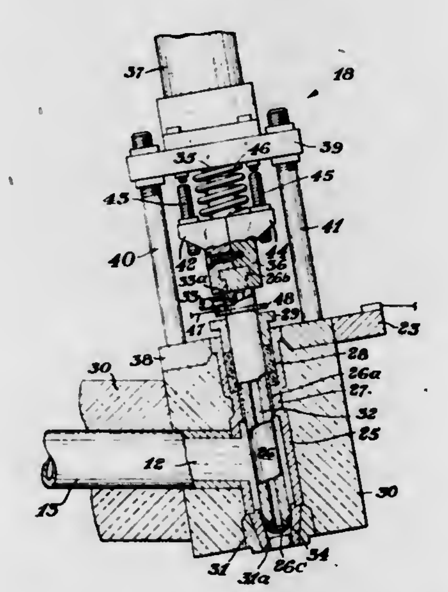
Charles E. Cook, P.O. Box 231, Wilder, Idaho
Filed Nov. 8, 1971, Ser. No. 196,502
Int. Cl. F16k *51/00*
U.S. Cl. 137—268 **3 Claims**

The fertilizer dispenser of the present invention comprises a tank having an elliptical shape and being disposed vertically with respect to its rectilinear axis on a suitable pedestal; a bladder made of a flexible, resilient material disposed within the tank and fastened to the lowermost interior end wall of the tank; a column disposed into the bladder from the lowermost interior end wall of the tank to a point distally from the uppermost terminal end of the tank; a fertilizer input tube operable to conduct fluid fertilizer under pressure from a suitable source to the lowermost terminal end of the tank into the bladder; a fertilizer output tube operable to conduct the fertilizer from the bladder and the tank into an irrigation water supply pipe; and a water governor tube operable to conduct water under pressure from the pipe to the interior walls of the tank and outside the bladder. The column may be made of an open mesh screen disposed about the connections of the fertilizer input tube and the fertilizer output tube.



3,726,305
TRANSFER LINE AND VALVE ASSEMBLY COMBINATION FOR HANDLING MOLTEN LIQUIDS

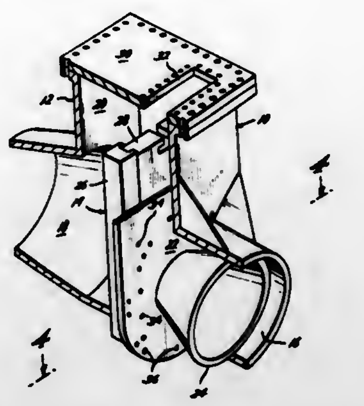
Stephen C. Erickson, and Foster C. Bennett, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 26, 1971, Ser. No. 202,150
Int. Cl. F16k *49/00*
U.S. Cl. 137—341 **5 Claims**



Disclosed herein is an electrically-heated transfer line and valve assembly combination which is particularly adapted for transferring molten metals from one point to another. The valve assembly is basically a cylindrical valve body having a slidable stem therein, with the stem being moved between open and closed positions by mechanical power, such as an air cylinder or hydraulic cylinder. In the apparatus described herein the transfer line and valve assembly form a part of the same electrical circuit, the objective being to achieve uniform heating throughout the entire transfer system. Specific applications of the valve assembly include its use as an end valve on a transfer line in die casting or permanent mold casting, and as a metering valve in cold chamber die casting of magnesium alloys.

3,726,306
REFINERY CONTROL VALVE

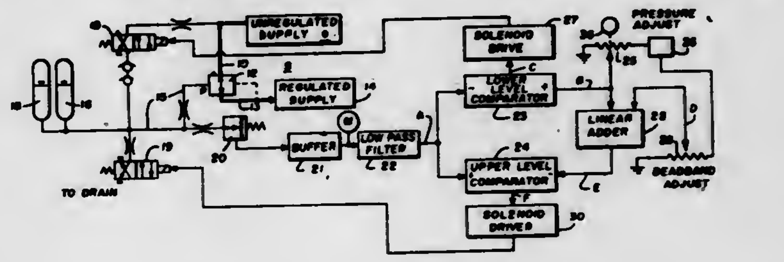
Howard A. Purvis, Houston, Tex., assignor to Texas Alloy Products Co., Inc., Houston, Tex.
Filed May 20, 1971, Ser. No. 145,162
Int. Cl. F16k *27/00*
U.S. Cl. 137—375 **5 Claims**



An Improved Refinery Control Valve of the slide or disc type for particular use in fluid catalytic cracking units at high temperatures and velocities with abrasive materials. The entire valve assembly comprising the inlet liner, with port guides and slide, are removable as a unit for repair or replacement, so that the valve body need not be removed from the refinery unit during a turn around.

3,726,307
PRESSURE CONTROL APPARATUS

Richard J. Carman, and Paul R. Benson, both of Spring, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.
Filed Dec. 9, 1971, Ser. No. 206,481
Int. Cl. G05d *11/00*; **F16k** *31/02*
U.S. Cl. 137—487.5 **12 Claims**

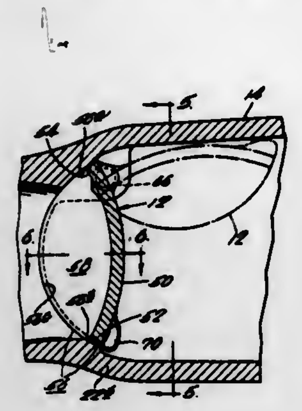


Control apparatus is disclosed for regulating fluid pressure in a fluid system between predetermined lower and upper limits of such pressure by comparing electrical voltages proportional to the fluid pressure in said system and to said lower and upper limits of pressure. Electrical control signals are generated in response to differences in the compared voltages to actuate solenoid operated valves connected in the fluid system for increasing the fluid pressure in the system when below said lower limit, and decreasing said fluid pressure when above said upper limit. The specific embodiment of the control system described is connected to control the pilot pressure of a pilot operated hydraulic pressure regulator.

3,726,308
SUCTION CHECK VALVE FOR PUMPS

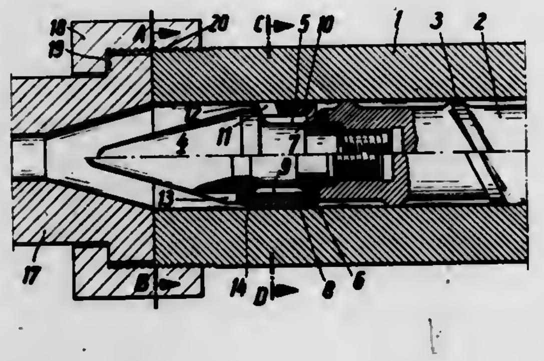
H. Alfred Eberhardt, Paoli, Pa., assignor to Hale Fire Pump Company, Conshohocken, Pa.
Filed Dec. 9, 1971, Ser. No. 206,340
Int. Cl. F16k *15/00*; **B21k** *1/20*
U.S. Cl. 137—527.8 **2 Claims**

A centrifugal pump assembly comprising a main body having at least one pair of side by side impeller chambers, an impeller rotatably mounted in each chamber, at least one inlet manifold, at least one discharge manifold, a discharge passage connecting the discharge side of each impeller with said discharge manifold, a bypass passage connecting the discharge side of one of said impellers with the inlet side of the other of said impellers, a transfer valve operable in first position to connect discharge side of said one impeller directly to said discharge manifold and in a second position to connect the discharge side of said one impeller to the inlet side of said other impeller, a valve seat in the inlet manifold, at least one check valve in the inlet manifold of said other impeller operable between a closed position when said transfer valve is in a first position and on open position when said transfer valve is in said second position, said check valve including an arcuate wall portion having a pair of parallel top and bottom end surfaces which lie in a circumference of a common circle and a pair of generally oval-shaped side wall portions disposed generally transversely to said arcuate wall portion from opposite side edges thereof, the outer edges of the side walls lying on the circumference of said common circle.



3,726,309
SCREW PISTON FEED DEVICE

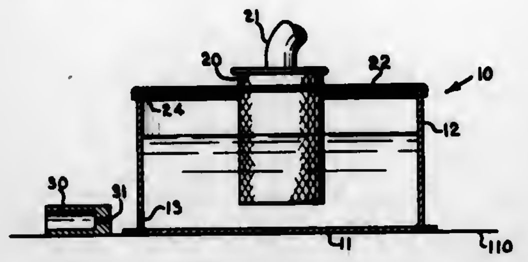
Willi Neubert, Meinerzhagen, Germany, assignor to Gebruder Battenfeld, Meinerzhagen/Westphalia, Germany
Filed Feb. 3, 1971, Ser. No. 112,270
Claims priority, application Germany, Feb. 3, 1970, P 20 06 389.2
Int. Cl. F16k *15/00, 17/00*
U.S. Cl. 137—528 **7 Claims**



The invention relates to non-return valves for screw pistons devices for extrusion moulding of plastic material, in which the material is in a first mode conveyed by the rotary movement and extrusion of the material takes place in a second mode by the axial movement of the screw; a non-return valve is provided which allows the material to pass during the first mode to the front end of the screw and in the second mode closes to prevent the compositions from being driven back down the screw, the valve being formed as a ring around the screw which rings is allowed limited axial movement but substantially no rotational movement, the valve ring when open, allowing a passage for the material between it and the screw shaft and when closing the ring moves relatively back on the screw shaft to seat on the shaft and close the passage.

3,726,310
FLUID AMPLIFIED AUXILIARY RESERVOIR

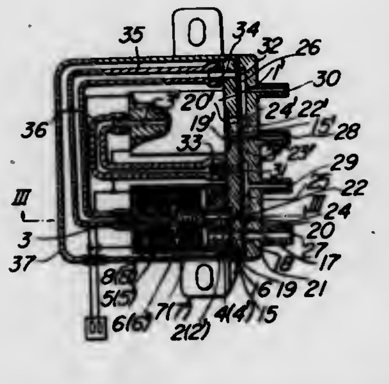
Charles M. Coscia, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Filed Feb. 18, 1971, Ser. No. 116,576
Int. Cl. F04f *5/02*
U.S. Cl. 137—576 **2 Claims**



A fuel reservoir arranged about the intake or suction conduit of a fuel pump supply line in a fuel tank utilized by internal combustion engines, consisting of a container having a bottom and open or closed top and having a fuel receiving opening therein. A fuel jet directs return fuel through the opening into the container. The jet is positioned exterior of the container such that intank fuel is entrained from the primary tank in which the reservoir is located.

3,726,311
PRESSURE PASSAGE CHANGE-OVER DEVICE

Shin-ya Ishihara, Anjo, and Hyozo Mitsui, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Japan
Filed April 13, 1971, Ser. No. 133,661
Claims priority, application Japan, April 16, 1970, 45/36924
Int. Cl. F16k *11/10*
U.S. Cl. 137—596.17 **25 Claims**



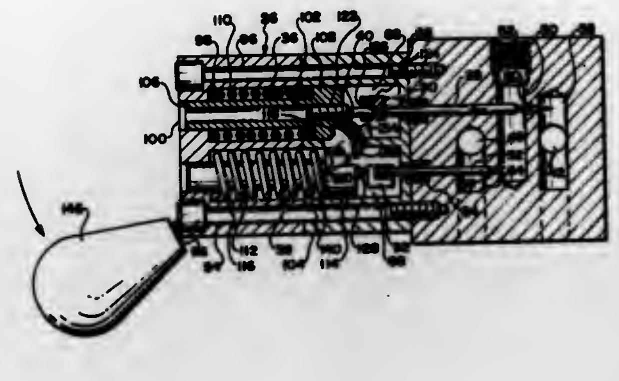
A pressure passage change-over device which has at least two board-like members defining required pressure transmission passages. It may have a compact construction compared with the usual negative pressure passage change-over device which uses rubber hoses.

3,726,312
VALVE

James N. Wognum, 9309 South Pleasant Avenue, Chicago, Ill.
Filed June 7, 1971, Ser. No. 150,405
Int. Cl. F16k *11/00*
U.S. Cl. 137—596.2 **18 Claims**

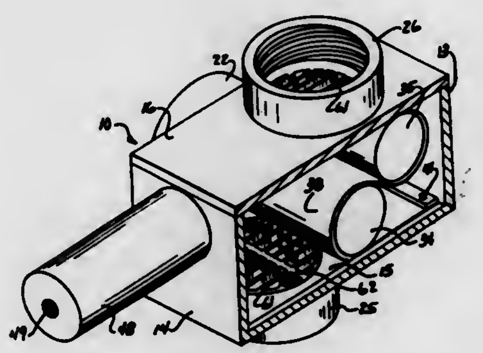
A multi-position valve which provides throttling control. The valve includes a manifold having a first cylinder port, a second cylinder port, an exhaust port, an inlet port, a first valve port between the inlet port and the first cylinder port, a second valve port between the exhaust port and the first cylinder port, a third valve port between the inlet port and the second cylinder port, and a fourth valve port between the second cylinder port and the exhaust port. A plurality of valve rods, one of each is positionable in each of the valve ports,

regulates the flow of fluid through the valve ports. Each pair of valve rods between the inlet and exhaust ports of each of the cylinder ports is connected to a yoke. A spring contacts each of the yokes to urge the respective valve rods into a closed attitude relative to the respective valve ports.



3,726,313
RECIPROCATING VALVE

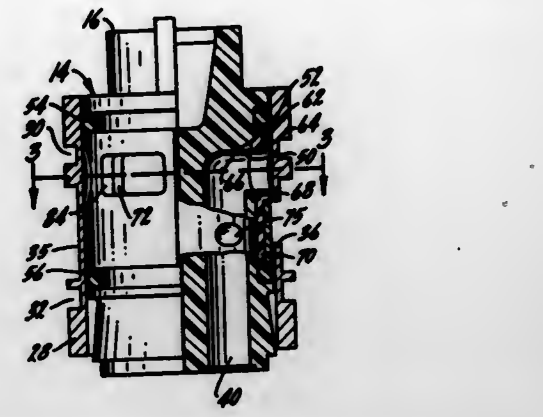
Vidyut K. Pandya, Rockford, Ill., assignor to Aquamatic, Inc., Rockford, Ill.
Filed July 6, 1971, Ser. No. 159,737
Int. Cl. F16k *11/14*
U.S. Cl. 137—609 **32 Claims**



The principles of a roller-band device are applied to a valve. The valve has outlet openings nearly as large as the width of the band. A grid is provided in the outlet openings to support the and when closed. The grid is recessed and a peripheral recess is provided around the outlet openings. The recess has a sharp edge against which the band seals.

3,726,314
VALVE SEAL CONSTRUCTION

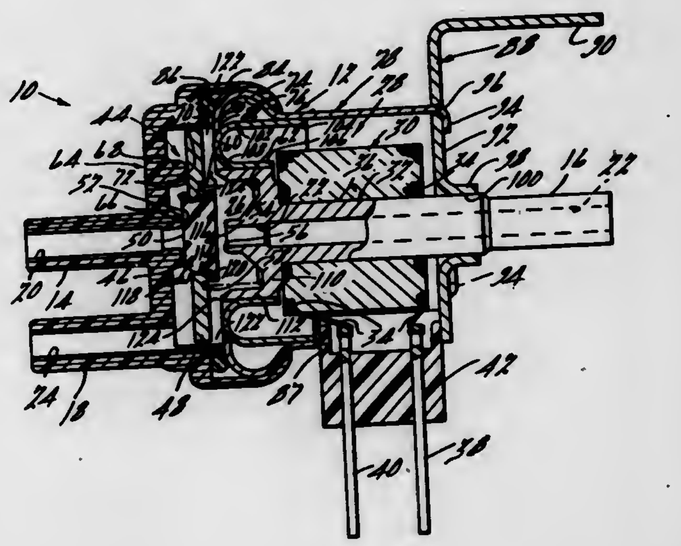
Alfred M. Moen, 25 Lakeview Drive, Grafton, Ohio
Continuation-in-part of Ser. No. 147,357, May 27, 1971. This application Aug. 18, 1971, Ser. No. 172,776
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.41 **15 Claims**



A valve seal construction for use in connection with a valve comprising a body member having inlet passages terminating on the exterior thereof, and a sleeve member movable relative to the body member to control the fluid discharged from the valve. The seal construction includes a port portion in sealing contact with the sleeve and a body portion surrounding the port portion and positioned against the exterior of the body member.

3,726,315
MAGNETIC VALVE

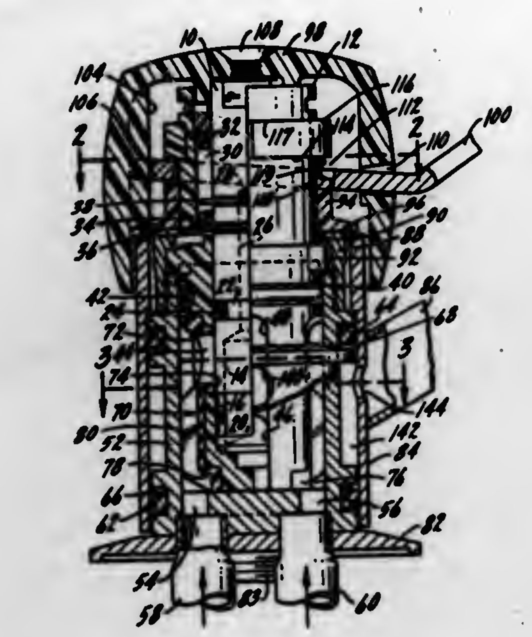
William L. Sheppard, Romulus, Mich., assignor to Mechanical Products, Division of Aiken Industries, Inc., Jackson, Mich.
Continuation-in-part of Ser. No. 32,140, April 27, 1970, abandoned. This application Sept. 28, 1970, Ser. No. 76,652
Int. Cl. F16k *31/02, 11/04*
U.S. Cl. 137—625.65 **11 Claims**



A magnetically operated valve having a resilient flat surfaced valve member cooperating with a valve seat. The resilient member is mounted on an armature in a manner to permit relative motion therebetween to allow the armature to gain a predetermined inertia prior to engaging the resilient member so as to aid in overcoming the pressure differential across the resilient member. Additionally, the electromagnet thereof acts unevenly on the armature so as to cause a "prying" movement of the resilient member from the valve seat. The valve may be operated in the normally-open or the normally-closed mode.

3,726,316
FAUCET CONSTRUCTION

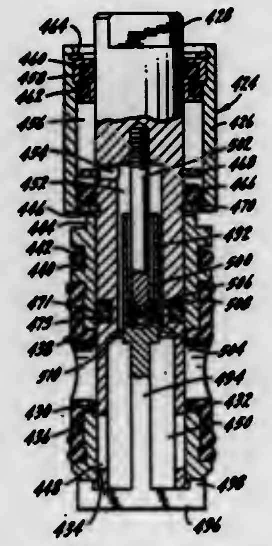
Alfred M. Moen, 25 Lakeview Drive, Grafton, Ohio
Filed May 27, 1971, Ser. No. 147,327
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.17 24 Claims



A single handle mixing faucet has a hollow stem positioned within a sleeve. The sleeve has a pair of water inlet openings and at least one discharge opening and the stem is reciprocal and rotatable relative to the sleeve to control the volume and temperature of water discharged from the sleeve. The sleeve is positioned within a retainer having bottom inlet openings with the exterior of the sleeve and the interior of the retainer cooperating to define passages from the retainer inlet openings to the sleeve inlets. A handle for the mixing faucet includes a cap and a lever, with the cap being attached to a stem and a portion of the lever being positioned within the cap and interlocked with the sleeve.

3,726,317
BOTTOM OUTLET GROMMET MIXING VALVE

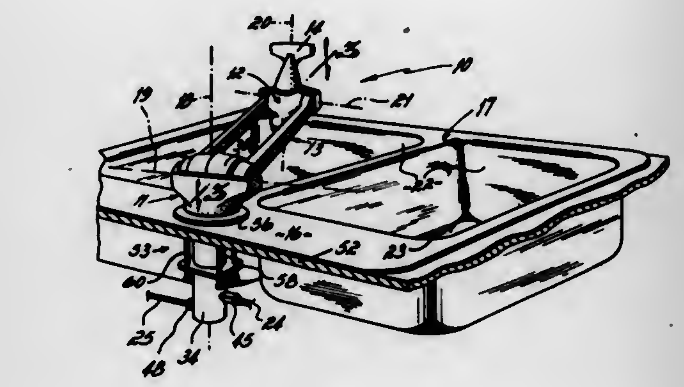
Alfred M. Moen, 25 Lakeview Drive, Grafton, Ohio
Filed May 27, 1971, Ser. No. 147,357
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.17 13 Claims



A single handle mixing faucet comprises a cylindrical housing, a cylindrical sleeve positioned within the housing and a stem reciprocal and rotatable relative to the sleeve. The sleeve discharge port is in its bottom as is the discharge port in the housing. A seal member encloses a portion of the sleeve adjacent the sleeve inlet ports and is in sealing contact with the stem, sleeve and housing. Means are provided within the stem for retarding sudden closure of the stem to prevent "water hammer."

3,726,318
FAUCET

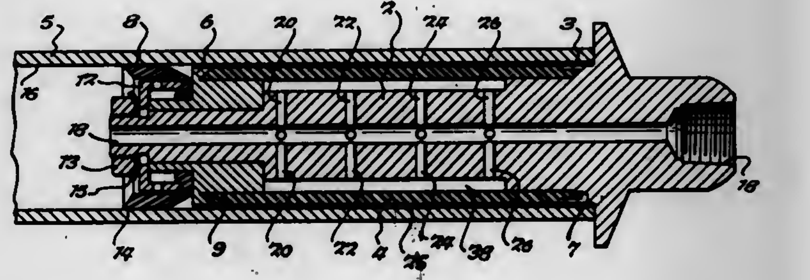
Robert W. Hyde, Crystal River, Fla., assignor to Pryde Inc., Cincinnati, Ohio
Filed Oct. 28, 1971, Ser. No. 193,306
Int. Cl. F16k *19/00*
U.S. Cl. 137—625.41 7 Claims



A hot-cold water faucet wherein the major components are of a compact, simplified construction and are molded of plastic. Further, the major faucet components are adapted to be assembled and locked together by hand. This faucet is of the type disclosed in U.S. Pat. No. 3,410,487 in that the temperature, volume and direction of water drawn from the faucet's spout can be controlled with one hand by manipulating a single knob associated with the spout.

3,726,319
COMPRESSION SEAL PLUG

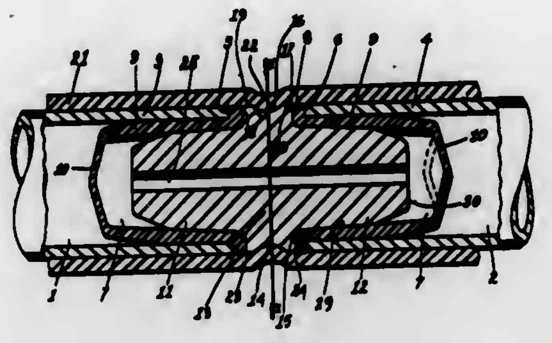
Billy R. Patterson, Diana, Tex., assignor to Lone Star Steel Company, Dallas, Tex.
Filed Jan. 18, 1971, Ser. No. 107,337
Int. Cl. F16l *55/12*; G01m *3/28*
U.S. Cl. 138—90 3 Claims



The invention relates to a compression seal valve plug for easy sealing of a pipe section during pressure testing of the pipe section. The plug contains a flexible, elastic sleeve surrounding its central body section. In testing, test fluid causes expansion of the sleeve and creates a frictional holding force between the sleeve and the inside wall of the pipe section. This frictional holding force, in turn, is transmitted indirectly to the body section of the plug. The test fluid within the pipe section is isolated from the outside diameter of the sleeve by a seal in continuous contact with the inside wall of the pipe section. The pressure of the test fluid against the inside wall of the pipe section is easily determinable using pressure gauges outside the pipe.

3,726,320
TUBULAR CONSTRUCTION ARRANGEMENT

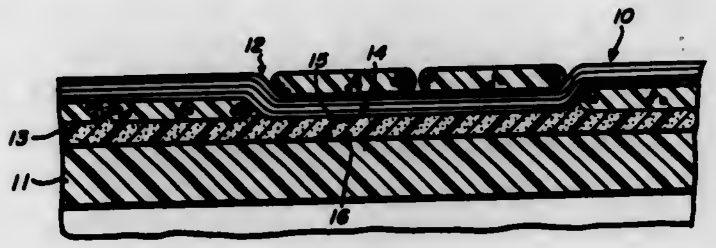
Wilhelm Lachenmayer, Berlebeck, Germany, assignor to Benteler-Werke AG, Krs. Paderborn, Schloss, Neuhaus, Germany
Division of Ser. No. 865,283, Oct. 10, 1969. This application Feb. 14, 1972, Ser. No. 226,006
Claims priority, application Germany, Nov. 26, 1968, P 18 10 957.4
Int. Cl. F16l *55/00*
U.S. Cl. 138—103 10 Claims



A tubular construction arrangement in which the open ends of at least two elongated tubular members are closed by cup-shaped members having flange portions overlying and abutting against radial endfaces of the tubular members. A pair of opposite axially extending portions of an alignment and spacing member are respectively fitted into the cup-shaped members closing adjacent ends of the tubular members to substantially align the latter, and the alignment and spacing member has a central radial enlargement which is sandwiched between the flange portions of the cup-shaped members. An insulating jacket surrounds the tubular members, the flange portions of the cup-shaped members and the enlargement of the alignment and spacing member.

3,726,321
FLEXIBLE HOSE

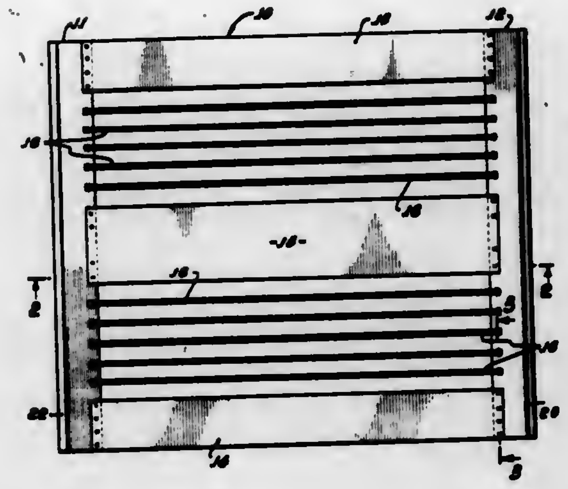
Alfred R. Phillips, Waynesville; John S. Haley, Lake Junaluska, both of N.C., and Edward A. Clifton, Englewood, Ohio, assignors to Dayco Corporation, Dayton, Ohio
Filed Feb. 19, 1971, Ser. No. 116,990
Int. Cl. F16l *11/08*
U.S. Cl. 138—123 10 Claims



An improved high pressure flexible hose and method of making same are provided by providing a flexible plastic tube and applying a layer of an elastomeric adhesive on the outside surface of the tube. An outer cover is braided against the layer of adhesive and the adhesive allowed to set. The properties of the adhesive are such that upon bending the hose the adhesive serves as an elastic connection between the tube and the braided cover to thereby provide improved service life for the hose even under adverse operating conditions.

3,726,322
FLUID CONDUIT ARRANGEMENT

John F. Kramer, 2412 Almira, Fullerton, Calif.
Continuation-in-part of Ser. No. 826,358, May 21, 1969, abandoned. This application April 29, 1971, Ser. No. 138,685
Int. Cl. F16l *11/00*; H01b *7/28*
U.S. Cl. 138—128 15 Claims



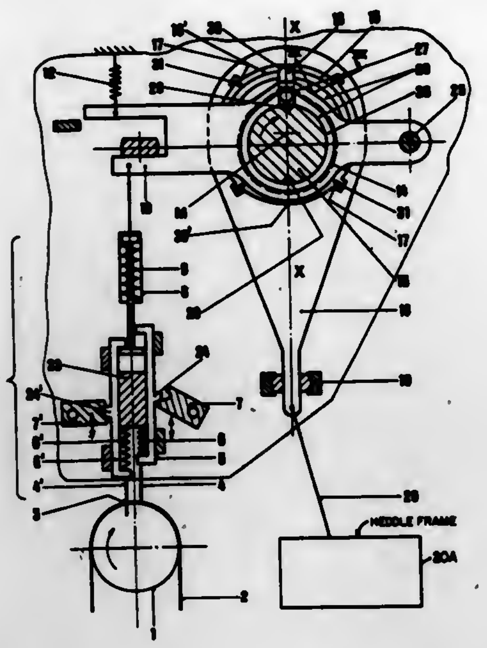
The arrangement of this invention for providing a fluid conduit includes a plurality of spaced parallel elongated elements positioned in a flat rectangular pattern, a means for holding the elements in the pattern, strips of flat material at the ends, and a sheet of material overlying the elongated members, which is formed into a fluid conduit by effecting appropriate bends in the elongated elements and end strips intermediate the side edges to bring the side edges into adjacency where they are jointed. The bends may be of different configurations at the two ends of the unit. When the elongated elements are in spaced parallelism transverse to the unit, the resulting conduit will be flexible and may be bent to form an elbow, or into other shape. When longitudinally extending elongated elements are included, rigidity is imparted at the locations of such elements. Interlocking arrangements may be provided to secure together the side edges, or these edges may be welded or otherwise secured. Two layers of sheet material may be used, bonded together and to the inner and outer surfaces of the elongated elements, and insulation may be provided over the outside.

3,726,323
WEDGE COUPLING BETWEEN A DRIVING SHAFT AND AN ECCENTRIC RING OF A DOBBY MECHANISM

Walter Kleiner, Wadenswil, Switzerland, assignor to Staubli Ltd., Horgen-Zurich, Switzerland
Filed May 26, 1971, Ser. No. 146,878
Claims priority, application Switzerland, May 29, 1970, 8033
Int. Cl. D03c *1/00*
U.S. Cl. 139—66 7 Claims

Dobby, in which the movement of the heald shafts is effected through a connecting rod (18), which connecting rod embraces an eccentric ring (28) on the driving shaft (15). Release of the movement is effected by a coupling wedge (13), which is supported in the eccentric ring and for control purposes connects alternatively with the drive shaft or the connecting rod. Resilient semicircular guide rails (16, 16') are provided on the connecting rod, which guide rails serve as

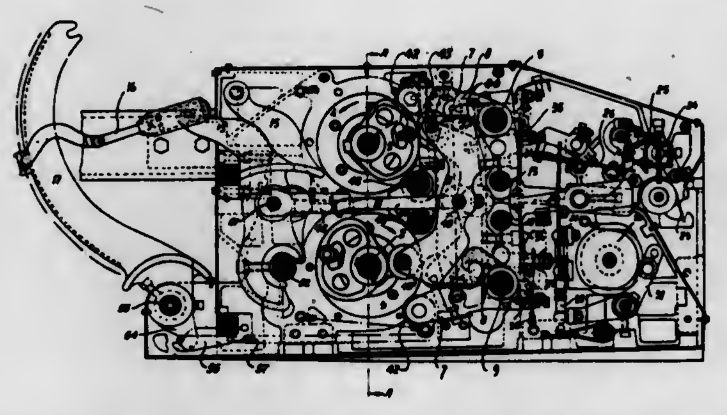
guides for the coupling wedge during movement of same or as holding members during its coupling with the connecting rod.



Through the resilient arrangement of the guide rails, damage to the dobby is avoided, in the event of a malfunction.

3,726,324
DOBBY MACHINES

Sergio Serra Xans, Calle Legalidad No. 13, Barcelona, Spain
Filed Nov. 5, 1970, Ser. No. 87,164
Claims priority, application Spain, Nov. 13, 1969, 373 748
Int. Cl. D03c ***1/00***
U.S. Cl. 139—68 **10 Claims**

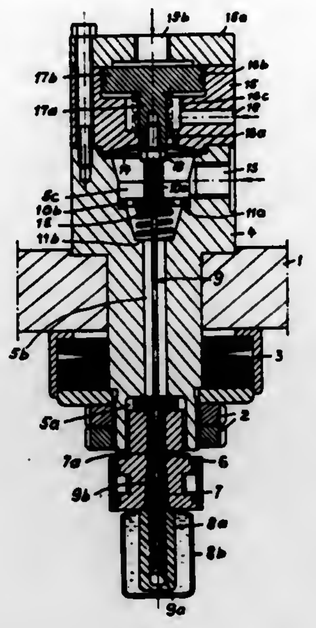


Improvements in dobby machines, which improvements comprise a heald actioning device consisting of two horizontal shafts across the width of the dobby machine and carrying individual sets of eccentrics, each of which is connected to the lifter-motion drive. A horizontal tie-rod has one end thereof connected to the lifter-motion drive substantially at the center of gyration thereof and is subjected to a reciprocating displacement due to the eccentric rotation. The opposite end of the tie-rod is articularly connected to the central part of a vertical lever, the one end of which is pivotally connected to a shaft, the other end of the lever driving the corresponding heald formation.

3,726,325
VALVE MECHANISM FOR CONTROLLING THE FLOW OF A PLASTIC MATERIAL FOR MANUFACTURING AND FILLING A PLASTIC HOLLOW BODY

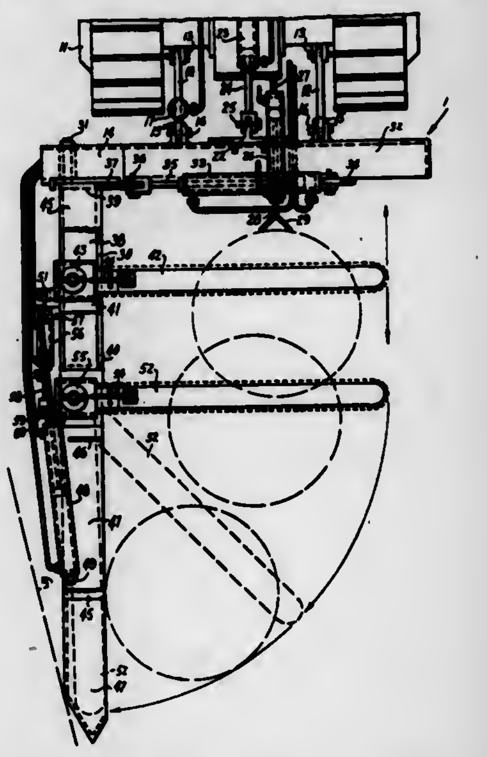
Paul Munz, Netstal, Switzerland, assignor to Maschinenfabrik Und Giesserei Netstal AG, Netstal, Switzerland
Filed Nov. 27, 1970, Ser. No. 93,162
Int. Cl. B67c ***3/00;*** **B65b** ***1/04, 3/04***
U.S. Cl. 141—317 **3 Claims**

A device for manufacturing and filling a plastic hollow body includes a hollow supporting sleeve for a hollow plastic blank which is to be blown up, and a valve in the sleeve cooperating with the free end of the sleeve. The sleeve is supported by a cylinder casing having a widened area defining an inlet chamber connected to an inlet for receiving the material to be filled into the hollow body and connected to the bore of the sleeve. The valve is operated by a control mechanism which is sealed from the inlet chamber by a diaphragm. The diaphragm carries an actuation member which is displaced by a control piston of the control mechanism to cause actuation of the valve at the free end of the supporting sleeve.



3,726,326
TREE FELLING MACHINE

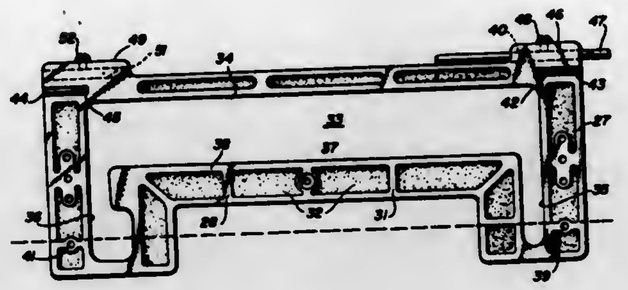
Thomas R. Coleman, Route 4, P.O. Box 634, Yazoo City, Miss.
Filed Dec. 6, 1971, Ser. No. 205,007
Int. Cl. B27b ***17/02;*** **A01g** ***23/08***
U.S. Cl. 144—34 R **6 Claims**



A tractor mounted tree felling machine having a pair of hydraulically actuated chain saws with the inner saw slidably mounted on a frame and the outer saw pivotally mounted on a frame to cut the tree from opposite sides thereof. The frame is adjustable in height and rotatable about a longitudinal axis for cutting trees at an angle. A pusher is mounted on the tractor and hydraulically actuated for pushing the tree over as it is being cut in a direction away from the tractor.

3,726,327
STAIR TREAD

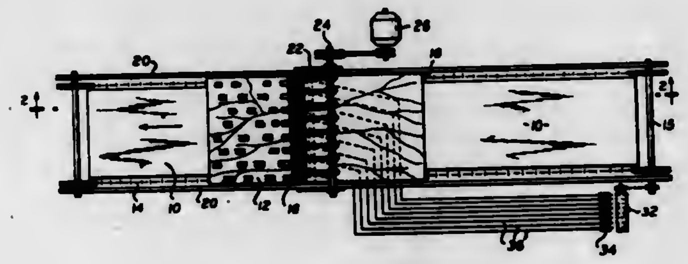
Louis A. Cormier, 42 Central Street, Southbridge, Mass.
Division of Ser. No. 778,365, Oct. 11, 1968, Pat. No. 3,552,084. This application Jan. 4, 1971, Ser. No. 103,743
Int. Cl. B27c ***5/10***
U.S. Cl. 144—144.5 **6 Claims**



This invention relates to a stair tread and, more particularly, to a system for remodeling new or renovating worn stair treads which involves routing a recess in the stair and placing an insert in the recess.

3,726,328
METHOD FOR MAKING TEXTURED PANELS

Donald F. Luebs, Vienna, Va., and Frederick R. Ashby, Red Oak Ridge, N.Y., assignors to Champion International Corporation, New York, N.Y.
Division of Ser. Nos. 759,624, Sept. 13, 1968, and Ser. No., Division of Ser. No. 35,011, May 6, 1970, Pat. No. 3,616,826, and Ser. No., Division of Ser. No. 118,665. This application Feb. 25, 1971, Ser. No. 118,666
Int. Cl. B27m ***3/08***
U.S. Cl. 144—323 **4 Claims**

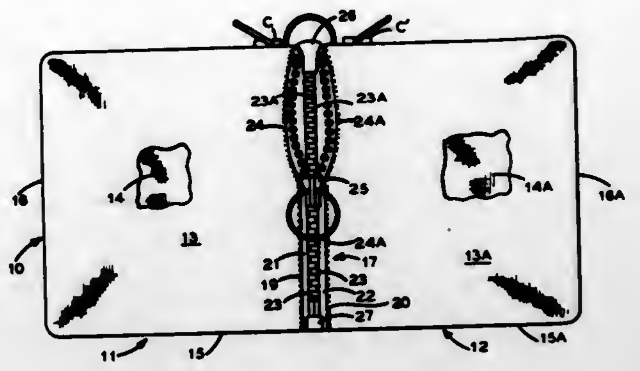


This invention pertains to the method, and/or apparatus for rapidly producing the same so that fibrous board products including plywood panels would appear to simulate an adze surfaced product having a rustic appearance. The "distressing" or cutting of the product may be minimal or partial distressing or may be total distressing including overlapping cuts, or cuts within previous cuts.

3,726,329
MULTI-UNIT BAG CONSTRUCTION

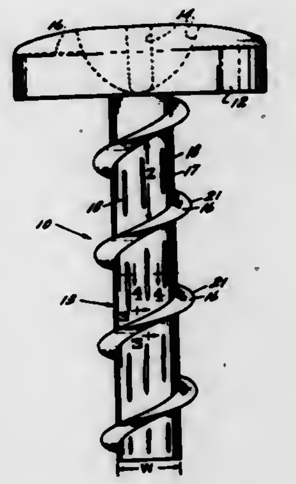
Jesse W. Dean, 3878 Cannon Place, Bronx, N.Y.
Filed July 16, 1971, Ser. No. 163,147
Int. Cl. A45c ***1/00***
U.S. Cl. 150—28 R **9 Claims**

A multi-unit bag construction made up of a plurality of separable units; each unit being capable of functioning as a **single bag; together with combination closure and connector means for selectively interconnecting the units to form a single bag of relatively large size and capacity or for separating the individual units to form bags of smaller size.**



3,726,330
SCREW FASTENER

Robert B. Adler, 6855 Cornell Road, Cincinnati, Ohio
Filed July 28, 1971, Ser. No. 166,804
Int. Cl. F16b ***39/22***
U.S. Cl. 151—22 **3 Claims**



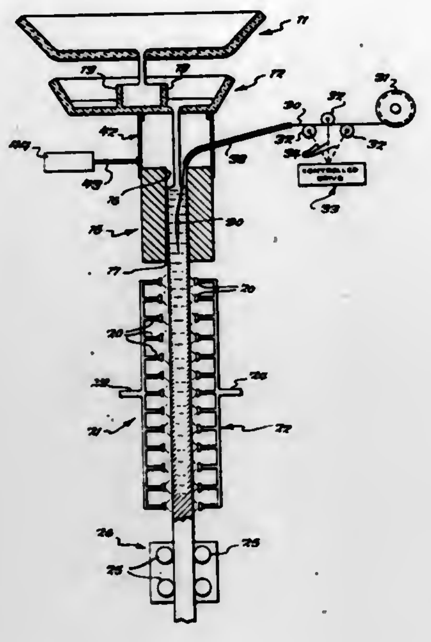
A screw fastener having a narrow helical thread on the shank, the shank having a wall intermediate thread convolutions, which is substantially wider than the thread. Serrations on the wall lock the screw in a bore of a plastic boss.

3,726,331
CONTINUOUS CASTING PROCESS

Robert L. Bunting, Jr., 225 Columbia Avenue, Hamburg, N.Y.
Continuation-in-part of Ser. No. 34,211, May 4, 1970, abandoned. This application April 28, 1971, Ser. No. 138,174
Int. Cl. B22d ***27/20***
U.S. Cl. 164—57 **9 Claims**

In conjunction with a method for continuously casting a fusible material such as steel, the manner of withdrawing heat during casting is improved by delivering a metal wire into the molten material at the top of the mold and in the general direction of flow of material through the mold. A low effective superheat is maintained in the molten material being cast. The wire has a cross-sectional area and is delivered by operation of a controlled drive means such that complete melting of the wire occurs at a point in the material above the point where complete freezing of the material is expected to take place. In the casting of steel, freezing is caused to occur at a point spaced from the level of molten steel in the mold as short as one-seventh of the linear distance at which solidification is

completed in continuous casting. The resulting cast product has a solid center, equi-axed metal grains in a major portion thereof and the same chemical composition in the grains as is present in the steel prior to casting.



3,726,332
SEMI-CONTINUOUS CASTING METHOD UTILIZING A THERMOINSULATING SHEET MATERIAL

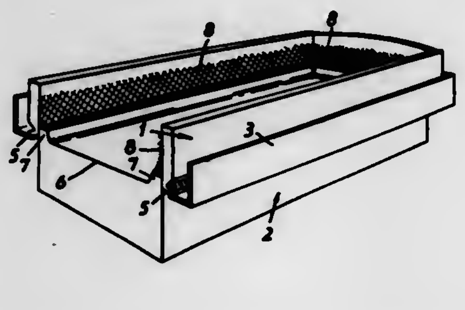
Robert Stanley Clegg, Stirling, Scotland, assignor to The British Aluminum Company Limited, London, England

Filed March 4, 1971, Ser. No. 120,947

Claims priority, application Great Britain, March 12, 1970, 11,978/70

Int. Cl. B22d *11/10*

U.S. Cl. 164—82 7 Claims



A method for the semi continuous casting of metal in a mould having a vertical wall structure and a dummy which is initially disposed within the lower part of that wall structure, said dummy being lowered progressively from the wall structure as metal in the mould solidifies and casting proceeds, in which before the metal is poured into the mould a strip of heat resistant and thermally insulating sheet material, preferably woven fiber glass material, is laid on part of the inside of the wall structure immediately above the upper surface of the dummy and preferably extending a short distance round the corner onto the top of the dummy, so that it covers at least part of the side of the lower end of the cast metal as it emerges from the mould thus reducing the differential shrinkage between the metal first solidified on the dummy and that immediately following causing a reduction in the degree of upward bowing of the edges of the bottom surface of the billet. The sheet material can extend continuously up the wall structure to the top of the mould and then prevents blebs forming on the sides of the cast product.

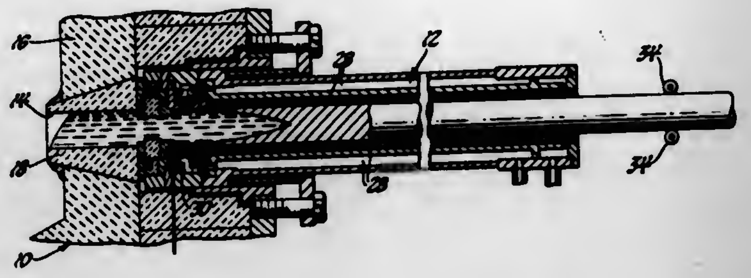
3,726,333
CONTROL OF CONTINUOUS CASTING OPERATION

George M. Goodrich, Almont; Robert G. Williams, Birmingham, and Fred J. Webbere, Orchard Lake, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 879,832, Nov. 25, 1969, abandoned. This application July 7, 1971, Ser. No. 160,487

Int. Cl. B22d *11/12*

U.S. Cl. 164—82 7 Claims



A method and apparatus for continuously monitoring and controlling a continuous casting operation to detect and heal breakouts occurring periodically during the casting operation is disclosed. In a continuous casting operation wherein molten metal is progressively passed through three consecutive zones: a first zone wherein molten metal is passed from a holding vessel without significant solidification due to its low heat transfer capacity, a second zone wherein a thin skin of metal forms progressively due to its relatively high heat transfer capacity, and a third zone in which the molten metal solidifies to form a self-sustaining rod; a thermocouple is placed in the vicinity of the juncture of the first and second zones to measure the temperature fluctuation at the juncture. The advance of the solidified rod is automatically stopped on a continued decrease in temperature at the juncture as measured by the thermocouple which results from a breakout occurring in zone two. Stopping of the rod advance allows for the breakout to heat after which advance is automatically resumed.

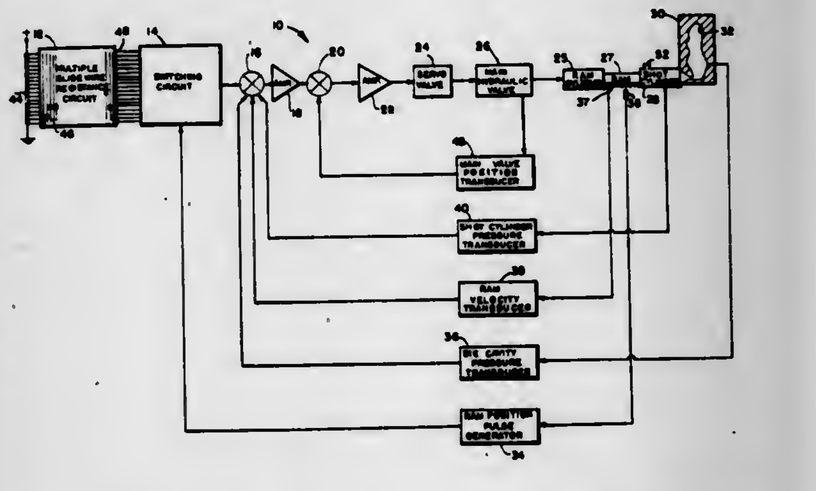
3,726,334
ELECTROHYDRAULIC RAM VELOCITY CONTROL CIRCUIT

David W. Sallberg, Farmington, and Walter E. Meyer, Ferndale, both of Mich., assignors to Koehring Company, Milwaukee, Wis.

Filed Sept. 28, 1970, Ser. No. 75,968

Int. Cl. B22d *17/32*; B29b *5/04*

U.S. Cl. 164—155 7 Claims



An electrohydraulic control circuit for controlling the velocity of a ram driving a fluid into a die cavity is disclosed. In accordance with the control method disclosed, the position of the ram is sensed by a pulse generator and sensed ram positions are used to provide electric signals which vary in accordance with the sensed positions and flow of hydraulic ram drive fluid is varied in accordance with the electric signals provided to vary the velocity of the ram. The electric signals may

be further varied in accordance with one or more of the positions of a metering member in a hydraulic valve supplying ram drive fluid, the pressure of the fluid in the shot cylinder, the velocity of the ram and the pressure in the die cavity. Control of the ram may be directly from a large electrohydraulic servo valve or a pilot electrohydraulic servo valve may be used to control a larger hydraulic valve supplying ram drive fluid.

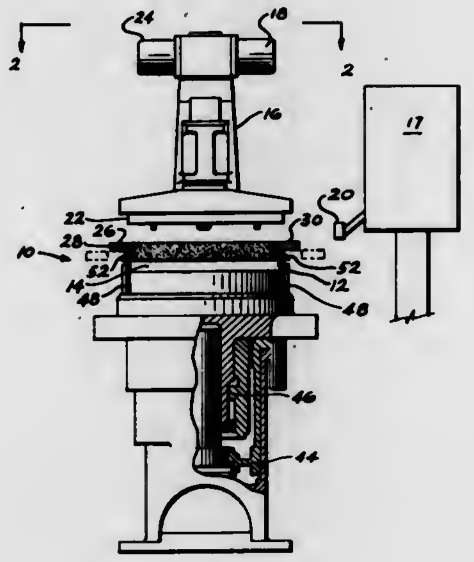
3,726,335
FOUNDRY MOLD MAKING APPARATUS

Lester C. Young, Cleveland, Ohio, assignor to SPO Incorporated, Cleveland, Ohio

Filed April 6, 1971, Ser. No. 131,750

Int. Cl. B22c *15/02*

U.S. Cl. 164—207 4 Claims



Foundry mold making apparatus including a two-piece upset member which in a first position forms an upset positioned above a circular flask, and in a second position is pivoted laterally of the flask, to permit compaction of the sand within the flask, and means for stripping the finished mold from the lower pattern.

3,726,336
CONTINUOUS CASTING OF METALLIC ELEMENTS

Gunther Moritz, 11 Bonn-Bad Godesberg, Germany, assignor to Vereinigte Aluminum-Werke Aktiengesellschaft, Bonn, Germany

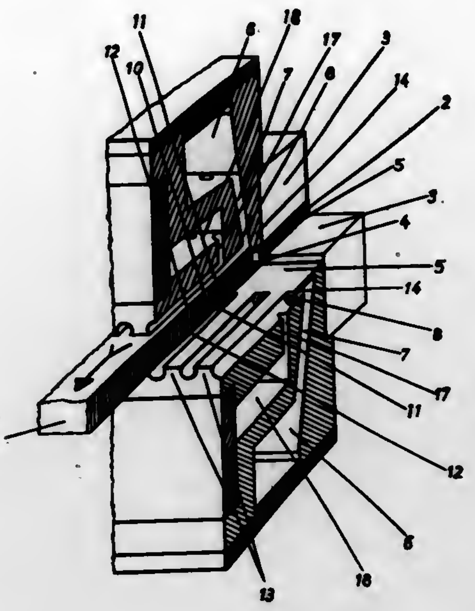
Filed Nov. 16, 1970, Ser. No. 89,802

Claims priority, application Germany, Nov. 14, 1969, P 19 57 314.9; June 12, 1970, P 20 28 947.8; Nov. 12, 1968, P 18 08 418.9

Int. Cl. B22d *11/12*

U.S. Cl. 164—283 1 Claim

A mold for continuous casting of metallic elements has an upright passage of constant cross-section intermediate an inlet and outlet thereof. Feed means feeds into the inlet a stream of molten metal so that the latter solidifies in the passage and advances therethrough as a metallic element of constant cross-section with circumferential clearance. Cooling means introduces into this clearance jets of water in such a manner as to indirectly cool the metallic element in an upstream portion of the clearance and to directly cool the element in a downstream portion of the clearance, and for producing in this clearance an underpressure sufficient to aspirate auxiliary fluids thereinto.



3,726,337
NUCLEAR REACTORS

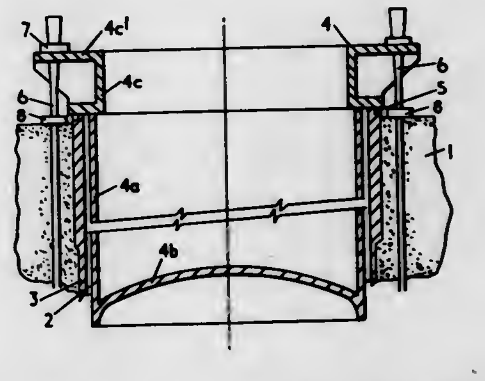
Michael Joseph Proudlove, Knutsford, England, assignor to The Nuclear Power Group Limited, Knutsford, England

Filed Feb. 25, 1970, Ser. No. 13,893

Claims priority, application Great Britain, Feb. 27, 1969, 10,604/69

Int. Cl. F24h *3/00*

U.S. Cl. 165—47 5 Claims



A nuclear reactor pressure vessel comprising a concrete vessel wall, stressing tendons passing through said concrete wall and thereby pre-stressing said concrete, pods provided in said wall for accommodating heat exchanger tube banks, each pod extending to the outer surface of the wall, and a closure member closing each of said pods, each of said closure members being held in position by means of some of said stressing tendons.

3,726,338
CONTROLLED DEFLECTION ROLL WITH CONTROLLED TEMPERATURE

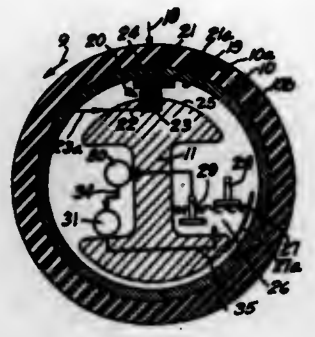
Alan R. Sorenson, Orfordville, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 28, 1970, Ser. No. 101,470

Int. Cl. B21b *13/00*

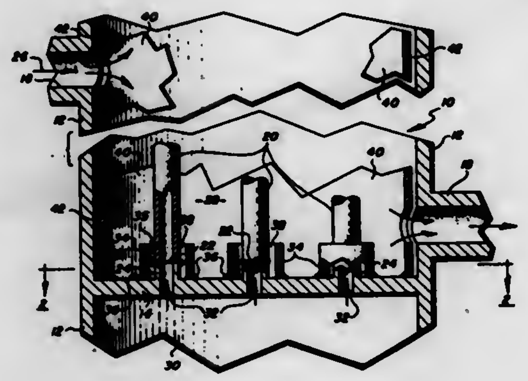
U.S. Cl. 165—89 4 Claims

A controlled deflection roll having a stationary shaft supported at its ends, a roll shell rotatably positioned on the shaft and fluid support means between the shaft and shell transmitting the force of a load on the shell to the shaft, the fluid support means having a lubricating fluid in engagement with the inner surface of the shell, and a heat exchanger supported on the shaft circulating the lubricating fluid and controlling its temperature to control the temperature of the shell with a heat exchange fluid pumped from outside the roll shell to the heat exchanger.



3,726,339
STEAM GENERATOR PROTECTOR

Edward B. Ash, Canoga Park, Calif., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Oct. 13, 1969, Ser. No. 865,839
Int. Cl. F28f *19/00*
U.S. Cl. 165—134 4 Claims

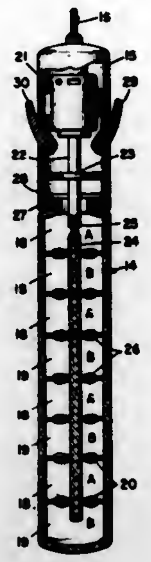


In a liquid metal steam generator having a plurality of parallel metal tubes welded between at least a pair of tube sheets for the passage of fluid therethrough, said tubes being housed in a container. The invention comprises a protective metal cylinder fabricated of a material that resists the corrosive-erosive effects of sodium-water reaction products which surrounds a weld of each of said tubes and a shield between all of the tubes and the container to prevent catastrophic damage to the adjacent tubes and the container in the event of leak in one of the tubes.

3,726,340
APPARATUS FOR OVERCOMING LOST CIRCULATION IN OIL WELLS

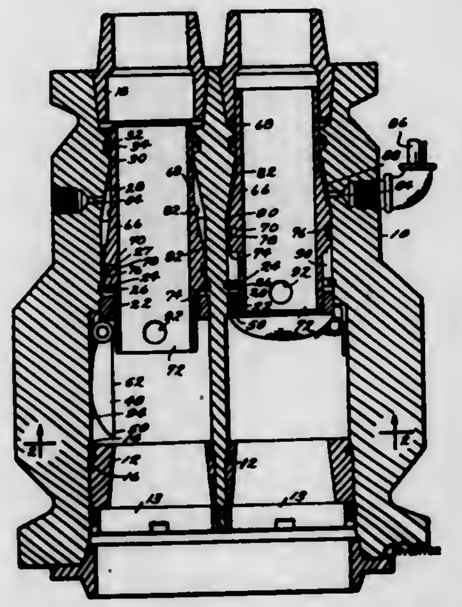
Ward M. Fraser, P.O. Box 101, Harbor City, Calif.
Filed Sept. 3, 1971, Ser. No. 177,669
Int. Cl. E21b *33/13*
U.S. Cl. 166—117 1 Claim

Oil well side walls are rendered substantially impervious to fluid at a level at which lost circulation is occuring by lowering to this level a capsule containing ingredients for generating a polyurethane foam. These ingredients are mixed while the capsule is at a desired level in the oil well bore hole, the resulting generation of foam completely fracturing the capsule and effectively plugging the side walls of the oil well.



3,726,341
PETROLEUM WELL TUBING SAFETY VALVE

Marvin L. Holbert, Jr., Houston, Tex., assignor to Gray Tool Company, Houston, Tex.
Filed March 12, 1971, Ser. No. 123,805
Int. Cl. E21b *33/00*
U.S. Cl. 166—224 13 Claims



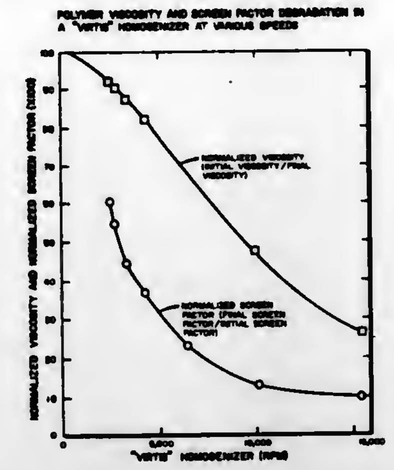
Preferably installed in a socket in the well head, the flapper-type check valve incorporates a differential pressure-operated piston as an opening and closing sleeve. The valve may be economically installed in existing wells e.g. offshore dual wells on multiple well platforms to provide internal blowout and anti-fire protection for wells which presently have no other positive closure than e.g. a storm choke. Even though closed, the flapper-type safety device allows for pumping fluids downward into the well.

3,726,342
METHOD OF POLYMER FLOODING

John S. Rhudy, and Gerald W. Haws, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed March 24, 1971, Ser. No. 127,483
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 12 Claims

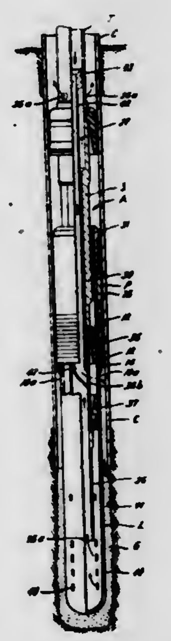
Polymer flooding to increase production of formation fluids from a subterranean oil-bearing reservoir of low permeability, utilizing a polymer of a specified average molecular weight

with at least 5 percent by weight having an average molecular weight at least 1.2 times greater than this specified average molecular weight is improved by mechanically or physically degrading the polymer solution. This substantially decreases the tendency of the polymer solution to "plug" the formation, while only slightly decreasing its viscosity.



3,726,343
APPARATUS AND METHOD FOR RUNNING A WELL SCREEN AND PACKER AND GRAVEL PACKING AROUND THE WELL SCREEN

Philip E. Davis, Jr., P.O. Box 35377, Houston, Tex.
Filed June 24, 1971, Ser. No. 156,363
Int. Cl. E21b *43/04, 43/10*
U.S. Cl. 166—278 14 Claims

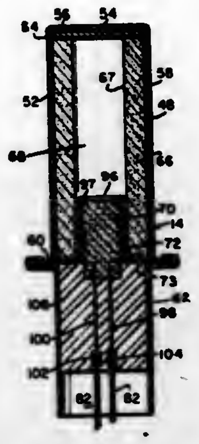


Apparatus and method for running a well screen and packer in a well and gravel packing around the well screen, wherein the well screen and packer are run into the well together on a tubing work string and the packing of gravel around the well screen and the setting of the packer are accomplished without removal of the tubing work string from the well and without pumping gravel by the packing element.

3,726,344
ELECTRICALLY ACTUATED SPRINKLER

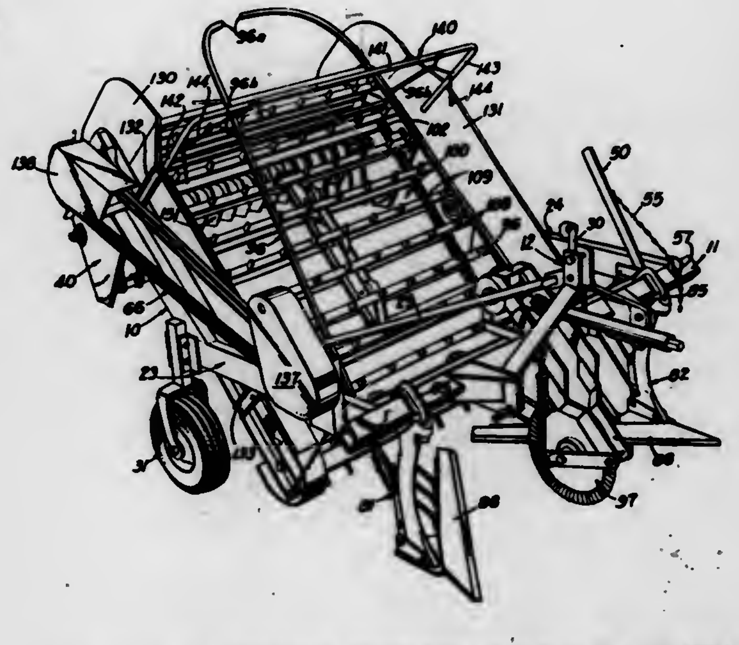
Allan J. Rothman, and J. Brooks Semple, both of Paoli, Pa., assignors to S. R. Products Inc., Mendenhall, Pa.
Filed April 26, 1971, Ser. No. 144,568
Int. Cl. A62c *37/08*
U.S. Cl. 169—37 7 Claims

An electrically responsive heat generating device for use with existing thermally sensitive sprinkler heads for individually or collectively activating the sprinkler heads in response to electrical stimuli from smoke detectors, heat detectors or other alarm circuits. The sprinkler release incorporates a mounting bracket to overfit the sprinkler head body or other fixed construction to position a heat generating device to impinge adequate heat upon the sprinkler fusible elements to activate the sprinkler head.



3,726,345
PEANUT DIGGER SHAKER INVERTER

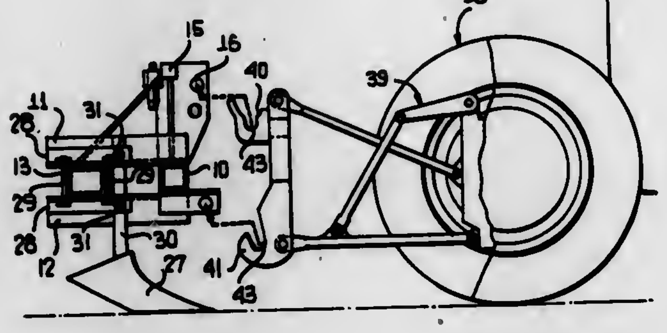
Larry D. Harrell, and Jesse Daniels, both of Albany, Ga., assignors to Lilliston Corporation, Albany, Ga.
Filed April 26, 1971, Ser. No. 137,552
Int. Cl. A01d *29/00*
U.S. Cl. 171—101 40 Claims



A root crop harvesting apparatus operable for digging root crops from a pair of adjacent rows, conveying the dug root crops upwardly along inclined spaced parallel paths to an elevated position and discharging the plants for fall by gravity to the ground. Digging means are operatively associated with the harvesting apparatus for digging and removing root crop plants from their growing implacement in the ground. Conveying means are operatively associated with the harvesting apparatus for engaging the root crop plants, uprooted by the digging means, and operable for conveying the plants upwardly along the spaced parallel paths to the elevated position and operable for simultaneously separating soil therefrom. Plant deflecting means are operatively associated with the harvesting apparatus for contacting plants moving along the spaced parallel paths and operable for effecting an angular displacement of the plants inwardly from their original upright position to a generally horizontal position, to cause them to lie down in the region between the spaced parallel paths so that the plants can be discharged in these positions. Rotatable disc directing means are operatively associated with the harvesting apparatus and located in a position to receive the plants discharged from the conveying means and for directing the plants rearwardly for fall by gravity to the ground. Windrowing means, including two sets of spaced tine assemblies which define a windrowing path therebetween, are operatively associated with the harvesting apparatus for engaging the crop root portion of the plant during fall by gravity to the ground for directing the crop root portion angularly so that the plants are inverted with all of the root crops being crowded together to form a single windrow centered between the rows being dug and with the crop root portions being elevated for maximum exposure and aligned along the top portion of the windrow.

3,726,346
IMPLEMENT HITCH

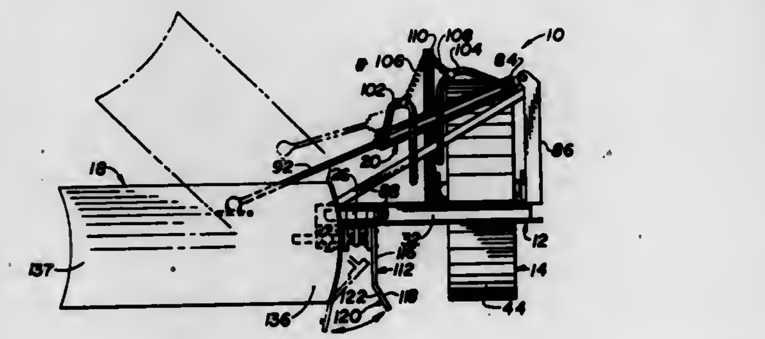
William H. Thompson; Donnie H. Thompson, both of Route 2, Box 122, and Kent B. Thompson, Route 2, Box 57, all of Harlingen, Tex.
Filed Feb. 10, 1971, Ser. No. 114,190
Int. Cl. A01b *59/43*
U.S. Cl. 172—292 6 Claims



The invention consists of an implement hitch designed for use with existing standard farm tractor hitches for plowing wherein the present hitch is used to convert one form of plowing operation to another by converting conventional manual operation to a substantially automatic operation saving considerable labor and time.

3,726,347
EARTH HANDLING APPARATUS

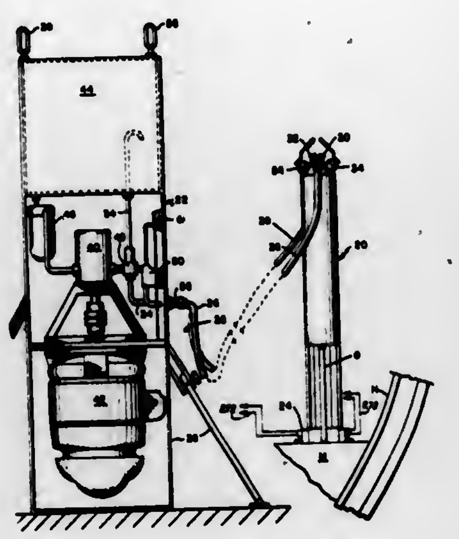
Dennis C. Hymah, 540 Fifth St., Colusa, Calif.
Filed Dec. 8, 1970, Ser. No. 96,199
Int. Cl. A01b *65/00*
U.S. Cl. 172—666 16 Claims



Apparatus for mounting and moving an earth handling tool over the ground wherein a frame has a wheel at one side thereof and a beam at the opposite side, the beam being pivotally mounted on the frame and having means for carrying the tool. Power means carried by the frame is coupled with the beam for moving the same and thereby the tool into and out of operative position. The apparatus is moved forwardly by a suitable towing vehicle and the beam has means adjacent to the rear end thereof to provide lateral stability for the apparatus as it moves over the ground with the tool in any one of its operative positions.

3,726,348
PORTABLE HYDRAULIC POWER TOOL UNIT

Anthony J. Seegan, 82 Pratt St., Glastonbury, Conn.
Filed June 1, 1971, Ser. No. 148,643
Int. Cl. B23b *47/12, 47/22*
U.S. Cl. 173—20 16 Claims



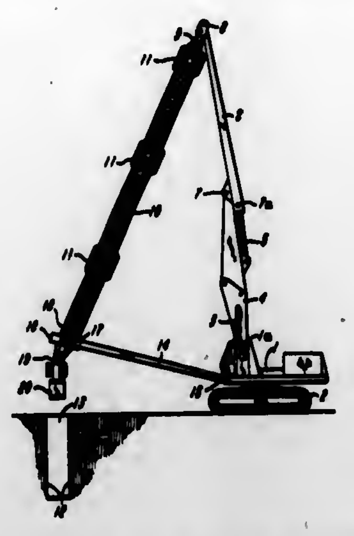
A portable hydraulic power tool is disclosed for applications requiring high torque or rotary motion combined with axial reciprocation in a work arbor. Examples of such applications include various machining operations, particularly drilling or boring of large diameter holes. The tool is especially adapted to provide accurate control of arbor speed, quick reversal of direction of rotation and axial feed of the arbor, and readily variable adjustment of thrust and torque output. To this end the tool utilizes an hydraulic power fed arbor that is both telescopingly reciprocable within a housing and simultaneously rotatable therein, the arbor itself constituting an hydraulic actuator to provide axial power feed while a torroidally arranged hydraulic motor surrounding the arbor produces the rotary drive for the arbor. The tool design affords a unit of improved efficiency, reduced weight and greater compactness, making it possible for a man to carry to a fixed work site a power tool of greater power output capability than conventional power tools of comparable weight and size. The tool housing incorporates an extensible-retractable radial support for the working end of the arbor throughout its axial travel, and torque adapter means are included for securing the tool in place on the work, in order to resist the counter-torque and monitor the force developed during operation.

3,726,349
HYDRAULICALLY OPERABLE APPARATUS FOR MAKING SLIT TRENCHES

Helmut Heusler, Dortmund-Kirchhorde, and Dieter Maly, Lohe, both of Germany, assignors to Orenstein & Koppel Aktiengesellschaft, Dortmund-Dorstfeld, Germany
Continuation-in-part of Ser. No. 785,691, Dec. 23, 1967, abandoned. This application Jan. 22, 1971, Ser. No. 108,772
Claims priority, application Germany, Dec. 23, 1967, P 16 34 923.8
Int. Cl. E21b *47/02*
U.S. Cl. 175—45 4 Claims

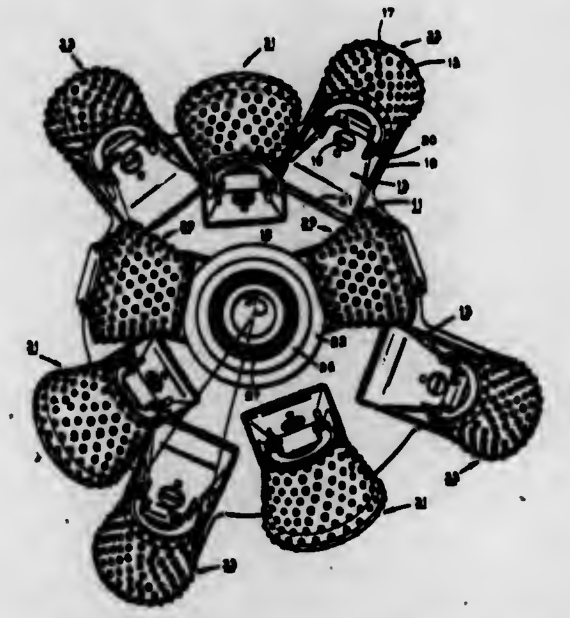
A hydraulically operable implement for producing in the ground vertical deep slit trenches of narrow width which comprises a gripping device adapted to be actuated by an extra long boom and a dipper arm, in which said gripping device suspended on the lower end of beam means through the intervention of a rotatable head connected to the free end of a

dipper arm and supporting said beam means is braced relative to said implement by a bridge pivotally connected to a carriage on said implement, the free end of said bridge being provided with a cradle frame extending around said beam means.



3,726,350
ANTI-TRACKING EARTH BORING DRILL

Rudolf Carl Otto Pessier, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.
Filed May 24, 1971, Ser. No. 146,396
Int. Cl. E21b *9/00, 9/36;* E21c *13/01*
U.S. Cl. 175—374 11 Claims

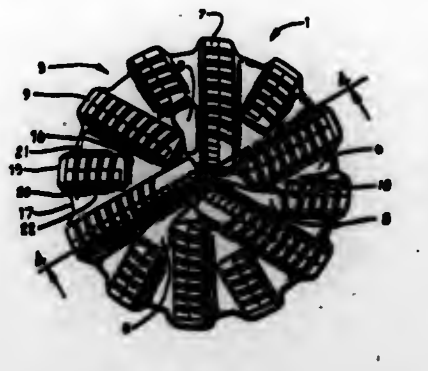


In an earth boring drill, a cutter is disclosed with cutting teeth arranged to engage a selected annular area of the bore hole bottom in a non-tracking and cutter shell erosion preventing manner during bit rotation. The spacing of the teeth in different circumferential rows of the cutter is changed to maintain an optimum distance between the teeth. Further the teeth are arranged in groups of interrupted spacing, and interruption teeth are used selectively to arrange the pattern of teeth to prevent tracking and cutter shell erosion.

3,726,351
MILL TOOL

Edward B. Williams, Jr., P. O. Box 648, 103 Mullaney Road, Greenville, Tex.
Filed April 26, 1971, Ser. No. 137,514
Int. Cl. E21c *13/00*
U.S. Cl. 175—410 3 Claims

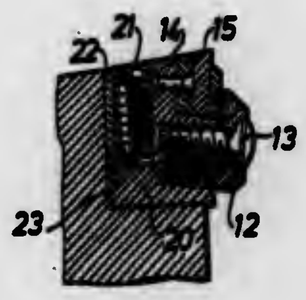
A mill tool includes a tubular body member having a crown portion molded on one end thereof and having a plurality of circumferentially spaced and radially extending ribs extending outwardly from one face of the crown portion and having a plurality of radially spaced cutting elements molded in the ribs and at least one flow passage through the crown portion and



communicating with the tubular body member for flow of fluid therethrough to remove milling debris.

3,726,352
MEANS FOR CLAMPING CUTTING INSERTS IN A DRILL

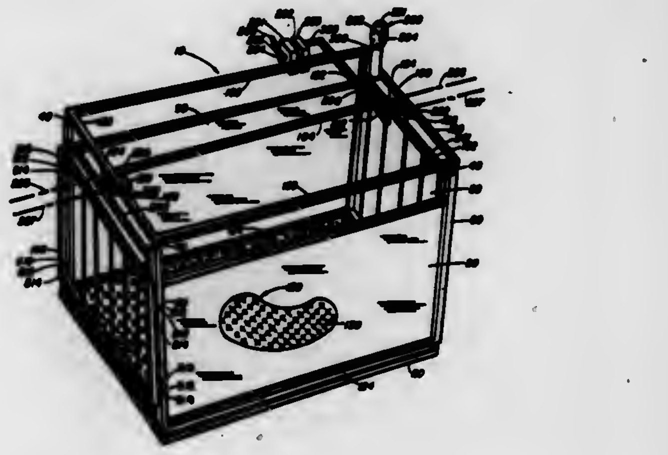
Axel Sven Olov Roos, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden
Filed Nov. 20, 1970, Ser. No. 91,297
Claims priority, application Sweden, Nov. 24, 1969, 16081/69
Int. Cl. E21c *13/00*
U.S. Cl. 175—413 1 Claim



The cutting inserts of a rotary drill are secured to the drill head by means of clamps which attach the inserts on support bodies laterally projecting from the drill body.

3,726,353
LIVESTOCK SCALE

Sheldon L. Christensen, 1963 E. 9th St., Fremont, Nebr.
Filed July 26, 1971, Ser. No. 166,010
Int. Cl. G01g *5/04*
U.S. Cl. 177—208 8 Claims

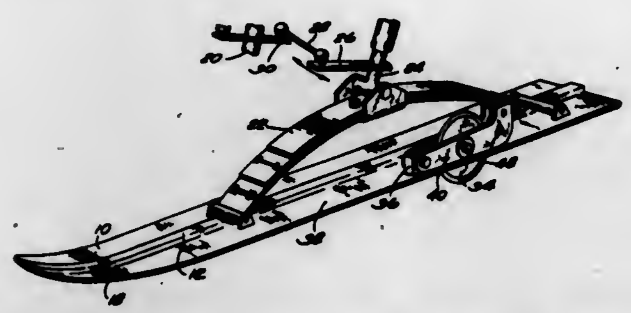


A livestock scale having a main supporting frame, a platform vertically movable on the main supporting frame, a measuring device bearing indicia and adapted to indicate the weight of a load on said platform, means interconnecting the measuring device and said platform in operative correlation, means enclosing the sides of a space above said platform sufficiently to prevent an animal on the platform from escaping.

3,726,354

STEERING & STABILIZING ATTACHMENT FOR SNOW VEHICLES

Ira J. LaPlante, Route 2, Crivitz, Wis.
Filed May 26, 1971, Ser. No. 147,119
Int. Cl. B62m *27/00*
U.S. Cl. 180—5 R 3 Claims

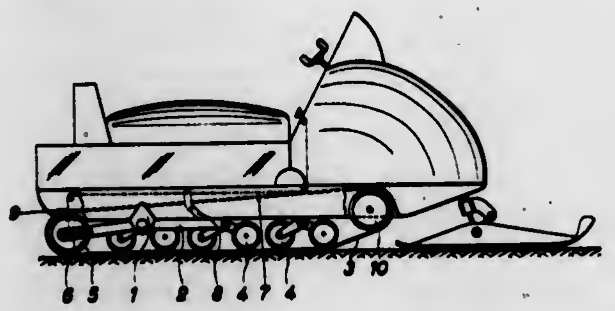


A runner or ski for a snow vehicle includes a steering and stabilizing attachment comprising a disc which is laterally offset from the runner leaf spring and rotatably connected to a pair of swing arms which are pivotally connected to the runner. A spring connected to the swing arms and the ski urges the disc downwardly through a slot in the ski and yieldably affords floating action of the disc in response to ground engagement.

3,726,355

MOTOR SLED

Vilho Johannes Dunder, Storgatan 40, Haparanda, Sweden
Filed March 25, 1971, Ser. No. 127,969
Claims priority, application Finland, March 26, 1970, 870
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R 2 Claims



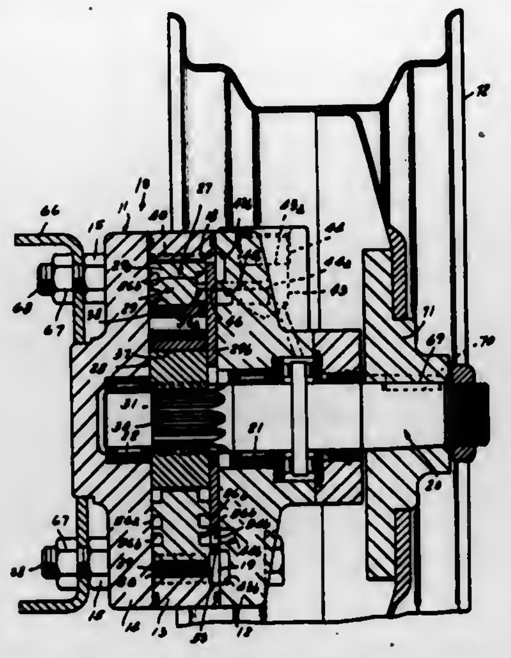
This invention relates to a motor sled or equivalent vehicle moving with the aid of one or several endless track mats, in which the support wheels of the track mat have at least partially been arranged in groups with the aid of a rocking arm system, the set of return wheels having been journalled in one end of said system. According to the invention the set of return wheels can be raised off ground contact into approximately identical position with that of the front end of the track mat.

3,726,356

HYDRAULIC DEVICE

Raymon L. Goff, and Frederick D. Venable, both of Lafayette, Ind., assignors to T R W Inc., Cleveland, Ohio
Division of Ser. No. 841,405, July 14, 1969, Pat. No. 3,627,454. This application Feb. 1, 1971, Ser. No. 111,190
Int. Cl. B60k *7/00*
U.S. Cl. 180—66 F 5 Claims

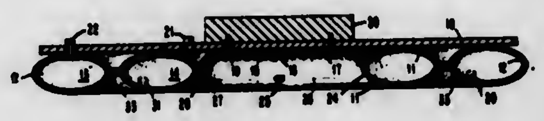
A hydraulic motor-pump assembly including a housing, a chamber formed in the housing, a shaft journalled in the housing and extending into the chamber and a gear set in the chamber including an externally toothed rotor mounted fast on the shaft and an internally toothed stator assembly surrounding the shaft in meshing relation. The stator assembly is geared to the housing so as to cause, in response to relative rotation of the rotor, orbital movement of the stator assembly about the axis of the rotor and rotational movement of the stator assembly about its own axis at a speed less than the speed of rotation of the rotor. Certain passages, ports and the like are provided in the housing and in the stator assembly for directing high and low pressure fluid to and from the expanding and contracting fluid pockets formed between the teeth of the stator assembly in a manner providing high operating efficiency. The motor-pump assembly has wide application including use in a vehicular hydraulic motor drive arrangement.



3,726,357

AIR CUSHION LIFTING PLATFORM

Gerard D. Gauffillet, Binghamton, N.Y., assignor to Gagne Associates, Inc., Binghampton, N.Y.
Filed March 29, 1971, Ser. No. 128,993
Int. Cl. B60v *1/06*
U.S. Cl. 180—124 4 Claims



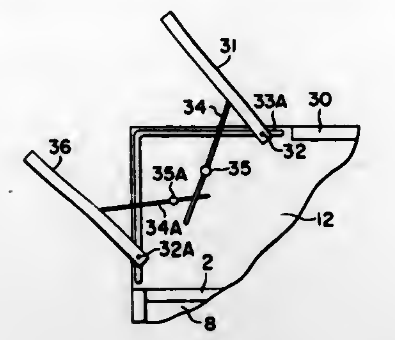
An air cushion supported platform having dual inflatable diaphragms is described. The diaphragms are concentrically disposed. The inner diaphragm is attached to the platform and the outer diaphragm is attached to the inner diaphragm. The air outlet openings are so distributed that the air streams from the two diaphragms coact to produce lifting of the platform.

3,726,358

ROTARY LOUDSPEAKER

Ryu Hiyama, Hamamatsu-shi, Shizuoka-ken, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan
Filed April 14, 1971, Ser. No. 133,972
Claims priority, application Japan, April 17, 1970, 45/36689; April 14, 1970, 45/36690
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 A 5 Claims

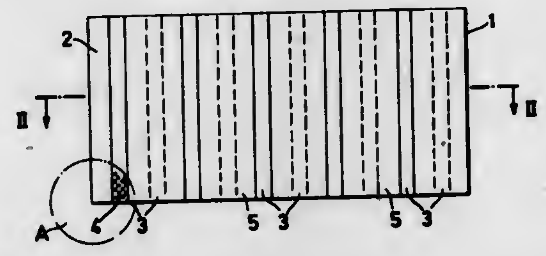
A rotary loudspeaker system comprising, in combination, a rotatable loudspeaker and a reflector plate for reflecting sound radiated from the loudspeaker toward a listener. The reflector plate is located near the loudspeaker in such position that it does not interfere with the rotating movement of the loudspeaker and at such angle that it reflects the sound radiated from the loudspeaker toward the listener. The reflector plate is formed by a part of a cabinet in which the loudspeaker is housed. The angle of the reflector plate may be made adjustable. The reflector plate may be closed to form a completely enclosed cabinet.



3,726,359

MUFFLER FOR FLOWING GASES

Rudolf Dierl, Rossdorf; Peter Rontgen, Giessen, and Georg Hinners, Witten, all of Germany, assignors to Isobertechuik Horst Grassmann, Frankfurt/Main, Germany
Filed April 21, 1971, Ser. No. 135,947
Claims priority, application Germany, April 22, 1970, P 20 19 416.5
Int. Cl. G10k *11/00*
U.S. Cl. 181—42 25 Claims



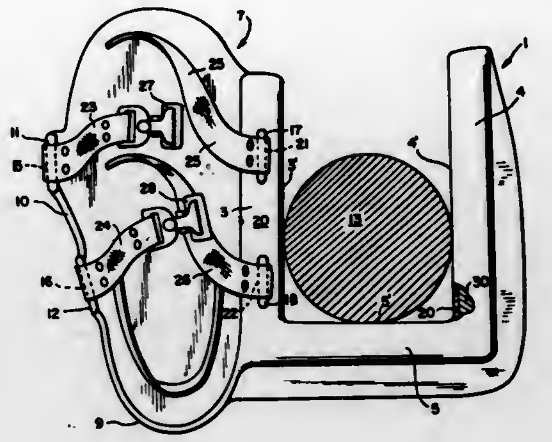
A muffler for flowing gases, particularly for ventilation and air conditioning installations, in the form of a tubular duct of preferably rectangular or square cross section, for the reactive and dissipative absorption of sound, having an externally gastight shell which in its interior contains at least one and preferably a plurality of baffles for muffling the sound, said baffles extending substantially in planes parallel to the direction of flow of the gas and consisting of at least one plate of solid material, such as steel sheet, and of at least one layer of a porous material suitable for absorbing sound, the surfaces of the baffles exposed to the flowing has being of abrasion-resistant construction, wherein the two external cross sectional regions of a baffle which are exposed to the gas stream each consist of a plate provided with perforated areas disposed in bands, the perforated surface area of the bands being smaller than the remaining unperforated surface area and the two plates being so coordinated that across the direction of gas flow the perforated band-like surface areas of the two plates are relatively staggered.

3,726,360

MAST OR POLE CLIMBING DEVICE

William J. Price, 3823 East Lake Way, Redwood City, Calif.; Richard W. Cooper, 1000 Ignatio Boulevard, Apt. 51, Navato, Calif., and Robert A. Gates, 4018 Bennett Valley Road, Santa Rosa, Calif.
Filed Feb. 18, 1971, Ser. No. 116,449
Int. Cl. A63b *27/02*
U.S. Cl. 182—134 8 Claims

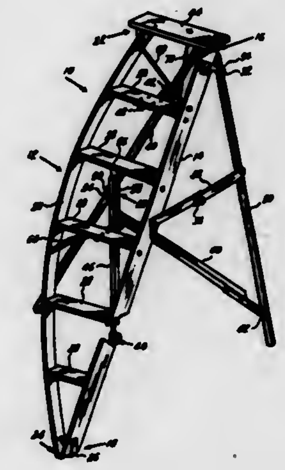
A mast or pole climbing device comprising as an integral unit, a generally U-shaped rigid gripping bar member comprised of an outer gripping bar, an inner gripping bar and a rear gripping bar, said inner and outer gripping bars being substantially parallel to each other and said rear gripping bar connecting said inner and outer gripping bars such that said bars lie in a common plane, the surface portion of the bar gripping the mast or pole being generally rounded, a rigid foot plate including a heel stop on said foot plate and an outer side foot support on said foot plate. The inner gripping bar is integrally connected along substantially its entire length to the inner edge of the foot plate. Attachment means for fastening elements are provided the foot plate and the foot plate forms an angle of about 5° to 30°, preferably 10° to 20° with the common plane of the U-shaped gripping bar member. A coating of resilient material such as plastic is applied to at least the gripping surface of the gripping bars.



3,726,361

FOLDABLE LADDER

George Harvey Emmons, 11 South 12th St., Marshalltown, Iowa
Continuation-in-part of Ser. No. 57,484, July 23, 1970. This application Dec. 29, 1971, Ser. No. 213,469
Int. Cl. E06c *1/20*
U.S. Cl. 182—170 11 Claims



A step ladder structure having a foldable three legged tripod supporting frame. The ladder component utilizes one of the tripod legs as a side piece and a second ladder side piece is secured at one end to the ground engaging end of the other side piece from which it extends upwardly in a suitable spaced relationship with spaced steps connected to the two side pieces in a ladder relationship. Bracing is provided between the second side piece and the other two tripod legs.

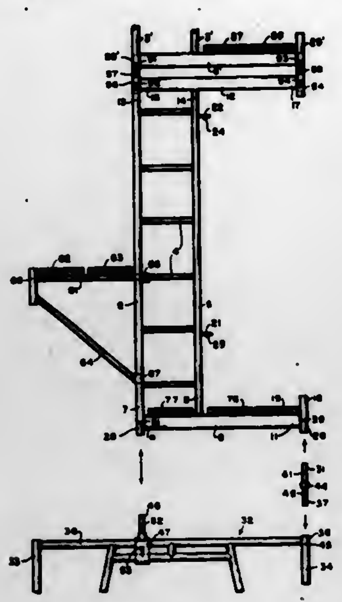
3,726,362
A C SCAFFOLD FRAME

James D. Puckett, Castro Valley, Calif., assignor to Trio Leasing, San Leandro, Calif.

Filed March 13, 1972, Ser. No. 234,240

Int. Cl. E04g *1/14*

U.S. Cl. 182—178 **7 Claims**



A scaffold member for use with one or more identical members consisting of a pair of elongated members normally positioned in a vertical position, joined by a plurality of rungs forming a ladder and joined to a pair of upper and lower ledgers cantilevered from the ends of said elongated members and adapted for receiving scaffold plank.

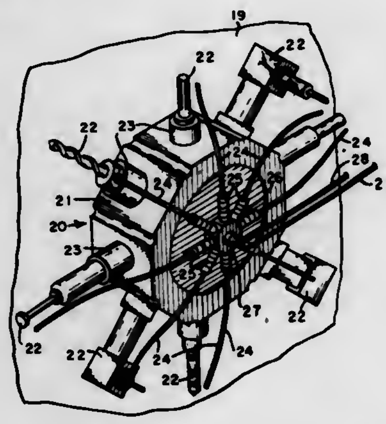
3,726,363
COOLANT SPIDER ASSEMBLY

Ernst Sussman, Bethlehem, Pa., assignor to Eugene Twining, Allentown, Pa., a part interest

Filed June 8, 1971, Ser. No. 151,065

Int. Cl. F16n *7/30*

U.S. Cl. 184—56 R **5 Claims**



A coolant spider assembly that serves to selectively feed coolant to the spindles of a turret type drilling machine, and wherein there is provided a valve means for controlling the flow of coolant, and wherein there is also provided a sealing arrangement for the spider assembly.

3,726,364
ELEVATOR HEAT CONTROLLED SAFETY CIRCUIT

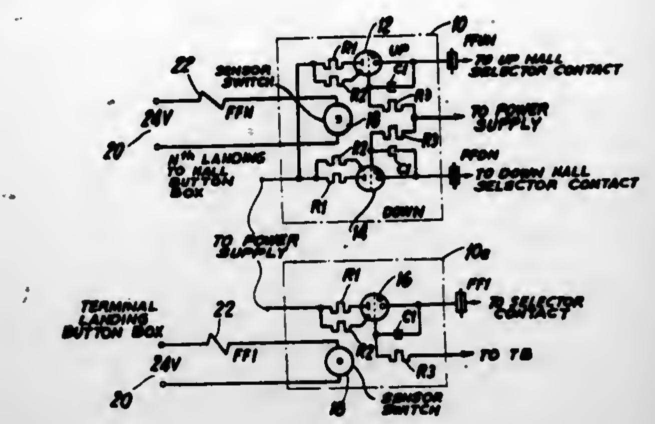
Yale Citrin, Scarsdale, and Thomas Imperatore, Long Island, both of N.Y., assignors to Thermocycle, Inc., Brooklyn, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,561

Int. Cl. B66b *13/24*

U.S. Cl. 187—29 R **4 Claims**

A safety circuit for preventing the operation of the hall call and car call circuitry in an automatic elevator control system whenever the temperature sensed at a hall call button at any landing exceeds a predetermined value. A temperature controlled switch is positioned in the hall call button enclosure and operates when the predetermined temperature level is sensed to effectively disable the hall and car call relay circuitry for any landing at which an excessive temperature is sensed so as to prevent an elevator car from stopping at that landing.



3,726,365
INTERNAL COMBUSTION ENGINE

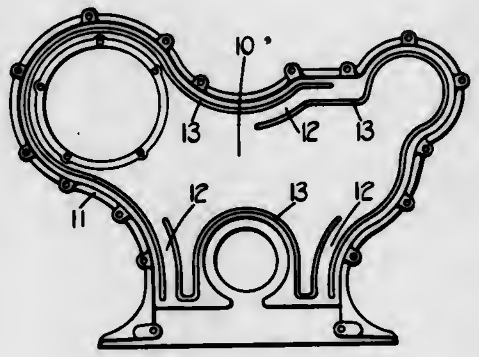
Michael Frederick Russell, 67 Swakeleys Drive, Middlesex, England

Filed Feb. 5, 1971, Ser. No. 112,868

Claims priority, application Great Britain, Feb. 25, 1970, 8,985/70

Int. Cl. F16f *7/08*

U.S. Cl. 188—1 B **3 Claims**



A metallic panel for an internal combustion engine, the panel being of the kind not supporting a load. The panel is divided into a peripheral portion and a central portion the two portions being interconnected by at least one strip of metal and the spaces defined between the edges of the portions being occupied by a filling which is formed from a flexible non-metallic material. The two portions are substantially isolated from each other and the radiation of noise from the central portion is substantially reduced.

3,726,366
AUTOMATIC STABILIZER FOR POWERED IRRIGATION PIPE LINES

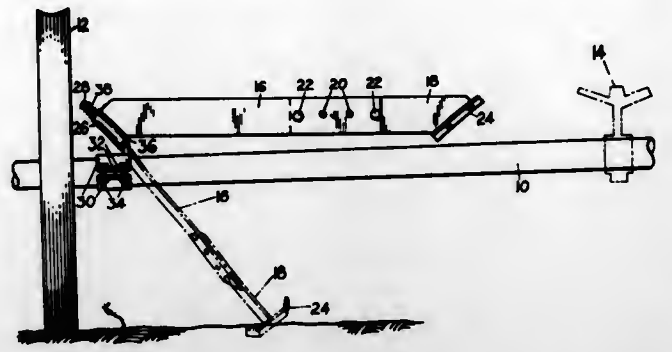
Leonard H. Williams, P.O. Box 233, Hermiston, Oreg.

Filed Dec. 11, 1970, Ser. No. 97,262

Int. Cl. A01g *25/02*

U.S. Cl. 188—6 **5 Claims**

An elongated stabilizer arm is mounted pivotally at one end on a support adapted to be secured to an irrigation pipe supported above the ground by spaced wheels, with the pivot axis disposed in a vertical plane and extending obliquely with respect to the longitudinal dimension of the pipe, whereby the arm is movable laterally downward to opposite sides of the pipe for engagement of its opposite end with the ground. A spring interengages the support and arm for urging the latter to a rest position parallel to the pipe, the arm being movable to said lateral ground-engaging positions by a predetermined velocity of wind reacting against the arm.



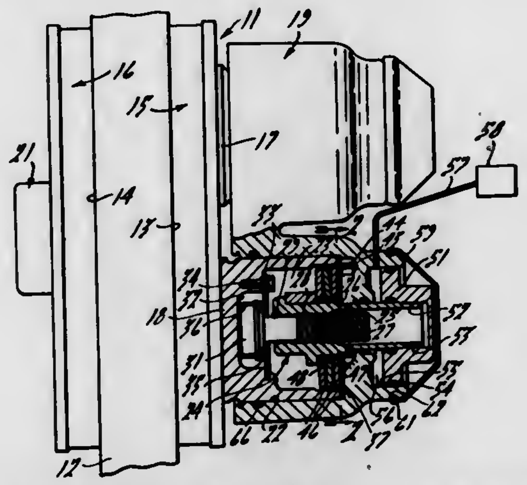
3,726,367
COMBINED SERVICE AND PARKING BRAKE

Anthony C. Evans, Westland, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed July 21, 1970, Ser. No. 56,921

Int. Cl. F16d *55/14*

U.S. Cl. 188—106 P **12 Claims**



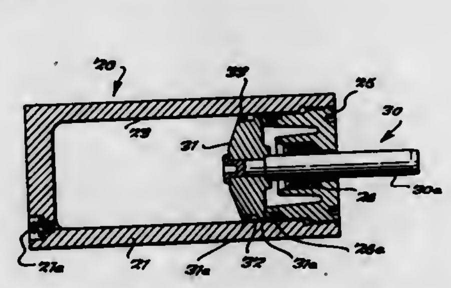
A disk brake assembly for a motor vehicle in which the friction pads are applied by a spring force in addition to being hydraulically actuated. A fluid pressure release system is employed for releasing the spring actuated portion of the brake. This brake may, therefore, function as a combined service and parking brake with the spring applied portion serving as the parking brake.

3,726,368
FLUID AMPLIFIED LIQUID SPRING SHOCKS AND/OR SHOCK ABSORBERS

Paul H. Taylor, 3877 East River Road, Grand Island, N.Y. Continuation of Ser. No. 764,377, Sept. 30, 1968, abandoned. This application Oct. 30, 1970, Ser. No. 85,796

Int. Cl. F16f *9/19*

U.S. Cl. 188—316 **8 Claims**



A shock absorber which uses fluid amplification to provide programmed fluid flow and highly efficient shock curves without the necessity of expensive and inefficient metering holes, metering pins, and/or pressure responsive valves is provided by the interaction of: (1) a fluid passage clearance between a shock piston head or vane and the chamber, which houses and is swept by the head or vane, (2) an indentation formed around the periphery of the head or vane, and (3) a plurality of openings between the head or vane and the indentation formed around the periphery of the head or vane.

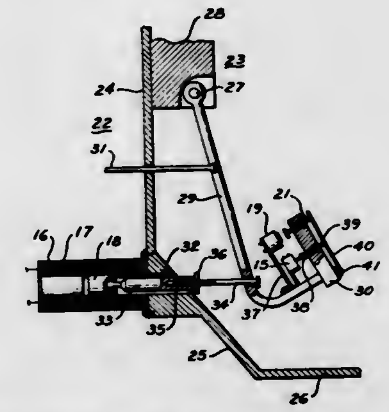
3,726,369
AUTOMATIC BRAKE ACTUATOR

Joao De Assuncao Esteves, 1477 Pacific Avenue, San Leandro, Calif.

Filed Jan. 14, 1971, Ser. No. 106,513

Int. Cl. F16d *67/00*

U.S. Cl. 192—3 TR **7 Claims**



Brake actuator mechanism for energizing the brake system of an automotive vehicle automatically during the interval that the driver's foot is removed from the accelerator pedal and is placed on the brake pedal. Thus, the loss of time otherwise incident to movement of the driver's foot from the accelerator pedal to the brake pedal is obviated. The mechanism includes a brake-system actuator in the form of a solenoid connected with the brake pedal and operative, when energized, to displace the same inwardly, thereby causing the brakes to be applied. A sensor in the form of a switch is located on the accelerator pedal so that the switch is tripped whenever the driver's foot is removed from the pedal. Control means in the form of an electric circuit including the actuator and sensor as elements thereof is responsive to the sensor and effective to energize the actuator automatically whenever the driver's foot is released from the brake pedal.

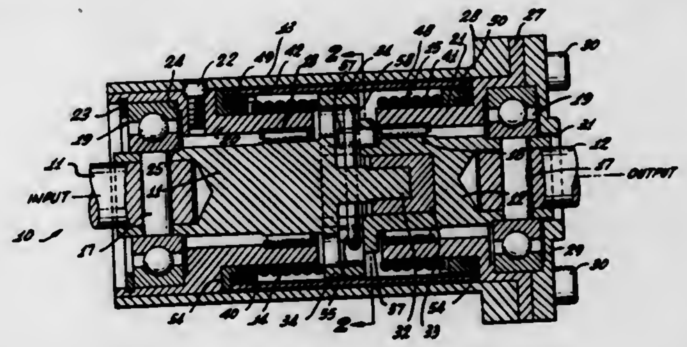
3,726,370
BIDIRECTIONAL NO-BACK COUPLING

Lex W. Hubbard, Jr., 4637 Park Murasol, Calabasas Park, Calif.

Filed July 15, 1971, Ser. No. 163,010

Int. Cl. F16d *67/00, 49/02*

U.S. Cl. 192—8 C **17 Claims**



A coupling in which an input shaft is disposed in end-to-end relation with an output shaft, and two fixed sleeves are disposed around the adjacent end portions of the shafts with helical locking springs wrapped around the sleeves to grip the latter. The adjacent ends of the springs are secured to the output shaft so that one spring is tightened around its sleeve when torque is applied to the output shaft in either direction, and a cylindrical cage rotatable with the input shaft has dogs engaging the remote ends of the springs to loosen the spring that otherwise would be tightened, thereby freeing the output shaft for rotation by the input shaft through a jaw-type connection. A preloaded spring shifts the cage to the neutral position upon cessation of turning of the input shaft, thereby immediately relocking the output shaft.

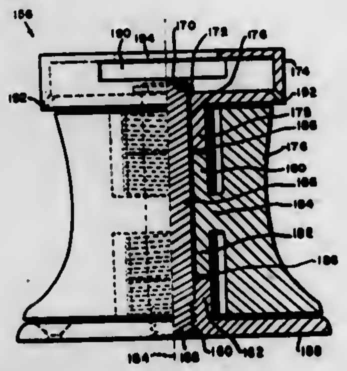
3,726,371
TORQUE DEVICE FOR WINCHES AND THE LIKE

Irving R. Versoy, Scituate, Mass., assignor to Walter J. Kreske, Newton Centre, Mass., a part interest

Division of Ser. No. 747,398, July 24, 1968, Pat. No. 3,581,854. This application Feb. 26, 1971, Ser. No. 119,332

Int. Cl. F16d *67/02, 41/07;* **B66d** *1/30*

U.S. Cl. 192—12 BA **5 Claims**



Positive backstop type silent infinitely variable reciprocating to unidirectional motion converter in the form of improved winch embodiments, each having a winch drum constrained to rotate in a single direction with respect to a winch spindle on which it is mounted, the constraint being achieved by a silent positive backstop action of a first roller, sprag or spring clutch engaging the drum and spindle, each winch also including a lever receiving winch top structure mounted to rotate on the spindle and constrained by silent positive backstop action of a second roller, sprag or spring clutch engaging the top structure and winch drum to rotate with respect to the winch drum only in the opposite direction of the winch drum rotation.

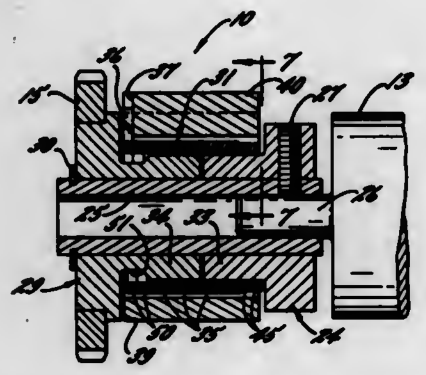
3,726,372
HELICAL SPRING CLUTCH

John S. Baer, Medford Lakes, and John H. Weatherby, Sewell, both of N.J., assignors to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Oct. 27, 1971, Ser. No. 193,057

Int. Cl. F16d *11/06*

U.S. Cl. 192—26 **16 Claims**



A normally engaged helical spring clutch in which selected turns of the spring are telescoped with a differential fit over the input and output hubs to insure torsional loading of the spring as an incident to disengagement of the clutch.

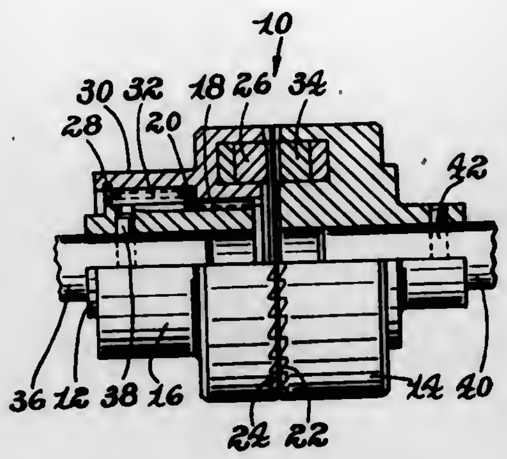
3,726,373
OVERRUNNING CLUTCH WITH MULTIPLE MAGNET RETARDATION

Donald L. Miller, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 8, 1970, Ser. No. 96,203

Int. Cl. F16d *27/00*

U.S. Cl. 192—84 PM **8 Claims**



A positive drive jaw or tooth clutch of the overrunning type which automatically engages and/or disengages by axial movement of a movable clutch member connected through a helical spline or equivalent connection, such as a pin and slot connection, to a driving member is disclosed herein. The clutch is particularly characterized by the addition of multiple permanent magnet drive means to provide a retarding force which induces axial travel between the helically-connected members to obtain clutch engagement but wherein the magnet drive means are of the synchronous follower drive type which permits high speed overrun without overheating.

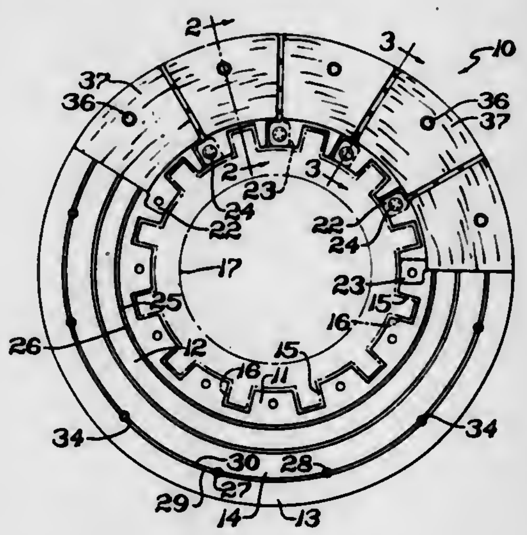
3,726,374
CIRCULAR SEGMENTED FRICTION MEMBER FOR BRAKE OR CLUTCH

John H. Warren, Troy, and Lowell D. Bok, Anno, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed June 2, 1971, Ser. No. 149,169

Int. Cl. F16d *11/00*

U.S. Cl. 192—107 R **13 Claims**



A brake or clutch mechanism having an annular stator or rotor with concentric rings of heat absorbing material sandwiched between facing members connected by fasteners extending between the rings for holding the rings in spaced-apart position. The facing members are connected to a torque member at the inner or outer periphery which holds the next adjacent ring in place.

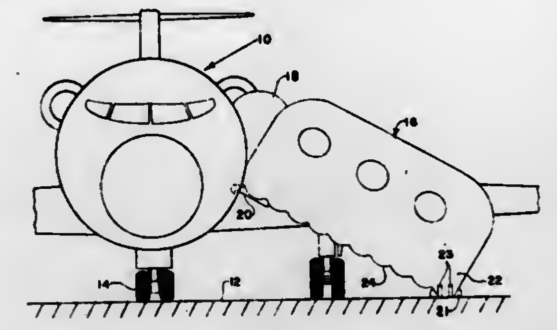
3,726,375
INFLATED ESCAPE RAMPS

Steven W. Blate, Akron; Donald B. Tschudy, Canton; Robert S. Ross, Northfield Center; Fred W. Mellor, Akron; Harry T. Kifor, Canton, and William C. Davidson, Cuyahoga Falls, all of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Continuation of Ser. No. 753,351, Aug. 19, 1968, abandoned. This application March 8, 1971, Ser. No. 121,954

Int. Cl. B65g *11/10*

U.S. Cl. 193—25 B **9 Claims**



The invention comprises an inflatable ramp particularly designed to serve as an escape or a discretionary ramp for association with aircraft usage in an emergency type situation. The convex shaped lobes on the ramp serve as omniangle steps regardless of the angle of the ramp with the relationship to the horizontal, wherein the entire ramp is packageable within the aircraft structure. The specific construction of the ramp utilizing dual wall thread connected inflatable fabric is important to the operational structure of the invention, and to the fabrication of the ramp which will have sufficient strength to withstand passenger traffic or other loading when deplaning without collapsing, and in addition permit reentry into the plane cabin. It can further be used for deplaning injured people confined to stretchers and so forth.

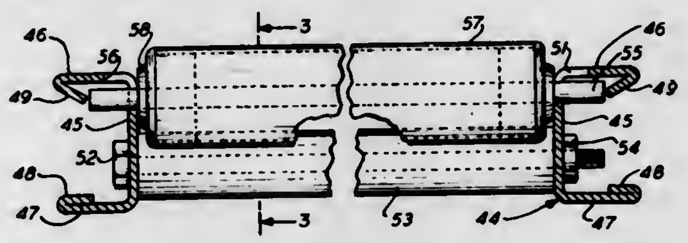
3,726,376
CONVEYOR ASSEMBLY

Robert W. Gotham, Summit; Robert J. McKnight, Freehold, and Frank J. Neuwirth, Manasquan, all of N.J., assignors to Unex Conveying Systems, Inc., Edison, N.J.

Filed March 19, 1971, Ser. No. 126,006

Int. Cl. B65g *13/00*

U.S. Cl. 193—35 R **4 Claims**



A Roller Conveyor assembly including rollers mounted rotatably on axles, side rails formed with pockets for the ends of the axles, and means integral with the frames to prevent vertical and longitudinal displacement of the axles.

3,726,377
VENDING MACHINE HAVING THREE-CONDUCTOR COLLATING CIRCUIT

Masakane Nakayasu, and Toshihisa Kosaka, both of Himeji-shi, Japan, assignors to Kabushiki Kaisha Kokuei Seisakusho, Himeji-shi, Hyogo-ken, Japan

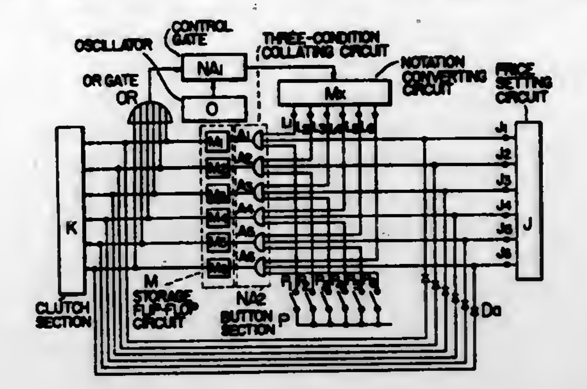
Filed Oct. 21, 1971, Ser. No. 191,452

Claims priority, application Japan, Oct. 23, 1970, 45/93826

Int. Cl. G07f *11/00*

U.S. Cl. 194—10 **9 Claims**

In a coin-operated vending machine for automatic ejection of a selected one of assorted commodities in stock therewithin, there are provided a notation converting circuit having a desired number of output terminals successively producing an output signal, a price setting circuit having the same number of output terminals only one of which produces an output signal when a prescribed coin has been dropped,



and a merchandise selecting means which produces an output signal when one of its contact pairs has been manually closed. When the aforesaid three output signals are simultaneously impressed to one of several gates which make up a three-condition collating circuit, and output signal is produced therefrom for actuation of a merchandise ejecting means.

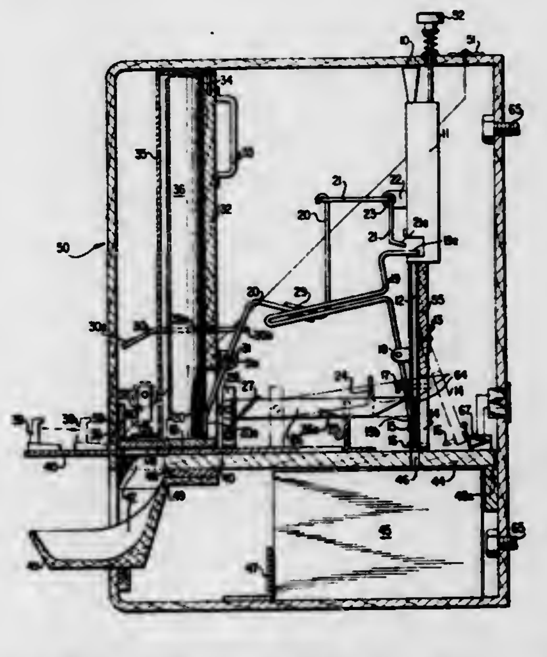
3,726,378
COIN HANDLING APPARATUS

Bennie P. Simons, 2516 Robinson Way, Huntsville, Tex.

Filed June 9, 1971, Ser. No. 151,296

Int. Cl. G07d *1/04;* **G07f** *5/24*

U.S. Cl. 194—92 **21 Claims**



Coin handling apparatus includes a coin acceptor/rejector for receiving a coin deposited therein and discharging an accepted coin into a coin chute. Retaining means project into the coin chute for retaining an accepted coin discharged therein. A movable plate, manually operated by a user of the apparatus, carries a notched locking bar and a coin release action bar, the locking bar being biased to normally engage a stop and prevent cycling of the apparatus in the absence of a coin being received on the coin retaining means. The locking bar includes means for engaging a coin retained in the coin chute, thereby to be urged out of its normal, resiliently biased position and avoid engaging the stop, and permitting further movement of the movable plate. The coin release action bar, during that further plate movement, effects withdrawal of the retaining means from the coin chute and permits the coin to pass through the chute and be deposited in a coin box. The movable plate may then be withdrawn, completing the cycle. A coin changer embodiment of the apparatus further includes a plurality of coin storage tubes containing coins to be dispensed, the movable plate having a plurality of corresponding coin pockets. The full cycle of movement of the plate, as permitted by the presence of a coin held within the chute by the coin retaining means, permits disposing the coin pockets beneath the corresponding coin storage tubes for receiving a coin from each tube in the corresponding pocket. As the plate is withdrawn in completing the cycle of operation, the coins in the pockets are correspondingly withdrawn from the coin storage tubes and passed over a discharge chute through which the coins are dispensed to the user. The coin handling apparatus may then be employed to actuate a further mechanism upon deposit of a coin of appropriate denomination therein, alternatively as a coin changing mechanism for dispensing coins of smaller denomination from the coin storage tubes and of an aggregate value corresponding to the denomination of the deposited coin, or as a combination thereof, supplying coins of smaller denominations and actuating a further mechanism, the service charge for which mechanism in addition to the aggregate value of the dispensed coins of smaller denominations corresponding to the value of the deposited coin. Means are provided for automatically rejecting any additional coin deposited while a previously deposited coin is present on the retaining means and, in the coin changing apparatus, when the supply of coins to be dispensed is exhausted.

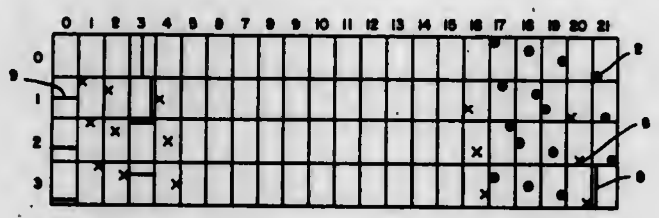
3,726,379
TYPEHEAD CHARACTER RASTER FOR PLOTTING

Earl J. Isaac, Novato, Calif., assignor to Tplot, Inc., San Rafael, Calif.

Filed Aug. 24, 1970, Ser. No. 66,358

Int. Cl. B41j *3/00*

U.S. Cl. 197—1 R **2 Claims**



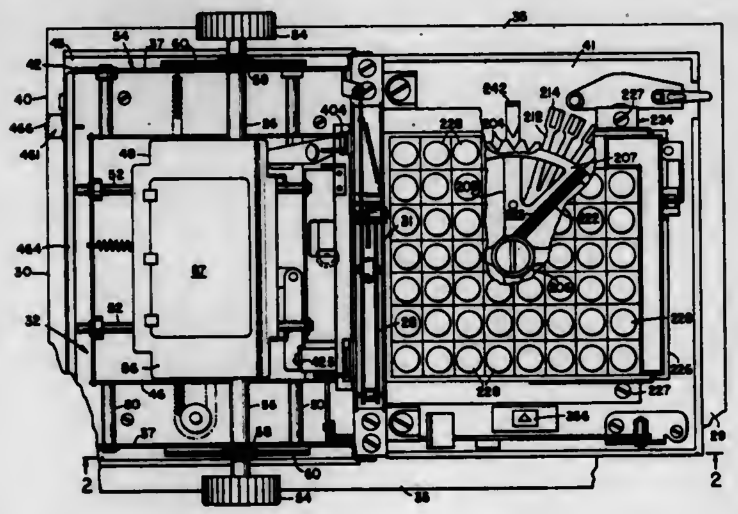
A character raster for movable typehead printing elements which prints gridded graphs with uniform X–Y resolution.

3,726,380
CARD EMBOSSING APPARATUS

Eugene Beers, Lafayette; Milton M. Brown; William A. Eckes, both of Berkeley, and William A. Penaluna, Pinole, all of Calif., assignors to Dymo Industries, Inc., Emeryville, Calif.

Filed March 25, 1971, Ser. No. 127,919

U.S. Cl. 197—6.6 **22 Claims**



Apparatus for embossing cards and the like which has a housing and an embossing station disposed beneath a type die support frame extending upwardly from the housing. A card holder mounts a card to be embossed and is rectilinearly movable for placement of the cards beneath the frame at the embossing station, incremental movement of the card in an embossing line direction, incremental movement of the card in a direction perpendicular thereto for the spacing and embossing of a plurality of parallel lines. An embossing wheel is mounted on the side of a frame opposite from the card holder and has a plurality of peripherally arranged type die sets mounted on flexible cantilever arms extending from the wheel. The type dies are mounted on ends of the arms and are movable into registration with the embossing station so that one die is disposed on each side of the card. A keyboard disposed over the type wheel selects the registration of the desired type dies. A drive mechanism is mounted on the lower portion of the housing for continuous rotation of the embossing wheel except during the embossing of a symbol on the card, which is effected by actuation of a selective key, key actuation causing the drive means to stop. The drive mechanism further moves the opposing type dies into engagement with the card for the embossing of a symbol, releases the actuated key to permit rotation of the type wheel after the completion of an embossing cycle, and incrementally moves the card holder forward in a line direction after each embossing cycle to position the card for the embossing of the next symbol. The increments by which the card holder can be advanced are variable and the card holder includes means for pivoting the card into an inclined position when the card is removed from beneath the frame for the convenient withdrawal of the card from and the insertion of a card in the card holder.

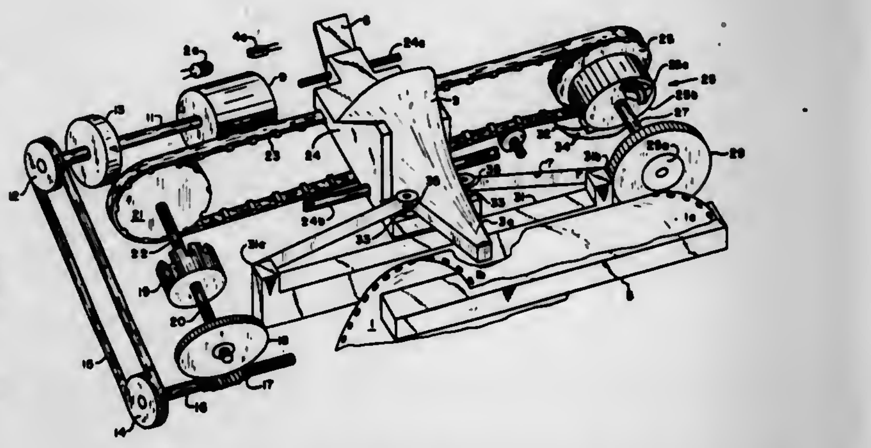
3,726,381
PRINTER RIBBON FEED

John B. Murphy, West Roxbury, Mass., assignor to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed March 3, 1971, Ser. No. 120,432

Int. Cl. B41j *33/10*

U.S. Cl. 197—168 **4 Claims**



A printer having a printhead which moves from left to right across the document to print a line and a ribbon located between the printing end of the printhead and the document. Ribbon supply means is provided at the right side of the document, ribbon take-up means is provided at the left side of the document and means for engaging the ribbon when the printhead moves from right to left is mounted on the printhead. During a printing operation with left-to-right movement of the printhead, the ribbon remains stationary and is traversed by the printhead. This provides a new area of the ribbon for printing each character. When the printhead returns to the left to begin a new line, printing does not occur and the engaging means connected to the printhead pulls the ribbon from the supply means. The resulting slack in the ribbon is taken up at the left side of the document by the take-up means and when the printhead reaches the left margin a new supply of ribbon has been provided for printing the next line. Since the printhead prints when moving toward the right, its velocity is slower in this direction. Preferably, the engaging means is fractionally operable to engage the ribbon at the higher speed during leftward movement but slides with respect to the ribbon at the slower velocity during rightward movement.

3,726,382
LOADING MACHINE

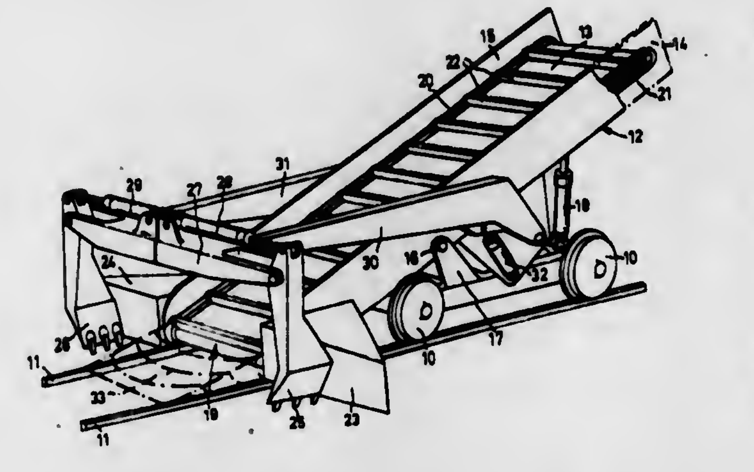
Erik Kurt Hannes Gelfgren; Karl Verner Peterson, both of Ornskoldsvik, and Olle Sundin, Gullanget, all of Sweden, assignors to AB Hagglund & Soner, Ornskoldsvik, Sweden

Filed Sept. 15, 1970, Ser. No. 72,262

Claims priority, application Sweden, Sept. 24, 1969, 13147/69

Int. Cl. B65g *65/06*

U.S. Cl. 198—10 **1 Claim**



A loading machine especially designed to be utilized in smaller drift mines and tunnels. The machine comprises a wheeled chassis and a track adjustable at different vertical angles, the track being provided with a continuous conveyor. Pivotably journalled at the loading end of the track are two digging arms which are controlled by hydraulic cylinders so as to effect digging movement in a direction towards each other in essentially vertical swinging planes which form an angle with the longitudinal direction of the track.

3,726,383
METHOD AND APPARATUS FOR BALANCED AUTOMATIC TRANSPORT OF CIGARETTE TRAYS OR THE LIKE ALONG AN ENDLESS PATH

Ulrich Bornfleth; Fritz Selenke, both of Hamburg; Jurgen Koehn, Hamburg-Kirchwerder, and Frank-Dieter Lehmann, Wentorf, all of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Bergedorf, Germany

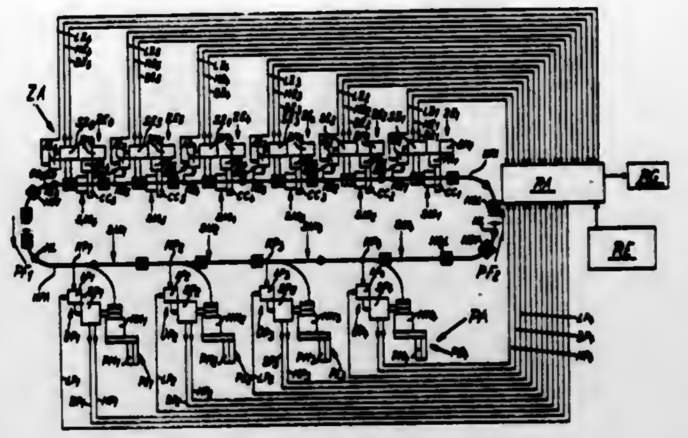
Filed June 21, 1971, Ser. No. 154,958

Claims priority, application Germany, June 20, 1970, P 20 30 515.1

Int. Cl. B65g *47/00*; A24c *1/10*

U.S. Cl. 198—20 R **17 Claims**

An endless conveyor has equidistant carriers which are transported past several cigarette making machines and past several cigarette packing machines. Each machine is associated with an automatic transfer unit which is activatable to transport cages with trays for cigarettes between the adjacent carrier and the respective machine so that the output of the cigarette making machines is transported to the cigarette packing machines and the cages with empty trays are returned to the cigarette making machines. A computer responds to signals from transfer units which are in need of cages with filled or empty trays and scans the conveyor for concentrations of unoccupied carriers, carriers transporting cages with filled trays, and carriers supporting cages with empty trays in order to activate the transfer unit in a manner to avoid excessive concentrations and excessive scarcity of unoccupied carriers or carriers transporting cages with filled and empty trays in various portions of the conveyor.



3,726,384
MACHINE TOOLS

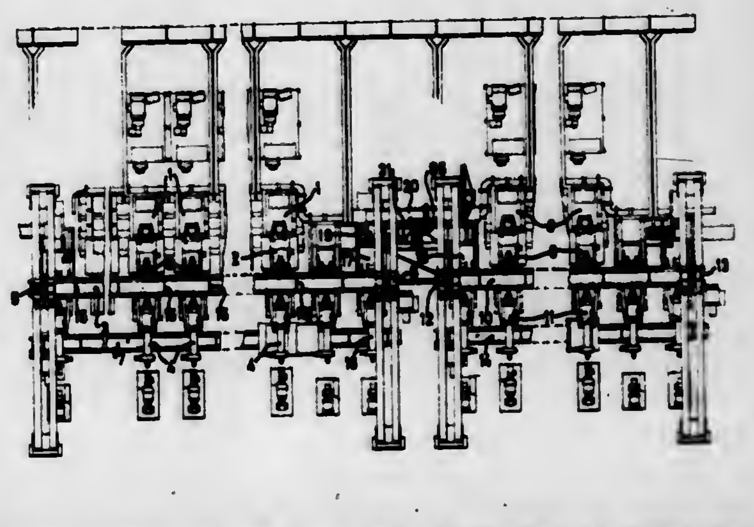
Ronald L. Archibald, Bushey, England, assignor to The Lapointe Machine Tool Company Limited, Watford, England

Filed June 5, 1970, Ser. No. 43,912

Claims priority, application Great Britain, Dec. 18, 1969, 61,730/69

Int. Cl. B65g *47/00*

U.S. Cl. 198—25 **7 Claims**



Two groups of machines, for broaching or otherwise machining the roots and tips respectively of workpieces such as turbine and compressor blades, are arranged in a single line. Each group is served by a separate free flow conveyor which carries workholders, each containing a workpiece, to each machine in turn and transfer mechanism arranged between the two groups of machines is operable to remove each workpiece from its workholder on one conveyor, rotate it through 180° and return it to a workholder on the other conveyor.

3,726,385
CLOSURE HANDLING APPARATUS

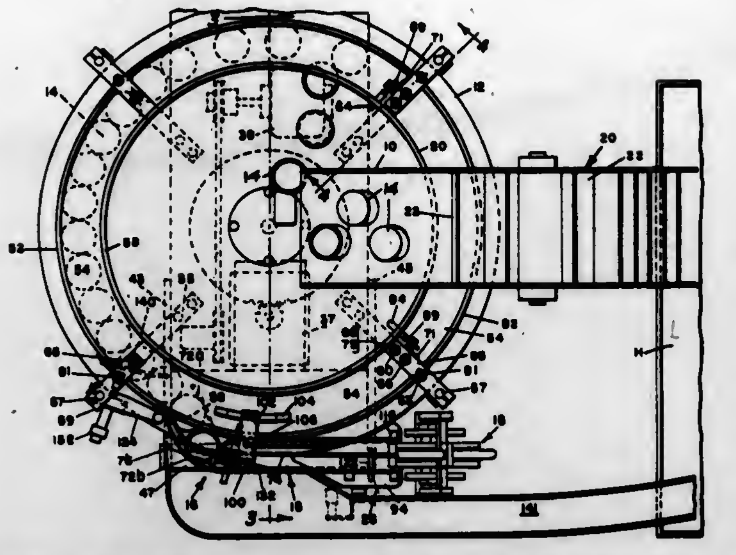
Walter S. Sterling, Quincy, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed May 15, 1970, Ser. No. 37,511

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AA **14 Claims**

Closure handling apparatus adapted to effect rapid and efficient orientation of cylindrical closures which are greater in diameter than in height. Closures deposited on a rotary disk are discharged substantially tangentially in either an open end up or an open end down position, provision being made for sorting one from the other to effect orientation prior to depositing the oriented closures into a chute.



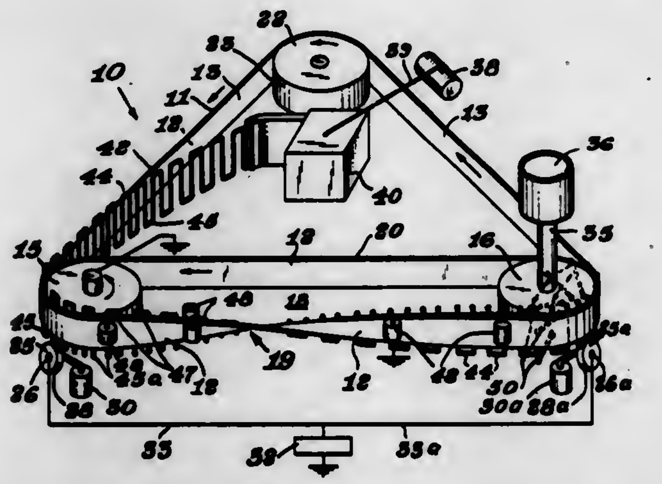
3,726,386
DOUBLED LOOP INVERTING AND CONVEYING APPARATUS

Douglas S. Chisholm, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 13,218, Feb. 6, 1970, abandoned, which is a division of Ser. No. 685,867, Nov. 27, 1967, abandoned. This application April 9, 1971, Ser. No. 132,751

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AC 4 Claims



Conveying apparatus, including a double looped belt with a twisted side trained about supporting pulleys, wherein an article may be introduced between the loops and be inverted while conveyed to the other end of said loop.

3,726,387
CONTINUOUSLY MOVING APPARATUS FOR UNIFORMLY ORIENTING BOTTLES

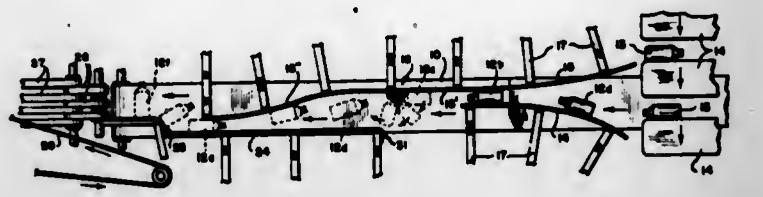
Robert J. Krooss, 74 Ball Road, Mountain Lakes, N.J.

Continuation-in-part of Ser. No. 47,513, June 17, 1970, Pat. No. 3,624,773. This application Nov. 29, 1971, Ser. No. 202,882

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AD 6 Claims

Bottles are delivered between a pair of conveyor belts spaced apart to grip and convey them. The bottles are guided along a longitudinal path parallel to the direction of belt travel to fixture means including a transversely extending pin which enters the neck of neck-leading bottles to rotate them to base-leading conditions and which engages the bases of base-leading bottles to rotate them to extend across the belts with their necks laterally beyond the position of rotated neck-leading bottles. An abutment across the belts from the pin is positioned to clear the bases of formerly neck-leading bottles but to engage the necks of formerly base-leading bottles, as rotated to extend across the belts, and rotate such bottles to base-leading conditions. A downstream shoulder adjacent the pin prevents excessive entry of the pin into the neck of a neck-leading bottle, and an upstream abutment engages the outer portion of the base of a base-leading bottle to initiate rotation thereof into contact with the head of the pin. The bottles may then be aligned and turned to neck-upward conditions.



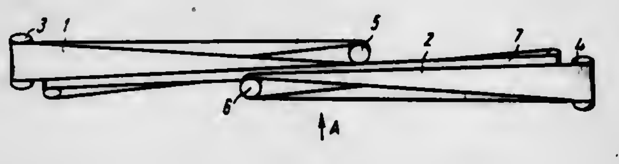
3,726,388
DEVICE FOR TURNING OVER SHEET MATERIALS

Albinas-Vitalis Mikaloyaus Petrovas, ulitsa Michurino. 64. kv. 49; Eduard Viktorovich Bavchenkov, ulitsa Serakausko, 19. kv. 2, and Evgeny Alexandrovich Yargin, ulitsa Chjurlenio, 15. kv. 11a, all of Vilnjus, U.S.S.R.

Filed Dec. 15, 1970, Ser. No. 98,298

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AB 1 Claim



A device for turning-over sheet materials, mainly furniture panel elements, in which the turning-over means are made so that the turning-over process takes place continuously.

3,726,389
CONVEYOR

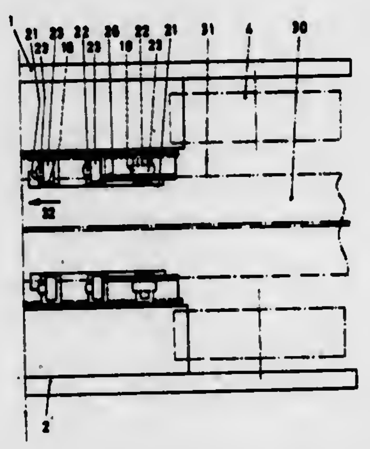
Theodor Klein, Burbach, Germany, assignor to Siemag Siegener Maschinenbau G.m.b.H, Dahlbruch, Germany

Filed Dec. 20, 1971, Ser. No. 209,809

Claims priority, application Germany, Dec. 18, 1970, P 20 62 506.3

Int. Cl. B65h *29/28*

U.S. Cl. 198—179 11 Claims



A conveyor for foil strip in which the edges of the strip are held by clamps as it moves along the conveyor.

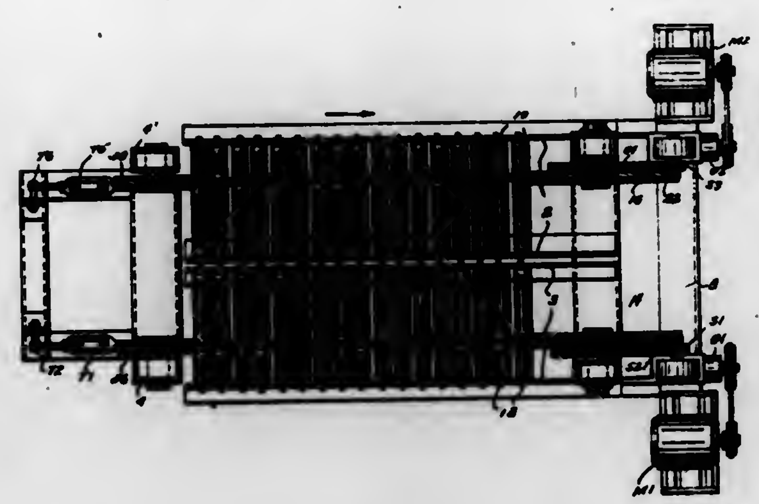
3,726,390
METHOD AND APPARATUS FOR CONVEYING MATERIALS

Ralph A. Fletcher, Bedford, N.H., and Joseph R. Oliver, Lowell, Mass., assignors to H. E. Fletcher Co., Westford, Mass.

Filed Aug. 12, 1970, Ser. No. 63,159

Int. Cl. B65g *15/12*

U.S. Cl. 198—190 3 Claims



Relatively heavy loads are conveyed along a desired path of travel by positioning the loads on a plurality of spaced endless conveyor elements which are held under high tension. The endless conveyor elements are led around rotating driver sheave means which advance the conveyor elements and load in a desirably controlled manner. Load bearing portions of the endless conveyor elements are received at separated points in rolling contact with separated roller supporting surfaces. The method of conveying and the apparatus devised for carrying out the method are useful especially in handling relatively large blocks of stone such as granite, and particularly where the blocks are required to be processed in a cutting machine of the guillotine type in which a set of aligned cutting elements are moved up and down in a common plane of reciprocating movement to cut up the block into dimension stone pieces of uniform size. The endless conveyor elements may be selectively controlled to guide and position the block during and after each cutting operation.

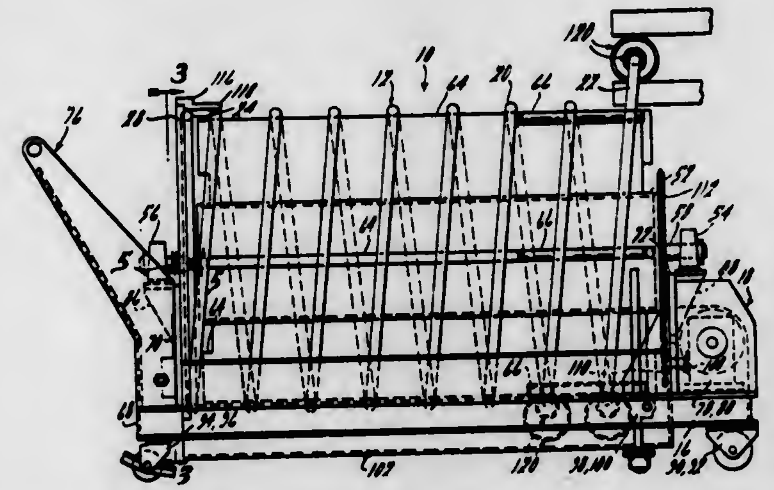
3,726,391
PORTABLE RING STORAGE AND FEEDING UNIT

Sidney M., Napp, Rockton, Ill., assignor to The Bendix Corportion, Southfield, Mich.

Filed April 28, 1970, Ser. No. 32,669

Int. Cl. B65g *33/00*

U.S. Cl. 198—212 12 Claims



A portable storage and feeding device for rings or similar articles having openings therethrough comprising a helical rack member and means for feeding the rings or articles onto the helical rack member by passing the coils through the openings of the rings and including means for advancing the rings on and off of the rack member. A first embodiment utilizes wiper members partially supporting the rack member for advancing the rings on and off the helical rack member, while a second embodiment utilizes a gravity feed and discharge arrangement.

3,726,392
FLEXIBLE DEVICE FOR CONVEYING POWDERY GRANULAR FIBROUS OR FLUID PRODUCTS

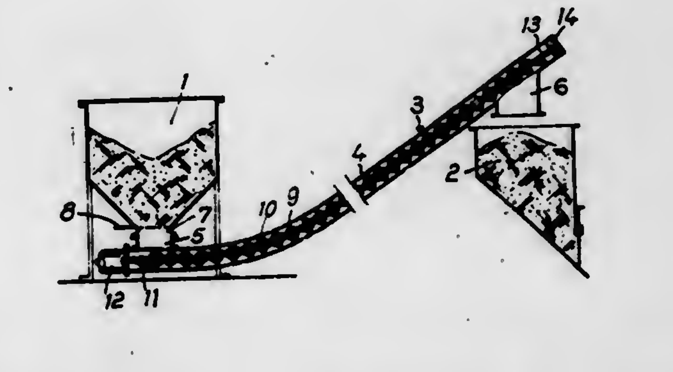
Blaise Rastoin, 42, avenue de la Panouse-Le Cabot, Marseille, France

Filed Jan. 11, 1971, Ser. No. 105,536

Claims priority, application France, Jan. 23, 1970, 7002362

Int. Cl. B65g *33/00*

U.S. Cl. 198—213 1 Claim



This invention relates to a flexible device for conveying powdery, granular, fibrous or fluid products, composed of an outer flexible tube having an opening near each of its ends and of a plurality of conveying spirals constituted by helical springs having the same direction of winding, disposed coaxially inside said sleeve and rotated, in the same direction, at speeds which are substantially reverse of their respective pitches.

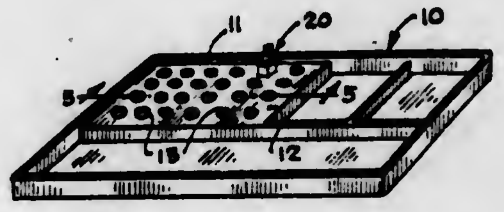
3,726,393
SOCKET WRENCH RETAINER AND ASSEMBLIES

Duwayne A. Thompson, 2200 Joanna Avenue, Zion, Ill.

Filed Dec. 8, 1970, Ser. No. 96,018

Int. Cl. B65d *85/54*; A47f *7/00*

U.S. Cl. 206—16 D 4 Claims



A socket wrench retainer comprising a lug of a configuration adapted to engage the drive opening of a socket wrench is provided. The socket wrench retainer can be made separately for insertion into a base, formed integrally in a tool box or tray, or can be formed or attached on sheets which can then be cut to fit a tray or tool box as desired, to fit individual tool needs. For greater versatility, a tiered retainer comprising several retainers of different sizes and formed concentrically as a one piece combination retainer is provided. Accordingly, a single retainer can accommodate socket wrenches of several different sizes. For special applications or uses, the socket wrench retainer can be combined with other features.

3,726,394
RESPIRATOR PACKAGE CONSTRUCTION

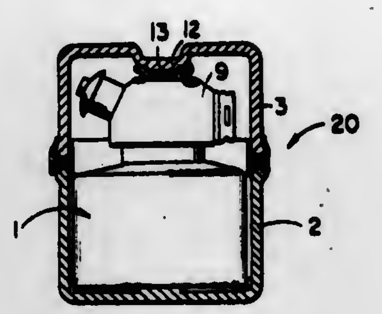
Karl-August Wachter, Lubeck, Germany, assignor to Dragerwerk Aktiengesellschaft, Lubeck, Germany

Filed May 14, 1970, Ser. No. 37,239

Claims priority, application Germany, May 20, 1969, P 19 25 622.5

Int. Cl. B65d *85/00*

U.S. Cl. 206—46 FR **4 Claims**



A respirator package includes a container having a bottom half portion and a top half portion which is closeable over the bottom portion. A respirator pan is placed in the bottom portion over an interiorly projecting ridge which is defined around the circumference of the bottom thereof so as to hold the respirator pan or pot so that its walls are spaced upwardly from the bottom and inwardly from the side walls of the lower portion of the container. The top of the respirator projects upwardly above the lower portion of the container and a deformable material is placed on the top of the respirator in a recess provided therefore in a position so that it projects above the uppermost portion of the respirator.

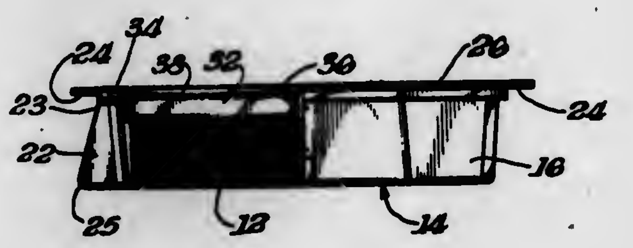
3,726,395
CONTAINER OF TREATED DISPOSABLE TOWELS

Kenneth W. Duhy, New York, N.Y., assignor to Pfizer Inc., New York, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,875

Int. Cl. B65d *1/00, 5/64, 85/62*

U.S. Cl. 206—46 ST **10 Claims**



A stack of liquid saturated disposable towels is enclosed within a sealed container including a shallow tray and a replaceable lid which is trapped within a foil-backed paper cover sealed to an outwardly extending lip on the tray. The tray and lid are a thin plastic material, such as polystyrene, which is shaped for structural rigidity and functional purposes. The tray includes outwardly projecting corners for stiffening it and facilitating internal access to the corners of the towels for grasping and obtaining uniform saturation. Outwardly projecting legs extend from one side of the tray at the corners for standing the containers on end for display. The formed lid with handle is received within a peripheral well within the lip of the tray for covering the container after the seal is removed. The foil-backed sealing cover is easily removed with a peelable tab scored from one of the corners of the lip.

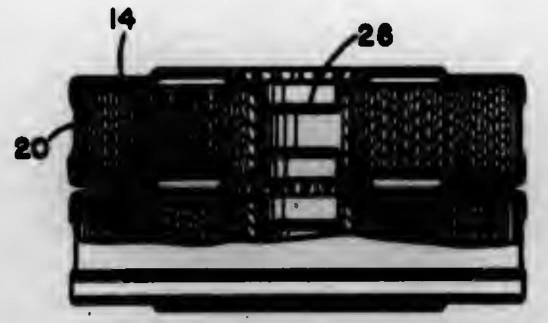
3,726,396
METHOD AND APPARATUS TO FORM SHRINK WRAPPED COIL PACKAGE

William B. Birkner, Kent, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio

Filed Feb. 11, 1971, Ser. No. 114,424

Int. Cl. B65d *21/02, 85/67*

U.S. Cl. 206—52 R **4 Claims**



This method of packaging rolls made from convolutions of a paper strip carried on a center core includes applying end caps to opposite sides of the roll of paper convolutions, applying a cover sheet around the periphery of the roll, which sheet is made from a heat shrink plastic material, and then shrinking the cover sheet into tight engagement with the end caps and the roll of paper convolutions to form a compact, tightly enclosed shipping and transport unit. Novel ribbed end caps are provided to aid in stacking rolls on top of each other.

3,726,397
JOINT FASTENER PACKAGE

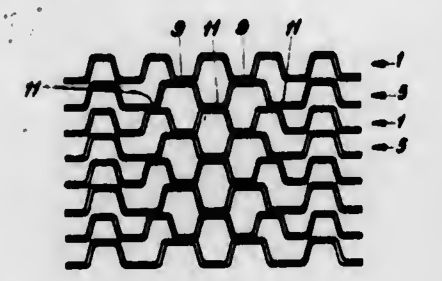
Hans-Werner Springer, Schmalenbek, Germany, assignor to Joh. Friedrich Behrens, Ahrensburg, Germany

Filed Oct. 29, 1971, Ser. No. 193,682

Claims priority, application Germany, Jan. 20, 1971, P 21 02 501.4

Int. Cl. B65d *69/00;* **F16b** *15/00*

U.S. Cl. 206—56 DF **5 Claims**



A regular row of corrugated joint fasteners in which the corrugated fasteners consist of two types of equal length, one type having a plurality of prominences formed by the corrugation and the other type having at least one less prominence than the said one type, and in which the two types of fastener are located alternately in the said regular row and are so arranged that only the prominences at and/or adjacent to the center of the fasteners are in contact with each other. The contacting prominences of adjacent fasteners are stuck together.

3,726,398
APPARATUS FOR PACKAGING AND HANDLING STACKS OF HANDLES

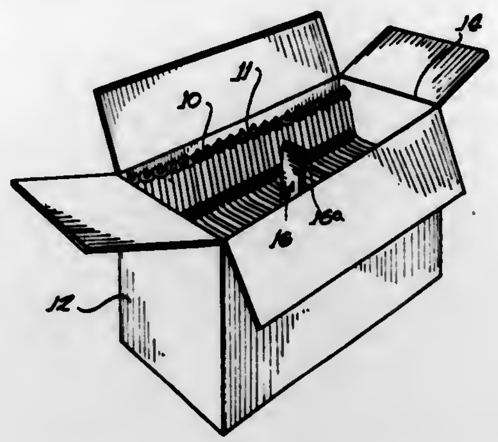
Walter E. Hidding, 505 Banbury Road, Arlington Heights, Ill.

Filed Feb. 1, 1972, Ser. No. 222,474

Int. Cl. B65d *77/30, 69/00*

U.S. Cl. 206—65 K **8 Claims**

The apparatus disclosed is directed to packaging and handling of a plurality of strips of plastic handles which are to be separated from the strips and attached to gabled top cartons such as milk cartons or the like. The strips of handles are stacked one on top of the other in a quantity so as to constitute a complete load for a handle receiving magazine of a handle attaching machine. A complete load may consist of 500 discrete handles, this being 25 strips of handles with 20 handles on each strip. The strips are arranged in a stack and the entire stack is positioned in a container, such as a cardboard carton or the like, with a T-bar support member positioned through the stack of handles. The entire stack of handles is removed from the container by grasping the upstanding extended portion of the T-bar support member and raising the stack from the container. The entire stack is then turned over and inserted into the handle receiving magazine and the T-bar is removed.



3,726,399
APPARATUS FOR MAKING STITCHABLE ARTICLES, ESPECIALLY SHOES SUBSTANTIALLY OF FABRIC MATERIAL AND A METHOD THEREFOR

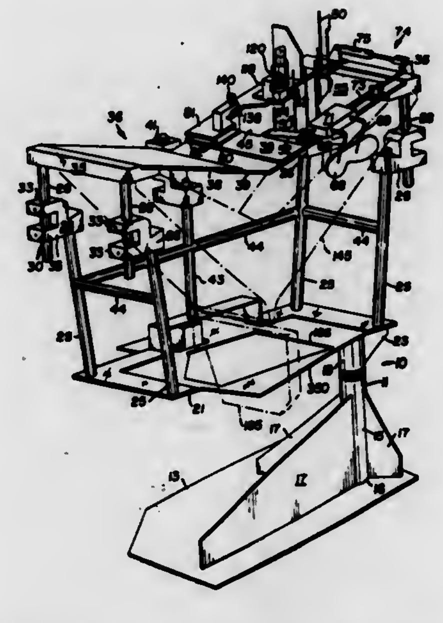
Bernard Delacour Beamish, 1197 Birchview Dr., Port Credit, Ontario, and David Grieve Taylor, 29 Sanctbury Pl., Etobicoke, Ontario, both of Canada

Filed June 14, 1971, Ser. No. 152,583

Claims priority, application Canada, June 12, 1970, 085378

Int. Cl. B07c *5/342*

U.S. Cl. 209—73 **11 Claims**



Components of stitchable material are color monitored, i.e., compared to ensure that they are the same color, and gauged or aligned prior to stitching the components together. The components, i.e., sections of shoe quarters are fed automatically from separate stacks thereof, photoelectrically color monitored while they are still separate, gauged and finally fed to a tandem sewing machine arrangement. If the components differ in color, or if only one component is fed from one stack, the components are automatically rejected.

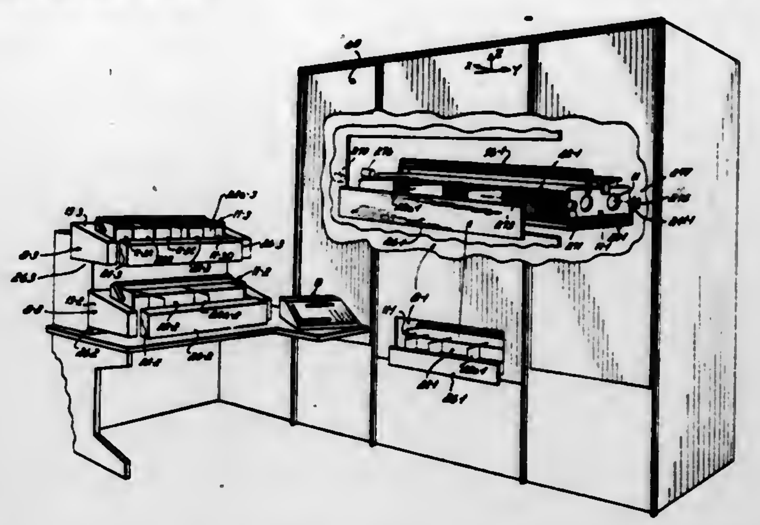
3,726,400
DOCUMENT RETRIEVAL APPARATUS AND METHOD

Robert J. Kalthoff, Cincinnati, and Richard C. O'Brien, Dayton, both of Ohio, assignors to O. K. Partnership, Cincinnati, Ohio

Filed Dec. 29, 1971, Ser. No. 213,848

Int. Cl. B07c *1/20*

U.S. Cl. 209—80.5 **8 Claims**



A document retrieval apparatus and method having a plurality of movable trays each containing encoded documents which are normally stored in addressable crypts arranged in two opposed, spaced matrices with the crypt openings of respective matrices in common vertical planes, a main document selector designed to select a desired document from among a tray of encoded documents transported thereto, and a tray transport movable in the space between the crypt matrices, the main selector and the crypt openings for transferring trays of encoded documents between their respective crypts and the main selector, and a keyboard control console which in response to entry of data identifying a document in a specific tray effects the transfer of the tray from its respective crypt to the main selector whereat the desired document is then ejected by the selector from among those of the retrieved tray. A second, or buffer, selector, which is searched along with the main selector when a document is sought, is provided for temporarily storing retrieved documents prior to their return to storage, or new documents prior to infiling, in the movable trays stored in the crypts.

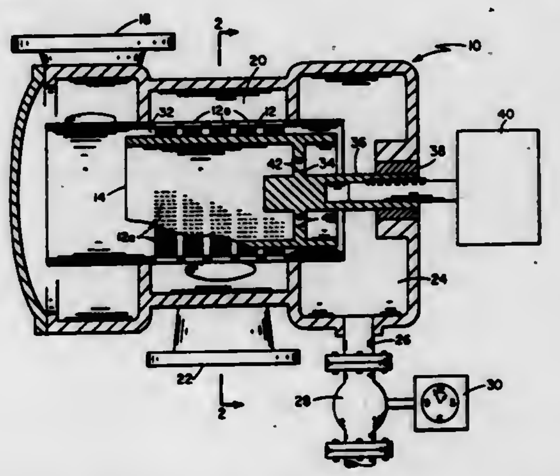
3,726,401
SCREENING MACHINE

Joseph A. Bolton, III, North Attleboro, and Peter Edmund LeBlanc, Walpole, both of Mass., assignors to Bird Machine Company, Inc., South Walpole, Mass.

Filed Dec. 16, 1970, Ser. No. 98,738

Int. Cl. B07b *1/20*

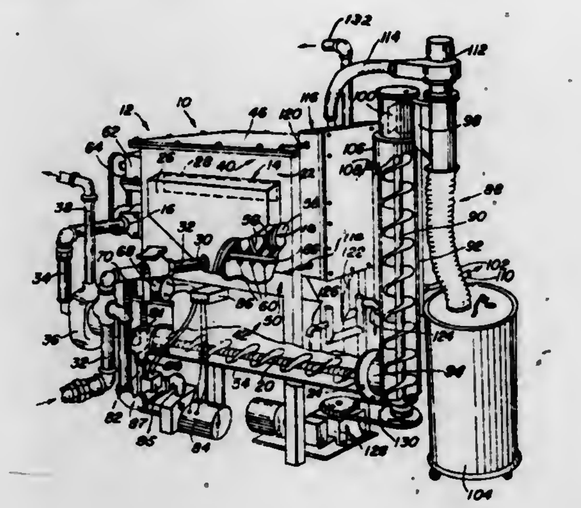
U.S. Cl. 209—240 **8 Claims**



A screening machine is disclosed for separating solid particles in liquid slurry stock wherein a substantially closed surface rotor opposite a screen forms therewith a screening zone and is utilized as a pumping means for recirculating to the inlet to the screening zone rejected stock which has passed through the screening zone. Detrimental thickening of such rejected stock is thereby avoided and the recovery of acceptable particles through the screen is increased.

3,726,402
APPARATUS FOR REMOVING PARTICULATE MATTER FROM A FILTER CHAMBER

George Goutos, 5534 W. 63rd Place, Chicago, Ill.
Filed July 2, 1971, Ser. No. 159,198
Int. Cl. B01d *19/42*
U.S. Cl. 210—107 **20 Claims**

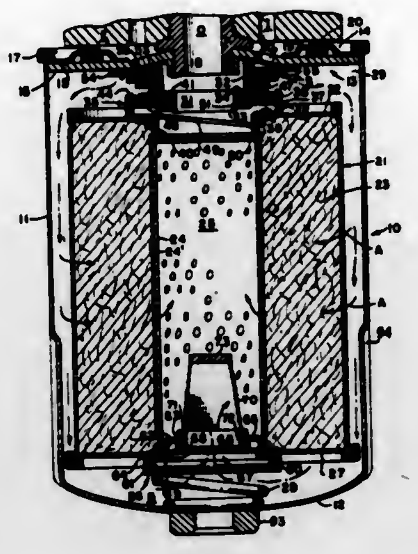


Particulate matter may be effectively and automatically removed from the interior of a filter chamber by employing a vented auger having a hollow interior. The auger comprises inlet openings that provide fluid communication between the interior of the filter chamber and the interior of the auger and an outlet that provides fluid communication between the hollow interior and an auger outlet from the filter chamber. A recirculation pump is adapted to withdraw liquid from the auger outlet so as to cause liquid in the filter chamber to flow into the auger shaft, while the particulate matter collects around the outside surface of the auger shaft. Rotation of the auger moves the particulate matter surrounding the auger to a discharge opening in the filter chamber. Control means are provided to intermittently drive the auger and the recirculation pump at separate times, so that the recirculation pump will first draw particulate matter downwardly to the auger and then the auger will discharge the particulate matter surrounding the auger from the filter chamber.

3,726,403
DUAL FLOW, SPIN-ON FILTER

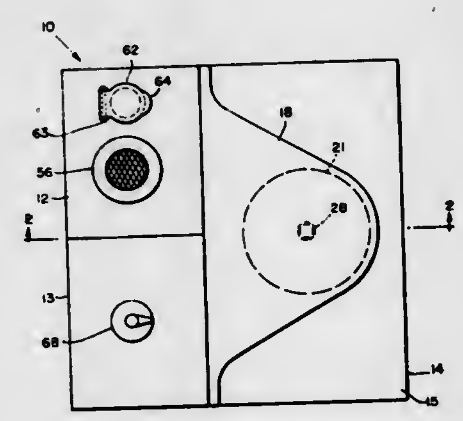
Robert J. Shaltis, Hastings, Mich., assignor to Hastings Manufacturing Company, Hastings, Mich.
Continuation-in-part of Ser. Nos. 36,971, May 13, 1970, and Ser. No. 39,741, May 22, 1970, abandoned, and Ser. No. 105,426, Jan. 11, 1971. This application Feb. 8, 1971, Ser. No. 113,283
Int. Cl. B01d *35/14, 27/10*
U.S. Cl. 210—132 **35 Claims**

A dual flow, spin-on filter for an engine lubricating system and for other fluids requiring filtration comprising a filter housing enclosing a fine filter cartridge centrally positioned within the housing, a perforated central tube within the cartridge defining an outlet chamber and surrounded by a fine filter media, the central tube having an outlet end adapted to communicate with an outlet fitting, a restrictor having a metering orifice closing the other end of the central tube providing a by-pass of the fine filter cartridge for a portion of the engine lubricating oil in excess of the amount of oil which the fine filter is normally capable of handling and a coarse filter normally in closed communication with the metering orifice for filtering the portion of the lubricating oil passing through the metering orifice. The coarse filter may be located on either the upstream side or the downstream side of the metering orifice and in one embodiment of the invention the coarse filter is adapted to move away from the metering orifice under predetermined pressure so that fluid flowing through the metering orifice will by-pass the coarse filter.



3,726,404
BATCH OZONATORS FOR DRINKING WATER

Vincent R. Troglione, Meadville, Pa., assignor to Moody Aquamatics Systems, Inc., Meadville, Pa.
Filed July 26, 1971, Ser. No. 165,514
Int. Cl. B01d *35/28*
U.S. Cl. 210—139 **13 Claims**



Each ozonating unit comprises a contact tank containing a diffuser, an ozone generator for supplying ozone gas to the diffuser, a storage tank or reservoir removably mounted adjacent the contact tank, and a water pump having its inlet connected to the contact tank and its inlet connected to the contact tank and its outlet connected through a filter with the storage tank, when the latter is in its operative position. After a contact tank is filled with drinking water, a dual contact timer device on each unit is set manually to operate the associated ozone generator for a predetermined interval of, e.g., 5, 10, 15, 20 minutes, etc. After each operation of a generator, the associated water pump is automatically energized for a predetermined time to pump the ozonated water from a contact tank to the associated storage tank.

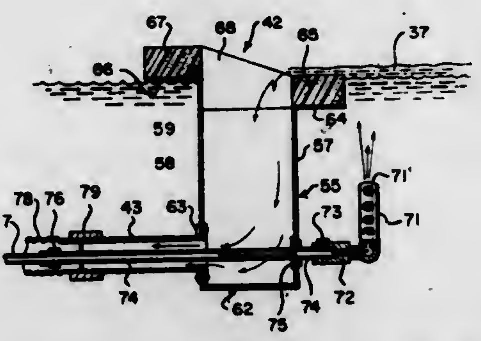
3,726,405
CHROMATOGRAPHIC SHEETS AND FILMS AND ADSORBENT THEREFOR

Bruno Engelbrecht, Langemarckstr. 10; Hans Walker, Lindenweg 10, both of Eschwege; Johannes Blome, Rohgraben 11, Grebendorf, and Friedemann Jordan, Johannisplatz 4a, Buhl/Baden, all of Germany
Filed April 2, 1971, Ser. No. 130,822
Claims priority, application Germany, April 2, 1970, P 20 15 672.3
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C **3 Claims**

An adsorbent for a chromatographic sheet or film containing an adsorption active powder and 1 to 50 percent by weight of silicic acid in the form of a silica sol having a content of from 1 to 15 percent of colloidal silicic acid based on the weight of said adsorption active powder and chromatographic sheets and films based on the same.

3,726,406
OIL SKIMMING APPARATUS

Clifford Damberger, P.O. Box 361, Taber, Alberta, Canada
Filed Feb. 9, 1971, Ser. No. 113,890
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 **6 Claims**

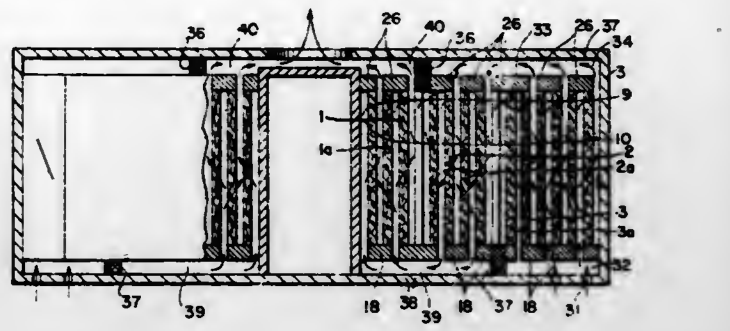


A skimmer body is provided with front and rear faces and with floatable members connected to the upper portions of the front and rear faces with the front floatable members being lower than the rear floatable member, the floatable members being of such capacity as to support the skimmer body with the upper surface of the front floatable member underlying the oil slick to be collected. Extending from the forward face and laterally of the skimmer body is a hot water spray heat to heat the oil slick from beneath the same just immediately to its passing over the upper surface of the front floating body. End plates confine the oil slick to the opening in the top of the skimmer body and prevent the lateral escape of the same therefrom. The oil slick is drawn into the oil skimmer body by a cable water fence gathered by boat equipment and drawn toward the skimmer body. A heater and separator and a vacuum pump that removes the oil slick from the skimmer body and a hot water pump line takes the water from the separator and delivers it to the hot water spray head on the skimmer body. The oil is delivered from the heater and separator to an oil tanker or other storage device that may be available. The oil water fence is made up of a series of floatable blocks having end plates that can be connected together by a pin and pin opening arrangement and held thereagainst by a pin locker device extending downwardly from the top surfaces of the blocks.

3,726,407
MULTI-STAGE SPIRAL-WOUND FILTER

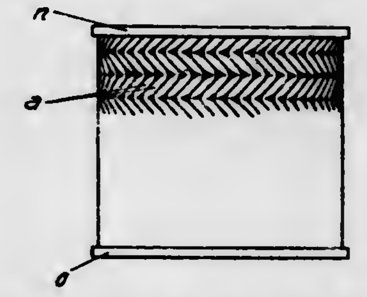
John E. Weyand, Needham, Mass., assignor to Millipore Corporation, Bedford, Mass.
Filed April 22, 1971, Ser. No. 136,313
Int. Cl. B01d *27/00*
U.S. Cl. 210—435 **17 Claims**

A multi-stage filter formed by spirally winding a multi-layer material around a core to form a generally cylindrical construction having two opposing spiral end surfaces. The multi-layer material is formed by at least one filter layer, and at least two spacer layers formed from a material with a high void volume. The layers are arranged so that during use, and in each stage, unfiltered fluid in each layer passing through one spiral surface into one spacer layer must pass through a filter layer prior to passing out of the construction through the opposing spiral end surface. Fluid in each stage passes through the filter in an opposite axial direction than the fluid passing through the filter in adjacent stages.



3,726,408
STRUCTURES OF SHEET MATERIALS MADE OF ASYMMETRIC FOLDS

Lucien Victor Gewiss, Vernon, France, assignor to Marc Wood Societe Anonyme pour la Promotion des Echanges Techniques Internaux
Division of Ser. No. 541,809, April 11, 1966, Pat. No. 3,550,423. This application March 20, 1970, Ser. No. 24,960
Int. Cl. B01d *27/06*
U.S. Cl. 210—493 **9 Claims**

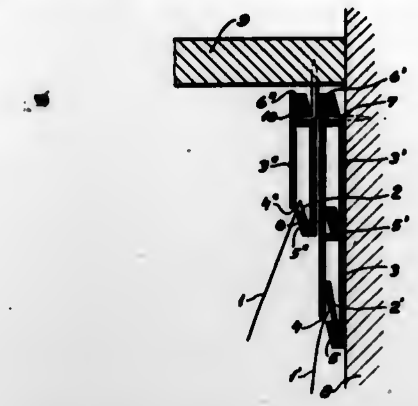


Geometrical structures having alternate asymmetrical folds of drawable or extensible material forming two faces wherein the folds on each of the faces are substantially identical to the other folds on that face. The fold on one of the faces have a rounded profile in cross section which is somewhat wider than the profile on the other face of the structure. The structure may be produced by the rectilinear pleating of a flat sheet or of a longitudinally corrugated sheet or by the chevron pleating of a flat sheet. Such structures may be used as sandwich core materials, filtering screens, cylindrical insulating materials and filtering cartridges, by way of example.

3,726,409
SUSPENSION ARRANGEMENT FOR PLANE OBJECTS

Martin Krabbe Skousen, Englandsgade 2, Esbjerg, Denmark
Filed Oct. 2, 1970, Ser. No. 77,538
Int. Cl. A47f *7/16*
U.S. Cl. 211—46 **3 Claims**

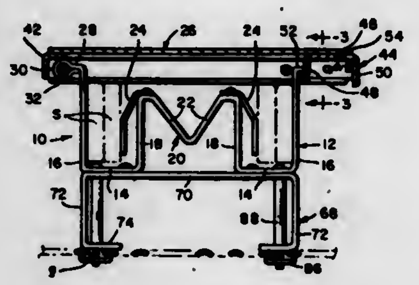
A suspension arrangement for suspending a planar sheet of material having a fillet on one end thereof is composed of a horizontally disposed support rail having a hollow chamber therein and a horizontally extending slit communicating with the chamber. The horizontal slit is spaced in proximity to the lower portion of the hollow chamber and the hollow chamber vertically extends from the slit a distance greater than the width of the fillet. Accordingly, the planar sheet can be placed in the suspending apparatus simply by pushing the suspending edge directly into the slit, the fillet being narrow enough to fit entirely within the chamber above the slit so that it will be completely inserted as the sheet is pushed in and then serve to hold the sheet as it rests in the chamber.



3,726,410
SKI CLAMPING DEVICE

Kenneth W. Binding, Woburn, and Stanley H. Cunningham, Everett, both of Mass., assignors to Beatrice Foods Co., Chicago, Ill.

Filed June 11, 1971, Ser. No. 152,347
Int. Cl. B60K *9/08*
U.S. Cl. 211—60 SK 6 Claims



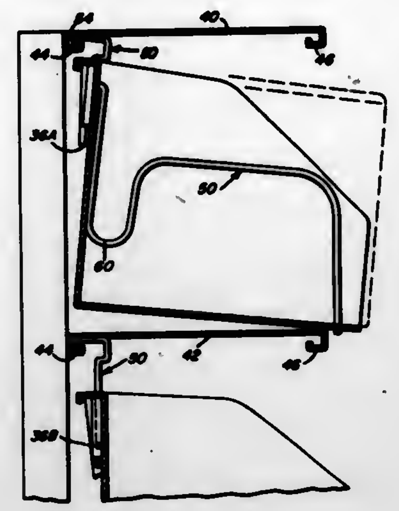
A ski clamp structure comprising a pair of transversely spaced, U-shaped receptacles rigidly joined by a V-shaped receptacle, a clamp bar pivotally connected at one end to the structure so as to overlie the open tops of the receptacle, a latch at the distal end of the clamp bar for releasably holding the bar in clamping position, said latch being adapted to be locked in operative position, a mounting bracket to which the structure is fastened, and bolts for securing the mounting bracket to a vehicle body, the heads of the bolts being located at the bottoms of the receptacles so as to be inaccessible and the threaded end of the bolts extending through apertures in the vehicle body and having threaded thereon lock nuts which are located inside the body and hence inaccessible.

3,726,411
SHELF MOUNTABLE STORAGE CONTAINER

Dennis Lee Jones, Bakersfield, Calif., assignor to Wallace Thomas Jones and Fred H. Walbaum, Bakerfield, Calif., part interest to each

Filed March 12, 1971, Ser. No. 123,758
Int. Cl. A47f *3/14*
U.S. Cl. 211—126 10 Claims

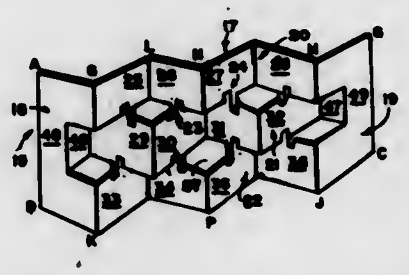
A shelf mountable container assembly is provided with both fixed and adjustable flanges adapted to engage the underside channels of various sized mounting shelves. The container assembly is comprised of a pair of vertical side walls interconnected by a bottom panel and a closed end panel. A fixed mounting flange extends outwardly and downwardly from the top edge portion of the end panel for engagement with a shelf mounting channel,and a pair of flange support ribs include several vertically spaced adjustment apertures for embracing locking pins on an adjustable mounting bracket. The end and bottom panels each contain mounting slots adapted to accept opposite end portions of resilient wire dividers to separate the container into smaller compartments. The container assembly is also provided with a detachable handle extension,a straddle plate for interconnecting abutting containers and a container retriever for removing containers from the shelves.



3,726,412
COLLAPSIBLE DISPLAY DEVICE

Stanley W. Resnicoff, 4705 B. Kahala Avenue, Honolulu, Hawaii

Filed June 30, 1971, Ser. No. 158,263
Int. Cl. A47f *5/11*
U.S. Cl. 211—135 6 Claims



A display device constructed from a blank of foldable sheet stock having formed therein a plurality of spaced, vertical fold lines and a plurality of spaced, discontinuous horizontal slits which cross the vertical fold lines. The spaced, horizontal slits divide the blank into sections and adjacent sections are folded in opposite directions along the vertical fold lines to subdivide each of the sections into a plurality of panels which zig-zag in a direction opposite to the panels of the adjacent section and form intersections. At these intersections, short vertical fold lines are formed which are parallel to the spaced vertical fold lines. The ends of the discontinuous, horizontal slits have oppositely directed L-shaped slits or diagonal slits to join the short vertical fold lines and form hinge connections for panels of adjacent sections.

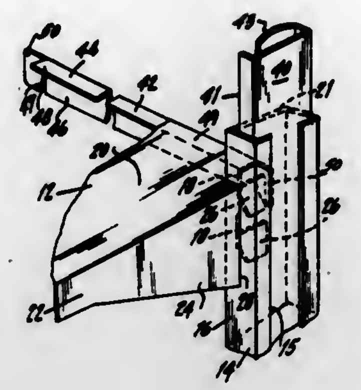
3,726,413
ADJUSTABLE METAL SHELVING

George R. Squires, 88 King St., Dover, N.J.

Filed March 22, 1971, Ser. No. 126,467
Int. Cl. A47b *9/14*; A47f *5/00*
U.S. Cl. 211—148 4 Claims

The parts of an adjustable metal shelving are tightly held together by supporting hooks of the shelves extending into slots of U-shaped vertical upright support members. The hooks form tapered notches with an adjacent vertical edge of the shelves from which they extend. After insertion each supporting hook is pressed downwardly until the tapered notch rides down over the lower edge of the respective slot. This cams the vertical edge of the shelf against the outer surface of

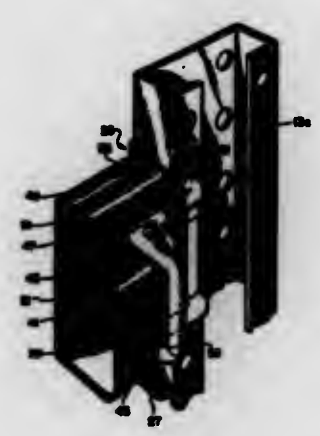
the vertical support member and fits the lower edge of the slot into the notch to tightly hold the respective shelf to the vertical upright support member. A U-shaped finishing strip is telescoped into one or more of the vertical upright members with an edge of the finishing strip resiliently in contact with the supporting shelf hooks extending into the vertical upright member. This minimizes the inadvertent separation of the hooks from the upright members.



3,726,414
STORAGE RACK AND BEAM FOR USE THEREIN

Anthony N. Konstant, Mount Prospect, Ill., assignor to Speedrack Inc., Skokie, Ill.

Filed June 28, 1971, Ser. No. 157,339
Int. Cl. A47f *5/00*
U.S. Cl. 211—148 9 Claims

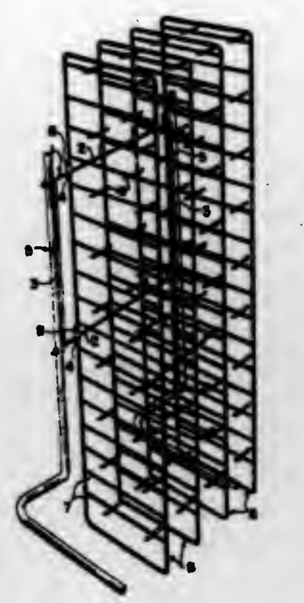


An improved beam shape for use as a horizontal load-bearing member in a storage rack of the type adapted to support horizontal decking upon spaced parallel beams. The beam configuration provides an upper wall, narrower in width than the bottom wall, formed from a pair of folded elements which present abutting arcuate edges along which a longitudinal weld line completes the tubular shape. The tubular shape is particularly adapted for fabrication via an automatic rolling and welding process, and the specific configuration of the two rolled portions which form the upper surface add improved stiffness and overall strength to the beam shape.

3,726,415
WIRE RACK

James J. Malik, 6618 Bennington Drive, Parma, Ohio

Filed Nov. 3, 1971, Ser. No. 195,130
Int. Cl. A47f *5/13*, *7/00*
U.S. Cl. 211—169 1 Claim

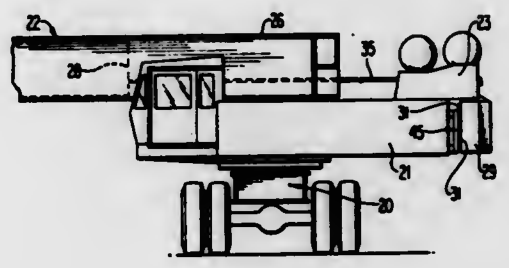


A collapsible, extensible wire display rack for relatively small items which are most conveniently displayed when hung, and which normally are sold in a large variety. The rack is either free-standing or may itself be hung from a vertically mounted pegboard.

3,726,416
EXTENDABLE COUNTERWEIGHT FOR CRANES AND METHOD OF MANIPULATING

Donald R. Pottorff, Mercersburg, Pa., and William E. Wright, Hagerstown, Md., assignors to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Dec. 15, 1970, Ser. No. 98,430
Int. Cl. B66c *23/72*
U.S. Cl. 212—49 16 Claims



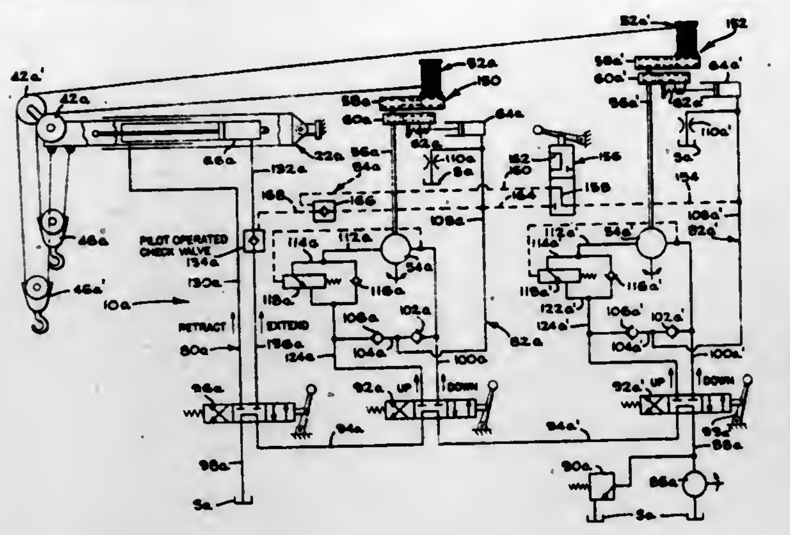
A counterweight for large mobile cranes or like machines features a power-operated extendable and retractable counterweight carriage and latching means. A suspension cable for the counterweight has a connection with a movable telescoping section of the crane boom so that the crane boom hydraulic system may be employed to raise and lower the counterweight and the need for a separate system is avoided. A safety control mechanism in the path of movement of the counterweight when it is being elevated prevents possible damage to the crane superstructure.

3,726,417
BOOM EXTENSION CONTROL SYSTEM

Oliver T. Nephew, Cedar Rapids, Iowa, assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 10,961, Feb. 12, 1970. This application Aug. 13, 1971, Ser. No. 171,674
Int. Cl. B66c *23/06*

U.S. Cl. 212—55 **4 Claims**



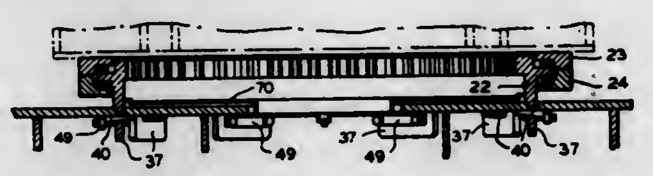
A boom extension control system for employment with hydraulically extensible booms having hydraulic load lifting cable winches effective to provide an interlock between the boom and winch controls whereby extension of the boom is prevented until the winch is operated.

3,726,418
SYSTEM AND METHOD FOR REMOVABLE INSTALLATION OF SWING CIRCLE FOR LARGE CRANE

Ralph H. Short, Lima, Ohio, assignor to Clark Equipment Company, Buchanan, Mich.

Filed July 1, 1971, Ser. No. 158,822
Int. Cl. B66c *23/84*

U.S. Cl. 212—69 **13 Claims**



The superstructure for large material handling apparatus is removably mounted to a bed by means of a swing circle which includes a bearing having an outer race secured to the bottom of the superstructure and an inner race with a plurality of depending slotted tangs. The tangs are placed through slots in the bed of the apparatus, and wedges are forced into the slots of the tangs to secure the tangs beneath the lower surface of the bed. The wedges are then locked in place, and means are provided for bracing the tangs against the frame of the apparatus to prevent turning of the inner race during operation.

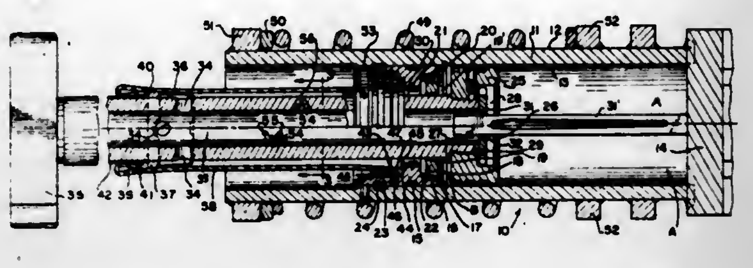
3,726,419
RAILWAY CAR HYDRAULIC CUSHIONING UNIT WITH SPRAY TYPE DISCHARGE PORTS

Steven A. Anderson, Elwood, Ill., and John H. Spence, Munster, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Feb. 17, 1971, Ser. No. 116,186
Int. Cl. B61g *9/16, 11/12*

U.S. Cl. 213—43 **4 Claims**

A railway car cushioning unit comprises a cylinder and piston and piston rod assembly reciprocally positioned therein. The cushioning unit is provided with a high pressure chamber and a draft chamber both of which are in communication with a flexible boot type reservoir. The piston rod moves through a bore provided in the cylinder head and the boot type reservoir also provides a dynamic seal for the chambers. A piston is provided with an elongated passage which communicates with the high pressure chamber through a metering orifice. Ports are provided for communicating the passageway with the flexible boot for the passage of fluid therebetween. The ports are of a configuration which provides a dispersed spray during the movement of the fluid between the passageway and chambers to the reservoir.

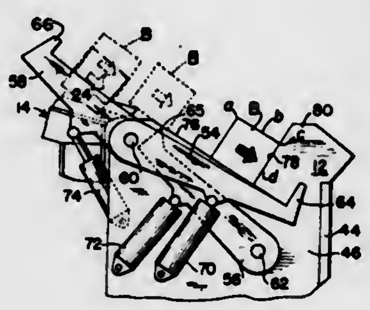


3,726,420
BILLET MANIPULATING APPARATUS

Robert R. Stratton, Charlotte, N.C., and Robert J. Kaszuba, Chicago, Ill., assignors to Pettibone Corporation, Chicago, Ill.

Division of Ser. No. 868,998, Oct. 24, 1969, Pat. No. 3,601,263. This application July 22, 1971, Ser. No. 165,267
Int. Cl. B65g *7/00*

U.S. Cl. 214—1 QG **2 Claims**



A billet manipulating apparatus for the selective presentation of a billet to the operative grinding surface of a grinding wheel. An assembly of three billet-engaging arms functions to remove the billet to be ground from a charge table and position it in any one of a number of grinding positions, one arm effecting transfer of the billet from the table to the other two arms which then function to rotate or tumble the billet until the desired side or edge to be ground is presented to the associated grinding wheel.

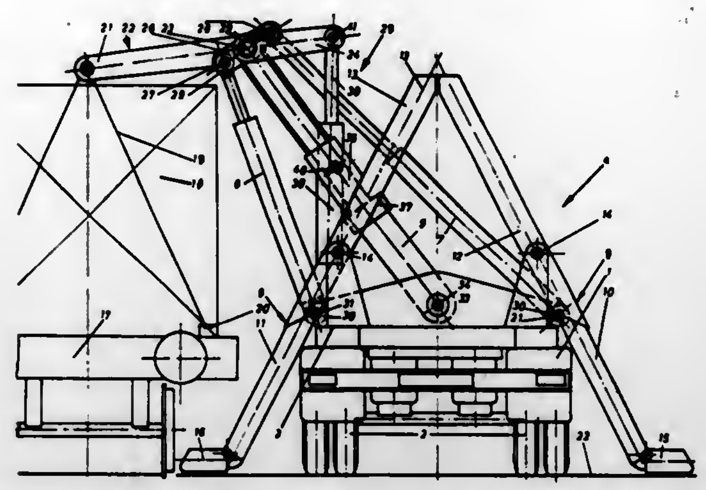
3,726,421
LOADING AND UNLOADING DEVICE

Alois Goldhofer, D 894 Memmingen, P.O. B. 297, Amendingen, Germany

Filed Sept. 10, 1971, Ser. No. 179,475
Claims priority, application Germany, Sept. 17, 1970, P 20 46 057.5; Aug. 20, 1971, P 21 41 774.3
Int. Cl. B60p *1/48*

U.S. Cl. 214—77 R **29 Claims**

A loading and unloading device is located at each end of a load-carrying vehicle. Each such device consists of a pair of telescoping booms hinged together at their upper ends and hinged to the vehicle body at their lower ends, a telescoping support boom hinged to the other booms at its upper end and to the vehicle body between the booms at its lower end, a double ended lever pivotally mounted intermediate its end at the upper hinge point, and power means attached to one end thereof to cause the other end to pivot, to thereby move a load attached thereto.

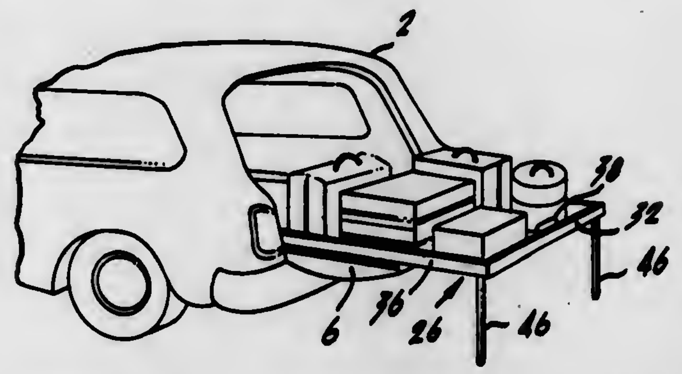


3,726,422
SLIDING LUGGAGE RACK FOR STATION WAGONS

Albert Rush Zelin, Glenbrook, Storybrook Road, Hopewell, N.J.

Filed March 18, 1971, Ser. No. 125,553
Int. Cl. B60p *3/00*

U.S. Cl. 214—83.24 **2 Claims**



A luggage rack for use in a station wagon is adapted to be inserted into the rear of a station wagon body and removably mounted above the floor or any folded seats in the body when luggage, trunks, boxes or other cargo are to be transported. At such times the luggage rack is secured in place and a portion of the rack is arranged to be extended outward through the rear door into a position for convenient arrangement and stowage of the cargo to be carried. The extended portion of the rack with articles located thereon is then slidably movable into the body of the station wagon for enclosure within the body during travel. When not in use the luggage rack is readily removable from the body to permit the car seats to be raised for use by passengers.

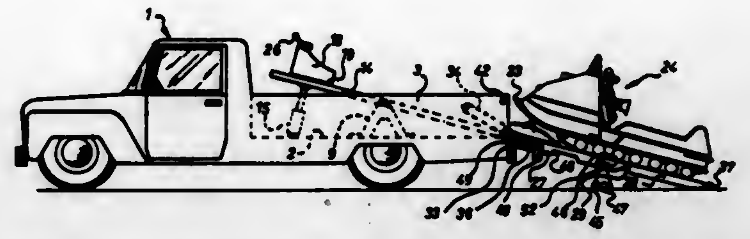
3,726,423
VEHICLE ATTACHMENT FOR TRANSPORTING SNOWMOBILES

Xavier Miron, 504, 37th Avenue, La Salle, Quebec, Canada

Filed April 22, 1971, Ser. No. 136,440
Claims priority, application Canada, May 22, 1970, 083,522
Int. Cl. B60p *1/28*

U.S. Cl. 214—505 **15 Claims**

An attachment provided to be mounted on a vehicle having a rear deck, such as a pick-up truck, to adapt the vehicle for transporting snowmobiles, said attachment comprising a ramp including a first ramp section and a second ramp section, a hinge provided at one end of said first ramp section to pivotally connect the latter to the rear deck of a vehicle, the second ramp section being pivotally connected to the other end of the first ramp section, a latch means attached to the first ramp section and adapted to hold the latter in a transport position and a tiltable platform adapted to be pivotally mounted in an elevated position with one end of said platform adjacent said one end of the first ramp section and hydraulic actuators adapted to be connected to pivot the first ramp section and the platform between a loading-unloading position and a transport position.

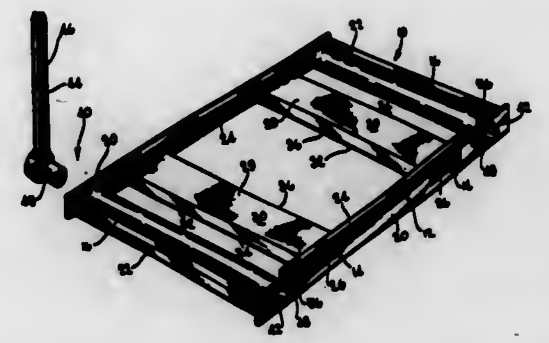


3,726,424
PALLET

Jules J. Du Puis, 1002 S. Main Street, Wheaton, Ill., and Jack P. Du Puis, 1 S. 465 Lewis, Lombard, Ill.

Filed April 5, 1971, Ser. No. 130,918
Int. Cl. B66f *9/12*

U.S. Cl. 214—620 **3 Claims**



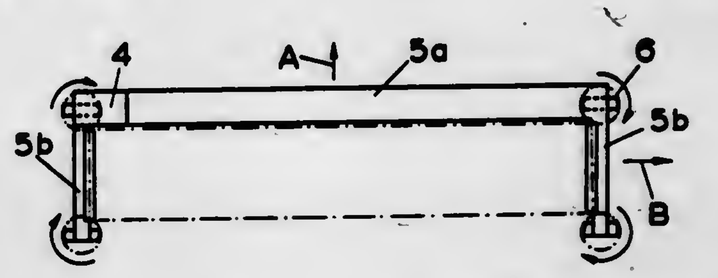
A lift truck pallet is provided with rotatable load supporting means for transferring a load from the pallet in a direction lateral to the direction of insertion of forks therein. The preferred rotatable load supporting means is in the form of rotatable rollers having axes substantially parallel to the direction in which the forks are received in the pallet, and drive means may be provided to rotate the rollers to transfer the load from the pallet to a space located laterally of and adjacent to the pallet.

3,726,425
SIDE LOADER FOR CONTAINERS

Matti Terho, Naistenmatka, and Reijo Tiitto, Peltolamminkatu, both of Finland, assignors to Valmet Oy, Helsinki, Finland

Filed Nov. 2, 1970, Ser. No. 85,920
Claims priority, application Finland, Nov. 4, 1969, 3182/69
Int. Cl. B66f *9/00*

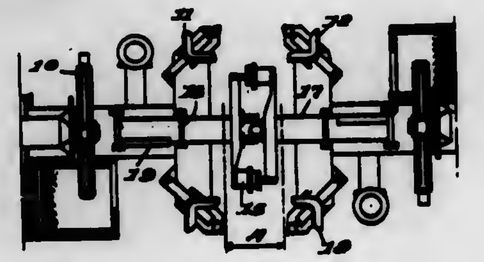
U.S. Cl. 214—621 **1 Claim**



The present invention concerns a horizontal U-shaped side loader for containers, especially intended for the handling of over-length containers and comprising gripping devices for lifting the containers from the ground, and the wheels of which in addition to the conventional turning movements required in steering are turnable through 90° so that it is possible to drive the side loader in two fundamental travelling directions, between which an angle of the said magnitude is enclosed.

3,726,426
MEANS FOR CRANES

Lennart Tingskog, Raa, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Continuation-in-part of Ser. No. 863,440, Oct. 3, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 186,220
Claims priority, application Sweden, Oct. 9, 1968, 13639/68
Int. Cl. B63b *27/00*
U.S. Cl. 214—658 5 Claims



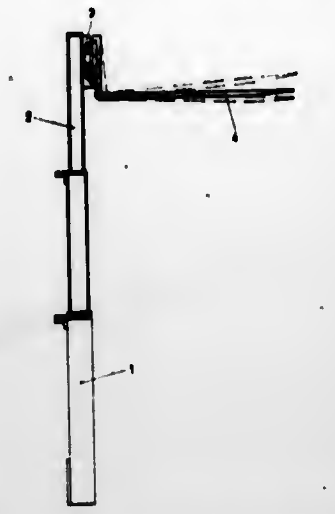
A crane includes two gripping members or spreaders mounted adjacent to each other for raising and lowering movement by cables and for horizontal movement between a dock and a ship having compartments for receiving loads. The gripping members are provided with a magnetic or similar arrangement by which they can be coupled together or de-coupled from each other. The upward and downward movement of the gripping members when they are above the ship compartments is controlled by a memory device. During upward movement, when the gripping members reach a certain position when they are outside the compartments (cell construction) the magnetic or similar arrangement is energized and the gripping devices (spreaders) are coupled together. Thereafter the gripping devices are moved away for loading or unloading purposes. This upward movement is stored in the memory device to a certain point. When the loaded gripping members are moved downward, the memory device causes them to be uncoupled at a certain distance above the compartments and thereafter to stop within the compartments at substantially the same level from which they had previously started.

The arrangement may also be such that the gripping devices can start at different levels, will move to the same level, be thereby coupled together, and on the downward movement will each stop at substantially the same position from which it started previously. This requires the use of one, preferably two memory devices, one for each gripping member.

3,726,427
LIFT TRUCKS

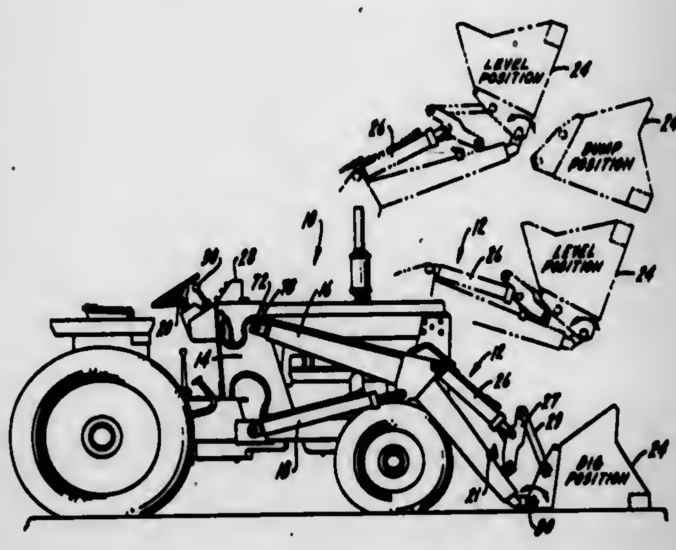
Rolf L. Carlund, Mjolby, Sweden, assignor to AB Bygg-Och Transportekonomi (BT), Mjolby, Sweden
Filed Aug. 25, 1971, Ser. No. 174,785
Int. Cl. B66f *9/16*
U.S. Cl. 214—701 P 3 Claims

A lift truck having a mast, a load carriage for movement up and down said mast and provided with forks which are rotatably mounted in said load carriage about a horizontal, transversal shaft. The load carriage and the forks are each provided with a supporting surface, said surfaces converging against each other. Hydraulic means cause two rollers to move between the two supporting surfaces in the converging and diverging direction thereof to rotate the forks in either direction round its horizontal shaft. The rollers are freely rotatable in relation to each other, the one for engagement with only one supporting surface and the other with only the other supporting surface.



3,726,428
CONTROL CIRCUIT FOR FRONT END LOADER

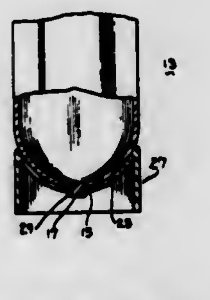
Wayne W. Lark, Clarendon Hills; Marvin D. Jennings, Naperville, and Arthur J. Howells, Jr., Western Springs, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Feb. 4, 1971, Ser. No. 112,537
Int. Cl. E02f *3/86, 3/87*
U.S. Cl. 214—763 10 Claims



There is disclosed a control circuit for actuating a hydraulically actuated boom and a hydraulically actuated implement associated with an earth-working mechanism whereby the actuation of the boom and the implement may be initiated solely by the closing of an electrical switch thereby enabling the operator of the earth-working mechanism to retain both hands on the steering wheel except for the short period of time when the switch is actuated. The control circuit comprises a first electrical circuit for automatically raising the boom and the implement, a second electrical circuit for automatically and continuously orienting the implement in a predetermined relationship with the boom, a third electrical circuit for automatically rotating the implement from a first position to a second position and wherein the third electrical circuit includes means for maintaining the implement in the second position for a preselected period of time and then automatically returning the implement to the first position, a fourth electrical circuit for lowering the boom and the implement, a fifth electrical circuit for automatically orienting the implement in a preselected angular relationship with the surface upon which the earth-working mechanism is located, and a sixth electrical circuit adapted to enable the boom and the implement to follow the surface upon which the earth-working mechanism is located. Each of these electrical circuits may be enabled in a preselected sequence by merely closing a switch which is located within easy access to the operator of the earth-working mechanism and in addition, a manual override control is available so that the operator may manually operate the boom and the implement in a conventional manner.

3,726,429
PACKAGE FOR HOLDING PRESSURIZED FLUENT MATERIALS

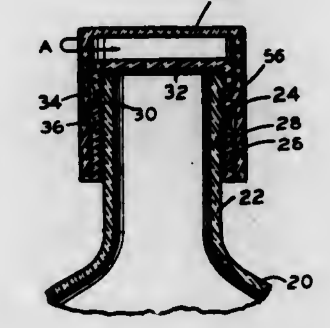
Robert L. Doughty, West Hartford, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 28, 1970, Ser. No. 101,961
Int. Cl. B65d *23/00*
U.S. Cl. 215—1 C 4 Claims



A composite package for holding pressurized fluent materials such as carbonated beverages, beer, aerosols and the like, which includes a thermoplastic container having a hemispherically shaped bottom section and a support for holding the container in an upright position which is formed of a thermoplastic compatible with that of the container, the support being heat sealed to the bottom section so as to attach the two together.

3,726,430
SAFETY BOTTLE CAP WITH CAMMED INNER AND OUTER CAPS

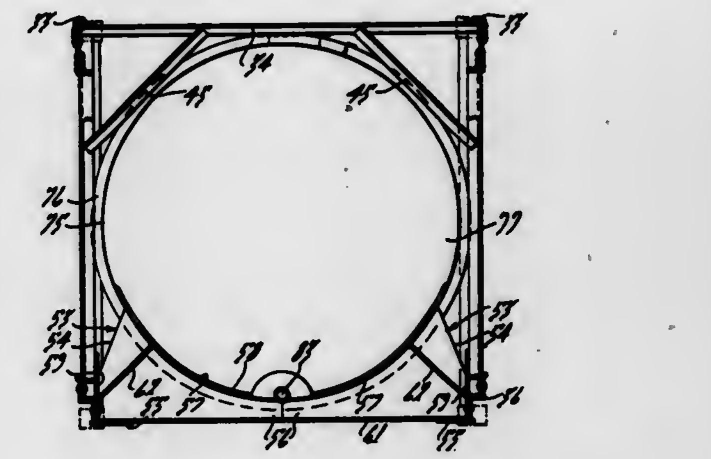
Joseph R. Falcone, 217 Cooper Lane, Dewitt, N.Y.; Anthony Falcone, Jr., 207 Oak Ridge, Camillus, N.Y., and George W. Hanford, 304 Oneida Street, Syracuse, N.Y.
Filed Feb. 1, 1971, Ser. No. 111,390
Int. Cl. B65d *55/02*; A61j *1/00*
U.S. Cl. 215—9 6 Claims



Safety threaded bottle cap assembly having inner and outer caps, the inner cap having spaced annular circumferential grooves, and an outer cap telescoping over the inner cap, and having a blister adapted to project into either groove and providing for relatively free rotation of the outer cap when the blister is in the outer groove, the outer cap being sufficiently resilient to permit the shifting of the outer cap axially to move the blister from one groove to the other and means on preventing relative rotation of said outer cap in respect to the inner cap when rotated in the direction to loosen or remove the inner cap from a bottle and operative only when said outer cap is shifted so as to place said blister in said inner groove and for replacing the inner cap upon the bottle, and shifting the blister of the outer cap to the outer groove upon the inner cap becoming tight on the bottle.

3,726,431
CONTAINERIZED TANK SYSTEM

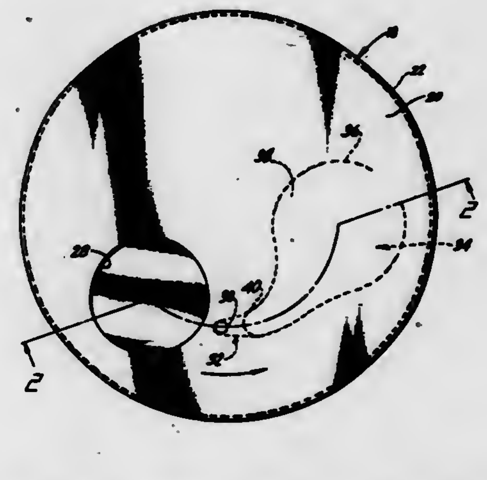
Lawrence A. Botkin, Omaha, Nebr., assignor to Fruehauf Corporation, Detroit, Mich.
Filed Aug. 24, 1970, Ser. No. 66,505
Int. Cl. B65d *57/00*
U.S. Cl. 220—12 9 Claims



The tank is constructed in the usual manner to withstand pressure and bending moments and is supported within a frame structure which simulates a container in dimensions and corner castings. The frame structure is capable of being stacked six-high when fully loaded which is made possible by the use of end frames of heavy tubular construction which are disposed in aligned relation when the frame structures are stacked. The frame structures are 20 or 40 feet long following the dimensions of the containers so that they can be transported, stacked and stored in the same manner as the containers.

3,726,432
EASY OPENING CONTAINER

Frank Gentile, 1130 N. Laurel Avenue, Apt. 3, Hollywood, Calif.
Continuation-in-part of Ser. No. 834,777, June 19, 1969, abandoned. This application Feb. 5, 1971, Ser. No. 112,966
Int. Cl. B65d *17/00*
U.S. Cl. 220—27 25 Claims



A rotatable lid fitted over the top of a cylindrical container has a downwardly projecting tongue on its underside adapted to force severance of a dispensing opening in the container top as the lid is rotated relative to the container. A matching opening in the lid registers with the opening severed in the top to provide means for dispensing the contents of the container.

3,726,433
SEAL RELEASE FOR A PRESSURE VESSEL

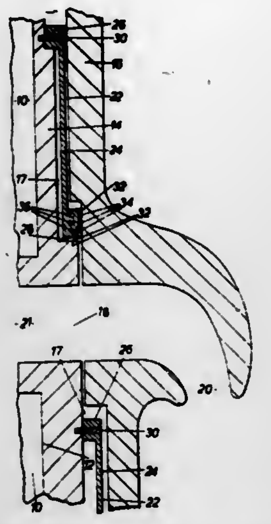
Edward George David Andrews, Cawston, England, assignor to Rolls Royce Limited, Derby, England

Filed Oct. 19, 1970, Ser. No. 81,735

Claims priority, application Great Britain, Oct. 25, 1969, 52,366/69

Int. Cl. B65d *53/00*

U.S. Cl. 220—46 **5 Claims**



A seal has two portions, the first one of which is adapted to be sealingly secured to a cylindrical wall defining an aperture and the second one of which is adapted to sealingly engage the periphery of an object and is provided with means for varying its temperature so as to disengage the second portion from the periphery of the object.

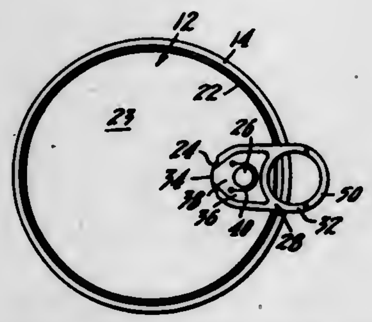
3,726,434
FULL OR PARTIAL OPENING EASY-OPEN CONTAINER END CLOSURE

John Robert Platt, Crystal Lake, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 21, 1971, Ser. No. 210,533

Int. Cl. B65d *17/20*

U.S. Cl. 220—54 **4 Claims**



A full or partial opening easy-open container end closure having indented into its central panel a large peripheral score pattern encompassing a smaller score pattern. A rivet secures an opening tab to the panel section defined by the smaller score pattern in a manner that allows the tab to be manipulated to initially rupture a portion of either score pattern and to effect a partial or full opening in the end.

3,726,435
NAPKIN DISPENSER

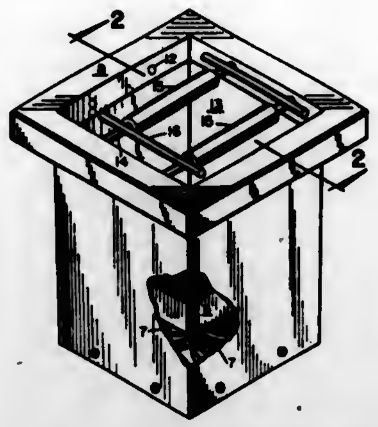
Glen L. Williams; George W. Church, Jr., and Ronald A. Miller, all of San Antonio, Tex., assignors to Church's Fried Chicken, Inc., San Antonio, Tex.

Filed Nov. 4, 1970, Ser. No. 86,771

Int. Cl. B65h *1/08*

U.S. Cl. 221—59 **5 Claims**

A disposable napkin dispenser having a raised collar defining a discharge opening and a spring-loaded follower for delivering napkins to the discharge opening. A pair of primary roller guide retainers extend across the discharge opening in parallel relation to each other to retain napkins inside the dispenser and to facilitate their removal therefrom and a pair of secondary centering guide retainers are connected across the top of the primary roller guide retainers in perpendicular relation thereto.



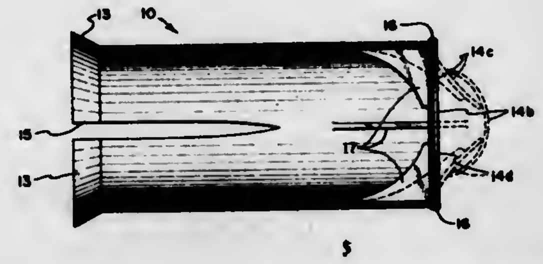
3,726,436
DISPENSER WITH FLAP VALVE

Richard R. Despain, and Gary A. Flandro, both of Salt Lake City, Utah, assignors to said Despain, by said Flandro

Filed April 14, 1971, Ser. No. 133,910

Int. Cl. B65d *37/00*

U.S. Cl. 222—213 **8 Claims**



A dispenser including a valve unit which is housed within the neck of a flexible type container from which fluid and semi-fluid matter such as tooth paste, shaving cream, catsup, mustard and the like are dispensed. The valve assembly allows flow through when squeezing pressure is applied to the container and the material contained therein, and automatically closes to prevent further flow, when the pressure is removed. The valve assembly includes a valve having a plurality of overlapping flaps which are hinged to open back from one another and to form a central passageway between them when pressure is exerted from within the container. Each flap may have one or more elastic stiffener members to increase the flaps ability to return to its original location when pressure from within the container is removed. As the flaps close they compress and shear through any material trapped in the central passage, with the lower flaps wiping trapped matterial from the undersides of the upper flaps so that no material is trapped between them.

3,726,437
AEROSOL SPRAY DISPENSER

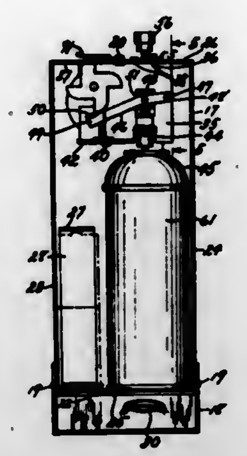
Norman H. Siegel, 1351 N.E. 191st St., North Miami Beach, Fla.

Filed Jan. 21, 1971, Ser. No. 108,332

Int. Cl. B67d *5/08*

U.S. Cl. 222—70 **2 Claims**

An automatic aerosol spray dispenser of a type adapted to contain a replaceable aerosol can and operate the valve mechanism thereof at predetermined intervals for adjustable shorter periods. Timing of the first mentioned intervals is by means of a solid state timing device having a discharging condensor. The discharge of the condensor is employed to commence operation of a motor driving a cam which drives a valve-operating mechanism, and opens a switch in series with the motor at the completion of a spray cycle, this switch being closed with initiation of motor operation. Since the motor operates only during the spray cycle, and continuous current consumption is limited to the charging of the condensor, the device is suitable for dry cell operation.



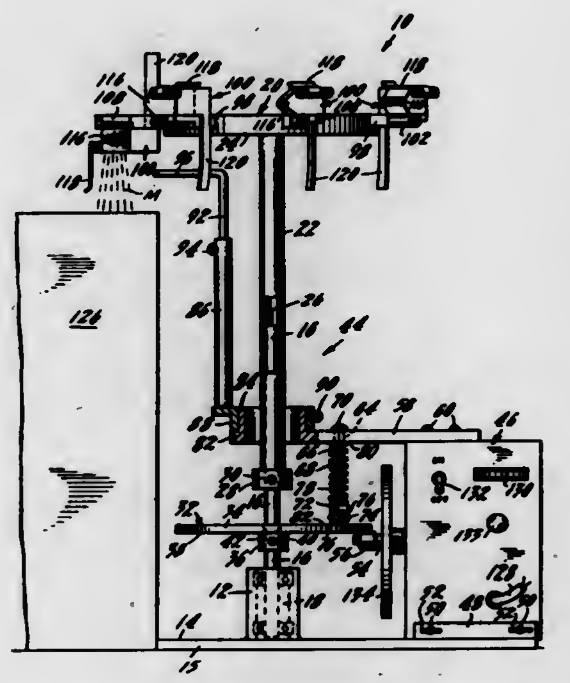
3,726,438
APPARATUS FOR DISPENSING MATERIAL FROM RECEPTACLES PIVOTALLY INVERTABLE AT THE ENDS OF CONSECUTIVE TIME PERIODS

William J. O'Rourke, 27 Palmyra Road, R.F.D. 3, Brewster, N.Y.

Filed Sept. 8, 1971, Ser. No. 178,687

Int. Cl. A01k *5/02*

U.S. Cl. 222—70 **12 Claims**



An apparatus for dispensing a predetermined quantity of material at the end of consecutive preselected time periods has a plurality of receptacles, each for containing a predetermined quantity of material, pivotally invertably mounted at equal distances around the periphery of a rotatable turret mechanism. The turret mechanism turns through a rotation cycle having a predetermined period of rotation and thereby carries the receptacles along a fixed path of revolution. A trip rod prepositioned adjacent to a preselected segment of the receptacle path initiates pivotal tilting of each receptacle as each receptacle is consecutively carried through the path segment near the end of each consecutive preselected time period. After initiation of this pivotal tilting movement of the receptacle, a weight attached to the receptacle causes acceleration of the tilting movement to invert the receptacle at the end of the preselected path segment whereby the predetermined quantity of material is dispensed from a receptacle at the end of each consecutive preselected time period.

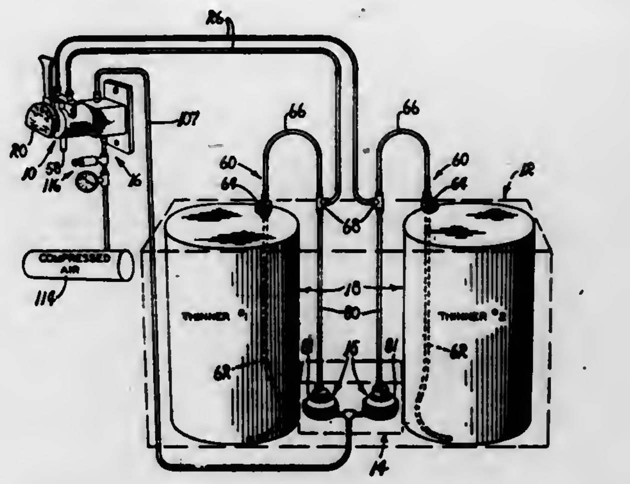
3,726,439
SYSTEM FOR DISPENSING FLUIDS

Gerald D. Sjostrand, 5440 East Lansing Way, Fresno, Calif.

Filed March 3, 1971, Ser. No. 120,486

Int. Cl. B67d *5/60*

U.S. Cl. 222—145 **3 Claims**



An air-operated system for blending and dispensing fluids, particularly suited for use in blending and dispensing paint thinners and the like as they are employed in automotive paint shops. The system is characterized by a compartmented reservoir containing a plurality of types of fluids to be blended and dispensed; a manipulatable valve for successively dispensing charges of blended fluid; and an air-operated siphon pump coupled with both the reservoir and the valve for successively discharging charges of fluid drawn from the reservoir in response to manipulations of the valve.

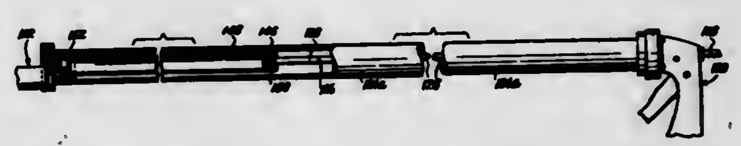
3,726,440
CAULKING GUN

Fred E. Deeb, Tallahassee, Fla., assignor to Speed Caulking, Inc., Tallahassee, Fla.

Filed Dec. 21, 1970, Ser. No. 99,961

Int. Cl. G01f *11/06*

U.S. Cl. 222—174 **8 Claims**



The cartridge chamber is connected with the trigger assembly by a tubular casing and a pressure member which are adjustable so as to provide a caulking gun of any desired length and the trigger assembly is rotatably connected to the tubular casing or to the cartridge chamber so that the relative position of these two components may be varied.

3,726,441
DISTRIBUTOR FOR FRAGILE PARTICULATE MATERIALS

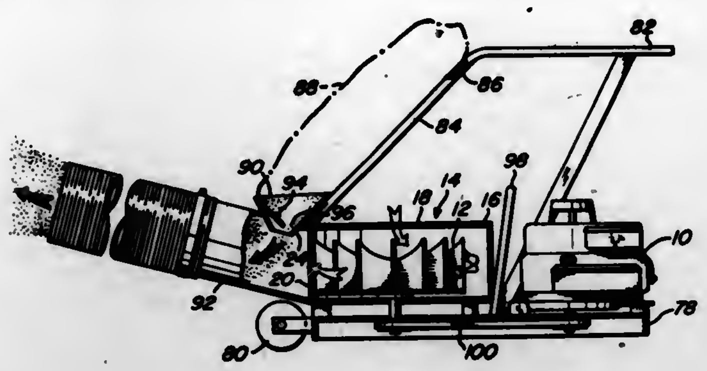
Richard E. Keyes, and Ralph E. Lingert, both of Cincinnati, Ohio, assignors to The Finn Equipment Company, Cincinnati, Ohio

Filed March 19, 1971, Ser. No. 126,050

Int. Cl. A01c *15/04*

U.S. Cl. 222—178 **8 Claims**

The distributor of fragile particulate materials includes a blower, a hopper for particulate material, and a venturi tube assembly arranged to receive the material from the hopper and broadcast the material substantially uniformly over an extensive area, with the aid of air as the dispersal vehicle, ap-



plied in a manner such as to ensure deposit of the material upon said area in practically its original form and without substantially reducing the material to powder or granules.

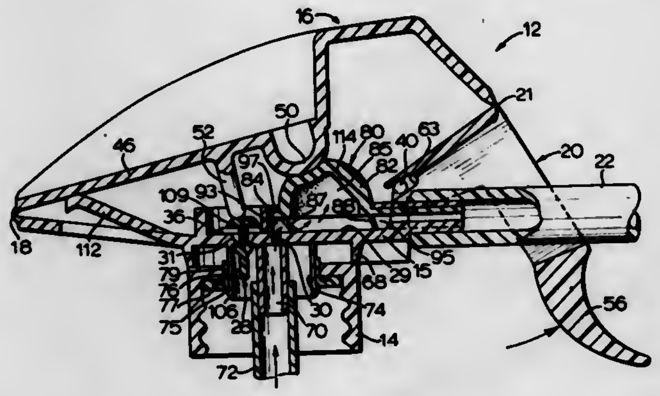
3,726,442
TRIGGER PUMP AND BREATHER VALVE DISPENSING ASSEMBLY

Thomas N. Davidson, Thornhill; Alois A. Krawagna, Toronto and Frederick Harold Humphrey, Markham, all of Ontario, Canada, assignors to Polypump Curacao N.V., Willemstad, Curacao, Netherlands Antilles

Filed Feb. 17, 1971, Ser. No. 116,112

Int. Cl. B65d *37/00*

U.S. Cl. 222—207 **9 Claims**



A vent-valve for use with a plate member having an aperture therethrough. The vent-valve consists of a stem extending loosely through the aperture, and having on one side of the aperture an enlargement converging toward the aperture and adapted to seal the same. On the other side of the aperture of the stem has a resilient mushroom-like cap which bears against the plate member to bias the enlargement toward and into sealing relation with the aperture.

3,726,443
PORTABLE SPRAY APPARATUS

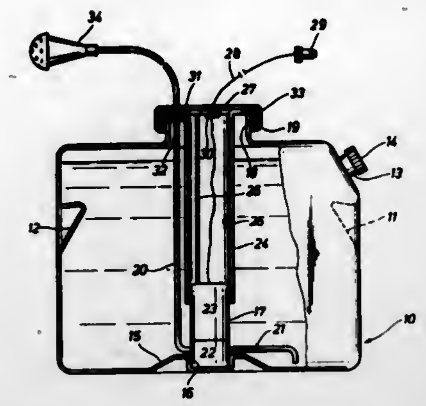
Brantly Harris, 6236 Willers Way, Houston, Tex.

Continuation of Ser. No. 52,039, July 2, 1970, abandoned. This application March 20, 1972, Ser. No. 236,116

Int. Cl. B67d *5/50*

U.S. Cl. 222—333 **6 Claims**

One embodiment of a portable spray apparatus is disclosed wherein a plastic container is provided with built-in handle grips and an inlet port. The container has a wide mouth opening threaded to receive a cap member and is sized large enough to receive a submergible electric water pump. The bottom surface of the container is preformed to provide a supporting receptacle for the motor while the upper end of the motor is supported by a tubular support member. The tubular support member has a cap or lid portion which engages the mouth opening and a threaded annular cap or ring member attaches the tubular member to the container. The pump has an opening near the bottom of the container and an outlet cou-



pled to a flexible hose. The hose and electrical wiring for the pump extend through the cap member. The electrical wiring has a plug for reception in an automobile cigar lighter receptacle for furnishing d.c. power.

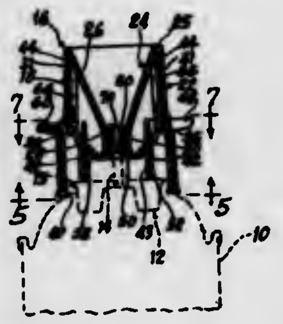
3,726,444
ACTUATOR MEANS FOR USE WITH AEROSOL DISPENSERS

Efrem M. Ostrowsky, Highland Park, and William G. Crowle, Deerfield, both of Ill., assignors to Federal Tool & Plastics, a Division of VCA Corporation, Chicago, Ill.

Filed June 23, 1971, Ser. No. 155,738

Int. Cl. B65d *55/12*

U.S. Cl. 222—402.11 **10 Claims**



Actuator means adapted for securement to an aerosol container, including a cap and a toggle-type actuator having a nozzle so that the application of manual pressure against the toggle-type actuator will operate the valve stem of the aerosol container to depress or move the valve stem inwardly and permit the contents of the aerosol container to be discharged therefrom, said toggle-type actuator having means cooperating with the cap to lock the actuator against relative movement with respect to said cap and to the valve stem to prevent any discharge of the contents of the aerosol container during shipment and during non-use of same and also prevent the accidental operation of the valve stem.

3,726,445
ACTUATOR MEANS FOR USE WITH AEROSOL DISPENSERS

Efrem M. Ostrowsky, and William G. Crowle, Chicago, Ill., assignors to Federal Tool & Plastics, a Division of VCA Corporation, Chicago, Ill.

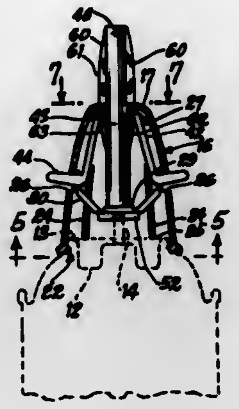
Filed June 23, 1971, Ser. No. 155,870

Int. Cl. B65d *55/12*

U.S. Cl. 222—402.11 **10 Claims**

Actuator means adapted for securement to an aerosol container including a cap, a dispensing nozzle, and a toggle-type actuator operatively associated with the cap and nozzle so that the application of manual pressure against the toggle-type actuator will operate the dispensing nozzle which is operatively

connected to the valve stem of the aerosol unit to depress the valve stem inwardly and permit the contents of the aerosol container to be discharged therefrom, said nozzle having



means cooperating with the cap to lock the nozzle against any reciprocal movement relative to said cap to prevent accidental movement of the valve stem and thereby prevent accidental discharge of the aerosol contents.

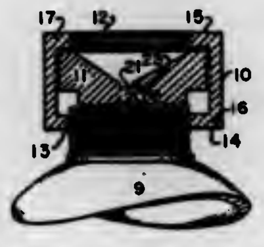
3,726,446
COMBINED CLOSURE AND DISPENSING CAP FOR TUBES AND BOTTLES

John A. Hays, Post Office Box 795, Raymondville, Tex.

Filed Oct. 14, 1971, Ser. No. 189,154

Int. Cl. B67d *3/00*

U.S. Cl. 222—513 **4 Claims**



Dual function of the closing device comprises an outer threaded retainer encasing a valve including a flexible flap which functions in one direction as dispenser and in the other direction as a seal when forced against the valve seat. The threaded retainer is constructed with threads at each end retaining a floating valve. The device is constructed and arranged to function as a dispenser when secured to a tube at one end and as a closure or seal when secured at the opposite end.

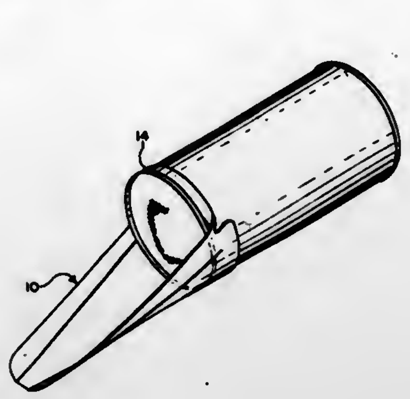
3,726,447
PLASTIC CONTAINER SPOUT

M. Julius Klygis, Evergreen Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 26, 1971, Ser. No. 119,284

Int. Cl. B65d *5/74*

U.S. Cl. 222—567 **12 Claims**



A plastic container spout for mounting on the outer surface of a container and slidably movable between a substantially juxtaposed retracted position and an extended pouring position.

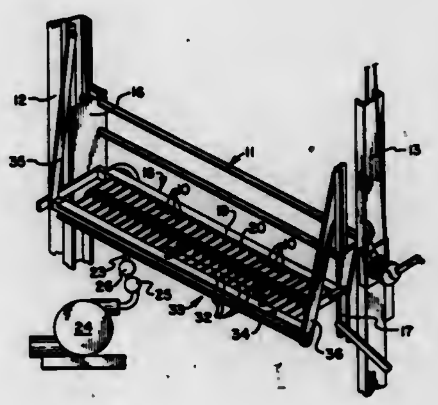
3,726,448
INFLATABLE FINGER FOR A DRAPERY PLEATING AND STRETCHING APPARATUS

John H. Hales, P.O. Box 1098, Aurora, Utah

Filed Nov. 9, 1971, Ser. No. 197,080

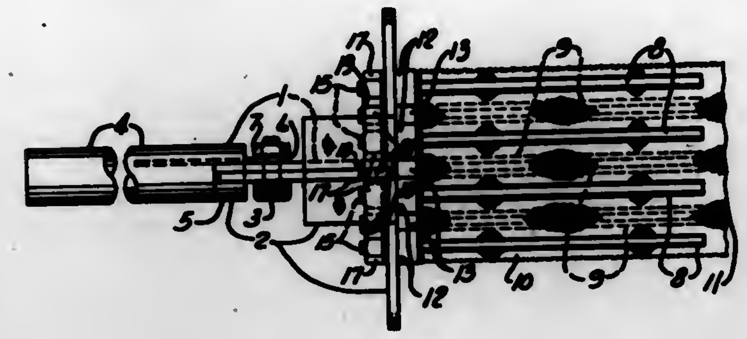
Int. Cl. A41h *43/00;* **D06j** *1/00*

U.S. Cl. 223—32 **10 Claims**



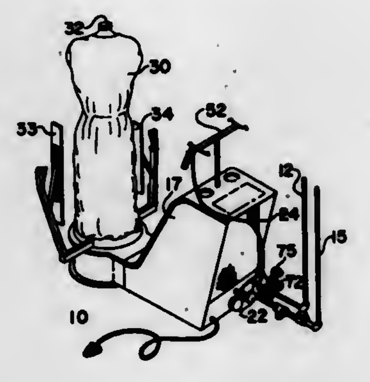
The improved inflatable finger has a rigid outer shell that is thin and elongated both in cross section and in side elevation. It is rounded at one end and closed, except for slots in the sides thereof. The opposite end is open and flanged for attachment to a header member of a drapery pleating and folding apparatus. A rubber bladder having the form of the outer shell, and covered with an expandable fabric sheath, fits inside the outer shell, so that its flange abuts that of the shell. The inflatable fingers are forced into sealed relationship with the header member, over holes therein, by spring clamps fitted over the flanges of the fingers and screwed to the header member. A set of parallel inflatable fingers is meshed with an opposing set of noninflatable fingers to pleat drapery between the sets. Clamping of the drapery between the two sets of fingers may be effected by inflating the bladders of the inflatable fingers so that portions of the bladders are forced through the slots in their shells to bind the drapery against adjacent noninflatable fingers. An insert may be included in each bladder to prevent sealing of the sides thereof when not inflated.

3,726,449
PLEAT FORMING DEVICE
Connie Kern, 909 Kennebec Street, Pittsburgh, Pa.
Filed May 26, 1971, Ser. No. 147,063
Int. Cl. A41h *43/00*; D06j *1/00*; D05b *35/08*
U.S. Cl. 223—35 **4 Claims**



A pleat forming device to form pleats in a strip of material such as in the manufacture of curtains. A pair of pivoted arms are each provided with a series of tines at their free ends which intermesh with each other when the arms are closed such that material disposed between the two series of tines will be folded into a series of pleats when the tines intermesh.

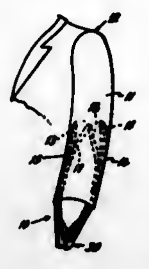
3,726,450
GARMENT FINISHER WITH ATTACHED ASSEMBLY OF FLUID SPRAYING GUNS
Frank H. Richterkessing, Louisville, Ky., assignor to The W. M. Cissell Manufacturing Company, Louisville, Ky.
Division of Ser. No. 13,455, Feb. 24, 1970, Pat. No. 3,655,131. This application Sept. 9, 1971, Ser. No. 179,025
Int. Cl. A41h *5/00*
U.S. Cl. 223—70 **2 Claims**



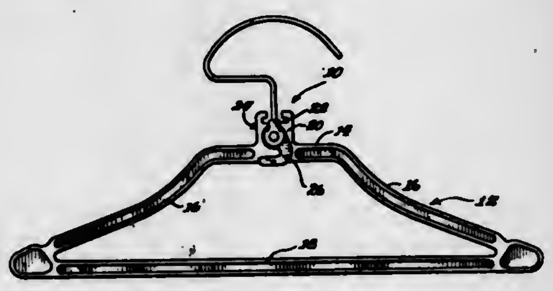
A garment finisher having steam supply and steam return conduits serving the same includes an assembly of fluid spraying guns communicating with the steam conduits. An improved steam gun fed by a circulating dry steam source is disclosed.

3,726,451
GARMENT SLEEVER
Bertram G. Blevens, Louisville, Ky., assignor to W. M. Cissell Manufacturing Company, Louisville, Ky.
Filed Nov. 5, 1971, Ser. No. 196,132
Int. Cl. D06c *5/00, 15/00*
U.S. Cl. 223—74 **7 Claims**

A sleever has two slats connected together by a spring in the form of a pair of elongated outwardly bowed leaf springs such that the slats are parallel. A handle has a pair of members pivoted to the slats to apply an inward force for compressing the spring and moving the slats together for insertion into, or removal from, the sleeve of a garment. The slats and handle members are connected to the midsections of the outwardly bowed springs, enabling the slats to remain parallel when together, apart and/or in intermediate positions, thereby being adaptable to shape garment sleeves of various sizes during a garment conditioning or finishing operation.

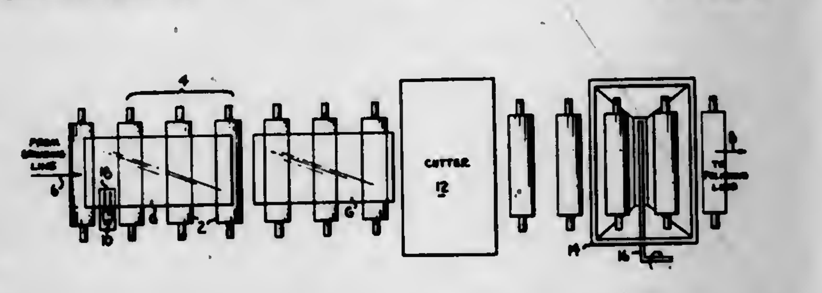


3,726,452
GARMENT HANGER AND CLAMP THEREFOR
Max I. Jaffe, 1240 N. Homan Avenue, Chicago, Ill.
Filed Oct. 4, 1971, Ser. No. 186,068
Int. Cl. A47j *51/94*
U.S. Cl. 223—91 **8 Claims**



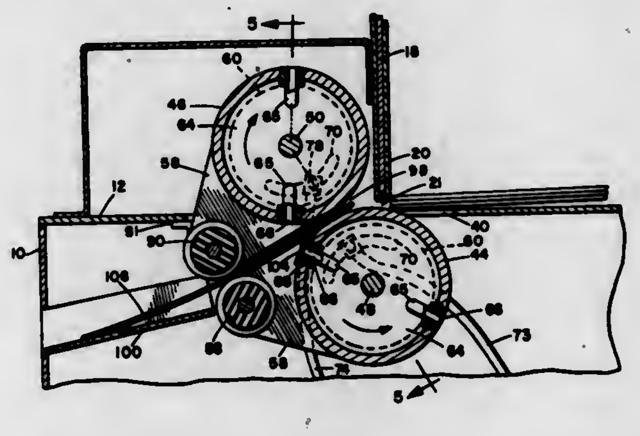
A garment hanger having a hanger body which includes a top portion and a lower horizontal cross-member spaced from the top portion, with the top portion being slotted to form a support engaging member, a handle provided with a keeper latch which handle and keeper latch are pivotally or rotatably secured as a unit to the hanger body so that when the handle is positioned inwardly of the top of the hanger body the keeper latch will secure the garment hanger to its support, with the arcuate portion of the handle adapted to engage the lower horizontal cross-member to prevent a garment draped thereover from slipping therefrom, said handle adapted to be rotated to extend above the top of the hanger body for carrying, said handle having the arcuate portion of a size to permit all of the fingers of a person's hand to be curled around the arcuate portion to provide a firm and convenient hand support.

3,726,453
EDGE-VENT DETECTOR
Gary W. Shaffer, Hyndman, Pa.; Lester R. Norris, Lonaconing, and William H. Hutcheson, Cumberland, both of Md., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed March 11, 1971, Ser. No. 123,300
Int. Cl. B26f *3/00*
U.S. Cl. 225—2 **6 Claims**



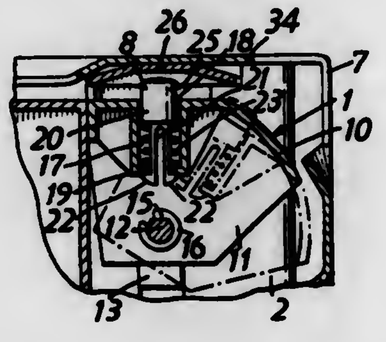
In a process for making ground-and-polished plate glass, apparatus is provided, associated with a conveyor line for ground glass, prior to entry of same into a polishing line, for detecting edge vents in the glass. The apparatus comprises a carriage or frame spring-loaded or otherwise urged against the glass and having a follower wheel in contact with an edge thereof, with there being mounted on a frame a microswitch means having a contact member or roller in operative contact with the edge of the glass sheet or ribbon to be inspected. The microswitch is operatively connected to a means for indicating the presence of edge vents. The equipment preferably further comprises a cutter and a breaker means associated with a cullet chute, for removing from the process the pieces of glass that are detected as having faulty edges, to avoid unwanted breakage or damage in a subsequent polishing operation.

3,726,454
ENVELOPE OPENING MACHINE
Daniel T. Robbins, 1415 W. Clark Avenue, Burbank, Calif.
Filed Dec. 21, 1971, Ser. No. 210,537
Int. Cl. B26f *3/02*
U.S. Cl. 225—99 **13 Claims**



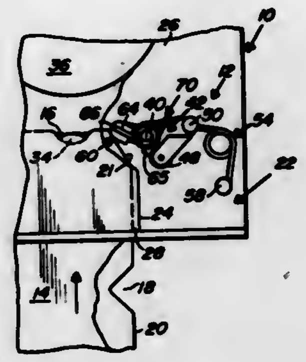
An automatic envelope opening machine for high speed opening of envelopes having snap-out opener flaps defined by perforations, scoring or otherwise weakened lines on the envelope specially made for use in such machines. The machine has two suction opener rollers and the envelopes pass therebetween, simplifying the initial charging of the magazine since the envelopes need not all be oriented in the same manner and the address side may be toward the top or bottom. The offset arrangement of the rollers allows the magazine to be easily accessible and gravity operated with a unique stack pressure spoiler incorporated in the magazine. Improved structure of the extractor and opener rollers prevents jamming of the machine. The very high speed operation greatly simplifies the maintenance of adequate suction.

3,726,455
FEED MECHANISM FOR FEEDING STATIONERY HAVING FEED PERFORATIONS
Peter Sandbach, Stoke-on-Trent, England, assignor to Moore Business Forms Inc., Niagara Falls, N.Y.
Filed July 13, 1971, Ser. No. 162,159
Int. Cl. G03b *1/22*
U.S. Cl. 226—62 **2 Claims**



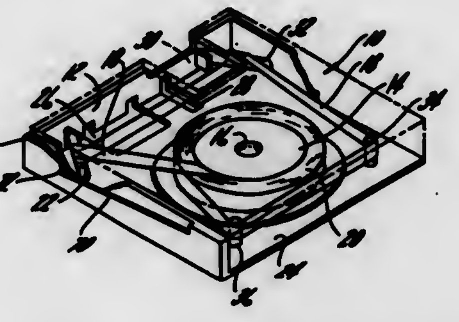
A feed mechanism for feeding stationery having feed perforations has spring loaded pins for engaging the feed perforations. Each pin is movably retained in an aperture in a base plate of the feed mechanism and has a portion which is made of resilient material so that the pin can be inserted into or removed from the aperture by temporary distortion of the portion.

3,726,456
CARTRIDGE LOCKING MECHANISM FOR A MINIATURE TAPE PLAYER
Victor E. Church, Park Ridge, and William B. Huber, Park Forest, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed March 31, 1972, Ser. No. 239,896
Int. Cl. B65h *17/20*
U.S. Cl. 226—89 **7 Claims**



A cartridge locking mechanism for a miniature tape cartridge player adapted to receive standard tape cartridges having a beveled side wall portion at the leading end thereof and a notch, includes a rotatably mounted plate member having a cartridge engaging roller mounted thereon for movement into and out of the player in accordance with the rotation of the plate member and a sensing arm mounted for rotation about the axis of rotation of the plate member and coupled to the plate member by a spring which biases the sensing arm into the path of a cartridge received in the player. The sensing arm engages the beveled side wall portion of the cartridge when the latter is inserted into the player to deflect the sensing arm and thereafter cause rotation of the plate member. An over-center spring also coupled to the plate member moves from a first stable state to a second stable state to in turn move the roller into engagement with the side wall of the cartridge, and upon full insertion of the latter into the player, into the notch in the side wall of the cartridge.

3,726,457
TAPE CARTRIDGE PLAYBACK MECHANISM
Theophiel Clement Jozef Lodewijk Staar, Kraainem, Belgium, assignor to Staar, S. A., Brussels, Belgium
Filed Dec. 28, 1971, Ser. No. 212,928
Int. Cl. G11b *15/66*
U.S. Cl. 226—90 **17 Claims**



A transport apparatus for magnetic tape stored in cartridges in which the tape is exposed through apertures in opposed principal side walls for cooperation with a tape guide, sound head and tape drive capstan, each of which is at a fixed location in said apparatus. The apparatus is adapted to slidingly receive one of said cartridges inserted inwardly edgewise to a first position wherein the exposed tape is approximately opposite the location of the tape guide, sound head and tape drive capstan, and is thereafter moved transversely toward a second position where the tape guide, sound head and tape drive capstan penetrate one wall of the cartridge into operative contact with the tape and the pressure roller penetrates the opposite principal wall to press against the tape and tape drive capstan.

3,726,458
DEVICE FOR THE INTERMITTENT FEED OF A WIDTH OF MATERIAL

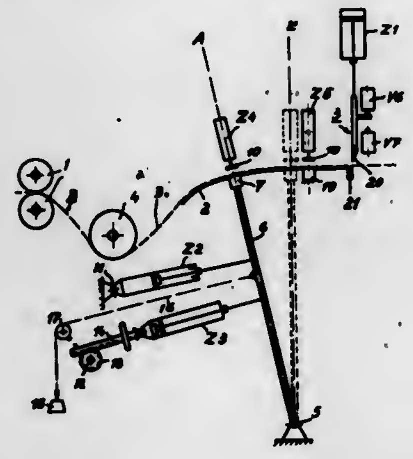
Richard Rabl, Vienna, Austria, assignor to Akkumulatorenfabrik Dr. Leopold Jungfer, Karnten, Austria

Filed July 12, 1971, Ser. No. 161,800

Claims priority, application Austria, July 17, 1970, 6562/70

Int. Cl. B65h *17/26*

U.S. Cl. 226—141 **1 Claim**



A feed device for strip material has a reciprocable arm which is moved in a feed direction by a first pneumatic ram and in a return direction by a second pneumatic ram. The arm has a clamp for holding the material during feed movement and a further clamp located at the end of the feed movement of the arm to hold the material during return movement of the ram. The first ram has a stop for limiting the feed movement and the second ram has both a stop for limiting return movement and a device for braking movement of the member towards the end of the return movement.

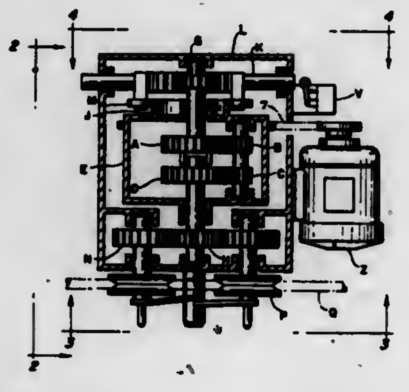
3,726,459
APPARATUS FOR PRODUCING INTERMITTENT MOTION

Paul Defontenay, Gourg la Reine, France, assignor to Redex Societe Anonyme, Ivry (Seine), France

Division of Ser. No. 861,809, Sept. 29, 1969. This application Jan. 21, 1972, Ser. No. 219,871

Int. Cl. B65h *17/22*

U.S. Cl. 226—152 **2 Claims**



Intermittent movement of a work piece is produced from a rotary motor which drives the case of a differential. A cam integral with the differential case drives a gear rack slider having a pinion which drives one sun gear of the differential. Another sun gear of the differential is coupled to the first sun gear by planet gears. Output drive rollers are gear driven from the shaft of the second sun gear. A switch actuated by the slider may be employed to control an external machine or to control the operation of the motion producer itself.

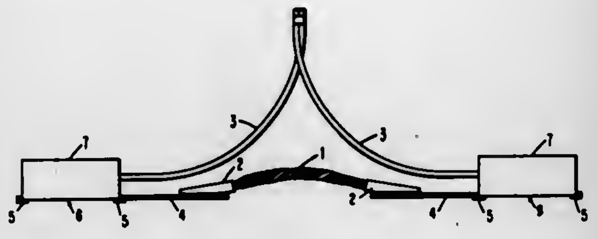
3,726,460
EXPLOSIVE BONDING DEVICE

Gary J. Lemonds, Broomfield, and Ivor G. Hanson, Arvada, both of Colo., assignors to Creative Metals Inc., Broomfield, Colo.

Filed July 29, 1971, Ser. No. 167,401

Int. Cl. B23k *21/00;* **B23p** *3/02*

U.S. Cl. 228—3 **5 Claims**



A bonding device for explosively bonding electrical conductors between disjointed rails, pipes or the like; a process for bonding electrical conductors onto rails, pipes or the like; and rails, pipes or the like bonded with electrical conductors.

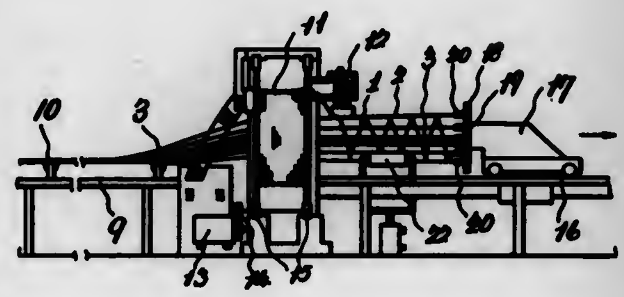
3,726,461
APPARATUS FOR FORMING PC CONCRETE PIPE REINFORCING

Yoshikiyo Fukushima, Setagaya-ku, Tokyo; Yasushi Ishihara, Kitatama-gun, Tokyo; Kenzo Momota, Suginami-ku, Tokyo; Yasuo Usui, Chigasaki-City, Kanagawa-Prefecture; Tuyoshi Sakumura, Suginami-ku, Tokyo; Satoru Sogo, Koganei-City, Tokyo, and Koji Nunokawa, Ota-ku, Tokyo, all of Japan, assignors to Nippon Concrete Industries Co., Ltd., Tokyo, Japan

Division of Ser. No. 794,900, Jan. 29, 1969, Pat. No. 3,592,243. This application Jan. 18, 1971, Ser. No. 107,581

Int. Cl. B23k *1/20*

U.S. Cl. 228—5 **7 Claims**



Apparatus for fabricating PC concrete pipe reinforcing including fittings or plates for holding tension reinforcements and non-tension vertical reinforcements, bobbin and welding apparatus for welding spiral non-tension reinforcements to the non-tension reinforcements, rings to hold the tension reinforcements substantially parallel, when the plates or fittings are such that they are not normally parallel, the bobbin and welding apparatus being either fixed, axially movable, and/or rotatable around the vertical reinforcements, and one of the fittings or plates being axially movable when the vertical reinforcements are normally substantially parallel.

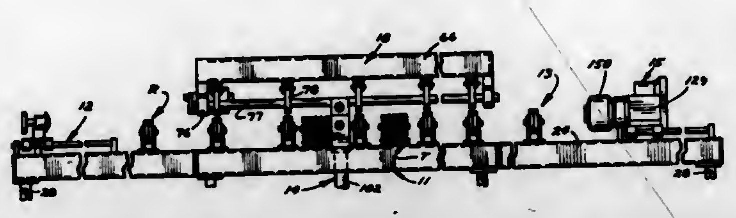
3,726,462
ROD WELDING APPARATUS FOR MAKING THREADED DRILL RODS

Ake E. Ronnkvist, Excelsior, Minn., assignor to E. J. Longyear Company, Minneapolis, Minn.

Filed Oct. 26, 1970, Ser. No. 83,899

Int. Cl. B23k *5/00*

U.S. Cl. 228—6 **32 Claims**



Rod welding apparatus that includes a rod positioner and a chuck assembly mounted on opposite ends of a frame for movement toward and away from one another, a plurality of roller assemblies intermediate the first mentioned assemblies for supporting a pair of rod portions with a threaded together pin and box combination intermediate the rod portions, a hold down assembly having driven rollers to releasably hold the rod portions down on the roller assemblies and rotate the rod portions and said combination while the rod portions and combination are held in axial compression by the first mentioned assemblies, a welder machine, a seam locator unit and controls for welding the pin to one rod portion and the box to the other rod portion, and a linear travel assembly for moving the rod portion adjacent the rod positioner assembly toward the chuck assembly, and the method of welding the rod portions together.

3,726,463
APPARATUS FOR PRODUCING HELICALLY FORMED WELDED TUBE

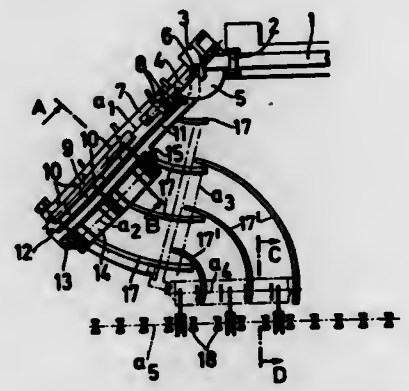
Ralf Hoffmann, Dortmund-Solde, and Helmut Weidner, Dortmund-Korne, both of Germany, assignors to Hoesch Maschinenfabrik Deutschland Aktiengesellschaft, Dortmund, Germany

Filed Sept. 13, 1971, Ser. No. 179,679

Claims priority, application Germany, Sept. 19, 1970, P 20 46 284.4

Int. Cl. B23k *1/20*

U.S. Cl. 228—15 **4 Claims**



Apparatus for producing tubing by welding helically formed metal strip comprises a mechanism for feeding the strip, a tube former which winds the metal strip helically to form the tube, a device for welding together the strip edges after it has been formed, a cutter for cutting the welded tube into lengths and a tube carrier for supporting these lengths of tube, the tube carrier being pivoted so that it can be swung to vary the angle between the axis of the formed tube and the direction in which the strip is fed, a receiver which receives the cut-off lengths of tube from the carrier and a conveyor for conveying the cut-off lengths from the receiver. The receiver is arranged so that each of the cut-off lengths of tube can be swung about the pivot axis of the tube carrier from a position parallel to the carrier and can also be swung about a second axis into a position in which each length of tube extends parallel to the conveyor which ten receives the tube and conveys it away.

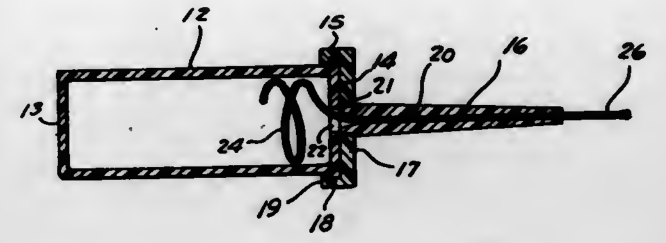
3,726,464
SOLDER WICK DEVICE

Thomas A. Howell, P. O. Box 4672, and Dewey D. Selle, 1932 18th Place, both of Yuma, Ariz.

Filed Nov. 2[illegible], 1969, Ser. No. 880,573

Int. Cl. B23k *1/00*

U.S. Cl. 228—19 **8 Claims**



A desoldering device consisting of a cylindrical container housing a coil of stranded wire impregnated with a small amount of soldering flux, the container having an elongated outlet conduit through which the stranded wire is extended to act as a wick. The stranded wire absorbs melted solder by capillary action when the wire is held against a soldered joint and heat is applied thereto.

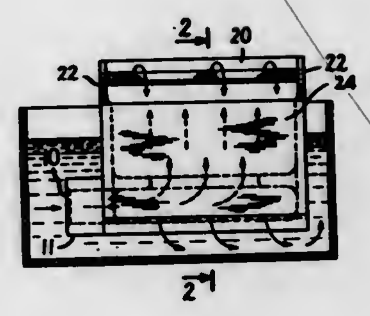
3,726,465
WAVE SOLDERING APPARATUS

Kenneth G. Boynton, Milford, N.H.; and Thomas R. Diggins, Elk Grove, Ill., assignors to Hollis Engineering, Inc., Nashua, N.H.

Filed Jan. 15, 1971, Ser. No. 106,801

Int. Cl. B23k *1/08*

U.S. Cl. 228—37 **8 Claims**



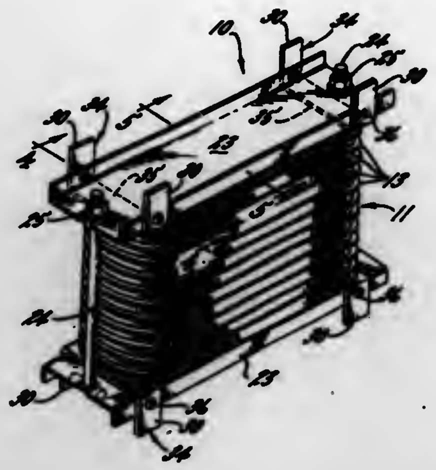
An apparatus for producing a soldering wave having a gradually curved upper soldering surface and including a passage communicating with a reservoir of the solder through a lower intake and having a discharge opening above the level of the solder in the reservoir, a wall forming part of the passage and discharge opening over which the solder flows to form the wave, a down-wardly extending return passage having its upper intake in communication with the downstream end of the wave and its lower discharge end beneath the level of the solder in the reservoir, a downwardly sloped wall for supporting the wave between the overflow wall and the upper end of the return passage and lengthening the wave between the upstream and downstream ends thereof, and a flow regulator within the return passage to maintain a column of solder within the return passage at a height substantially above the level of the solder in the reservoir to eliminate turbulence within the wave and the return passage.

3,726,466
BRAZING FIXTURE

Helmut Vedder; Edward R. Byrnes, and Ronald D. Rogers, Rockford, Ill., assignors to Alco Standard Corporation, Valley Forge, Pa.

Filed May 28, 1971, Ser. No. 148,003
Int. Cl. B23k *19/00*

U.S. Cl. 228—44 7 Claims



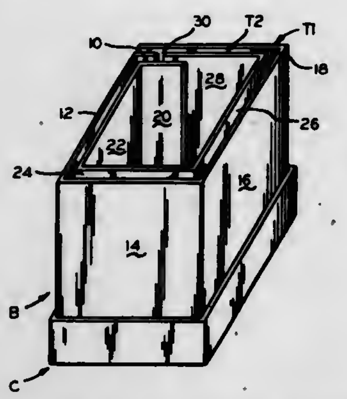
A fixture for holding a stack of workpieces in assembled relationship during furnace brazing of the workpieces by radiant heat. The fixture comprises upper and lower clamping plates adapted to be drawn together to clamp the workpieces. Fins made of highly heat conductive material project vertically from the plates and block the radiant heat directed horizontally across the plates, the fins conducting such heat into the plates to raise the temperature of the plates and promote uniform heating of the workpieces from top to bottom.

3,726,467
HEAVY DUTY CONTAINER

Charles J. Shepherd, Pasadena, Tex., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 12, 1972, Ser. No. 217,090
Int. Cl. B65d *13/00, 5/00*

U.S. Cl. 229—23 R 10 Claims



A heavy duty paperboard shipping container has a body formed from a pair of telescoping tubular elements wherein all but one of the walls of the container body are double-ply in thickness throughout their entire width, and wherein one wall is double-ply in thickness throughout the majority of its width and is triple-ply for a minority of its width adjacent one corner of the container body.

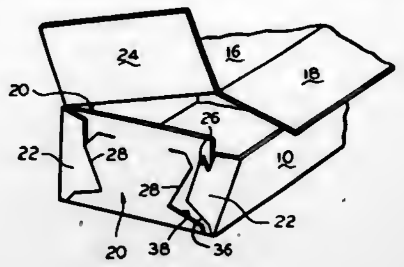
3,726,468
CARTON END WALL STRUCTURE

Richard J. Muth, Kent, Wash., assignor to Container Corporation of America, Chicago, Ill.

Filed April 13, 1971, Ser. No. 133,503
Int. Cl. B65d *5/26*

U.S. Cl. 229—36 1 Claim

In a folding carton formed of foldable paperboard, an end wall structure including, an inner flap, a pair of intermediate flaps having interlocking engagement with the inner flap, an outer flap having sealing engagement with said inner and intermediate flaps, and means whereby the inner flap and portions of the intermediate flaps present generally co-planar surfaces engaging the outer flap.

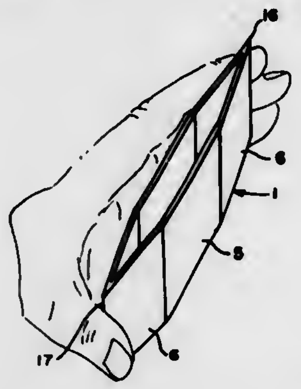


3,726,469
EXPANSIBLE AND COLLAPSIBLE SPRING ACTING, MULTI-SIDED STRUCTURES AND BLANKS THEREFOR

Albert O. Koehler, 1217 Durham Road, Riegelsville, Pa.

Filed Aug. 17, 1970, Ser. No. 64,234
Int. Cl. B65d *5/36*

U.S. Cl. 229—41 B 3 Claims



A container having sidewalls, end walls and a bottom wall, all formed from a hand cut, stamped or die cut integral blank.

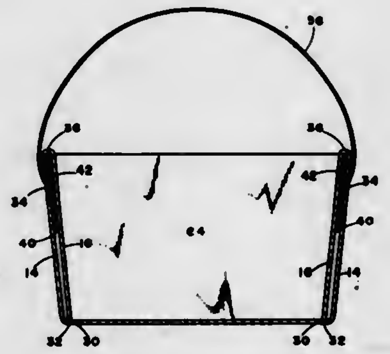
The bottom wall is constructed so as to have spring action for automatically moving it quickly to the fully expanded position by the mere pressing together of longitudinally separated edges of the blank, which spring action locks the blank in its expanded position. The spring action occurs as a consequence of progressive unfolding the collapsed bottom wall along its medial fold line to progressively expand the blank until such fold line attains a critical position, at which time the bottom wall will suddenly spring downwardly and become locked in its fully expanded and flattened position. An integral top wall or lid of similar construction may also be provided.

3,726,470
BASKET-LIKE CONTAINER

Richard H. Naylor, Spry, Pa., assignor to Cor-Box, Inc., York, Pa.

Filed May 5, 1971, Ser. No. 140,527
Int. Cl. B65d *5/46*

U.S. Cl. 229—52 4 Claims



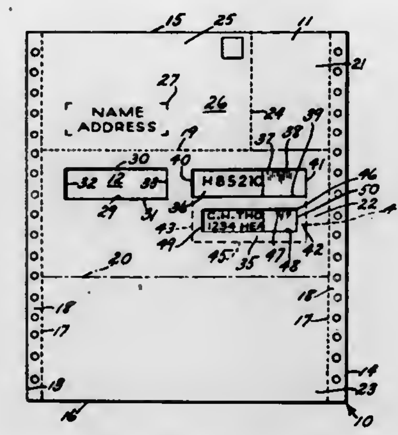
A box-like body open at the top and having a bail-like handle to form a basket-like container formed from stiff sheet stock, the sides comprising two plies folded flatly together and connected at the upper edges, and a strip-type handle formed from solid fiber stock and having short end portions folded flatly upon themselves which are extended through slots in the outer plies of the sides of said body to interlock therewith.

3,726,471
CREDIT CARD MAILER

Paul J. Kalb, 219 Jackson Avenue, Mineola, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,399
Int. Cl. B65d *27/04*; B42d *15/00*

U.S. Cl. 229—92.8 3 Claims



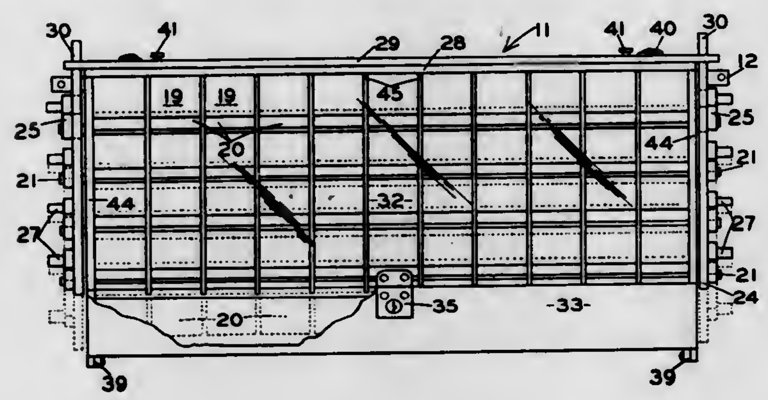
An improved mailing device for credit cards including first and second lamina which are glued or otherwise laminated in selected areas to form at least two interconnected fold portions. A first portion includes a predetermined area upon which a computer prints required indicia. A second fold portion includes a cut out area, which, when said first fold portion is placed in overlying relation with respect to said second fold portion, overlies said predetermined area so that printed indicia is visible therethrough. The second fold portion includes a pocket for supporting a credit card between said first and second lamina in such manner that the indicia on the card is visible and comparable against the corresponding computer printed indicia prior to folding, and inserting the device into a conventional window envelope for mailing. A portion of the mailer is frangibly interconnected to the remaining parts of the device, so as to be detachable and used as a postcard acknowledging receipt of the credit card.

3,726,472
PARKING LOT DEPOSITORY

Kerry E. Garner, 29 Don Drive, Little Rock, Ark.

Filed Oct. 22, 1971, Ser. No. 191,652
Int. Cl. G07b *15/00*

U.S. Cl. 232—1 R 8 Claims



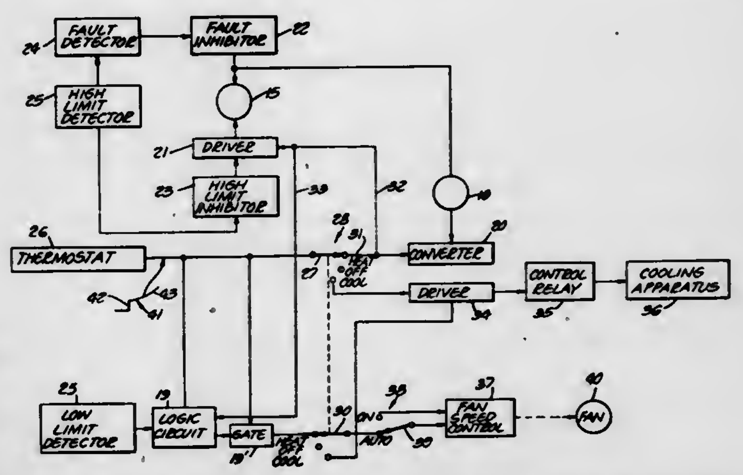
A parking lot fee depository, particularly suitable for use in large parking lots, has an inner currency receiver contained within a strongbox. The inner receiver has a large array of compartments in communication with associated currency-depositing slots in one vertical wall of the strongbox. Swingably mounted floor gates of the compartments are operable between an upper downwardly-sloping currency-retaining position and an additionally downwardly-sloping currency-discharging position from which the currency in all of the compartments is simultaneously emptied into a cash drawer, the sloping floor gate construction enabling the handling of both metal and folded paper currency. Control of the floor gates is effected with actuating mechanisms at each end of the receiver cooperating with a common latch member disposed along the top of the receiver.

3,726,473
SYSTEM FOR HEATING OR AIR CONDITIONING

Said Sapir, Westlake Village, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed April 23, 1970, Ser. No. 31,167
Int. Cl. G05d *23/22*

U.S. Cl. 236—11 7 Claims



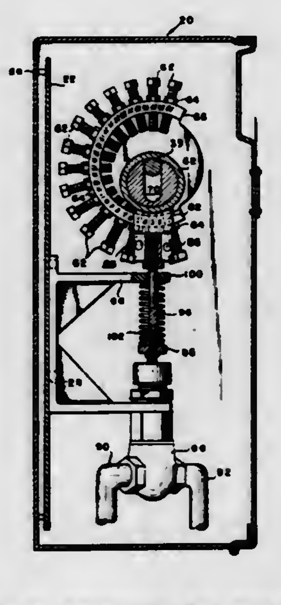
A system for heating or air conditioning wherein provision is made for controlling fan speed and/or the heating and modulating valve in accordance with thermostat demand. The thermostat puts out a step function followed by a ramp for both on-off and proportional control. One valve may be used in series with another for each function. A logic gate is provided to override the speed control when the plenum is cold. Half speed is provided for a hot plenum even though there is no thermostat demand for heat. Two detectors are provided for plenum temperature. The same thermostat is used with both voltage sensitive and current sensitive circuits.

3,726,474
FIRE CONTROL SYSTEM

Albert W. Devoe, Portland, Maine, assignor to Frank Ray Neal, Jr., Manassas, Va., a part interest

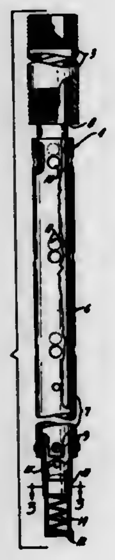
Filed Dec. 28, 1970, Ser. No. 101,995
Int. Cl. F22b *35/06*

U.S. Cl. 236—26 E 10 Claims



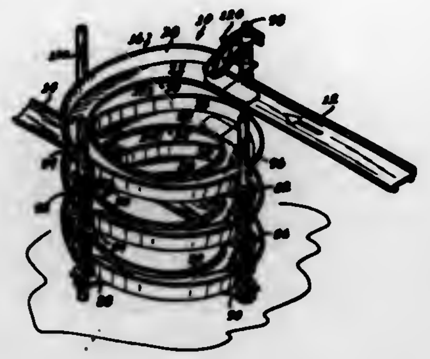
This invention is an assembly for automatically controlling the fire size of an oil burner, the fire size being regulated in response to the signal of boiler steam pressure over a wide pressure range. The signal is transmitted through a steam pressure gauge line and an electronic pulsor to a driving motor, which actuates the present assembly. This assembly includes a shaft driven by a motor, on which shaft valve control members are mounted for regulating the amount of oil and an atomizing agent which are mixed together to control the fire size in a range from low fire to high fire. Each valve control member includes an adjustable camming surface, selected portions of which are in contiguous engagement with a floating cam roller which actuates a valve plunger for controlling the opening and closing of each valve through which oil and the atomizing agent pass.

3,726,475
BACK PRESSURE VALVE FOR THERMAL COMPENSATING DIP TUBE
John P. Eising, Oconomowoc, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed Dec. 1, 1971, Ser. No. 203,718
Int. Cl. F24h *9/20*
U.S. Cl. 236—102 4 Claims



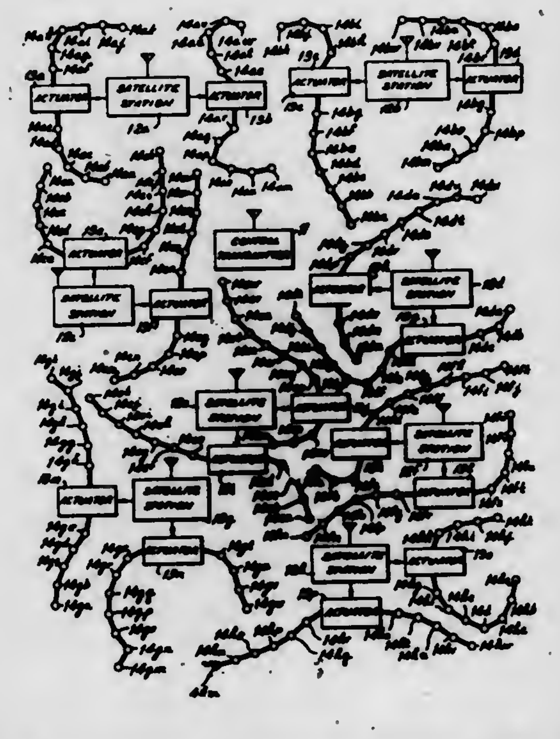
A dip tube used as a conduit of cold water into a water heater tank is made of two concentric tubes with one tube having a higher coefficient of expansion than the other. Longitudinally spaced apertures are provided in the upper portion of the tubes and the apertures are offset under predetermined low temperature conditions. The apertures of one tube are placed in registry with the apertures of the other tube upon increase in the temperature of the water stored in the tank which expands one tube longitudinally with respect to the other to discharge the incoming cold water into the tank through the apertures at various levels within the upper portion of the tank to overcome stacking. The improvement here consists of providing the lower end of the dip tube with a flexible or resilient back pressure valve to provide a moderate variable flow restriction at the lower end of the tube so that when the apertures are in registry the flow of incoming cold water into the upper portion of the tank through the apertures is substantially increased. A bleed passageway is provided in the lower end of the dip tube above the valve for a controlled minimum flow of incoming cold water through the dip tube and discharge at the lower end to eventually effect contraction of the concentric tubes and offsetting of the apertures therein.

3,726,476
HELICAL TRACK SYSTEM
Irwin C. Porter, Quinter, Kans.; Orbert S. Smith, Hawthorne, and George Soulakis, Pasadena, both of Calif. assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 18, 1971, Ser. No. 107,377
Int. Cl. A63h *19/30*
U.S. Cl. 238—10 E 7 Claims



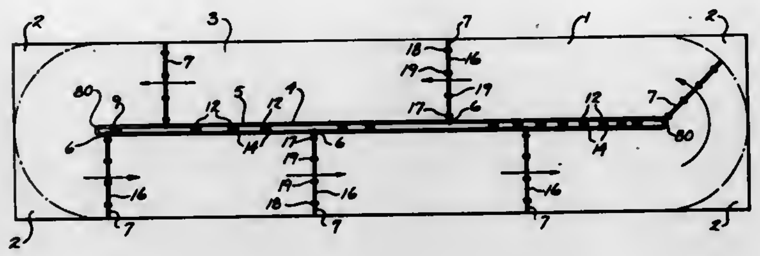
A helical track accessory for a toy vehicle and track layout system including three easily assembled and disassembled track sections having integral tabs which are attaChed to alignment and support poles. The poles have spaced pairs of annular flanges for receiving the tabs. A deflector arm positioned at the upper end portion of the helical track provides a bearing force upon moving toy vehicles to insure the vehicle is retained on the helical track. The track and poles are simply constructed and of synthetic resin so as to be inexpensively manufactured.

3,726,477
AUTOMATED IRRIGATION SYSTEM
Jonas M. Shapiro, 117 Saw Mill Road, Stamford, Conn.
Filed June 2, 1971, Ser. No. 149,224
Int. Cl. A01g *27/00*
U.S. Cl. 239—70 8 Claims



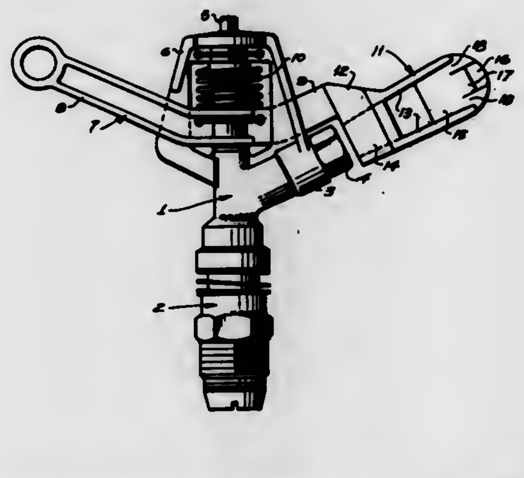
A radio transmitter transmits coded radio signals at frequencies within the citizen's band. Each of a plurality of radio receivers comprises a decoder for decoding the coded radio signals which responds to a frequency specified for the particular radio receiver and a timer connected to the decoder for providing timing for a timing period initiated by the decoded radio signals. A motor actuator electrically connected to the timer of each radio receiver is coupled to the corresponding hydraulic valve actuator of one of a group of sprinkler heads comprising a plurality of sprinkler heads and controls the valve actuator to control the supply of water to the sprinkler heads of the group during the timing period.

3,726,478
MOVING PIVOT SPRINKLER IRRIGATION SYSTEM
David C. McMurray, Milwaukee, Wis., assignor to Irrigation and Power Equipment Inc., Greeley, Colo.
Filed March 29, 1971, Ser. No. 129,015
Int. Cl. A01g *25/02*; B05b *3/18*
U.S. Cl. 239—212 16 Claims



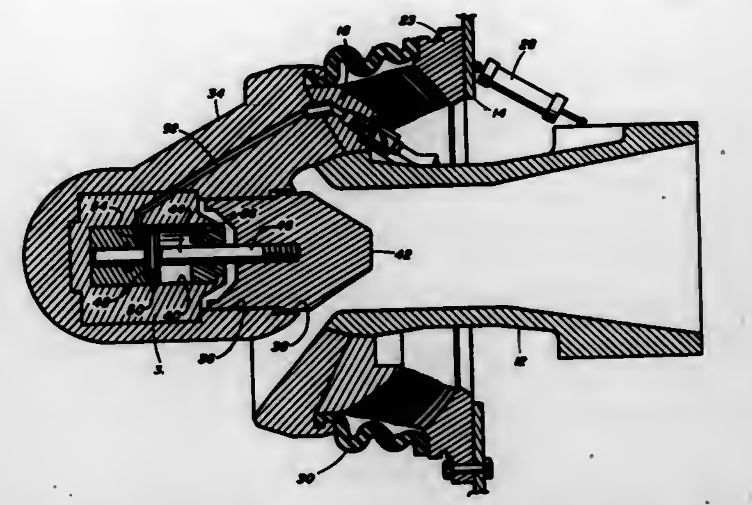
An irrigation sprinkler pipe with sprinkler stations spaced longitudinally therealong is mounted on individually driven tractors, also spaced longitudinally therealong, to move generally in a direction normal to the axis of the pipe. Control means automatically adjust the tractor drives to maintain the pipe straight as well as generally normal to, and in proper lateral spaced relation with, a guidance dolly (or sensor) which is made to follow a reference line of travel in the shape of a substantially horizontal closed loop. The pipe is supplied with water from a source within the reference loop and uniformly distributes that water on the ground swept over by the pipe as it continuously travels around the outside of said loop. The sprinkler stations are arranged in sets and controlled automatically to determine the flow from each sprinkler station so that the cumulative flow for a given area is substantially proportional to the rate at which the pipe is passing over the ground in that area. Any number of sprinkler pipes can be operated simultaneously on the reference loop.

3,726,479
DEFLECTOR SPOON FOR ROTARY SPRINKLERS
Paul H. Leissner, and Karl A. Janson, both of Corona, Calif., assignors to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Sept. 20, 1971, Ser. No. 181,868
Int. Cl. B05b *3/02*
U.S. Cl. 239—233 3 Claims



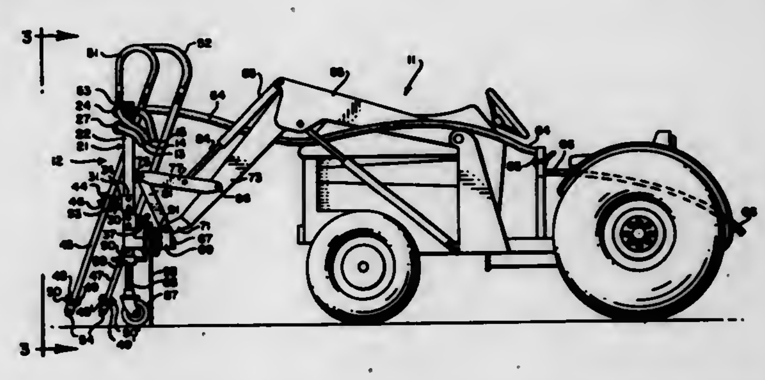
A deflector spoon fitted on an end of an oscillating arm carried by a rotary sprinkler, the arm causing the spoon to move repeatedly into the water stream so as to impart a turning movement to the sprinkler; the spoon being so arranged that nozzles of a wide range of sizes may be interchanged without materially affecting the operation of the deflector spoon.

3,726,480
THRUST VECTORING CONTROL SYSTEM FOR ROCKET NOZZLES
Louis E. Miltenberger, Ridgeley, W. Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed Feb. 24, 1971, Ser. No. 118,540
Int. Cl. B63h *11/10*
U.S. Cl. 239—265.19 5 Claims



A system for providing a rocket powered vehicle with complete thrust vectoring capabilities including a convergent-divergent nozzle attached to a motor casing by a flexible joint member. The flexible joint member includes a laminar structure comprising a series of alternate annular elastomeric and metallic shim members. The elastomeric shim members provide omnidirectional flexible capabilities for the nozzle. Integrally connected to the nozzle is a hydraulically controlled pintle member movable along the axis of the nozzle which varies the effective cross-sectional area of the throat of the nozzle and thereby varies the magnitude of the resulting thrust.

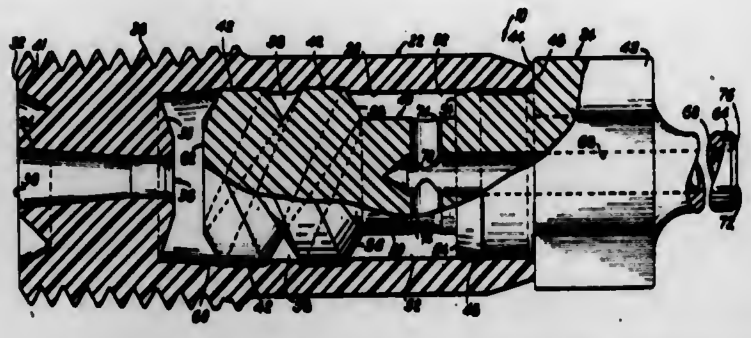
3,726,481
HIGH PRESSURE JET CLEANING DEVICE
Willard F. Foster, Alden, and Robert W. Wild, South Wales, both of N.Y., assignors to C. H. Heist Corporation, Buffalo, N.Y.
Filed Jan. 6, 1971, Ser. No. 104,276
Int. Cl. B05b *9/02*
U.S. Cl. 239—287 10 Claims



A machine for cleaning a surface by means of high pressure jets of liquid comprising a frame for mounting on a vehicle, a manifold on the frame, a plurality of lances in communication with said manifold, a plurality of nozzles in said lances for supplying fan-shaped jets of liquid for impingement on said surface to be cleaned, said nozzles being oriented to cause the jets to be inclined at an acute angle to the direction of motion of said vehicle and being proximate each other so as to clean a swath on said surface as said vehicle traverses said surface, and adjustment means for adjusting the inclination of the lances relative to the vertical and for adjusting the orientation of said nozzles relative to the direction of travel of said vehicle, and a plurality of pump units for supplying high pressure liquid to the manifold. The foregoing machine is used in a system which includes a source of water and a plurality of motor-pump units placed in parallel across the machine and the source for producing a sufficient quantity of water at a sufficiently high pressure for supplying the above described machine.

3,726,482
COALESCING NOZZLE

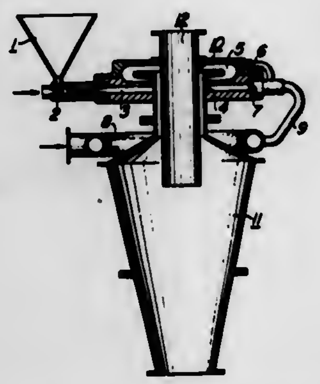
Roland P. Heinrichs, Lindenhurst, N.Y., assignor to Uniwave, Inc., Farmingdale, L.I., N.Y.
Filed June 7, 1971, Ser. No. 150,604
Int. Cl. B05b *1/34*
U.S. Cl. 239—467 **32 Claims**



A coalescing nozzle having a body portion and a sleeve portion defining a circuitous path between inlet and outlet openings thereof for the coalescing of liquid particles as an aerosol passes therethrough. The circuitous path includes at least one region at which the aerosol impacts against a wall of said path and a region in which angular momentum is imparted to said fluid so that a liquid spray produced at said outlet consists substantially of droplets of a size tending not to remain in suspension in the ambient atmosphere.

3,726,483
PROCESS THE PREPARATION OF ULTRA-FINE POLYTETRAFLUOROETHYLENE MOLDING POWDER

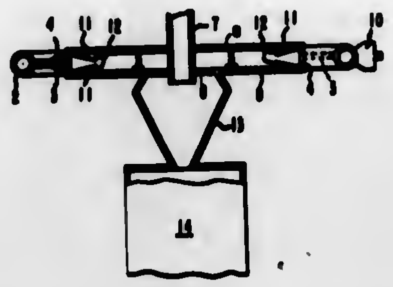
Yutaka Kometani, Nishinomiya; Syozo Fumoto, Suita, and Singo Tanigawa, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan
Filed Dec. 30, 1970, Ser. No. 102,841
Int. Cl. B02c *19/06*
U.S. Cl. 241—5 **3 Claims**



A process for the preparation of ultra-fine polytetrafluoroethylene molding powder having a specific surface area of 4 to 9 m^2/g as measured by nitrogen adsorption, a low pressure molding coefficient of not greater than 20 and a surface smoothness of higher than 15 seconds, which comprises pulverizing a polytetrafluoroethylene molding powder obtained by a suspension polymerization method and having a specific surface area of 2 to 4 m^2/g as measured by nitrogen adsorption mainly by the milling action effected by interparticle collision at a temperature below 100° C. The ultra-fine molding powder obtained according to this process can be molded by a conventional compression molding method used for a polytetrafluoroethylene molding powder, applying a low preforming pressure of 50 to 150 Kg/cm^2, followed by sintering.

3,726,484
STEPPED FLUID ENERGY MILL

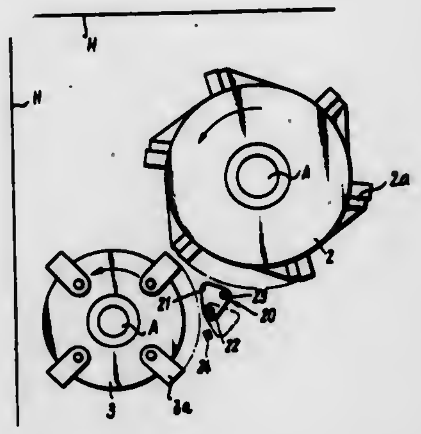
George A. Schurr, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 15, 1971, Ser. No. 189,586
Int. Cl. B02c *19/06*
U.S. Cl. 241—5 **7 Claims**



A fluid energy mill of the confined vortex type is provided with paraxially symmetric discontinuities projecting from each of the axial walls. These serve to reduce the high radial velocities that tend to occur near the axial walls. As a consequence, there is a reduced tendency for oversize particles to escape along the axial walls and into the product collector and product uniformities are improved.

3,726,485
IMPACT BREAKER

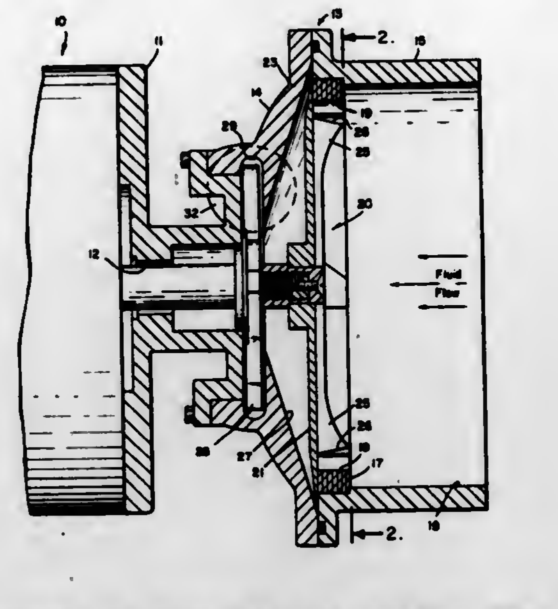
Nicolas Oznibichine, Paris, France, assignor to Hazemag Hartzerkleinerungs und Zement Maschinenbau GmbH, Munster, Germany
Filed May 5, 1971, Ser. No. 140,476
Claims priority, application France, May 5, 1970, 7016400
Int. Cl. B02c *13/20, 25/00*
U.S. Cl. 241—32 **6 Claims**



A pair of impellers are mounted in a housing for rotation about substantially parallel horizontal axes on which one is located at a level below the other. The impellers have circumferences which define with one another a gap extending longitudinally of the axes of rotation and an anvil member of wedge-shaped cross-section is located at least in part in this gap at a side of an axial plane passing through these axes which is located downstream of this plane as seen with respect to the direction of rotation of the impellers. Material to be crushed which is carried along by the impellers into the gap thus impacts on the anvil member and becomes further crushed.

3,726,486
GRINDER PUMP

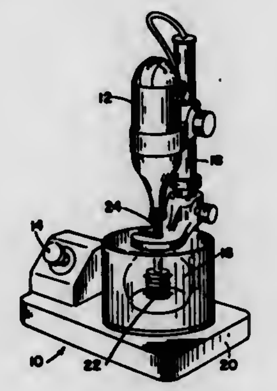
Arthur W. Smith, La Habra, and Elmer J. Baggenstoss, Temple City, both of Calif., assignors to Ecology Engineering and Manufacturing, Inc., Santee, Calif.
Filed Jan. 7, 1971, Ser. No. 104,681
Int. Cl. B02c *18/40*
U.S. Cl. 241—46.11 **6 Claims**



The functions of shredding and grinding have been separated from the pumping action of the grinding pump by utilizing two separate rotor sections attached to a common driving shaft. The first rotor contains a combination shearing plate and ripping bars which provide the functions of ripping the raw material and shredding this material into a discharge cavity. The end portions of the bars more efficiently rip the raw material without second rotor section contains a pumping member in the form of an impeller which is caused to rotate in a separate pumping cavity. The impeller causes a vacuum in the discharge cavity area which pulls the shredded material into the pumping cavity for discharge.

3,726,487
HOMOGENIZER SHEARING ASSEMBLY APPARATUS AND PROCESS

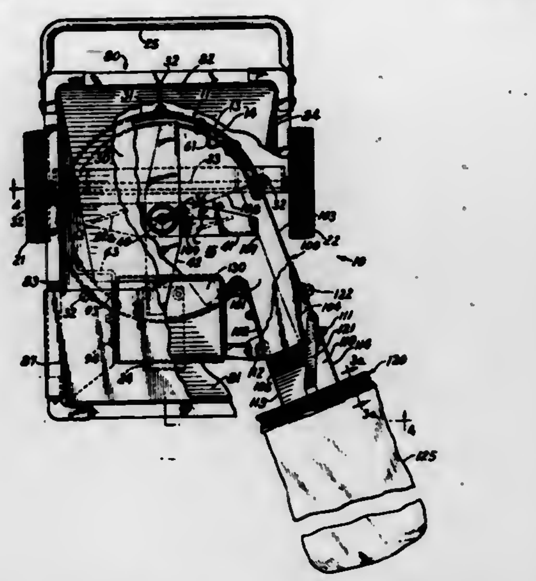
Douglas S. Fraser, New Paltz, N.Y., assignor to Cenco Medical/Health Supply Corporation, Chicago, Ill.
Filed April 5, 1971, Ser. No. 130,906
Int. Cl. B02c *18/10*
U.S. Cl. 241—46.17 **8 Claims**



A tissue shearing assembly for use in a homogenizing apparatus having shearing means disposed along the chords or diameter of annular support means and fixed to the support means so that a portion of the shearing means extends marginally beyond the periphery of the support means. A plurality of similar annular support means containing shearing means disposed similarly on each, stacked in vertical relationship and mounted on a spindle connected to a homogenizer motor for rotation about an axis at high speed, the annular support means rotating with the spindle about the same axis and the shearing means thereby traveling in a path spaced from the same axis. An annular support means containing shearing means and having a diameter such that the circumference of the annular support means is greater than the length of the longest tissue to be homogenized.

3,726,488
SHREDDING AND BAGGING DEVICE FOR YARD USAGE

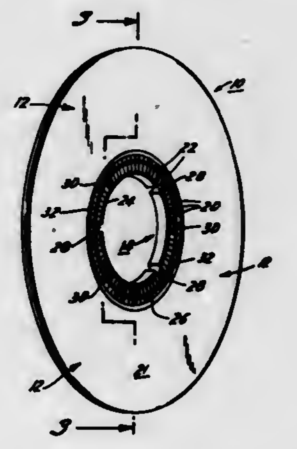
Byron T. Aasland, and Douglas D. Dankel, both of Kankakee, Ill., assignors to Roper Corporation, Kankakee, Ill.
Filed Oct. 4, 1971, Ser. No. 186,076
Int. Cl. B02c *18/10*
U.S. Cl. 241—101.7 **15 Claims**



A device for shredding and bagging leaves and other yard and garden waste which includes a horizontal base of shallow cup shape and a cover plate which mounts an engine and rotary blade. The base is fitted with removable breakers spaced about the inner periphery having horizontal notches which register with the tip portions of the blade. A shoulder provided on the engine shaft seats the blade in a precise axial position, and the cover plate is seated directly on the breakers to insure registry between the blade and the cooperating notches. Preferably, two blades are employed welded to a cylindrical hub at right angles to one another. Material is fed, via a hopper, through the cover plate and ejected through a peripheral opening into a discharge conduit. A bag-holding ring generally alined with the conduit supports the bag as material is blown into it.

3,726,489
SINGLE-FLANGE TAPE REEL

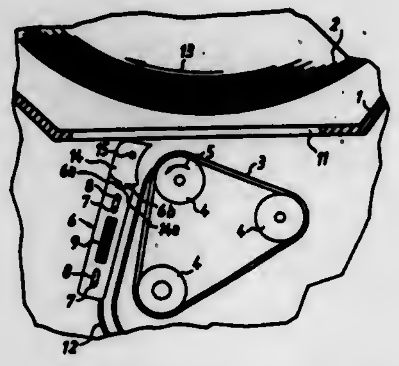
Horst L. A. Honsa, Decatur, Ala., assignor to S.C.I. Systems, Inc., Huntsville, Ala.
Filed June 28, 1971, Ser. No. 157,312
Int. Cl. B65h *75/12*
U.S. Cl. 242—71.8 **10 Claims**



The tape reel is molded out of a thermoplastic synthetic resin such as polystyrene. The reel has a flange and an integral hub which extends from one side of the flange. There are cavities which form radial ribs in the hub on the opposite wide of the flange. This provides a maximum amount of solid plastic material to support tape tightly wound on the hub, while preventing molding distortion of the hub, and at the same time minimizing fabrication costs.

3,726,490
FILM GUIDING AND THREADING MECHANISM FOR CINEMATOGRAPHIC APPARATUS

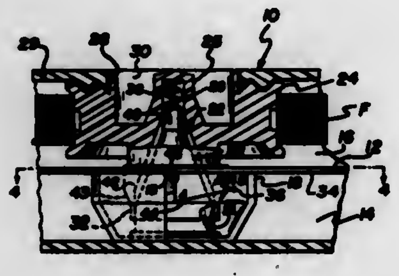
Hermann Muller, Munich; Dieter Sandl, Baldham, and Herbert Wilsch, Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed June 15, 1971, Ser. No. 153,220
Claims priority, application Germany, June 16, 1970, P 20 29 741.0
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—192 **9 Claims**



A film guiding and threading mechanism for motion picture projectors or cameras wherein the supply of convoluted film is supported for rotation in and counter to a direction to pay out the film. The leader of the film can be deflected into a predetermined path by a deflector having a film-engaging tooth which is pivotably mounted on a reciprocable holder. The latter maintains the tip of the tooth in engagement with the outermost convolution of the supply of film while the supply begins to rotate in a direction to pay out the film. The leader of the film pivots the tooth from a first position in which the tip of the tooth bears against the film to a second position in which the tip is spaced from the outermost convolution and cannot damage an oncoming splice or another protuberance on the film. The leader abuts against a concave surface of the tooth and thereby pivots the tooth to the second position in which the outermost convolution of the supply of film is engaged by a convex surface of the tooth.

3,726,491
ANTI-BACKUP MECHANISM FOR A FILM CARTRIDGE TAKE-UP SPOOL

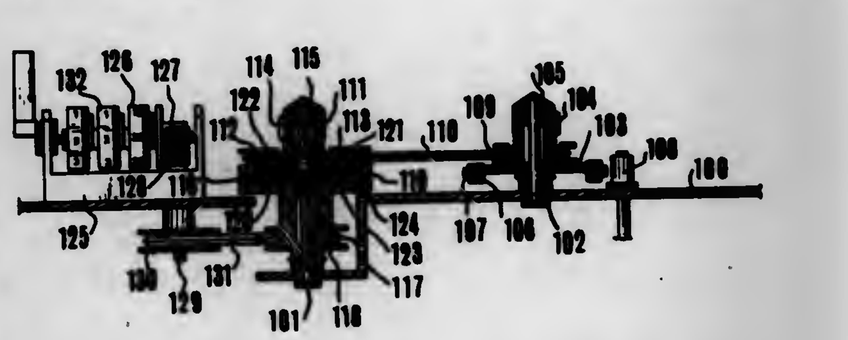
Archie J. Tucker, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 30, 1971, Ser. No. 203,209
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—194 **6 Claims**



A film cartridge includes an anti-backup mechanism having a ratchet assembly for securing automatically a film take-up spool against reverse rotation when the cartridge is out of a camera and for permitting reverse rotation of the take-up spool such as to withdraw exposed film from the cartridge for processing or to photograph "fade, lap and dissolve" sequences when the cartridge is loaded in a camera. The ratchet assembly comprises an elongate finger member, formed internal with a cartridge partition (for example), engageable with an inclined ratchet surface molded onto the spool. The spool is mounted for axial movement between a first position in which the finger member and the inclined surface cooperate to secure the spool against rotation in the reverse direction and a second position in which the finger member and the inclined surface are disengaged to permit reverse rotation of the spool. In both positions the spool is rotatable in the forward or take-up direction. In one preferred embodiment, the anti-backup mechanism includes a helical spring for biasing the spool into its first position and for permitting movement to its second position when an external axial force is applied to the spool, such as when the cartridge is loaded into a camera and is operably coupled to a camera drive mechanism. In another embodiment the spring force is provided by spring finger members integral with a cartridge wall.

3,726,492
METHOD AND MEANS FOR METERING TAPE FOOTAGE

Sumio Koizumi, Kawasaki-shi, and Hiroyuki Adachi, Sagamihara-shi, both of Japan, assignors to Shinmei Electric Co. Ltd., Kanagawa-ken, Japan
Filed March 4, 1971, Ser. No. 120,860
Claims priority, application Japan, March 7, 1970, 45/19053; April 25, 1970, 45/35122
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—201 **13 Claims**

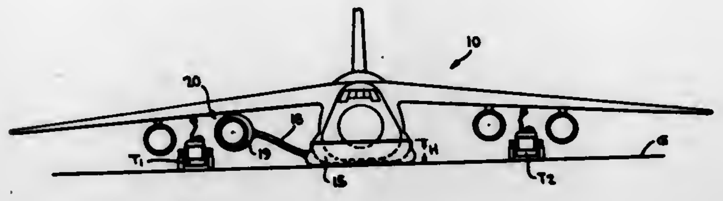


The running length of magnetic tape being fed from a supply reel to a takeup reel on a tape recorder is metered by first reducing the variable revolving speed of the takeup reel in a predetermined ratio, adding the reduced revolving speed of the takeup reel to the variable revolving speed of the supply reel, and converting the resultantly obtained sum into a desired unit of indication. This metering method finds application in several devices also disclosed herein, in which are commonly employed planet differential means in association with both of a pair of revolvable shafts on which are respectively mounted the supply and takeup reels. The planet differential means include a pair of planet gears whose revolution around a common axis, corresponding to the aforementioned sum, is conveyed to a digital tape footage counter or other indicating means.

3,726,493
AIR CUSHION SYSTEM FOR AIRCRAFT REMOVAL

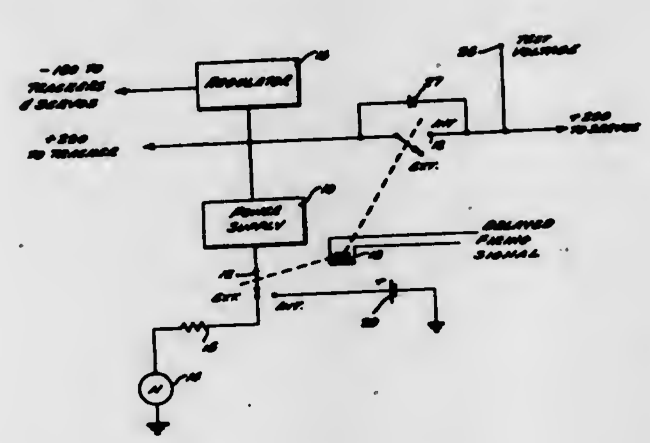
Albert F. Muller, 400 Scott Street, Baytown, Tex.
Filed Dec. 2, 1970, Ser. No. 94,312
Int. Cl. B64c *37/00*
U.S. Cl. 244—2 **19 Claims**

Apparatus and method for quick conversion of a disabled aircraft or other structure to a ground effects machine includes the use of a flexible skirt conforming to the periphery of the structure and adhesive strip means for attachment of the skirt at the top edge thereof. At the bottom edge of the skirt, laterally extending cross ties hold the lower edge inwardly to provide a captive air space, said air space being defined by the lower portion of the aircraft and the skirt. Superatmospheric air supply is provided to the space from the fan jet portion of an engine of the aircraft through an annular collector, a transfer tube and a peripheral manifold on said skirt. The manifold is substantially tear shaped in cross section and assists in holding the strip means against the surface of the structure and isolated from peeling forces and transient pressure changes in the air space. Alternatively, V-shaped adhesive tape formed with upwardly and downwardly flaps holds the top of the skirt so as to resist peeling. Crawler tube means are provided to extend the stabilizing cross ties beneath the aircraft for attachment and high strength contact adhesive tape or epoxy resin is utilized to form the adhering strip.



3,726,494
MISSILE POWER TRANSFER SYSTEM

John M. Flagg; Wendell E. Bard; Bernard F. Christensen; Roy W. Stevens, Jr., and Edgar J. Dunn, all of Tucson, Ariz., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 18, 1971, Ser. No. 128,625
Int. Cl. F42b *35/00*; F42c *11/00, 15/40*
U.S. Cl. 244—3.14 **1 Claim**

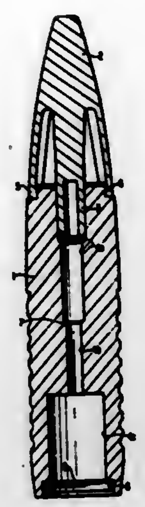


In a missile, means and methods for applying electrical power to the control surface servos after receipt of a firing signal.

3,726,495
PROJECTILE

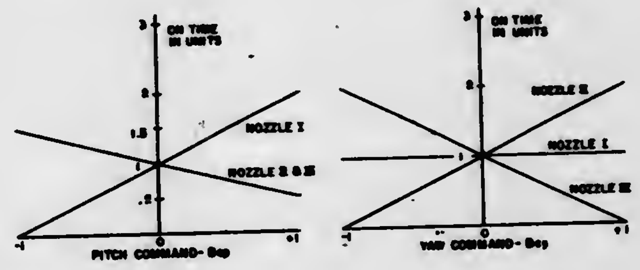
Heinz Gawlick, and Rudolf Stahlmann, both of Furth, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany
Filed Jan. 20, 1970, Ser. No. 4,237
Int. Cl. F42b *11/16*
U.S. Cl. 244—3.27 **22 Claims**

A projectile having a continuous axial bore and a cover adapted to drop off provided at the front end of the projectile. The cover is temporarily held on the projectile so as to retain original shape thereof until firing. The front zone of the bore is followed by a zone effective as a jet and having smaller, preferably variable cross-sectional dimensions. The zone of smaller cross-sectional dimensions can pass over into a zone of relatively larger cross-sectional dimensions toward the rear of the projectiles. Spin-braking devices can be provided at the front end of the projectile for limiting the flight range of the projectile to a desired value.



3,726,496
TRIDIRECTIONAL ACTUATOR

John P. Leonard, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army
Filed Aug. 4, 1971, Ser. No. 168,882
Int. Cl. F41g *7/00*; B63h *25/46*
U.S. Cl. 244—3.22 **2 Claims**

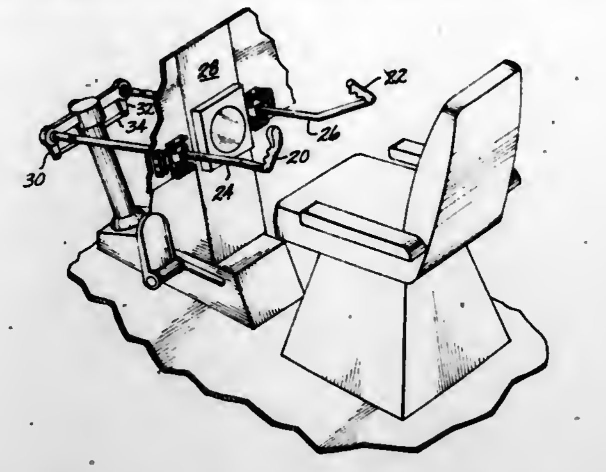


The device is a portion of a missile control system used to generate the forces to change missile attitude. A three channel fluid amplifier with its exits located at 120° intervals around the missile body in a plane orthogonal to the long axis is the motive device. It is controlled by a single, electrically driven port venting mechanism, which is energized by an electronically generated sequence of pulses. These switching pulses are formed to produce a proper force time product in the pitch and yaw planes without cross coupling.

3,726,497
AIRCRAFT CONTROL HANDLES

James R. Gannett, Redmond; James W. McKee; Henry E. Ronberg, both of Belleve, and John D. Warner, Seattle, all of Wash., assignors to The United States of America as represented by the Administrator of the Federal Aviation Administration
Filed Jan. 15, 1971, Ser. No. 106,753
Int. Cl. B64c *13/06*
U.S. Cl. 244—83 R **12 Claims**

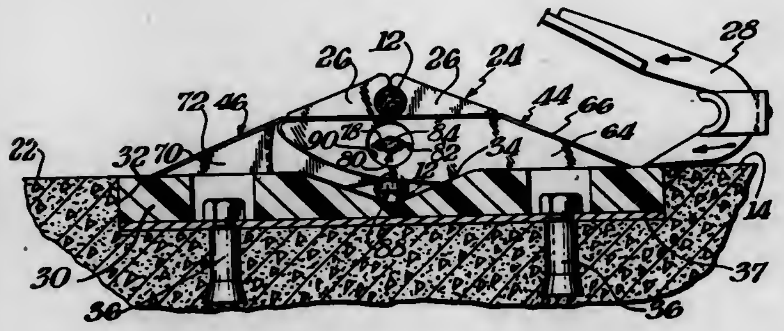
Pilot control means for an aircraft cockpit comprising, a pair of aircraft control handles projecting out from the cockpit instrument panel and being mounted to a horizontal shaft which through interconnected linkage and crank means, provides for aircraft attitude control such that pitch control is provided by pulling backward or pushing forward either or both of the handles and roll control is provided by rotating



either or both handles to the right or left about their respective horizontal shafts.

3,726,498
PENDANT SUPPORTING AND RETAINING DEVICE FOR ARRESTING AIRCRAFT

William R. Schlegel, Colonial Woods, Del., assignor to All American Industries, Inc., Wilmington, Del.
Filed Nov. 23, 1971, Ser. No. 201,350
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 C **30 Claims**

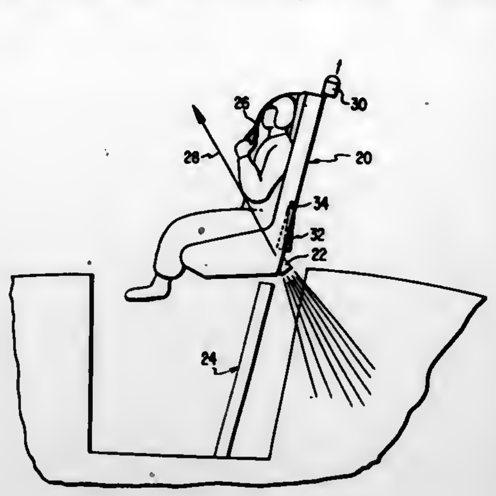


The cross runway pendant of an aircraft arresting system is supported and retained above the runway at a height suitable for aircraft hook engagement on spaced disengageable, elevating, gripping tong assemblies by the upward reaction of a resilient support accommodated within slots in the runway. The pendant is disengageably retained between flexible jaws on each assembly from which it is snatched upon engagement by a landing aircraft. The upward bias of the resilient support is overridden by actuating a compressed air cylinder to depress the assembly and cause it to release the pendant. A groove is installed across the runway under the pendant to permit full retraction of the pendant below the surface, and the part of the runway under the pendant may be made of a wear-resistant material such as polyurethane, having a low coefficient of restitution for helping to damp waves set up in the pendant when it is run over by unarrested aircraft wheels and for protecting the surface of the runway against resultant chipping and spalling.

3,726,499
METHOD OF DEPLOYING A PARACHUTE BY A ROCKET UNDER LOW SPEED CONDITIONS

Fred B. Stencel, Asheville, N.C., assignor to Stencel Aero Engineering Corporation, Asheville, N.C.
Filed May 11, 1971, Ser. No. 142,288
Int. Cl. B64d *25/10, 17/72*
U.S. Cl. 244—141 **1 Claim**

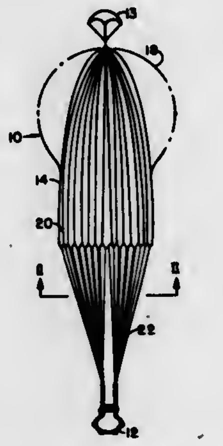
A parachute development system as described in copending application Ser. No. 848,932 now U.S. Pat. No. 3,595,501 uses as a pilot parachute to orient a rocket in the airstream so that when the rocket is fired downstream, it deploys the main parachute. The invention herein accomplishes orientation of the rocket rapidly and without the use of the pilot parachute



under low speed conditions, by releasing the rocket to trail behind the load which is being accelerated in an upstream direction in the airstream.

3,726,500
LOAD-CONTROLLED DISREEFING MECHANISM FOR PARACHUTES

Victor G. Bockelmann, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 23, 1971, Ser. No. 173,760
Int. Cl. B64d *17/34, 17/36*
U.S. Cl. 244—152 **5 Claims**

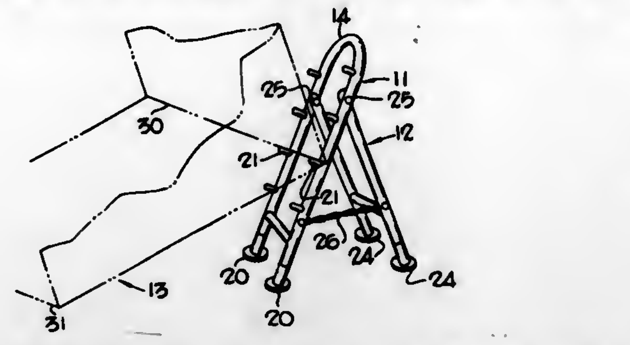


A device is provided for regulating continuously the growth rate of the diameter of parachute canopy skirt during initial inflation for the purpose of controlling drag area, drag force and opening shock. The varying degree of disreefing is accomplished automatically when the force on the parachute is below a maximum determined level enabling the parachute to be inflated safely in a minimum elapsed time.

3,726,501
PORTABLE SUPPORT FOR SELECTIVELY ELEVATING ONE END OF AN ARTICLE

Lloyd C. Trentmann, R.R. No. 2, Box 207C, Marthasville, Mo.
Filed Feb. 19, 1971, Ser. No. 116,808
Int. Cl. F16m *13/00*
U.S. Cl. 248—351 **2 Claims**

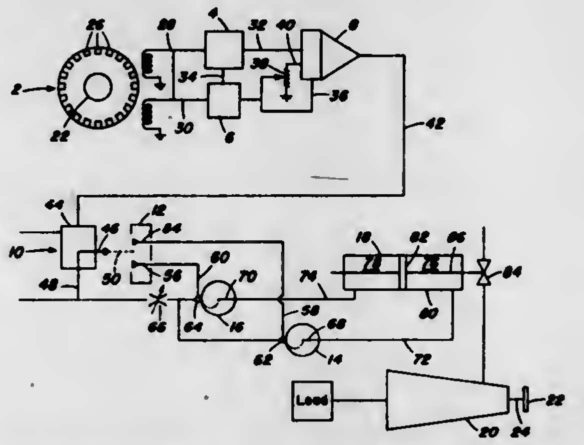
This portable support includes front and rear double-legged frames which are pivotally interconnected at their upper end so that the support may be folded from an open load-carrying condition, suitable for supporting one end of a heavy domestic appliance to a closed storage condition. The front frame includes an arrangement of load-carrying pegs engageable under one edge of the appliance to hold that edge of the ap-



pliance at a desired temporary elevation and afford access to the underside.

3,726,502
CONTROL DEVICE

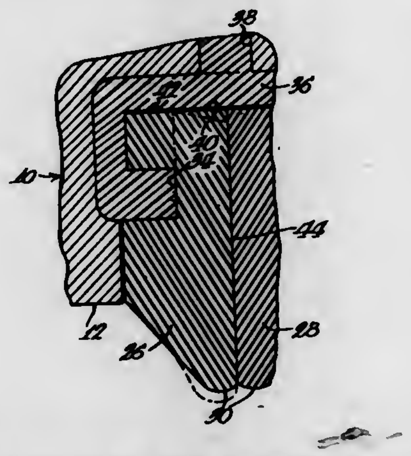
Ward F. O'Connor, Deanville, N.J., assignor to The Lummus Company, Bloomfield, N.J.
Continuation-in-part of Ser. No. 837,673, June 30, 1969, abandoned. This application Oct. 21, 1970, Ser. No. 82,749
Int. Cl. F15b *13/044, 9/03, 9/09*
U.S. Cl. 251—62 **3 Claims**



This invention relates to control apparatus for rotating equipment, and more particularly to highly reliable fluid control apparatus for governing the various functions of rotating equipment.

3,726,503
PRESSURE SEAL FOR BUTTERFLY VALVES

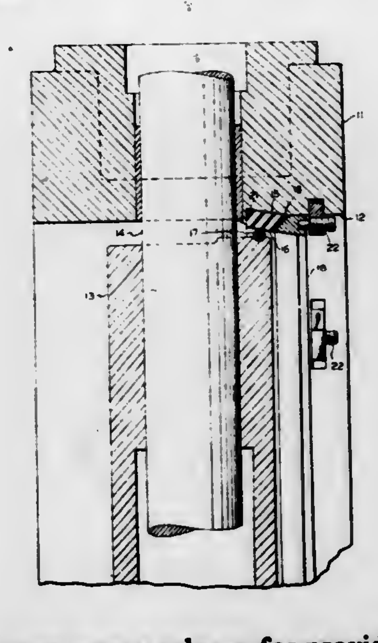
Donald G. Fawkes, Aurora, Ill., assignor to Henry Pratt Company, Aurora, Ill.
Filed Oct. 20, 1971, Ser. No. 191,026
Int. Cl. F16k *1/22*
U.S. Cl. 251—173 **8 Claims**



A butterfly valve embodying an improved pressure seal. The valve includes a valve body having a fluid passage in which is a valve disc journaled for rotation between open and closed positions. A two member seal is arranged to contact the valve disc when the latter is in the closed position and the two members of the seal are constructed so that fluid under pressure may pass between an interface of the two members to the radially outermost side thereof to drive disc engaging, sealing noses of each of the members into firm sealing engagement with the disc.

3,726,504
CORROSION RESISTANT VALVING EDGE FOR BUTTER-FLY VALVE DISC

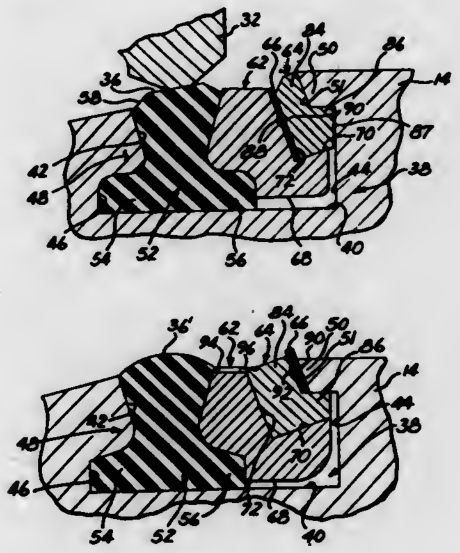
Kalman Kormos, and Dezso Szilagyi, both of Providence, R.I., assignors to General Signal Corporation, Rochester, N.Y.
Filed April 2, 1971, Ser. No. 130,707
Int. Cl. F16k *1/226*
U.S. Cl. 251—306 **14 Claims**



The disclosure concerns a scheme for providing a corrosion resistant valving edge of the rotatable disc of a butterfly valve. The valving edge is defined by a ring of corrosion resistant material which is shrink fitted into an annular groove formed in the periphery of the disc. The ring is subjected to a substantial hoop stress which compresses it tightly against the surface of the groove and retains it in place. In some cases, however, this self-retaining action may be supplemented by tack welding the ring to the disc.

3,726,505
BUTTERFLY VALVE WITH SHIM SEAT ADJUSTMENT

Hubert L. Williams, Hinsdale, Ill., assignor to Clow Corporation, Oak Brook, Ill.
Filed Nov. 15, 1971, Ser. No. 198,718
Int. Cl. F16k *1/226;* **F15j** *15/16*
U.S. Cl. 251—307 **10 Claims**



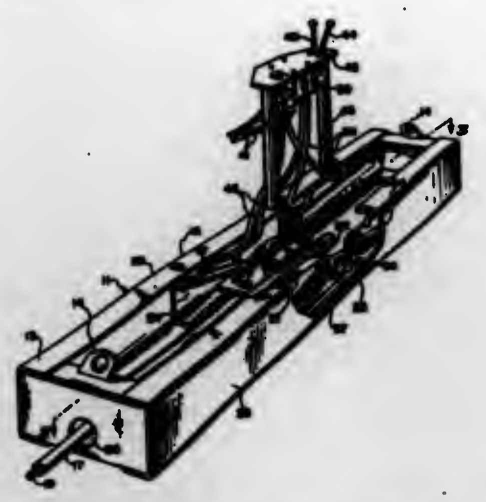
A butterfly valve is provided which includes a resilient ring defining a valve disc seat and chocks and shims arranged so as to compress the ring and expand it radially.

3,726,506

HYDRAULIC ROD AND PIPE PUSHER-PULLER

Henry J. Vanderwaal, and Dennis R. Vanderwaal, both of 9650 N. 2nd St., Rockford, Ill.
Filed July 16, 1971, Ser. No. 163,164
Int. Cl. E21b *9/00*

U.S. Cl. 254—29 15 Claims



A rectangular horizontal frame that is set in a rectangular excavation between two vertical abutments at opposite ends has two large hydraulic cylinders disposed horizontally in parallel relation in the opposite sides of the frame with their piston rods connected to the opposite ends of a cross-head that is reciprocable on slides in the frame and carries at its middle a movable gripping jaw of elongated form to engage one side of a rod section to be pushed or pulled, while a fixed cooperating jaw on the cross-head engages the opposite side of the rod. The movable jaw is T-shaped and pivoted at the middle of the cross-portion of the T to the cross-head on a vertical axis to grip, working in either direction for pushing or pulling, and is operated at the end of the leg of the T by a separate small hydraulic piston working in a cylinder pivoted at one end on one of the slides attached to the cross-head, thus making the gripping action a separately controllable thing from the heavy force applied in pushing or pulling the rod under hydraulic pressure using the main large pistons, thus avoiding damaging the rod by unnecessarily high gripping pressure. A separate manually controlled valve controls the gripping and releasing of the rod gripper from the same control stand where another manual control valve is provided to control the operation of the large pistons in the two large cylinders that move the cross-head back and forth in the pushing or pulling operation, thus speeding up the operation all around so that a new rod section can be inserted quickly in a pushing operation and one rod section after another can be removed speedily in a pulling operation. A manually operable cam cooperates with one end of a horizontally disposed hold-down plate at one end of the frame that is pivoted on a vertical axis at its other end to be swung into and out of operative position straddling the rod to apply a downward pressure on the leading end to direct it properly downwardly at an acute angle in relation to the horizontal plane of the frame to offset the tendency toward veering upwardly at the forward end.

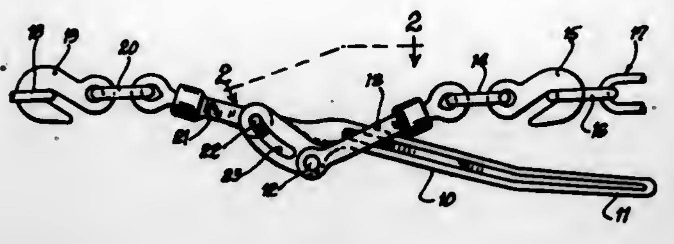
3,726,507

LOAD BINDER

Mark T. Rymasza, Arlington Heights, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.
Filed June 10, 1971, Ser. No. 151,732
Int. Cl. B66f *3/00*

U.S. Cl. 254—78 6 Claims

A variable advantage force applying device is disclosed as applied to a load binder used to tighten a flexible fastener such as a rope, cable or chain around a load to hold the load against shifting on the bed of a carrier or to fasten a bundle of heavy objects together. The device uses a lever pivoted to one end of the flexible fastener and connected to the other end of the fastener by a pin and slot. The slot is curved and disposed to move the pin toward the pivot for the lever as the lever is swung in a tightening direction. As the pin moves closer to the pivot, it increases the mechanical advantage of the lever at the stage of the tightening operation during which the resistance to tightening increases. An overcenter arrangement is incorporated in the pin and slot according to accepted design practice to hold the fastener in a tightened condition.



ERRATUM

For Class 254—187 R see:
Patent No. 3,726,801

3,726,508

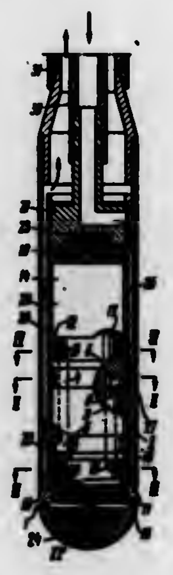
PNEUMATIC VIBRATOR

Eduard Petrovich Varnello; Nikolai Alexandrovich Klushin; Petr Avramovich Maslakov; Vladimir Nikiforovich Shmigalsky, and Eduard Alexandrovich Abramenkov, all of Novosibirsk, U.S.S.R., assignors to Institut Gornogo dela sibirskogo Otdelenia Akademii Nauk SSSR, Novosibirsk, U.S.S.R.
Filed Aug. 17, 1971, Ser. No. 172,421

Claims priority, application U.S.S.R., Dec. 22, 1970, 1602014; Feb. 23, 1971, 1618405; Feb. 23, 1971, 1618404; Feb. 23, 1971, 1618403; Feb. 23, 1971, 1618402

Int. Cl. B01f *11/00*

U.S. Cl. 259—1 R 18 Claims



A pneumatic vibrator including a housing inside of which there is mounted a reciprocating impact member having eccentric projections on the opposite end faces thereof, with these projections in operation of the vibrator, being adapted to strike the members mounted adjacent to the end, or terminal walls of the housing, in which way the housing is imparted additional transverse vibrations.

3,726,509

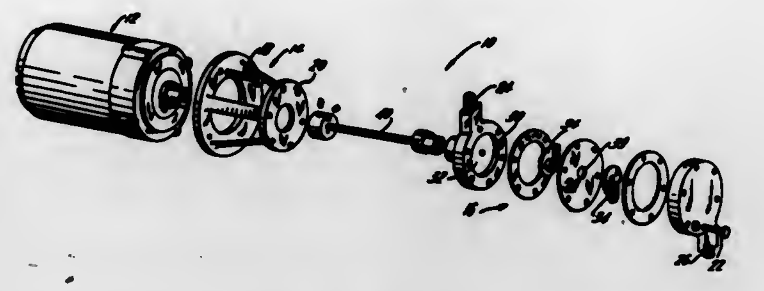
MIXING UNIT FOR WATER EXTENDIBLE POLYESTER RESINS OR THE LIKE

Sidney G. Lammers, Syracuse, and Michael W. Lammers, Union, both of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

Continuation of Ser. No. 876,560, Nov. 13, 1969, and a continuation of Ser. No. 60,704, Aug. 3, 1970. This application Dec. 3, 1970, Ser. No. 94,707

Int. Cl. B01f *7/04*

U.S. Cl. 259—7 4 Claims



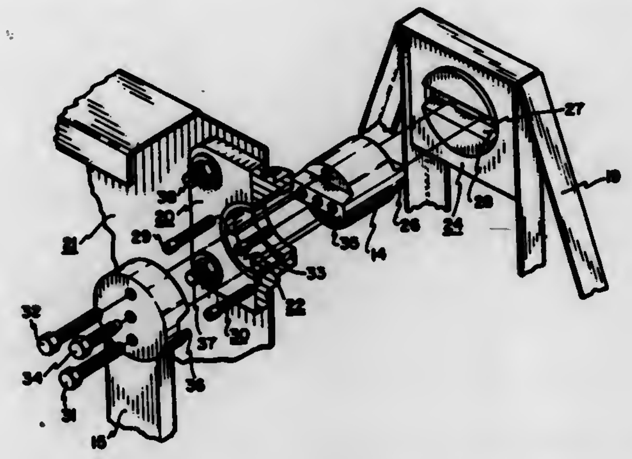
A powered mixing unit adapted for emulsifying water extended polyester resins to such degree that during and subsequent to curing the water extender in the finally molded product will be easily and readily released creating a three-dimensional open-celled resin network. To achieve this desired water release the majority of emulsion particles are ideally sized between about 1 and 5 microns and in the typical rotary mixer operating between about 1,750 and 5,000 rpm such sizing may be accomplished by providing an impeller that occupies between about 3 and 10 percent by volume of the mixing chamber. Similarly, the impeller should be so shaped that only a moderate shear is produced in the chamber during operation.

3,726,510

AGITATOR MOUNTING FOR DRUM FILTERS

Steven S. Davis, Bountiful, and Morris F. Durrant, Centerville, both of Utah, assignors to Envirotech Corporation, Salt Lake City, Utah
Filed March 4, 1971, Ser. No. 120,804
Int. Cl. B01f *11/00;* B01d *35/00*

U.S. Cl. 259—101 14 Claims



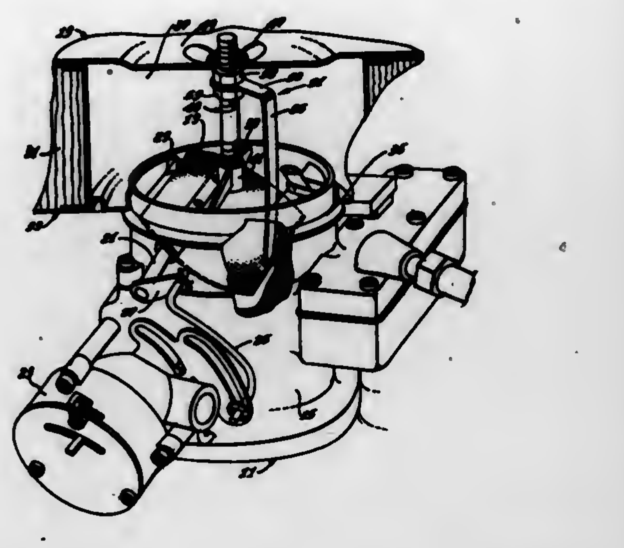
An improved agitator mounting for drum filters having agitator pins located below the drum's center axis has been developed. The improved agitator mounting provides means for driving a submerged, suspended rake-type agitator through a pin and bearing means mounted through the wall of the filter tank. The improved mounting means, which may be completely removed from outside the tank, comprises bearing means mounted externally, a pin seating in said bearing means, said pin secured to the agitator arm by bolts or other means fastened externally, and a drive arm attached to said pin by external means. A boot may also be attached between the agitator arm and the tank wall to house the agitator mounting and provide a liquid seal to prevent liquid contact with the agitator mounting.

3,726,511

ACCESSORY FOR CARBURETOR CHOKE ADJUSTMENT

Thomas J. Jones, 3434 Edgehill Drive, Los Angeles, Calif.
Filed July 29, 1971, Ser. No. 167,226
Int. Cl. F02m *1/08*

U.S. Cl. 261—39 B 6 Claims



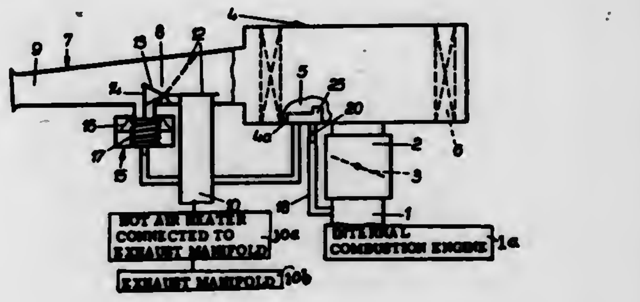
A carburetor attachable to an air cleaner wherein the carburetor has an air passage with a choke valve therein pivotable from a closed position to a full open position, a threaded stud mounted on the carburetor upstream of the choke valve for attaching the air cleaner to the carburetor, and a finger element mounted on the stud and projecting into contact with the choke valve to hold the choke valve in a slightly open position whereby the finger element prevents the choke valve from completely closing.

3,726,512

APPARATUS TO REGULATE THE INTAKE AIR TEMPERATURE OF COMBUSTION ENGINE PRIME MOVERS

Heinz Herwig, Tamm; Manfred Mueller, Heutingsheim, and Paul Schoenefeld, Ludwigsburg, all of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Germany
Filed June 9, 1971, Ser. No. 151,361
Int. Cl. F02m *31/06*

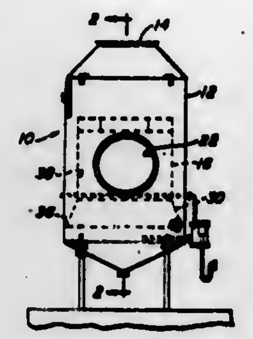
U.S. Cl. 261—39 B 5 Claims


HOT AIR HEATER CONNECTED TO EXHAUST MANIFOLD
10a
EXHAUST MANIFOLD
10b
INTERNAL COMBUSTION ENGINE
1a
1
7
8
12
4
10

An apparatus automatically sensing and regulating intake air temperatures for combustion engines equipped with a carburetor or with a propane gas fuel operated fuel injector. The temperature of the intake air entering the engine is sensed by a bimetallic valve element, which simultaneously operates a flapper valve by means of the engine intake vacuum. The flapper valve automatically proportions the amount of raw cold intake air and preheated intake air for optimum engine operation.

3,726,513
NOZZLE IMPINGEMENT SCRUBBER

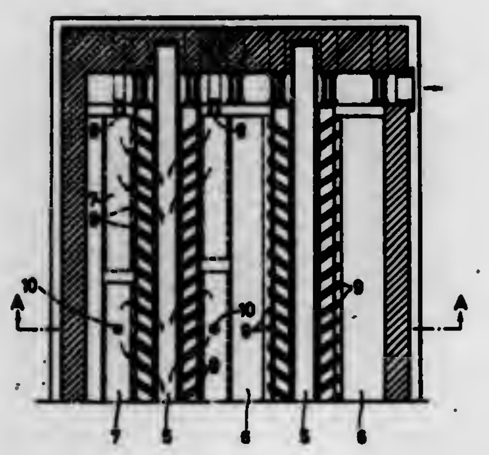
Graham K. Houghton, Jr., 2844 Lawndale Drive, Los Angeles, Calif., and Floyd W. Redman, 1005 Radcliff Avenue, Bakersfield, Calif.
Continuation of Ser. No. 880,668, Nov. 28, 1969, abandoned. This application May 13, 1971, Ser. No. 143,262
Int. Cl. B01d *47/02*
U.S. Cl. 261—119 **7 Claims**



A nozzle impingement scrubber chamber having a central clean gas outlet including a nozzle structured such that substantially no quiescent zone exists adjacent the exit end thereof.

3,726,514
ARRANGEMENT AT WALKING BEAM FURNACE

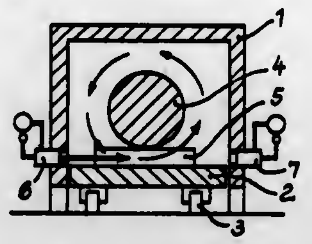
Eric Fagergren, Bromma, Sweden, assignor to Aktiebolaget Tabougnar, Stockholm, Sweden
Filed July 9, 1971, Ser. No. 161,182
Claims priority, application Sweden, Nov. 4, 1970, 14889/70
Int. Cl. F27b *9/14*; F27d *3/00*
U.S. Cl. 432—122 **6 Claims**



A walking beam furnace for heating a charge being advanced through the furnace by walking beams located in longitudinal opening in the hearth which is provided with longitudinally extending ridges on both sides of the openings for supporting the charge thereby forming a longitudinally extending area above the walking beams operating in the area. The ridges are provided with transverse channels connecting the longitudinal areas for the walking beams with the spaces outside the ridges, and these spaces are supplied with heat for introduction into the areas above the walking beams but below the charge.

3,726,515
INDUSTRIAL OVEN AND METHOD OF OPERATING THE SAME

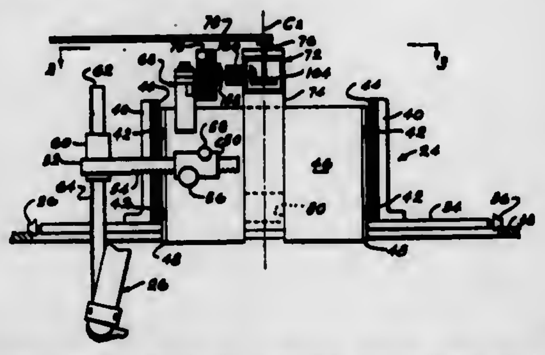
Rudiger Knaak, Neuss, Germany, assignor to Koppers Wistra Ofenbau Gesellschaft Mit Beschraenkter Haftung, Dusseldorf, Germany
Filed Feb. 25, 1971, Ser. No. 118,812
Claims priority, application Germany, March 3, 1970, P 20 09 761.4
Int. Cl. F27b *3/10, 9/26*
U.S. Cl. 263—40 R **10 Claims**



An industrial oven is provided in its circumferential wall with a first group of burners so arranged that when they operate they inject into the chamber of the oven combustion gases which form therein a first coil filling the chamber and rotating in one direction. A second group of burners is also provided in the wall and so constructed that they inject into the chamber combustion gases which form a second coil therein which fills the chamber but which rotates in an opposite direction.

3,726,516
CUTTING TORCH CONTOUR GENERATOR FOR CYLINDRICAL INTERSECTIONS

Kenneth B. Garner, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Jan. 25, 1971, Ser. No. 109,135
Int. Cl. B23k *7/04*
U.S. Cl. 266—23 N **9 Claims**



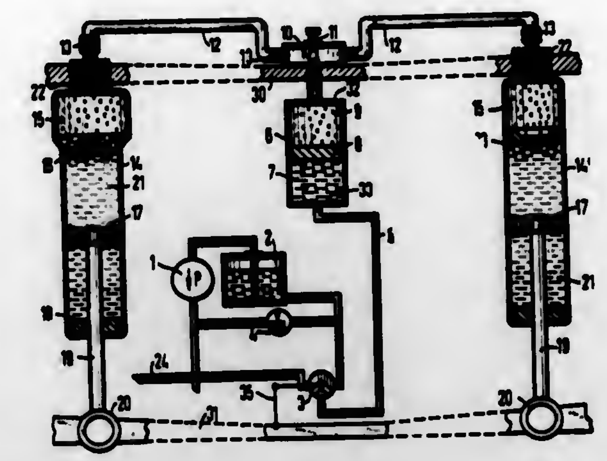
A cylindrical intersection contour generator having an adjustable cutting torch which is particularly controlled in the rise and fall, thereof by a rotating crank, as the torch moves relatively about the circumference of one of the cylindrical shaped objects. The initial positioning of the cutting torch as to its radius, vertical height and cutting angle, the particular throw of the crank, and the settings for controlling the rise and fall and the cutting angle of the cutting torch during relative rotation are predetermined on the basis of the diameter and wall thickness of the cylindrical shapes to be joined and the ratio of their respective diameters.

3,726,517
VEHICULAR SUSPENSION SYSTEM HAVING PNEUMATIC SPRINGS

Dieter Lutz, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed March 29, 1971, Ser. No. 128,964
Claims priority, application Germany, April 4, 1970, P 20 16 192.6
Int. Cl. F16f *5/00*
U.S. Cl. 267—64 R **10 Claims**

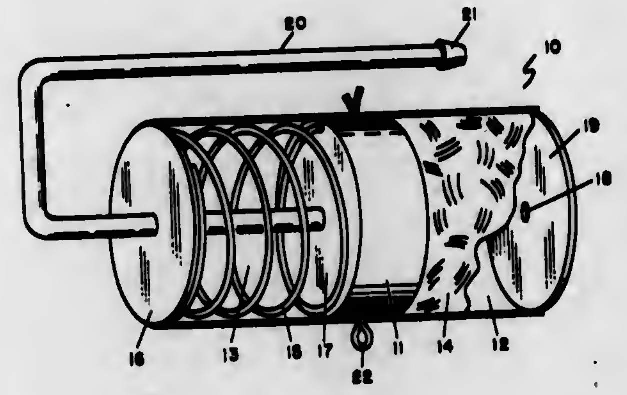
The pneumatic springs connecting two associated wheels to the chassis of a motor vehicle are connected by throttling

tubes to a common source of air under pressure, the air pressure being controlled by a hydraulic system including a two-way valve set according to the relative position of chassis and wheels.



3,726,518
LIQUID TIMING DEVICE

Michael Halik, Sparta, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed June 25, 1971, Ser. No. 156,785
Int. Cl. F16f *3/07*
U.S. Cl. 267—151 **6 Claims**



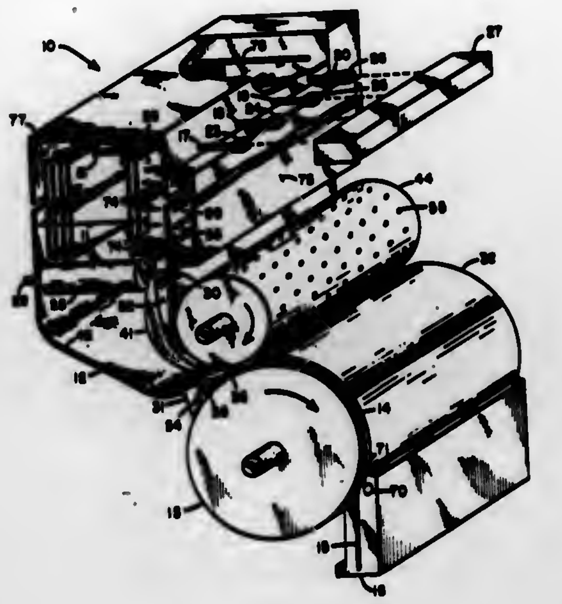
A liquid timer which includes a generally hollow, closed cylindrical member having therein a longitudinally reciprocable piston dividing the internal volume thereof into two portions. One of said portions being filled with silicone rubber gum and having a restricted liquid passage or orifice between the separated volume portions. A biasing means coupled to said piston urging the said piston in a direction to compress said liquid or reduce the volume thereof. Actuating means for releasably holding said piston until the timing cycle is to be commenced. Said piston further being provided with terminal output means indicative of the termination of the timing cycle.

The invention described herein may be manufactured, used and licensed by or for the Government for governmental purposes without the payment to me of any royalty thereon.

3,726,519
RHD-CARD TRANSPORTATION AND POSITIONING

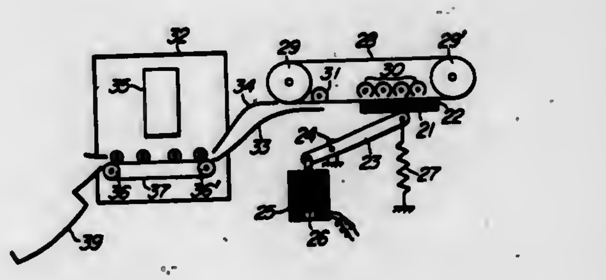
George D. Bukovich, Minneapolis; Leroy A. Vos, Saint Paul, and Gary B. Woehler, Minneapolis, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Feb. 11, 1971, Ser. No. 114,458
Int. Cl. B65h *5/22, 29/24*
U.S. Cl. 271—3 **7 Claims**

A rotating drum contains a plurality of read/write heads rotating therewith. A cartridge, having first and second sections, is positioned in a fixed position relative to said drum and has a plurality of cards retained in said first section with means for selectively releasing any card. A first chute is positioned to transport any card from the cartridge to a predetermined and non-rotating position around said drum, where the read/write function occurs. A second chute is positioned to transport a card from its predetermined position around the drum back to the second section of the cartridge, which section is maintained free of cards except for the returning card. Means are provided for maintaining an air bearing between the card and the drum during transport of the card, as well as when the card is in its predetermined position around the drum periphery.



3,726,520
APPARATUS FOR AUTOMATICALLY CONVEYING SHEETS OF PAPER BY MEANS OF ELECTROSTATIC ADSORPTION

Tetsuo Doi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 10, 1970, Ser. No. 62,477
Claims priority, application Japan, Aug. 13, 1969, 44/63536
Int. Cl. B65h *3/18*
U.S. Cl. 271—18 A **14 Claims**

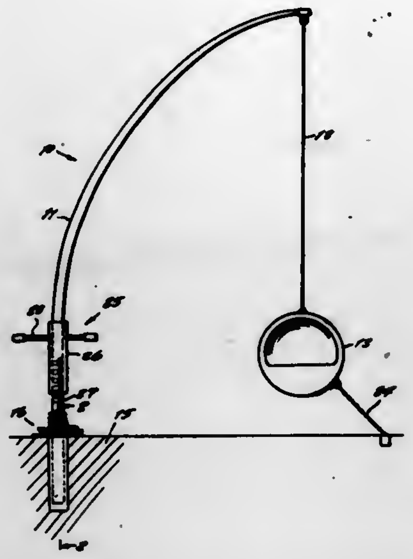


For automatically conveying sheets of paper one after another from the top of a stack of sheets of paper to a predetermined position by taking advantage of the electrostatic adsorption phenomenon, an apparatus comprises sheet of paper carrier means electrostatically charged by charging means, means for supporting said carrier means in parallel opposed relation to the sheet of paper to pick up said sheet of paper under electrostatic force and means for releasing the sheet of paper from said carrier means after the sheet of paper is located in the predetermined position, whereby the sheets of paper can be fed automatically regardless of the thickness of the sheets of paper, the presence or absence of a folded line or wrinkles in the sheets of paper and the type of paper.

3,726,521
UPSTANDING ROTATABLE CHILD SUPPORTING POLE HAVING ADJUSTABLE FLEXIBILITY

Donald M. Sidlauskas, 3950 N.W. 32nd Terrace, Fort Lauderdale, Fla.

Filed Aug. 11, 1971, Ser. No. 170,896
Int. Cl. A63g *1/12*
U.S. Cl. 272—41 **2 Claims**

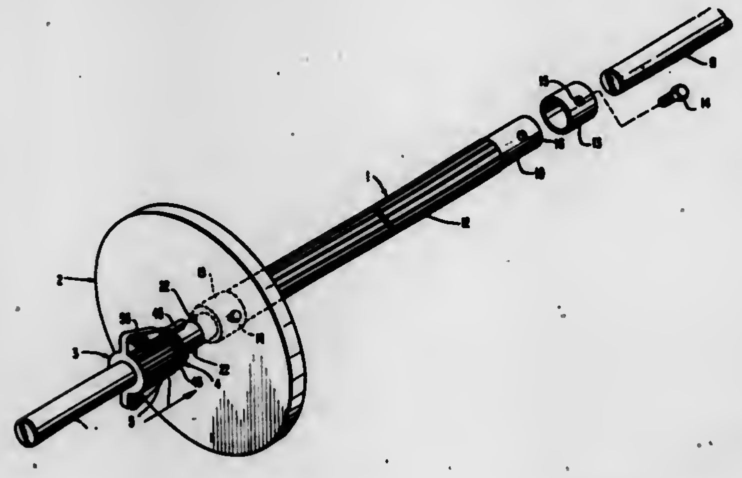


An amusement ride for a child, the device incorporating an upstanding, flexible pole, the upper end of which accordingly bends over due to the weight of a child sitting on a seat supported by a line from the upper end of the pole, the lower end of the pole being rotatable within a sleeve fitted in a ground, the weight of the pole resting upon a thrust bearing, and the pole being rotatable by the action of a wind-up coil spring.

3,726,522
COMBINATION OF A BARBELL WITH WEIGHT AND COLLET DEVICE

Ira J. Silberman, Opelika, Ala., assignor to Diversified Products Corporation, Opelika, Ala.

Filed May 17, 1971, Ser. No. 144,058
Int. Cl. A63b *13/00, 11/00*
U.S. Cl. 272—84 **5 Claims**

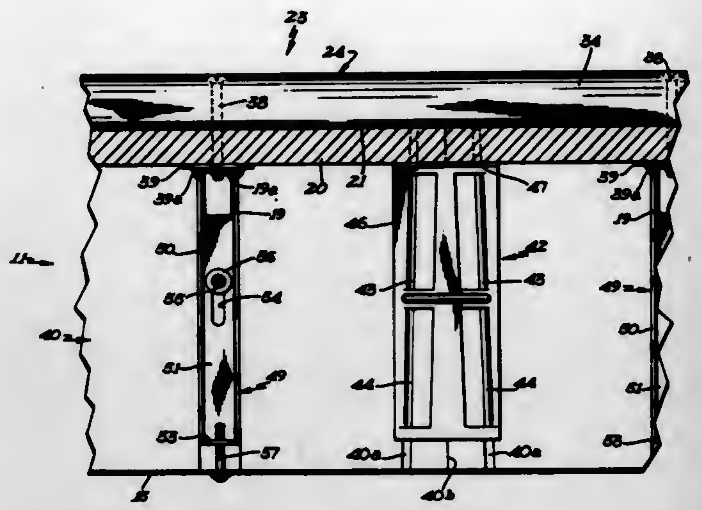


A collet device is disclosed for securing barbell weights on a bar. The device includes an inner member and an outer member, and is attached to the bar by the frictional engagement of the inner member with the bar. The outer member progressively threadably engages the inner member and compresses a portion thereof against the bar. The device also includes keys for engaging the weights to prevent them from rotating relative to the bar.

3,726,523
POOL TABLE CONSTRUCTION WITH SPLICER-CONNECTED PERIPHERAL PANEL MEMBERS

Otto Seveven Nielsen, 4875 Sorell Ave. North, Minneapolis, Minn.

Filed Aug. 26, 1970, Ser. No. 70,629
Int. Cl. A63d *15/00*
U.S. Cl. 273—3 C **7 Claims**

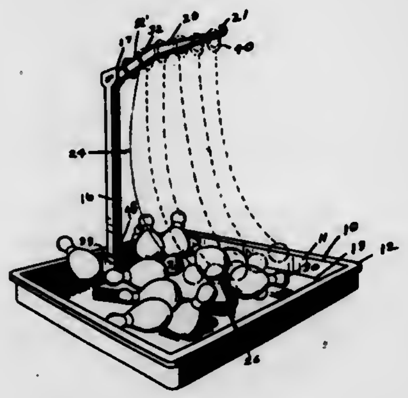


A pool table comprises a metallic frame having leg structures secured thereto, and supporting a rectangular bed, and a rail and bumper structure thereon. A plurality of vertical external panels are secured to the frame around the entire external periphery thereof. Similar splicing members are each applied to the end portions of adjacent panels and engage in converging slots in the inner surfaces of the panels to urge the panels into tight end-to-end abutting relation. These splicing members may be removed to facilitate maintenance of the pool table. Connecting members connect the panels to the frame and these connecting members may also be readily detached from the frame for purposes of maintenance.

3,726,524
TETHERED BALL BOWLING GAME

Joseph J. Prischak, 3508 Zimmerly Road; Terry W. McQuaid, 4236 Feidler Drive, and Dennis J. Prischak, 3508 Zimmerly Road, all of Erie, Pa.

Filed Jan. 19, 1971, Ser. No. 107,802
Int. Cl. A63d *7/00*
U.S. Cl. 273—40 **1 Claim**

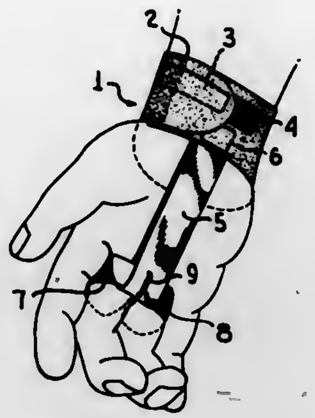


A game comprising a game board having a marginal edge extending upwardly and forming a marginal border around the sides. A platform on the bottom of said enclosure supports bowling pins. A post removably supported on one side of said enclosure has a part extending upward and over the platform. A tapered upwardly angled boom is supported on said post. A ring is supported on the boom and slidably down said boom so that a ball supported on a string tied to said ring will swing toward the bowling pins and then down onto said floor behind said platform after it has been swung past the platform.

3,726,525
AUTOMATIC LIFTER FOR BOWLING

Homer L. Jackson, Flint, Mich., assignor to Robert Holbeck and Janice Holbeck, Swartz Creek, Mich.

Continuation of Ser. No. 766,094, Oct. 9, 1968, abandoned. This application March 12, 1971, Ser. No. 123,833
Int. Cl. A63b *71/14*
U.S. Cl. 273—54 B **9 Claims**

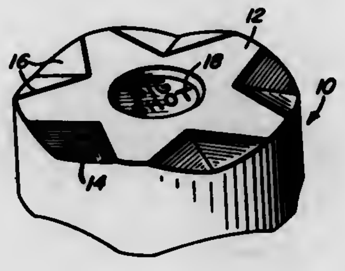


This invention provides an automatic lifter bowling aid to get lift and spin on a bowling ball. The device has a construction including a wristband, finger support and a flat elastic member fixedly attached to the wrist support member and the finger support. The finger support member is constructed to fit tightly around the fingers of the bowler to provide a firm support.

3,726,526
MULTI-PURPOSE GAME PUCK

Leroy N. Radovich, 811 S. 15th Avenue, St. Cloud, Minn.

Filed Dec. 16, 1971, Ser. No. 208,712
Int. Cl. A63b *71/00*
U.S. Cl. 273—128 R **5 Claims**



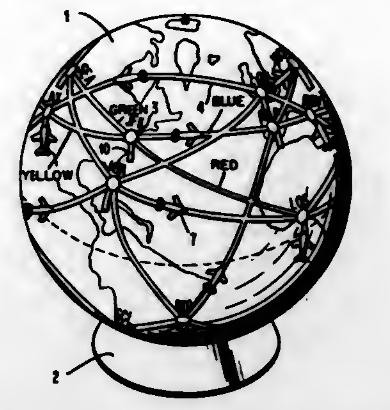
A multi-purpose game puck formed of relatively hard material and being generally cylindrical in shape with upper and lower flat star-shaped surfaces adapted to slide over a playing surface and indented surfaces between the star points to provide air channels and which aid in movement over rough or irregular playing surfaces, and circular recesses formed in the center of each star-shaped surface to provide an air pocket which is effective to cushion the puck as it slides over irregular surfaces with air flowing into the pocket via the air channels.

3,726,527
WORLD TRANSPORT GAME APPARATUS

Peter P. Schauffler, 7701 Cresheim Road, Philadelphia, Pa.

Filed Jan. 21, 1971, Ser. No. 108,271
Int. Cl. A63f *3/04*
U.S. Cl. 273—134 AC **5 Claims**

Game apparatus including miniature models of air or sea transports operated in world-wide service on great-circle tracks between international airports or seaports on an inflated plastic globe or a flat board as directed by a radar-screen-facsimile spinner and random-order cards. Numbered

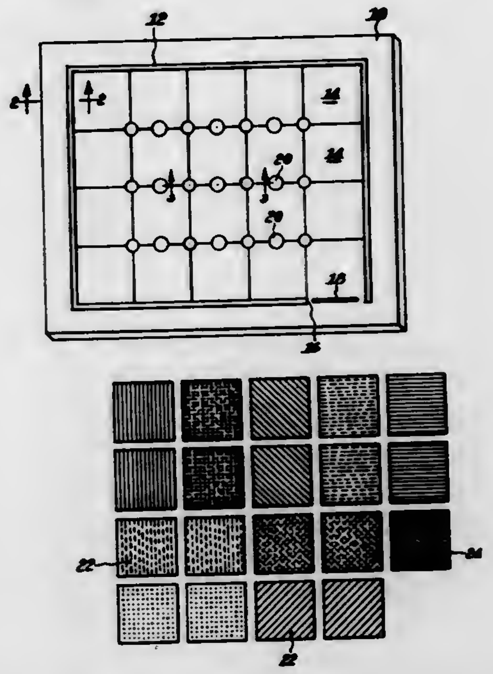


patches are affixed to the models, and distinctively colored patches are affixed to tables indicating related facilities such as hangars acquired by each player.

3,726,528
SLIDING MARKER PUZZLE WITH SELECTIVELY EFFECTIVE BOUNDARY

Violet V. Kump, Mankato, Minn., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed July 21, 1971, Ser. No. 164,622
Int. Cl. A63f *9/08*
U.S. Cl. 273—153 S **1 Claim**



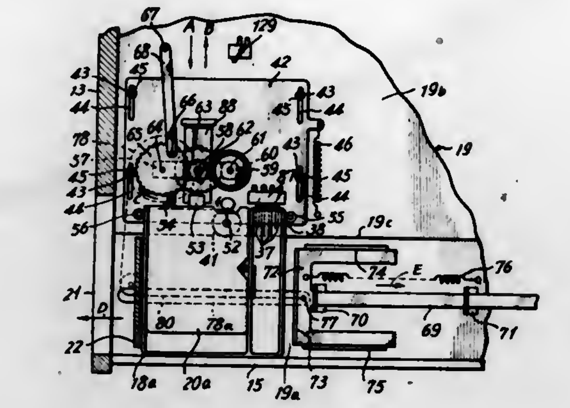
A game board having a raised peripheral lip enclosing 20 squares in four rows and five columns, 19 colored square markers of nine sets of two markers of the same color and one set of one, the board lip having a portion removable for the insertion of markers, pegs at the intersections of the squares and additional pegs between adjacent pairs of the same color, one of said squares being differently colored and having bottom grooves boundary pegs.

3,726,529
MAGNETIC TAPE CARTRIDGE REMOVING APPARATUS

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Oct. 5, 1970, Ser. No. 78,109
Claims priority, application Japan, Oct. 4, 1969, 44/78952
Int. Cl. G11b *23/12, 15/26*
U.S. Cl. 274—4 F **4 Claims**

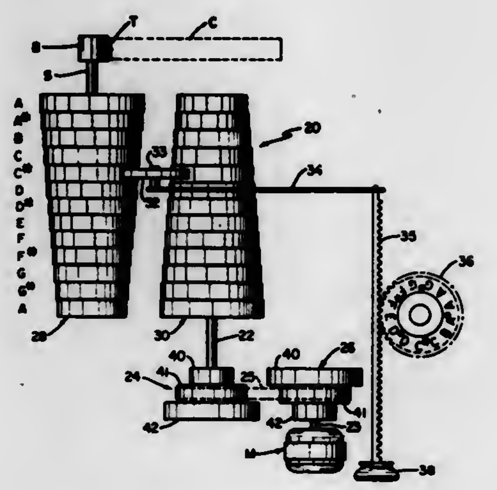
A magnetic tape cartridge removing apparatus in a tape player for playing a vertical stack of cartridges from the lowermost to the uppermost in succession in a bottomless enclosure, comprises a player cabinet, a platform which is provided within the cabinet and on which the lowermost cartridge rests, a movable deck resting on the platform for playing the cartridge in the play position, said movable deck mounting thereon a capstan and magnetic head or the like, deck driving



means for reciprocally moving the deck between such positions of engagement with and disengagement from the cartridge in the play position, and a pushing member operable to depressedly move the cartridge in the play position from the play position during the time that the deck is reciprocally moved by deck driving means.

3,726,530
MUSICAL SOUND RECORDING METHOD

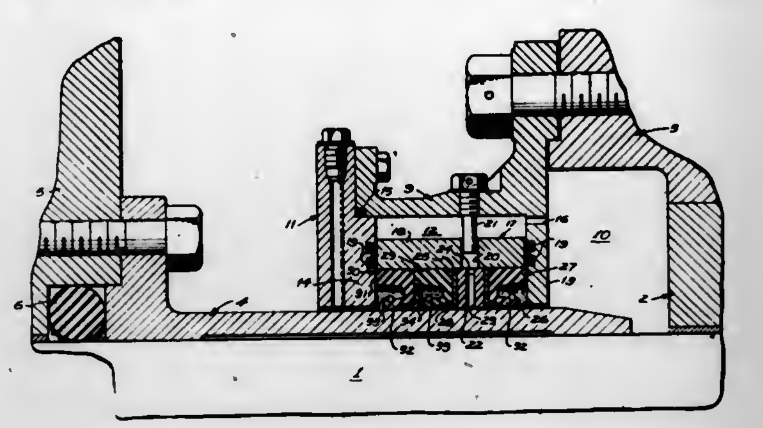
Lowell E. Beimer, 6558 North Campbell Avenue, Chicago, Ill. Division of Ser. Nos. 786,517, Oct. 3, 1968, and Ser. No. 616,717, Feb. 16, 1967, abandoned. This application June 8, 1970, Ser. No. 44,645
Int. Cl. F11b *15/46, 25/06*
U.S. Cl. 274—46 **7 Claims**



A musical selection is recorded on a first sound track driven at a speed corresponding to the frequency level of the key in which the selection is to be played. The same selection, or different harmony parts of that selection, are then successively played in different keys and are recorded on separate sound tracks at speeds corresponding respectively to the frequency or characteristic frequency of each different key selected. In each successive recording, the first recording is played back for reference purposes to provide the proper tempo for recording at each different speed. Thereafter, the recordings on each separate track are played back simultaneously at the reference speed and may be re-recorded on a single track. Although the given selection is recorded at different speeds, when played back at the reference speed each recording will blend and harmonize with the first recording.

3,726,531
STERN TUBE SEAL

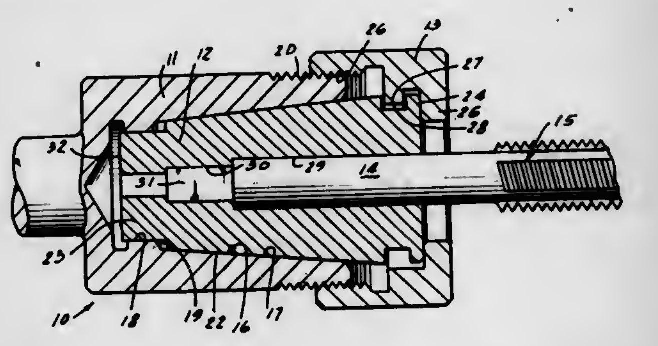
Peter A. Pagan, La Palma, and Paul T. Mitchell, Huntington Beach, both of Calif., assignors to American Metal Bearing Company, Los Angeles, Calif.
Filed Dec. 7, 1970, Ser. No. 95,482
Int. Cl. F16j *15/32*
U.S. Cl. 277—59 **7 Claims**



A stern tube seal installation comprising an aft seal unit and a forward seal unit, each unit including a lubricant filled seal chamber confronting a propeller shaft or liner thereon, the seal chamber containing a rotation restrained floating ring sealed at its ends with respect to the chamber and spaced from the shaft by a centering ring flanked by at least a pair of seal rings engaging the shaft. Lubricant passages extend through the floating ring and centering ring to the shaft liner between the seal rings.

3,726,532
COLLET CHUCK FOR A TAP

James G. Zeilinger, Saginaw, Mich., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Sept. 21, 1970, Ser. No. 74,017
Int. Cl. B23b *31/12*
U.S. Cl. 279—52 **2 Claims**



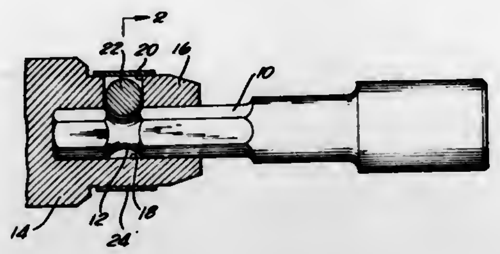
A collet chuck for a tap includes a body, a tapered compressible collet, and a clamping member or nut threaded on the body and having a flange acting axially on the collet. The body has a bore at its inner end of non-circular configuration forming a socket receptive of the inner end of the collet which is of similar shape. The threads between the clamping member and the body are so arranged that unless the non-circular portion of the collet is received in the body socket, the threads cannot engage.

3,726,533
SPRING BIASED COUPLING FOR TOOL AND CHUCK

Gary S. Lafferty, Sr., Milwaukee, Wis., assignor to Milwaukee Electric Tool Corporation, Brookfield, Wis.
Filed Jan. 22, 1971, Ser. No. 108,793
Int. Cl. B23b *31/08*
U.S. Cl. 279—97 **4 Claims**

A coupling between the shank of a tool or other accessory and a rotatable chuck is spring biased so that the tool may be

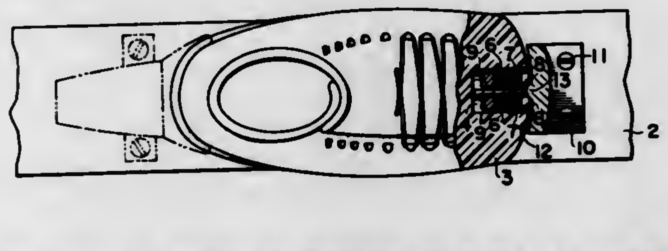
coupled and uncoupled merely by applying inward or outward force to the tool. A noncircular shank on the tool has encircling it a standard locking groove which receives a locking member having a cylindrical configuration. The neck of the chuck has an axially extending bore of noncircular shape into which the shank of the tool will axially slide. The noncircular but conforming shapes of the bore and shank prevent relative free rotation therebetween. A transversely extending slot in



the outside of the neck of the chuck has a depth which is enough to form an opening into the bore of the neck. A needle roller is mounted in the slot and is pressed inwardly against the relatively large bearing surfaces at the end portions of the bottom of the slot by a retaining split-ring spring so that a portion of its cylindrical surface extends into the bore in such neck. When the tool is inserted the spring gives sufficiently to allow the needle roller to move outwardly and then snap into the locking groove.

3,726,534
SKI BOOT TOE FIXTURE

Yoshinari Mochizuki, Itabashi-ku, Tokyo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo, Japan
Filed June 8, 1971, Ser. No. 151,004
Claims priority, application Japan, June 10, 1970, 45/49542; June 11, 1970, 45/49857; July 1, 1970, 45/57960; July 2, 1970, 45/58164
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 R **4 Claims**

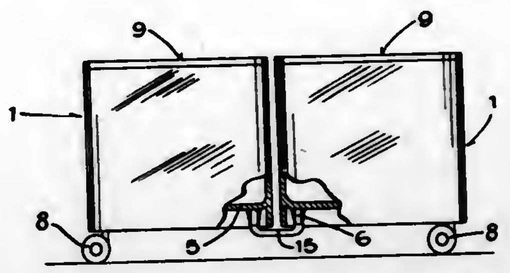


A ski boot toe fixture is provided in which an engaging member and means for urging the engaging member forwardly is contained within a recess formed in the front tip portion of the sole of a ski boot. The engaging member is partially projected beyond the front tip of the boot sole and is pressed and fitted against a rear surface of a boot toe receiving member secured on a ski. The rear surface of the boot toe receiving member has concave or convex means for normally preventing said engaging member for moving laterally.

3,726,535
MULTI-PURPOSE ARTICLE OF FURNITURE

Giuseppe Longato, via Makalle 19, Padova, Italy
Filed May 3, 1971, Ser. No. 139,630
Claims priority, application Italy, July 15, 1970, 5183 A/70
Int. Cl. B62b *3/02*
U.S. Cl. 280—34 R **7 Claims**

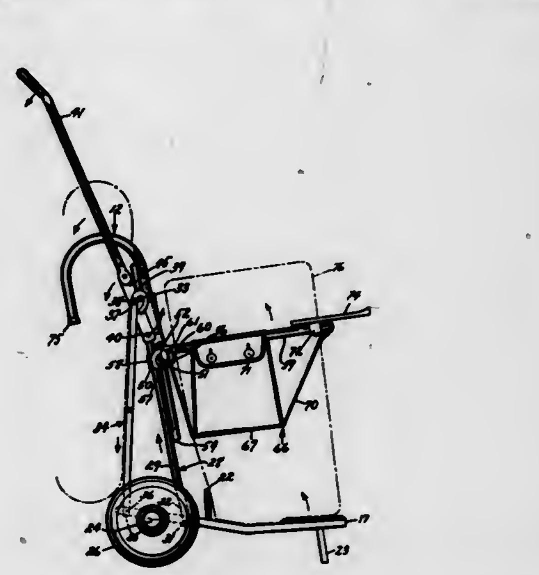
Multi-purpose article of furniture which doubles as a portable bar, a TV carrier, a magazine rack, a coffee table or a seat and consists of a box-like body with removable tray-like lid, said lid having a bevelled perimeter which mates with the edges of the vertical walls. The floor may have a sunken portion and the casters for the body may be replaced with U-



shaped connectors which permit the arrangement of a plurality of articles into aesthetically different combinations.

3,726,536
MULTIPLE USE COLLAPSIBLE CART

Francisco Jorge De Loizara Y Arino, Avenida del Generalisimo No. 53-7°B., Madrid, Spain
Filed March 1, 1971, Ser. No. 119,582
Claims priority, application Spain, June 5, 1970, 159087
Int. Cl. B62b *1/04*
U.S. Cl. 280—36 C **8 Claims**

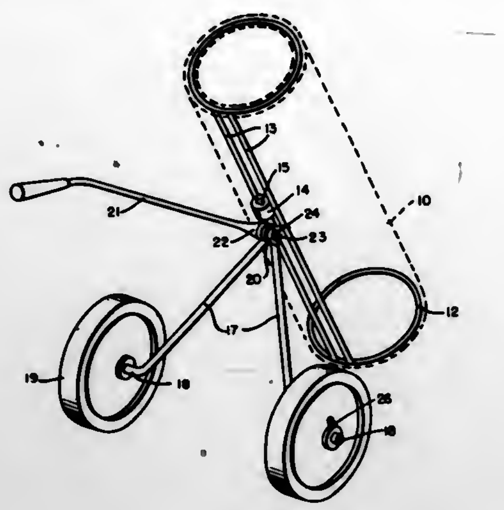


A multi purpose two wheeled cart adapted to be employed selectively as a luggage carrier, a perambulator or a shopping cart. The device includes a main chassis to which is selectively attached a detachable upper carrier element. In detached condition, the main chassis element resembles a light weight hand truck, and may be employed for transporting baggage. In similarly detached condition, the upper chassis element may be suspended from an automotive seat back to serve as an infant carrier. In interconnected relation, the upper carrier element forms a seat of a perambulator, and the floor of the main chassis forms a foot rest. The seat-forming member may be removed from the upper carrier element to form an enclosing frame for maintaining a large bag or container upon the floor of the main chassis.

3,726,537
GOLF CART

Bernard J. McLoughlin, c/o Hustler Golf Shop, Box 995, Troy, N.Y.
Filed Feb. 9, 1971, Ser. No. 113,838
Int. Cl. B62b *1/16*
U.S. Cl. 280—47.26 **2 Claims**

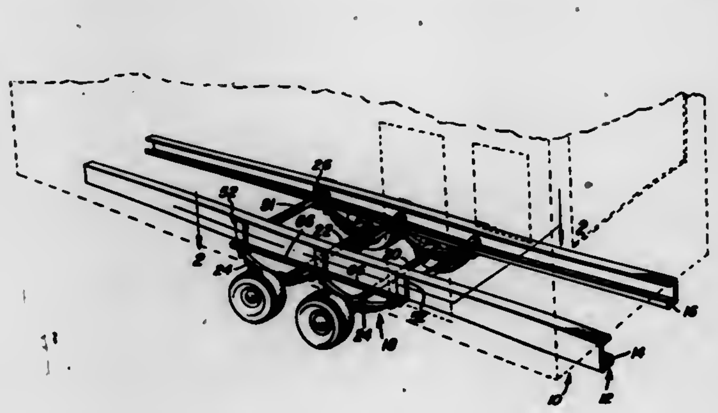
An improved golf cart including a frame for a golf bag, said frame including a pair of parallel, spaced-apart rods and two ring shaped supports. Welded to the rods is a bag supporting means in the form of an adaptor for mounting the bag on a carriage frame. The carriage includes a pair of wheels, each with its respective axle. Each of the axles forms a portion of an arm. The arms are joined together and a single shaft is engaged with the adapter to support the bag on the carriage



frame. A handle is associated with the common shaft connected to each of the arms and with the adapter so as to control the orientation of the golf bag and cart.

3,726,538
TEMPORARY TRAILER RUNNING GEAR

John D. Robinson, Texas City, Tex., assignor to Rebecca P. Robinson, Texas City, Tex., a part interest
Filed Feb. 9, 1971, Ser. No. 113,869
Int. Cl. B60g *5/00*
U.S. Cl. 280—81 R 4 Claims

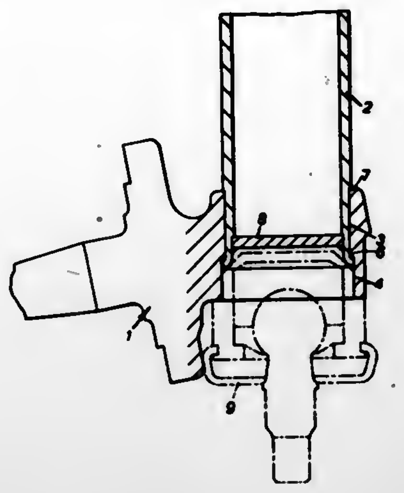


A removable running gear assembly for securement to the underframe of modular structures to be transported over roads. The assembly includes tandem axles provided with conventional opposite end leaf springs and the adjacent ends of each pair of leaf springs are anchored by spring shackles to a center mounting plate while the remote ends of each pair of leaf springs are anchored by shackles to opposite end mounting plates thus providing three mounting plates along opposite sides of the tandem axle assembly for securement to corresponding longitudinal members of a support frame upon which a modular structure is disposed.

3,726,539
VEHICLE SUSPENSION UNITS

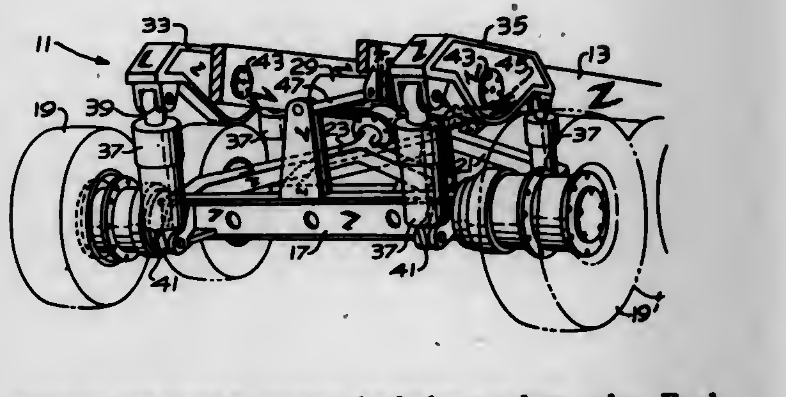
Lawrence G. Nicholls, Birmingham 11, Tyseley, England, assignor to Girling Limited, Birmingham, England
Filed July 24, 1970, Ser. No. 57,966
Claims priority, application Great Britain, July 25, 1969, 37,544/69
Int. Cl. B62d *7/14*
U.S. Cl. 280—96.2 R 2 Claims

A suspension unit comprising a stub axle and a telescopic damper unit in which the body tube of the damper is mechanically locked in the stub axle. The tube passes through a bore in the stub axle up to a shoulder on the tube, and the extreme end of which is spun out to form a flange, so that the stub axle is gripped between the shoulder and the flange.



3,726,540
TANDEM AXLE SUSPENSION SYSTEM FOR HEAVY-DUTY VEHICLE

Frank A. Groess, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed June 11, 1971, Ser. No. 152,288
Int. Cl. B60g *5/06*
U.S. Cl. 280—104.5 A 6 Claims



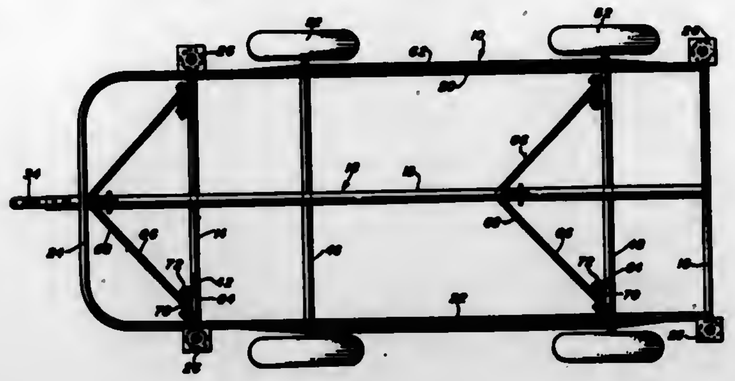
A vehicle suspension system includes tandem axles. Each axle is connected to the vehicle frame by an A-frame. An equalizer beam on each side of the vehicle connects adjacent ends of the tandem axles. Radius arms stabilize each axle in side thrust. All joints are spherical for universal action. All drive and braking torques and thrusts are taken by the ball joints at the apexes of the A-frames. Vertical loads on the wheels are equalized by equalizer beams, and the connections between the equalizer beams and the axles take vertical loads only without any torque reaction or alignment duties.

3,726,541
DOLLY-TYPE TANDEM AXLE SUSPENSION

Raymond C. Connell, 170 Sunset Drive, Burbank Heights, Pasco, Wash.
Filed Nov. 27, 1970, Ser. No. 93,234
Int. Cl. B62d *21/00*
U.S. Cl. 280—106.5 R 9 Claims

A load supporting vehicle including a main frame defining four corner portions and also provided with an underlying running gear frame defining four similar corner portions disposed beneath the first mentioned corner portions. The running gear frame includes longitudinally spaced tandem axle assemblies whose opposite end portions are disposed adjacent the corresponding main frame and running gear frame

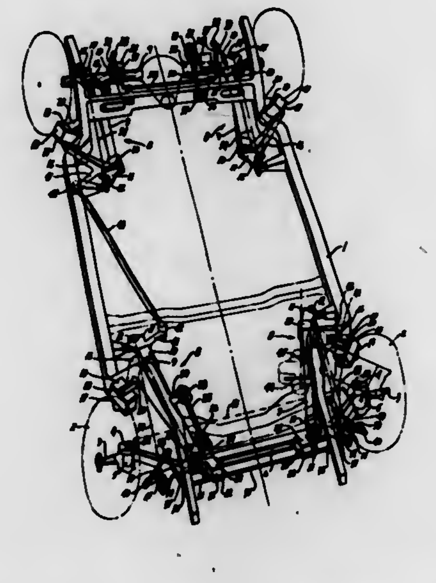
corner portions. Compression spring means are operatively connected between the pairs of corresponding main frame and running gear frame corner portions and a pair of generally V-shaped radius arms are provided and have the free ends of the legs thereof pivotally supported from the running gear frame



for oscillation about horizontal transverse axes spaced longitudinally of the running gear frame and the apex portions of the V-shaped radius arms are swivelly connected to adjacent portions of the main frame spaced forwardly of the aforementioned axes with the V-shaped radius arms generally horizontally disposed.

3,726,542
VEHICLE BANKING ARM CONSTRUCTION

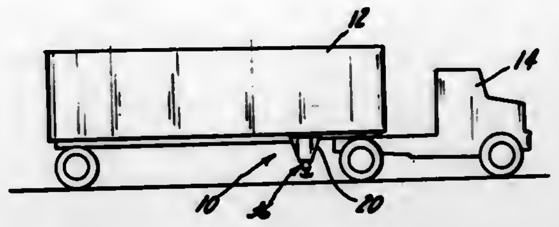
Joachim Kolbe, 5126 Haskell Avenue, Encino, Calif.
Filed Oct. 1, 1971, Ser. No. 185,765
Int. Cl. B60g *11/60*
U.S. Cl. 280—112 A 4 Claims



A curvebank car banking arm comprising a torsionally operated leaf spring bundle which is anchored at each end by a universally movable pivot and by a selectively spaced multiturn cushion to the vehicle superstructure and to a rigid axle respectively, front steerable wheels carried by the axle which receives its share of the pivot transmitted superstructure load at a point spaced substantially further away from the center of the vehicle axle than the respective leaf spring bundle end. The apparatus is designed to secure through increased torsional spring bundle windup and through added multiturn cushion resilient shear loading improved wheel rate as well as increased clearance for the angularly steered front wheel position while the vehicle negotiates a turn; the improvement disclosing new relationships which in combination make the reintroduction of rigid front axles to family passenger cars desirable by solving related rigid front axle problems previously unsolved.

3,726,543
ASSIST MECHANISM FOR FOLD-UP LANDING GEAR

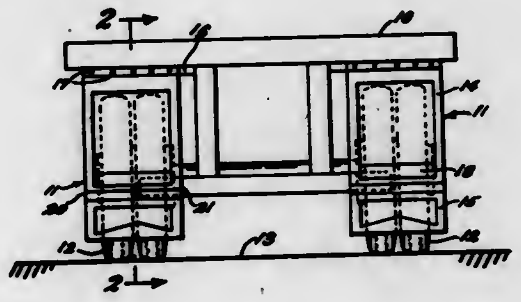
Thomas B. Dalton, Muskegon, Mich., assignor to Westran Corporation, Muskegon, Mich.
Filed Jan. 29, 1971, Ser. No. 110,837
Int. Cl. B60s *9/02*
U.S. Cl. 280—150.5 4 Claims



An assist mechanism for a trailer landing gear, the landing gear being of the type having a pair of legs secured to opposite sides of the forward portion of a trailer to support the trailer and each of the legs being capable of being folded beneath the trailer. The mechanism comprises an assist spring for each leg having one end secured to a fixed support beneath the trailer body and the other end secured to a chain, which passes over a sprocket and is connected with the leg of the landing gear. The sprocket is eccentrically mounted to permit the spring to exert the most pulling force on the leg during the latter portion of its pivoting to the folded-up position.

3,726,544
SNAP-OFF MUD FLAPS

James F. Miller, 3664 Stettinius Avenue, Cincinnati, Ohio
Filed June 23, 1971, Ser. No. 155,889
Int. Cl. B62d *25/16*
U.S. Cl. 280—154.5 R 5 Claims

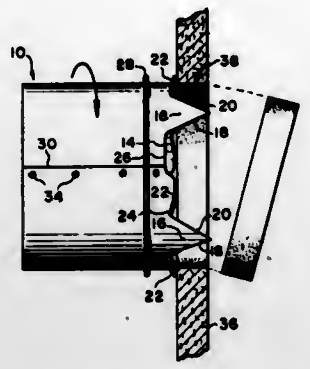


A mud flap for trucking trailers and other wheeled vehicles comprising a releasable connector means between the truck body mounting member and that part of the flap liable to be accidentally caught between the wheels of the vehicle moving in reverse, and a stationary object, such as curbing which otherwise tear or mutilate the mud flap and its mounting.

3,726,545
AIR DUCT CONNECTOR

John R. Grim, and Alan D. Hunter, both of Clarksville, Tenn., assignors to The Trane Company, La Crosse, Wis.
Filed May 21, 1971, Ser. No. 145,738
Int. Cl. F16l *15/00; 41/00*
U.S. Cl. 285—3 6 Claims

An air duct connector for connecting a duct to a wall of a larger air duct or plenum chamber which is formed of reinforced fiberglass or the like. The leading edge of the connec-



tor is provided with cutting teeth for initially forming a circular aperture in the reinforced fiberglass wall and radially extending tabs which may be threaded into the aperture to lock the connector to the wall.

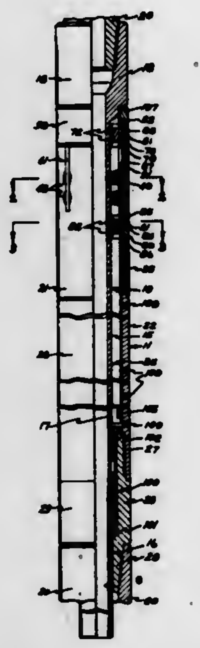
3,726,546
EXTENSIBLE COUPLING FOR WELL PIPES

Cicero C. Brown, 8490 Katy Freeway, Houston, Tex.

Continuation-in-part of Ser. No. 50,794, June 29, 1970, Pat. No. 3,630,551. This application Aug. 5, 1971, Ser. No. 169,319

Int. Cl. F16c *25/00*

U.S. Cl. 285—91 **10 Claims**



An extensible coupling for use in well pipe strings, particularly, rotary drill strings, to permit relative longitudinal, non-rotative movement between sections of the pipe string. The coupling comprises an outer tubular member adapted to telescopically receive an inner tubular member. The inner tubular member is provided with a plurality of longitudinal spline slots engaged by rollers carried by the outer tubular member and projecting radially inward from its bore.

3,726,547
CONNECTOR FOR FLEXIBLE NON-METALLIC CONDUIT

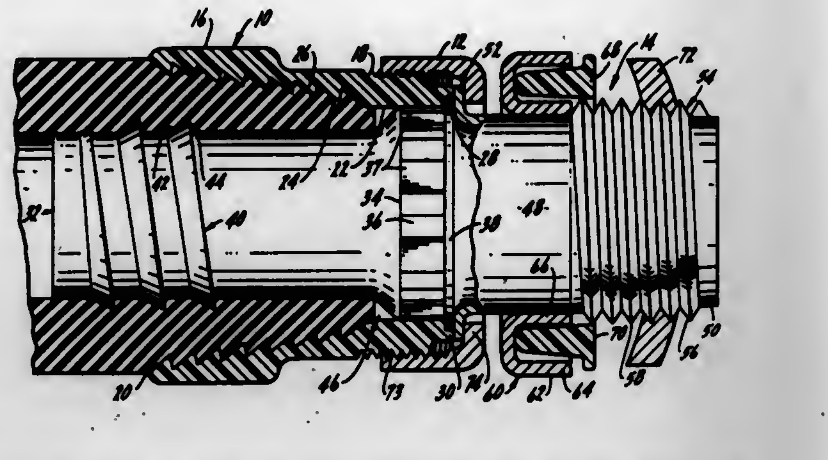
John A. Cox, Jr., Sycamore, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Continuation-in-part of Ser. No. 818,905, April 24, 1969, abandoned. This application May 17, 1971, Ser. No. 144,006

Int. Cl. F16l *55/00*

U.S. Cl. 285—174 **7 Claims**

This is concerned with a connector for joining non-metallic conduit or tubing to a terminus, for example a box, junction or the like. The connector takes the form of a housing with a tapered interior and an all-plastic pilot projecting therefrom at the large end with threads on the surface thereof which are constructed and adapted to bite into the inner surface of non-metallic conduit. The tapered inner surface or bore of the housing also has threads which have the same pitch as the threads on the pilot. The pilot is joined to the small end of the passage through the housing by a non-rotatable joint and secured there so that the two parts will turn as one unit. The housing and pilot or insert are held by a free-wheeling connection on the flanged end of a body member by a nousing nut which may be either metal or plastic. The body element is constructed to be inserted into an opening in a box, junction or what-have-you and sealed in place.



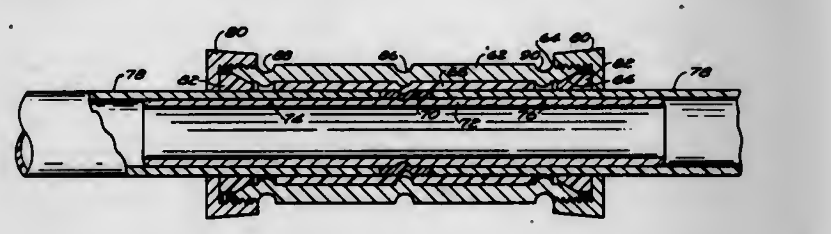
3,726,548
PIPE FITTING

Sam Alewitz, Painesville, Ohio, assignor to Perfection Corporation, Madison, Ohio

Filed April 29, 1971, Ser. No. 138,608

Int. Cl. F16l *33/00*

U.S. Cl. 285—249 **7 Claims**



A pipe fitting adapted to connect a section of plastic pipe to a fitting body. The fitting comprises a hollow metallic body into which is disposed a plastic sleeve. An annular ring is disposed within the sleeve. A second sleeve is disposed within the hollow body and is attached to the ring such that a socket is defined by the first and second sleeves. The socket has a transverse dimension slightly in excess of the wall thickness of the plastic pipe so that the pipe may be snugly received within the socket. A gasket and compression nut provide sealing between the plastic pipe and the fitting body.

3,726,549
PIPE JOINT RETAINER GLAND

Earl C. Bradley, Jr., 2 Roundrock Circle, Richardson, Tex.

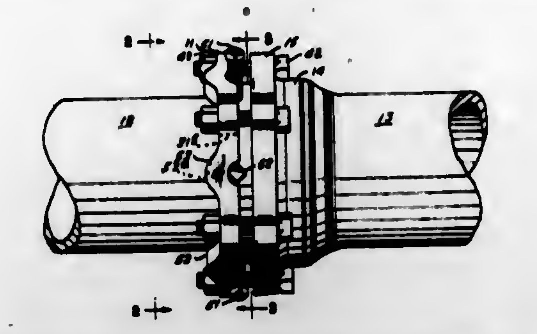
Filed Sept. 15, 1971, Ser. No. 180,812

Int. Cl. F16l *23/00*

U.S. Cl. 285—356 **7 Claims**

A mechanical joint including an integral bell on a first pipe provided with a flange having axial bolt holes, a plain end on a second pipe receivable in the bell, an annular gasket for sealing around the plain pipe end within the bell, and a retainer gland having bolt holes aligned with bolt holes in the bell flange for the securing of the gland with the bell flange to hold the gasket in sealed relationship between the gland, the plain pipe end, and the bell, the retainer gland being particularly characterized by circumferentially spaced set screws disposed radially through tapped holes partially in the gland lip and partially in the gland flange and extending through arcuate

recesses provided in the gland flange with arcuate protuberances or bosses on the back face of the flange aligned with the arcuate recesses. The gland is disposed on the bare pipe end and secured to the bell flange by tee-head bolts while the set screws through the gland are tightened against the plain pipe end for holding the joint together to maintain the pipe with the plain pipe end coupled into the pipe with the bell while the gland additionally holds the gasket in a sealed relationship around the plain pipe end within the bell confined by the gland lip.



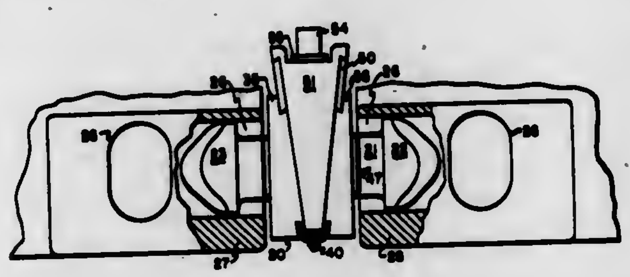
3,726,550
SLACK-FREE CONTAINER COUPLER

John Algot Johnson, 9 Sheridan Drive, Short Hills, N.J., and Fred Muller, Jr., 120 Ridgedale Avenue, Florham Park, N.J.

Filed Jan. 29, 1971, Ser. No. 110,965

Int. Cl. F16b *7/00*

U.S. Cl. 287—2 **5 Claims**



This invention pertains to an improved slack-free coupler for joining the corner fittings of freight containers to form a rigid connection, with the coupler carrying all the forces between the joined containers. The tension member of the coupler is of unitary construction, and the associated collars around it are wedged against the container fittings by means of a screw driven wedge-shaped yoke to maintain a tight fit between the containers despite the tolerance of spacing of adjacent container corner fittings.

3,726,551
TUBULAR RIGID ANGLED JOINT

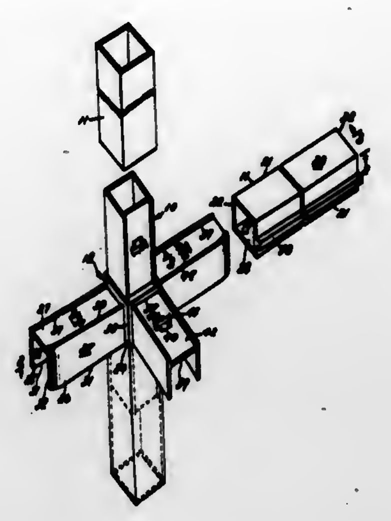
Nat Levenberg, 2 Windsor Place, Lynbrook, N.Y.

Filed June 30, 1971, Ser. No. 158,300

Int. Cl. F16b *7/00*

U.S. Cl. 287—54 A **4 Claims**

A tubular furniture construction characterized in providing modular units which can be assembled without the use of screws, bolts, detents or external mechanical deformation, as well as welding or brazing. Outer tubular members are generally rectangular in cross section and define a rectilinear cavity therein. Inner tubular members are correspondingly rectangular, including three or four walls, with one wall recessed with respect to two adjacent walls to provide an interstice, there being a resilient locking tab mounted on the recessed wall, which is provided with barbs capable of engaging an inner surface of an overlying wall of said outer tubular member to prevent relative movement in a direction which would disengage the inner and outer members. One form of outer tubular member includes a laterally extending flange which is offset with respect to the principal axis thereof, so as to selectively support shelves at one edge thereof of varying thickness. Additional rigidity of an assembled structure is enhanced by providing one or more corner units in which the inner tubular members are disposed at slightly less than a mutual right angle, said members flexing to exert a stress upon engaged outer tubular members in a direction perpendicular to the principal axis of said tubular members, this structure permitting unusually large commercial tolerance in sizes.



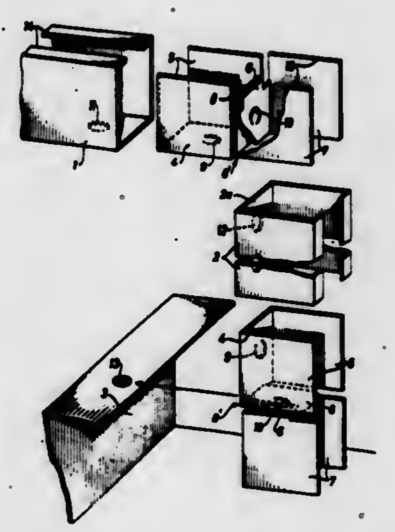
3,726,552
LOCKING ELEMENT FOR ANCHORAGE OF A U-SHAPED CEILING SECTION TO A U-SHAPED WALL SECTION PERPENDICULAR TO IT

Lennart Widerby, Jonkoping, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed May 14, 1971, Ser. No. 143,456

Int. Cl. F16b *5/06*

U.S. Cl. 287—189.36 D **5 Claims**

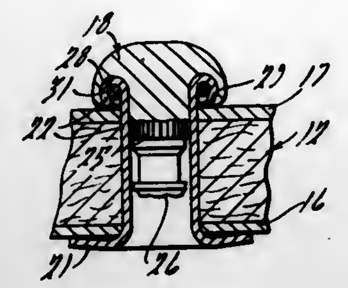


A locking element for anchorage of a U-shaped ceiling section to a U-shaped wall section perpendicular to it, both constituting clamping sections for joining together of said elements, said locking element consisting of a first U-section inserted in, and surrounded on all sides by the ceiling section, and of a second U-section inserted in, and surrounded on all sides by the wall section, and by an intermediate piece integral with the webs of the respective sections, the intermediate piece being bent so that the aforesaid sections after mounting are perpendicular to one another.

3,726,553
TWO-PART PULL TYPE POSITIVE LOCK FASTENERS

Perry J. Reynolds, Detroit, Mich., and John F. Orloff, Saint Clair Shore, both of Mich., assignors to Huck Manufacturing Company

Filed July 9, 1971, Ser. No. 161,205
Int. Cl. F16b *5/04*
U.S. Cl. 287—189.36 D **10 Claims**

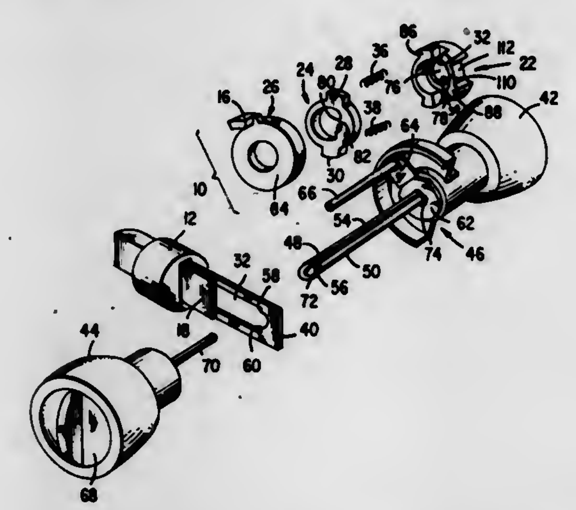


A two-piece fastener, including a headed pin and a sleeve with the sleeve being set by engagement with the head of the pin and with the pin and sleeve being mechanically locked by the formation of an interlock between the underside of the pinhead and the sleeve in the setting of the fastener.

3,726,554
DOOR LOCK INSERT

John Getz, Jr., 332 Robbins Avenue, Trenton, N.J.

Filed Oct. 12, 1971, Ser. No. 188,131
Int. Cl. E05c *1/16;* **E05b** *13/10*
U.S. Cl. 292—169.17 **15 Claims**



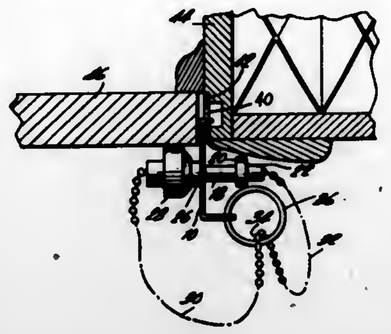
A door lock insert is herein provided for dead latching the bolt portion of a conventional entry door lock into engagement with a receiving recess presented by a door frame, in response to locking the lock. The insert may comprise a body presenting a dogging member extending generally perpendicular to and spaced radially from a locking shaft portion of the entry door lock which shaft generally extends between two door knobs journaled for rotation on the overall lock. The body may include an encasing member for housing a shaft-engaging assembly. The assembly, in turn, presents an arrangement for keying the overall insert to the locking shaft. In operation, upon locking the overall entry door lock arrangement, the dogging member is rotated into a position adjacent a rear position of the bolt so that the bolt is dead latched into the retaining recess presented by the door frame and may not be retracted by forcefully inserting a celluloid card or the like between the bolt and an associated strike-plate.

Furthermore, since the bolt is not depressable when the dogging member is in position, the door must be locked from the outside with a key. This would, then, insure that the operator have the key for reintry.

3,726,555
DOOR LOCK

Michael J. Lawson, Norwalk, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,130
Int. Cl. E05c *19/18*
U.S. Cl. 292—291 **5 Claims**

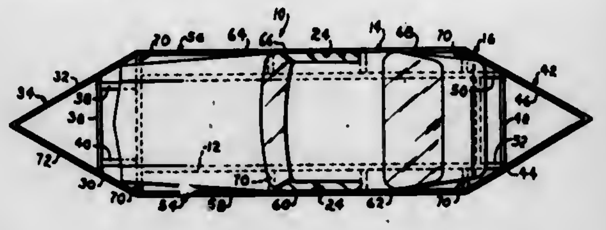


A safety lock for securing a door in a frame to prevent opening from the outside which is unlocked or locked by connecting or disconnecting two threadedly engageable members which are disposed on opposite sides of a plate with a hole therein.

3,726,556
SAFETY BUMPER FOR VEHICLES

William Holmes West, 4115 McGhee, Kansas City, Mo.

Filed April 7, 1971, Ser. No. 131,998
Int. Cl. B60r *19/04*
U.S. Cl. 293—62 **2 Claims**



A safety bumper for motor vehicles utilizes first and second barrier members disposed to present a cuneiform structure at both the front and rear of the vehicle. The structures are coupled with the frame of the vehicle and are strong enough to withstand considerable collision forces without damage to the vehicle. First and second side guards extend longitudinally of the vehicle on either side and cooperate with the cuneiform structures to present an uninterrupted barrier surface. At least one of the side guards is comprised of a plurality of guard sections, one of which is secured to the door of the vehicle to allow ingress and egress.

The protective bumper can be adapted for use on existing vehicles or the entire vehicle construction can be modified to accommodate the new bumper. In either case however, whenever the vehicle contacts an object having a velocity different from that of the vehicle, the forces of collision will be dissipated laterally of the vehicle and the object thereby minimizing absorption of the forces and the resultant collision damage. Relatively minor collisions are completely avoided by causing the two colliding objects to move laterally and continuing on their respective paths.

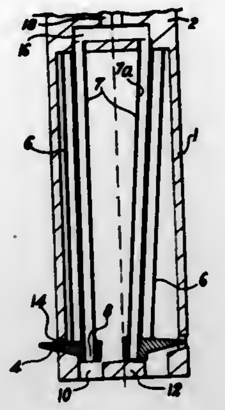
3,726,557
HANDLING GRAB

Edmond Ventre, Le Vesinet, France, assignor to Electricite De France (Servive National), Paris, France

Filed June 23, 1971, Ser. No. 155,699
Claims priority, application France, July 31, 1970, 7028420
Int. Cl. B66c *1/30*
U.S. Cl. 294—86 A **8 Claims**

The grab comprises a hollow cylindrical body which is connected to a suspension and control unit and in which grappling

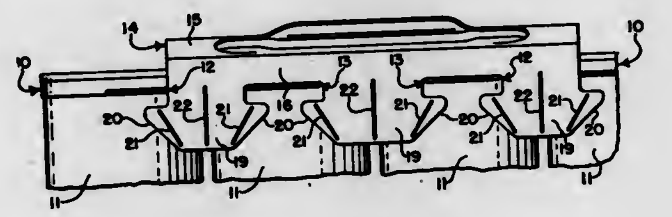
claws are displaced simultaneously between a position of engagement with a load to be handled and a position of disengagement therefrom. Each claw is supported by two parallel metallic rods which are fastened together along their entire length or only at one end. At least one rod which is of hollow construction, is connected at one end to the exterior and at the other end to a source of control fluid. Said fluid is brought to a temperature which is different from the ambient temperature, thereby causing differential expansion of the two rods and displacement of the claws.



3,726,558
MULTIPLE CONTAINER CARRIER

M. Julius Klygis, Evergreen Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed June 2, 1971, Ser. No. 149,312
Int. Cl. B65d *71/00*
U.S. Cl. 294—87.2 **6 Claims**



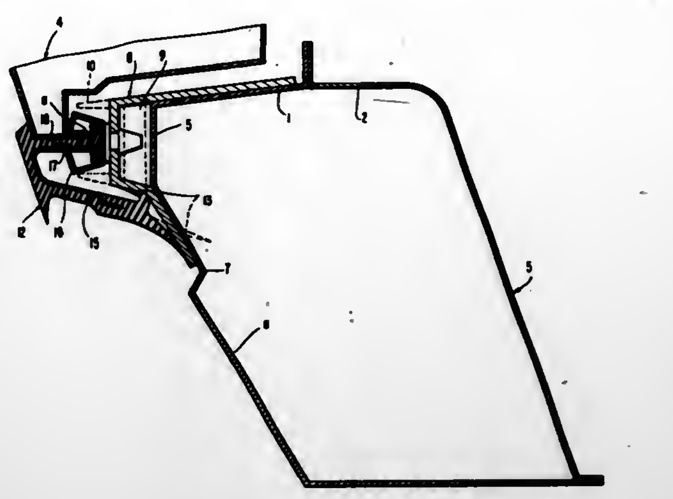
A carrier device for use with multiple container carriers for effectively interlocking and transporting of a plurality of multiple container carriers when the multiple container carriers are mounted on the containers.

3,726,559
MOTOR VEHICLE BODY

Karl Wilfert, Gerlingen-Waldstadt, and Bela Barenyi, Wurttemberg, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed March 8, 1971, Ser. No. 121,930
Claims priority, application Germany, March 7, 1970, P 20 10 913.1
Int. Cl. B60j *5/04*
U.S. Cl. 296—28 R **28 Claims**

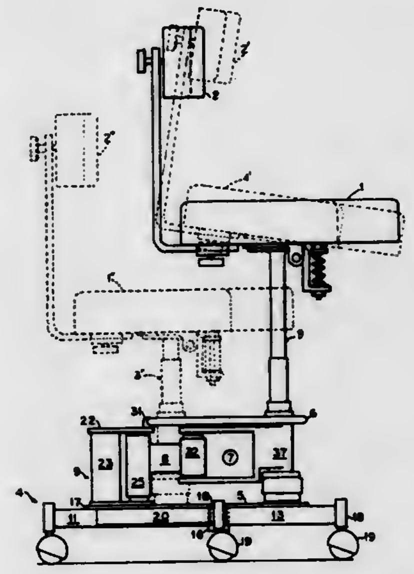
A motor vehicle body, in particular for passenger motor vehicles which are equipped with lateral doors and with longitudinal threshold bearers disposed below the doors; the upper area of the outer lateral surface of a longitudinal threshold bearer projects considerably beyond the lower area in the outward direction and is covered at least in part by the door.



3,726,560
STOOL

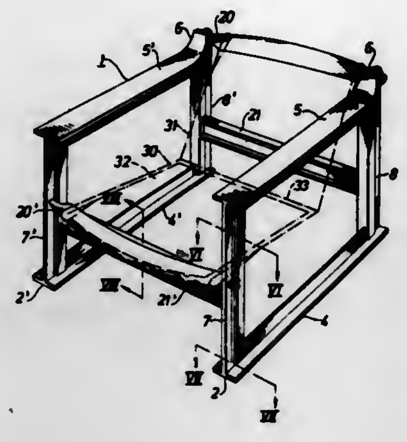
Richard W. Page, P.O. Box 258 B, Chatham, Mass.

Filed Aug. 23, 1971, Ser. No. 173,978
Int. Cl. A47c *1/02*
U.S. Cl. 297—349 **6 Claims**



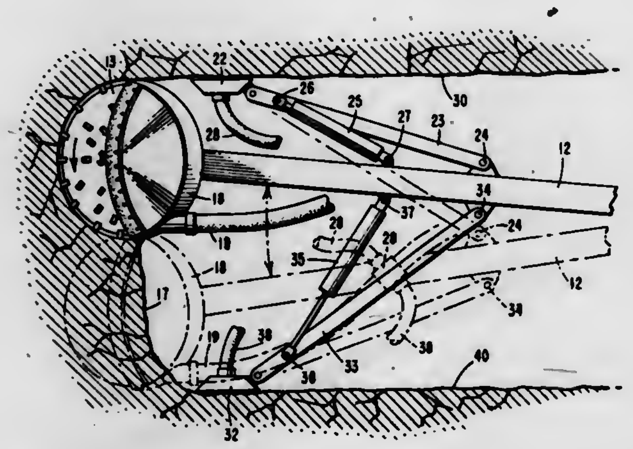
The dental stool has a base with casters permitting movement into desired operating position. The seat is supported by a hinged arm mounting for the seat column lower end, permitting free movement of the column axis in all directions in a horizontal plane. The column length is adjustable for placing the seat at desired height and the seat has a tilting adjustment with respect to the column, and may turn freely about the column axis. The forward edge of the seat is recessed for supporting the thighs to either side of the recess and rearwardly thereof. A horizontal ring cooperating with a rotatable wheel on the column limits the movement with respect to the base and a horizontal plate cooperates with an adjustable spring pressed pad at the bottom of the column to provide a slight frictional resistance to movement of the stool seat and column.

3,726,561
FURNITURE FRAME CONSTRUCTION
Imre Bolyos, Kevingeringen 25, Danderyd, Sweden
Filed July 27, 1971, Ser. No. 166,491
Claims priority, application Sweden, Aug. 21, 1970, 11432/70
Int. Cl. A47c *7/00*
U.S. Cl. 297—440 **7 Claims**



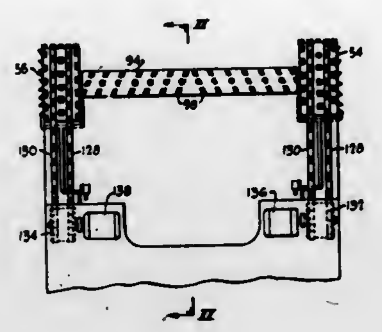
A furniture frame structure pairs of identical frame portions arranged, when assembled, to form opposing structural elements, one pair being so constructed that, during assembly, it may be moved into an opening in the second pair and being latched thereto.

3,726,562
MINING MACHINE INCLUDING MEANS FOR UTILIZING VACUUM AT WORKING FACE AND METHODS OF OPERATION THEREOF
George C. Wharton, III, Box 450, Wise, Va.
Filed April 7, 1971, Ser. No. 131,991
Int. Cl. E21c *41/00*
U.S. Cl. 299—12 **6 Claims**



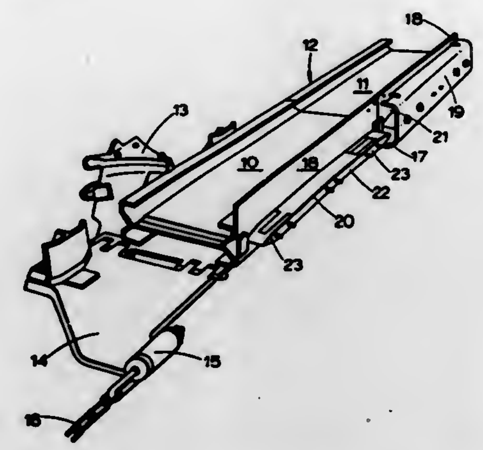
Apparatus for mining coal or other mineable material, of the continuous or mobile type, having a cutter head operative to engage and work the mine face, and having associated therewith one or more vacuum lines or air suction conduits which are critically oriented relative to the working face and the cutter head. A main vacuum line may be employed to pneumatically convey the freshly mined, lump size coal to ground level, or to a subsurface grinder, or other site remote from the mine face. One or more auxillary vacuum lines may be positioned to terminate adjacent the mine roof and floor, and in close proximity to the working face, to scavenge methane, carbon dioxide, carbon monoxide and coal dust.

3,726,563
METHOD AND APPARATUS FOR CONTINUOUS MINING
Alex J. Galis, Hetherbrae Square, Apt. 101, Indiana, Pa.
Filed April 7, 1971, Ser. No. 132,093
Int. Cl. E21c *41/04, 27/08*
U.S. Cl. 299—15 **14 Claims**



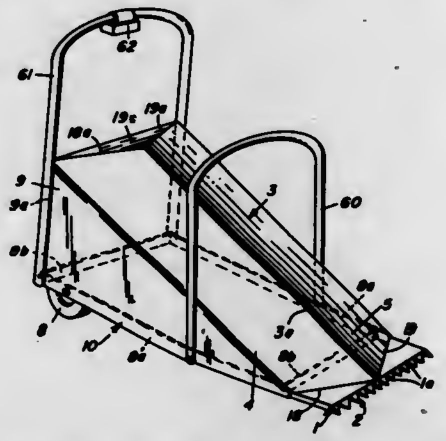
The mining machine has a pair of rotatable drum members positioned in spaced parallel relation to each other and supported from the mining machine body portion by a pair of forwardly extending support arms. The support arms are pivotally connected to the mining machine and are arranged to move the rotatable drums in a vertical plane. The rotatable drums have a plurality of cutter bits extending radially therefrom to dislodge a pair of parallel kerfs of coal from the face that are slightly wider than the rotatable drum members. The kerfs cut by the rotatable drums extend beyond the side walls of the mining machine. Endless cutter chains with cutting elements thereon are reeved about the drums and the support arms. The endless cutter chains are arranged to dislodge a vertical kerf of coal as the support arms pivot relative to the body portion. A transverse cutter bar is supported within the periphery of the rotatable drum members. The cutter bar has a diameter substantially smaller than the diameter of the rotatable drum members and has radial extending cutter bits thereon along the length thereof to cut a transverse kerf in the coal. Means are provided to rotate the cutter bar relative to the drums to thereby form the transverse kerf between the spaced drum members. Other means are provided to revolve the rotatable cutter bar around the axes of the rotatable drums, so that the cutter bar can be moved to positions tangent to the lower, upper and intermediate portions of the rotatable drum members. The method of continuous mining includes sumping the rotatable cutter drums and transverse cutter bar into the coal and forming a horizontal transverse bottom kerf with the cutter bar and simultaneously forming a pair of vertical side kerfs with the drum member. The horizontal transverse bottom kerf is tangent to the lower edge of the vertical side kerfs. The cutter bar revolves about the axes of the rotatable cutter drum members to a location tangent with the front edge portion of the rotatable cutter drums. The rotatable cutter drums with the transverse cutter bar are is pivoted vertically relative to the mining machine body portion to form a pair of vertical side kerfs. The cutter bar forms a transverse vertical kerf between the vertical side kerf formed by the rotatable drum members. The endless chains form vertical side kerfs as the rotatable drums are pivoted upwardly relative to the mining machine body portion to form continuous vertical side kerfs. The transverse cutter bar is revolved about the axes of the rotatable drum members to a location adjacent the upper portion of the rotatable drum members and the rotatable drum members with the transverse cutter bar intact thereto is sumped rearwardly, completing the vertical side kerfs and a transverse upper horizontal kerf. With this arrangement, a block of coal is dislodged from the face.

3,726,564
CHAIN GUIDING STRUCTURE FOR LONGWALL MINING
Alois Hauschopp, 4712 Werne/Lippe; Berthold Ostrop, 4714 Selm; Oswald Breuer, 46 Dortmund-Husen, and Bernd Steinkuhl, 4628 Lunen, all of Germany, assignors to Gewerkschaft Eisenhutte Westphalia, Westphalia, Germany
Filed June 23, 1971, Ser. No. 155,992
Claims priority, application Germany, Aug. 28, 1970, P 20 42 726.3
Int. Cl. E21c *27/34*
U.S. Cl. 299—34 **11 Claims**



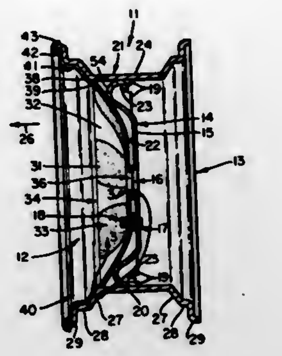
A mineral mining installation with a conveyor extending alongside a mineral face and a plough movable along the conveyor to win and load mineral into the conveyor. The plough is driven by a chain circulated in haulage and return runs arranged one above another at the side of the conveyor remote from the mineral face and these chain runs are disposed in guide channels defined between plates attached to the side of the conveyor and covers attached to the plates. The guide channels are separated by elongate slide members arranged end-to-end between the plates and the covers. The upper chain run slides in contact with the slide members over its entire length to inhibit whipping of the chain.

3,726,565
MATERIAL STRIPPING APPARATUS AND BLADE
Wesley J. Oliverius, 1332 Fisherman Road, Norfolk, Va.
Filed May 28, 1971, Ser. No. 147,766
Int. Cl. E04d *15/00*
U.S. Cl. 299—37 **11 Claims**



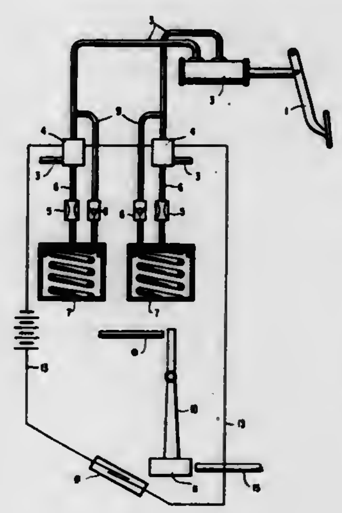
A material stripping machine including a movable carriage on which is located a motor for providing reciprocating motion to a blade member having a cutting edge for stripping material. Mounted on the carriage behind the blade member is a diverter means for diverting stripped material to either side of the carriage so that it does not block the forward movement of the machine. The cutting edge of the blade member comprises a series of beveled teeth, and the body of the blade member has projecting upwardly therefrom at least one subsidiary cutting member having a cutting edge facing the cutting edge of the blade member for cutting through materal stripped by the blade.

3,726,566
WHEEL STRUCTURE
Richard D. Beith, Alamo, Calif., assignor to E. T. Industries, Inc.
Filed Jan. 2, 1970, Ser. No. 166
Int. Cl. B60b *3/00, 7/00*
U.S. Cl. 301—37 R **4 Claims**



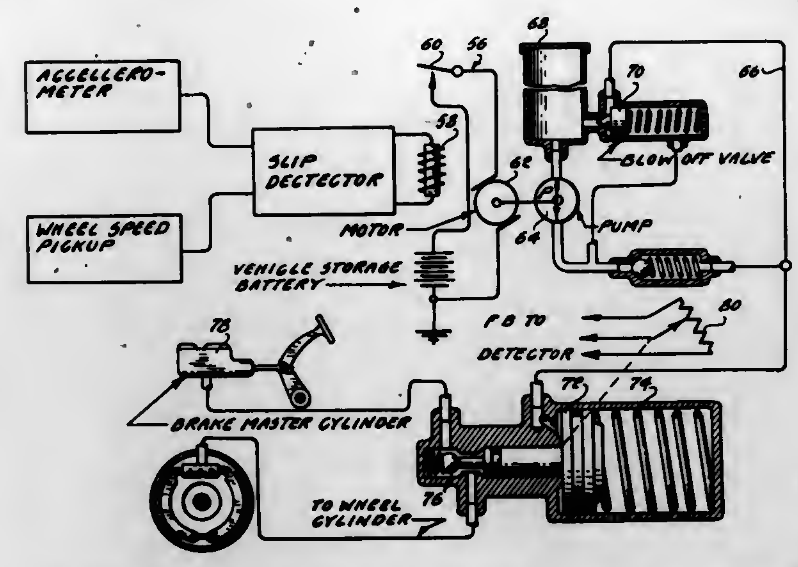
A wheel cover mounted to cover the front surface of a wheel has a concavely contoured front surface. The cover is provided with a central hub opening and circularly spaced lug bolt apertures. Lips are provided about the outer periphery, central hub opening and lug apertures of the wheel cover to grip respectively about the periphery of the tire mounting rim, edge of the hub opening and edges of the lug apertures of the wheel. Adhesive is sandwiched between the wheel and wheel cover which, together with the gripping lips of the wheel cover, permanently and rigidly fix the wheel cover to the wheel making a unitary wheel structure.

3,726,567
DEVICE FOR PREVENTING THE OVER-BRAKING OF VEHICLES WITH HYDRAULIC BRAKE INSTALLATIONS
Manfred H. Burckhardt, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Nov. 19, 1970, Ser. No. 90,998
Claims priority, application Germany, Nov. 21, 1969, P 19 58 628.8
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F **15 Claims**



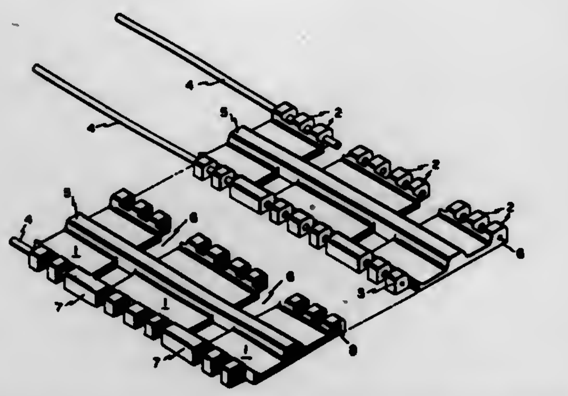
An installation for preventing excessive braking of vehicles equipped with a hydraulic brake installation, particularly of commercial types of vehicles with a higher center of gravity, in which the pressure in the brake lines is automatically reduced upon exceeding a predetermined deceleration of the vehicle.

3,726,568
ACTUATOR FOR AN ANTISKID BRAKE SYSTEM
Allen D. Krugler, Jr., Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 9, 1970, Ser. No. 1,663
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 F **2 Claims**



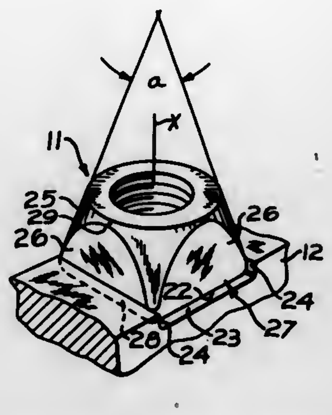
An actuator for controlling wheel brake pressure in fluid pressure operated wheel brakes for a wheeled vehicle whereby wheel skid is controlled, said actuator comprising a pump in the wheel brake fluid circuit, a motor for actuating the pump and a control system for actuating the motor in response to changes in a synthesized wheel slip signal.

3,726,569
PIN FASTENING FOR SEGMENTED SNOWMOBILE TRACKS
Ralph Maglio, Westhampton, and Arnold G. Peterson, Sunderland, both of Mass., assignors to J. P. Stevens & Co. Inc., New York, N.Y.
Filed Aug. 18, 1971, Ser. No. 172,748
Int. Cl. B62d *55/22*
U.S. Cl. 305—35 R **3 Claims**



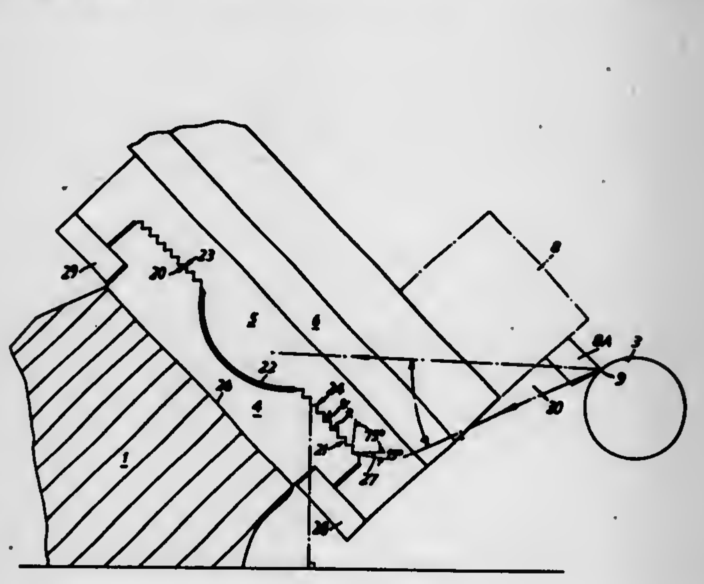
Segmented snowmobile tracks of elastomeric segments with mating hollow elements on both transverse edges of each segment held together with a pin, such as a steel pin, are provided with positive rigid pin locking means at one or both ends of the hollow segment, the locking means being in the form of rigid elements against which one or both ends of the pin abut. For snowmobile tracks these can be metal inserts which can be forced into the end of the hollow member. The insert may be on one end only, in which case the other end of the hollow hinge member is provided with a small hole which is much smaller than the cross-section of the pin but permits insertion of a suitable tool to drive the pin out. For larger vehicles, such as tracks on trucks and the like, there should be positive stops, such as through bolts on both ends. In the case of a snowmobile track there is sufficient resilience in the elastomer so that the pin can be driven out with a hammer and drift when repair of track segments is necessary.

3,726,570
TRACK ASSEMBLY WITH IRREVERSIBLE CONICALLY SHAPED TRACK SHOE NUT
Richard H. Wetherill, Morton, and Anton T. Gregg, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 17, 1970, Ser. No. 99,070
Int. Cl. B62d *55/28*
U.S. Cl. 305—54 **4 Claims**



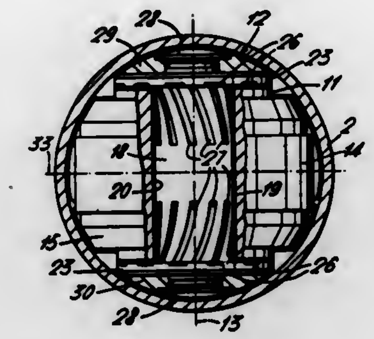
A generally conically-shaped nut for attaching a track shoe to a link of an integrated track assembly, employed on a track-type vehicle, comprises a square lower portion and a circular upper portion. The square lower portion seats in a mating recess formed in the link to prevent rotation of the nut when it is "torqued-down" by a threadably attached bolt. Incorrect, inverted assembly of the nut is deterred by visual inspection and by the nut's circular upper portion which tends to freely rotate in the recess of the link when such mis-assembly is attempted.

3,726,571
MACHINE TOOLS
Gordon A. Boyd, Dorking, and Franz Berger, West Wickham, both of England, assignors to Autologic Limited, Mitcham, Surrey, England
Filed Jan. 25, 1971, Ser. No. 109,292
Claims priority, application Great Britain, Jan. 28, 1970, 4,213/70
Int. Cl. F16c *11/01*
U.S. Cl. 308—3 **5 Claims**



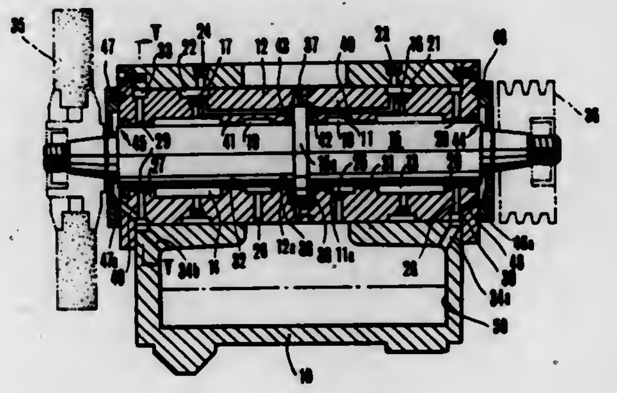
A machine tool has a slide carrying a tool holder arranged to slide on a slideway which is fixed to the bed of the machine tool. The slide and slideway are provided with interengaging grooves and projections which extend in the direction of sliding movement, the grooves and projections being in the form of serrations. The slide and slideway are inclined at an angle to the horizontal.

3,726,572
GAS-LUBRICATED BEARINGS
Geoffrey Beardmore, Cheltenham, England, assignor to Smiths Industries Limited, London, England
Filed May 12, 1970, Ser. No. 36,655
Claims priority, application Great Britain, May 14, 1969, 24,634/69; May 14, 1969, 24,635/69; May 14, 1969, 24,636/69
Int. Cl. G01e *19/00*
U.S. Cl. 308—9 **14 Claims**



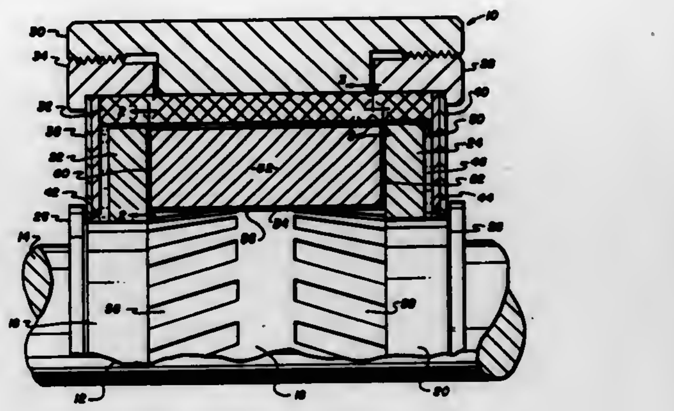
A gas-lubricated bearing comprises two relatively movable bearing members each of which has a bearing surface opposing the bearing surface of the other with clearance for gas support between them during movement of said bearing members relative to one another. One of the two bearing surfaces is fabricated wholly of boron carbide or wholly of silicon carbide, and the other of said bearing surfaces comprises a carbide such as boron carbide, silicon carbide, or tungsten carbide. One of the bearing members may take the form of a shaft, with the other bearing member comprising a rotor part embracing the shaft for rotation about the shaft axis.

3,726,573
HIGH RIGIDITY FLUID BEARINGS
Kunihiko Unno, Kariya, Japan; assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed April 7, 1971, Ser. No. 132,130
Claims priority, application Japan, April 21, 1970, 45/34077
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **5 Claims**



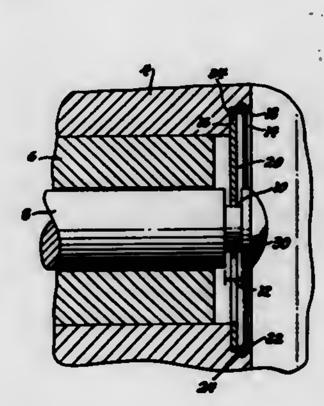
In a high rigidity fluid bearing of the type wherein a rotating shaft is supported by fluid under pressure contained in fluid pockets formed in the bearing surface in spaced apart relationship in the circumferential direction and surrounded by raised lands, the axial width of the lands is made narrower on the load side than on the no load side so as to cause more pressurized fluid to flow out from the pockets over the load side lands than over the no load side lands.

3,726,574
FERROHYDRODYNAMIC LOW-FRICTION BEARING WITH VOLUME COMPENSATION
Robert H. Tuffias, Costa Mesa, and Harry D. Larsen, Northridge, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Aug. 13, 1971, Ser. No. 171,692
Int. Cl. F16c *33/74, 32/00*
U.S. Cl. 308—36.3 **19 Claims**



A self-contained, full film hydrodynamic bearing is provided utilizing (1) the hydrodynamic properties of a ferrofluid (colloidal suspension of magnetic particles) to produce support pressures in the bearing by an applied viscous pumping action, and (2) the magnetic properties of the ferrofluid to retain the fluid within the bearing where the bearing retains the ferrofluid over a wide temperature range and concomitantly compensates for ferrofluid expansion and contraction.

3,726,575
APPARATUS FOR CONTROLLING SHAFT END PLAY
Earl J. Moorman, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 19, 1971, Ser. No. 163,778
Int. Cl. F16c *17/04*
U.S. Cl. 308—135 **1 Claim**



An apparatus for controlling shaft end play including a bearing mounted within a housing and a shaft rotatably supported by the bearing wherein an end portion of the shaft extends beyond the bearing within the housing. A circumferential groove in the shaft end portion receives radially inwardly extending teeth of a flat washer secured to the housing. The washer is retained adjacent its outer periphery by means of a spring ring engaging the housing. End play of the shaft is limited in either axial direction by engagement of the circumferential groove with the inwardly extending teeth of the secured washer. The washer can be designed to have any desired resistive force thereby providing a predetermined amount of axial shaft end play.

3,726,576
ROLLING BEARING

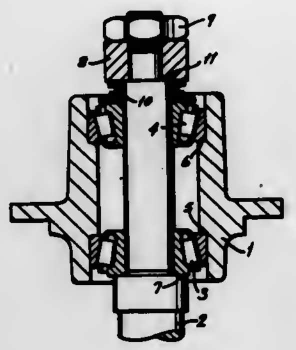
Thomas George Barnbrook, and Frederick James Wren, both of Northampton, England, assignors to The Timken Company, Canton, Ohio

Division of Ser. No. 48,286, June 22, 1970, Pat. No. 3,672,019. This application March 9, 1972, Ser. No. 233,370

Claims priority, application Great Britain, June 30, 1969, 33,018/69

Int. Cl. F16c ***33/00***

U.S. Cl. 308—207 **11 Claims**



A bearing capable of carrying thrust loads is adjusted by positioning a spacer washer against one of the bearing races and applying an axial load to that washer. The load is resisted by the bearing and is sufficient in magnitude to deform the washer first elastically and then plastically. The plastic deformation is such that upon removal of the axial load and recovery of the elastic deformation, the spacer will provide the desired end play or preload adjustment for the bearing.

3,726,577
ROLLER BEARING, ESPECIALLY FOR THE BEARING OF THE STAR PIN OF A UNIVERSAL JOINT

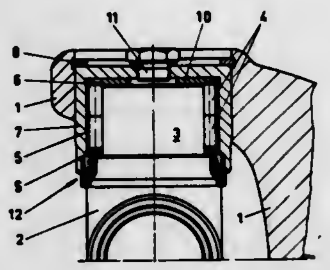
Gerd Faulbecker, Essen-Steele, Germany, assignor to Gelenkwellenbau GmbH, Essen, Germany

Filed Feb. 18, 1971, Ser. No. 116,468

Claims priority, application Germany, Feb. 19, 1970, G 70 06 011.6

Int. Cl. F16c ***33/34***

U.S. Cl. 308—212 **2 Claims**



Roller bearing for a bearing system of journal pins in universal joints having a pot-shaped solid bushing as an outer support for the rollers of the bearing includes a sheet-metal sleeve press-fitted in the solid bushing, the sleeve forming at the inner surface thereof an outer race for the rollers, the sleeve having ends formed as guiding rims for the rollers.

3,726,578
CONVERTIBLE SIDE-BY-SIDE REFRIGERATOR

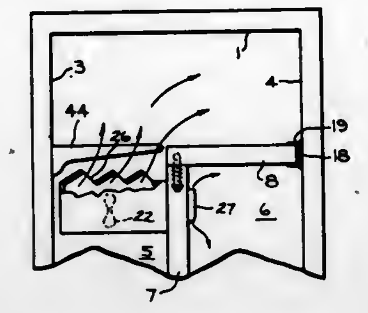
William J. Armstrong, Jeffersontown, Ky., assignor to General Electric Company

Filed Nov. 12, 1971, Ser. No. 198,171

Int. Cl. F25d ***11/02***

U.S. Cl. 312—214 **7 Claims**

A household refrigerator cabinet including a partition dividing the interior of the cabinet into generally side-by-side freezer and fresh food compartments, the upper end section of the partition being movable between vertical and horizontal positions to vary the relative widths of either of the two compartments.



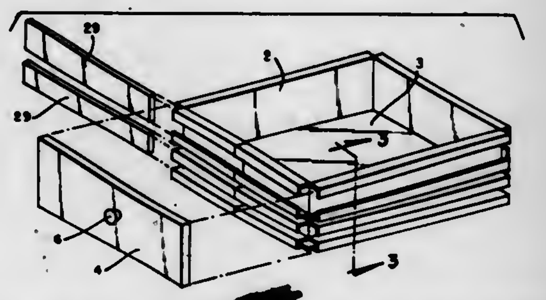
3,726,579
MULTI-SIZE DRAWER CONSTRUCTION

Myron E. Ullman, Jr., Canfield, Ohio, assignor to Kessler Products, Co., Inc., Youngstown, Ohio

Filed June 17, 1969, Ser. No. 833,957

Int. Cl. A47b ***88/00***

U.S. Cl. 312—330 **6 Claims**



For use in a drawer, an extruded semi-flexible plastic strip of the same width as the desired drawer height is provided with a smooth side and ridged side having a number of longitudinal flanges which are adapted to be cut transversely with a hand saw, down to the surface of the strip, so that the strip can be bent at the saw cuts to form the vertical sides of a drawer as a single piece of any desired size; the bottom one of said flanges is formed to embrace the edges of a bottom piece for the drawer, the other flanges are adapted to cooperate with a variety of different drawer slides and terminate in a plane so that a front piece can be attached if desired.

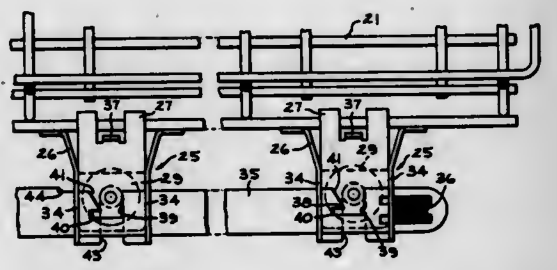
3,726,580
RACK LEVEL ADJUSTMENT APPARATUS IN AN APPLIANCE CABINET

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed June 1, 1971, Ser. No. 148,840

Int. Cl. A47b ***96/00***

U.S. Cl. 312—351 **8 Claims**



The support means for a rack, such as a dish-supporting rack in a front opening dishwasher cabinet, includes means for manually adjusting the level of the rack in accordance with the size of items to be placed on the rack or a rack vertically adjacent thereto. Each side of the rack is preferably adjusted between upper and lower positions, and adjustment of the side from an upper position to a lower one is a particularly rapid operation accomplished by manually releasing a locking means whereby the rack side will move downwardly to its lowermost position.

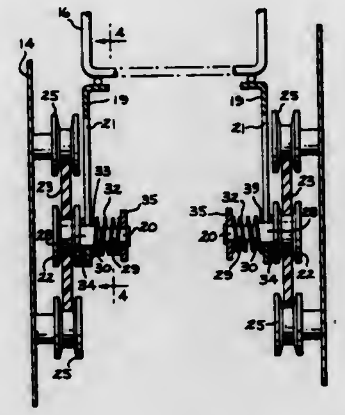
3,726,581
RACK LEVEL ADJUSTMENT APPARATUS IN AN APPLIANCE CABINET

Donald G. H. Doepke, Greenfield, Wis., assignor to General Electric Company, Louisville, Ky.

Filed June 1, 1971, Ser. No. 148,846

Int. Cl. A47b ***88/04***

U.S. Cl. 312—351 **8 Claims**



A support means for a rack, such as a dish-supporting rack in a front-opening dishwasher cabinet, includes means for manually adjusting the level of the rack in accordance with the size of the items to be placed on the adjustable rack or on a rack vertically adjacent thereto. Each side of the adjustable rack is preferably adjustable between upper and lower positions, and adjustment of the side from an upper position to a lower one is a particularly rapid operation accomplished by manually releasing a locking means whereby the rack side will move downwardly to its lowermost position.

3,726,582
ELECTRIC DISCHARGE LAMP COMPRISING CONTAINER OF DENSELY SINTERED ALUMINUM OXIDE

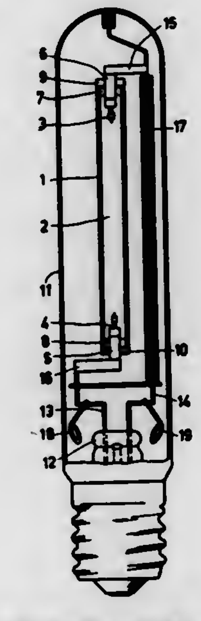
Taeke Tol, and Bertus De Vrijer, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 711,763, March 8, 1968, Pat. No. 3,609,437. This application July 20, 1970, Ser. No. 63,964

Claims priority, application Netherlands, March 31, 1967, 6704681

Int. Cl. H01j ***9/00***

U.S. Cl. 316—17 **4 Claims**



Method of making an electric gas discharge lamp having an envelope of densely sintered aluminum oxide and employing an alkali metal vapor as the discharge medium. A current lead-in member for an electrode envelope by means of a sealing element of densely sintered aluminum oxide which is sintered to the inner wall of the envelope and is provided with an aperture into which a cylindrical current lead-in supporting at one end an electrode assembly is secured in a gastight manner. The current lead-in member is provided with a cover for the envelope which is sealed to the latter by a sealing glass having a melting point higher than 800°C. and lower than the melting point of the aluminum oxide or the current lead-in member.

3,726,583
REFLECTION-TYPE PROJECTION SCREEN

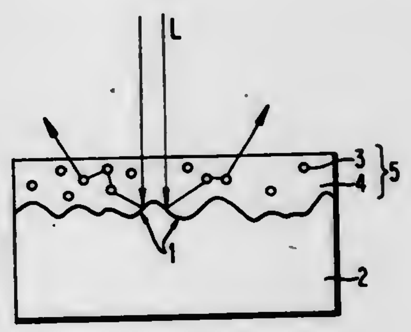
Hiroshi Fujisaki; Shizuo Miyano, and Asaji Kondo, all of Asaka-shi, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Oct. 29, 1970, Ser. No. 85,068

Claims priority, application Japan, Oct. 29, 1969, 44/86581

Int. Cl. G03b ***21/60***

U.S. Cl. 350—126 **12 Claims**



A reflection type projection screen comprising an aluminum support, the surface of which has rolling stripes thereon. The surface of the support further having a light-reflecting property such that light impinging upon the surface of the support will be reflected in a direction such that the amount of light reflected in a direction perpendicular to the rolling stripes is 1.5 to 3.0 times that reflected in a direction parallel to the rolling stripes. The support further having coated thereon a light scattering layer comprising silica powder dispersed in a hydrophobic polymer, and method for preparing same.

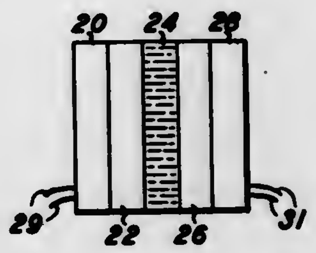
3,726,584
LIGHT MODULATION SYSTEM

James E. Adams, Ontario, and Werner E. L. Haas, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 28, 1971, Ser. No. 147,915

Int. Cl. G02f ***1/26***

U.S. Cl. 350—150 **18 Claims**



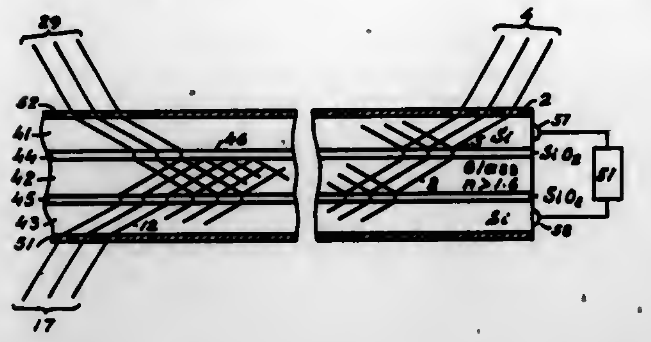
A system for modulating light is disclosed comprising directing a beam of linearly polarized monochromatic light on an optically negative liquid crystal film and subsequently varying the pitch of the liquid crystal film in response to some stimulus to which the pitch of the film is sensitive. Specific applications in which the system can be utilized are also described.

3,726,585

ELECTRICALLY MODULATED RADIATION FILTERS

Andre Fedotowsky, 12 rue Francoeur, Cap Rouge, Quebec, Canada, and Kurt Lehovec, 11 Woodlawn Drive, Williamstown, Mass.

Filed Feb. 22, 1971, Ser. No. 117,489
Int. Cl. G02f *1/38*
U.S. Cl. 350—160 R **11 Claims**



The intensity of a monochromatic light beam is modulated by passing it through a multilayer arrangement near the critical angle of incidence thereby causing multiple reflections in one of these layers acting as an optical resonator and by varying the refractive index of at least one of said multilayers by an electrical or electromagnetic field.

3,726,586

WEDGE SHAPED OPTICAL BODY

Edwin J. Smialkowski, Philadelphia, and Edgar R. Lang, Glenside, both of Pa., assignors to Rohm and Haas, Philadelphia, Pa.

Filed Dec. 18, 1970, Ser. No. 99,562
Int. Cl. G02b *5/04*
U.S. Cl. 350—286 **4 Claims**

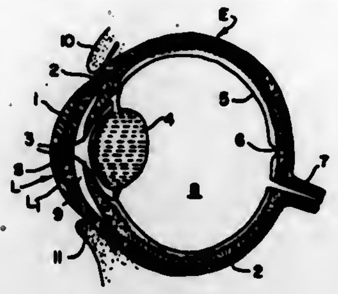
A wedge-shaped optical body that may be used as a component of a rear vision system for an automobile comprises a pair of rigid glass faces set at an angle of convergence to one another such that the angle is parallel to the longitudinal axes of the faces to form a prism or truncated prism and held by a flexible liquid tight spacer fitted to the perimeters of the glass faces and the formed prism or truncated prism filled with a cured poly(alkyl methacrylate). The poly(alkyl methacrylate) is prepared from a polymerizable syrup comprising (a) 10 to 70 parts by weight of a copolymer of at least two alkyl methacrylates wherein the alkyl group is saturated and contains one to 18 carbon atoms; (b) 90 to 30 parts by weight of a mixture of at least two polymerizable alkyl methacrylate monomers wherein the alkyl group is saturated and contains one to 18 carbon atoms; modified with (c) 0.1 to 2 parts by weight of at least one polyfunctional monomer capable of crosslinking the alkyl methacrylate monomers; (d) 0.5 to 15 parts by weight of a glass adhesion promoter, and (e) 5 to 20 parts by weight of a plasticizer; the syrup characterized in that the refractive index of (b), (c), (d), and (e) after polymerization is substantially the same as that of (a). The modified poly(alkyl methacrylate) composition exhibits excellent adhesion to glass and is optically transparent.

3,726,587

BIFOCAL CORNEAL CONTACT LENS AND METHOD OF MAKING SAME

Claud A. Kendall, 95 Fairmont Avenue, Fairmont, W. Va.
Continuation-in-part of Ser. No. 844,801, July 25, 1969, abandoned, which is a continuation-in-part of Ser. No. 781,865, Dec. 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 714,943, March 21, 1968, abandoned. This application March 9, 1971, Ser. No. 122,419
Int. Cl. G02c *7/04*
U.S. Cl. 351—161 **4 Claims**

A bifocal corneal contact lens and method of making same wherein a carrying lens or lens body has a corrective optical prescription for viewing distant objects and has a near viewing portion or bifocal segment fused in an indentation of one surface thereof, said near viewing portion having a corrective optical prescription for viewing near objects, the lens body having a predetermined power to correct for distant vision and the segment having a power equal to the exact refractive add of the eye to correct for near vision and having a size in relation to the size of the pupil of the eye so that the optimum focal points of the lens body and segment are spaced apart a distance less than the radius of the eye and actually overlap and blend together to give a clear and continuous image when the gaze is shifted between near and distant objects without any optical jump or fuzziness of vision occurring.

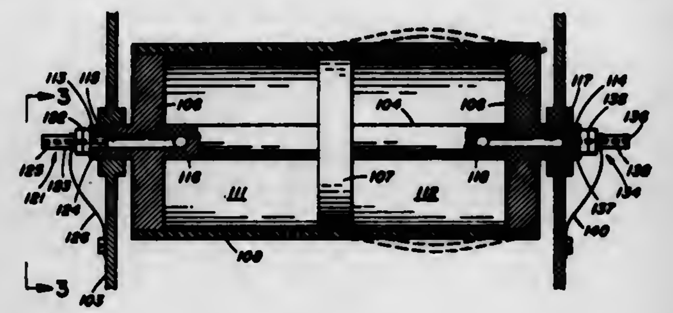


3,726,588

WEB TRACKING SYSTEM

Rabin Moser, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 213,951
Int. Cl. G03g *15/00*; F16h *7/18*; B21b *31/32*
U.S. Cl. 355—3 **10 Claims**



A steering roll for a web or belt having two axial chambers and an elastomeric surface on which the web or belt is supported. Fluid pressure is selectively applied through a fluid circuit including fluid amplifiers to the two chambers in response to movement of the web from a predetermined path to cause relative movement between the axial ends of the elastomeric material, thereby tilting the surface of the roll to correct the web alignment. The steering roll can be used to support a recording belt in an electrostatographic apparatus.

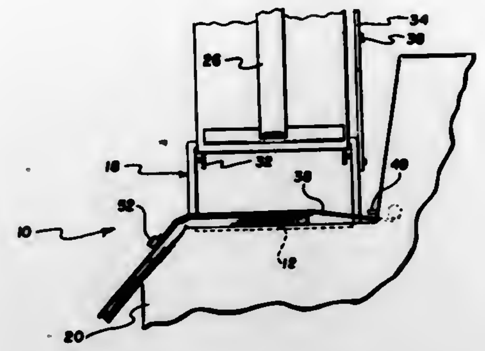
3,726,589

CONVERTIBLE DOCUMENT FEEDER AND FLEXIBLE LIGHT SHIELD

Anthony P. Difulvio; William C. Wilson, both of Rochester, and Hans O. Stoever, Rush, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 5, 1971, Ser. No. 195,989
Int. Cl. G03b *27/34*
U.S. Cl. 355—64 **4 Claims**

A document feeder which is used to transport a plurality of documents in a programmed sequence to the exposure platen of a copying machine is pivoted from a use position overlying the exposure platen to a storage or non-use position in which the exposure platen is accessible to expose books or individual documents. A retractable auxiliary light shield is stored wrapped on a spring loaded storage spool mounted within the housing of the copying machine when the document feeder is in its operative position overlying the exposure platen. When the document feeder is moved to its non-use position, the light shield is pulled out against the bias of the spring to the desired length and it is automatically locked out by a ratchet and pawl device. A magnetic hem is provided in the free end of the light shield which is attracted to and held against the frame and housing of the copying machine during single document exposure. To rewind the light shield onto the storage spool, the pawl is disengaged from the ratchet and the spool then rotates under the force of the spring to rewind the light shield about the core of the spool.

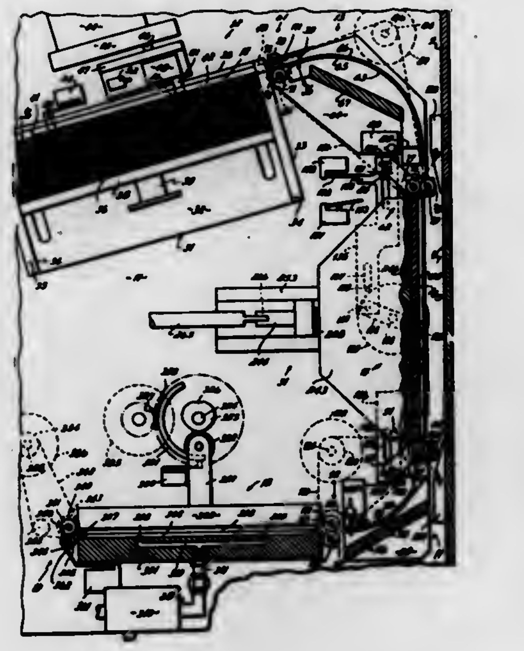


3,726,590

FICHE-TO-FICHE COPIER

Jerome L. Kistner, Cincinnati, and Robert E. Gettle, Hamilton, both of Ohio, assignors to Mosler Safe Company, Hamilton, Ohio

Filed Aug. 6, 1971, Ser. No. 169,650
Int. Cl. G03b *27/30*
U.S. Cl. 355—100 **23 Claims**



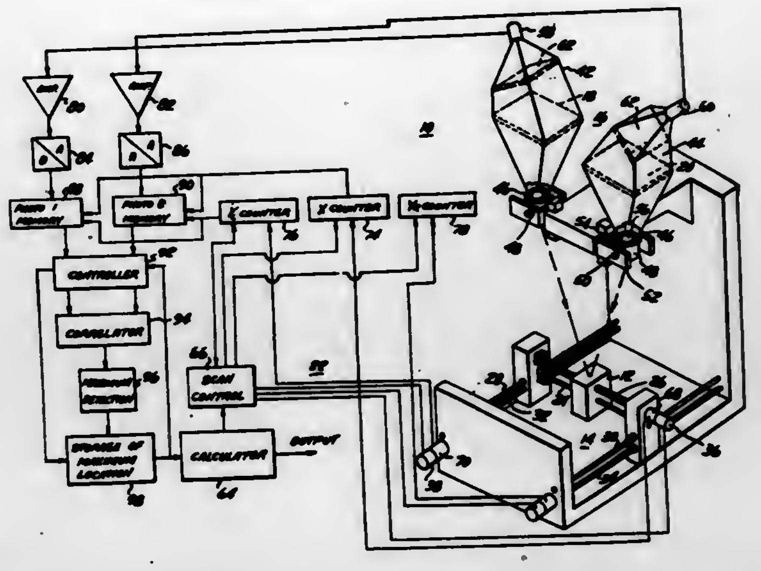
A compact apparatus for making card-like photographic copies in which the copy cards proceed in a U-shaped path with one dimension of the card extending vertically throughout its travel from a stack feeder at one arm of the U, to an exposure station at the base of the U, and to a developing station at the other arm of the U. Retractable drive rollers are provided at the exposure station which, in drive position, provide continuous feed control of the card, and in retracted position, allow for complete exposure from edge to edge of fiche type copy cards.

3,726,591

STEREOPLOTTING APPARATUS FOR CORRELATING IMAGE POINTS DISPOSED ALONG EPIPOLAR LINES

Uuno V. Helava; Walter E. Chapelle, and John A. Hornbuckle, all of Southfield, Mich., assignors to The Bendix Corporation

Filed Dec. 8, 1971, Ser. No. 206,075
Int. Cl. G01c *11/12*
U.S. Cl. 356—2 **17 Claims**



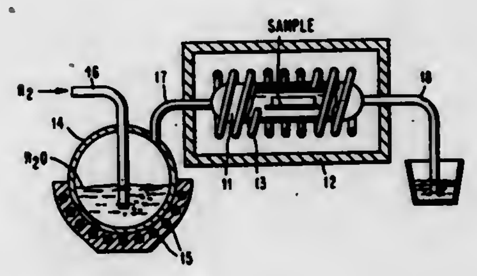
A stereomapper that includes apparatus for scanning a high intensity spot or point of light across two stereo images. The images modulate received light. Conjugate points are identified by apparatus that measures the correlation between the intensities of modulated light representing points along the two stereo images. Conjugate points are rapidly and conveniently identified by limiting the search for conjugate points to points along corresponding epipolar lines. The coordinates of points identified to be conjugate points are used to calculate the position of the actual point of the scene represented by the conjugate points.

3,726,592

METHOD AND APPARATUS FOR DETECTING MOISTURE

Edwin A. Corl, Wappingers Falls, and Khalil S. Daghir, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,335
Int. Cl. G01n *21/10, 21/34*
U.S. Cl. 356—36 **11 Claims**

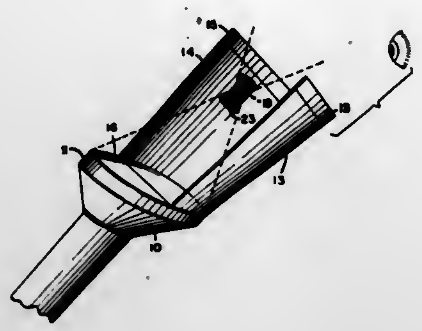


A method of measuring the breakdown of the P=O bond in a phosphosilicate glass layer and thereby measuring the water transmissibility of a sputtered quartz layer superimposed on the glass layer. The intensity of the P=O absorption band at 1,325 cm^{-1} is measured by an infrared spectrophotometer. The sample is then wet baked in a humid environment at an elevated temperature. The intensity of the P=O absorption band at 1,325 cm^{-1} is again measured and compared with the first measurement.

3,726,593

AIR POLLUTION LIGHT FOR NAKED EYE DETECTION OF INDIVIDUAL SUB-MICRON SIZED PARTICLES

Kenneth G. Salem, 226 Belmont Street, Johnstown, Pa.
Filed April 22, 1970, Ser. No. 30,849
Int. Cl. G01n *21/00*
U.S. Cl. 356—103 **3 Claims**

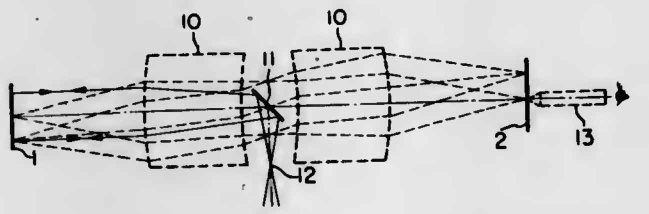


An apparatus is provided for directly observing with the unaided eye, particles one micron and smaller in diameter, in which a source of light is adapted with a converging lens which collects the light and causes the incident beam to come to a point focus, and when appropriately viewed from a common angle to the light source, light source itself being obscured from sight, light in the area of convergence becomes discernible and scattering of such light by individual particles is then observable when such size particles are present.

3,726,594

IMAGE POSITIONING OPTICAL ARRANGEMENT IN PROJECTION PRINTING SYSTEM

Zenji Wakimoto, Ohta-ku, Tokyo, and Yasushi Matsui, Kawasaki-shi, Kanagawa-ken, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Dec. 9, 1971, Ser. No. 206,300
Int. Cl. G01c *1/00*; G01b *11/26*
U.S. Cl. 356—138 **1 Claim**

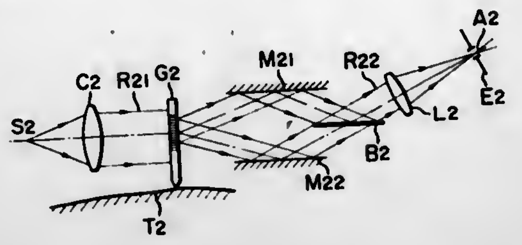


In the projection printing system of the type in which the image of an original plate formed with a pattern is projected for printing on a photosensitive plate through a projection lens system, an image positioning optical arrangement comprises a projection lens providing an optical image forming system, and a semitransparent mirror obliquely disposed at an afocal position in the optical image forming system so that illuminating light incident on the photosensitive plate is emergent therefrom perpendicularly or substantially perpendicularly thereto. A light source or an image of light source is disposed at or near a position corresponding to the focal point of an optical system interposed between the photosensitive plate and the semitransparent mirror so that the image on the photosensitive plate may be focused on the original plate. A position adjusting microscope is disposed behind the original plate for viewing a formed image therethrough.

3,726,595

METHOD FOR OPTICAL DETECTION AND/OR MEASUREMENT OF MOVEMENT OF A DIFFRACTION GRATING

Kazuya Matsumoto, Kohhoku-ku, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 5, 1971, Ser. No. 104,006
Claims priority, application Japan, Jan. 7, 1970, 45/2455; Jan. 30, 1970, 45/8727; March 2, 1970, 45/18081
Int. Cl. G01b *9/02*
U.S. Cl. 356—111 **18 Claims**

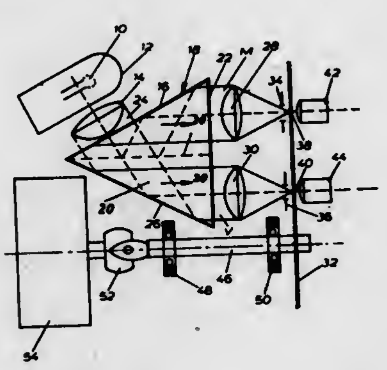


A method for optical detection and/or measurement of movement of a diffraction grating which is characterized in that the vertical movement of the diffraction grating in respect to a standard parallel beam is detected based on variation in interference fringes produced by diffracted waves from the grating moving in the standard parallel beams.

3,726,596

OPTICAL DEVICE FOR FORMING MEASURING AND REFERENCE BEAMS OF LIGHT

Adolf Triller, and Wolfgang Siersch, both of Munich, Germany, assignors to Erwin Sick, Waldkirch, An der Allee, Germany
Filed Aug. 5, 1971, Ser. No. 176,380
Claims priority, application Germany, Aug. 11, 1970, P 20 39 827.0
Int. Cl. G01j *1/00, 1/10*
U.S. Cl. 356—213 **6 Claims**



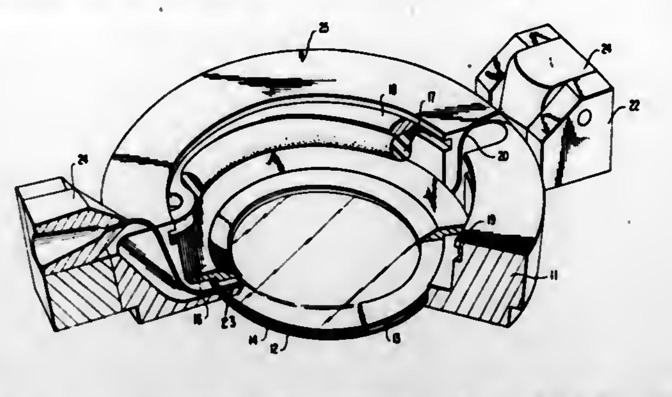
A beam from a light source is collimated and directed at right angles into the input face of a Koster's prism. From the output face of the prism emerge a measuring and reference beams which are parallel to each other. Lenses across the latter beams focussing the respective beams in the plane of a chopper disc. Diaphragms are positioned between the lenses and the disc.

3,726,597

CONTROLLED ENVIRONMENT CULTURE SYSTEM FOR LIGHT MICROSCOPY

James A. Dvorak, and Woodrow F. Stotler, both of Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare
Filed March 9, 1972, Ser. No. 233,194
Int. Cl. G01n *21/16*
U.S. Cl. 356—244 **8 Claims**

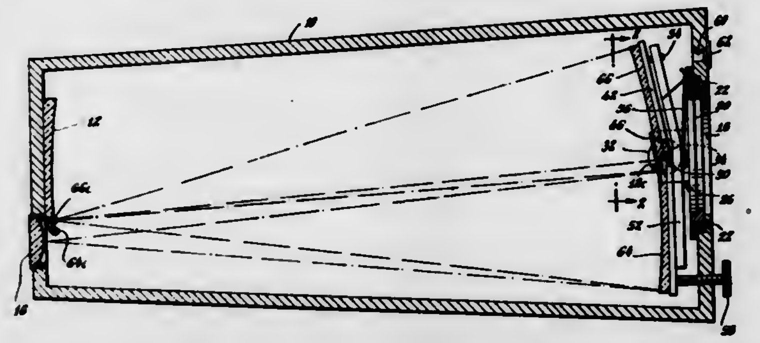
A cell culture chamber for use in optical microscopic techniques and equipment is provided with an apertured holder carrying two coverglasses mounted strain free and separated by a stainless steel spacer with tubes permanently attached therethrough. A pressure plate holds the coverglasses in place by being compressed by a sealing ring and a removable snap ring.



3,726,598

MULTIPLE PASS OPTICAL ABSORPTION CELL

Anthony C. Gilby, Darien; James Alan Horton, Trumbull, both of Conn., assignor to Wilks Scientific Corporation, South Norwalk, Conn.
Filed Feb. 14, 1972, Ser. No. 225,858
Int. Cl. G01n *21/16, 21/36*
U.S. Cl. 356—244 **10 Claims**



A multiple pass optical absorption cell of the type having a pair of objective mirrors and a field mirror, all having substantially the same radius of curvature and with the entrance and exit windows positioned to one side of the field mirror. In this invention, the two objective mirrors are positioned on a common mount with a fixed predetermined distance separating their centers of curvature. Path length is changed by rotation of the common mount, whereby the distance between the centers of curvature remains fixed.

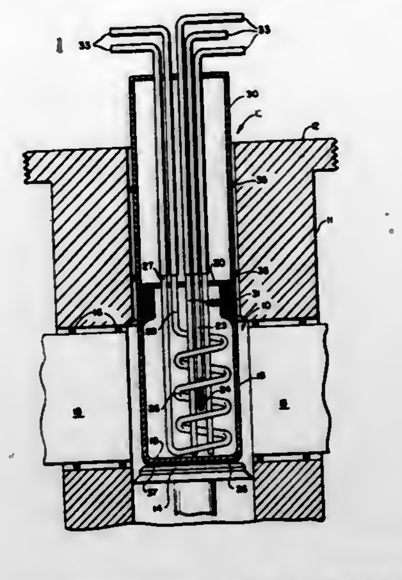
The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

3,726,599

SAMPLE CELL FOR LIQUID SCINTILLATION COUNTERS

Michael P. Neary, Newport Beach, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Nov. 27, 1970, Ser. No. 93,254
Int. Cl. G01n *1/10*
U.S. Cl. 356—246 **10 Claims**

A sample cell is disclosed for adapting liquid scintillation counters to chemiluminescence measurements. A glass reaction vessel is secured within a support tube of substantially the same size and shape as the elevator passageway of a liquid scintillation counter. An O-ring seals the passageway against ambient light when the reaction vessel is in the counting position. A plurality of glass tubes are sealed within the vessel and are brought through the top of the support tube by black polyethylene tubing, the black polyethylene preventing light piping from the exterior to within the reaction vessel. Two of the glass tubes are open and terminate near the bottom of the vessel to fill and empty the vessel. A third is sealed at its lower end and receives a thermistor to measure sample temperature.

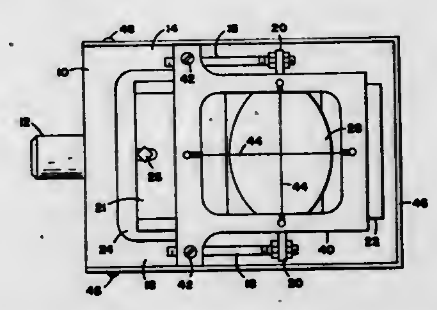


Two other tubes are interconnected by a tubular helix for circulation of a thermostating fluid. The vessel may be sandblasted and the bottom silvered or aluminized to improve optical transmission characteristics. The bottom is covered with felt to absorb mechanical shock.

3,726,600

OFF-AXIS ALIGNMENT DEVICE

Philip W. Carmack, and David J. Sweigart, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army
Filed Oct. 6, 1971, Ser. No. 186,889
Int. Cl. G01b *11/26*
U.S. Cl. 356—253 **5 Claims**



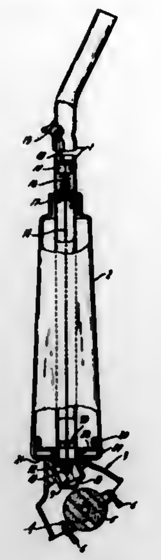
A device for making a surface parallel with and centered on a fixed reference surface without the necessity of placing an alignment scope on the axis between the two surfaces. A beam splitter is supported by parallel bars from the base of the device. These bars position the beam splitter at a preset angular setting with respect to an alignment mirror of the device. In case the beam splitter is inadvertently moved the support bars will control the repositioning of the beam splitter through a torsion and/or cantilever movement.

3,726,601

RUG SHAMPOOER WITH IMPROVED FOOT-TO-TANK CONNECTION

Robert A. Yonkers, Grandville, Mich., assignor to Bissell Inc., Grand Rapids, Mich.
Filed June 9, 1971, Ser. No. 151,263
Int. Cl. A47l *11/08*
U.S. Cl. 401—21 **10 Claims**

A rug shampooer in which the shampoo tank and the foot for mounting the roller-brush assembly are formed separately, and the two are joined by a flexible clip which clamps to the tank and to which the foot is secured. The control valve is manually operated from the handle, which extends through the tank to the tank bottom. The bottom handle end area is provided with passage means for flow of liquid shampoo from the tank to the distributor.



3,726,602

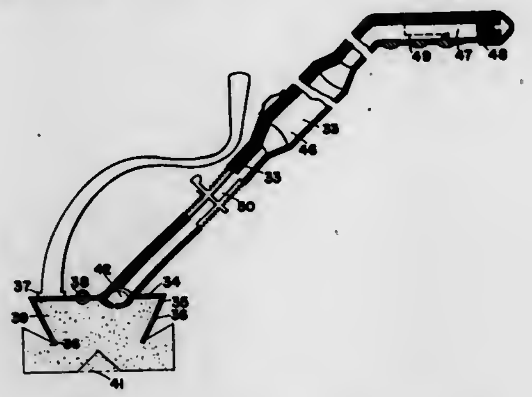
FLOOR, RUG AND UPHOLSTERY CONDITIONING DEVICE

Bruno Rosocha, 124 Vryenhoek Crescent, Winnipeg, Manitoba, Canada

Filed June 21, 1971, Ser. No. 155,203

Int. Cl. A46b *11/04*

U.S. Cl. 401—196 **1 Claim**



A pad or roller is mounted in a frame carried at the lower end of a hollow handle. Liquid wax, varnish, shampoo or other cleaning or conditioning liquid is carried in the handle and metered by an adjustable metering device, to the pad or roller. A wringer attachment is provided for use with the pad or sponge element.

3,726,603

AUTOMATIC SYSTEM FOR TREATING ELONGATED STOCK

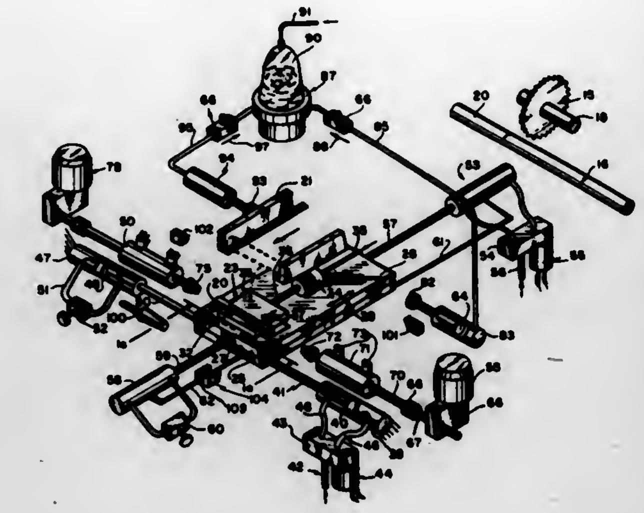
William S. Fortune, 14250 Dearborn St., Panorama City, Calif.

Filed Aug. 3, 1971, Ser. No. 168,592

Int. Cl. B23b *39/22*

U.S. Cl. 408—40 **13 Claims**

A system for automatically treating elongated stock, such for example as tubes, rods, or bars. The stock is cut into predetermined length and then must be deburred, chamfered, drilled or counter-bored, as the case may be. The stock is held in a vise mounted on a vise platform and capable of reciprocating in one direction. The vise platform is slidably mounted on a main platform capable of reciprocating at right angles to the vise platform. The vise is opened to receive a piece of stock, and the stock is then moved into alignment with two opposed tools. The stock is then moved first against one rotating tool and then against the other for deburring it or else against a non-rotating tool for applying a cap or the like thereto. The finished tool is then moved to another station where it is ejected by an air nozzle. The platform may be rapidly moved by an air system. The movement may be slowed or retarded by an oil damping system including an adjustable metering valve. Bumpers may be provided for slowly moving each end of the stock against the appropriate rotating tool and again the movement may be controlled by adjustable valves. The stock is metered one by one into the vise by a fixed stock guide and a reciprocating stock releasing or metering device which is controlled by engagement with the moving platform for receiving the next piece of stock.



3,726,604

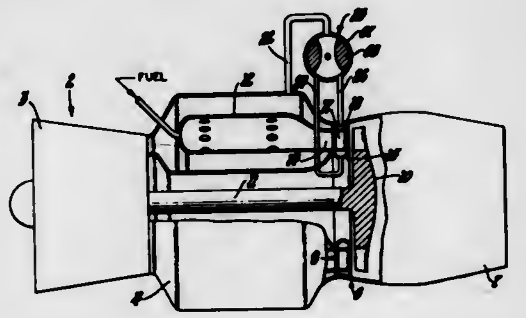
COOLED JET FLAP VANE

Harold E. Helms; Ronald P. Schwedland, both of Indianapolis, and Floyd Waters, Jr., Wanamaker, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1971, Ser. No. 188,904

Int. Cl. F01d *5/14*

U.S. Cl. 415—115 **8 Claims**



A high temperature gas turbine diverts air compressed by the compressor of the engine for cooling the turbine nozzle vanes. These vanes have laminated walls with passages through the walls for cooling the vane walls. The vanes also have slots adjacent the trailing edge for blowing air toward adjacent vanes to provide a jet flap effect and thus reduce the effective area of the nozzle. The air diverted from the compressor is controlled so as to direct all the air for cooling at maximum engine rating and to use some of the air for jet flap purposes and correspondingly reduce the cooling air at lower power operation of the engine.

ERRATA

For Classes 415—11 and 415—64 see:
Patents Nos. 3,726,618 and 3,726,619

3,726,605

FLUID-FLOW MACHINE

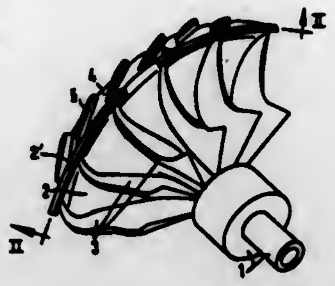
Herbert Bachl, Turkenstr. 40, 8 Munich 13, Germany

Filed June 22, 1970, Ser. No. 48,121

Claims priority, application Germany, June 30, 1969, P 19 33 070.2; July 15, 1969, P 19 35 872.6; April 30, 1970, P 20 21 260.6

Int. Cl. F04d *29/38;* **F01d** *5/08;* **F04d** *7/00*

U.S. Cl. 416—186 **11 Claims**



A fluid-flow machine comprises an essentially disk-shaped rotor with flow channels whose inlet openings and outlet openings are differently spaced respectively from the axis, the flow direction of the channels being axial near the axis but predominantly tangential remote from the axis. The rotor has curved overflow edges which close the inner flow-channel boundary surfaces and which face the rotor axis in the region of the rotor openings remote from the axis. The overflow edges form a direct connection over the entire periphery, interrupted only by the channel-separating wall thickness of the rotor — between the predominantly tangential channel portions at the rotor openings remote from the axis on the one hand, and the predominantly radial channel portions in the middle region of the rotor on the other hand. The edges effect a directional change between axial and radial flow. The cross section of the flow channels in the rotor is narrower in the axial than in the radial direction in the region remote from the rotor axis, and this cross-sectional shape changes gradually toward the axis to a reversely dimensioned configuration having a larger width in the axial direction than in the radial direction.

3,726,606

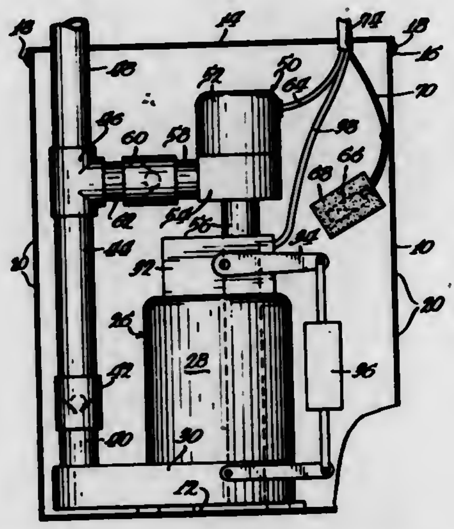
SUMP APPARATUS

Anthony Peters, c/o Countryside Plumbing, 235 East Irving Park Road, Wood Dale, Ill.

Filed Nov. 19, 1971, Ser. No. 200,324

Int. Cl. F04b *41/06, 49/04*

U.S. Cl. 417—7 **8 Claims**



A sump apparatus including a first pump adapted to be operated by a principal power source and a second pump adapted to be operated by an auxiliary power source, particularly a storage battery. A control system is provided which normally provides power for the first pump and is operative to charge a storage battery for the second pump when necessary. The control system is also operative to automatically condition the second pump for energization whenever the principal power source fails, totally or partially, or to energize the second pump from the auxiliary power source if the first pump is unable to maintain pumping requirements sufficient to empty a sump well or the like. The control system also includes a warning system for indicating when both pumps are running simultaneously or when the principal power source has failed.

3,726,607

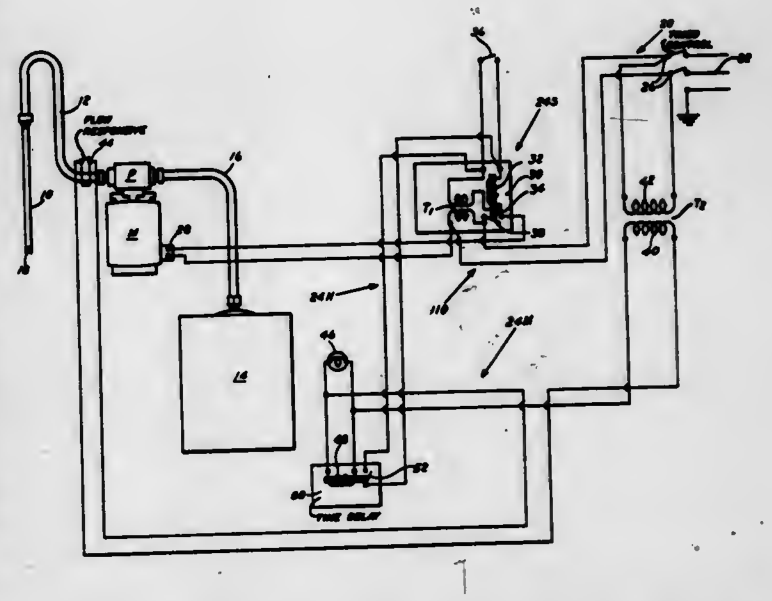
COIN-ACTUATED CRANKCASE PUMP CONTROL CIRCUIT

Mark B. Garman, Grand Junction, Colo., assignor to Monarch Enterprises, Inc., Grand Junction, Colo.

Filed Dec. 27, 1971, Ser. No. 212,603

Int. Cl. F04b *49/02, 49/06*

U.S. Cl. 417—12 **5 Claims**



This invention relates to an improved electrical circuit for controlling the operation of a crankcase pump which is characterized by a coin-actuated 110 V. pump motor actuating circuit and an overriding low-voltage pump shut-down circuit that monitors the flow of fluid and responds to the cessation thereof. The circuit also includes a manual starting switch that enables the operator to delay initiation of the pumping cycle so that it will not begin upon insertion of the coin. The pump shutdown circuit has a time-delay feature which prevents premature termination of the pumping cycle initiated by a false response by the fluid-flow sensor. Finally, the circuit provides the operator with a signal that denoted completion of the pumping cycle.

3,726,608

FUEL INJECTION PUMP TIMING DEVICE

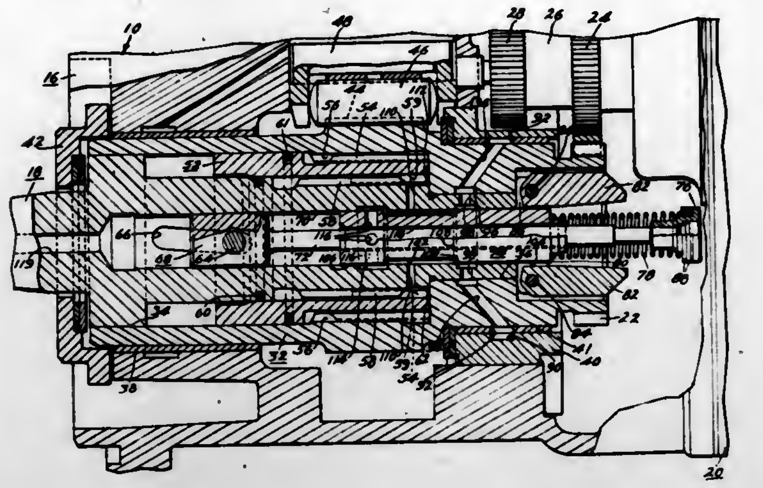
Norvan W. Bostwick, Longmeadow, Mass.; Warren E. Snyder, Brookfield, Wis., and Ignace J. Doborowski, Springfield, Mass., assignors to AMBAC Industries, Inc., Springfield, Mass.

Filed April 26, 1971, Ser. No. 137,180

Int. Cl. F16d *5/00*

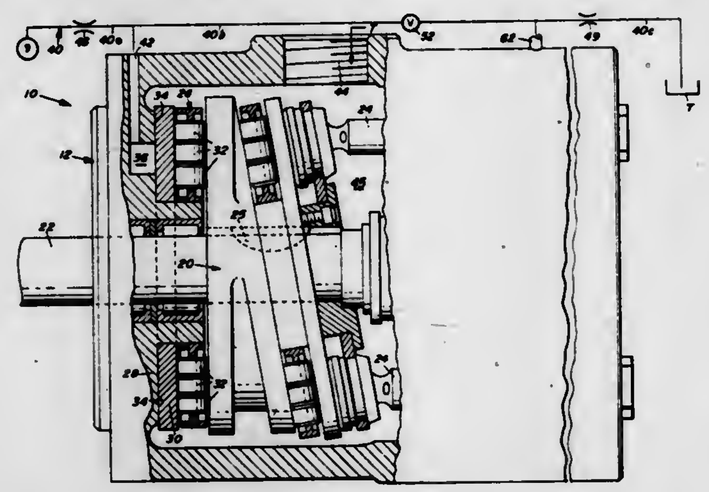
U.S. Cl. 417—212 **11 Claims**

An integral timing device for fuel injection pumps including a servo-actuated helically splined sleeve for varying the relative angular position of the pump drive shaft and the cam driven by the drive shaft which serves to reciprocate the pump plunger. The invention includes means for providing a positive trapping of the sleeve actuating fluid during the plunger injection interval to minimize the shifting of the cam towards a retard position and to reduce the pressure requirements of the device. In addition, means are provided for automatically retarding the pump timing during the starting of the engine.



3,726,609
LOAD CONTROLLER

Hamish A. G. Cattanach, Middlesex, Teddington, England, assignor to Applied Power Industries, Inc., Milwaukee, Wis.
Filed Jan. 30, 1970, Ser. No. 7,206
Int. Cl. F04b *49/00*
U.S. Cl. 417—270 4 Claims

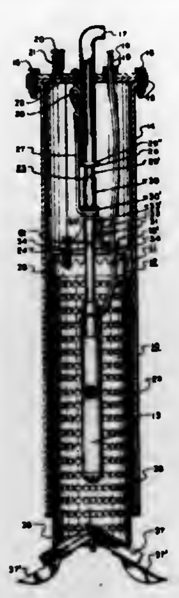


A system for regulating the output of a variable delivery hydraulic pump by sensing the load on the pumping members and adjusting the output of the pump in response thereto.

3,726,610
PUMP MOUNTING ASSEMBLY

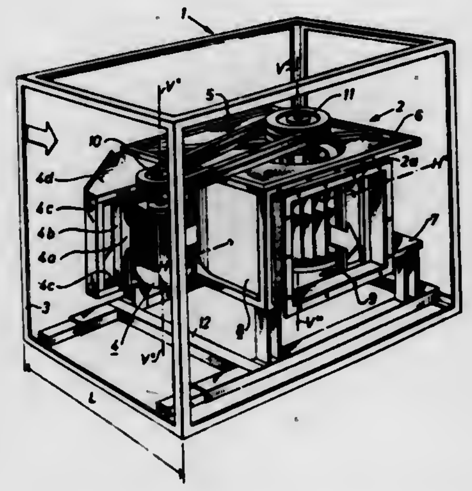
Delwin W. Butterfield, Route 3, Twin Falls, Idaho
Filed Dec. 23, 1971, Ser. No. 211,203
Int. Cl. F04b *39/00*
U.S. Cl. 417—360 2 Claims

The pump mounting assembly of this invention comprises a casing assembly and a pump mount. The casing assembly includes a substantially cylindrically shaped, upstandingly disposed casing wall and a casing cap plate selectively lockingly fastened transversely to the uppermost terminal end of the casing wall. The pump mounting includes a pump flange, a base flange and a filter liner. The pump flange has a suitable configuration to closely slidably engage the interior of the casing wall. The pump flange is dependently carried by means of a yoke connected to a cable fastened between the yoke and the casing cap plate. The pump flange is also fastened to the water discharging conduit of the pump distally from the pump. The pump flange includes venting means controllable from the yoke. The base flange has a substantially ring-like configuration with the outer configuration similar to the interior configuration of the casing wall, and has an interior or hole operable to permit passage of the pump. The base flange is fastened to the interior of the casing wall distally from the lowermost terminal end of the casing. The base flange includes bevelled gear-like teeth provided on its uppermost terminal end. The pump flange includes corresponding bevelled gear-like teeth on its lowermost terminal side operable to interlockingly engage the base flange and the pump flange. The filter liner is fastened to the lowermost terminal edge of the base flange, and includes a substantially cylindrical configuration of a smaller diameter than the diameter of the casing wall. The filter liner includes a multiplicity of holes and a shoring means which may include a pair of outwardly urged paddle-like shoring members.



3,726,611
FAN UNIT DESIGNED AS AN AIR TREATMENT DEVICE IN AN AIR CONDITIONING AGGREGATE

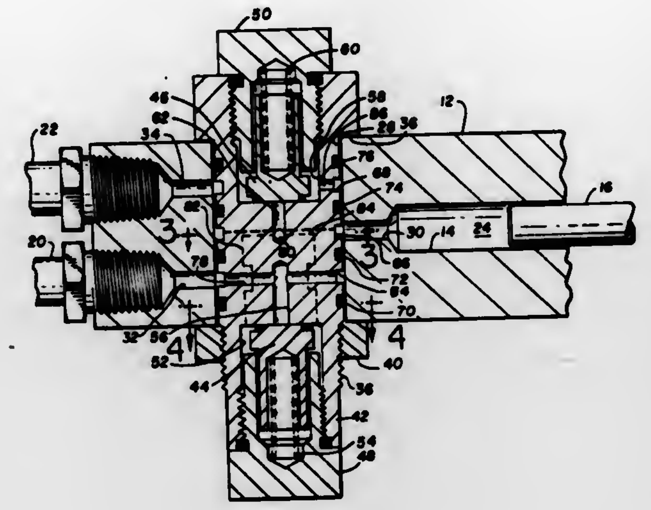
Lennart Astrom, 130 11 Saltsjo-Duvnas, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden
Filed May 20, 1971, Ser. No. 145,349
Claims priority, application Sweden, May 29, 1970, 7500/70
Int. Cl. F04b *17/00*
U.S. Cl. 417—423 R 3 Claims



An air conditioning aggregate with a built-in fan unit comprising a radial fan, an electric drive motor and a power transmission therebetween, the radial fan being secured with its plane-parallel end walls in a framework of the air conditioning aggregate, the greatest length dimension of said frame work extending in a direction perpendicular to the ejection aperture of the fan, the electric drive motor being mounted on one side of the fan housing of the radial fan, while the power belt transmission extends between rope-belt pulleys on the two parallel axles of fan and motor.

3,726,612
PUMP

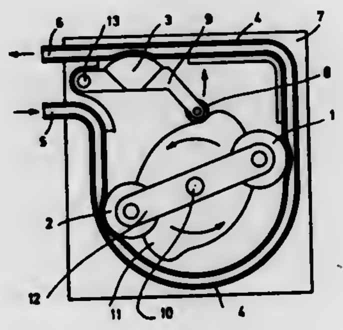
George J. Greene, Jr., Houston, Tex., assignor to Greene Research Engineering Co., Houston, Tex.
Filed Dec. 7, 1970, Ser. No. 95,438
Int. Cl. F04b *21/02, 39/00*
U.S. Cl. 417—454 9 Claims



A pump having the usual suction and discharge check valves contained in a cartridge which may be removed and replaced without having to dismantle any of the other pump structure. The cartridge is in the form of a bolt-shaped member which is inserted into a bore in the pump cylinder and is provided with check valves and suitable communication means to position the check valves in control of the suction and discharge flows to and from the pump. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,726,613
PULSEFREE PERISTALTIC PUMP

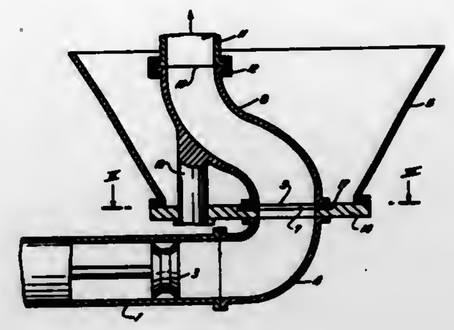
Wolf von Casimir, Am Blumengarten 8, Munich, Germany
Filed Oct. 12, 1970, Ser. No. 80,115
Int. Cl. F04b *43/08, 43/12, 45/06*
U.S. Cl. 417—477 4 Claims



To smooth the pulsations in the flow rate of a fluid conveyed by a peristaltic pump, a cam-controlled pusher is synchronized with the driving elements (rollers or plungers) acting upon the wall of a flexible tube to constrict that wall, at a location downstream of the driving elements, when these elements advance the fluid toward the tube outlet and to allow its expansion at the beginning of every new operating cycle when a new pressure wave is initiated at a location remote from that outlet.

3,726,614
PUMP CONSTRUCTION

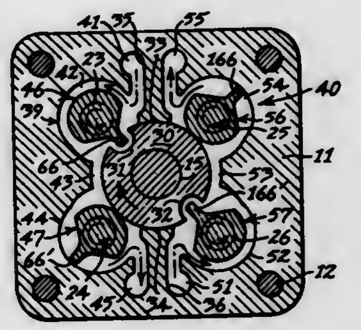
Wolfgang Schellenberg, Essen, Germany, assignor to Torkret GmbH, Essen, Germany
Filed July 14, 1971, Ser. No. 162,370
Claims priority, application Germany, Jan. 29, 1971, P 21 04 191.8
Int. Cl. F04b *15/02*
U.S. Cl. 417—517 10 Claims



A pump for viscous materials has two or more cylinders each of which accommodates a reciprocable piston. A receiving channel is adapted to receive material expelled from the respective cylinders and has an inlet for this purpose. A hopper contains viscous material and communicates via two apertures with the respective cylinders. A substantially S-shaped conduit is located in the hopper and has an outlet opening coaxial and communicating with the inlet, and an inlet opening. A shaft member is fast with the conduit and coaxial with the inlet, the shaft member being mounted for turning movement whereby it effects pivoting of the conduit between two end positions in which the inlet opening of the conduit respectively registers with one of the apertures. The pivoting movement is timed so that the inlet opening of the conduit registers with the aperture of that cylinder in which the piston is about to perform its working stroke.

3,726,615
ROTARY FLUID POWER DEVICE

Robert A. Kolinski, 815 Gilbreth Drive, Lawrenceburg, Tenn.
Filed Oct. 28, 1971, Ser. No. 193,509
Int. Cl. F01c *1/30*; F03c *3/00*; F04c *11/00*
U.S. Cl. 418—7 6 Claims



A power device capable of being used as either a fluid motor or a rotary pump, having a rotary abutment with two opposed valving recesses and four rotary pistons disposed in the same rotary plane and in operative circumferential engagement with the rotary abutment. The device comprises a pair of fluid power units connected in two parallel fluid circuits, each circuit having two pistons connected in series. The rotary pistons are balanced so that diametrically opposed pistons in different circuits are working, while the other pair of diametrically opposed pistons in the different circuits are valving.

The appendages are designed with maximum working faces and with a minimum radial dimension, by relieving the base of the appendage to form flat diverging shoulders.

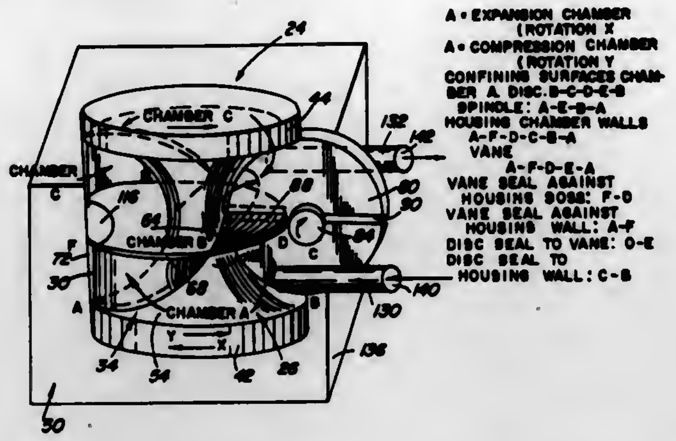
3,726,616
FLUID ACTUATED ENERGY TRANSLATING DEVICE

William T. Powers, Northbrook, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Jan. 11, 1971, Ser. No. 105,430

Int. Cl. F01c *1/08*; **F03c** *3/00*; **F01c** *11/00*

U.S. Cl. 418—10 **3 Claims**


A = EXPANSION CHAMBER (ROTATION X
A = COMPRESSION CHAMBER (ROTATION Y
CONFINING SURFACES CHAMBER A DISC. B-C-D-E-B
SPINDLE: A-E-B-A
HOUSING CHAMBER WALLS A-F-D-C-B-A
VANE A-F-D-E-A
VANE SEAL AGAINST HOUSING BOSS: F-D
VANE SEAL AGAINST HOUSING WALL: A-F
DISC SEAL TO VANE: D-E
DISC SEAL TO HOUSING WALL: C-B
CHAMBER C
CHAMBER B
CHAMBER A
24
44
132
142
116
64
88
80
90
94
72
30
68
140
130
136
34
54
42
26
50

An energy translating device operative in response to fluid pressure and characterized by a novel and highly efficient intercoupling arrangement of its moving components. The elements of the device include a housing, a wasp-waisted spindle, a single turn mobius-type vane encircling the spindle and in fluid-sealing engagement with an annular wall of the spindle and with the housing, a rotatable slotted disc extending into a fluid cavity formed between the spindle and the housing and in fluid sealing engagement with the spindle and housing, the spindle-encircling vane passing slidably through a slot in the disc, and fluid input and exhaust passages extending through the housing and communicating with the interior cavity, on either side of the rotatable disc.

3,726,617
PUMP OR A MOTOR EMPLOYING A COUPLE OF ROTORS IN THE SHAPE OF CYLINDERS WITH AN APPROXIMATELY CYCLIC SECTION

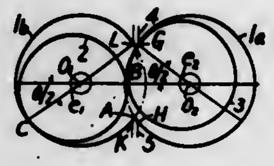
Takayoshi Daido, 624 Jippoji, Himeji, Japan

Filed April 9, 1971, Ser. No. 132,776

Claims priority, application Japan, April 17, 1970, 45/33198

Int. Cl. F01c *1/24*; **F03c** *3/00*; **F04c** *1/14*

U.S. Cl. 418—150 **1 Claim**



A pump or motor having two rotors of a defined shape such as to ensure contact between the two rotors in all positions.

3,726,618
SELF-PRIMING PUMP

John L. Dicmas, Arcadia, Calif., assignor to Johnston Pump Company, Glendora, Calif.

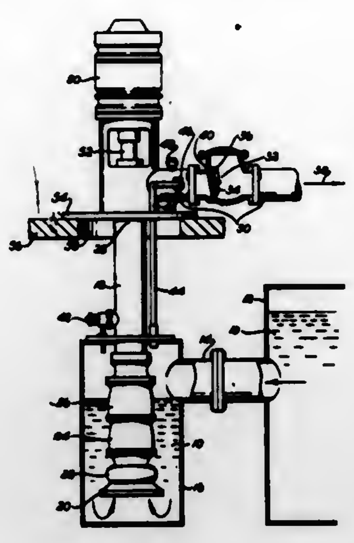
Filed April 5, 1971, Ser. No. 131,381

Int. Cl. F01b *25/00*

U.S. Cl. 415—11 **4 Claims**

A vertical self-priming pump assembly for unloading bulk cargo carriers is disclosed. The vertical pump has a column which ingests fluid at its lower end and discharges fluid at its upper end. A mixed flow pump is located at the lower end of the column, with multiple turbine pumps located above the mixed flow pump. A poppet valve and a bypass line with a check valve are used for self-priming of the pump.

A vent valve and a manual bypass line are provided for initial priming of the pump. Fluid discharged at the upper end of the column passes through a discharge conduit containing a check valve to prevent flow back into the column.



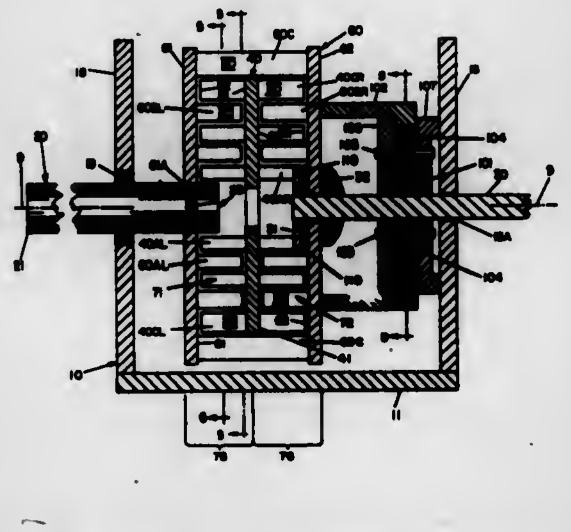
3,726,619
ROTARY FLUID-POWERED APPARATUS

Clarence L. Adams, Box 217, Fort Calhoun, Wash.

Filed Sept. 20, 1971, Ser. No. 181,742

Int. Cl. F01d *1/24*

U.S. Cl. 415—64 **11 Claims**



There is disclosed herein rotary apparatus powerably motivatable with a pressurized fluid, such as air, steam, water, etc. Preferred embodiments of the rotary vaned apparatus comprise: a stationary frame member; a pair of vaned counter-rotatable motors, each revolvably associated with respect to the frame member and including an output-shaft extending longitudinally along a central-axis and directly co-revolvable with one of said rotors; means for directing pressurized fluid radially outwardly from the central-axis and across the rotors' vanes, and to the appreciable exclusion of coincidental longitudinal fluid flow, thereby causing counter-rotation of the respective rotors; and planetary gear means operatively extending from the output-shaft to the oppositely rotating rotor to make the mechanical energy of the counter-rotating rotors available for use in a single angular direction about the central-axis. Other noteworthy specific features might include: vane means securely removably attached in concentric annular arrangements on the respective rotors together with a plurality of intra-annulus vane-like blades of regular cross-sectional size and shape, means to prevent or to minimize longitudinal stresses on the counter-rotating rotors; and means for making efficient use of the apparatus parts and the radial motive fluid.

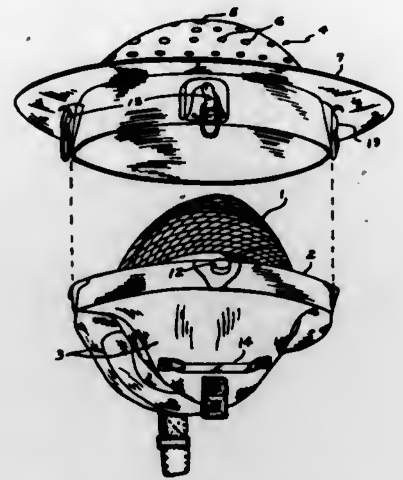
3,726,620
FORM-FITTED PROTECTIVE HEADGEAR LINER MOLD

William G. Morton, 22 rue Royale, Dayton, Ohio

Division of Ser. No. 805,299, March 7, 1969. This application Nov. 10, 1971, Ser. No. 197,551

Int. Cl. B29c *1/14*; **A42b** *3/00*

U.S. Cl. 425—2 **7 Claims**



A method for fabricating form-fitting headgear liners which conform to an individual wearer's head and which may be covered with a hard, rigid outer protective shell. The form fitting liners are fabricated by placing a headpiece such as a bathing cap, a rubber dam, and a rigid outer shell with openings drilled therein on an individual's head, pouring in a material which will foam and fill the space between the headpiece and the outer shell, allowing the material to foam and harden, and then removing the rubber dam, bathing cap, and outer shell.

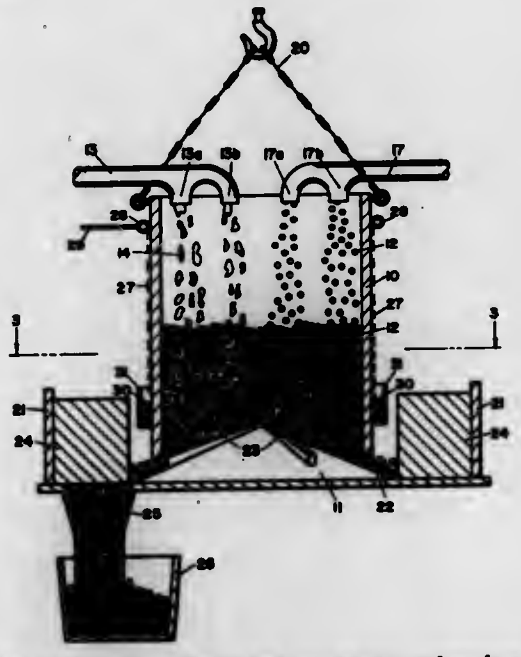
3,726,621
APPARATUS FOR PRODUCING OXIDE REFRACTORY MATERIAL HAVING FINE CRYSTAL STRUCTURE

Paul Cichy, Buffalo, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed June 15, 1971, Ser. No. 153,317

Int. Cl. B22d *23/08*; **B28b** *1/54*

U.S. Cl. 425—6 **11 Claims**



Oxide refractory materials (for example, alumina-zirconia mixtures) can be cast to have an extremely fine crystal structure, by casting a melt of oxide refractory materials onto a non-reactive, non-melting particulate solid cooling media of a material other than that of the oxide refractory material (for example, steel spheres having a size ranging from about 5 to about 60 millimeters). The casting takes place within a solidification chamber having an opening in its lower end, through which the cooling media and solidified oxide refractory melt can be removed. According to one embodiment, the opening in the lower end of the solidification chamber is either temporarily completely blocked by a base, which is periodically removed to allow the recovery of cooling media and solidified oxide refractory melt, or continuously partially blocked by the base, so that the cooling media and solidified oxide refractory melt can be continuously recovered from the solidification chamber. According to another embodiment, no base at all is required, but the continuous discharge of cooling media and solidified oxide refractory melt is controlled by the angle of inclination of the cylinder which constitutes the solidification chamber. The solidified material, when crushed and graded, has exceptional utility as an extremely tough abrasive grain.

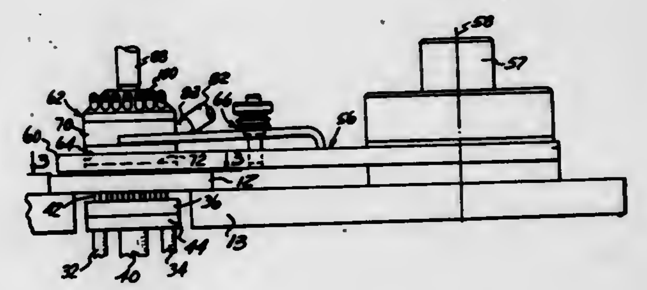
3,726,622
COMPACTING APPARATUS

Georges D. DeTroyer, Grosse Ile, and Raymond P. DeSantis, Royal Oak, both of Mich., assignors to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Filed Aug. 20, 1971, Ser. No. 173,484

Int. Cl. B30b *11/04*

U.S. Cl. 425—78 **7 Claims**



A powder compacting apparatus comprising a punch and die assembly having a die plate provided with at least a pair of rows of die cavities and with a reciprocable punch disposed in each die cavity. A work station positioner angularly movable across the upper surface of the die plate carries a station positioner block in which are formed a powder dispenser for each die cavity, an anvil surface for each row of die cavities and a pickup head for each die cavity. The powder dispensers and the pickup heads are disposed in rows corresponding to the rows of die cavities such that each row of powder dispensers, each anvil surface and each row of pickup heads are sequentially positioned, in timed relationship with the reciprocation of the punches, over each row of die cavities for filling the die cavities with powder material by means of the powder dispensers in a first angular position of the station positioner, compacting the powder material in each die cavity between the punch ends and the anvil surface in a second position of the station positioner and ejecting the compacted articles from the die cavities into the pickup heads in a third angular position of the station positioner.

3,726,623
WEB TRANSFER SYSTEM

Charles Ferstenberg, Paramus, N.J., assignor to Tenneco Chemicals, Inc., New York, N.Y.

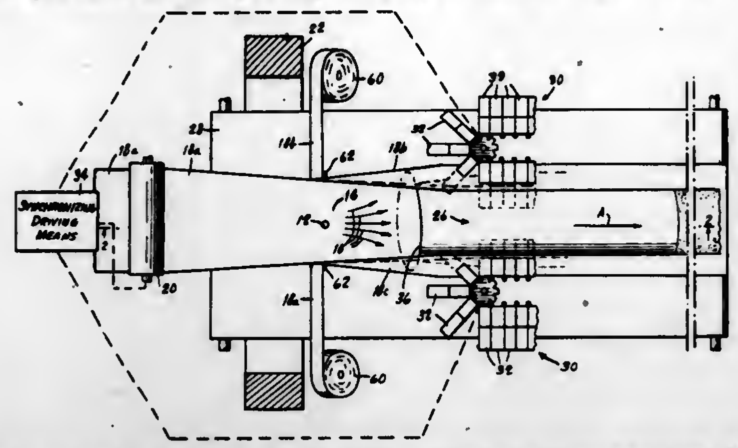
Division of Ser. No. 54,048, June 1, 1970, Pat. No. 3,659,981, which is a division of Ser. No. 696,070, Jan. 5, 1968, abandoned. This application Oct. 20, 1971, Ser. No. 191,054

Int. Cl. B29d *27/00*

U.S. Cl. 425—112 **2 Claims**

Contouring of flexible webs to the interior of an elongated moving molding channel by the provision of specially located

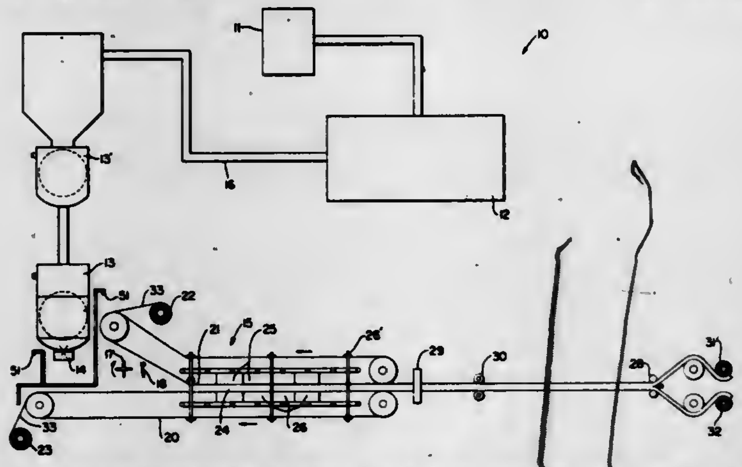
and specially shaped guiding devices, by the provision of spe-



cial internal mold supports and by the selective overlapping of separate web sheets.

3,726,624
FOAM SHEET MATERIAL MEANS

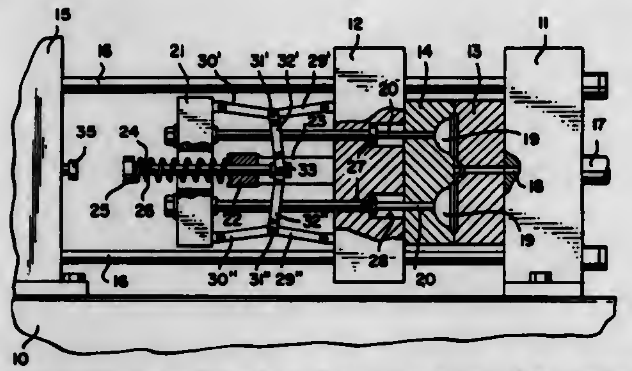
Irving L. Schwarz, 360 Merrimac St., Newton, Mass.
Filed Feb. 27, 1970, Ser. No. 14,954
Int. Cl. B29d *27/00*; B32b *5/16*
U.S. Cl. 425—145 **8 Claims**



A urethane binder is used in a continuous process which employs metering and leveling devices to continuously form uniform density sheet materials from scrap foam particles. Novel uniform density, flame retardant, plastic foam sheets containing urethane binder are formed. A single application step is used simultaneously with formation of the foam sheet materials to incorporate at least one surfacing sheet of solid plastic on the foam sheet materials.

3,726,625
EJECTOR MECHANISM FOR MOLDED ARTICLES

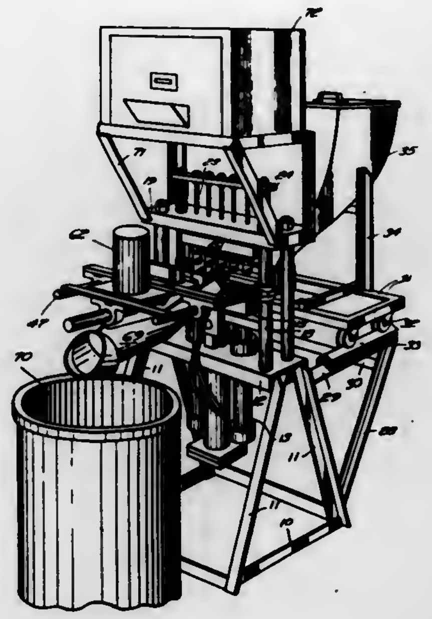
Herbert Rees, Toronto, Ontario, Canada, assignor to Husky Manufacturing & Tool Works Limited, Bolton, Canada
Filed Feb. 16, 1971, Ser. No. 115,207
Int. Cl. B29f *1/14*
U.S. Cl. 425—247 **8 Claims**



On the opening stroke of a movable platen of an injection-molding machine, a rod rearwardly projecting from that platen strikes a stop and displaces an articulated linkage, hinged to the platen, which transmits the relative motion of rod and platen at a reduced rate to a set of ejector pins supported on that linkage.

3,726,626
MOLDING APPARATUS

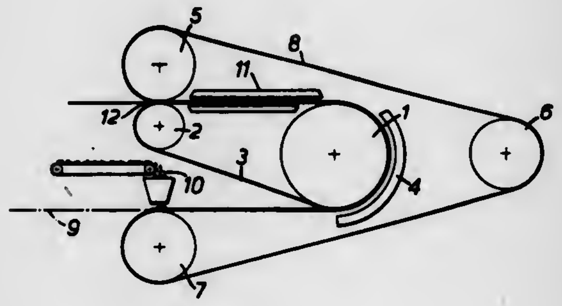
Henry Bromberg, Central Falls, R.I., assignor to Herbert Wang, Warwick, R.I., a part interest
Substitute for Ser. No. 505,129, Dec. 20, 1965, abandoned. This application Oct. 29, 1971, Ser. No. 193,681
Int. Cl. B29c *7/00*; B29d *1/00*; B29g *1/00*
U.S. Cl. 425—346 **16 Claims**



An automatic molding apparatus for plastic thermosetting material. The apparatus has five or less mold cavities for easy manufacture of the molds or easy alteration thereof. A hopper is filled with a plastic powder and an automatic feed device moves a predetermined quantity of the powder to each mold cavity. The molds then close automatically and heat is applied. Each cavity may be provided with a mold insert which can be threaded to form internal threads in the finished piece. Automatic means are provided to rotate the finished piece to remove it from the threaded insert.

3,726,627
VULCANIZING OF RUBBER AND OTHER LIKE SHEET MATERIAL

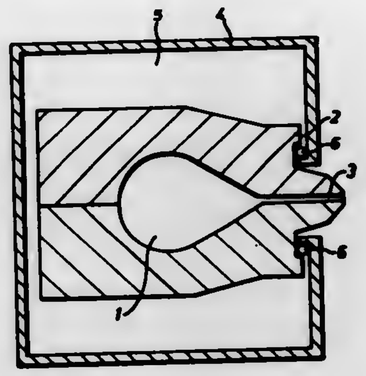
Rolf Gersbeck, Hannover, Germany, assignor to Hermann Berstorff Maschinenbau G.m.b.H., Hannover-Kleefeld, Germany
Filed March 9, 1971, Ser. No. 122,342
Int. Cl. B29h *5/00*
U.S. Cl. 425—371 **2 Claims**



Apparatus for vulcanizing rubber and other like sheet material comprises a heated drum against which the sheet material is pressed by two overlying endless belts. The endless belts are entrained around discrete sets of guide rollers.

3,726,628
EXTRUDER FOR THE PRODUCTION OF FOILS

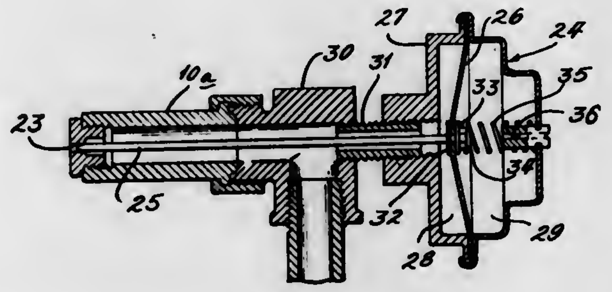
Peter Herzhoff, Leverkusen; Hans Gref, Cologne, and Wolfgang Schweicher, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed April 28, 1971, Ser. No. 138,107
Claims priority, application Germany, May 8, 1970, P 20 22 415.1
Int. Cl. B29f *3/04*
U.S. Cl. 425—461 **4 Claims**



For adjusting the slit width of an extruder for the production of foils or webs, the extruder body is enclosed in a housing defining a compensation chamber, sealed by an elastic packing which extends around the mouth of the extruder slit, and a constant pressure difference being maintained between the compensation chamber and the distributor chamber of the extruder body.

3,726,629
PROTECTIVE DEVICE FOR GASEOUS FUEL LINE

Marcel A. Eschman, Belleville, Ill., assignor to Empire Stove Company, Belleville, Ill.
Filed March 4, 1971, Ser. No. 120,831
Int. Cl. F23n
U.S. Cl. 431—89 **8 Claims**

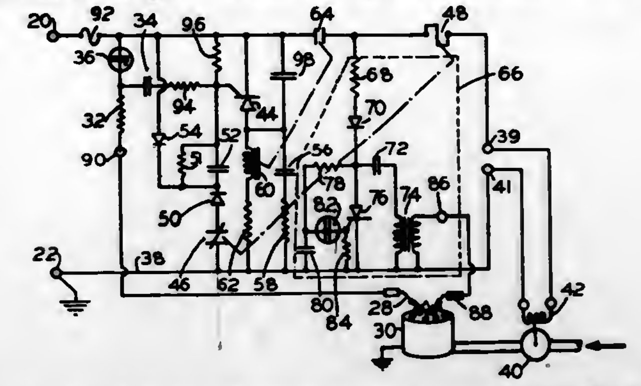


A diaphragm operated rod is mounted in a gaseous fuel line and aligned with an orifice in the line so that the rod enters and blocks the orifice when it is not in use. This prevents spiders and other insects from entering the orifice. When gaseous fluid is supplied to the line it moves the diaphragm to extract the rod from the orifice and permits fuel to be supplied to a burner at the end of the line.

3,726,630
FLAME IGNITION

William F. Potts, Liverpool, N.Y., assignor to Liberty Combustion Corporation, Syracuse, N.Y.
Division of Ser. No. 732,459, May 27, 1968, abandoned. This application July 15, 1970, Ser. No. 55,234
Int. Cl. F23n *5/00*
U.S. Cl. 431—78 **1 Claim**

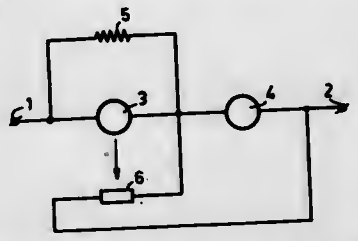
Burner ignition employing flame rectification to produce signal pulses to retain fuel supply valve open, and employing pulses from closing AC power circuit for initiating opening of



the valve. The full specification should be consulted for an understanding of the invention.

3,726,631
DEVICE FOR THE CONSECUTIVE IGNITION OF COMBUSTION FLASH-LIGHT LAMPS

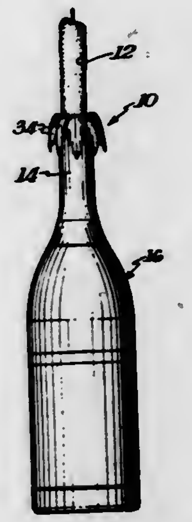
Wilhelmus Polycarpus De Graaf, and Peter Andreas Waltherus Tielemans, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 23, 1970, Ser. No. 74,542
Claims priority, application Netherlands, Oct. 3, 1969, 6915055
Int. Cl. F21k *5/02*
U.S. Cl. 431—95 **3 Claims**



In both parallel and series arrangements for the sequential flashing of flash lamps used in conjunction with camera mechanisms, accessible switching means formed as break contacts are provided which assure full utilization of all the bulbs in the arrangement in the event one or more of the bulbs fail to achieve sufficiently high resistance after ignition. The user may actuate the break contact in either series or parallel arrangement so that the remainder of the flash lamps may be utilized in the event one of the lamps fails to operate.

3,726,632
CANDLE HOLDER

Gerardine L. Connolly, 102 School Road, Wilmington, Del.
Filed June 14, 1971, Ser. No. 152,739
Int. Cl. F23q *2/32*
U.S. Cl. 431—126 **8 Claims**



A candle holder is mounted to the neck of a bottle and holds the candle spaced from the inner wall of the bottle neck with a substantial open area therebetween to permit the melting wax to drip from the candle into the inside of the bottle.

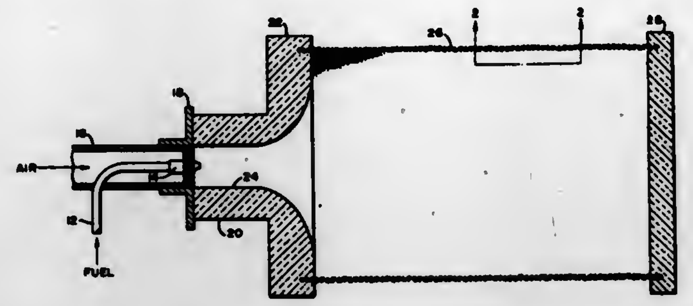
3,726,633
LOW POLLUTANT-HIGH THERMAL EFFICIENCY BURNER

Andrew D. Vasilakis, Bedford, and Stanley P. Bonk, Burlington, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Nov. 30, 1970, Ser. No. 93,603

Int. Cl. F23d *13/14*

U.S. Cl. 431—329 **10 Claims**



A liquid-fired burner in which the combustion space is defined by a cylinder which includes a screen heated by radiation from the combustion flame and by convection from the combustion gases flowing through the screen. The screen loses heat to the ambient volume principally by radiation and maintains an equilibrium temperature equal to or lower than the gases within the combustion space. Complete combustion with minimum excess air and low pressure drop is thus achieved resulting in operation at high thermal efficiency with minimal pollutant production. The radiant screen is so woven that very few optical paths exist from the interior combustion space to the ambient volume. Substantially all radiant energy originating in the combustion flames is intercepted by the screen, and the woven pattern serves also to enhance the transfer of heat to the screen from combustion gases passing therethrough. The screen may be made of an oxidation-resistant alloy or may in some instances be coated with high temperature ceramic.

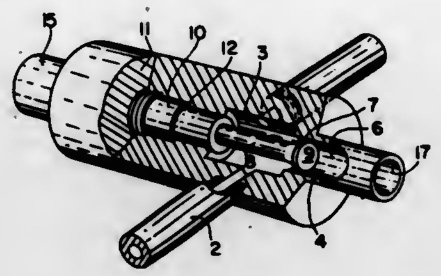
3,726,634
BURNER

John H. Thomson, and Dimiter S. Zagoroff, both of Marblehead, Mass., assignors to Dimiter S. Zagoroff, Marblehead, Mass.

Filed Sept. 30, 1970, Ser. No. 76,762

Int. Cl. F23d *15/02*

U.S. Cl. 431—353 **11 Claims**



A burner construction for burning gaseous fuel with a gaseous oxidizer. The fuel and oxidizer are mixed and directed so as to impart a swirling motion to the resultant mixture. The swirling mixture is passed through an annulus formed by a flame holder and the inside surface of a flame tube and ignited in a combustion chamber. The construction provides improved combustion intensity and permits the use of pure oxygen as the oxidizer without overheating or melting the combustion chamber walls.

ERRATUM

For Class 432—25 see:
Patent No. 3,726,515

CHEMICAL

3,726,635
PROCESS FOR DYEING HUMAN HAIR WITH NITROPARAPHENYLENEDIAMINE DYESTUFF AND COMPOSITIONS THEREFOR

Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne-sur-Seine, France, assignors to L'Oreal, Paris, France

No Drawing. Continuation of application Ser. No. 568,118, July 27, 1966. This application Dec. 2, 1970, Ser. No. 94,631

Int. Cl. A61k *7/12;* **D06p** *3/04*

U.S. Cl. 8—10 **9 Claims**

Hair dye compositions which contain 1-amino-4-amino alkyl amino-nitro-benzene dyes are usefully employed in a process for dyeing hair.

3,726,636
ALBUMINOUS-AMINOPLAST PRECURSOR-UREA DYE COMPOSITION FOR POLYAMIDE

Walter Baderscher, Biel, Basel-Land, Switzerland, and Thierry Stas de Richelle, Saint-Pierre-de-Chandieu, France, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Sept. 9, 1969, Ser. No. 856,495. Divided and this application Aug. 19, 1971, Ser. No. 173,266

Claims priority, application Switzerland, Sept. 24, 1968, 14,260/68

Int. Cl. D06p *1/68*

U.S. Cl. 8—83 **7 Claims**

Textile materials on the base of synthetic or natural polyamide fibres are dyed or printed with water-soluble wool-dyestuffs in the presence of (a) an aminoplast precondensate and an acid curing catalyst, (b) urea, thiourea or guanidine, (c) a hydroxyalkylcellulose and (d) an albuminous substance. After dyeing or printing the materials are steamed without intermediate drying. This process proves particularly advantageous in printing or padding thick or stiff materials such as fleeces, felts or carpet webs.

3,726,637
ZIRCONIUM TANNING

Warren B. Blumenthal, North Tonawanda, N.Y., assignor to NL Industries, Inc., New York, N.Y.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,636

Int. Cl. C14c *3/02, 3/04*

U.S. Cl. 8—94.25 **4 Claims**

Tanning of animal hides and skins by silicated sodium zirconium sulfate at a pH between 1.0 and 2.5 is accelerated when there are present in the tanning bath at least four sulfate ions per atom of zirconium in addition to the sulfate required to react with cations present in the hides or bath which form sparingly soluble sulfates.

3,726,638
DECOLORATION OF HUMAN HAIR WITH BLEACHING COMPOSITIONS CONTAINING N-METHYLOL COMPOUNDS

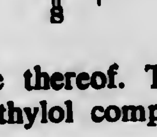
Giuliana Ghilardi, Gregoire Kalopissis, and Henri Philippe de Beaulieu, Paris, and Jean-Louis Abegg, Le Perreux, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Filed July 9, 1970, Ser. No. 53,674

Int. Cl. D06l *3/02;* **A61k** *7/12*

U.S. Cl. 8—111 **6 Claims**

A composition for bleaching keratinic fibers includes a mixture of an oxidizing agent and at least one N-methylol compound which is methylated on the nitrogen of a



$$-\underset{\underset{S}{\|}}{C}-\underset{|}{N}-$$

group or a derivative thereof. The oxidizing agent is mixed with the N-methylol compound or its derivative just before application of the resulting mixture to the keratinic fibers.

3,726,639
FLAME-RESISTANT CELLULOSE AND PROCESS FOR PRODUCING SAME

James B. Prentice, Batesville, Ind., Denzel Allan Nicholson, Springfield Township, Hamilton County, Ohio, and Ronald T. Amel, Whitewater, Wis., assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Aug. 17, 1970, Ser. No. 64,627

Int. Cl. D06m *13/28, 13/44, 15/54;* **C09k** *3/28*

U.S. Cl. 8—115.7 **8 Claims**

Flame-resistant cellulose is prepared by reacting cellulose with (1) (a) methylolmelamines or (b) melamine and 2–6 moles of formaldehyde per mole of melamine, and (2) (a) α-hydroxy phosphonates or (b) a mixture of dialkyl phosphites and certain carbonyl containing compounds at a temperature of from about 100 to about 200° C. for a period of time from about 2 minutes to an hour to provide a durable flame-resistant effect.

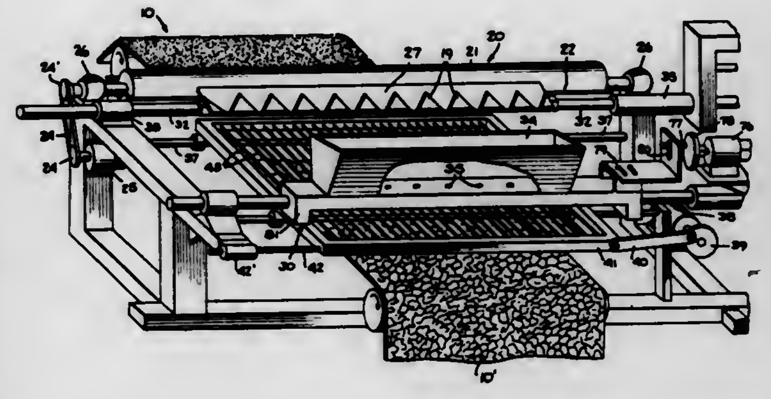
3,726,640
METHODS TO PATTERN AND TO DYE SINGLE COLORED TEXTILES, ESPECIALLY CARPETS, WITH DIFFERENT COLORS OR TONES

Nassir Takriti, Kurt Quoos, and Ferdinand Leifeld, Krefeld, and Valentin Appenzeller, Kempen, Niederrhein, Germany, assignors to Textilausruestungs-Gesellschaft Schraers & Co., Krefeld, Germany

Original application June 9, 1969, Ser. No. 831,297, now Patent No. 3,683,649. Divided and this application Nov. 30, 1971, Ser. No. 203,314

Int. Cl. D06p *5/00*

U.S. Cl. 8—149 **8 Claims**



A method of dyeing textiles by applying the color or colors in a spotted fashion by means of individual dye droplets in an equal volume over the surface of the textile breadth which is continuously transported. The application of the dye droplets is effected according to the random colors or random tones to be desired without any repeated pattern or design.

3,726,641
AQUEOUS DYEBATH CONTAINING POLYACRYLONITRILE AND A NITROGEN-CONTAINING COMPOUND

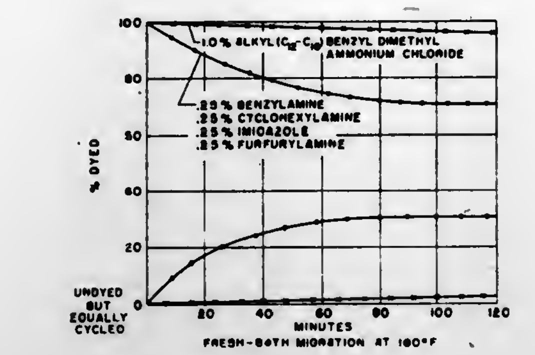
John A. Komninos, Upper Saddle River, N.J., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

Original application Feb. 10, 1969, Ser. No. 797,978, now Patent No. 3,632,300. Divided and this application Mar. 30, 1971, Ser. No. 129,596

Int. Cl. D06p *5/06*

U.S. Cl. 8—172 **6 Claims**

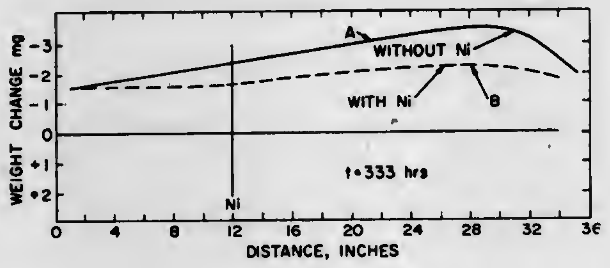
Fibrous material consisting of a synthetic material is dyed with a basic dyestuff in the presence of at least one member of a group of amine or nitrogen-containing compounds. Effective compounds include cyclohexylamine including alkyl substituted cyclohexylamines, furfurylamine, 1,2,3,4-tetrahydroisoquinoline, and the like. The aforesaid



compounds are characterized by the ability of facilitating the migration-transfer of dye from a densely dyed or normally dyed portion of a synthetic fabric/fiber to a sparsely dyed or undyed portion.

3,726,642
SUPPRESSION OF CORROSION OF IRON IN SODIUM

Hugh S. Isaacs, Shoreham, and Anthony J. Romano, Kings Park, N.Y., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 29, 1971, Ser. No. 213,644
Int. Cl. C23f *11/08, 14/02*
U.S. Cl. 21—2.5 R **5 Claims**



A method of reducing the corrosive effects of molten sodium on the walls of an iron bearing containment structure comprising the addition of nickel or chromium to the sodium in solution near to or at the point of the highest temperature in the sodium system.

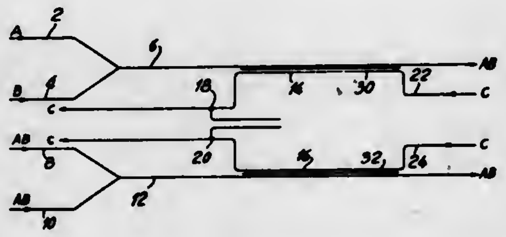
3,726,643
METHOD OF PRODUCING REFRACTORY CARBIDES, BORIDES, SILICIDES, SULFIDES, AND NITRIDES OF METALS OF GROUPS IV, V, AND VI OF THE PERIODIC SYSTEM

Alexandr Grigorievich Merzhanov, Valentin Mikhailovich Shkiro, and Inna Petrovna Borovinskaya, Moskovskaya, U.S.S.R., assignors to Filial Instituta Khimicheskoi Fiziki Akademii Nauk, U.S.S.R., Moskovskaya
No Drawing. Filed Apr. 9, 1970, Ser. No. 27,106
Int. Cl. C01b *21/06, 33/06, 31/30*
U.S. Cl. 423—409 **12 Claims**

A method of producing refractory inorganic compounds such as carbides, borides, nitrides, silicides, oxides, phosphides, sulphides, fluorides and chlorides of metals of the IV, V and VI groups, in which at least one of the metals of the IV, V and VI groups of the periodic system is mixed with one of the non-metals N, C, B, Si, O_2, P, S, F, or Cl_2, and to the resulting mixture is introduced ignition means for generating a temperature sufficient for starting the process of combustion of the initial components whose further interaction takes place owing to heat generated by the reaction, the reaction of metals with metalloids C, B, Si, P, S being carried out in an inert gas medium.

3,726,644
FLOW CALORIMETER

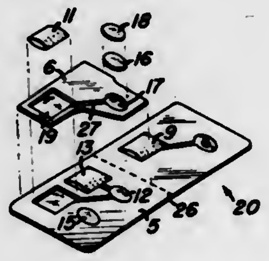
Jacques E. Desnoyers; Carmel Jolicoeur, and Patrick Picker, all of Sherbrooke, Quebec, Canada, assignors to University of Sherbrooke, Sherbrooke, Province of Quebec, Canada
Filed Feb. 24, 1970, Ser. No. 13,433
Int. Cl. G01k *17/02, 17/04;* **G01n** *33/00*
U.S. Cl. 23—230 R **12 Claims**



The invention relates to a flow microcalorimeter wherein the reactant fluids are injected in one tubular flow chamber and reacted while mixing and flowing therethrough and a heat exchange means is associated with the tubular flow chamber wherethrough a fluid is circulated in a reverse flow direction. Measurements can be made in either the adiabatic or the isothermal mode depending on the relative flow of the reactant fluids and the heat exchange fluids. In some applications, such as when very fine measurements are required, thermal effects unrelated to the mixing can be cancelled out by introducing the already mixed and reacted fluids into a similar tubular flow chamber with a similar heat exchanger, this arrangement including a differentially coupled temperature sensing means associated with the outlets of said heat exchange means.

3,726,645
INERT PLASTIC FILM FOR SUPPORT AND PACKAGING OF CHEMICAL SPOT TEST SYSTEMS

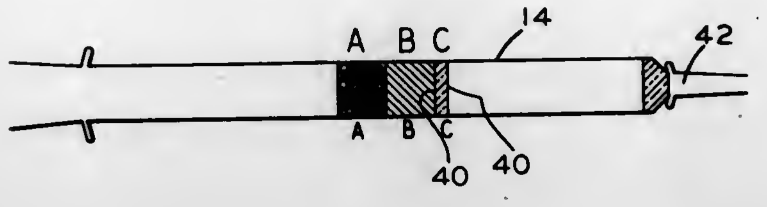
Thomas D. Kaczmarek, Pittsburgh, Pa., assignor to the United States of America as represented by the Secretary of the Army
Filed July 6, 1970, Ser. No. 52,499
Int. Cl. B65d *79/00, 83/00;* **G01n** *31/22*
U.S. Cl. 23—253 TP **3 Claims**



An apparatus, method, and material for the packaging and support of chemical spot test systems; the invention being utilized to eliminate any reaction between the chemical system and the container means. The container means containing a plurality of spot tests and the apparatus being sufficiently compact to carry in a jacket or shirt pocket.

3,726,646
APPARATUS TO OXIDIZE BIOLOGICAL MATERIAL

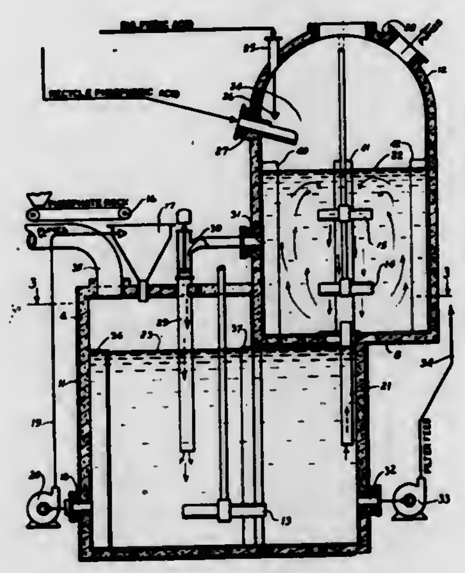
Michael A. Kravetz, North Brunswick, and Eric C. Schreiber, Locust, N.J., assignors to R. J. Harvey Instrument Corporation, Hillsdale, N.J.
Filed Apr. 8, 1971, Ser. No. 132,329
Int. Cl. G01n *31/10, 33/16*
U.S. Cl. 23—253 PC **4 Claims**



Furnace for the oxidation of biological material and novel scintillation solutions. By utilizing the furnace and the improved combustion tube packing of this invention biological material is converted to carbon-14 dioxide and triated water for purposes of liquid scintillation counting.

3,726,647
APPARATUS FOR THE PRODUCTION OF PHOSPHORIC ACID

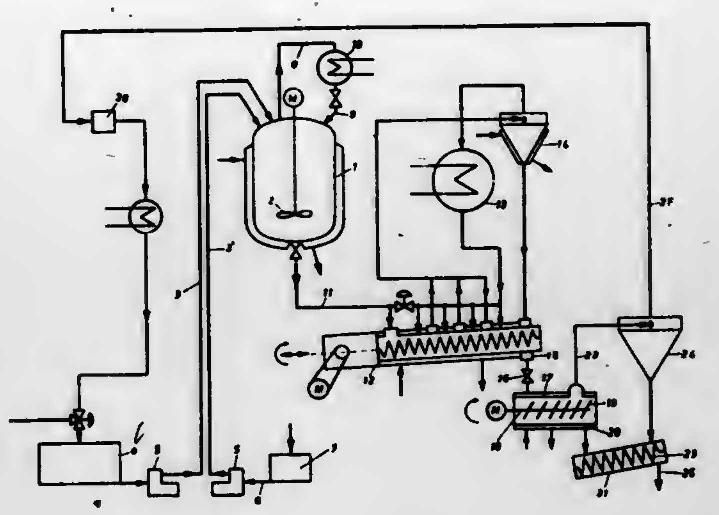
Robert L. Somerville, Rte. 1, P.O. Box 256, Old Amwell Road, Neshanic, N.J. 08853
Filed Feb. 11, 1971, Ser. No. 114,506
Int. Cl. C01c *1/46;* **C01b** *25/22*
U.S. Cl. 23—259.2 **6 Claims**



A one-piece apparatus for the production of wet process phosphoric acid which comprises a lower digestion chamber for the basic reaction between the phosphate rock and the sulfuric acid, containing single means for mechanical agitation and baffles projecting from the inner walls of said lower chamber; and an upper vacuum crystallization chamber to remove heat of reaction and promote gypsum crystal growth containing means for mechanical agitation, baffles projecting from the inner walls of said upper chamber, liquid inlet means extending below the liquid level in the lower chamber for introducing the hot slurry into said crystallizer, liquid return means for returning the cooled slurry to the digestor and varied inlet and outlet means.

3,726,648
BULK POLYMERIZER FOR VINYL CHLORIDE PRODUCTION

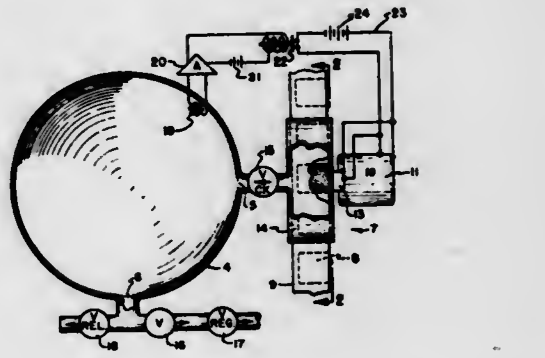
Wilhelm G. Weber, Pratteln, Walter Gresch, Muttenz, and Ivan Stojanovic, Pratteln, Switzerland, assignors to Buss Aktiengesellschaft, Basel, Switzerland
Filed Jan. 25, 1971, Ser. No. 109,514
Int. Cl. C08f *1/04, 1/10, 3/30*
U.S. Cl. 23—260 **2 Claims**



Apparatus for bulk polymerization comprising feeding means for continuously feeding a monomer and reaction initiator additives in a jacketed reaction vessel with mixing and simultaneously conveying means therefore for moving the components in a main conveying direction. The apparatus includes means within the reaction vessel for repeatedly feeding a predetermined and selectable portion of the reaction mass in a direction opposite to the main conveying direction and backwards into the preceding reaction spaces.

3,726,649
DEMAND GAS GENERATOR SYSTEM USING SOLID PROPELLANT

Joseph E. Pelham, Brigham City, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed Nov. 11, 1971, Ser. No. 197,902
Int. Cl. B01j *7/00*
U.S. Cl. 23—281 **4 Claims**



A gas generator using concatenated, solid propellant changes, exhausts gases into an orificed pressure vessel, the pressure vessel being equipped with a pressure transducer connected to an electrical switch for automatically firing as many propellant charges as are necessary to create a predetermined gas pressure within the pressure vessel, and valve means on the orifice of the pressure vessel for withdrawing an instant supply of gas at a known pressure for operation of any of a variety of secondary devices. Optional items are a pressure regulator in tandem with the valve means on the outlet orifice, and a pressure release valve to prevent overpressurization of the pressure vessel.

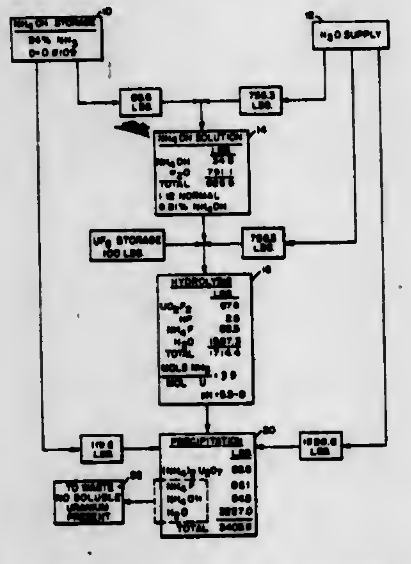
3,726,650
PROCESS FOR RECOVERY OF URANIUM VALUES BY PRECIPITATION OF AMMONIUM DIURANATE

Richard K. Welty, Columbia, S.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 804,137, Mar. 4, 1969, which is a continuation-in-part of application Ser. No. 718,949, Apr. 4, 1968, both now abandoned. This application Sept. 24, 1969, Ser. No. 865,232

Int. Cl. C10g *43/00*

U.S. Cl. 423—15 **6 Claims**



A process for the recovery of uranium as ammonium diuranate from aqueous solutions having uranyl and fluoride ions and for reducing the soluble uranium losses in the liquid waste stream thereof, by first forming an intermediate compound, uranyl fluoride (UO_2F_2), with dilute ammonium hydroxide to provide a solution at a pH of about 5.5 to 6.0, and then by precipitating essentially all of the uranium, as ammonium diuranate $[(NH_4)_2U_2O_7]$, from the solution under controlled conditions that prevent formation of any soluble fluoride complexes, such as $UO_2F_3\cdot 3NH_4F$, that would otherwise be ordinarily formed during the precipitation of the ammonium diuranate.

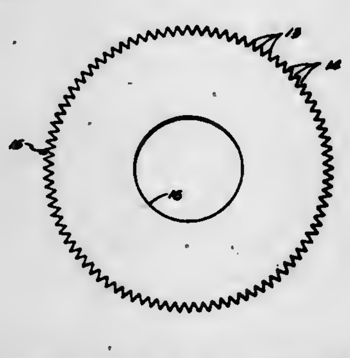
3,726,651
SYNTHETIC FIREPLACE LOG

Clifford P. Ronden, Edmonton, Alberta, Canada, assignor to Husky Briquetting, Inc., Cody, Wyo.

Continuation-in-part of application Ser. No. 756,864, Sept. 3, 1968. This application Dec. 15, 1969, Ser. No. 885,177

Int. Cl. C10l *5/36, 5/00*

U.S. Cl. 44—14 **4 Claims**



Synthetic fireplace logs are provided in the form of elongated, indurated bodies composed of a uniform mixture comprising charcoal (or charcoal and coal), sawdust and binder material. Particular compositions are employed which result in easily ignitable, clean, strong logs of controlled density and burning characteristics approximating those of natural woods. The outer longitudinal surface of the log is made up of a series of longitudinally extending ridges and valleys which increase the surface area, the ridges having at least one sharp longitudinal edge. These outer surface characteristics combine with the characteristics afforded by the compositions to provide easy lighting of the log.

3,726,652
SOLID FUEL COVERED WITH A COMBUSTIBLE FIBROUS COMPOSITION

John W. Schick, Cherry Hill, N.J., assignor to Mobil Oil Corporation

No Drawing. Continuation of application Ser. No. 607,907, Jan. 9, 1967. This application Nov. 20, 1970, Ser. No. 91,609

Int. Cl. C10l *5/36, 11/00*

U.S. Cl. 44—14 **11 Claims**

A solid fuel composition which has at least a portion of its surface covered with a combustible fibrous composition. Upon ignition, the fibrous composition begins to emit heat and continues to do so until the solid fuel has been ignited and emits heat.

3,726,653
POLYMERIC POUR POINT DEPRESSANT FOR RESIDUAL FUELS

Pieter H. van der Meij and Rudolf H. Bloembergen, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,042

Claims priority, application Great Britain, Dec. 18, 1969, 61,724/69

Int. Cl. C10l *1/18*

U.S. Cl. 44—62 **3 Claims**

Wax-containing crude oils and residual fuels containing, as a pour point depressant, a mixture of oil soluble polymers of olefinically unsaturated monomers having aliphatic hydrocarbon side chains with at least 14 carbon atoms and oil soluble copolymers of ethylene and an olefinically unsaturated aliphatic monomer having from 3 to 5 carbon atoms per molecule have improved pour point characteristics.

3,726,654
PROCESS FOR GASIFYING HEAVY HYDROCARBONS

Gerhard Baron, Hofheim; Horst Bechthold, Frankfurt am Main, and Helmut Liebgott, Bad Homberg, all of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Germany

Filed March 1, 1971, Ser. No. 119,915

Claims priority, application Germany, March 17, 1970, P 20 12 529.5

Int. Cl. C01b *2/14*

U.S. Cl. 48—215 **7 Claims**

High-boiling, heavy hydrocarbons are converted into a low-methane gaseous mixture containing hydrogen, carbon monoxide and carbon dioxide, substantially free of carbon black, by first reacting such hydrocarbons with water vapor and oxygen in the absence of a catalyst at elevated temperatures and thereafter contacting the resulting reaction mixture with a chromium oxide containing catalyst.

3,726,655
APPARATUS AND METHOD FOR ATTENUATING MINERAL FIBERS

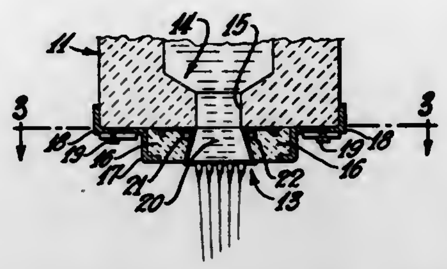
Michael S. Mitcham, Granville, Ohio, and Richard A. Pregnall, Columbia, S.C., assignors to Owens-Corning Fiberglas Corporation

Filed Nov. 27, 1970, Ser. No. 93,312

Int. Cl. C03b *37/02*

U.S. Cl. 65—1 **11 Claims**

An improved apparatus for attenuating mineral fibers from a liquid melt. The apparatus includes a furnace block having an interior trough for the liquid melt which extends through the lower surface thereof. A removable bushing support is clamped to the lower surface of the furnace block with an interior flared opening leading downwardly from the trough to a plurality of bushing orifices in its lower surface. Adjacent the interface between the furnace block and the bushing support and along the sides of the passage through the block are cooling pipes which are filled with cooling liquid when the bushings and their support structure are to be removed for repair or replacement. The cooling liquid in the pipes is effective to locally freeze off and solidify the melt in the passage across the interface to permit bushing support structure removal out thermal disturbance of the remainder of the installation.



3,726,656
METHOD OF PRODUCING ELONGATED, CLAD GLASS MEMBER

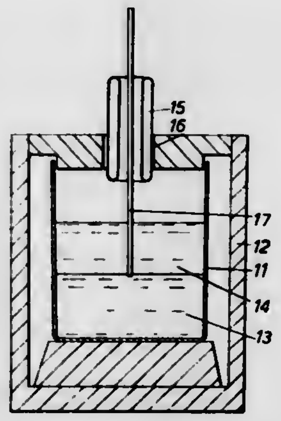
Alexander Mailer Reid, St. Helens, David William Harper, Liverpool, and Albert Forber, Skelmersdale, England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England

Filed Oct. 12, 1970, Ser. No. 79,761

Claims priority, application Great Britain, Oct. 14, 1969, 50,543/69

Int. Cl. C03b *15/14, 15/16*

U.S. Cl. 65—3 **2 Claims**



A molten layer of cladding glass is supported on a molten layer of core glass and an elongated glass member comprising cladding on a core is drawn from the free surface of the upper layer of glass. The elongated member is cooled just above the free surface of the upper layer of molten glass. The elongated glass member may be drawn to form a clad fibre for use in fibre optics. Bait is lowered to the molten glass to initiate drawing of the elongated glass member.

3,726,657
DECOMPOSABLE GLASS

Dennis M. VerDow, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

No Drawing. Filed June 25, 1970, Ser. No. 49,928

Int. Cl. C03c *15/00, 17/00, 19/00*

U.S. Cl. 65—23 **3 Claims**

Disclosed herein are decomposable glass articles made from a SiO_2–Na_2O glass and having a surface treated by a cuprous chloride ion exchange method which has been found to protect the articles from decomposition by aqueous attack until the ion exchanged surface zone has been ruptured or broken.

3,726,658
APPARATUS FOR ELECTRICALLY WELDING A DOUBLE WALLED GLAZING UNIT

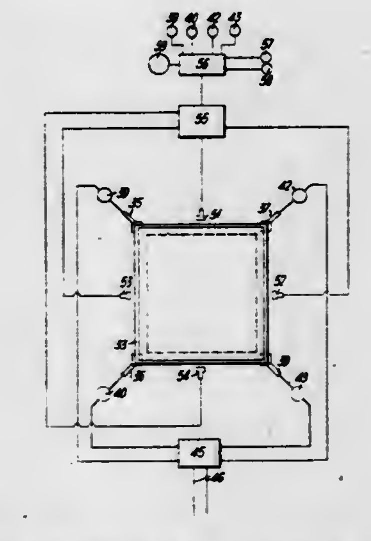
Kenneth Banks, St. Helens, England, assignor to Pilkington Brothers Limited, Liverpool, Lancashire, England

Filed Oct. 16, 1970, Ser. No. 81,339

Claims priority, application Great Britain, Oct. 17, 1969, 51,232/69

Int. Cl. C03b *23/14*

U.S. Cl. 65—40 **13 Claims**



A glass article, e.g. an all-glass multiple glazing unit, is manufactured by uniting at least two glass parts by a continuous weld. The regions of the glass parts to be united are heated to soften the regions and to form the desired weld. This step of heating the regions is performed by passing principal electrical heating currents through the whole of the region and then passing auxiliary electrical heating currents through only a part, i.e. the colder part, of the region.

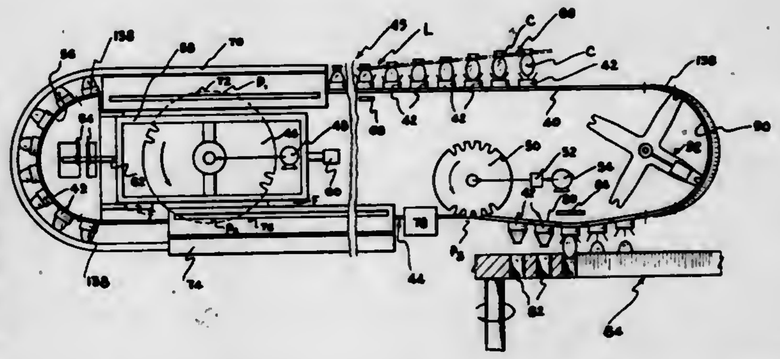
3,726,659
METHOD AND APPARATUS FOR FORMING A FINISH ON A GLASS CONTAINER

John D. Banyas and Edward A. Ross, Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Oct. 2, 1970, Ser. No. 77,425

Int. Cl. C03b *9/12*

U.S. Cl. 65—70 **21 Claims**



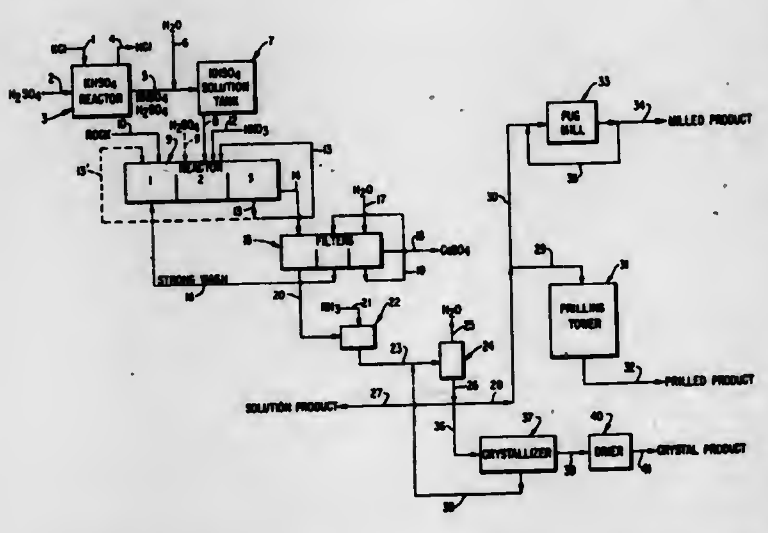
Method and apparatus for forming a finish on a glass container on a production line. Glass containers having an integrally formed moil portion on the upper end of the container body portion are loaded in sequence in an upright position into uniformly spaced chucks on a continuously moving endless conveyor. The containers are carried through a first heating zone while being driven in rotation to achieve even thermal exposure of the containers. During transit of the first heating zone, the containers are passed around a vertical end turn to orient the containers in an inverted position, with the moil portion lowermost, as they pass along a horizontal lower run of the endless conveyor. During their transit of the lower run, the containers pass between a linear row of opposed burners which direct a high intensity row of flame jets against a narrow portion of the container body to first thermally sever the moil portion from the body and to subsequently form a beaded finish on the container. The containers are rotated during their passage through this set of burners at a controlled rate to achieve the desired finish formation. The finish is subsequently inspected and containers with malformed finishes are promptly ejected at the inspection station. Containers not ejected at the inspection station are subsequently lowered partially into the pockets of a synchronized pocket conveyor, the container chucks being opened when the container is partially inserted into the pocket to drop the container the remaining distance into the pocket.

3,726,660
NITROPHOSPHATE FERTILIZER PRODUCTION

Erhart K. Drechsel, Houston, Tex., and John B. Sardisco, Shreveport, La., assignors to Pennzoil Company, Shreveport, La.

Filed Apr. 23, 1971, Ser. No. 136,960
Int. Cl. C05b *11/04*

U.S. Cl. 71—37 **2 Claims**



Nitrogen-phosphate-potassium fertilizer products are prepared by the reaction of phosphate rock or a solubilized form thereof and potassium hydrogen sulfate in the presence of nitric acid and the necessary amount of sulfuric acid to assure good filterability of the gypsum crystals at a temperature of about 40–90° C., the resulting mixture is filtered to remove the calcium sulfate precipitate and the resulting filtrate processed to provide a solution product, a crystallized product, a prilled product or a milled product or the resulting filtrate is treated with ammonia to provide nitrogen values and thereafter worked-up to a crystallized product, a solution product, a prilled product or a milled product.

3,726,661
ALKOXY-BENZYL-DITHIOCARBAMIC ACID ESTERS AS SELECTIVE HERBICIDES

Kiyoshi Matsushima, Masao Miyamoto, and Nobuo Fukazawa, all of Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

No Drawing. Application Dec. 8, 1969, Ser. No. 883,344, which is a continuation-in-part of application Ser. No. 840,068, Mar. 6, 1969. Divided and this application Dec. 7, 1971, Ser. No. 205,761
Int. Cl. A01n *9/12*

U.S. Cl. 71—101 **4 Claims**

Alkoxy-benzyl-dithiocarbamic acid esters, i.e. alkoxy-benzyl- -N-alkyl-, -N,N-dialkyl- and piperidino-dithiocarbamic acid esters, which possess herbicidal properties, and which may be produced by conventional methods.

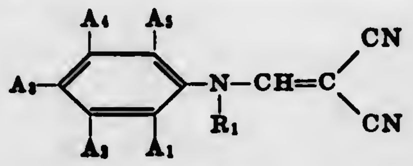
3,726,662
HERBICIDAL ANILINOMETHYLENE-MALONONITRILES

Robert K. Howe, Bridgeton, and Joseph W. Baker, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

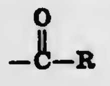
No Drawing. Filed Jan. 14, 1970, Ser. No. 2,961
The portion of the term of the patent subsequent to Dec. 29, 1987, has been disclaimed
Int. Cl. A01n *9/20*

U.S. Cl. 71—103 **6 Claims**

Herbicidal anilinomethylenemalononitrile compounds of the formula



wherein R_1 is selected from the group consisting of hydrogen, alkyl having a maximum of 8 carbon atoms and the group



$$-\overset{O}{\overset{\|}{C}}-R$$

in which R is an alkyl; A_1, A_2, A_3, A_4, and A_5 are independently selected from the group consisting of hydrogen, alkyl, halogen, haloalkyl, nitro, cyano, hydroxy, alkoxy, phenoxy, phenyl and substituted phenyl.

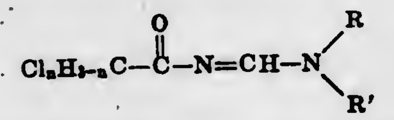
3,726,663
HERBICIDAL COMPOSITIONS COMPRISING SUBSTITUTED FORMAMIDINES

Angelo John Speziale, Creve Coeur, and Lowell R. Smith, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 737,345, June 17, 1968, Pat. No. 3,562,326. This application Feb. 12, 1970, Ser. No. 14,881
Int. Cl. A01n *9/20*

U.S. Cl. 71—118 **17 Claims**

Phytotoxically active compositions and method employing substituted formamidines of the formula



$$Cl_nH_{3-n}C-\overset{O}{\overset{\|}{C}}-N=CH-N\begin{matrix}R\\R'\end{matrix}$$

wherein *n* is a whole number from 1 to 3, inclusive, wherein R and R′ are like or unlike and are aliphatic containing from one to four carbon atoms, inclusive, and containing from 0 to 3 chloro substituents, inclusive. R′ can also be phenyl or monochloro- or dichloro substituted phenyl.

3,726,664
MAGNETIC ALLOY PARTICLE COMPOSITIONS AND METHOD OF MANUFACTURE

Charles C. Parker, Longmont, Colo., Rhodes W. Polleys, Concord, Mass., and Joseph S. Vranka, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Original application Apr. 1, 1969, Ser. No. 812,433. Divided and this application Apr. 15, 1971, Ser. No. 134,421
Int. Cl. B22f *9/00;* **H01f** *1/06*

U.S. Cl. 75—.5 A **8 Claims**

This invention relates to the preparation of finely divided particles and especially to the preparation of high coercivity, finely divided magnetic alloy particles by reduction of salts of cobalt, and mixtures of salts of cobalt and iron, mixtures of salts of cobalt and nickel, in a bath

containing hypophosphite and amine borane anion reducing agents. Sodium hypophosphite and dimethyl amine borane or any soluble salts which provide hypophosphite and amine borane anions in solution are reacted with soluble metal salts of cobalt alone, or cobalt with iron, or nickel dissolved in the bath. Precipitation of finely divided metal-phosphorus-boron alloy particles is brought about by the reduction of metal cations by the hypophosphite and amine borane anion reducing agents. After separating and drying, the precipitate is found to consist of non-pyrophoric magnetic alloy particles, including about 0.1–5% phosphorus and about 0.1–1.5% boron, which are generally spherical in shape and which vary in size from about 0.01 micron to 3.0 microns in diameter.

3,726,665
SLAGGING IN BASIC STEEL-MAKING PROCESS

William J. Minnick, Cheltenham, Pa., assignor to C. & W. H. Corson Inc., Plymouth Meeting, Pa.

No Drawing. Original application Oct. 15, 1969, Ser. No. 866,727, now Patent No. 3,645,719. Divided and this application Oct. 18, 1971, Ser. No. 190,410
Int. Cl. C21c *5/54*

U.S. Cl. 75—30 **20 Claims**

In a basic steel-making process wherein dolomite is charged as a slag-forming ingredient, the improvement wherein dolomite, prior to its charging, is intimately mixed with iron oxide in defined proportions, and formed into shaped bodies. In one preferred embodiment, the intimate mixture is pre-reacted, by heating, to convert the calcium oxide portion of the mixture into dicalcium ferrite with or without conversion of magnesium oxide to magnesio ferrite. Compositions for addition to a basic steel-making furnace in the form of preformed bodies of an intimate mixture of dolomite and iron oxide or the stated ferrite or ferrites resulting from the aforesaid pre-reaction, are also provided.

3,726,666
DEPHOSPHORIZATION OF ALUMINUM ALLOYS BY CADMIUM

Pierre Desre, Grenoble, Olivier Berthon, Syessinet, and Michel Jacquet, Coublevie, France, assignors to Compagnie Pechiney, Paris, France

No Drawing. Filed Aug. 18, 1970, Ser. No. 64,803
Int. Cl. C22b *21/06;* **C22c** *21/02*

U.S. Cl. 75—68 R **11 Claims**

Dephosphorization of aluminum and alloys of aluminum by reaction, while in a molten state, with cadmium or cadmium and lead whereby cadmium reacts with the phosphorus in the alloy to form cadmium phosphorus which separates with the cadmium from the alloy.

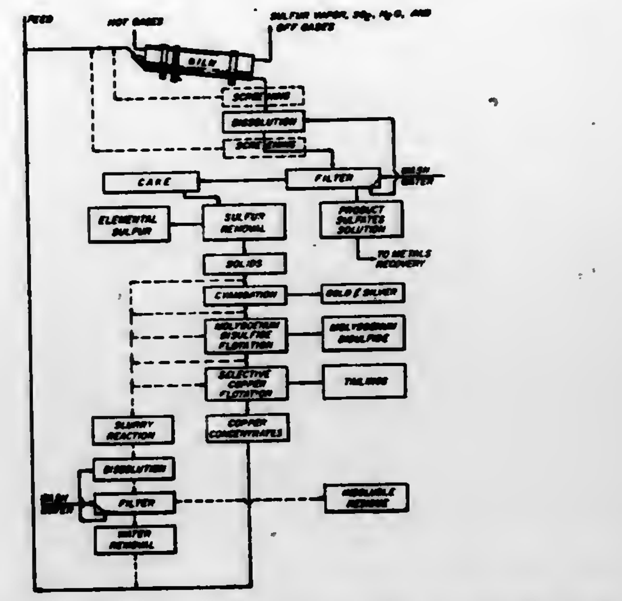
3,726,667
PROCESS OF LEACHING SULFIDE CONTAINING MATERIALS WITH HOT, STRONG SULFURIC ACID

Warren Fuchs, Long Island, N.Y., assignor to Treadwell Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 779,893, Nov. 29, 1968, which is a continuation-in-part of application Ser. No. 697,266, Dec. 18, 1967, both now abandoned. This application Oct. 29, 1971, Ser. No. 193,700
Int. Cl. C22b *15/08, 49/00*

U.S. Cl. 75—101 **19 Claims**

Materials such as ores, concentrates, and the like containing sulfides of copper, iron, zinc, lead, molybdenum, etc., with or without precious metals, are treated with strong sulfuric acid, the concentration being maintained between 80% and 100%. The amount of sulfuric acid is less than 3.8 moles per molar equivalent in the sulfides which react and preferably is 3 moles or less. The temperature is maintained between 160° and 250° C. and the particle size of the sulfide and gangue material is preferably not in excess of 8 mesh. The reaction is effected in paste or semi-solid form in apparatus such as a rotary kiln, and preferably the concentration of sulfuric acid is maintained by evaporation of water formed. Under these conditions at least 10% of the sulfur content of the reacting sulfides, and preferably at least 50%, is recovered in the form of elemental sulfur. To improve distribution of heat and reactant, larger particles, such as inert pebbles of at least ¼", are used, which larger particles become coated with the reactants and are effectively tumbled in the kiln while reaction occurs in the coating. The reaction may be carried out in stages, with the earlier stages maximizing sulfur production and later stages under more drastic conditions after interstage removal of elemental sulfur.



3,726,668
WELDING FILLING MATERIAL

Anton Bäumel, Lank, Niederrhein, Germany, assignor to Gebr. Bohler & Co. A.G., Kapfenberg, Austria

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,877
Claims priority, application Germany, Nov. 29, 1969, P 19 60 032.9
Int. Cl. C22c *39/54*

U.S. Cl. 75—125 **7 Claims**

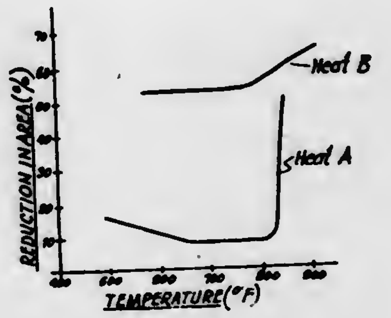
The filler material comprises metallic constituents and carbon and is of 0.001–0.2% carbon, 0.1–5.0% silicon, 0.25–10.0% manganese, 15.0–25.0% chromium, 3.5–6.0% molybdenum, 8.0–30.0% nickel, 0.01–3.0% copper, 0.1–0.35% nitrogen, related to the total weight of the metallic constituents and carbon, balance iron and inevitable impurities.

3,726,669
ELIMINATION OF LEAD EMBRITTLEMENT IN STEEL

Norman N. Breyer, Highland Park, and Sheldon Mostovoy, Homewood, Ill., assignors to La Salle Steel Company, Hammond, Ind.

Filed Mar. 3, 1971, Ser. No. 120,463
Int. Cl. C22c *39/54*

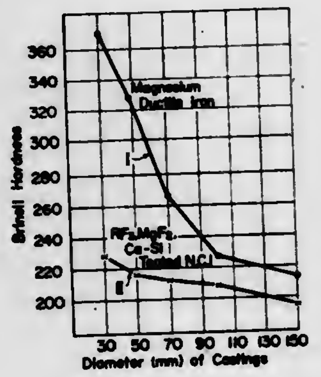
U.S. Cl. 75—129 **11 Claims**



This invention is addressed to the elimination of lead embrittlement in steels in which at least one rare earth metal is added to a steel to produce a steel having improved mechanical properties at elevated temperatures.

3,726,670
NODULAR GRAPHITE CAST IRON CONTAINING CALCIUM, RARE EARTH METALS AND MAGNESIUM AND A METHOD FOR ITS PRODUCTION

Kazuki Kusaka, 16–20 Honkugenuma 3-chome, Fujisawa, Japan
Continuation-in-part of application Ser. No. 622,854, Jan. 30, 1967, which is a continuation-in-part of application Ser. No. 186,704, Apr. 11, 1962, both now abandoned. This application Nov. 25, 1970, Ser. No. 92,805
Claims priority, application Japan, July 3, 1961, 36/23,178
Int. Cl. C22c *37/04*
U.S. Cl. 75—130 B **4 Claims**



Nodular graphite cast iron containing carbon in the range of from 3.2 to 4.2% by weight, silicon in the amount of from 1 to 4.5% by weight and in which the percent carbon plus one-third the percent silicon is equal to or greater than 4.0% is provided. The nodular graphite cast iron is characterized by contents of rare earth metal (R) 0.010–0.12% by weight, magnesium (Mg) 0.006–0.040% by weight and calcium (Ca) 0.002–0.025% by weight, and having the content ratio of rare earth metal and magnesium within the range R/Mg=1.0–4.0. The nodular graphite cast iron is produced by adding to a molten iron having a sulphur content of less than 0.03% by weight, a nodular graphite cast iron additive consisting essentially of 10 to 30% by weight of magnesium fluoride, from 10 to 30% by weight rare earth metal fluoride, and from 40 to 80% by weight calcium-silicon.

3,726,671
SEALING ALLOY

George A. Majesko, Glen Ridge, N.J., assignor to Wilbur B. Driver Company
No Drawing. Filed Jan. 15, 1971, Ser. No. 106,897
Int. Cl. C22c *39/10*
U.S. Cl. 75—134 F **3 Claims**

A glass sealing alloy comprising, as expressed in percent by weight, the following major constituents:

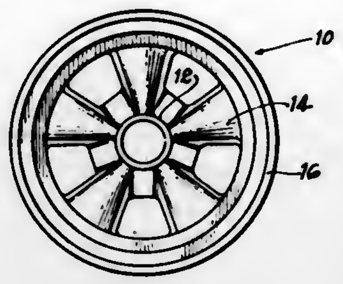
	Percent
Nickel	5.5–20.0
Cobalt	42.5–57.0
Chromium	5.0–6.5
Iron	Balance

the sum of the nickel and cobalt constituents falling within the range 62.0%–63.0%.

3,726,672
ALUMINUM BASE ALLOY DIECASTING COMPOSITION

Richard S. Lindberg, Homewood, and G. Leslie Armstrong, Crete, Ill., assignors to U.S. Reduction Co.
Filed Oct. 30, 1970, Ser. No. 85,372
Int. Cl. C22c *21/02*
U.S. Cl. 75—142 **2 Claims**

An aluminum base alloy and an automobile wheel diecast therefrom, the alloy consisting essentially of aluminum and by weight percentage of the total composition, magnesium 0.25 to 0.6%, copper 0.25 to 0.6%, iron 0.5 to 1.5%, silicon 11 to 13.5%, chromium 0.25 to 0.4%, a maximum of 3% zinc, a maximum of 0.5% manganese and a maximum of 0.2% of each of titanium, nickel, tin and lead.



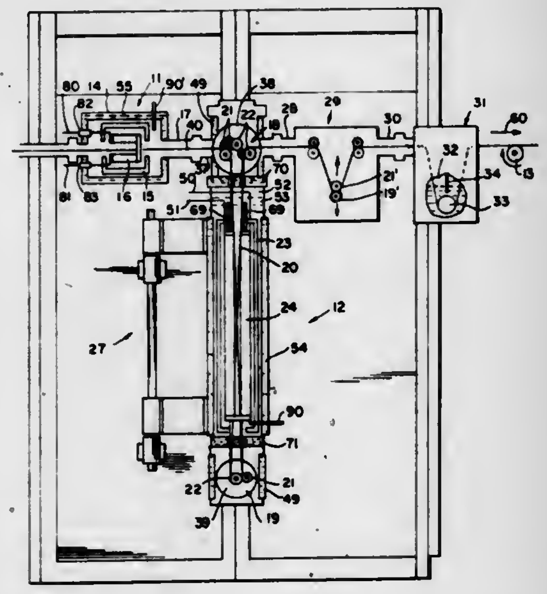
3,726,673
METHOD OF MAKING ALLOYED COPPER

Herbert Greenwald, Jr., Upper Arlington, Ohio, assignor to Berry Metal Company, Harmony, Pa.
No Drawing. Original application Nov. 18, 1969, Ser. No. 877,879, now Patent No. 3,615,374. Divided and this application Feb. 29, 1971, Ser. No. 119,390
Int. Cl. C22c *9/00*
U.S. Cl. 75—153 **18 Claims**

Deoxidized copper having near-trace amounts of iron and possibly also chromium is alloyed in a non-reactive environment with zirconium and aluminum. The resulting alloyed metal experiences a significantly delayed onset of embrittlement when stressed at elevated temperatures.

3,726,674
HORIZONTAL VERTICAL SINTERING METHOD

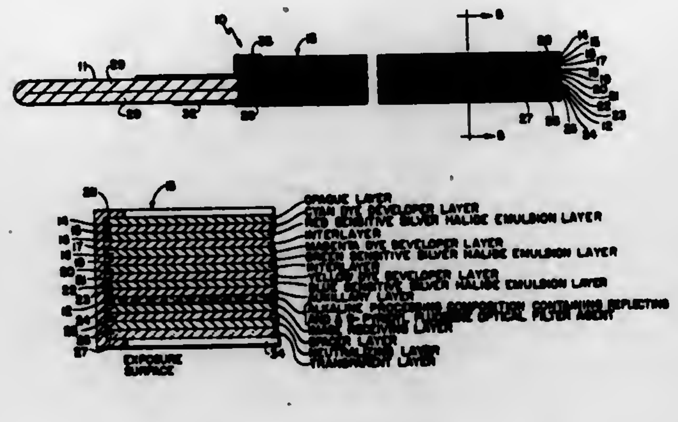
Gerhart P. Klein, 49 Raymond Manchester, Mass. 01944
Original application Aug. 21, 1968, Ser. No. 754,393. Divided and this application Sept. 23, 1970, Ser. No. 74,932
Int. Cl. B22f *1/00*
U.S. Cl. 75—221 **6 Claims**



A horizontal-vertical sintering furnace wherein a workpiece is presintered in the horizontal plane and sintered in the vertical plane. The workpiece makes multiple passes through a vertical sintering means.

3,726,675
FILM UNITS COMPRISING LIGHT REFLECTING MATERIALS AND 9 - [2-(N-ALKYL)-PYRIDYL]-FLUORENE OPTICAL FILTER AGENTS AND PROCESSES FOR THEIR USE

Alan L. Borror, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation of application Ser. No. 49,627, June 25, 1970. This application Sept. 28, 1971, Ser. No. 184,363
Int. Cl. G03c *1/84, 5/54, 7/00*
U.S. Cl. 96—3 **36 Claims**



The present invention relates to photography and, more particularly, to photographic film units which comprise photosensitive silver halide having associated therewith 9-pyridyl fluorene, and to photographic processes, more particularly, photographic diffusion transfer processes, adapted to employ such film units.

3,726,676
PROCESS FOR FORMING A CONTINUOUS TONE NEGATIVE AND POSITIVE IMAGE

Arthur Donald Ketley, Columbia, Clifton Leroy Kehr, Silver Spring, and Jennie Lee Touchette, Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Original application Oct. 11, 1968, Ser. No. 766,948. Divided and this application July 15, 1971, Ser. No. 163,081
Int. Cl. G03c *5/08*
U.S. Cl. 96—27 **17 Claims**

This invention is directed toward forming a silverless continuous tone photographic image having a scale index between 0.5 and 1.5 and a gamma of 0.5–1.5 (see "Kodak Notes on Practical Densitometry," Pamphlet No. E59, pages 1–76, Eastman Kodak Company, Rochester, N.Y., for definitions) from a supported pigment or dye filled liquid photosensitive composition by selectively insolubilizing portions of the composition on exposure to actinic radiation and removing the unexposed liquid portion of the composition from the support.

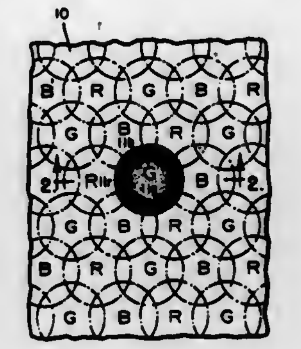
3,726,677
PHOTOPOLYMERISATION WITH LEUCO INDIGO DYE DERIVATIVES

Martin Hepher, Berkhampstead, and John Arthur Sperry, Chalfont St. Peter, England, assignors to Norprint Limited, Autotype Division, London, England
No Drawing. Filed Feb. 19, 1971, Ser. No. 117,138
Claims priority, application Great Britain, Mar. 6, 1970, 10,884/70
Int. Cl. G03c *1/68, 1/70*
U.S. Cl. 96—33 **9 Claims**

The polymerisation of unsaturated compounds caused by exposure to light of photosensitive systems is known and prior systems are discussed. The known sensitivity to light of leuco derivatives of indigoid dyes is employed to initiate the image-forming polymerisation of monomers. The invention provides a method of forming a polymeric resist image by the image-wise exposure of a base coated with a vinyl monomer dispersion containing a leuco sulphuric ester of an indigo or thio-indigo dye. The formation of etching resists, silk screen stencils and other image-bearing products is described.

3,726,678
METHOD OF SCREENING A COLOR PICTURE TUBE

Ronald C. Robinder, Hanover Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Aug. 24, 1970, Ser. No. 66,457
Int. Cl. G03c *5/00, 7/00, 7/66*
U.S. Cl. 96—36.1 **5 Claims**



The screen of a color picture tube is provided with an interlaced pattern of filter components individually transmissive of one of the primary colors, green, blue and red. The filters are applied through a photographic printing process in which the process for developing any one of the three filter components employs a coating of both a metallic luster and a photosensitive resist. The filter components are dimensioned to overlap at their peripheral portions and define, in the areas of overlap, a light attenuator. The non-overlapping portion of each filter receives a deposit of a phosphor which emits light of the wavelength to which the associated filter component is transmissive.

3,726,679
LIGHT SENSITIVE EPOXY FORMULATION

Oscar R. Abolafia and Michael J. Canestaro, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed June 30, 1971, Ser. No. 158,541
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 HD **16 Claims**

A method of rendering epoxy formulations light sensitive is provided. A formulation comprising an epoxy and a hardener is allowed to slowly react, or age, until the material is near its gel point, e.g., for about 1 day to about 30 days. After aging, from about 1% to about 5% of a sensitizer selected from a halogenated organic compound is added. The formulation is coated on a substrate, exposed to actinic radiation and solvent developed.

3,726,680
PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES IN THE PRESENCE OF COMPOUNDS OF THE THIADIAZOLE SERIES

Anita von König, Leverkusen, and Carl Metzger, Wuppertal-Elberfeld, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed May 19, 1970, Ser. No. 38,916
Claims priority, application Germany, June 14, 1969, P 19 30 338.9
Int. Cl. G03c *7/00*
U.S. Cl. 96—52 **5 Claims**

Processed photographic silver images are stabilized by the addition of antibronzing agents against loss of density and changes in image tone upon high gloss drying at high temperatures. Compounds with a high antibronzing effect are compounds of the 2-mercapto-5-ureido-1,3,4-thiadiazole series.

3,726,681
MULTILAYERED COLOR PHOTOGRAPHIC MATERIAL

Gerrit Pankow, Opladen, and Bernhard Morcher, Rigobert Otto, and Erick Bockley, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,224
Claims priority, application Germany, Nov. 22, 1969, P 19 58 709.8
Int. Cl. G03c *1/76*
U.S. Cl. 96—74 **2 Claims**

In a multilayered color color photographic material at least one of the three colored partial images is produced in a double layer consisting of two light-sensitive silver halide emulsion layers, both containing a color-forming coupler for the same partial image. One of the partial layers, preferably the upper one, is more sensitive to light than the other by from 0.1 to 0.6 log *I.t* units. The color-forming coupler in the more light-sensitive layer couples from 2 to 20 times more rapidly than that in the less sensitive layer. The necessary ratio of coupling velocities can be achieved by the methods used for incorporating the couplers in the layers. The material exhibits less graininess and higher sensitivity.

3,726,682
PHOTOGRAPHIC MATERIALS WITH ALKALI-SOLUBLE ANTIHALATION LAYER

August Jean Van Paesschen, Antwerp, Joseph Antoine Herbots, Edegem, and Lucien Janbaptist Van Gossum, Kontich, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,806
Claims priority, application Great Britain, Feb. 17, 1970, 7,587/70; Oct. 20, 1970, 49,791/70
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R **3 Claims**

The invention describes an antihalation layer for use in a photographic film material. The antihalation layer is applied to the side of the hydrophobic film support opposite to the light-sensitive layer and comprises an antihalation dye or pigment dispersed in a water-insoluble, alkali-soluble copolymer of vinyl acetate and crotonic acid comprising between 5 and 20% by weight of crotonic acid.

The antihalation layer dissolves away in alkaline developing baths or after treatment in a highly alkaline preliminary bath, readily dissolves in water.

The elimination of the antihalation layer in a developing bath or in water when a preliminary bath is used, may be facilitated by applying between the antihalation layer and the film support an intermediate layer formed from a mixture of 1 to 3 parts by weight of a cellulose ester and 3 to 1 parts by weight of at least one alkali-soluble polymer.

3,726,683
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT WITH DYE LAYER

Nobuo Yamamoto, Masakazu Yoneyama, Hiroso Ueda, and Yoshiaki Ono, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

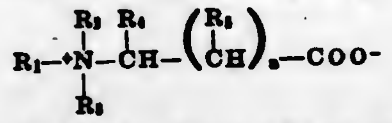
No Drawing. Filed Oct. 7, 1971, Ser. No. 187,553
Claims priority, application Japan, Oct. 7, 1970, 45/88,132
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 A **6 Claims**

A photographic element comprising a support having thereon at least one light-sensitive silver halide emulsion layer and at least one gelatin layer containing

(1) a polymeric basic mordant having more than 50% recurring units seelcted from the group consisting of 2-methyl-1-vinylimidazole units and the quaternary salts thereof, 2- or 4-vinylpyridine units and the quaternary salts thereof, alkylaminoalkylacrylate units and the quaternary salts thereof, and alkylaminoalkylmethacrylate units and the quaternary salts thereof,

(2) an oxonal or pyrazolone-styryl type dye having an acidic radical in its aromatic nucleus, and

(3) a betaine-type compound having the general formula:



$$R_1-\overset{+}{\underset{R_2}{\overset{R_3}{N}}}-\overset{R_4}{C}H-\left(\overset{R_5}{C}H\right)_n-COO^-$$

wherein R_1, R_2 and R_3, which may be the same or different, each represents an aliphatic hydrocarbon radical, R_4 and R_5, which may be the same or different, each represents a hydrogen atom or an aliphatic hydrocarbon radical, and the total of the carbon atoms in R_1 to R_5 is from 8 to 21, and *n* is 0 or 1.

3,726,684
SPECTRALLY SENSITIZING QUICK-PROCESSING PHOTOGRAPHIC MATERIAL

Oskar Riester, Leverkusen, and Armin Voigt, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,203
Claims priority, application Germany, Dec. 11, 1970, P 20 60 939.6
Int. Cl. G03c *1/06, 1/18, 5/38*
U.S. Cl. 96—95 **4 Claims**

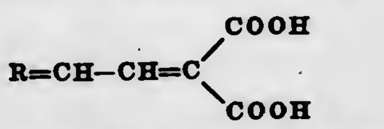
A light-sensitive photographic material comprising at least one silver halide emulsion layer, which contains developer substances and is suitable for quick-processing, can be spectrally sensitized by certain benzimidazole trimethine cyanines.

3,726,685
PHOTOSENSITIVE COMPOSITION COMPRISING LIGHT-SENSITIVE COPOLYESTER

Georges A. Philipot, Marie-Jose-Suzanne Michiels, and Yolande-P-M De Villeneuve, Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Mar. 12, 1970, Ser. No. 19,063, now Patent No. 3,674,745. Divided and this application Nov. 17, 1971, Ser. No. 199,787
Int. Cl. G03c *1/68*
U.S. Cl. 96—86 P **9 Claims**

There is described a novel group of light-sensitive copolyesters prepared by condensing at least one dihydroxy compound with a mixture of diacids comprising more than 70 and less than 95 mole percent of a diacid having the formula:



$$R{=}CH-CH{=}C(COOH)_2$$

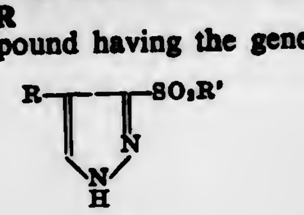
where R is an alkylidene, aralkylidene or heterocyclic group and less than 30 but more than 5 mole percent of a non-light-sensitive aromatic diacid.

3,726,686
LIGHT-SENSITIVE SILVER HALIDE EMULSION CONTAINING A PYRAZOLE COMPOUND ANTIFOGGANT

Yoshimi Kuwabara, Tokyo, Sadao Sugita, Hanno, Hiroyuki Inokuma, Issei Iwai, Yukichi Kishida, Tadahiro Iwashige, and Noboru Ishida, Tokyo, and Toshihide Miyamura, Sendai, Japan, assignors to Konishiroku Photo Industry Co., Ltd., and Sankyo Company Limited

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,841
Claims priority, application Japan, Dec. 1, 1969, 44/96,330
Int. Cl. G03c *1/34, 1/40*
U.S. Cl. 96—100 R **4 Claims**

A pyrazole compound having the general formula



wherein R and R′ are individually selected from the group consisting of phenyl, lower alkyl substituted phenyl, lower alkoxy substituted phenyl or halogen substituted phenyl is incorporated into a light-sensitive silver halide photographic material. The pyrazole compound may be used in an amount of 10 mg. to 2 g. per mole of silver halide contained in the photographic material. A light-sensitive silver halide photographic material which is essentially free from formation of fog and stain and which has good stability is obtained.

3,726,687
RECORDING MATERIAL CONTAINING CLUSTER SILVER COMPOUNDS

Derek Bryce-Smith, Highland Wood House, Mill Lane, Kidmore End, County of Oxfordshire, England, and Ernest Thomson Blues, 36 Reeds Ave., Earley, Reading, England

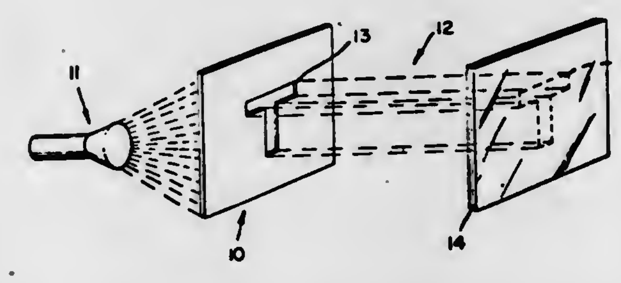
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,156
Claims priority, application Great Britain, Sept. 25, 1969, 47,325/69
Int. Cl. G03c *1/02*
U.S. Cl. 96—114.6 **15 Claims**

Recording material sensitive to electromagnetic radiation and or high energy elementary particles comprising a silver-containing layer in which the silver is present as a cluster silver compound having a proportion of the silver atoms thereof arranged in a plurality of layers of mono-atomic thickness with metal-metal bonds existing between the silver atoms of any one layer; and recording process using the same. The silver ketenide containing silver atoms arranged in mono-atomic layers is preferably prepared by the reaction of silver acetate and acetic anhydride in pyridine.

3,726,688
IMAGE FIXATION IN PHOTOCHEMICAL REPRODUCTION PROCESS

John B. Rust, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 20, 1968, Ser. No. 714,596
Int. Cl. G03c *5/00, 1/68*
U.S. Cl. 96—115 P **26 Claims**



In a photosensitive composition having a pH greater than 7 and comprising as a composite whole (a) a monomer polymerizable by addition and condensation reactions, (b) a latent catalyst alterable by heating to form an acid in the presence of water, and preferably (c) a photocatalyst system capable of inducing addition polymerization of the monomer when irradiated with actinic light, the method, for example, comprising (1) irradiating the basic photosensitive composition in the presence of water with heat or actinic light to form an image and (2) treating the photosensitive composition to cause the latent catalyst to form an acid to condensation polymerize the remaining monomer, and also effect the production of multiple colored imaging of the composite.

3,726,689
ANIMAL FOOD FROM RAW WHOLE FISH

Max Patashnik, Kirkland, Wash., assignor to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,806
Int. Cl. A22c *25/20;* **A23k** *1/10*
U.S. Cl. 99—3 **1 Claim**

Raw whole fish is coarsely ground to hamburger-like consistency while NaCl is added to the fish to salinize its aqueous content in order to influence solubilization of myofibrillar protein. The "hamburger" is then passed through a colloid mill to form a paste-like emulsion containing dissolved protein and dispersed globules of fish fat. Dissolved protein is then coagulated to gel the emulsion into a product suitable as animal food or bait.

3,726,690
ACIDIFIED FOOD PRODUCTS CONTAINING XANTHOMONAS COLLOID

Harry R. Schuppner, Jr., El Cajon, Calif., assignor to Kelco Company, San Diego, Calif.

No Drawing. Continuation-in-part of application Ser. No. 502,446, Oct. 22, 1965, now Patent No. 3,557,016, dated June 19, 1971. This application Dec. 28, 1970, Ser. No. 102,116
Int. Cl. A23g *3/00;* **A23l** *1/04, 1/24*
U.S. Cl. 99—139 **7 Claims**

A process for preparing an acidified food product by mixing a fat, milk solids or an edible protein, water or milk, an edible emulsifier, and a mixture of a Xanthomonas colloid and locust bean gum, heating the mixture to a temperature of about 160° F. or higher, adding an edible acid, homogenizing the mixture and sterilizing the food product. The acidified product may be canned or stored under refrigeration.

An acidified emulsion-type food product containing fat, an edible protein, flavoring ingredients and water and a mixture of a Xanthomonas colloid and locust bean gum in an effective amount to prevent or minimize serum separation from said product.

3,726,691
PROCESS FOR PRODUCING POLYGLYCEROL ESTER FLUFFY FROSTING MIXES

Paul Selden, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 25, 1971, Ser. No. 128,157
Int. Cl. A23g *3/00*
U.S. Cl. 99—139 **8 Claims**

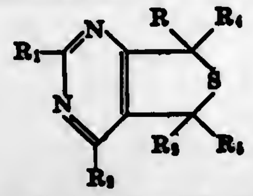
Dry prepared fluffy frosting mixes containing polyglycerol esters are produced by predispersing the polyglycerol esters in a hot aqueous sugar solution, cooling the resultant solution, blending the solution with dry sugar, grinding the resultant blend, and mixing the resultant blend with additional ingredients such as flavorings, salt, and thickeners. The dry mix can be made into a fluffy frosting by adding water and whipping the water and the mix together.

3,726,692
NOVEL CYCLIC FLAVORING COMPOSITIONS AND PROCESSES

Ira Katz, Elberon, Richard A. Wilson, Edison, William J. Evers, Long Branch, Manfred H. Vock, West Orange, and Gerrit W. Verhoeve, Lyncroft, N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

No Drawing. Filed Aug. 21, 1970, Ser. No. 66,110
Int. Cl. A23l *1/26;* **A24b** *15/04;* **C07b** *9/00*
U.S. Cl. 99—140 R **5 Claims**

Processes for altering the flavors and aromas of products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one heterocyclic pyrimidine having the formula:



wherein R_1, R_2, R_3, R_4, R_5, and R_6 are the same or different and represent hydrogen or alkyl; the products so produced; flavoring and fragrance compositions containing such heterocyclic pyrimidines; and novel heterocyclic pyrimidines and processes for their production.

3,726,693
DEHYDRATED FOOD COATED WITH EDIBLE OIL, GELATIN, GLYCERINE AQUEOUS EMULSION

Norman E. Harris, Waltham, Mass., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Dec. 22, 1970, Ser. No. 100,772
Int. Cl. A23b; B65b *23/00*
U.S. Cl. 99—199 **6 Claims**

Hardening of coated food items, such as dehydrated and compressed foods coated with an aqueous emulsion of edible oil, caseinate, glycerine and gelatin, which occurs upon exposure to temperatures above 85° F. is eliminated when the moisture level of the coated food items is held below 2% by weight.

3,726,694
CORROSION INHIBITING MOLYBDATE PIGMENT AND PROCESS FOR MAKING SAME

Fred W. Moore, Plymouth, Dennis R. Robitaille, Detroit, and Henry F. Barry, Ann Arbor, Mich., assignors to American Metal Climax, Inc.

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,745
Int. Cl. C09c *1/02, 1/04*
U.S. Cl. 106—14 **8 Claims**

A process for preparing an extended corrosion inhibiting pigment comprising a particulated carrier having a molybdate coating thereon, the corrosion inhibiting pigment produced by said process and protective coating formulations incorporating said pigment in amounts which are effective to inhibit corrosion of underlying substrates over which the coating formulations are applied.

3,726,695
GLASS-CERAMICS CONTAINING MULLITE

George H. Beall, Big Flats, and Hermann L. Rittler, Horseheads, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 28, 1971, Ser. No. 212,985
Int. Cl. C03c *3/22*
U.S. Cl. 106—39 DV **2 Claims**

The instant invention relates to the production of glass-ceramic articles having compositions within the

$$Cs_2O—Al_2O_3—SiO_2$$

field wherein the crystal phase present therein consists essentially of mullite ($3Al_2O_3 \cdot 2SiO_2$). Such articles exhibit good dimensional stability at temperatures up to about 1250° C. and range from translucent to transparent in appearance. This combination of properties has rendered these products exceptionally useful for high temperature lamp envelopes.

3,726,696
REFRACTORY PARTICULATES

Robert E. Ott, Bel Air, Md., assignor to SCM Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 817,128, Apr. 17, 1969. This application Aug. 28, 1970, Ser. No. 67,996
Int. Cl. B01j *11/06;* C03c *5/02*
U.S. Cl. 106—48 **1 Claim**

Discrete pieces of specially preformed refractory ceramic are useful in loose condition, bonded together in shapes, or subsequently bonded onto or into a substrate for use in apparatus or articles for the elevated temperature decomposition of combustible carbonaceous substances, e.g. fats, suitably in fume-treating apparatus, food cooking oven walls, fume handling and heat treating equipment, paper, incinerators, hot food conveyors, etc. The ceramic is the porous, sorptive structure obtained by heat interacting elemental metal-containing enameling composition, then arresting by cooling the ensuing reaction before substantial coalescene of the structure occurs. The enameling composition comprises alkali-bearing glass frit particles, about ½–25% halide based on the weight of said frit, and about 2–75 parts per 100 parts of solids in said composition of particles of elemental metal, particularly aluminum, magnesium, high alloys of either, and mixtures of same.

3,726,697
GLASS MANUFACTURE FROM PREREACTED BATCH AND COMPOSITION

William A. Mod and Donald L. Caldwell, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of applications Ser. No. 558,055, June 16, 1966, and Ser. No. 597,665, Nov. 29, 1966. This application Aug. 17, 1967, Ser. No. 662,272
Int. Cl. C03c *3/04*
U.S. Cl. 106—52 **7 Claims**

This specification discloses a non-decreptitating, dry, glass-making batch composition which is infinitely storable, and a method for preparation thereof, the composition being useful in preparing a final glass product having from about 4 to 20 weight percent of alkali metal flux oxides therein. The batch is characterized in that at least 50 weight percent of said alkali metal flux oxide concentration in the final glass product is derived from an alkali metal hydroxide as a component in the batch and further characterized in that the batch is in a substantially reacted discrete form prior to melting. A significantly reduced melting and fining time and a reduced seed count per unit time is obtained, among other advantages, from said glass making batch.

3,726,698
OPTICAL GLASS WITH CONTROLLED ULTRAVIOLET TRANSMISSION

George B. Hares and David W. Morgan, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,328
Int. Cl. C03c *3/08*
U.S. Cl. 106—54 **3 Claims**

This invention relates to crown glasses wherein the cut, i.e., the wave length limits within which must lie the wave length at which the transmittance is 37%, can be adjusted to wave lengths between about 3500 A.–3900 A. These glasses consist essentially, by weight on the oxide basis, of about 0.1–5% CeO_2, 0.5–5% La_2O_3, 5–10% ZnO, 15–22% B_2O_3, 15–23% SiO_2, and 43–50% BaO.

3,726,699
BURNED BASIC REFRACTORY AND BATCH THEREFOR

Michael A. Nelson, Jeffersonville, Ind., Robert F. Patrick, Louisville, Ky., and Thomas M. Wehrenberg, Jeffersonville, Ind., assignors to Corhart Refractories Company, Louisville, Ky.

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,722
Int. Cl. C04b *35/112*
U.S. Cl. 106—59 **13 Claims**

Compacted and burned refractory body made from size-graded particulate batch mixture of chemical grade (Transvaal) chromite grain with low-silica content, dead-burned magnesite grain, and fused magnesia-chemical grade chromite grain containing 40–58% MgO. Chromite grain forms 10–35% of batch as −10 +150 mesh particles. Other two grains form three particle fractions: 25–60% of batch being coarse −4 +20 mesh composed of (as percent of batch) 5 to less than 20% fused grain and more than 5 to 40% magnesite grain, 0–30% of batch being intermediate −10 +35 mesh and 15–60% of batch being fine −35 mesh, of which fine magnesite grain is at least 10% of batch. The total +28 mesh particles of chromite grain and magnesite grain constitute 4 to less than 50% of batch. Body burned at 1660° C. or higher characterized by modulus of rupture at 1340° C. consistently above 1700 p.s.i. and as high as 2000 p.s.i. or higher.

3,726,700
COMPOSITE PIGMENTS AND THEIR PREPARATION

Hans A. Wildt, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

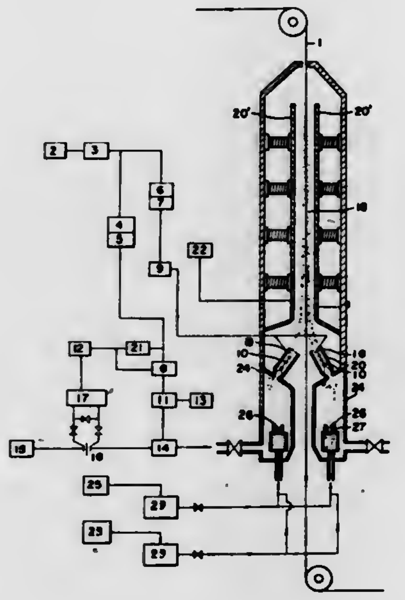
Int. Cl. C09c *1/36*
U.S. Cl. 106—300 **8 Claims**

Composite pigments, exhibiting high hiding power when incorporated into latex paints, are formed of a mineral extender comprising clay particles to which pigmentary titanium dioxide particles have been adhered by a precipitate of 1–15 percent by weight of hydrous oxides of titanium, aluminum, or silicon or mixtures thereof. The clay particles comprising the extender are preferably those derived from high kaolinite clays, or calcined or delaminated clays having an internal pore volume in the dry, compressed form of at least 0.3 cm^3/gm and an internal pore size distribution between 1.5 and 0.2 microns.

3,726,701
METHOD FOR CONTROLLING DEPOSIT OF COATING MATERIAL IN ELECTROSTATIC COATING

Takuitsu Nishikawa, Yokohama, Akira Ninomiya, Kawasaki, and Kango Sakai, Kitakyushu, Japan, assignors to Nippon Kogei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1971, Ser. No. 171,440
Claims priority, application Japan, May 11, 1971, 46/30,830
Int. Cl. B05b *5/02*
U.S. Cl. 117—17 **8 Claims**



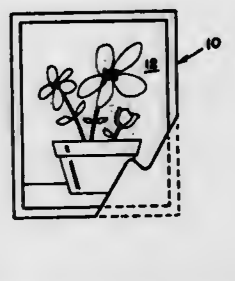
A method for controlling the deposition of an electrostatic coating material is disclosed. According to the method, a mist of coating material is first formed in a mist generator. The mist is then carried by an air stream to a delivery equalizer through which the mist is uniformly supplied to a mist container. The air stream subsequently carries the mist from the mist container to an electrostatic charging zone wherein the mist receives an electrostatic charge. Finally, the charged mist is supplied to an electrostatic deposition zone and is deposited on a continuously running sheet.

The quantity of coating mist is controlled by adjusting both the air-flow for carrying the mist and controlling the potential in the electrostatic charging zone in response to the variations in the speed of the continuous sheet.

3,726,702
METHOD FOR MAKING SHADED ARTWORK

Jerome C. Ciskowski, 37396 Mario Drive, Sterling Heights, Mich. 48077

Filed Dec. 17, 1970, Ser. No. 99,113
Int. Cl. B44c *1/20;* B44d *1/02*
U.S. Cl. 117—37 R **14 Claims**

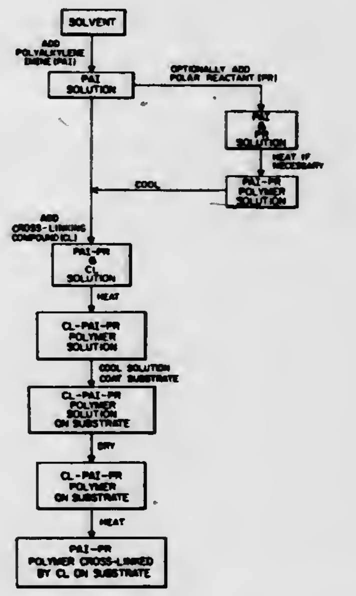


A method of shading artwork such as pictorial representations wherein paint, pencil, chalk or other suitable substance is deposited on a plurality of closely spaced projections on a surface which are formed to accept predetermined amounts of paint, pencil or chalk or other suitable substance to provide appropriate shading. When the user desires chalk as his medium, the image may be preserved by applying a fixing coat to the surface and may also be highlighted by applying paints to the surface.

3,726,703
NON-FOGGING MATERIAL

Ralph William Dornte, Lower Southampton Township, Pa., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Nov. 4, 1970, Ser. No. 86,883
Int. Cl. C09k *3/18;* C03c *17/32*
U.S. Cl. 177—47 A **24 Claims**


SOLVENT
ADD POLYALKYLENE IMINE (PAI)
PAI SOLUTION
OPTIONALLY ADD POLAR REACTANT (PR)
PAI & PR SOLUTION
HEAT IF NECESSARY
PAI–PR POLYMER SOLUTION
COOL
ADD CROSS-LINKING COMPOUND (CL)
PAI–PR & CL SOLUTION
HEAT
CL-PAI-PR POLYMER SOLUTION
COOL SOLUTION COAT SUBSTRATE
CL-PAI-PR POLYMER SOLUTION ON SUBSTRATE
DRY
CL-PAI-PR POLYMER ON SUBSTRATE
HEAT
PAI–PR POLYMER CROSS-LINKED BY CL ON SUBSTRATE

A non-fogging material is provided by applying a transparent non-fogging coating to a normally fogging transparent or reflecting substrate. The non-fogging coating comprises a highly cross-linked alkylene imine polymer. The polyalkylene imine may be further modified by an adhesion promoter through reaction with the amine hydrogens of the polyimine. The non-fogging articles include goggles — safety and ski, bathroom mirrors, windows, boat windshields, packages, eyeglasses and gas masks.

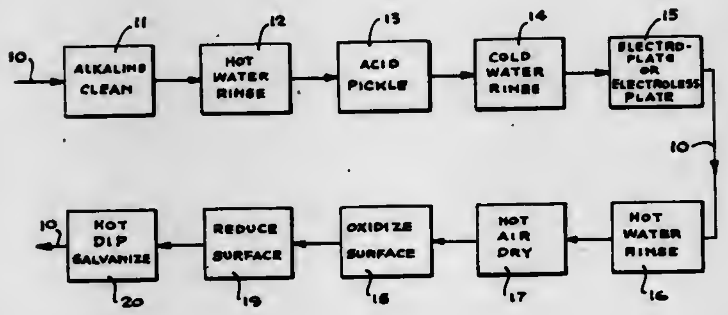
3,726,704
RUST PREVENTION PROCESS FOR SHEET STEEL PLATING BASE

Shoji Shimada, Tobata-ku, Fukuoka, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 729,127, May 14, 1968, abandoned, which is a continuation of Ser. No. 376,211, June 18, 1964, abandoned. This application Jan. 25, 1971, Ser. No. 109,646
Int. Cl. C23c *1/04, 1/02*
U.S. Cl. 117—51 **4 Claims**

Process for producing plated sheet steel by coating a sheet steel plating base with an alkylimidazoline, forming an acid salt of the amine on the plating base by passing the coated plating base through an acid washing solution, and plating the resultant sheet steel, without any rinsing of the acid salt, by dipping in a molten metal bath. Also provided is an electroplating process wherein the acid salt of the amine is rinsed from the plating base prior to electroplating.

3,726,705
PROCESS FOR GALVANIZING A FERROUS METAL ARTICLE

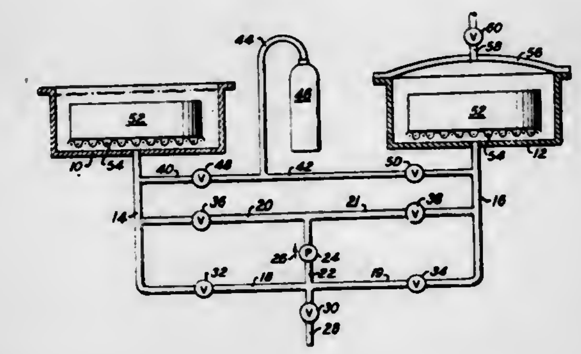
William A. Carter, Jr., Gary, and Arnold G. Preban, Dyer, Ind., assignors to Inland Steel Company, Chicago, Ill.
Filed June 30, 1971, Ser. No. 158,225
Int. Cl. B44d *1/34;* **C23c** *1/02*
U.S. Cl. 117—51 **10 Claims**



In a Sendzimir-type process for continuously hot-dip galvanizing a steel strip provided with special physical properties before galvanizing which avoids destruction of the special physical properties during the galvanizing process, a steel strip is placed with a thin surface coating of a non-ferrous metal which forms an oxide and whose oxide is reducible at a temperature below 1050° F., and preferably below about 900° F., and the coating of non-ferrous metal is oxidized in an oxidizing atmosphere to form an oxide film, the oxide film is reduced to the metallic form by heating the strip in a reducing atmosphere to a maximum temperature of 1050° F. and preferably no higher than about 900° F., and then the strip is immersed in a hot-dip galvanizing bath while the non-ferrous metal is maintained in the metallic form. The non-ferrous metals found most useful for surface coating of the steel strip are nickel, copper, and combinations of nickel and copper. The non-ferrous metal coating is preferably applied to the strip by plating either electrolytically or by non-electrolytic displacement to provide a coating having a weight ranging between about 10 and 100 mg./ft.^{2} with a preferred coating weight of between about 25 and 50 mg./ft.^{2}.

3,726,706
EXCHANGER PACKING

Ola Glav, Vallentuna, Sweden, assignor to Aktiebolaget Carl Munters, Sollentuna, Sweden
Continuation-in-part of application Ser. No. 561,705, June 30, 1966, which is a continuation-in-part of application Ser. No. 531,068, Mar. 2, 1966. This application Feb. 11, 1970, Ser. No. 10,471
The portion of the term of the patent subsequent to Mar. 10, 1987, has been disclaimed
Int. Cl. B44d *1/48;* **C03c** *25/02*
U.S. Cl. 117—62 **4 Claims**



Exchanger packings of corrugated laminated asbestos through which gases are passed for heat or moisture exchange are strengthened by dipping the fiber board sheets, or packing formed from such sheets, into an inorganic soluble salt solution, the excess liquid being drained and then precipitating the salt component upon the fibers of the packing by reacting with a gaseous medium. The inorganic salt is typically water glass, and the precipitating gas is typically carbon dioxide, sulfur trioxide, chlorine or the like.

3,726,707
PORCELAIN ENAMELING OF STEEL

Duane N. Prosser, Centerville, and Norman J. Sawdey, Kettering, Ohio, assignors to General Motors Corporation, Detroit, Mich.
No Drawing. Filed Oct. 4, 1971, Ser. No. 186,449
Int. Cl. C23c *3/02;* **C23d** *5/00*
U.S. Cl. 117—70 C **1 Claim**

Process for the porcelain enameling of steel involving electrolessly depositing nickel, cobalt and copper onto cleaned, pickled and etched steel prior to enameling.

3,726,708
PROCESS OF PRODUCING A COMPOSITE PHENOLIC RESIN FOAM ARTICLE AND RESULTANT ARTICLE

Franz Weissenfels, Siegburg, and Hans Jünger, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
No Drawing. Filed June 22, 1970, Ser. No. 59,788
Claims priority, application Germany, June 23, 1969, P 19 31 776.1
Int. Cl. B32b *5/18, 11/06*
U.S. Cl. 117—76 P **6 Claims**

A novel composite article of a phenolic resin foam adhered to an inherently water vapor pervious covering and impregnated with a tar, bitumen or vinyl, acrylic or phenolic polymer, whereby to decrease the porosity and increase the adhesion strength. This product is made by foaming a phonolic resin in contact with a porous covering material, suitably paper; hardening and setting the resin foam; impregnating and coating this foam-covering material article with one of the recited impregnants in liquid form; and then drying the product.

3,726,709
METHOD FOR THE MANUFACTURE OF CELLULOSE-CONTAINING MATERIAL WITH IMPROVED ABRASION RESISTANCE

Peter Garth Garratt, Wallisellen, Jürg Holgne, Zurich, and Jacques G. Heetman, Klingnau, Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland
No Drawing. Filed June 2, 1970, Ser. No. 42,906
Claims priority, application Switzerland, June 4, 1969, 8,475/69
Int. Cl. B44d *1/28, 1/50*
U.S. Cl. 117—93.31 **10 Claims**

Method of improving abrasion resistance and resistance to water absorption of wood and other cellulose containing materials in which the wood is impregnted with a polymerizable mixture containing vinyl acetate or propionate together with a highly branched monomer of a vinyl ester of a carboxylic acid containing seven to thirteen carbon atoms and the mixture polymerized.

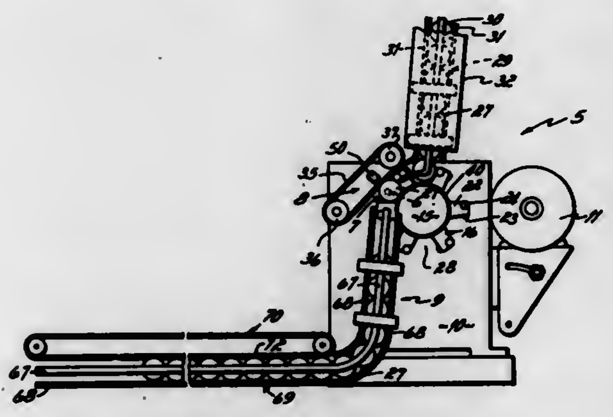
3,726,710
SILICON PAPER RELEASE COMPOSITIONS

Sidney E. Berger, Rye, N.Y., and Thomas C. Williams, Ridgefield, Conn., assignors to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 24,025, March 30, 1970, abandoned. This application Sept. 2, 1970, Ser. No. 69,126
Int. Cl. B44d *1/50;* **C09d** *3/82*
U.S. Cl. 117—93.31 **30 Claims**

Curable silicone release compositions comprising a crosslinkable olefinic containing organopolysiloxane compound and a photosensitizer and a paper substrate coated therewith; a process for preparing silicone paper release articles comprising subjecting said compositions coated on a paper substrate to high intensity predominantly continuum light radiation in order to crosslink the siloxane; and the silicone paper release articles obtained by said process.

3,726,711
METHOD AND APPARATUS FOR COATING METAL CAN BODIES

Edwin F. Hogstrom, Sheffield Lake, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Filed Sept. 28, 1970, Ser. No. 76,168
Int. Cl. B44d *1/02*
U.S. Cl. 17—96 **29 Claims**



A method and apparatus for applying a film of wax to the body of a can before the can is completely assembled with an end or ends. The wax is applied by melting a 100% solids wax and forcing it as a liquid without the addition of a solvent through an airless spray nozzle under conditions which results in a thin film of 100% solids wax being applied over the complete interior surface of the can body.

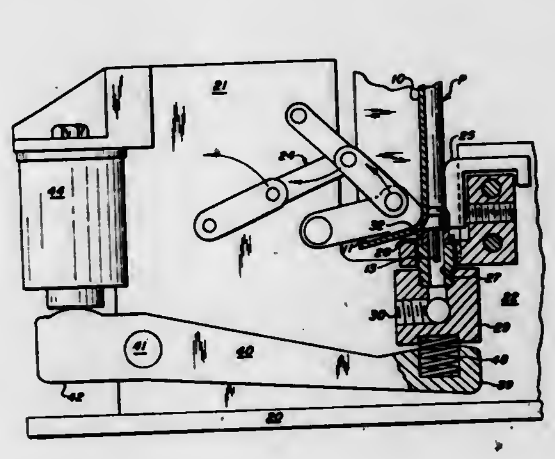
3,726,712
DOUBLE COATED ELECTRICAL CONDUCTOR

Robert E. Rieck, Naperville, Ill., and Edwin F. Morello, Whiting, Ind., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Filed May 26, 1971, Ser. No. 147,239
Int. Cl. B44d *1/18;* **C08g** *20/32*
U.S. Cl. 117—218 **10 Claims**

Insulated electrical conductors having a base coat of a polyamide-imide or polyamide prepared by reacting at elevated temperature (1) trimellitic anhydride or isophthalic acid or mixtures thereof. (2) diprimary aromatic diamines and (3) lactams or amino acids cured on the conductor and an overcoat of a polyamide-imide resin cured on the base coat, said polyamide-amide being the reaction product of (I) a trimellitic acid derivative and (II) a diprimary diamine or trimellitic anhydride and an aromatic diisocyanate.

3,726,713
METHODS OF TREATING ELECTRICAL HEATING ELEMENTS

Grover G. Hawk, North Canton, Frank A. Martin, Akron, and Tracy A. Poulson, Bowerston, Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Feb. 9, 1970, Ser. No. 9,887
Claims priority, application Great Britain, May 23, 1969, 26,481/69
Int. Cl. B44d *1/44*
U.S. Cl. 117—231 **4 Claims**



Methods of and apparatus for treating an electric resistance heating element of the type having an open-ended metallic sheath filled with compacted, electric-insulating, heat-conductive material in which is embedded an electrical conductor, whereby electrical leakage between the metallic sheath and the electrical conductor is reduced. The present invention provides for the introduction of a moisture-protective fluid, such as silicone oil, into the heating element sheath under pressure to achieve maximum dispersion of such fluid through the compacted material.

3,726,714
MAGNETIC RECORDING MEDIA INCLUDING COMPOSITIONS OF CARBON MODIFIED CHROMIUM OXIDE

Robert S. Haines, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Original application Dec. 22, 1969, Ser. No. 887,310. Divided and this application Apr. 26, 1971. Ser. No. 137,672
Int. Cl. H01f *10/02*
U.S. Cl. 117—235 **2 Claims**

This invention relates to a magnetic recording media including magnetic recording media including as the magnetic portion thereof ferromagnetic oxide compositions containing 59% to 62% chromium and 0.05% to 0.90% carbon combined with oxygen, and in the form of uniform, finely divided particles of tetragonal crystalline structure.

3,726,715
DIFFUSION APPARATUS

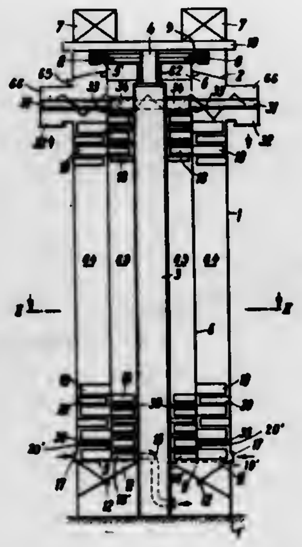
Franz Mushack, Wolfenbuttel, Germany, assignor to Braunschweigische Maschinenbauanstalt, Braunschweig am Alten, Bahnhof, Germany

Filed Apr. 13, 1971, Ser. No. 133,530

Claims priority, application Germany, June 29, 1970, P 20 32 014.3

Int. Cl. C13d *1/00, 1/12*

U.S. Cl. 127—5 **16 Claims**



Diffusion apparatus, preferably in the form of a diffusion tower, is especially useful in connection with the manufacture of sugar from beets or sugar cane. The starting material is comminuted by crushing, slicing or shredding and fed through the apparatus in counter current flow to an extraction liquid, by means of a hollow shaft conveyor, comprising inner and outer staggered transporting blades spaced from each other and forming in effect two separate feed worms, both of which have preferably the same pitch direction.

3,726,716
ORGANIC ELECTROLYTES FOR BATTERIES

Lee F. Athearn, Reading, and Charles C. Liang, Andover Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,950

Int. Cl. H01m *11/00, 17/02*

U.S. Cl. 136—100 R **5 Claims**

A high energy density electric cell has a light metal anode and an organic electrolyte containing an additive comprising a metal salt, the metal of which is an ion of a metal less reactive than lithium. This additive shows superior ability in removing passive film formed on the anode; and the additive includes metal chloride salts selected from the group consisting of $NiCl_2$, $MgCl_2$, $ZnCl_2$, $HgCl_2$, $PbCl_2$, $CdCl_2$, TlCl and the mixtures thereof.

3,726,717
FLAT CELL BATTERY AND METHOD OF MAKING

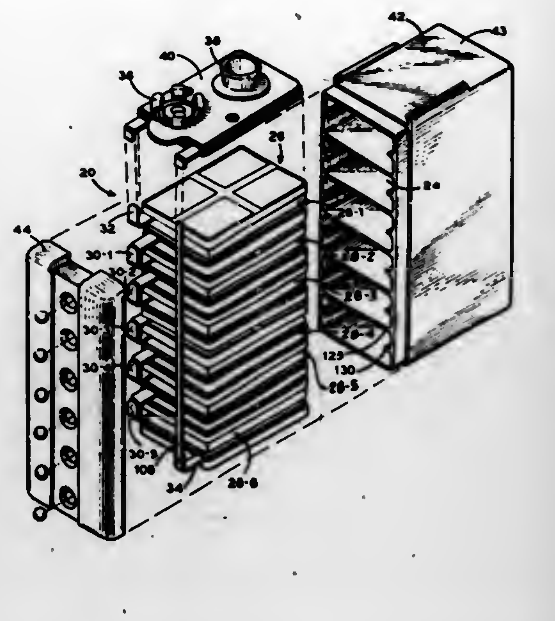
John F. Zaleski, Pleasantville, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Aug. 14, 1970, Ser. No. 63,767

Int. Cl. H01m *1/02*

U.S. Cl. 136—111 **11 Claims**

A multi-cell battery having a plastic casing shaped as a hollow regular parallelepiped with a long dimension, and initially open across a width dimension, and having a plurality of parallel cellular spaces in the depth dimension to define several cells to accommodate anode and cathode electrodes of rectangular shape for maximum space utilization of components in said cellular spaces including porous spacer, depolarizer and electrolyte, with a unitary closure element to cover and close and seal all of the cellular spaces, and prevent internal shorting, with the plastic casing walls being characterized to be air pervious to permit breathing venting and to prevent pressure build-up in the cells and to retain design format and prevent cracking of manganese dioxide depolarizer and consequent increase of internal battery resistance.



3,726,718
COMPOSITIONS CONTAINING LITHIUM, POTASSIUM, SULFATE AND NITRATE AND/OR NITRITE IONS

Geoffrey W. Mellors, Strongsville, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,829

Int. Cl. H01m *11/00*

U.S. Cl. 136—154 **5 Claims**

Compositions containing lithium, potassium, sulfate and nitrate and/or nitrite ions become good ionic conductors at temperatures above about 130° C. and are useful as electrolytes in electrochemical devices for use at temperatures in the ionically conductive range. In the composition which to all appearances is solid a liquid phase containing substantially all of the nitrate and/or nitrite ions is present encapsulated by a solid phase containing substantially all of the sulfate ions.

3,726,719
ION IMPLANTED SEMICONDUCTOR STRUCTURES

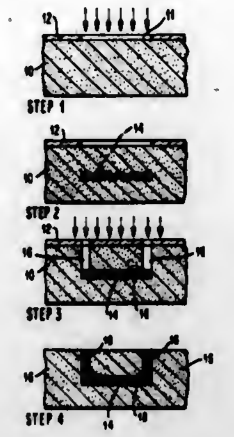
Karl Brack, Fishkill, Edward F. Gorey, Beacon, and Guenter H. Schwuttke, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 6, 1971, Ser. No. 186,890

Int. Cl. H01l *7/54, 19/00*

U.S. Cl. 148—1.5 **6 Claims**

Disclosed is a method for implanting silicon ions into monocrystalline silicon semiconductor substrates and forming amorphous insulating layers and boundaries within said substrate thereby forming isolation structures, devices and other discrete or interconnected semiconductor components. This is accomplished by bombarding the silicon body with controlled and directed silicon ions with an energy level sufficient to result in ion penetration to the desired subsurface depth.



3,726,720
METAL CONDITIONING COMPOSITIONS

Donald Joseph Guhde, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed May 24, 1971, Ser. No. 146,421

Int. Cl. C23f *7/08*

U.S. Cl. 148—6.15 R **17 Claims**

Concentrates and aqueous solutions containing orthophosphate ion, pyrophosphate ion, a complex fluorine-containing ion (i.e., fluosilicate) and magnesium ion are useful for treating metal surfaces in both 3-stage and 5-stage systems. The preferred compositions also contain a non-ionic surfactant, preferably an aliphatic polyether.

3,726,721
PROCESS FOR COATING ALUMINUM

Henry J. Wittrock and Bernard R. Baker, Pleasanton, and Albert H. Bushey, Danville, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed July 21, 1971, Ser. No. 164,816

Int. Cl. C23f *7/06*

U.S. Cl. 148—6.27 **10 Claims**

A process for forming an adherent, alkaline-resistant coating on an aluminum surface comprising treating the surface with an aqueous alkaline solution of a soluble alkaline earth compound such as calcium chloride. The coating is primarily complex double salts of calcium and aluminum.

3,726,722
NICKEL ALLOY PRODUCT AND METHOD OF MAKING

George S. Foerster and Garth D. Lawrence, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application June 30, 1967, Ser. No. 650,210. Divided and this application June 12, 1970, Ser. No. 45,918

Int. Cl. C22f *1/10;* **C22c** *19/00*

U.S. Cl. 148—11.5 F **11 Claims**

The invention is a high strength nickel alloy containing 1 to 20 percent by volume of intimately dispersed solid-insoluble second phase in a matrix of nickel or nickel alloy such as precipitation hardened alloy. The second phase is obtained by adding elements or compounds to nickel or nickel alloy in an amount in excess of their solid solubility in nickel. Elements or compounds which are only slightly soluble in nickel and form high melting compounds which have a useful liquid solubility are preferred. The alloy product is obtained by atomizing a substantially homogeneous melt, compacting the atomized particles and subjecting the compact to a wrought operation.

3,726,723
HOT-ROLLED LOW ALLOY STEELS

Arthur P. Coldren, and Robert L. Cryderman, both of Ann Arbor, Mich., assignors to American Metal Climax, Inc., New York, N.Y.

Filed May 11, 1970, Ser. No. 36,391

Int. Cl. C21d *7/14;* **C22c** *39/30, 39/54*

U.S. Cl. 148—12 **8 Claims**

A high-strength, low alloy steel containing about 0.01 to about 0.1 percent carbon, about 1.5 to about 2.5 percent manganese, about 0.1 to about 0.5 percent molybdenum, about 0.05 to about 0.2 percent niobium, and the balance iron, as the essential alloying constituents along with the usual impurities in conventional amounts. The low alloy steel is further characterized as having a predominantly acicular-ferrite microstructure contributing toward its excellent combination of strength and impact resistance in the hot rolled and hot rolled plus aged conditions.

3,726,724
RAIL STEEL

John Davies and Emyr Gwyn Jones, London, and William Henry Hodgson, Keswick, John Dixon Young, Seaton, and David Thomas Llewellyn, Rotherham, England, assignors to British Steel Corporation, London, England

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,374

Claims priority, application Great Britain, Mar. 20, 1970, 13,487/70

Int. Cl. C22c *39/54;* **C21d** *9/04*

U.S. Cl. 148—36 **9 Claims**

A steel rail section which contains a grain refining element and which has been subjected to normalising or controlled rolling to produce a ferrite grain size finer than A.S.T.M. 8 has a greater resistance to brittle fracture than current rail sections especially at low temperatures while retaining good tensile properties. The addition of a hardening element benefits wear resistance. Suitable grain refining elements are aluminium, vanadium, titanium, niobium, zirconium, while suitable hardening elements are manganese, silicon, chromium, nickel and molybdenum. Carbon levels can be between 0.2 and 0.85% by weight but are preferably not more than 0.39%, below the level for conventional rail steel. Between 0.5 and 2.5% by weight manganese or up to 1.5% by weight silicon are preferred as the hardening elements. For grain refining it is preferred to use aluminium or vanadium with a normalising treatment, or aluminium and niobium together with a controlled rolling process.

3,726,725
THERMAL MECHANICAL PROCESSING OF ALUMINUM ALLOYS (A)

Edward Gold, Santa Ana, Calif., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Mar. 22, 1971, Ser. No. 126,509

Int. Cl. C22f *1/04*

U.S. Cl. 148—12.7 **2 Claims**

This invention is concerned with the combined thermal and mechanical treatment of aluminum Alloy 2024 to produce a highly unusual combination of yield strength and ductility. The chemistry of this alloy is 4½% copper, 1½% magnesium, 0.6% manganese with the remainder essentially all aluminum. This alloy is also conventionally known as SAE 24 and 240. This treatment yields an alloy having a 0.2% yield strength of 75,000 to 85,000 pounds per square inch and ultimate tensile strength of 85,000 to 95,000 pounds per square inch and an elongation in a 2 inch gauge length of 8 to 10%.

3,726,726

METHOD OF PRODUCING DIFFUSED HIGH-RESISTIVITY MICRORESISTORS

Yordan Dimitrov Kasabov, Sofia, Bulgaria, assignor to Tzentralen Institut za Elementi, Sofia, Bulgaria
No Drawing. Filed Jan. 4, 1971, Ser. No. 103,929
Claims priority, application Bulgaria, Jan. 14, 1970, 13,746
Int. Cl. H01l *7/44*
U.S. Cl. 148—187 2 Claims

A method of producing diffused high-resistivity microresistors in a silicon wafer wherein, after the surface of the wafer is cleaned and etched to provide windows, the wafer is heated in vacuum with B_2O_3 to deposit impurity boron atoms upon the surface and prediffuse boron into the windows. The prediffusion takes place at a temperature of the order of 800° C. After penetrating diffusion, the wafer is exposed at the same temperature to an oxidizing atmosphere to render the boron atoms susceptible to solubilization in HF. The surface is then treated with an HF etchant to remove the nondiffused impurity atoms.

3,726,727

CHEMICAL WELDING MATERIAL

Wataru Ishibashi, 1563 Ichimiyake, Yasugun, Japan
Filed Jan. 15, 1971, Ser. No. 106,666
Claims priority, application Japan, May 19, 1970, 45/43,087
Int. Cl. C06b *19/00*
U.S. Cl. 149—2 4 Claims

The invention provides a chemical welding composition material of a powdered light metal and a metal oxide molded under pressure into a solid form, thereby producing a material capable of providing concentrated heat to weld works quickly, and ensuring adaptability of the composition material for works difficult to weld, such as with deep holes, narrow curved parts, or lengthy workpieces, without need for special procedures or tools.

3,726,728

BINDERLESS CAST PHOTOFLASH COMPOSITIONS

Howard W. Kruse, Ridgecrest, and Bertram A. Breslow, China Lake, Calif., and Raymond W. Szypulski, Berwin Heights, Md., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,328
Int. Cl. C06b *11/00*
U.S. Cl. 149—17 6 Claims

A binderless cast photoflash composition consisting of about 40% by weight metal powder dispersed in about 60% by weight molten inorganic oxidizer. This composition is less sensitive to impact, friction, and static electricity than flash powders consisting of finely divided loose-powder metal and oxidizer mixtures.

3,726,729

SOLID PROPELLANT COMPOSITIONS HAVING A NITROCELLULOSE - HYDROXYL-TERMINATED POLYBUTADIENE BINDER AND METHOD OF PREPARING THE SAME

Everette M. Pierce, Somerville, Ala., assignor to the United States of America as represented by the Secretary of the Army
No Drawing. Filed June 30, 1965, Ser. No. 469,975
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 8 Claims

Improved nitrocellulose-base compositions obtained by incorporating hydroxyl-terminated polybutadiene polymer in the nitrocellulose binder. Propellant compositions based on the resulting binder exhibit substantially improved strength and thermal stability.

3,726,730

PYROTECHNIC DELAY COMPOSITION CONTAINING HEAVY METAL SOAP

James E. Rose, Bryans Road, Md., and Roswitha Zimmer-Galler, Niceville, Fla., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Mar. 20, 1972, Ser. No. 236,173
Int. Cl. C06b *15/00*
U.S. Cl. 149—40 11 Claims

This invention relates to a pyrotechnic time delay composition which comprises tungsten, potassium perchlorate, barium chromate, diatomaceous earth, and a heavy metal soap.

3,726,731

COMPOSITE MATERIALS PRODUCING SUSTAINED COLORED FLAMES

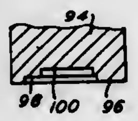
Leon Kliott, Hollywood, Fla., assignor to LCP Scientific, Inc., Miami, Fla.
Filed Feb. 24, 1971, Ser. No. 118,473
Int. Cl. C06b *15/00*
U.S. Cl. 149—109 10 Claims

This invention relates to chemical compounds or composite materials which, when exposed directly to an open flame, give the flame a sustained pre-determined color. Such chemical compounds can be used in a solid, jelly, liquid or gaseous form.

3,726,732

MULTI-STEP ETCHING PROJECTION SYSTEM

Robert W. Richardson, Wilmington, Del., and James J. Keegan, III, Upper Darby, Pa., assignors to The Franklin Mint, Inc., Franklin Center, Pa.
Filed July 9, 1970, Ser. No. 53,358
Int. Cl. C23f *1/02*
U.S. Cl. 156—11 6 Claims



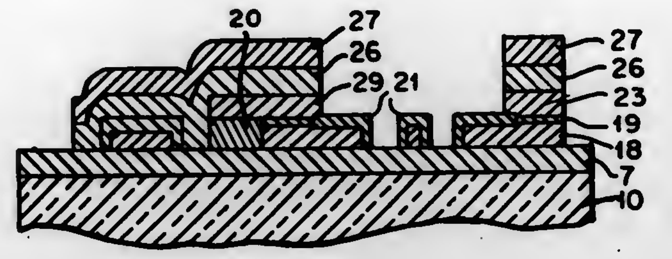
An optical projection system employing ultraviolet light for step projection and repeat projection of imagery to the surface of a photoresist coated coining die so that the die may be etched to various levels in registration with other projections. This permits photofabrication of dies of various sizes from a single series of step and repeat photographic negatives, each of which is in photographic registration to each other and to the respective etched surface of the coining die being fabricated. Filtered light permits visual examination of the projected imagery prior to exposure of the photoresist surface on the die. Enlargements and reductions are also possible with suitable lens systems.

3,726,733

METHOD OF MANUFACTURING THIN-FILM INTEGRATED CIRCUITS

Masashi Nakamura, Tokyo, and Junichiro Yamazaki, Takeshi Kamo, and Shin Akiba, Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Feb. 3, 1971, Ser. No. 112,227
Claims priority, application Japan, Feb. 10, 1970, 45/11,584
Int. Cl. H01l *7/50*
U.S. Cl. 156—17 3 Claims

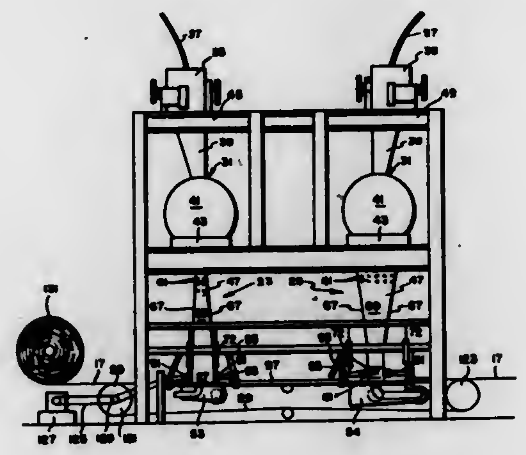
A method of making a thin-film integrated circuit containing a tantalum nitride resistor and a tantalum capacitor is disclosed. A thin tantalum layer is provided on the upper surface of the tantalum nitride. This double layer is anodically oxidized in order to adjust the resistance value of the resistor. A tantalum pentoxide layer converted from the tantalum layer substantially protects the tantalum nitride from the etching liquid in the patterning of a tantalum layer for the formation of the tantalum capacitor deposited on the entire surface of the substrate subsequent to the formation of the resistor.



3,726,734

METHOD OF CONTINUOUSLY FORMING A PAD OF FIBROUS MATERIAL

Charles A. Lee, Knoxville, Tenn., assignor to International Paper Company, New York, N.Y.
Original application Apr. 18, 1968, Ser. No. 722,369, now Patent No. 3,598,680. Divided and this application Aug. 28, 1970, Ser. No. 67,785
Int. Cl. B29j *5/04*
U.S. Cl. 156—62.2 2 Claims



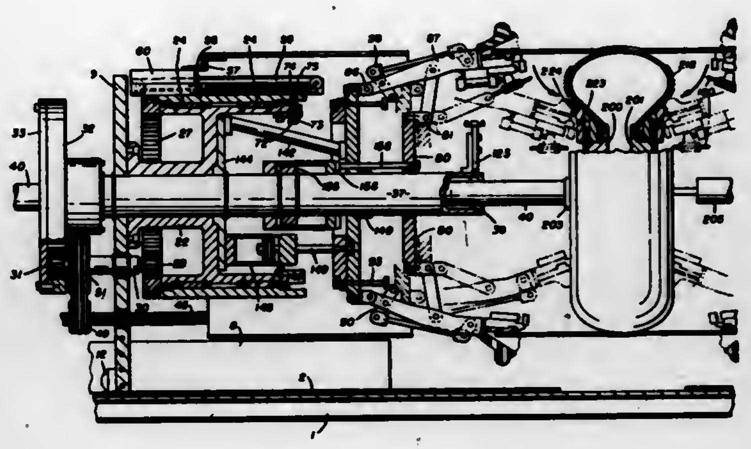
A fibrous web of non-uniform, cross-sectional thickness is formed in a continuous manner by air laying fibrous material at a first station and then air laying additional fibrous material at a second station downstream from the first to overlap at least partially the fibrous material deposited at the first station. To provide and maintain a precise configuration for the thicker portion of the web, a pressure differential is maintained across the web being formed to cause the air to flow through the thicker portion of the web as well as the thinner portions of the web at the substantially same rate as it approaches the web.

3,726,735

PROCESS OF MANUFACTURING RADIAL TIRES

Edward J. Harris, Akron, Ohio, assignor to Frances Harris, Akron, Ohio
Continuation of abandoned application Ser. No. 683,881, Nov. 17, 1967. This application Dec. 16, 1970, Ser. No. 98,919
Int. Cl. B29h *17/10, 17/12, 17/20*
U.S. Cl. 156—132 12 Claims

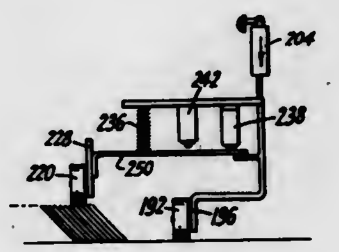
The invention relates to a process of building a tire with reinforcing elements which lie in planes which are substantially radial with respect to the tire axis. The tire is built on adjacent drum parts whose outside diameter is the diameter of the tire, and these are movable axially from the sides of an inflated bladder of the same diameter. Plies with parallel reinforcing elements are placed on the drum surface, with the reinforcing elements extending substantially perpendicularly to the center plane of the bladder. The drum parts are then moved away from the tire and the plies are brought down around the bladder, and beads are turned up in their edges.

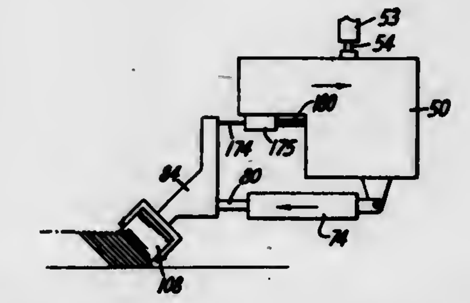


3,726,736

ROLL COVERING MACHINE

Alan N. Wolfenden, Balboa, Calif., assignor to AMF Incorporated, White Plains, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,206
Int. Cl. B32b *31/30;* G05g *15/00*
U.S. Cl. 156—187 11 Claims





Apparatus for covering a roll with a layer of elastomeric material which comprises means for rotating the roll, an extruder for extruding a strip of elastomeric material, means for effecting relative transverse movement between the extruder and the roll for winding the strip around the roll progressively therealong, means for developing an electrical signal in response to the progressive buildup of the elastomeric covering, and means for controlling said relative transverse movement in response to the signal developed by said progressive buildup of elastomeric material.

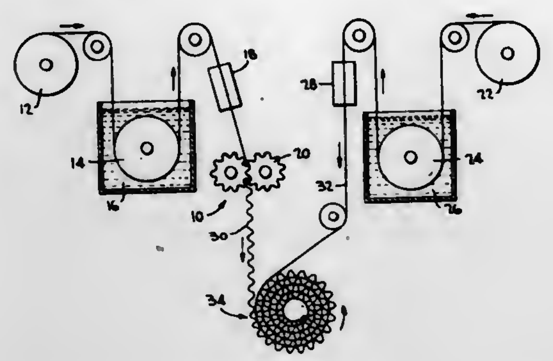
3,726,737
METHOD OF PRODUCING SILICON CARBIDE ARTICLES HAVING THIN LAYER CONSTRUCTION

Takeo Nishikawa, Chigasaki, Japan, assignor to Nippon Oil Seal Industry Co., Ltd., Fujisawa, Kanagawa, Japan

Filed Oct. 22, 1970, Ser. No. 83,037

Int. Cl. D21f *11/12;* **B31f** *1/20;* **C01b** *31/36*

U.S. Cl. 156—210 **8 Claims**



Production of articles of silicon carbide having multiple thin layer construction by forming a multiple layer construction of cellulosic sheets such as paper, carbonizing the construction in a non-oxidizing atmosphere, and silicon-carbonizing the resultant article. Some or all of the sheets may be shaped such as by corrugating and the sheets may be resin-impregnated and adhesively treated prior to formation of the initial multiple layer construction to provide a firmer product.

3,726,738
METHOD OF MAKING A CARBONIZED MATERIAL OF EXPANDED GRAPHITE AND CARBON FIBERS

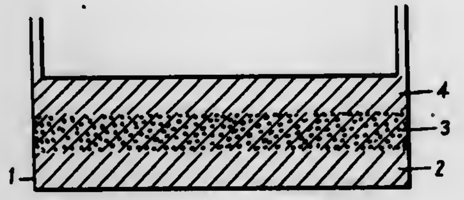
Joseph Gellon, 20 Rue de Villeneuve, 92 Clichy, France, and Jean-Pierre Slonina, 23 bis Route de la Cascade, 78 Le Vesinet, France

Filed Aug. 21, 1970, Ser. No. 66,030

Claims priority, application France, Aug. 7, 1969, 6929331

Int. Cl. B32b *31/04*

U.S. Cl. 156—276 **9 Claims**



A method of manufacturing a carbonised material which is resilient and resistant to high temperatures consists in closely combining together expanded graphite and carbon fibres.

3,726,739
METHODS OF CEMENTING SOLID MATERIALS

Horst Dalibor, Harksheide, Gunter Stenzel, Hamburg, and Richard Gutte, Oststeinbek, Germany, assignors to Reichhold-Albert Chemie Aktiengesellschaft

Filed Dec. 7, 1970, Ser. No. 95,797

Claims priority, application Switzerland, Dec. 8, 1969, 18,227/69; Mar. 4, 1970, 6,625/70

Int. Cl. C09j *5/02*

U.S. Cl. 156—308 **8 Claims**

This invention relates to a method of cementing solid materials by applying molten thermoplastics as fusion contact adhesives and allowing the molten thermoplastics to cool in contact with at least one of the materials to be cemented, in the usual way, characterized in that copolymers consisting of

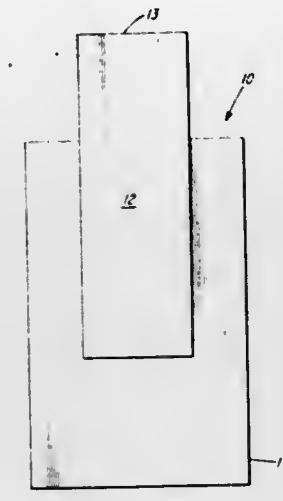
(a) a nitrile of an α,β-ethylenically unsaturated mono- or dicarboxylic acid or a mixture of more than one such nitrile,

(b) an amide of an α,β-ethylenically unsaturated mono- or dicarboxylic acid or a mixture of more than one such amide,

(c) an ester of an α,β-ethylenically unsaturated mono- or dicarboxylic acid, containing 4 to 12 carbon atoms in the alcohol residue, of a mixture or more than one such ester, and

(d) methyl methacrylate

are used as fusion contact adhesives. The preferred embodiment of the invention is characterized in that a product of a reaction between the copolymer and 0.01 to 1.0% by weight of formaldehyde or formaldehyde-releasing agents is used as a fusion contact adhesive.



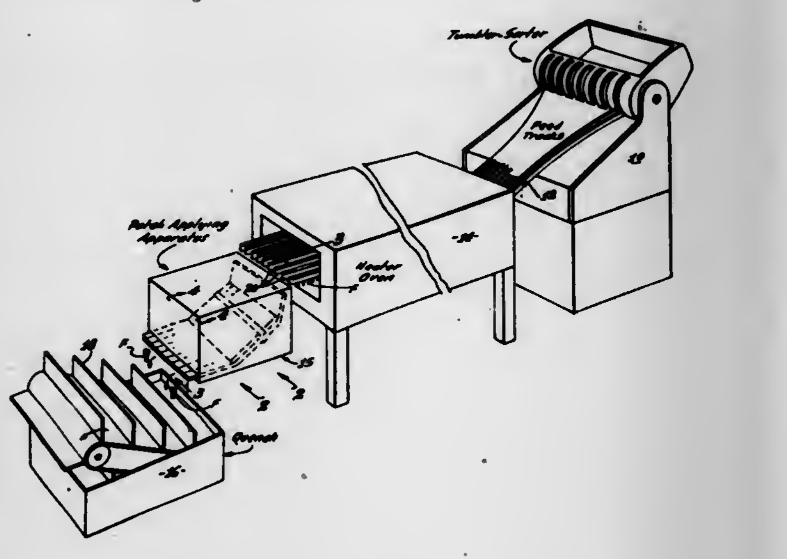
3,726,740
APPARATUS FOR FORMING SELF-LOCKING FASTENERS

Otto Kurt Schwenzfeier, Chula Vista, Calif., assignor to Long-Lok Fasteners Corporation, Cincinnati, Ohio

Filed May 10, 1971, Ser. No. 141,654

Int. Cl. B32b *31/18, 31/20*

U.S. Cl. 156—363 **28 Claims**



For the production of screw fasteners with plastic patches thereon, the fasteners are preheated to a high temperature. Each heated fastener pauses at a processing station where a predetermined increment of a plastic strip is severed and dropped onto the hot fastener and as the plastic melts a pressure shoe forms the plastic to the curved cross-sectional configuration of the fastener. The fasteners are then quenched. For high production a number of the fasteners are processed simultaneously on each of the repeated cycles of operation. The apparatus is readily adjustable to handle fasteners of different sizes.

3,726,741
METHOD OF BONDING EMPLOYING RADIAL BLOCK COPOLYMER ADHESIVE COMPOSITIONS

Terence C. Middlebrook, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Oct. 7, 1970, Ser. No. 78,982

Int. Cl. B44c; A43d *9/00*

U.S. Cl. 156—334 **4 Claims**

Radial or branched block copolymers of butadiene and styrene are employed as adhesive compositions in a solvent in the absence of a tackifying agent to bond radial block copolymer compounds containing naphthenic-type extender oils.

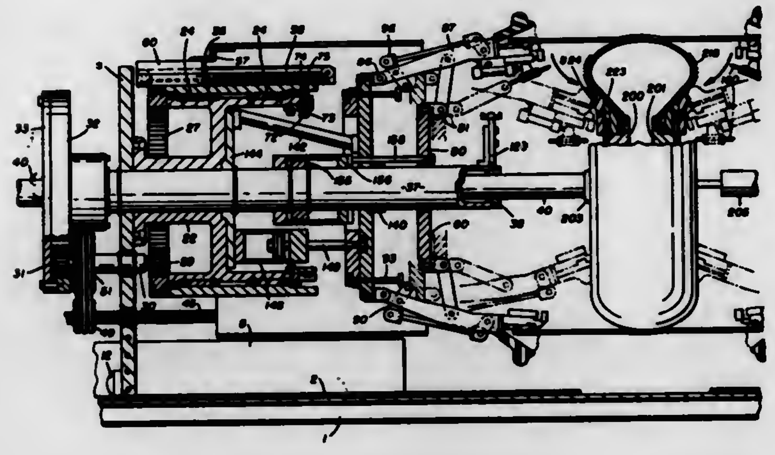
3,726,742
TIRE BUILDER

Edward J. Harris, Akron, Ohio, assignor to Frances Harris, Akron, Ohio

Original application Nov. 17, 1967, Ser. No. 683,881, abandoned. Divided and this application Dec. 16, 1970, Ser. No. 98,637

Int. Cl. B29h *17/10, 17/12, 17/20*

U.S. Cl. 156—400 **46 Claims**



A tire builder which includes a flexible, inflatable bladder supported at one side only, between two separately supported drums which are movable to bring the drum parts in touching arrangement near the largest diameter of the bladder and movable away from the bladder. Nonrotatable means is provided for grasping the edges of a carcass band formed on the drum parts when touching, and shaping the edges of the band over the bladder when the drum parts are separated. Suitable for building radial tires. Means is provided for supplying a bead to each side of the carcass.

3,726,743
FILM BLOWING METHOD AND APPARATUS

Fritz Reifenhauser, Troisdorf, and Herbert Rahlfs, Lohmar, Germany, assignors to Reifenhauser KG, Troisdorf, Germany

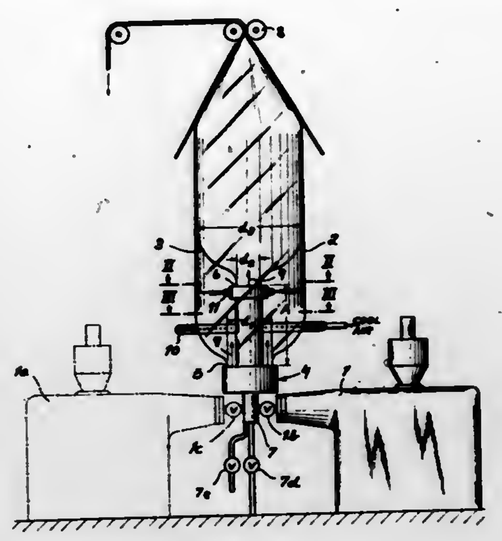
Filed Nov. 2, 1970, Ser. No. 86,214

Claims priority, application Germany, Oct. 31, 1969, P 19 54 824.4

Int. Cl. B30b *11/22;* **B32b** *31/30*

U.S. Cl. 156—494 **5 Claims**

An apparatus for the blowing of thermoplastic film wherein a pair of closed envelopes of thermoplastic material are extruded from concentric and coaxial dies and are independently blown and orientated prior to being passed together between a pair of calendering and compression rolls. A parting compound to enable separation of the laminated foils emerging from the rolls or an adhesion means may be applied to the interface of the two blown bodies.



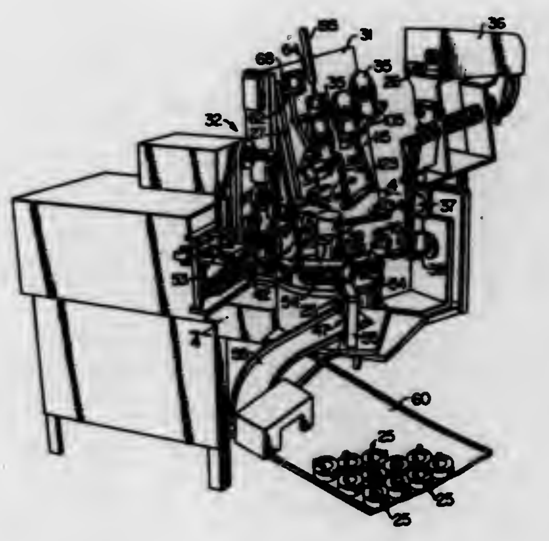
3,726,744
APPARATUS FOR UNWINDING AND SPLICING STRIPS OF MATERIAL

Benton A. Whiteman, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Original application Sept. 18, 1968, Ser. No. 760,633, now Patent No. 3,582,010. Divided and this application Jan. 11, 1971, Ser. No. 105,738

Int. Cl. B31f *5/00;* **B65h** *19/18*

U.S. Cl. 156—502 **21 Claims**

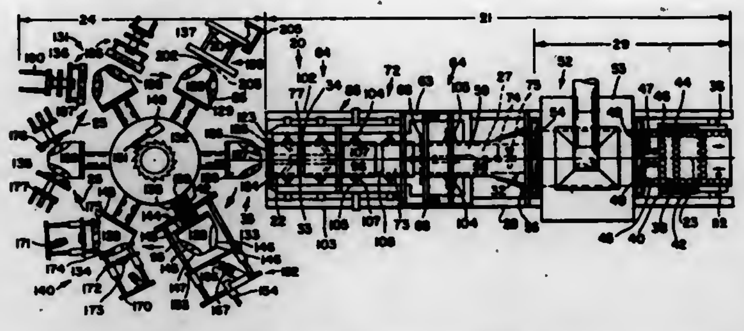


Apparatus for and method of controlling the unwinding of an elongated strip material from a supply roll thereof during the coiling of such strip material to define a coil construction wherein a substantially planar support inclined at an acute angle relative to a vertical plane is utilized together with a plurality of supporting rollers which engage the lower outer periphery of such supply roll to define an unwinding station. Means is also provided for serially feeding supply rolls to the unwinding station and automatically splicing the leading end portion of each new supply roll to the trailing end portion of an unwound roll without stopping the coiling operation.

3,726,745
APPARATUS FOR MAKING GARMENTS FROM SHEET MATERIAL

Lester Gidge and Valmor R. Poulin, Jr., Nashua, N.H., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed July 30, 1970, Ser. No. 59,434
Int. Cl. B32b *31/02;* B65c *9/06*
U.S. Cl. 156—510 **8 Claims**

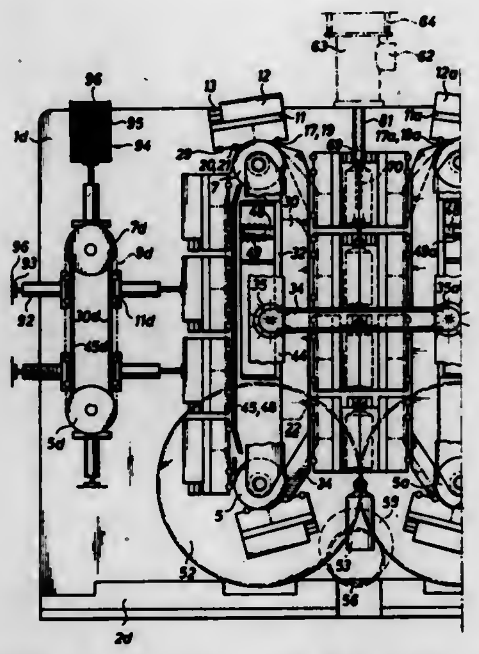


Finished, form-fitting garments, having limb openings conforming to the shape of the human torso, are automatically and continuously made at high speed by means of torso contoured forms moving along a path. The sheet material is printed with an adhesive seam pattern, if desired, formed into a tube, cut into tubular garment blanks and crotch patches adhered when the garments are panties. The blanks are individually and successively fed onto the forms, accurate limb openings cut at one station, elastic bands added, if desired, and enclosed in tubular edge seams at other stations, and the finished garments inverted and stripped from the forms.

3,726,746
APPARATUS FOR LABELLING CONTAINERS MADE OF THERMOPLASTIC SYNTHETIC MATERIAL

Gerhard Hansen, Hofener Strasse 47, D7013 Oeffingen, Kreis Waiblingen, Germany

Filed July 13, 1970, Ser. No. 54,132
Claims priority, application Germany, July 18, 1969, P 19 36 647.3
Int. Cl. B32b *31/20;* B65c *3/14*
U.S. Cl. 156—566 **2 Claims**

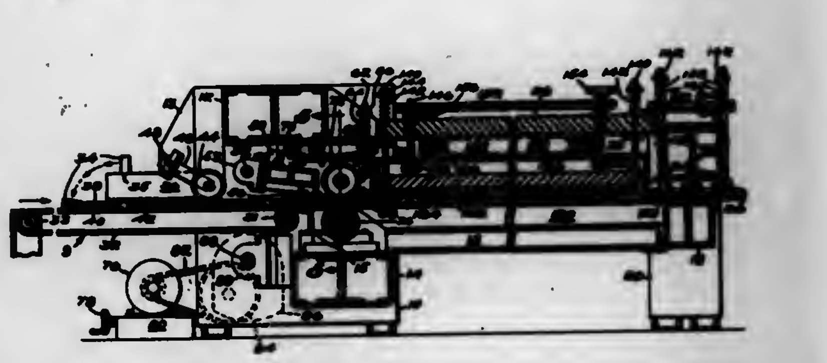


An apparatus for labelling containers made of thermoplastic synthetic material, which are produced in an apparatus having two circular tracks having production half-moulds arranged at uniform distances apart and mutually co-operating in pairs. A stock of labels and a label grab are provided adjacent one of the circular tracks on the side remote from the other circular track, the grab placing a label in an outwardly open half-mould of each pair. This label is retained in this half-mould until the formation of the container and adheres to the formed container.

3,726,747
CONTINUOUS-FEED HIGH-FREQUENCY GLUING PRESS

Paul D. Zottu, Needham, Mass. (% Industron Corporation, 1 Hillside Park, Needham Heights, Mass. 02194)

Filed May 25, 1970, Ser. No. 40,163
Int. Cl. B32b *31/12, 31/20*
U.S. Cl. 156—580 **23 Claims**



A press continuously bonds strips edge-coated with glue in edge-to-edge relation with one other or with a structural panel to form a composite sheet of indefinite length. The press feeds the sheet, under compression applied in a feeding direction transverse to the strips, between planar electrode platens through which a high-frequency alternating current is applied to the sheet to thermo-set the glue. Pressure is also applied against the major surfaces of the sheet to prevent buckling of the strips as the glue is set.

3,726,748
TRAPPED CAM ASSEMBLY

Robert J. Mistarz, Northbrook, and Albert B. Mojonnier, Sr., Chicago, Ill., assignors to Koehring Company, Milwaukee, Wis.

Filed June 17, 1971, Ser. No. 154,061
Int. Cl. B30b *13/34*
U.S. Cl. 156—580 **5 Claims**

A bottling machine processing unit including a rotatable shaft assembly comprised of a plurality of generally vertically extending shafts slidably received in generally vertically extending sleeves. The sleeves and shafts are circumferentially spaced about the rotatable shaft assembly. Each shaft includes a shaft displacement cam follower adjacent one end thereof, and each shaft is cooperable with a portion of a container for general vertical positioning thereof. A stationary cam is provided for raising and lowering the shafts in the sleeves during rotation of the shaft assembly. The cam includes a stationary, annular and substantially closed cam track defined by upper and lower track boundaries for capturing each of the displacement cam followers within the confines of the track. At least one auxiliary, upwardly open ended slot communicates with the cam track for providing an escape path for selective removal of the followers from the confines of the cam track upon vertical lifting of the shaft members. Provision is made for preventing rotational movement of the shafts about their respective axes.

3,726,749
HEAT SEALING APPARATUS AND METHOD

Robert J. Mistarz, Northbrook, and Albert B. Mojonnier, Sr., Chicago, Ill., assignors to Koehring Company, Milwaukee, Wis.

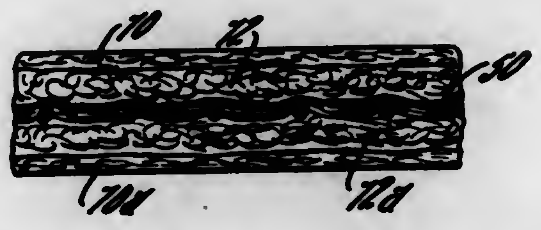
Filed June 17, 1971, Ser. No. 154,062
Int. Cl. B30b *13/34*
U.S. Cl. 156—580 **12 Claims**

Heat sealing apparatus for sealing a closure on the upper end of a thermoplastic container includes a continuously rotating annular heating plate that is continuously heated throughout its angular extent by electrical resistance means. A plurality of container holders are uniformly spaced apart beneath the annular heating plate. Each container is supported on a holder which prevents misalignments thereof and carries the container along a circular path beneath the annular heating plate. Cam means serve to raise and lower the container holders during revolution of the container holders about the circular path to press each container closure against the heating plate momentarily and effect sealing of the closure member to the container lip. Yielding means in the system for mounting the container holders protect the containers from being damaged as the closures are pressed against the heating plate.

3,726,750
COMPOSITE CELLULOSIC LAMINATE AND METHOD OF FORMING SAME

Robert A. Stillings, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 20, 1971, Ser. No. 145,543
Int. Cl. B32b *5/00*
U.S. Cl. 161—57 **8 Claims**

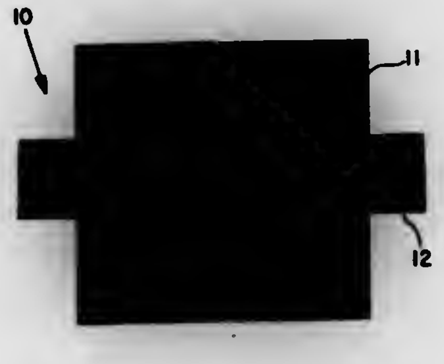


Paper products characterized by a superior combination of abrasion resistance, strength, absorbency and tactile properties are formed by combining an airlaid cellulosic web with a waterlaid cellulosic sheet. In one embodiment, the airlaid sheet is formed directly onto the waterlaid sheet and subsequently bonded thereto. The composite sheet may be combined with other waterlaid layers or reinforcing materials to provide products tailor made for a variety of disposable applications.

3,726,751
HIGH PERFORMANCE ABLATIVE MATERIAL CONSTRUCTION

James L. Casadevall, Orlando, Fla., assignor to Martin Marietta Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 672,073, Oct. 2, 1967. This application Jan. 8, 1971, Ser. No. 105,135
Int. Cl. B32b *25/02;* D03d *1/00*
U.S. Cl. 161—58 **19 Claims**

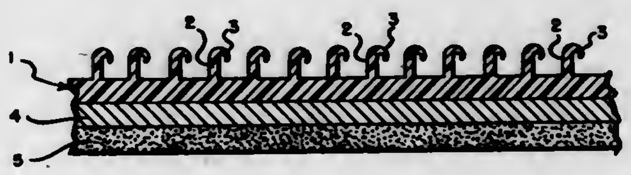


A high temperature tape for use in protecting a structural item to be subjected to high temperature, and the method whereby this novel tape is made are set forth. The tape is principally constituted by a number of elongate carrier fibers disposed in an essentially aligned array, and a large number of comparatively short fibers disposed in a nonwoven manner essentially transversely to the elongate fibers. The short fibers typically extend beyond the confines of the carrier fibers, at least on one side, thus to create a pliable, fringed tape capable of being wrapped for a number of turns about an item to be protected. This wrapping may be done in such a manner that the fringe formed by the short orthogonally placed fibers is available to extend over and cover previous turns of the tape. The fibers are of temperature resistant material, and various means are provided for securing the short fibers to the elongate fibers, including the use of certain resins. If resin is used, it may be of a type that can be cured subsequent to the layup of a length of the tape into a desired configuration, such as a missile nose cone.

3,726,752
ADHESIVE POLYAMIDE LAMINATE WITH A COATING COMPRISING RESORCINOL, PHENOL AND TRIISOCYANATE

George A. Provost, Manchester, N.H., assignor to American Velcro, Inc., Manchester, N.H.

Filed Sept. 14, 1970, Ser. No. 71,920
Int. Cl. B32b *27/06, 27/34*
U.S. Cl. 161—67 **12 Claims**

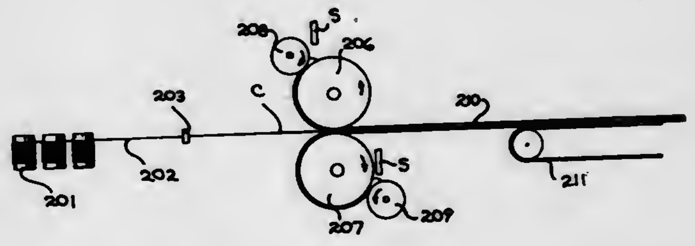


An adhesive laminate of a polyamide polymer is prepared by coating a web of polyamide polymer with a primer coating comprising resorcinol, phenol, triisocyanate and a diluent or vehicle and subsequently applying a lamina of a synthetic resin adhesive to the primer-coated web.

3,726,753
METHOD OF PRODUCING SHEET MATERIAL

Alfred Marzocchi, Cumberland, and Frank J. Lachut, Pawtucket, R.I., assignors to Owens-Corning Fiberglas Corporation

Application Dec. 27, 1966, Ser. No. 604,944, which is a division of application Ser. No. 452,096, Apr. 30, 1965, now Patent No. 3,390,714, dated July 2, 1968. Divided and this application Jan. 26, 1968, Ser. No. 700,979
Int. Cl. B32b *5/02*
U.S. Cl. 161—144 **5 Claims**



A method of making a glass reinforced rubber-like material by drawing an arrangement of parallel glass cords together and then between two converging layers of said rubber-like material to effect a combining of the two layers with the parallel glass cord sandwiched therebetween.

3,726,754

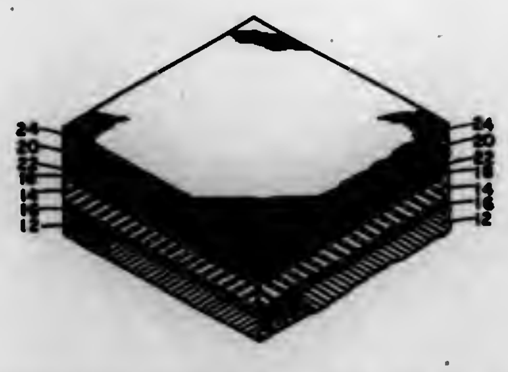
LAMINATED ROOF CONSTRUCTION AND METHOD OF MAKING SAME

Fred A. Coglianese, Hackettstown, and James J. Sullivan, Mendham, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Filed Sept. 8, 1971, Ser. No. 178,557

Int. Cl. B32b *3/26*; **E04b** *2/00*

U.S. Cl. 161—161 **21 Claims**



A laminated roof construction and a method of forming the same wherein the roof comprises a supporting deck having a water-proof intermediate membrane upon which is superimposed a heat resistant sandwich-type foam panel. The foam panel consists of a cellular foam-like material such as polyurethane and similar substances, and this foam material has a top and bottom skin or film adhered to the foam. At least the top skin is weatherproof and is resistant to actinic rays.

3,726,755

HIGH-STRENGTH FOAM MATERIAL

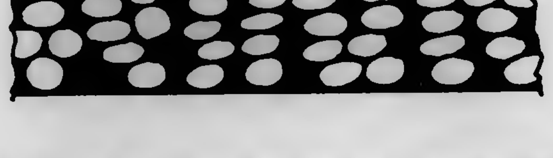
Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation

Division of application Ser. No. 582,903, Sept. 29, 1966, now Patent No. 3,562,370, which is a continuation-in-part of application Ser. No. 378,216, June 26, 1964, which in turn is a continuation-in-part of application Ser. No. 132,827, Aug. 21, 1961, both now abandoned. This application Sept. 25, 1970, Ser. No. 75,655

The portion of the term of the patent subsequent to June 13, 1984, has been disclaimed and dedicated to the Public

Int. Cl. B32b *5/18*; **C03c** *11/00, 17/32*

U.S. Cl. 161—168 **8 Claims**



A body of foam that has high compressive strength along at least one of its major axes. The foam body contains glass foam pellets and a matrix of a foamed binder. The pellets are arranged in end to end, substantial abutting engagement along at least one major axis of the foam body. The matrix of a foamed binder fills the interstices between the glass foam pellets.

3,726,756

PULPING OF WOODY SUBSTANCES IN GASEOUS MEDIA

Mario Witold Polak, Vancouver, British Columbia, Canada, assignor to General Fluid Dynamics International

Filed Dec. 14, 1970, Ser. No. 97,934

Int. Cl. D21c *5/00*

U.S. Cl. 162—50 **15 Claims**

Lignin is extracted from wood chips or the like to form wood pulp by treating the amorphous lignin molecule, which binds and cements the individual bundles of cellulosic fibres, with a gaseous reactant in an environment of ultrasonic radiation without change of state of the reactant and without the addition of prepared or mixed solvents or aqueous solutions.

3,726,757

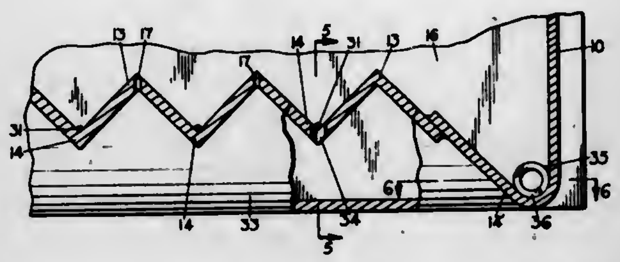
COMPOSITE MULTIPLE AND INCREMENTALLY CONTROLLED STEAM CHAMBER FOR APPLYING DRIED STEAM TO A PULP MAT

Joseph H. Dupasquier, 5855 NW. Skyline Drive, West Linn, Oreg. 97068

Filed June 28, 1971, Ser. No. 157,175

Int. Cl. D21f *5/18*

U.S. Cl. 162—290 **1 Claim**



A composite steam chamber extending transversely above a pulp mat for discharging steam down onto the mat; the composite chamber formed of separate individual chambers secured together including one or more central or inner chambers and an end chamber at each end of the composite structure; means for separately delivering steam into each individual chamber; each individual chamber having a bottom wall formed into ridges and valleys extending from one end wall of the chamber to the other, with steam jet orifices in the ridges; and means for drawing off moisture collecting in the valleys of each individual chamber.

3,726,758

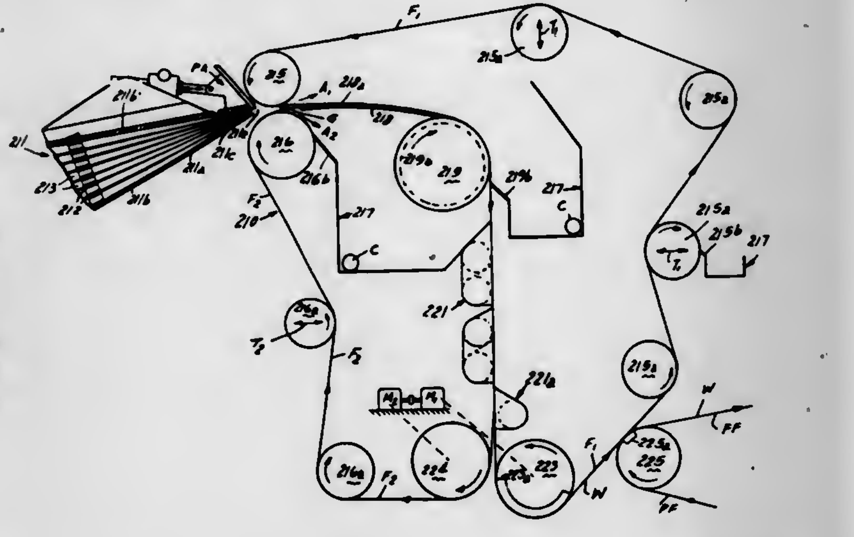
TWIN-WIRE WEB FORMING SYSTEM WITH DEWATERING BY CENTRIFUGAL FORCES

Joseph D. Parker, R.R. 1, Southgate Road, Roscoe, Ill. 61073, and David R. Gustafson, 717 E. Franklin St., Rockton, Ill. 61072

Continuation-in-part of abandoned applications Ser. No. 792,713, Jan. 21, 1969, and Ser. No. 795,954, Feb. 3, 1969. This application July 8, 1971, Ser. No. 160,879

Int. Cl. D21f *1/36*

U.S. Cl. 162—299 **23 Claims**



A twin-wire web making system for use in forming multi-ply or single-ply webs wherein a web stock is discharged into a nip between opposed forming wire runs arranged to converge with one another over guide elements. In one embodiment a plurality of individual forming sequences are associated with a main forming wire for receiving successive plies and merging the same together at each sequence. In another embodiment a single forming sequence is associated with a pick-up felt for removal of the ply from the forming sequence. At each sequence a head box means discharges web stock between twin wires supported by spaced breast rolls defining the nip therebetween and the wires gradually converge into general parallelism over curved guides by wrapping a portion of their surfaces so as to centrifugally dewater the stock sandwiched between the wires. In one aspect of the invention, a stationary curved surface and a rotary cylinder are positioned on the same side of the wires to guide the wires into general parallelism. The stationary surface and the roll combine to define a bi-radii path of wire travel having a first radius of curvature larger than the second radius of curvature. The stationary surface is water impermeable or permeable and includes surfaces having a decreasing radius of curvature in the direction of wire travel. The rotary cylinder includes solid rolls, open rolls and suction rolls. The head box means includes structures containing a plurality of flexible trailing elements therein defining therebetween channels converging in the direction of the nip for producing a stream having a relatively low degree of turbulence and a relatively high degree of dispersion.

3,726,759

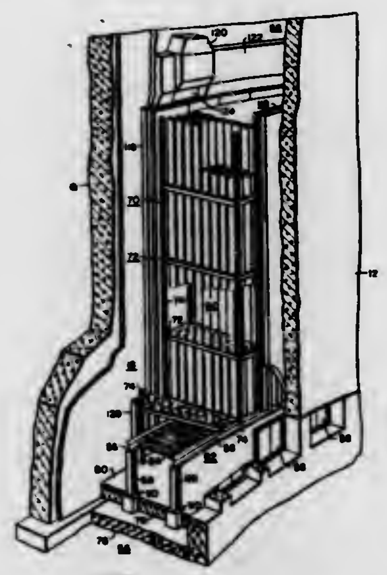
NUCLEAR REACTOR CONDENSER SUPPORT STRUCTURE

William G. Taft, Pittsburgh, Rein Schiff, Turtle Creek, and A. John Iredale, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 29, 1969, Ser. No. 820,074

Int. Cl. G21c *19/32*

U.S. Cl. 176—37 **19 Claims**



A lightweight structure for supporting a fusible material in a solid state in a condenser compartment of a nuclear reactor power plant containment in a configuration obtaining proper thermal-hydraulic relationships, and optimizing ease of construction, material condition and structure condition inspection, and dynamic load support, is provided. The supporting structure comprises an array of wire mesh interconnected tubular sections used to retain the material, and supported vertically by the condenser floor, and horizontally by positioning frameworks at required height intervals which locate the tubes in the desired array in such a manner as to effect cooling of the compartment over the entire surface with high ambient temperatures extended to the compartment, and maintaining uniform surface temperatures inside the compartment in consideration of the potential through conduction paths in the structural members. The resultant combined structural and thermal properties thereby adequately fulfill the requirements to maintain the location and configuration of the fusible solid under all postulated loading conditions and at the same time minimize the maintenance necessary on the fusible solid to meet the performance criteria during the lifetime of the plant.

3,726,760

CONTROL SYSTEM FOR GAS-FILLED CONTROL ROD

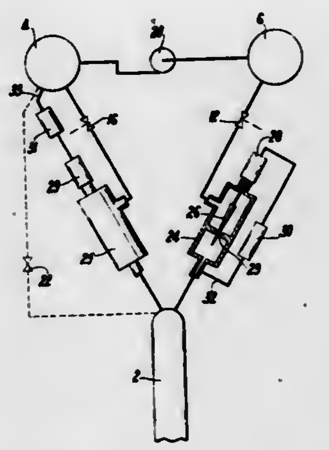
Roland Roche, Clamart, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 8, 1968, Ser. No. 774,306

Claims priority, application France, Nov. 13, 1967, 127,977

Int. Cl. G21c *7/22*

U.S. Cl. 176—86 G **4 Claims**



A method and apparatus for regulating the pressure of a gaseous neutron-absorbing mixture contained in a circulation loop which is placed within a nuclear reactor core. The loop is respectively connected to a low-pressure reservoir and to a high-pressure reservoir by means of two electrovalve assemblies, the two reservoirs being connected to each other by means of a pump. The areas of the openings of the throttles which provide a communication between the circulation loop and each of the two reservoirs are variably controlled in dependence on the highest value of the pressures established within the vessels which are connected to each throttle.

3,726,761

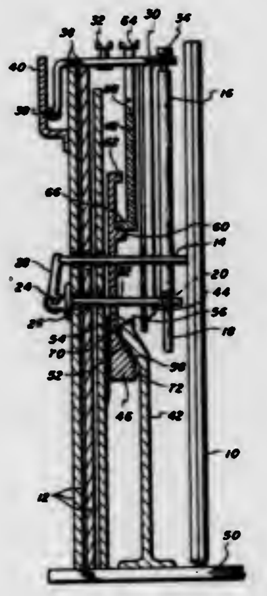
NUCLEAR REACTOR CORE CLAMPING SYSTEM

John P. Thorel, Northridge, and William F. Anderson, Westlake Village, Calif., assignors to North American Rockwell Corporation

Filed May 14, 1970, Ser. No. 37,079

Int. Cl. G21c *19/00*

U.S. Cl. 176—87 **6 Claims**



A clamping device for nuclear reactor cores wherein the force of gravity, acting upon weights and through a mechanical linkage, is made to exert a radial inwardly directed force of constant magnitude on the reactor core. Cams or mechanical supporting members are used to hold the weight in an upward position when a clamping force is not desired as for example during refueling.

3,726,762
BLOOD STORAGE METHOD
Henry K. Puharich, Ossining, N.Y., assignor to Intelectron Corporation, New York, N.Y.
Continuation of abandoned application Ser. No. 693,283, Dec. 26, 1967. This application May 19, 1971, Ser. No. 144,996
Int. Cl. A61k *17/00*
U.S. Cl. 195—1.8 **2 Claims**

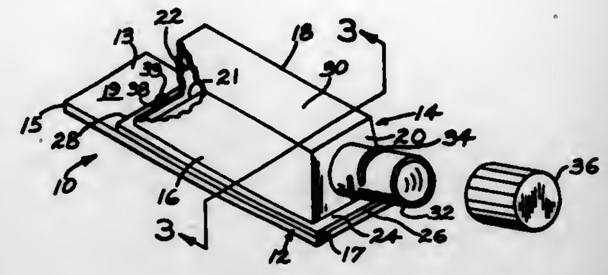
The present invention is directed principally to the electrodynamic control of blood coagulation and of thrombus formation in natural organs and artificial organ implants, for humans and animals. The invention provides for the net negative electrical charging of the walls of a natural or artificial organ or element of the cardiovascular system, and of the blood cells within such organ or element. The maintenance of such a net negative charge provides for a mutual repulsion of the blood cells from themselves and from the natural or artificial vascular surface, so that clotting and thrombus formation is avoided without utilization of anticoagulant chemical agents, as has been necessary heretofore with implanted artificial elements, for example. The invention also is useful in the elimination of existing thrombus formations, and is indicated to have a variety of advantageous observed and subjectively reported therapeutic results, presumably derived from "cleansing" of the cardiovascular system. A feature of the invention is the manner and means for effecting the desired net negative charge. The invention is indicated to have utility in the treatment of humans and animals. It also has indicated usefulness in the preservation of blood in storage.

3,726,763
METHOD FOR PRODUCING CITRIC ACID
Hideo Fukuda, Sumiyoshi-ku, Osaka; Takashi Suzuki, Takarazuka, Hyogo; Shunichi Akiyama, Otokuni-gun, Kyoto, and Yasuhiro Sumino, Suma-ku, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan
Filed Feb. 22, 1971, Ser. No. 117,705
Claims priority, application Japan, Feb. 24, 1970, 45/15810
Int. Cl. C12d *1/04*
U.S. Cl. 195—28 R **7 Claims**

This invention a method for production of citric acid which comprises innoculating a citric acid accumulating yeast belonging to the genus *Candida*, capable of utilizing hydrocarbons, in a medium containing a specific weight ratio of phosphorus to hydrocarbon, incubating the yeast until citric acid is produced and recovering the thus-produced citric acid.

3,726,764
MICROBIOLOGICAL CHAMBER APPARATUS
Fred K. White, Glen Ellyn, Ill., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Aug. 6, 1971, Ser. No. 169,628
Int. Cl. C12b *1/02*
U.S. Cl. 195—127 **4 Claims**

Microbiological chamber apparatus having a closed top wall, a bottom wall and sidewalls and having at least one sealable sidewall access port, which apparatus is useful, for example, to produce a tissue culture directly on a base, such as a microscope slide, for subsequent examination and storage, comprises in combination a base which forms the bottom of said chamber and a receptacle removably adhesively attached in liquid-impermeable contact to the base, such receptacle forming the other walls of the chamber. In one use of this apparatus, a liquid tissue culture medium is placed through the access port into the receptacle chamber in contact with the base, the medium is incubated to allow the tissue culture to grow and to attach such growth to the base. The liquid medium is then removed from the chamber, and the receptacle is removed from the base. The tissue culture growth on the base can then be treated as desired and microscopically examined. This apparatus is also useful as an anaerobic chamber or as a blood culture chamber for microbiological assays.



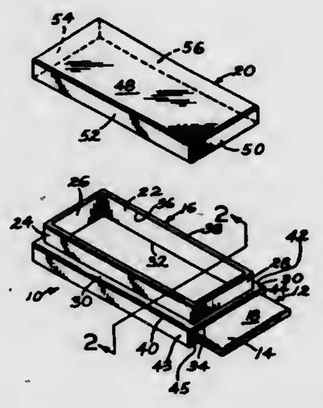
3,726,765
MICROBIOLOGICAL HYDROLYSIS OF PROSTAGLANDIN DIESTER
Michael R. G. Leeming, Canterbury, England, and George Greenspan, Narberth, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Feb. 4, 1972, Ser. No. 223,697
Int. Cl. C12d *1/02*
U.S. Cl. 195—30 **3 Claims**

The use of *Corynespora cassiicola* IMI 56007 to hydrolyze the ester functions present in 15-(R)-acetoxy-9-oxoprosta-5-cis-10,13-trans-trienoic acid, methyl ester (15-epi-PGA_2, acetate, methyl ester) is disclosed. The product of this hydrolysis is a useful intermediate for the synthesis of other physiologically active prostaglandins.

3,726,766
PROCESS FOR PRODUCING LINCOMYCIN
Alexander D. Argoudelis, Portage, and John H. Coats, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Filed June 28, 1971, Ser. No. 157,729
Int. Cl. C12d *9/20*
U.S. Cl. 195—80 R **3 Claims**

A novel microbiological process for preparing the antibiotic lincomycin.

3,726,767
MICROBIOLOGICAL REACTION CHAMBER APPARATUS
Fred K. White, Glenellyn, Ill., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Aug. 27, 1971, Ser. No. 175,492
Int. Cl. C12b *1/00*
U.S. Cl. 195—127 **4 Claims**

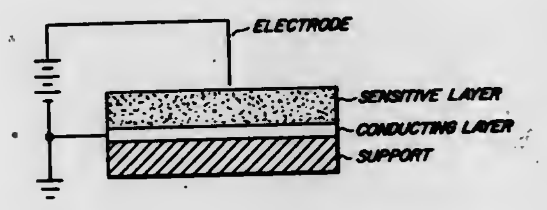


Microbiological reaction chamber apparatus having a bottom wall and sidewalls which is useful, for example, to produce a tissue culture directly on a base, such as a microscope slide, for subsequent examination and storage comprises in combination a base member which forms the bottom of said chamber and a receptacle member removably attached by clamping means in liquid-impermeable contact with said base member. One aspect of the invention resides in the novel receptacle component useful in the fabrication of the overall apparatus. In one use of this apparatus, a liquid tissue culture medium can be placed in the receptacle chamber in contact with the base, and the medium is incubated to allow the tissue culture to grow and to attach such growth to the base. The liquid medium is then removed from the chamber, and the receptacle is removed from the base. The tissue culture growth on the base can then be treated as desired and microscopically examined.

3,726,768
NICKEL PLATING BATHS CONTAINING AROMATIC SULFONIC ACIDS
Jerry R. Lundquist, San Jose, Calif., and Robert W. Stromatt, Richland, Wash., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Apr. 23, 1971, Ser. No. 137,062
Int. Cl. B01k *3/12;* **C23b** *5/08*
U.S. Cl. 204—1.5 **16 Claims**

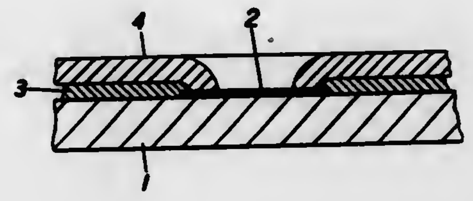
The stress of nickel deposits from plating solutions can be altered from tensile to near zero, and also to compressive stress by adding to nickel plating baths, such as those containing nickel sulfate and nickel bromide, amino naphthalene di- and tri-sulfonic acids, and naphthol disulfonic acids and their salts, such as, for example, 3-amino-2,7-naphthalenedisulfonic acid, and 2-naphthol-6,8-disulfonic acid, and their sodium and nickel salts. When the nickel salts of the above sulfonic acids are used as plating solutions rather than in the small amounts require as additive, bright of semibright, adherent and nonporous nickel deposits are formed and the stress of such nickel deposits range from approximately zero p.s.i. to —26,000 p.s.i. (compressive). Similar results were also obtained with the nickel salts of benzenesulfonic acid, benzenedisulfonic acids, naphthalenesulfonic acids, and naphthalenedisulfonic acids. Preferably all plating solutions contain nickel bromide. These plating solutions can be used for electroplating nickel on any substrate, including uranium.

3,726,769
DRY, INSTANT ACCESS ELECTROSENSITIVE RECORDING ELEMENTS AND METHODS
Paul M. Borsenberger, Hilton, Alfredo R. Guevara, Webster, and Richard W. Stahr, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 20, 1971, Ser. No. 209,868
Int. Cl. B41m *5/20;* **G03g** *17/00*
U.S. Cl. 204—2 **5 Claims**



Visible images can be produced directly in elements containing a layer of crystalline polyacetylenic material by applying an electrical potential between an electrode closely spaced to said layer and a conducting backing member on the opposite side of the layer.

3,726,770
ELECTRODEPOSITION PROCESS FOR PRODUCING PERFORATED FOILS WITH RAISED PORTIONS AT THE EDGES OF THE HOLES
Bodo Futterer, Lucerne, Switzerland, assignor to The Gillette Company, Boston, Mass.
Continuation of application Ser. No. 52,810, July 7, 1970, which is a division of application Ser. No. 651,548, July 6, 1967, both now abandoned. This application Jan. 4, 1972, Ser. No. 215,377
Claims priority, application Switzerland, July 6, 1966, 9,843/66
Int. Cl. C23b *5/48;* **B01k** *1/00*
U.S. Cl. 204—16 **2 Claims**



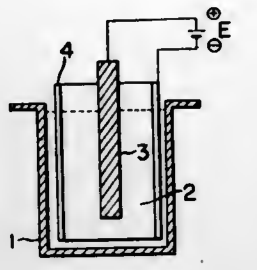
A repairable master negative and a process for producing a master negative suitable for the production of a number of perforated foils and for regenerating such a master negative when it is worn, comprising applying insulating material to one surface of a metallic base plate that is stable in a bath of an alkali at selected areas thereof which conform with the perforations in the foils to be produced, applying a coating of a metal which is erodable in a bath of an alkali which is built up on the metallic base plate after the insulating areas have been applied to it, and passivating the metallic coating When the master negative is worn due to the production of a number of perforated foils, it is repaired by stripping off electrolytically in a bath of an alkali the metallic coating and a new metallic coating is electrodeposited on the metallic base plate without disturbing the insulated areas.

3,726,771
PROCESS FOR CHEMICAL NICKEL PLATING OF ALUMINUM AND ITS ALLOYS
Miguel Coll-Palagos, Rye, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 687,428, Dec. 4, 1967. This application Nov. 23, 1970, Ser. No. 92,167
Int. Cl. C23b *1/00;* **C23f** *1/00;* **B32b** *15/04*
U.S. Cl. 204—38 B **9 Claims**

Aluminum and its alloys can be electrolessly plated by first degreasing and cleaning the aluminum surface, etching the degreased and cleaned surface wih hydrofluoric acid followed by immersing the base or surface in an acidic electroless plating solution containing nickel ions, hypophosphite ions, fluoborate and/or sulfamate ions, glycolate ions and a small amount of fluoride ions. The pH of the solution is within the range of 5.3 to 7.

3,726,772
METHOD FOR REMOVING IRON IMPURITIES CONTAINED IN A SALT BATH FOR NITROGENATION
Seiichi Takahashi, Takeshi Uehara, and Yoshiaki Shimizu, Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 2, 1971, Ser. No. 111,906
Claims priority, application Japan, Feb. 9, 1970, 45/11,287
Int. Cl. C23c *9/14*
U.S. Cl. 204—39 **8 Claims**

The present invention relates to a process for surely and economically removing iron impurities contained in a salt bath for nitrization comprising cyanide and cyanate by electrochemically depositing the iron impurities on a cathode using an anodic and a cathodic electrode provided in the salt bath.



3,726,773

SURFACE PREPARATION OF MARAGING STEEL FOR ELECTROPLATING

Vernon A. Lamb, Royal, Iowa, John P. Young, Gaithersburg, Md., and Wahling H. Ng, Rockaway, N.J., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Aug. 2, 1971, Ser. No. 168,456
Int. Cl. C23b *3/06, 5/62*
U.S. Cl. 204—129.35 **8 Claims**

An improved method of preparing maraging steels for subsequent metal deposition by utilization of a combined nitric acid pickle-mechanical abrasion descaling step in conjunction with a low current density acidic electropolishing step to produce a scale free, activated surface for deposition of a very adherent electrodeposit.

3,726,774

CONTROL OF NUCLEATION AND CRYSTALLISATION FROM SOLUTIONS BY CONTROLLING PRODUCTS OF IONISING RADIATION

Anthony Miles Robert Difford and Wilfrid Jesse Skinner, Norton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England
Filed May 31, 1968, Ser. No. 733,417
Claims priority, application Great Britain, June 6, 1967, 25,997/67
Int. Cl. B01j *1/10*
U.S. Cl. 204—157.1 R **26 Claims**

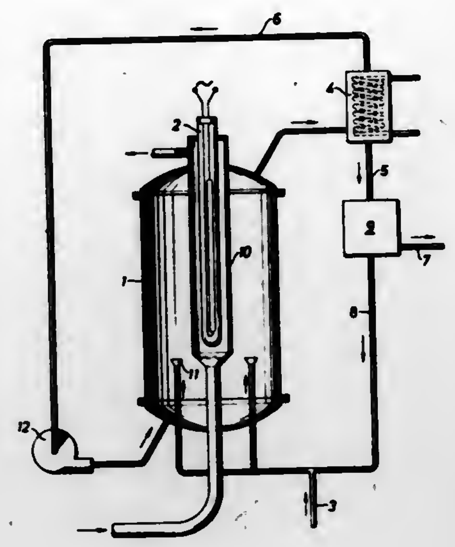
The primary nucleation of solids from solutions is controlled by controlling the concentration of the products of irradiation in the solution; fewer (and larger) crystals are obtained by reducing the level of ionising radiation to which the solution is exposed or by the addition of free-radical scavengers; more (and smaller) crystals are obtained by increasing said level of ionising radiation or by generating products of irradiation, such as free radicals, in the solution.

3,726,775

METHOD OF MANUFACTURING TRICHLOROACETYL CHLORIDE

Jan Anders Dahlberg, Anders Olof Modén, and Carl Arne Gunnar Östlund, Skoghall, Sweden, assignors to Uddeholms Aktiebolag, Uddeholm, Sweden
Filed Feb. 22, 1971, Ser. No. 117,243
Claims priority, application Sweden, July 9, 1970, 9,569/70
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R **12 Claims**

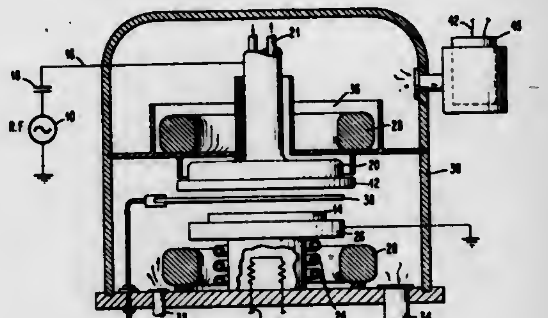
Trichloroacetyl chloride is produced from perchloroethylene, oxygen and chlorine in a photochemical chlorine-sensitized gas phase oxidation process. A liquid coolant is continuously introduced into the reactor in drop form, to absorb by vaporization a considerable portion of the heat produced in the oxidation process.



3,726,776

SPUTTERING PROCESS FOR PRODUCING SINGLE CRYSTAL THIN FILMS

Jerome J. Cuomo, Bronx, Ashok F. Mayadas, Somers, and Robert Rosenberg, Peekskill, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,738
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **5 Claims**



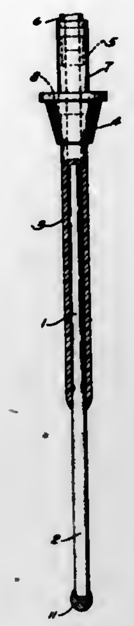
A sputtering process for depositing thin, single crystal films having bulk properties. The process is characterized by an extremely low pre-sputtering time, a substrate bias of at least approximately −30 volts, and low deposition temperatures. Both RF and DC sputtering are used. Improvide thin films having bulk properties are produced, said thin films in particular being superconducting materials, such as niobium. The films have excellent chemical purity and low defect density, and are single crystals.

3,726,777

IRIDIUM-IRIDIUM OXIDE ELECTRODE FOR MEASURING pH OF BLOOD AND OTHER FLUIDS

Robert A. Macur, Milwaukee, Wis., assignor to General Electric Company
Filed Apr. 30, 1970, Ser. No. 33,198
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 R **2 Claims**

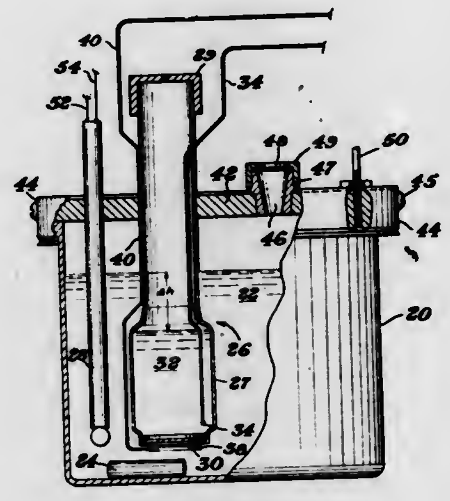
A wire of iridium or iridium and its noble metal alloys is treated in a manner that makes it useful as an electrode for sensing hydrogen ion concentration or pH of blood or other fluid. The electrode may be admitted to a blood vessel through a small cannula. Variations in the difference between the potentials developed by the new electrode and a suitable reference electrode are metered and linearly related to pH changes.



3,726,778

COULOMETRIC WATER TITRATOR

Gabor B. Levy, Westport, Conn., and David M. Seltzer, Little Neck, N.Y., assignors to Photovolt Corporation
Filed July 2, 1971, Ser. No. 159,428
Int. Cl. G01n *27/44*
U.S. Cl. 204—195 T **6 Claims**

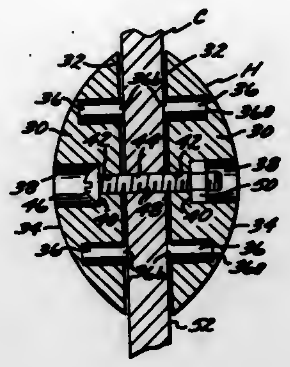


An improved automatic coulometric titrating apparatus for coulometric titration of water is described. The device includes a coulometric generator having a cathode which provides a large area of contact between the catholyte and the titration mixture, a hydrostatic pressure differential between the titration mixture and the catholyte, and auxiliary bipolar baseline stabilizing means to compensate for both positive and negative baseline drift. The device can be vented directly to the atmosphere without loss of accuracy under ordinary conditions.

3,726,779

MARINE ANTICORROSION ANODE STRUCTURE

John A. Morgan, 6037 Dunrobin Ave., Lakewood, Calif. 90713
Filed Jan. 11, 1971, Ser. No. 105,304
Int. Cl. C23f *13/00*
U.S. Cl. 204—197 **1 Claim**



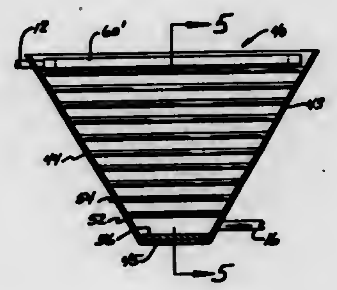
An anticorrosion anode structure for protecting iron or steel portions of a boat that are subject to corrosion when immersed in water, which device includes at least one body of a metal that has a greater electrolytic solution tendency than iron. The body has a number of spaced copper electrodes embedded therein and extending therefrom.

Clamping means are provided to force the free ends of the copper electrodes into pressure contact with the metallic structure to be protected, with the copper serving the dual purpose of forming an electrical connection in a galvanic cell that is defined by the metal body and the surface to be protected, as well as so spacing the body from the surface that substantially the entire external area of the body is in contact with the water in which it is immersed. The body by the electrical potential between it and the surface to be protected prevents corrosion of the surface.

3,726,780

ELECTROFLOTATION APPARATUS

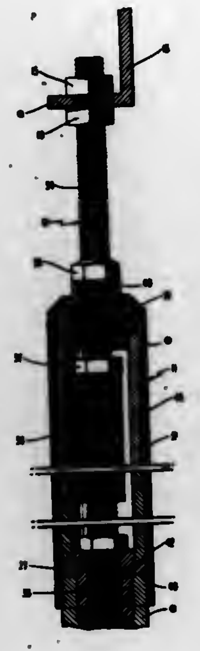
Warren B. Harnden and Eugene H. Morrill, Rockford, Ill., assignors to Illinois National Bank & Trust Company, Rockford, Ill., as trustee
Filed May 14, 1971, Ser. No. 143,305
Int. Cl. B01k *3/00*
U.S. Cl. 204—275 **20 Claims**



A tank, having a height several times its effective diameter, has a plurality of horizontal electrodes disposed throughout its entire height. Conduits and controls are provided for downflow of liquid to be purified in a non-turbulent manner. Electrolysis of the liquid causes gas bubbles to flow upwardly. This apparatus creates a non-turbulent flow of liquid directly counter to the flow of gas bubbles for a substantial vertical distance. In one embodiment the tank is a cylinder, while in another it has downwardly converging sides.

3,726,781
HIGHLY CONDUCTIVE ADJUSTABLE ELECTRODES

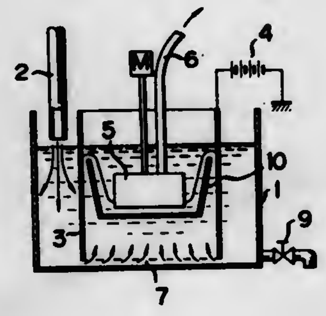
Pierre J. Verneuil, R.F.D. 1, P.O. Box 477, Woody Hill Road, Westerly, R.I. 02891
Filed Mar. 4, 1971, Ser. No. 120,806
Int. Cl. B01k *3/04*
U.S. Cl. 204—286 **14 Claims**



Electrodes, for instance those used in chromium plating, are lightened in weight, improved in efficiency and made of improved conductivity and high rigidity by a tubular sectional construction. Associated with these new electrodes is an advanced type of plating tank.

3,726,782
CLEANING DEVICE FOR WET-TYPE ELECTROPHOTOGRAPHIC DEVICE

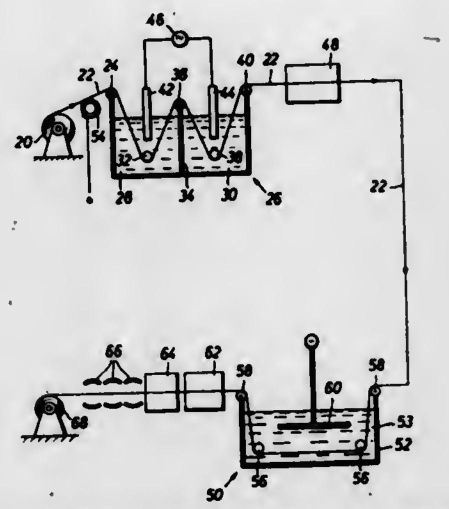
Hiroshi Tanaka and Yoshio Itoh, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 28, 1969, Ser. No. 828,611
Claims priority, application Japan, June 5, 1968, 43/38,407
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **7 Claims**



This invention provides a cleaning device for use in wet-type electrophotographic device to clean the sensitized surface of the photosensitive plate. The sensitized surface is cleaned by a cleaning solution; the solution thus mixed with the toner is led to a tank, where the toner is separated and accumulated by the electrode plates by field effect; and the purified cleaning solution is pumped up for reuse.

3,726,783
APPARATUS FOR PRODUCING AN ALUMINUM FOIL OR BAND WITH AN ELECTRICALLY INSULATING OR DECORATIVE COATING THEREON

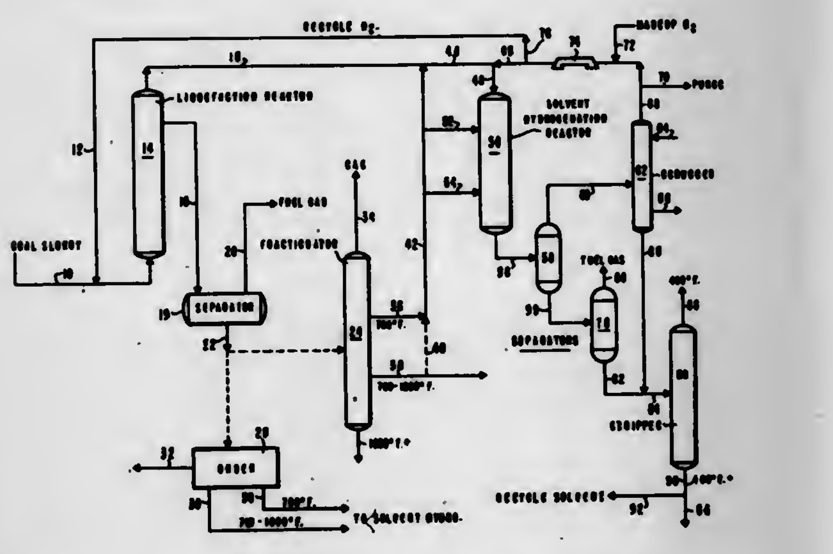
Helmut Friedrich Herrmann, Cologne-Braunsfeld, and Rolando M. Dizon, Cologne, Germany, assignors to Metalloxyd Gesellschaft mit beschrankter Haftung, Cologne-Braunsfeld, Germany
Original application Jan. 29, 1969, Ser. No. 749,911, now Patent No. 3,634,206. Divided and this application Mar. 19, 1971, Ser. No. 126,034
Claims priority, application Germany, Feb. 3, 1968, P 16 46 038.1
Int. Cl. C23b *9/02, 13/00;* **B01k** *5/02*
U.S. Cl. 204—300 **6 Claims**



An aluminum foil, band or the like with an electrically insulating or decorative coating applied to the outer surface thereof and comprising an inner oxide layer and an outer lacquer layer. Also disclosed are a method and an apparatus for producing the coated foil or the like in a continuous manner by passing the foil first through an electrolytic anodizing means for producing the oxide layer and subsequently through an electrophoresis device for applying the lacquer layer onto the oxide layer.

3,726,784
INTEGRATED COAL LIQUEFACTION AND HYDROTREATING PROCESS

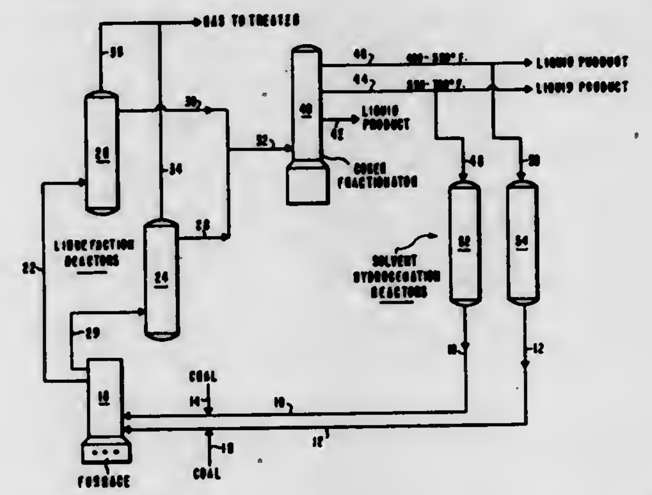
Juan J. Correa, Parsippany, and Jack M. Hochman, Boonton, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.
Filed Feb. 18, 1971, Ser. No. 116,373
Int. Cl. C10g *1/04*
U.S. Cl. 208—8 **11 Claims**



A hydrotreated liquid product from coal is obtained by a process in which liquefaction and hydrotreating zones are operated at essentially the same moderate pressures (1000–2000 psig). Without prior cooling, all the overhead vapor from the liquefaction reactor is admixed with a portion of a light liquid fraction (700° F.) recovered from the liquefaction liquid product, giving a hydrotreating feed having a temperature within a predetermined range. The remaining portion of the light liquid fraction of the liquefaction product is fed to the hydrotreating zone at quench points in the hydrotreating zone downstream from the point of introduction for the admixture, thus utilizing the heats of reaction in the hydrotreating zone to heat the remaining liquid portions (which provide quench to the hydrotreating zone).

3,726,785
COAL LIQUEFACTION USING HIGH AND LOW BOILING SOLVENTS

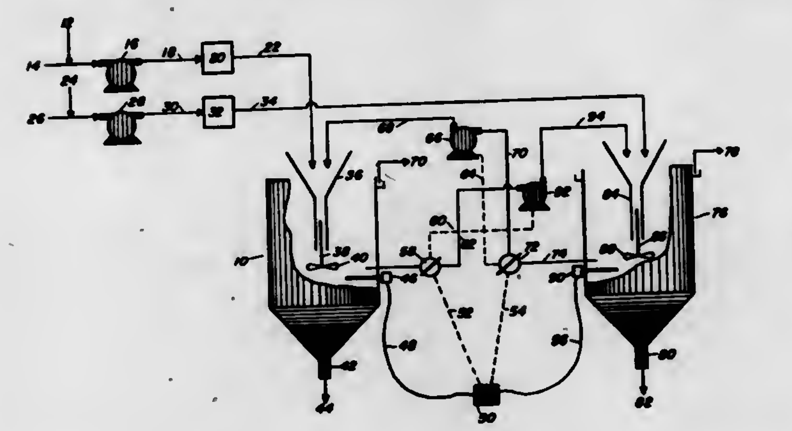
John E. Keller, Baytown, Tex.; Jack M. Hochman, Boonton, N.J., and James Q. Foster, Baytown, Tex., assignors to Esso Research and Engineering Company, Linden, N.J.
Filed March 3, 1971, Ser. No. 120,437
Int. Cl. C10g *1/04*
U.S. Cl. 208—8 **14 Claims**



First and second slurries of a particulate coal are formed with low and high boiling fractions of a coal-derived solvent boiling within the range from 300° to 1,000° F., the cut point of the two fractions being from about 500° F. to about 600° F. The slurries are separately liquefied, producing a higher total cylcohexane conversion of the coal than if the coal had been slurried instead in the total coal-derived solvent and liquefied under like conditions.

3,726,786
PROCESS FOR INTEGRATION OF EXTRACTION PROCESSING STREAMS

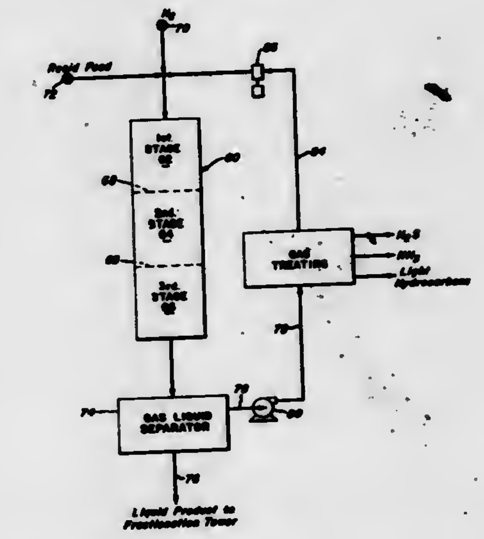
Richard A. Given, Chatham, N.J., assignor to Canada-Cities Service, Ltd., Imperial Oil Limited, Atlantic Richfield Canada, Ltd., and Gulf Oil Canada Limited, fractional part interest to each
Filed Dec. 30, 1971, Ser. No. 213,931
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 **2 Claims**



Disclosed herein is a process wherein optimal extraction cell conditions are maintained during tar sands processing through the integration of two or more extraction processing streams. In the process, the solids unsaturated extraction streams obtained during the processing of upper tar sand beds are stirred and cross-blended for use wherein tar sands are processed from the lower tar sand beds exhibiting maximum tolerable limits of suspended solids therein the extraction streams so as to optimize water processing and heat maintenance within the tar sands extraction cell.

3,726,787
THREE-STAGE PROCESS FOR HYDROTREATING FEEDS RICH IN POLYNUCLEAR AROMATICS

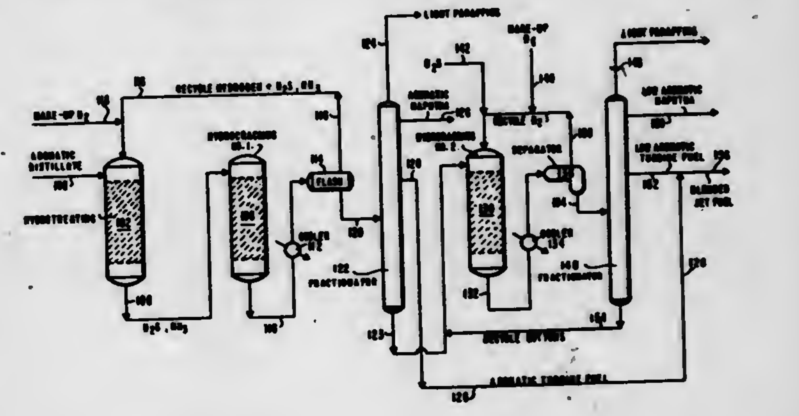
Alvin W. Frazier, Chicago Heights, Ill., Maurice E. Oxenreiter, Dyer, Ind., and Arnold N. Wennerberg, Chicago, Ill., assignors to Standard Oil Company, Chicago, Ill.
Filed Oct. 14, 1971, Ser. No. 189,177
Int. Cl. C10g *13/02, 23/02*
U.S. Cl. 208—59 **7 Claims**



Disclosed is a three-stage process for converting into gasoline and distillate fuels a hydrocarbon feed rich in polynuclear aromatics. The first stage employs a catalyst comprising an alkali metal component or an alkaline earth metal component or both, supported on activated carbon. The second and third stages employ a catalyst comprising metallic components from Group VI and Group VIII of the Periodic Table, supported on a refractory, inorganic cracking matrix.

3,726,788
TWO-STAGE HYDROCRACKING WITH INTERMEDIATE FRACTIONATION

Duane D. Trythall, Baytown, Tex., assignor to Esso Research and Engineering Company
Filed Oct. 15, 1970, Ser. No. 80,872
Int. Cl. B01j *11/40;* **C07c** *5/02;* **C10g** *13/02*
U.S. Cl. 208—59 **9 Claims**



A two-stage hydrocracking process, utilizing palladium on synthetic zeolite catalyst, is carried out with intermediate fractionation between the stages and with hydrogen sulfide and ammonia present in the first stage and hydrogen sulfide present in the second stage so as to obtain a high-aromatic naphtha product and a low-aromatic jet fuel product. Alternatively, the process can be used to obtain segregated streams of a high octane naphtha and a lower octane naphtha.

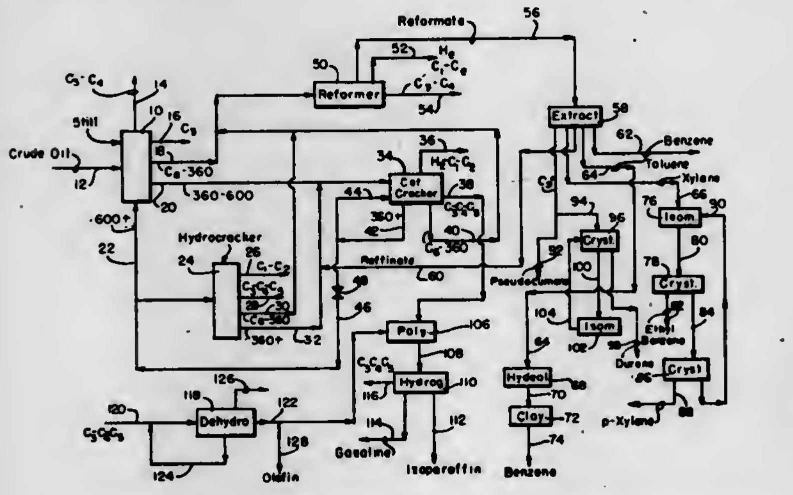
3,726,789
HYDROCARBON CONVERSION PROCESS FOR THE PRODUCTION OF OLEFINS AND AROMATICS

Stephen M. Kovach, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of application Ser. No. 28,271, Apr. 21, 1970, which is a continuation of application Ser. No. 665,748, Sept. 6, 1967, both now abandoned. This application Apr. 5, 1971, Ser. No. 131,538

Int. Cl. C10g *13/02*

U.S. Cl. 208—80 **10 Claims**



Disclosed is a petroleum refining process which maximizes production of aromatics and olefins. Process incorporates hydrocracking, catalytic cracking, reforming, polymerization, dehydrogenation and extraction operations with maximized cycling of refinery streams to the reforming and dehydrogenation phases.

3,726,790
HYDROTREATING HIGH-NITROGEN FEEDSTOCKS WITH HYDRODENITROGENATION AND HYDROCRACKING CATALYST

James P. Gallagher, Park Forest, and John Mool, Homewood, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 38,576, May 18, 1970. This application Jan. 17, 1972, Ser. No. 218,486

Int. Cl. C10g *13/02, 23/00*

U.S. Cl. 208—111 **21 Claims**

A process for hydrocracking and denitrogenation of heavy oils to form improved products, e.g., middle distillates, and a catalyst for use in the process are disclosed. The catalyst comprises a composite support containing a total of about 30% to about 70% by weight of silica and about 70% to about 30% by weight of alumina, formed from a combination of silica-alumina and alumina derived from hydrous alumina selected from the group consisting of boehmite, and mixtures of boehmite and amorphous hydrous alumina. The catalyst contains catalytically-effective amounts of a Group VI*b* and/or Group VIII metal. In a typical example, a distillate heavy mineral oil having an end boiling point up to about 1100° F. and containing from about 500 p.p.m. to 5000 p.p.m. of nitrogen is contacted with hydrogen over the catalyst at a temperature of about 650° F. to 900° F., a pressure of about 500 p.s.i. to 5000 p.s.i., a weight hourly space velocity of about 0.5 to 4 and a hydrogen flow rate of from about 3000 to 30,000 standard cubic feet of hydrogen per barrel of oil to produce improved products.

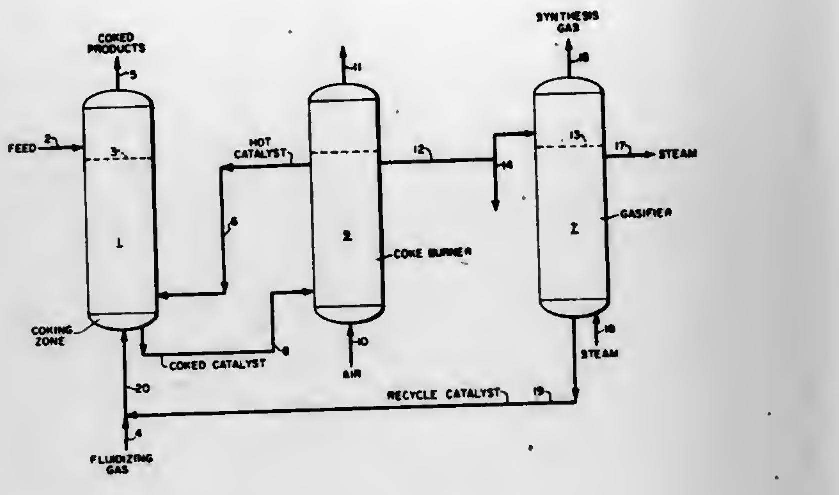
3,726,791
HYDROGEN PRODUCTION FROM AN INTEGRATED COKER GASIFIER SYSTEM

Charles N. Kimberlin, Jr., and Glen P. Hamner, Baton Rouge, La., assignors to Esso Research and Engineering Company

Continuation-in-part of abandoned application Ser. No. 802,800, Feb. 27, 1969. This application July 16, 1970, Ser. No. 55,443

Int. Cl. C10g *9/28*

U.S. Cl. 208—127 **12 Claims**



High Conradson carbon feeds are coked to lay down extensive carbon deposit on a gasification catalyst. The coked catalyst is then steam gasified to produce hydrogen. Part of the coked catalyst may be partially burned to produce heat for the coking step.

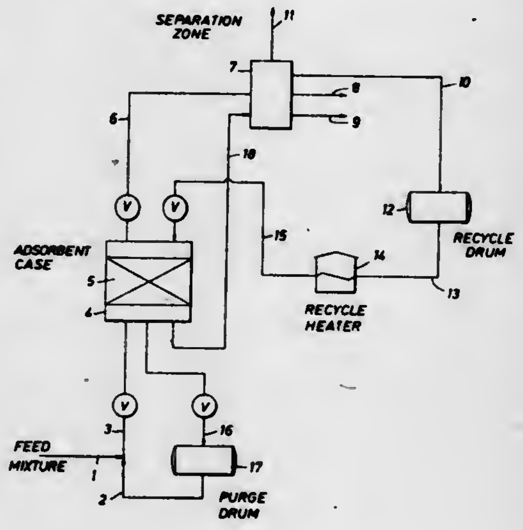
3,726,792
MOLECULAR SIEVE SELECTIVE ADSORPTION PROCESS

James O. Francis, Houston, Tex.; Ralph M. Lewis, New York, N.Y.; Lawrence R. Trammell, Port Arthur, and George W. Vachuda, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 181,792

Int. Cl. C10g *25/04*

U.S. Cl. 208—310 **8 Claims**



A method for separating $C_8 - C_{24}$ carbon number range straight chain hydrocarbons from hydrocarbon mixture employing a molecular sieve selective adsorption process comprising an adsorption cycle and a desorption cycle operated in the vapor phase at an elevated temperature and super-atmospheric pressure wherein a vaporized desorbent hydrocarbon is employed in the desorption cycle. Also a method for treating a selective adsorbent effluent to recover desorbent hydrocarbon for recycle to the selective adsorption process.

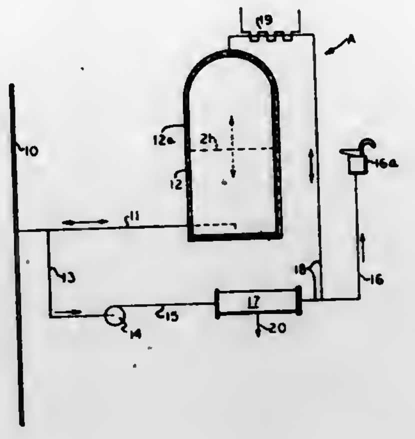
3,726,793
REVERSE OSMOSIS WATER PURIFYING SYSTEM WITH GRADIENT BARRIER WATER STORAGE CONTAINER

Donald T. Bray, Escondido, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.

Filed May 3, 1971, Ser. No. 139,563

Int. Cl. B01d *13/00, 31/00*

U.S. Cl. 210—23 **10 Claims**



In a water purification system wherein pressurized feed water is fed to the bottom of a storage container, and also to the inlet of a pressure pump, and supply water from the pump is fed at increased pressure to the inlet of the reverse osmosis unit, purified product water from the latter unit is fed to a dispensing valve or faucet, and also is heated and fed to the upper end of the product water storage container. The heated product water entering at the top of the storage container has a lower density and tends to float on the colder feed water in the product water storage tank. In addition, the purified water entering the top of the storage container has a lower salt content and less density than the colder feed water. Both mechanisms serve to create a density gradient barrier at the interface between product water and the feed water, thereby tending to keep the two water layers separate. The storage container preferably is insulated to maintain the relative temperatures of the two waters and to reduce the creation of convection currents.

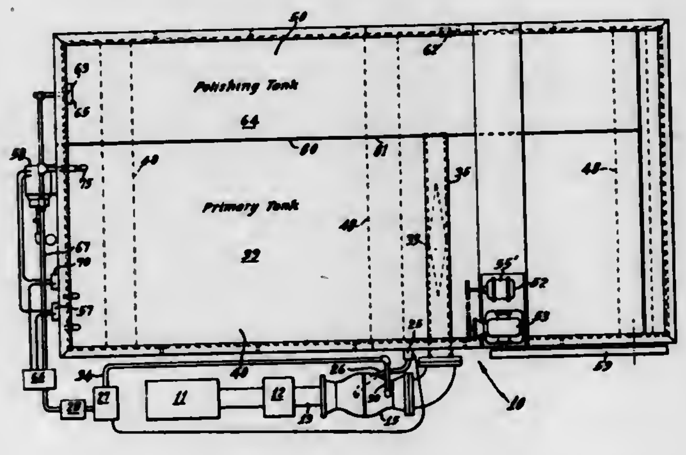
3,726,794
APPARATUS AND SYSTEM FOR REMOVAL OF LATEX FROM WASTE WATER

Winfield H. Scott, Jr., Jacksonville, Fla., assignor to Clarkson Industries, Inc., New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 102,015

Int. Cl. B01d *21/08, 21/24*

U.S. Cl. 210—104 **20 Claims**



The apparatus and system sense the flow of latex laden waste water above a predetermined minimum, mixes and treats same with chemicals in a compartment prior to storage of a batch of latex laden waste water and chemicals in a primary settling tank. The waste water is pumped from the primary tank upon filling of same above a predetermined level and chemicals are fed thereinto prior to being supplied to a polishing tank for final clarification and thereafter discharged into the sewer.

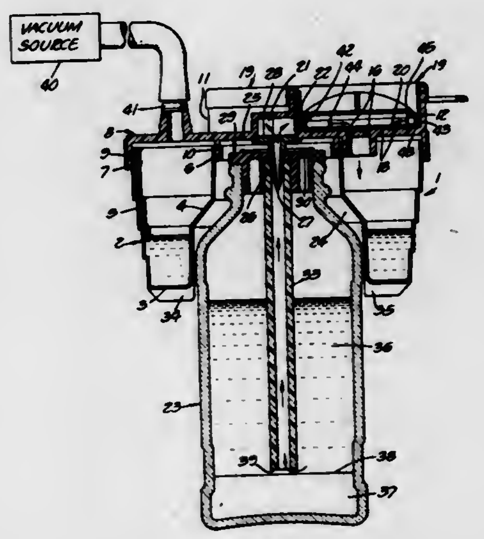
3,726,795
FILTERING UNIT FOR MEDICAL LIQUIDS

Frank M. Edwards, West Los Angeles, Calif., assignor to McGaw Division of American Hospital Supply Corporation, Glendale, Calif.

Filed Dec. 31, 1970, Ser. No. 103,200

Int. Cl. B01d *29/00, 29/04*

U.S. Cl. 210—233 **36 Claims**



A filtering unit for collecting bacteria from blood or other medical liquid onto filter discs which can then be cultured to identify the bacteria. The unit has a rigid reservoir with a top rigidly holding plural filter disc housings in level positions for even filtering. The reservoir is ring-shaped in one embodiment and has a central opening with a depending hollow spike for puncturing a rubber stopper of a blood supply bottle containing a medium for agglomerating and sedimenting a red cell portion of blood, which supply bottle fits into the center opening and supports the reservoir. Vacuum applied to the reservoir pulls a supernatant liquid above the red cell layer from the bottle, distributes it to the plural filter disc housings for filtering, and then deposits the filtrate into the reservoir.

3,726,796
DRILLING FLUID AND METHOD

Richard G. Schweiger, Muscatine, Iowa, assignor to Kelco Company, San Diego, Calif.

No Drawing. Continuation-in-part of application Ser. No. 815,186, Apr. 10, 1969, which is a continuation-in-part of applications Ser. No. 615,337, Feb. 13, 1967, and Ser. No. 772,814, Nov. 1, 1968, all now abandoned. This application June 3, 1971, Ser. No. 149,864

Int. Cl. C10m *1/32, 1/38*

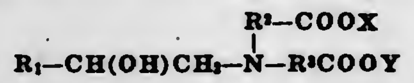
U.S. Cl. 252—8.5 M **11 Claims**

Oil base drilling fluids and water-in-oil emulsion drilling fluids containing quaternary ammonium salts of cellulose sulfate having a degree of substitution of about 2 or more and a viscosity at a one-percent concentration in aqueous media in excess of 20 cps. Method for drilling wells by circulating a drilling fluid, as defined above, in contact with a subsurface formation.

3,726,797
DETERGENT COMPOSITIONS AND PROCESSES INCORPORATING N-(2 - HYDROXY HYDROCARBYL) IMINODICARBOXYLATES

Bjorn Sundby, Piscataway, Edward J. Kenney, Bernardsville, and Harold E. Wixon, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,915
Int. Cl. C11d *1/18, 3/04;* **D06m** *13/38*
U.S. Cl. 252—8.8 **12 Claims**

Built synthetic organic detergent compositions comprise N-(2-hydroxy hydrocarbyl) iminocarboxylates or the corresponding carboxylic acids of the formula:



$$R_1-CH(OH)CH_2-\overset{\overset{\textstyle R^2-COOX}{|}}{N}-R^3COOY$$

wherein R^1 is an aliphatic hydrocarbon radical of 4 to 20 carbon atoms, R^2 and R^3 are divalent aliphatic or aromatic hydrocarbon radicals of 1 to 9 carbon atoms and X and Y are either hydrogen or salt-forming elements or radicals. In preferred embodiments of the invention, R^1 is a saturated radical of 12 to 20 carbon atoms, R^2 and R^3 are identical alkylene radicals of 1 to 2 carbon atoms, and X and Y are the same monovalent metals, or lower alkanolamines, e.g., sodium, triethanolamine. In addition to the iminodicarboxylates, such compositions comprise an inorganic builders salt, such as sodium tripolyphosphate or potassium pyrophosphate, and also may include other adjuvant materials, such as trisodium nitrilotracetate, enzymes, anti-redeposition agents, bleaches or bluing agents, germicides, hydrotropes, auxiliary detergents and softening agents, etc. Usually, the iminodicarboxylate comprises from 3 to 30% of the composition and the inorganic builder salt is from 10 to 70% thereof.

The products made may be in liquid or solid form and are preferably employed as liquids or powders. They may be utilized as washing-softening agents in laundering or may be employed in pre-soaking or after-soaking of laundry, to improve the softening of the washed material. The iminodicarboxylate can be used without inorganic builder salt, in which case it normally functions primarily as a softening agent and is preferably utilized in the rinse water, after completion of washing, although it may also be used alone in a pre-soaking or washing operations.

3,726,798
HYDRAULIC FLUID CONTAINING BASIC ZINC CARBOXYLATES

Howard Bernard Silver, Hinchley Wood, England, assignor to The British Petroleum Company Limited, London, England
No Drawing. Filed Apr. 14, 1971, Ser. No. 134,077
Claims priority, application Great Britain, Apr. 28, 1970, 20,320/70
Int. Cl. C09k *3/00*
U.S. Cl. 252—75 **8 Claims**

Hydraulic fluids containing novel complexes of zinc dihydrocarbyl dithiophosphates and basic zinc carboxylates are non-corrosive to silver.

3,726,799
WATER BASED ROLLING LUBRICANT

Ewell E. McDole, Danville, and Frank L. Howard, Livermore, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
No Drawing. Filed May 18, 1971, Ser. No. 144,645
Int. Cl. C10m *1/06, 1/22, 1/46*
U.S. Cl. 252—49.5 **29 Claims**

A coolant-lubricant for the cold rolling of aluminum and other light metals comprising an oil-in-water emulsion wherein the nonaqueous fraction of said emulsion consists essentially of from about 45 to 90% of a light petroleum oil, from about 5 to 50% by weight of esters of fatty acids, from about 5 to 50% by weight of fatty alcohols, between about 0.05 and 1.0% by weight of an oil-soluble emulsifier and preferably between about 0.05 and 1.0% by weight of an oil-insoluble emulsifier. The nonaqueous fraction of said emulsion amounts to between about 3 and 20% of the total weight of the emulsion. Preferably, the water phase of the emulsion has an alkali metal salt concentration of between about 10 and 400 parts per million and a pH level between about 5.0 and 7.4.

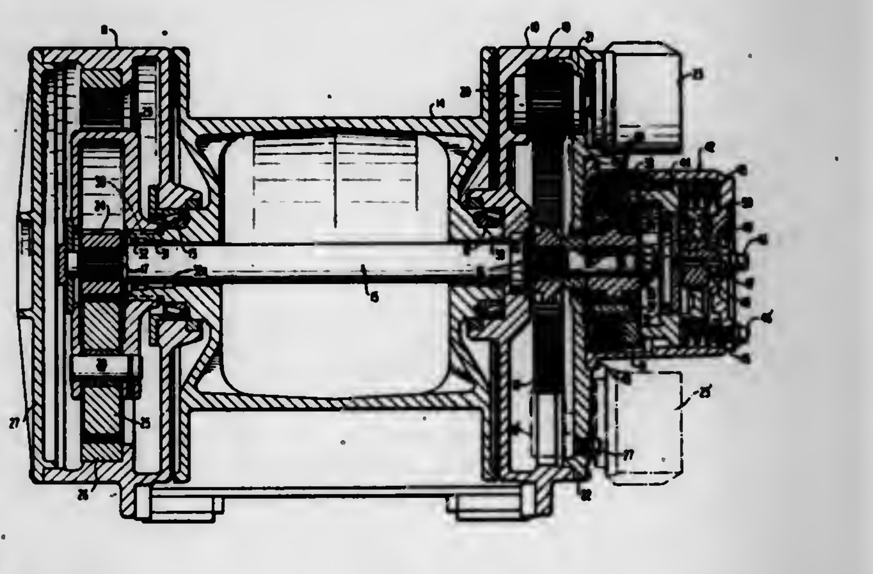
3,726,800
STABILIZATION OF PEROXYDISULFATE AND PEROXYDIPHOSPHATE SOLUTIONS

Robert E. Yelin, Willingboro, and Ralph F. Villiers, Trenton, N.J., assignors to FMC Corporation, New York, N.Y.
No Drawing. Filed Aug. 21, 1970, Ser. No. 66,058
Int. Cl. C11d *7/54*
U.S. Cl. 252—95 **4 Claims**

Aqueous solutions of peroxydisulfates and peroxydiphosphates are stabilized by the addition of urea, molecular oxygen, a vinyl monomer, or other solution-dispersible agent which is reactive with free radicals.

3,726,801
POWER WINCH FOR CRANES AND THE LIKE

Russell L. Sterner, Greencastle, and Henry A. Kohler, Waynesboro, Pa., assignors to Walter Kidde & Company, Inc., Clifton, N.J.
Filed Mar. 25, 1971, Ser. No. 127,955
Int. Cl. B66d *1/00*
U.S. Cl. 254—187 R **4 Claims**



The payload cable of a crane or the like is reeled in and payed out by a winch drum which is positively driven at all times by a pair of hydraulic motors. When lifting a payload, these two motors are operated in a parallel mode to provide maximum line pull at slower speed. The motors may be operated in the series mode to halve the line pull while the line speed is doubled. This mode of operation is employed to drop the hook ball of the crane rapidly. The winch additionally features a compact planetary gear reduction unit and an intercoacting one-way active clutch and disc brake arrangement for the winch drum shaft. The main shaft bearings are inboard of the clutch and brake housing and the latter components are easily accessible for servicing. A simplified hydraulic control circuit for the winch motors renders the operation of the winch safe, efficient and rapid without resort to a free-fall mode for the hook ball or free-wheeling of the winch drum.

3,726,802
LOW TEMPERATURE CHEMILUMINESCENT FORMULATIONS

Carl H. Morley and Everett M. Bens, China Lake, Calif., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed July 30, 1965, Ser. No. 476,788
Int. Cl. C09k *3/00*
U.S. Cl. 252—188.3 **9 Claims**

1. A method for extending the chemiluminescence of tetrakis(dimethylamino)ethylene to subzero temperatures which comprises:
  admixing the following ingredients at room temperature in an inert atmosphere;
  about 1 ml. of tetrakis(dimethylamino)ethylene;
  about 2 ml. of a member selected from the group consisting of hexane, tetrahydrofuran, cyclooctane and mixtures thereof; and
  about 1 ml. of a member selected from the group consisting of dimethylformamide, 3-methylsulfolane, sulfolane, 2-amino-3-methylpyridine, n,n-dimethyl lactamide, diethylcyanamide, ethylene glycol dimethylether, ethylene diamine, diethylene triamine, hexamethylenediamine, β-dimethylamino ethyl alcohol, amine catalyzed silicone-dimethylsilicone and mixtures thereof.

3,726,803
CAPSULE WALL TREATING PROCESS UTILIZING CONDENSATION POLYMERIZATION AND CAPSULE PRODUCT

Robert G. Bayless, Yellow Springs, and Donald D. Emrick, Kettering, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Continuation-in-part of Ser. No. 701,124, Jan. 29, 1968, abandoned. This application Feb. 16, 1970, Ser. No. 11,882
Int. Cl. B01j *13/02;* **B44d** *1/02, 1/44*
U.S. Cl. 252—316 **6 Claims**

A method is provided for treating existing liquid-permeated, capsule walls, en masse, wherein one component of a capsule wall treatment system comprising at least two components is held within the capsule wall material permeation pathways by being chemically complexed or otherwise bound therein and remaining components are infused into the capsule wall material by permeation, in liquid solution, to achieve reactive proximity to said chemically complexed or otherwise bound component. The complexed component and the remaining components are mutually co-reactive to form new polymeric material of a kind differing from the existing wall material and such new polymeric material is produced interstitially or internally within the structure of the existing capsule walls to provide a novel capsule wall composition comprising a composite or intimate association of different kinds of polymeric materials.

3,726,804
PROCESS FOR THE PRODUCTION OF MICROCAPSULES CONTAINING AN OILY LIQUID

Hiroharu Matsukawa and Masataka Kiritani, Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Sept. 2, 1970, Ser. No. 69,177
Claims priority, application Japan, Sept. 2, 1969, 44/69,448
Int. Cl. B01j *13/02;* **B44d** *1/02*
U.S. Cl. 252—316 **26 Claims**

A process for producing microcapsules containing an oily liquid which comprises dissolving at least one film-forming material which forms an oil and water insoluble high molecular weight material by reacting with itself or with another film-forming material in an oily liquid in the presence of a low boiling solvent or a polar solvent having miscibility with a polar liquid forming the continuous phase of the system, dispersing by emulsification the resulting solution in said polar liquid forming the continuous phase, and increasing the temperature of the system, whereby said film-forming materials in the dispersion are transferred to the surfaces of the oil drops and said reaction occurs to thereby form the high molecular weight material at the surfaces of the oil drops to form microcapsule walls. The film-forming material is selected from the group consisting of polyisocyanates, polyisothiocyanates, polyamines, polycarboxylic acids, polybasic chlorides, acid anhydrides, epoxy compounds, polyols, acrylate compounds, polysulfides, lactones, lactams and prepolymers thereof.

3,726,805
PROCESS FOR THE PRODUCTION OF AMINO ACID-CONTAINING MICROCAPSULES

Yukio Maekawa, Shizuo Miyano, and Asaji Kondo, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Mar. 17, 1971, Ser. No. 125,385
Claims priority, application Japan, Mar. 17, 1970, 45/22,508
Int. Cl. A61j *3/07;* **B01j** *13/02;* **B44d** *1/02*
U.S. Cl. 252—310 **11 Claims**

A process for producing amino acid-containing microcapsules which comprises melting a hardened oil having a melting point of higher than 40° C. and dispersing therein a powdered water-soluble amino acid to provide a first dispersion, dispersing said first dispersion in a solvent mixture of methanol and a polyhydric alcohol to form a second dispersion, said solvent mixture being heated to a temperature higher than the melting point of said hardened oil, and cooling said second dispersion to a temperature lower than the melting point of the hardened oil to thereby form said microcapsules.

3,726,806
SEMISOLID COMPOSITION USEFUL IN THIN LAYER CHROMATOGRAPHY METHOD

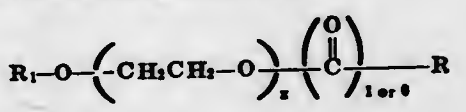
Paul M. Tocci, Miami, Fla., assignor to TLC Corporation, Miami, Fla.
No Drawing. Continuation-in-part of application Ser. No. 855,477, Sept. 5, 1969. This application Mar. 18, 1971, Ser. No. 125,865
Int. Cl. B01f *1/00;* **B01j** *13/00*
U.S. Cl. 252—317 **9 Claims**

A semisolid chromatographic solvent composition which is useful especially for use with the disposable chromatographic unit of copending application Ser. No. 855,477, now U.S. Pat. 3,600,306, comprises from about 1% to 15% by weight of a gelling agent such as fumed silica, fumed titania, alumina or starch and a solvent mixture (for example, n-butanol, glacial acetic acid and water) suitable for thin layer chromatography. Heat developable stains and other additives such as stabilizers may also be included.

3,726,807
TERNARY EMULSIFYING AGENT

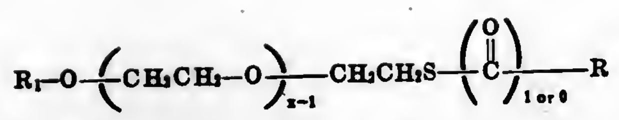
Keith L. Johnson, Matteson, and Harry T. Anderson, Clarendon Hills, Ill., assignors to Swift & Company, Chicago, Ill.
No Drawing. Original application Apr. 26, 1968, Ser. No. 724,613. Divided and this application Nov. 13, 1970, Ser. No. 89,454
Int. Cl. B01f *17/22, 17/34*
U.S. Cl. 252—356 **3 Claims**

A ternary emulsifying agent capable of forming optically transparent unified oil and water emulsions is disclosed, said ternary emulsifying agent comprising (1) a condensate of a fatty acylating substance having an average of 12–22 carbons in the acyl group and an alkylolamine having at least one acylatable hydrogen in the amino group, (2) a polyoxyethylene derivative represented by one of the following formulas:



$$R_1-O-\left(-CH_2CH_2-O\right)_x\left(\overset{\overset{O}{\|}}{C}\right)_{1\text{ or }0}-R$$

or



$$R_1-O-\left(CH_2CH_2-O\right)_{x-1}-CH_2CH_2S-\left(\overset{O}{\overset{\|}{C}}\right)_{1\text{ or }0}-R$$

wherein x is an integer of 8–60, R_1 is H, methyl, ethyl, propyl or butyl, R is a saturated or unsaturated fatty alkyl group having between 12 and 30 carbons or an alkyl phenol having 1–3 alkyl groups containing 3–12 carbons per group, and (3) a lower alkyl or aryl ether of a glycol selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and dipropylene glycol.

3,726,808
PROCESS FOR THE PRODUCTION OF ACTIVE CARBONS

Arnold N. Wennerberg, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 705,901, Feb. 16, 1968. This application Aug. 2, 1971, Ser. No. 168,007

Int. Cl. C01b *31/08, 31/10*

U.S. Cl. 252—425 **14 Claims**

Desulfurized active carbon is produced by steam treating a sulfur-containing pre-pyrolyzed or unpyrolyzed composition containing an aromatic acid salt at a temperature in the range of 450° C. to 650° C. whereby the sulfur is converted to H_2S and S (vapor) and a recyclable base is formed. When pyrolysis is conducted separately and prior to the steam treatment it is preferably conducted at a temperature between 450° C. and 1,000° C. Aromatic carboxylic acids are preferred and especially coke acid derived from the oxidation of petroleum coke.

3,726,809
CATALYST SUPPORTS AND TRANSITION METAL CATALYSTS SUPPORTED THEREON

Keith George Allum, Bracknell, Samuel McKenzie, Richmond, and Robert Chalmers Pitkethly, Camberley, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,031

Claims priority, application Great Britain, Dec. 19, 1969, 61,920/69

Int. Cl. C07f *7/02*

U.S. Cl. 252—431 P **5 Claims**

Catalyst supports are prepared by reacting an inorganic solid material (I) containing —OH groups e.g. silica with a compound (II) containing silicon and phosphorus e.g. $(EtO)_3SiCH_2CH_2PEt_2$. The product can be reacted with transition metal compounds e.g. Group VIII metal compounds to yield heterogeneous catalysts. In an alternative preparation the transition metal compound can be reacted with compound (II) and the product then reacted with the compound (I).

3,726,810
RHENIUM-ALUMINA CATALYST AND METHOD OF ACTIVATING SAME WITH ANHYDROUS TREATING AGENTS

John W. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 24, 1970, Ser. No. 101,419

Int. Cl. B01j *11/78*

U.S. Cl. 252—441 **9 Claims**

An activated rhenium-alumina catalyst is prepared by heating rhenium-containing alumina at 400–1500° F. in a dry ambient and treating it with anhydrous treating agents, i.e. Cl_2, HCl, HBr, Br_2 and Cl and Br derivatives of methane, at 400–1500° F. The activated catalyst finds utility in the isomerization of paraffins and naphthenes.

3,726,811
PRODUCTION OF CATALYST OR CATALYST SUPPORT

Alfred J. L. Toombs, Berkeley, and Warren E. Armstrong, Lafayette, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 7, 1971, Ser. No. 141,405

Int. Cl. B01j *11/40*

U.S. Cl. 252—463 **5 Claims**

Alpha alumina of relatively high surface area is produced by (1) impregnating commercial alumina xerogel with carbon-forming material, (2) heating at medium temperature to carbonize, (3) heating the resulting carbon-containing alumina at very high temperature in inert atmosphere thereby converting to alpha alumina of relatively high surface area while preventing reactive sintering during phase change, and (4) finally removing the carbon therefrom by conversion of the carbon to a gaseous carbon compound.

3,726,812
ACRYLAMIDE TYPE EARTH RESISTANCE REDUCING AGENT AND METHOD OF USE THEREOF

Einosuke Higashimura, Tokyo, Keiichi Hirai and Eisaku Okamoto, Yokohama, Masami Sasaki, Kawasaki, Yukihiko Sekimoto, Iruma, and Akiyoshi Horiba, Tokyo, Japan, assignors to Nitto Chemical Industry Co., Ltd., and Mitsubishi Rayon Co., Ltd., both of Tokyo, Japan

No Drawing. Filed May 25, 1971, Ser. No. 146,828

Claims priority, application Japan, May 29, 1970, 45/46,252; June 22, 1970, 45/54,230, 45/54,231

Int. Cl. H01b *1/06*

U.S. Cl. 252—521 **19 Claims**

An acrylamide type earth resistance-reducing agent comprising (1) acrylamide, (2) a water-soluble cross-linking monomer, (3) sodium acrylate and/or ammonium acrylate, and (4) at least one compound selected from the group consisting of metal salts of methacrylic acid, ammonium methacrylate, and 2-hydroxyethyl methacrylate. Corrosion resistance of the earth electrode is improved by adding to the said reducing agent at least one compound selected from the group consisting of water-soluble thiocyanates, benzotriazole, and hydroxy- halogen-, alkyl-, or nitro-substituted derivatives of benzotriazole. If necessary, the earth resistance can be further reduced advantageously by addition of an inorganic electrolyte to the said reducing agent. The above-said compositions are applied in the form of an aqueous solution and together with a redox catalyst by pouring or injecting into the soil surrounding the earth electrode.

3,726,813
DETERSIVE PARTICULATE COMPOSITION

Giuseppe Borrello, Via Fanciulla d'Anzio 9, Anzio, Italy

No Drawing. Filed Oct. 23, 1970, Ser. No. 83,601

Claims priority, application Italy, Oct. 24, 1969, 41,048/69

Int. Cl. C11d *3/065*

U.S. Cl. 252—539 **11 Claims**

A water-soluble, mechanically worked, substantially homogeneous, particulate detersive composition, said composition being formed of discrete particles each comprising (a) 10% to 40% by weight of water-soluble, higher alkyl aryl sulfonate detergent salt, having 9 to 15 carbons in the alkyl group (b) 10% to 40% by weight of a lower alkyl benzene sulfonate salt having one to three carbon atoms in the lower alkyl group, (c) 5% to 50% by weight of at least one water-soluble inorganic salt, and (d) 2 to 20% by weight of water; the ratio of (a) to (b) being between 1:4 and 6:1; the major portion of said particles being organic; said particles being non-tacky, rigid, breakable, and non-friable, having a density of 0.5 to 0.9 gm./cc., and having an average cross sectional area of from 0.04 mm.^{2} to 0.8 mm.^{2} and a length from 0.5 mm. to 10.0 mm., and the process of making the described composition.

3,726,814
LIQUID LAUNDRY DETERGENTS AND A PROCESS FOR PREPARING SAME

Albert Jay Lancz, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,601

Int. Cl. C11d *1/18*

U.S. Cl. 252—543 **5 Claims**

A clear liquid detergent composition comprising a solubilized stilbene brightener system, a surfactant, the sodium salt of nitrilotriacetic acid, and a hydrotrope. Moreover, a process of preparing said brightener system comprising solubilizing the stilbene brighteners with a water miscible solvent and heat is also described.

3,726,815
COMPOSITIONS CONTAINING AMINOPOLYUREYLENE RESIN

Paul Sheldon Grand, South Bound Brook, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,154

Int. Cl. C11d *1/38;* **B01j** *1/16*

U.S. Cl. 252—544 **7 Claims**

Compositions comprising a mixture of an aminopolyureylene resin having a molecular weight in the range of about 300 to 100,000 and an active material selected from the group of antibacterial materials, tarnish inhibitors, ultra violet absorbers, fluorescent brighteners, bluing agents and skin treating materials, the weight ratio of resin to active material being effective to improve the properties of the active material and being selected from the range of 1:1 to 20:1. Preferred compositions comprise 2% to 99% by weight of a water-soluble organic detergent, .05% to 5% by weight of aminopolyureylene resin and 0.05 to 5% by weight of active material.

3,726,816
CATALYST SYSTEM FOR USE IN WATER-BLOWN FLEXIBLE POLYETHERURETHANE FOAMS AND FOAMS MADE THEREFROM

Hubert J. Fabris, Akron, Edwin M. Maxey, Kent, and Heinz Uelzmann, Cuyahoga Falls, Ohio, assignors to The General Tire & Rubber Company, Summit, Ohio

No Drawing. Continuation-in-part of application Ser. No. 53,269, July 8, 1970. This application Oct. 18, 1971, Ser. No. 190,276

Int. Cl. C08g *22/44, 22/36, 51/58*

U.S. Cl. 260—2.5 AC **6 Claims**

A novel catalyst system for use in water-blown flexible polyetherurethane foams combines quaternary ammonium bases with a delayed action neutralizing composition which does not release free acid, thereby producing a foam having low residual odor that retains its original or near-original compression load strength, even when subjected to severe heat aging conditions.

3,726,817
SURFACE COATING COMPOSITIONS COMPRISING POLYESTER RESIN, WAX AND FLOCK AND COATINGS THEREOF

Dewey F. Niswonger, P.O. Box 1762, Redding, Calif. 96001

No Drawing. Filed Nov. 3, 1971, Ser. No. 195,447

Int. Cl. C08g *51/18*

U.S. Cl. 260—9 **12 Claims**

A curable surface coating composition comprising an unsaturated polyester resin, natural wax particles and flock which is mixed with a curing catalyst such as methyl ethyl ketone peroxide and poured or sprayed as a thin layer onto a concrete, wood or metal substrate and allowed to cure. The cured coatings are waterproof, strongly bonded to the substrate and have a low coefficient of friction, making them ideal for use as artificial skating surfaces.

3,726,818
OXIDATIVE CURING RESIN COMPOSITION CONSISTING ESSENTIALLY OF AN OIL-MODIFIED ALKYD RESIN AND A POLYCYCLIC NAPHTHENIC HYDROCARBON COMPOUND

Satoru Enomoto, Hisayuki Wada, Mikio Fujioka, and Masao Koguro, Iwaki, Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Nov. 20, 1970, Ser. No. 91,540

Claims priority, application Japan, Nov. 20, 1969, 44/92,650; May 18, 1970, 45/41,670

Int. Cl. C09d *3/64*

U.S. Cl. 260—22 CQ **13 Claims**

An oxidative curing resin composition containing an oil modified alkyd resin or drying oil and a polycyclic naphthenic hydrocarbon compound showing an average molecular weight of 200–1000 measured by the vapor pressure-osmotic method (hereinafter this method is called "VPO") and showing lower than 10% of an aromatic ring-forming proton density at a τ value of less than 4 by measurement of the nuclear magnetic resonance absorption spectrum (hereinafter, this measurement is called "NMR").

3,726,819
WATER-EXTENDED POLYESTER AND EPOXY RESINS

Willem Dijkhuizen, Zuidlaren, Netherlands, assignor to Scholten-Honig Research N.V., Foxhol, Netherlands

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,519

Claims priority, application Great Britain, Dec. 30, 1969, 63,186/69; July 14, 1970, 33,994/70

Int. Cl. C08f *21/04;* **C08g** *17/04, 30/00*

U.S. Cl. 260—22 CB **20 Claims**

Water extended resins are produced by curing an emulsion of water in a thermosetting resin in the presence of a catalyst and an emulsifier, the thermosetting resin being either an unsaturated polyester prepolymer containing a vinyl monomer copolymerizable therewith, or a low molecular weight epoxy resin. According to the invention the emulsifier is an organic compound which

(a) is capable of forming emulsions of the water-in-oil type

(b) is substantially insoluble in water, but soluble or dispersible in styrene and in the thermosetting resin;

(c) has emulsifying properties such that an emulsion of water in styrene containing 0.5 part of said emulsifier, 100 parts of styrene, and 150 parts of water does not separate any water and not more than 5 ml. of styrene from 100 ml. of the emulsion after standing for 60 minutes at 20° C.

3,726,820
SLIP AGENT COMPOSITION FOR SPIRAL-WOUND PAPER CANS

Merrill Bleyle, Waltham, and Charles T. Mitchell, Jr., North Reading, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

No Drawing. Original application June 30, 1964, Ser. No. 379,384, now Patent No. 3,400,008. Divided and this application Mar. 21, 1968, Ser. No. 734,186

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 R **2 Claims**

Paper articles having a coating of vinylidene chloride copolymer as a barrier to moisture penetration are further coated with an aqueous composition to impart "slip" to the coated paper. The "slip" composition contains paraffin wax, sodium alkyl sulfate, a binder polymer such as styrene-maleic anhydride copolymer and oxidized polyethylene.

3,726,821

WASH-RESISTANT ANTISTATIC COATING COMPOSITIONS

Thomas T. Chiu, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 23, 1968, Ser. No. 786,479

Int. Cl. C08f *33/08;* **C08g** *49/04*

U.S. Cl. 260—29.6 NR **8 Claims**

Wash-resistant antistatic fibrous materials are prepared by (1) contacting a fibrous substrate with a novel wash-resistant antistatic composition comprising an aqueous dispersion of a polyamine such as polyethylenimine and an organic polysulfonium compound such as (2-butene-1,4-diyl)bis[bis(2-hydroxyethyl)sulfonium chloride] and (2) curing the antistatic composition to form an adherent, wash-resistant antistatic coating for the fibrous substrate.

3,726,822

MODIFIED ANIONIC PAPER-SIZING AGENTS

Wulf von Bonin, Hans Ludwig Honig, and Werner Theuer, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft

No Drawing. Filed July 7, 1971, Ser. No. 160,516

Claims priority, application Germany, July 10, 1970, P 20 34 263.6

Int. Cl. C08f *41/12, 37/18*

U.S. Cl. 260—29.6 RW **4 Claims**

Anionic paper-sizing agents based on mixtures of (A) water-soluble salts of copolymers from olefinically unsaturated monomers such as ethylene, styrene, isobutylene or indene and maleic or itaconic acid imide and (B) a latex of a copolymer of olefinically unsaturated monomers such as an aromatic vinyl compound, vinyl ester, ether, halide or amide, (meth)acrylic ester or a nitrile, ester or amide.

3,726,823

COMPOSITION FOR PREVENTING THE STICKING OF OILY PRINTING INK TO A SURFACE OF THE CYLINDER OF OFFSET PRINTING PRESS

Tsuyoshi Morishima and Rentaro Shimizu, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 860,409, Sept. 23, 1969. This application Nov. 15, 1971, Ser. No. 199,042

Int. Cl. C08f *29/34*

U.S. Cl. 260—29.6 M **6 Claims**

A composition containing polyacrylic acid, colloidal silica, phosphoric acid and an organic compound of titanium such as a chelate compound of titanium or an organotitanium compound in a mixture of water and an organic solvent, said composition being applied to a surface of the metallic cylinder of an offset printing press to prevent said cylinder surface from being stained with oily printing ink and to avoid contamination of the printed matter with said printing ink.

3,726,824

PREPARATION OF FILM-FORMING LATEXES OF POLYVINYLAROMATIC-POLYDIENE BLOCK COPOLYMERS

Frank L. Saunders, Midland, and Ronald R. Pelletier, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 16, 1970, Ser. No. 72,887

Int. Cl. C08d *7/00*

U.S. Cl. 260—29.7 EM **8 Claims**

Latexes of polyvinylaromatic-polydiene block copolymers are provided by (1) dissolving the block copolymer in an organic liquid which is a selective solvent for the polydiene block, (2) emulsifying the resulting solution in an aqueous medium containing surfactant and (3) stripping the emulsion of organic and excess aqueous liquids to form a stable, concentrated latex.

3,726,825

POLYURETHANE COATING FOR MOISTURE VAPOR BARRIER

Fred E. Woodward, West Palm Beach, Fla., Dora A. Krasner, Yonkers, N.Y., and Sherman Krefting, Teaneck, N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 669,253, Sept. 20, 1967. This application Mar. 15, 1971, Ser. No. 124,491

Int. Cl. C08g *22/06;* **C08j** *1/42;* **B32b** *27/10*

U.S. Cl. 260—29.2 TN **16 Claims**

Compositions of cured linear thermoplastic polyurethane resins are used as coatings to form moisture vapor barriers or permeable materials. The polyurethane resins are reactive products of certain non-halogenated organic diisocyanates, neopentyl glycol and organic dihydroxy compounds other than neopentyl glycol, such as polyethers having two hydroxyl groups and dihydric compounds having only carbon to carbon bonds in the backbone and having from two to twenty carbon atoms. The resin compositions can be applied as lacquers or as emulsions.

3,726,826

STABILIZED ADHESIVE SOLUTIONS FOR POLYVINYL CHLORIDE

Everett Walter Knight, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 53,985, July 10, 1970. This application Feb. 29, 1972, Ser. No. 230,485

Int. Cl. C08f *45/26*

U.S. Cl. 260—30.4 R **2 Claims**

A solution of post-chlorinated polyvinyl chloride resin in tetrahydrofuran, an adhesive, is stabilized against gelling by including therein a small amount of 1,2-butylene oxide, ethyl acetate or mixtures thereof.

3,726,827

RAPID-SETTING NON-ELASTOMERIC POLYURETHANE COMPOSITIONS

Elvis E. Jones, Lake Jackson, Franciszek Olstowski, Freeport, and Donald B. Parrish, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 3, 1971, Ser. No. 195,498

Int. Cl. C08g *22/08, 22/40, 22/42*

U.S. Cl. 260—31.8 N **4 Claims**

Rapid-setting non-elastomeric urethane compositions are prepared from a composition comprising

(1) a liquid prepolymer such as one prepared by reacting toluene diisocyanate with the reaction product of about 3 moles of propylene oxide per mole of glycerine,
(2) a liquid polyol containing 3 to 8 hydroxyl groups such as the reaction product of about 3 moles of propylene oxide per mole of glycerine,
(3) as a liquid modifier compound, an ester of a carboxylic acid such as dioctyl phthalate and
(4) a non-amine-containing catalyst such as lead octoate.

3,726,828

COMPOUNDING POLYETHER ELASTOMERS

Roger S. Hawley, Cranford, and Irving Kuntz, Westfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 594,351, Nov. 15, 1966. This application Oct. 20, 1969, Ser. No. 868,670

Int. Cl. C08f *37/18*

U.S. Cl. 260—33.6 AQ **2 Claims**

The compounding of polyether elastomers is enhanced by incorporating therein small amounts of terpolymers of ethylene, a higher alpha olefin, and a non-conjugated diolefin typically selected from the group consisting of

5-alkylidene-2 - norbornene, 2 - alkyl - norbornadiene, acyclic dienes, alicyclic dienes, and hydro indenes.

3,726,829

INTUMESCENT POLYMER COMPOSITIONS FOR ROCKETS

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Nov. 10, 1970, Ser. No. 88,481

Int. Cl. C08c *11/08, 11/10, 11/16*

U.S. Cl. 260—41.5 R **10 Claims**

This invention pertains to chemical compositions useful in thermal barriers of a solid-propelled rocket motor which provides zoning capability for a missile. Flame resistant chemical compositions which intumesce are employed in the inert elastomeric barrier that is embedded between layers of solid propellant. Disclosed are intumescent chemical compositions useful as thermal barriers and additives to rocket motor case insulation and liner materials. The disclosed typical intumescent compositions are comprised of ammonium dihydrogen phosphate, boric acid, a filler material selected from asbestos or starch and tragacanth, a titanium oxide composition selected from titanium dioxide and titanium dioxide-barium sulfate, and a resin.

3,726,830

STABILIZATION OF POLYESTERS

Gunther Heuser, Troisdorf-Oberlar, and Norbert Vollkommer, Troisdorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed July 14, 1971, Ser. No. 162,475

Claims priority, application Germany, July 24, 1970, P 20 36 712.8

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.8 A **5 Claims**

Polyesters, especially beta-lactone based polyesters such as polypivalolactone, are stabilized against thermo-oxidative decomposition by admixing therewith phthalimide alone or in combination with N-acyl-p-aminophenol as an antioxidant.

3,726,831

PROCESS FOR PREPARING POLYIMIDES FROM AMINO AROMATIC DICARBOXYLIC ACIDS AND ESTER DERIVATIVES OF SAID ACIDS

Luis Acle, Jr., William R. Boram, and John V. Long, San Diego, Calif., assignors to International Harvester Company, San Diego, Calif.

No Drawing. Continuation of abandoned application Ser. No. 692,279, Dec. 21, 1967. This application Nov. 10, 1970, Ser. No. 88,511

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP **5 Claims**

Monomeric aromatic compounds having two carboxylic groups and an amino group so situated as to allow the monomer to be condensed to a polyamic acid or a derivative thereof with subsequent cyclization to a polyimide, together with the intermediate and end products. The preparation of the monomers and processes of preparing polyamic acids and polyimides therefrom.

3,726,832

CYCLIC ETHERS AND VINYL ETHERS AS MOLECULAR WEIGHT REGULATORS IN ALFIN POLYMERIZATIONS

Koei Komatsu and Shigeyuki Nishiyama, Yokohama, Noboru Ohshima, Tokyo, and Nobuyuki Sakabe, Kawasaki, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1971, Ser. No. 125,940

Claims priority, application Japan, Apr. 3, 1970, 45/27,887

Int. Cl. C08f *1/80*

U.S. Cl. 260—47 UA **33 Claims**

Conjugated diolefin polymers having a molecular weight of less than 1,000,000 can be produced at a high polymerization rate and in a high yield by homopolymerizing or copolymerizing a conjugated diolefin or a mixture thereof with a vinyl aromatic hydrocarbon in the presence of an alfin catalyst by using, as a molecular weight regulator, a cyclic ether having an $—O—CH_2—O—$ or

$$—O—CH_2—CH{=}CH—$$

radical in its ring or a vinyl ether having the formula $CH_2{=}CHOR^1$ or $CH_2{=}CHO(CH_2CH_2O)_nR^2$, wherein *n* is an integer of from 1 to 3, and R^1 and R^2 are alkyl groups having 1 to 10 carbon atoms, alkenyl groups, phenyl groups, aralkyl groups or cycloalkyl groups or a mixture of the cyclic ether and the vinyl ether. The above-mentioned molecular weight regulator not only displays a prominent molecular weight-regulating effect, even when used in a small amount, but also is easily commercially obtainable and inexpensive, so that marked commercial advantages can be attained.

3,726,833

POLYIMIDES OF BENZOPHENONE TETRACARBOXYLIC ACID COMPOUND AND 3,9-BIS(3-AMINOPROPYL) - 2,4,8,10 - TETRAOXASPIRO (5,5)-UNDECANE AND METHOD OF PREPARATION

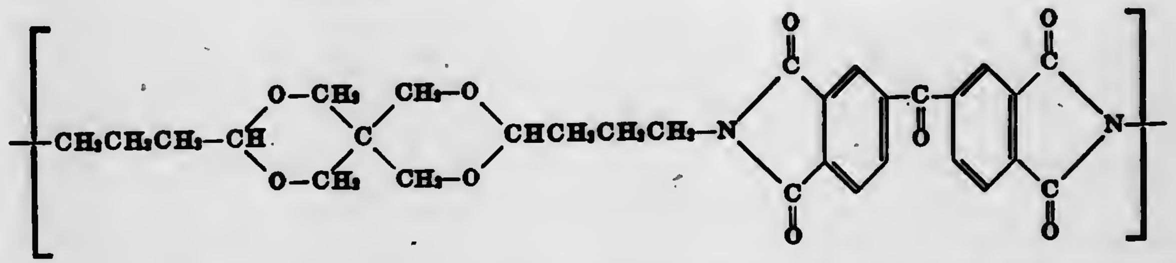
Munehiko Suzuki, Yokosuka, Etsuo Hosokawa, Yokohama, and Misao Waki, Kawasaki, Japan, assignors to Showa Densen Denran Kabushiki Kaisha, Kanagawa-ken, Japan

Original application May 21, 1969, Ser. No. 826,491. Divided and this application Jan. 6, 1971, Ser. No. 104,489

Int. Cl. C08g *20/32*

U.S. Cl. 260—65 **3 Claims**

A polyamide having a recurring structural unit of the formula



can be produced by causing a 3,3',4,4'-benzophenonetetracarboxylic acid compound and 3,9-bis(3-aminopropyl)-2,4,8,10-tetraoxaspiro(5,5)undecane to contact each other under conditions conducive to condensation. Such a polyimide is blended with a convertible polyester and a phenolic solvent to produce a composition which is suitable for use as an electrically insulating varnish forming a coating film of highly desirable properties.

3,726,834

THERMOPLASTIC COPOLYIMIDES

Luis Acle, Jr., San Diego, Calif., assignor to International Harvester Company, San Diego, Calif.

Continuation-in-part of Ser. No. 835,226, June 20, 1969, abandoned. This application July 3, 1972, Ser. No. 268,859

Int. Cl. C08g *20/32*

U.S. Cl. 260—65 **16 Claims**

Aromatic thermoplastic copolyimides made from a 3,3′,4,4′-benzophenonetetracarboxylic acid derivative and two or more aromatic diamines, at least one of which is meta-substituted and both or all of which are either meta- or para-substituted, together with precursors for and methods of preparing and using such copolyimides and precursors.

3,726,835

POLYURETHANE PREPOLYMERS CURED WITH MELAMINE OR DICYANDIAMIDE

Eugene R. Bertozzi, Yardley, Pa., assignor to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Jan. 12, 1971, Ser. No. 105,990

Int. Cl. C08g *22/16, 22/08*

U.S. Cl. 260—75 NH **8 Claims**

A storage-stable polyurethane prepolymer has been prepared in which the stabilizer is melamine or dicyandiamide admixed thereto; upon heating of the melamine admixed prepolymer, the composition is cured to a very tough polymer in a short time having a hardness of 70 Durometer A value forming a variety of cast shapes.

3,726,836

VISCOSITY-STABILIZED SOLUTION OF POLYURETHANE

Yasuji Nakahara and Jukichi Ohmura, Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka Prefecture, Japan

No Drawing. Filed Mar. 25, 1971, Ser. No. 128,149

Claims priority, application Japan, Mar. 30, 1970, 45/25,912

Int. Cl. C08g *22/16, 51/46, 53/00*

U.S. Cl. 260—75 NH **2 Claims**

Method of manufacturing a stabilized solution of polyurethane from a prepolymer having terminal isocyanate groups. The stabilized solution is obtained by the use of a bifunctional chain extender in combination with a N,N-dialkylhydrazine and/or a N,N-diarylhydrazine and the subsequent aging under heating. The viscosity of the stabilized solution is reproducible, and does not undergo any change on heating and/or on the lapse of time. The polyurethane obtained according to this invention has also a light resistance and therefore, the molded article produced therefrom has a superior retention of strength. The solution is useful for making fibers, films, molded articles, etc.

3,726,837

POLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMERS WITH A 1,2-DIARYL-1,2-DICYANO-ETHANE

Hendrik A. P. de Jongh, Dieren, and Cornelis R. H. I. de Jonge, De Steeg, Netherlands, assignors to Akzo, N.V., Arnhem, Netherlands

No Drawing. Filed July 2, 1970, Ser. No. 52,073

Claims priority, application Netherlands, July 8, 1969, 6910428

Int. Cl. C08f *1/78, 7/04*

U.S. Cl. 260—77.5 UA **8 Claims**

A process for effecting free radical-initiated chemical reactions of organic compounds which comprises effecting reaction of an organic compound in the presence of a free radical initiator compound comprising a 1,2-diaryl-1,2-dicyano-ethane compound that has a substituent group selected from the class consisting of an acyl group, a carbonamide group, and an esterified carboxyl group in the 1- and 2-positions. Also, a process for preparing the initiator compounds is disclosed.

3,726,838

POLYURETHANE BASED COATING COMPOSITIONS

Johannes Eimer and Erwin Windemuth, Leverkusen; Gerhard Berndt, Monheim, and Hans-Joachim Koch, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

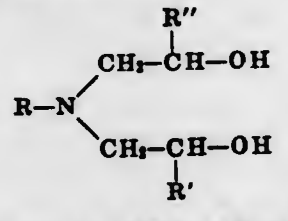
No Drawing. Filed Dec. 7, 1971, Ser. No. 205,721

Claims priority, application Germany, Dec. 9, 1970, P 20 60 599.6

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 AQ **7 Claims**

Polyurethane based coating compositions are prepared by reacting an organic polyisocyanate and a compound containing terminal hydroxyl groups reactive with isocyanates in the presence of a hydrophobic incorporation compound having the formula



$$R-N\begin{array}{l} CH_2-\overset{R''}{\overset{|}{C}}H-OH \\ CH_2-\underset{R'}{\underset{|}{C}}H-OH \end{array}$$

wherein R is a C_{12} to C_{20} alkyl, alkylcarbonyl or alkylaminocarbonyl the alkyl moiety of which contains 12 to 20 carbon atoms and R′ and R″ are hydrogen or C_1 to C_2 alkyl.

The compounds of the invention are suitable for coating or bonding paper, textile sheet structures or films, organic or inorganic materials.

3,726,839

FIRE RETARDANT CROSSLINKED COPOLYMERS OF A BIS(HYDROCARBYL) PHOSPHONATE WITH A POLYFUNCTIONAL ETHYLENICALLY UNSATURATED MONOMER

Jung Il Jin, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,871

Int. Cl. C08f *3/62, 15/26, 15/40*

U.S. Cl. 260—78.5 CL **9 Claims**

There are disclosed crosslinked copolymers of: (1) a bis(hydrocarbyl) vinylphosphonate, particularly bis-(beta-chloroethyl) vinylphosphonate; (2) a polyfunctional ethylenically unsaturated monomer; and (3) as an optional component one or more monofunctional vinyl comonomers. These crosslinked copolymers may be used, per se, as flame retardant materials or they may be blended with various thermoplastic polymers in order to reduce their flammability.

3,726,840

POLYMERIZATION OF EPISULFIDES USING METAL-CONTAINING CATALYSTS

George T. Gmitter, Fairlawn Village, Akron, Ohio, and John P. Mudde, Grosse Ile, Mich., assignors to The General Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Oct. 16, 1964, Ser. No. 404,513

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **5 Claims**

A method for making a polysulfide which comprises polymerizing an episulfide monomer in the presence either of the following catalysts:

(a) triphenyl aluminum and water
(b) antimony trioxide and diethyl zinc
(c) the reaction product of titanium tetrachloride and triethyl aluminum
(d) zinc cobalticyanide or
(e) zinc ferricyanide.

3,726,841

CROSS-LINKING POLYMERS

Joseph E. Mirolli, Beaumont, Tex., and Edwin J. Vandenberg, Foulk Woods, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,748

Int. Cl. C08g *23/06*

U.S. Cl. 260—79 **8 Claims**

It has been found that the presence of a small amount of an aliphatic, cyclic or acyclic quaternary ammonium halide salt or tetraalkyl phosphonium halide salt enhances the cross-linking rate of polymers and copolymers of epihalohydrin when cross-linked with urea, thiourea, ammonia, various polyamines or certain heterocyclic compounds in combination with certain metal compounds.

3,726,842

MANUFACTURE OF MODIFIED ETHYLENE POLYMERS

Hans-Georg Trieschmann, 23 Birkenweg, 6736 Hambach, Germany; Johann Zizlsperger, 6 In der Hol, 6905 Schriesheim, Germany; Hans Gropper, 171 Sternstrasse, 6700 Ludwigshafen, Germany; Kurt Stark, 22 Viktoriastrasse, 6900 Heidelberg, Germany; and Karl Heinz Fauth, 1 Kopernikusstrasse, 6701 Frankenthal, Germany

No Drawing. Filed Apr. 8, 1971, Ser. No. 132,604

Claims priority, application Germany, Apr. 18, 1970, P 20 18 718.2

Int. Cl. C08f *15/04*

U.S. Cl. 260—80.76 **5 Claims**

Production of modified ethylene polymers by polymerizing ethylene and/or ethylenically unsaturated monomers copolymerizable with ethylene at a pressure of more than 1,000 atmospheres and a temperature of from 150° to 400° C. in the presence of a free-radical polymerization initiator and an isobutylene oligomer containing from 4 to 100 isobutylene units. The resulting modified polymers of ethylene have a melt flow index of from 0.1 to 20 and are used for the production of transparent film and sheeting having low blocking values.

3,726,843

PROCESS FOR ISOLATING EPDM ELASTOMERS FROM THEIR SOLVENT SOLUTIONS

Colin Anolick, Louisville, Ky., and Edgar W. Slocum, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 3, 1970, Ser. No. 86,562

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **17 Claims**

In a continuous process for recovering an amorphous hydrocarbon copolymer of ethylene from solution by heating the solution at superatmospheric pressure to form two liquid phases, a solvent phase and a copolymer-rich phase, and separating the phases, the improvement of continuously passing the copolymer-rich phase into an intermediate lower pressure zone under substantially adiabatic conditions and then extruding the resulting copolymer-rich phase at a controlled rate into a vaporization zone under substantially adiabatic conditions to vaporize residual solvent and form the copolymer into solid bodies.

3,726,844

PROCESS FOR COPOLYMERIZING CONJUGATED DIENES WITH MONOVINYL AROMATIC MONOMERS

Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 693,763, Dec. 27, 1967. This application Nov. 20, 1970, Ser. No. 91,577

Int. Cl. C08f *19/08*

U.S. Cl. 260—83.7 **4 Claims**

A diene of 4 to 6 carbon atoms and styrene or other vinyl aromatic monomer, including alkylated vinyl aromatic monomers, are copolymerized in a hydrocarbon solvent using a substantial amount of each monomer and utilizing as the initiator, an alkali metal hydrocarbon (preferably n-butyllithium) complexed with another alkali metal. The complex may be formed by complexing hydrocarbon lithium with a different alkali metal. The complexing metal is used in an amount no more than the amount of alkali metal initially present in the initiator. Thus, if the initiator be prepared from hydrocarbon lithium, the ratio of (a) the amount of alkali metal other than lithium in the complexed initiator to (b) the amount of lithium in the complexed initiator, may be one part of the other alkali metal to 50 parts of lithium, and preferably 5 to 20 parts of lithium. The resulting copolymer is a copolymer of substantially constant composition (i.e. a copolymer containing no substantial block of vinyl monomer); and it has a low vinyl content. The diene may be butadiene, isoprene, piperylene or 2,3-dimethylbutadiene or a mixture thereof. The vinyl aromatic monomer may be styrene or an alkylated styrene or vinyl naphthylene or alkylated vinyl naphthylene or a mixture thereof.

3,726,845

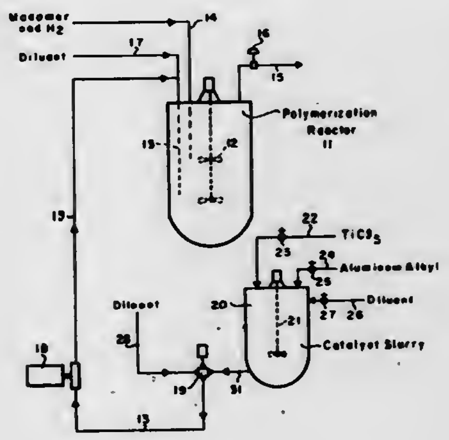
SUPPLYING CATALYST TO A REACTION ZONE

James K. Nickerson, Baytown, Tex., assignor to Esso Research and Engineering Company

Filed Mar. 22, 1971, Ser. No. 126,804

Int. Cl. C08f *1/42, 3/06, 3/08*

U.S. Cl. 260—85.3 R **10 Claims**



In the polymerization of alpha mono-olefins with a catalyst which tends to clog lines and pumps and wherein a diluent for the reaction is employed, the catalyst line and pump are maintained clean and free of catalyst deposits by alternately flowing or supplying catalyst and diluent as separate streams through said catalyst line and pump which also allows catalyst supply to be controlled.

3,726,846

POLYMERISATION OF STYRENE AND SIMILAR MONOMERS USING A CONTINUOUSLY INCREASING TEMPERATURE CYCLE

John Mansel Squire, Dollar, Scotland, and Geoffrey James Gammon, Ashford, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed June 9, 1970, Ser. No. 45,251

Int. Cl. C08f *7/04, 7/06*

U.S. Cl. 260—86.7 **11 Claims**

An olefin, particularly styrene, is polymerised, using a continuously programmed temperature rise in the range 50–150° C. and at least three initiators having half lives of 1–15 hours at 70° C. and less than 1 hour at 100° C., 1–15 hours at 100° C. and 1–4 hours at 115° C., and greater than 15 hours at 100° C. and 0.1 to 10 hours at 130° C. The invention is particularly applicable to a suspension process.

3,726,847
POLYMERIZATION METHOD EMPLOYING t-ALKYL PERESTERS OF t-HYDROPEROXIDES

Roger N. Lewis, Pinole, and Ronald L. Friedman, San Rafael, Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 725,931, May 1, 1968. This application June 28, 1971, Ser. No. 157,683

Int. Cl. C08f *3/04, 3/30, 3/56*

U.S. Cl. 260—92.8 R **25 Claims**

Tertiary alkyl peresters of tertiary hydroperoxides are used as polymerization initiators wherein the peresters are characterized by the tertiary alkyl group of the acid moiety having at least two alkyl groups of 2 or more carbon atoms. Typical is the polymerization of certain vinyl monomers such as vinyl chloride.

3,726,848
POLYMERISATION OF STYRENE AND RELATED MONOMERS USING A TWO STAGE CONTINUOUS HEATING CYCLE

John Mansel Squire, Dollar, Scotland, and Geoffrey James Gammon, Ashford, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed June 9, 1970, Ser. No. 44,892

Int. Cl. C08f *7/04, 7/06*

U.S. Cl. 260—91.5 **8 Claims**

A vinyl aromatic monomer is polymerised with two initators of different half lives using a two stage continuous temperature rise. The temperature cycle is an initial increase to 105–125° C. in less than 1 hour and a further rise to between 130 and 150° C. in up to an hour or more.

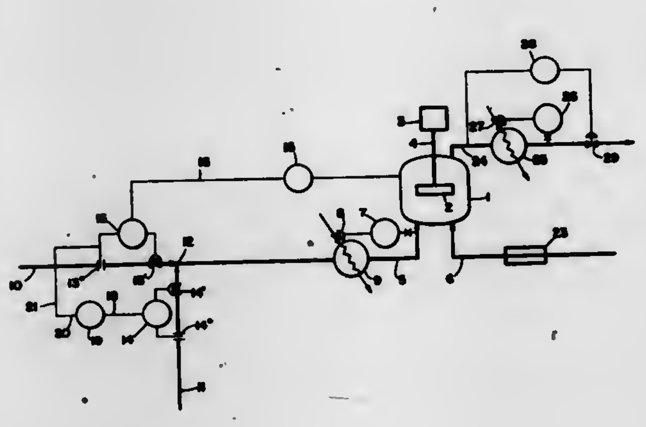
3,726,849
CONTINUOUS PROCESS FOR THE SOLUTION POLYMERIZATION OF OLEFINIC MONOMERS

Eldred L. Dance, 110 El Monte Way, and Kernal G. Shaw, 941 David Ave., both of Concord, Calif. 94520

Continuation of application Ser. No. 579,572, Sept. 15, 1966, which is a continuation-in-part of application Ser. No. 256,598, Feb. 6, 1963. This application Jan. 19, 1970, Ser. No. 4,443

Int. Cl. C08f *1/08, 3/10*

U.S. Cl. 260—93.1 **10 Claims**



This invention comprises a process, and apparatus used therefor, for controlling the type of polymer product produced during solution polymerization of an olefin, such as propylene, by making certain adjustments in operating conditions and making an adjustment in the rate of introducing the monomer feed stream to compensate for the overall effect of these various other alterations of conditions on the temperature of the polymerization mixture, the rate of introduction of the monomer feed stream being decreased when this temperature falls below a preselected temperature and this rate of introduction being increased when this temperature rises above the preselected temperature. One or more adjustments which can be made, and for compensation of which the above overall adjustment is made, are: (a) decreasing or increasing the ratio of monomer to solvent in the monomer feed stream as the molecular weight of the product is determined to be above or below respectively the desired molecular weight; (b) lowering or raising the temperature of the monomer feed stream as the percent of polymer in the effluent stream is determined to be below or above respectively the desired percentage, and (c) increasing or decreasing the rate of introduction of the catalyst feed stream as the production rate of the polymer is determined to be below or above the desired production rate.

3,726,850
LIGNIN DISPERSING AGENT

William John Detroit, Schofield, Wis., assignor to American Can Company, Greenwich, Conn.

No Drawing. Filed July 29, 1971, Ser. No. 167,501

Int. Cl. C07g *1/00*

U.S. Cl. 260—124 A **6 Claims**

A water-, alkali- and acid-soluble, oxidized lignin dispersing agent, substantially free of organically bound sulfur, formed by the reaction of ozone on lignin obtained from the spent liquors of the alkaline pulping of wood.

3,726,851
WATER-SOLUBLE BENZOTHIAZOLYLPHENYLAZO-BARBITURIC ACID DYESTUFFS

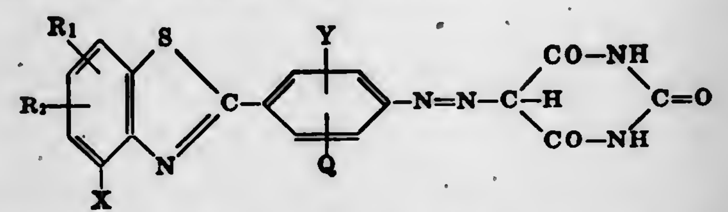
Alvin Carl Litke, West Seneca, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,848

Int. Cl. C09b *29/36;* **D21h** *1/46*

U.S. Cl. 260—154 **9 Claims**

Monoazo dyestuffs of the formula



wherein R_1, X and Y are hydrogen, lower alkoxy or lower alkyl; R_2 and Q are H or SO_3H with at least one being SO_3H; and Q is oxygen, sulfur, imino, or lower alkyl imino, and which paper dyeings are alkali- and acid-fast and are discharged on contact with conventional bleaching agents.

3,726,852
BICARBONATE SALTS OF INDAZOLIUM AND BENZIMIDAZOLIUM DYESTUFFS

Pierre Joseph Frederic Calla, Rouen, Louis Marie Joseph Berthelot, St. Etienne-du-Rouvray, Robert Frederic Michel Sureau, Enghien-les-Bains, and Gilbert Victor Henri Kremer, Ermont, France, assignors to Eugine Kuhlmann, Paris, France

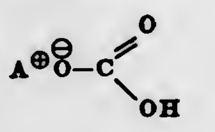
No Drawing. Continuation of application Ser. No. 659,886, Aug. 11, 1967. This application May 22, 1970, Ser. No. 41,669

Claims priority, application France, Sept. 8, 1966, 75,624

Int. Cl. C09b *29/36, 29/38, 43/00*

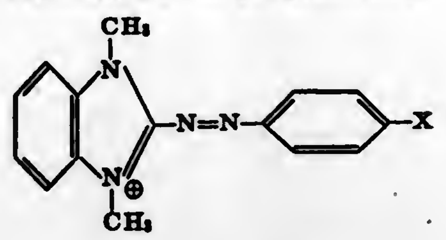
U.S. Cl. 260—157 **3 Claims**

A bicarbonate salt of an indazolium or benzimidazolium dyestuff which is useful for the preparation of concentrated solutions of dyestuffs. The concentrated solutions can be diluted and used as dyebaths. The bicarbonate has the general formula



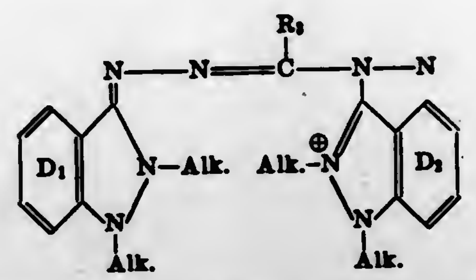
$$A^{\oplus}\,{}^{\ominus}O-C\begin{matrix}\nearrow O \\ \searrow OH\end{matrix}$$

Two typical formulae for A⊕ are as follows



(1)

and



(4)

where X is hydrogen, chlorine, methyl or methoxy, the benzene nuclei D_1 and D_2 are unsubstituted or substituted by chlorine or nitro, R_3 is hydrogen, alkyl having 1 to 3 inclusive carbon atoms, phenyl or p-amino-phenyl, and Alk. represents methyl or ethyl. Other formulae for A⊕ are given.

3,726,853
BENZANRIDO-AZO - 2 - HYDROXY-3-(CARBOXANILIDO-AZO-PHENYL)-NAPHTHALENE COMPOUNDS

Emil Stocker, Riehen, Georg Anton Klein, Bottmingen, Basel-Land, and Ernfred Schnabel, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

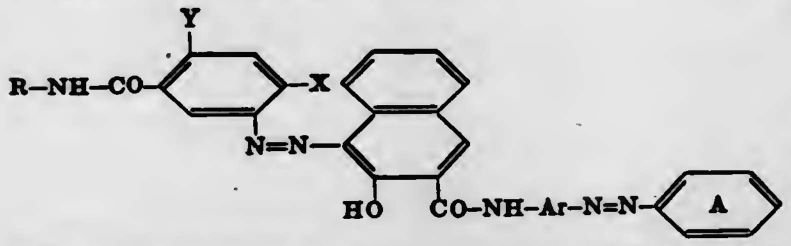
No Drawing. Filed July 14, 1970, Ser. No. 54,857

Claims priority, application Switzerland, July 16, 1969, 10,831/69

Int. Cl. C09b *31/06*

U.S. Cl. 260—188 **11 Claims**

Disazo compounds of the formula



wherein R represents an alkyl, phenyl or naphthyl radical, X halogen, methyl or phenoxy and Ar a phenylene or naphthylene radical are valuable pigments for coloring plastics in red shades.

3,726,854
BORON COMPLEXES OF o,o′-DIHYDROXYPHENYLAZONAPHTHYL DYES

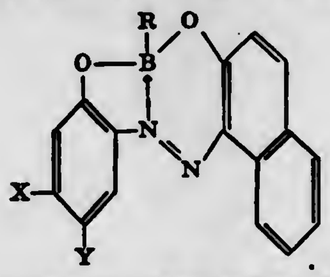
Charles Edward Lewis, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 15, 1970, Ser. No. 46,486

Int. Cl. C09b *29/10;* **D06p** *1/08, 1/18*

U.S. Cl. 260—197 **5 Claims**

A class of boron-chelated o,o′-dihydroxy monoazo dyes for synthetic fibers is provided. The dyes have the formula:



where R represents hydroxy, aryl, alkyl of from 1 to 8 carbon atoms or alkoxy of from 1 to 8 carbon atoms, and X and Y each represent hydrogen, chloro or nitro, provided that where either X or Y is nitro the other is hydrogen. The dyes are made by reacting an o,o′-dihydroxy-arylazoaryl dye with a polyoxyborane in a non-aqueous, non-polar solvent capable of forming an azeotrope with water. The dyes have the properties of disperse dyes being readily dispersed in a dyebath by dissolving in a low molecular wight, water-miscible solvent and adding to a water bath and producing yellow to orange to red to violet shades on the fibers.

3,726,855
CHLORINATED POLYHYDROXY POLYETHERS

Milton Lapkin, Barrington, R.I., assignor to Olin Corporation

No Drawing. Continuation-in-part of application Ser. No. 786,772, Dec. 24, 1968. This application July 6, 1970, Ser. No. 52,676

Int. Cl. C07c *47/18*

U.S. Cl. 260—209 R **2 Claims**

Chlorinated polyhydroxy polyethers are prepared by reacting a sucrose- or dextrose-based material, with over 15% by weight of the total reactants employed in preparing the chlorinated polyhydroxy polyether of 4,4,4-trichloro-1,2-epoxybutane in the presence of an acid catalyst at 30–200° C. These chlorinated polyhydroxy polyethers are useful in the preparation of flame-retardant polyurethane foams.

3,726,856
PROCESS FOR PREPARING ERYTHROMYCIN-2′-AMIDES

Anthony A. Sinkula, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 13, 1971, Ser. No. 143,199

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 E **7 Claims**

An improved chemical process for preparing erythromycin amides by reaction of erythromycin with a suitable amido carboxylic acid in the presence of a substituted chloroformate or a substituted bromoformate and an acid acceptor. Erythromycin amides are superior tasting erythromycin compounds possessing erythromycin antibacterial activities and the same uses as erythromycin.

3,726,857
$\Delta^{4,20,22}$-BUFATRIENOLIDE RHAMNOSIDE ETHERS AND PROCESS FOR THEIR PREPARATION

Hugo Kubinyi, Leimen, Germany, assignor to Knoll A.G. Chemische Fabriken, Ludwigshafen am Rhine, Germany

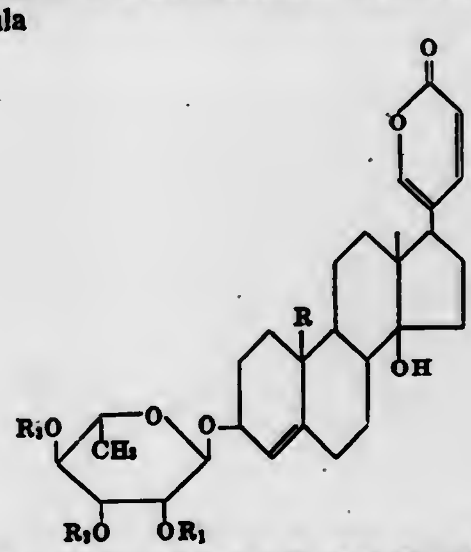
No Drawing. Filed Feb. 25, 1970, Ser. No. 14,218

Claims priority, application Germany, Feb. 28, 1969, P 19 10 207.9

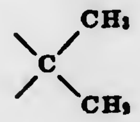
Int. Cl. C07c *173/00*

U.S. Cl. 260—210.5 **15 Claims**

Cardioactive $\Delta^{4,20,22}$-bufatrienolide rhamnoside ethers of the formula



wherein R is methyl or formyl; R_1 and R_2 taken alone are hydrogen, lower alkyl, or acetyl; R_1 and R_2 taken together are



$$\begin{matrix} & & CH_3 \\ \diagdown & / & \\ & C & \\ / & \diagdown & \\ & & CH_3 \end{matrix}$$

R_3 is hydrogen, lower alkyl, or acetyl; and wherein at least one of R_1, R_2, or R_3 is alkyl, and the method of preparing them by reaction of the corresponding 2′,3′,4′-hydoxy compounds or 2′,3′-isopropylidene-4′-hydroxy compounds with an alkyl halide, optionally followed by hydrolysis of the isopropylidene group and/or acetylation of unetherified hydroxy groups.

3,726,858
$\Delta^{4',5'}$-ANALOGS OF LINCOMYCIN

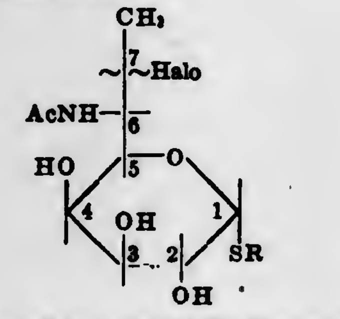
Robert D. Birkenmeyer, Comstock Township, Kalamazoo County, and Fred Kagan, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 864,893, Oct. 8, 1969, now Patent No. 3,574,186, which is a continuation-in-part of application Ser. No. 696,513, Jan. 9, 1968, which is a continuation-in-part of application Ser. No. 511,288, Dec. 1, 1965, which in turn is a continuation-in-part of application Ser. No. 431,184, Feb. 8, 1965, all now abandoned. Said application Ser. No. 864,893 being a continuation-in-part of applications Ser. No. 587,662, Oct. 19, 1966, now abandoned, and Ser. No. 696,518, Jan. 9, 1968, now Patent No. 3,496,163. This application Sept. 3, 1970, Ser. No. 69,436

Int. Cl. C07c *47/18*

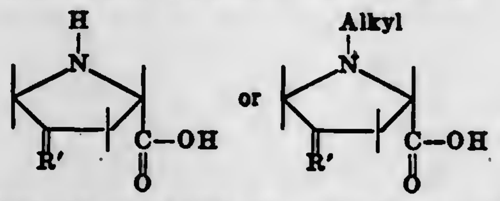
U.S. Cl. 260—210 R **10 Claims**

Compounds of the formula:

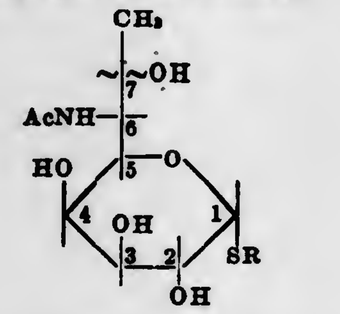


(I)

where Ac is the acyl of an acid of the formula



are prepared by replacing by chlorine or bromine the 7-hydroxy of a compound of the formula:



(II)

3,726,859
PROCESS FOR THE PREPARATION OF CELLULOSE DERIVATIVES CONTAINING CARBAMOYLETHYL GROUPS

Konrad Engelskirchen, Lank, and Joachim Galinke, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie. GmbH, Dusseldorf, Germany

No Drawing. Continuation-in-part of application Ser. No. 20,803, Mar. 18, 1970. This application Oct. 27, 1971, Ser. No. 193,194

Claims priority, application Germany, Apr. 23, 1969, P 19 20 493.4

Int. Cl. C08b *11/20*

U.S. Cl. 260—232 **9 Claims**

An improved process for the preparation of water-soluble carbamoylethylated cellulose derivatives from cellulose and acrylamide in an alkaline medium, which comprises suspending a cellulose derivative containing water-solubilizing non-ionic groups and free hydroxyl groups in an inert organic solvent, and treating the resulting suspension with acrylamide in the presence of an alkali or a quaternary ammonium base.

3,726,860
SEMICARBAZIDOPENICILLIN SACCHARIMIDES

James L. Diebold, 6 Raymond Road, Broomall, Pa. 19008, and Milton Wolf, 1100 W. Chester Pike, Chester, Pa. 19013

No Drawing. Filed June 3, 1971, Ser. No. 149,847

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **2 Claims**

Novel substituted semicarbazidopenicillanic acid saccharimido derivatives have been prepared which are useful antibacterial agents.

3,726,861
UREIDO DERIVATIVES OF 6-AMINOPENICILLANIC ACID SACCHARIMIDE

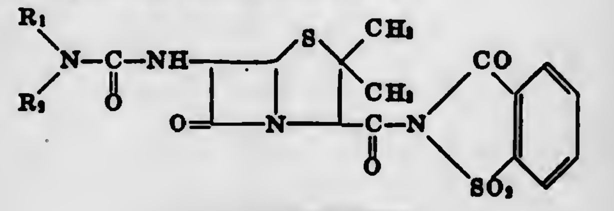
James L. Diebold, Broomall, and Milton Wolf, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 3, 1971, Ser. No. 149,819

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **4 Claims**

Novel antibiotic compounds have been prepared which have the following generic formula:



3,726,862
AZIRIDINYL COMPOUNDS

William P. Coker, Lake Jackson, Prella M. Phillips, Angleton, and Gordon R. Miller, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 309,865, Sept. 18, 1963, now Patent No. 3,338,885. This application Oct. 3, 1966, Ser. No. 583,979

Int. Cl. C07d *23/06*

U.S. Cl. 260—239 E **7 Claims**

Di-, tri-, and tetra-(1-aziridinyl)alkyl esters of carboxylic acids (e.g., adipic acid, terephthalic acid, trimellitic acid, trimesic acid, pyromellitic acid, citric acid, etc.), useful as inhibitors for haloalkanes and as curing agents for acid terminated polymers are prepared by reacting an aziridinylalkyl alcohol (e.g., 2-(1-aziridinyl)ethanol) and an ester of a di-, tri-, or tetracarboxylic acid in the presence of an alkali metal alcoholate.

3,726,863
AMIDES OF 6-ISOCYANATOPENICILLANIC ACID

Milton Wolf, West Chester, James L. Diebold, Broomall, and Scott J. Childress, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 3, 1971, Ser. No. 149,817

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **2 Claims**

Novel amides of 6-isocyanatopenicillanic acid have been prepared which are useful as intermediates in the preparation of antibiotically active penicillins.

3,726,864
NOVEL 11β-CHLORO - 19 - NORPREGN-4-ENE-3,20 DIONES AND THE 3,5-DIENOL ETHERS AND ESTERS THEREOF

Gordon Hanley Phillipps, Wembley, and Leslie Stephenson and Christopher Earle Newall, London, England, assignors to Glaxo Laboratories Limited

No Drawing. Filed July 20, 1970, Ser. No. 56,710

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 **17 Claims**

New 11β-chloro-19-norpregn-4-ene-3,20-diones and 3,5-dienol ethers and esters thereof show progesterone-like

activity superior to that of previously known and closely related substances. Methods for their preparation include inter alia the chlorination of corresponding 11α-hydroxy steroids and the introduction of desired substituents into already 11β-chlorinated steroids. The compounds are of use in human and veterinary medicine as contraceptives and also in clinical conditions, e.g. dysmenorrhoea.

3,726,865
DERIVATIVES OF 7-AMINOCEPHALOSPORANIC ACID

Hans Bickel, Binningen, Johannes Mueller and Rolf Bosshardt, Arlesheim, Heinrich Peter, Riehen, and Bruno Fechtig, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 2, 1970, Ser. No. 42,887

Claims priority, application Switzerland, June 6, 1969, 8,656/69

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **6 Claims**

Derivatives of 7-azidoacetylaminocephalosporanic acid which contain instead of the acetoxymethyl group in 3-position another group.

3,726,866
2-BENZIMIDAZALYLDITHIO CARBAMATES

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 638,595, May 15, 1967, Pat. No. 3,565,894. This application Nov. 2, 1970, Ser. No. 86,348

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 **9 Claims**

Heterocyclic esters of dithiocarbamic acid wherein the heterocycle is 2-imidazolyl, 2-imidazolinyl, 2-benzimidazolyl, or substituted derivatives thereof which esters are useful for accelerating the vulcanization of rubber.

3,726,867
FOUNDRY PROCESS AND ARTICLES PRODUCED THEREBY

Janis Robins, St. Paul, Minn., assignor to Ashland Oil, Inc., Ashland, Ky.

No Drawing. Continuation of abandoned application Ser. No. 756,419, Aug. 30, 1968, which is a continuation-in-part of application Ser. No. 569,106, Aug. 1, 1966, now Patent No. 3,429,848. This application Mar. 15, 1971, Ser. No. 124,569

Int. Cl. C08g *5/06*

U.S. Cl. 260—30.4 N **13 Claims**

Shaped foundry articles are produced by a process in which a phenolic resin containing an ionic catalyst is admixed with a polyisocyanate and a foundry aggregate and then shaped and cured at room temperature.

3,726,868
PHENYL AND SUBSTITUTED PHENYLSULFONYLALLYL AMINES AND SUBSTITUTED AMINES

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application Mar. 16, 1970, Ser. No. 20,110, now Patent No. 3,644,343, dated Feb. 22, 1970. Divided and this application Sept. 16, 1971, Ser. No. 180,885

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 **2 Claims**

Phenyl and substituted phenylsulfonylallyl amines and substituted amines, e.g., 1-(3-phenylsulfonylallyl)-pyrrolidine hydrochloride, are prepared by treating a phenyl or substituted phenylsulfonyl-2-propen-1-ol with an amine or substituted amine, treating the resulting intermediate with $SOCl_2$ and then with sodium carbonate and allowing the resulting intermediate to rearrange to the final product. The compounds are useful as anti-inflammatory agents.

3,726,869
5,6,7,8 - TETRAHYDRO-8-(2-MORPHOLINOETHYL)-5 - OXO-2-PHENYLPYRIDO[2,3-d]PYRIMIDINE-6-CARBONITRILE

Arthur A. Santilli, Havertown, and Dong H. Kim, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Aug. 14, 1968, Ser. No. 752,485, now Patent No. 3,641,027, dated Feb. 8, 1972. Divided and this application Apr. 23, 1971, Ser. No. 136,997

Int. Cl. C07d *87/44*

U.S. Cl. 260—247.5 B **1 Claim**

The disclosure is directed to 5,6,7,8-tetrahydro-8-(2-morpholinoethyl)-5-oxo - 2 - phenylpyrido[2,3-d]pyrimidine-6-carbonitrile which has central nervous system activity as a depressant.

3,726,870
10-CARBAMOYL-DIBENZO[a,d]CYCLOHEPTA [1,4,6]TRIEN-5-ONES

Gerald Rey-Bellet and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Sept. 12, 1968, Ser. No. 759,499, which is a continuation-in-part of abandoned application Ser. No. 431,981, Feb. 11, 1965. Divided and this application July 19, 1971, Ser. No. 164,107

Claims priority, application Switzerland, Feb. 18, 1964, 1,969/64; Dec. 4, 1964, 15,709/64

Int. Cl. C07d *87/34*

U.S. Cl. 260—247.7 F **9 Claims**

Dibenzo[a,d]cyclohepta[1,4,6]trienes bearing in the 5-position, substituents such as, for example, oxo- or 3′-lower alkoxyalkylidene and in the 10-position, substituents such as, for example, carbonyl, thiocarbonyl or guanyl radicals, for instance, 5-(3′-lower alkoxypropylidene) - dibenzo[a,d]cyclohepta[1,4,6]triene 10 - carboxylic acid di-(lower alkyl)amides and dibenzo[a,d]cyclohepta[1,4,6]trien-5-one 10-carboxylic acid cyclic amides, prepared, inter alia, from 5-(3′-lower alkoxypropylidene)-dibenzo[a,d]cyclohepta[1,4,6]triene 10 - carboxylic acid, 10-halocarbonyl - 5 - (3′-lower alkoxypropylidene)dibenzo[a,d]cyclohepta[1,4,6]triene or dibenzo[a,d]cyclohepta[1,4,6]trien-5-one 10-carboxylic acid halide, are described. The end products are useful as antidepressants.

3,726,871
PROCESS FOR THE PREPARATION OF TRIS-(2-HYDROXYETHYL) ISOCYANURATE

Stephen E. Belsky, Parsippany, and John H. Bonfield, Basking Ridge, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 39,855, May 20, 1970. This application Mar. 22, 1971, Ser. No. 126,884

Int. Cl. C07d *55/38*

U.S. Cl. 260—248 NS **29 Claims**

Improved process for preparing tris(2-hydroxyethyl)-isocyanurate from cyanuric acid and ethylene oxide whereby a ketone is employed as the solvent medium. High yields of pure product are obtained.

3,726,872
AMINOMETHYLBICYCLONONENES AND DIHYDRO DERIVATIVES THEREOF

Robert Norman Schut, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Aug. 28, 1970, Ser. No. 67,990

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 BC **4 Claims**

Certain aminomethylbicyclononenes and dihydro derivatives thereof as well as methods for their preparation are disclosed. The compounds are useful as analgesics and tranquilizers either in the form of their free bases or as acid addition salts.

3,726,873
QUINACRIDONE PIGMENT AND METHOD OF MAKING THE SAME

Kiyoshi Hashizume, Masahiro Shigemitsu, Iaso Kumano, Masayuki Miyatake, Hiromitsu Katsura, and Masahiro Oshima, Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 769,720, Oct. 22, 1968. This application Nov. 4, 1971, Ser. No. 195,862

Claims priority, application Japan, Oct. 27, 1967, 42/68,806, 42/68,807

Int. Cl. C07d *39/00*

U.S. Cl. 260—279 R **1 Claim**

A yellowish-red quinacridone pigment of a new and distinct crystalline structure.

3,726,874
METHODS FOR PRODUCTION OF 2,9-DICARBOXYQUINACRIDONE

Edward E. Jaffe, Union, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 6, 1971, Ser. No. 140,983

Int. Cl. C07d *39/00*

U.S. Cl. 260—279 R **4 Claims**

This invention relates to the preparation of 2,9-dicarboxyquinacridone by hydrolysis of 2,9-bistrifluoromethylquinacridone.

3,726,875
1,3(2H,4H)-DIOXOISOQUINOLINE-4-CARBOXYLATE ESTERS AND PROCESS THEREFOR

Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Application Oct. 11, 1967, Ser. No. 674,664, which is a continuation-in-part of abandoned application Ser. No. 649,462, June 28, 1967. Divided and this application Feb. 5, 1971, Ser. No. 113,083

Int. Cl. C07d *35/32*

U.S. Cl. 260—281 **6 Claims**

1,3(2H,4H)-dioxoisoquinoline-4-carboxamides, nuclear unsubstituted and substituted, are prepared by reacting the appropriate homophthalimide with potassium cyanate. Secondary carboxamides are prepared by reacting homophthalimide with appropriate isocyanates, and tertiary carboxamides are prepared by aminolysis of 4-carbalkoxy compounds, which are, in turn, prepared by alcoholysis of the corresponding 4-carboxanilides. Corresponding 5,6,7,8-tetrahydro compounds are similarly prepared. The various 2-substituted homophthalimides are prepared by reacting homophthalic acid with an appropriate amine. The 4-carboxamides are anti-inflammatory agents.

3,726,876
3-SUBSTITUTED - 6-ALKYL-2,3,6,9-TETRAHYDRO-2,9-DIOXOTHIAZOLO[5,4-f]-QUINOLINE - 8-CARBOXYLIC ACIDS AND METHODS FOR PRODUCING SAME

Renzo Dohmori, Seukichi Nagasaki, Shizuo Kadoya, Isao Takamura, and Norio Suzuki, Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

No Drawing. Filed Apr. 20, 1971, Ser. No. 135,754

Claims priority, application Japan, Apr. 27, 1970, 45/35,372

Int. Cl. C07d *33/48*

U.S. Cl. 260—283 S **9 Claims**

3 - substituted-6-alkyl-2,3,6,9-tetrahydro-2,9-dioxothiazolo[5,4-f]-quinoline-8-carboxylic acids have been synthesized and found to be characterized by excellent antibacterial activity against gram-negative and gram-positive bacteria.

3,726,877
AMINE SUBSTITUTED METHYLENE QUINUCLIDONE ANTI-BACTERIAL AGENTS

Samuel Elkin, Philadelphia, and Hillel Lieberman, Andalusia, Pa., assignors to Temple University, Philadelphia, Pa.

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,927

Int. Cl. C07d *39/06*

U.S. Cl. 260—293.53 **2 Claims**

A wide variety of secondary and tertiary amine-substituted 2-methylene-3-quinuclidones constitute a new class of compounds which are useful as anti-bacterial agents.

3,726,878
PYRIDINE THIOACETAMIDE DERIVATIVES

Yoshio Kanai, Osaka, Haruomi Honda, Kawanishi, Hyogo, Yasushi Sanno, Osaka, Kawani, Akira Nohara, Kyoto, and Morio Kanno, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

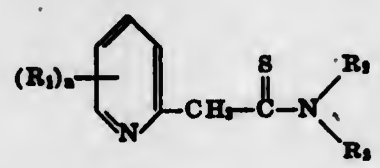
No Drawing. Filed July 7, 1970, Ser. No. 53,008

Claims priority, application Japan, July 8, 1969, 44/53,946

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 E **19 Claims**

Compounds of the formula



wherein R_1 is hydrogen, lower alkyl, lower alkoxy or halogen and *n* is an integer of 1 to 4, or wherein $(R_1)_n$ is a divalent straight chain hydrocarbon radical having 4 carbon atoms which is attached to the 5th and 6th positions of the pyridine ring, each of R_2 and R_3 independently represents hydrogen, lower alkyl, aralkyl or aryl, or R_2 and R_3 together with the nitrogen atom to which they are attached form a heterocyclic ring with a proviso that at least one of R_1, R_2 and R_3 is other than hydrogen and a pharmaceutically acceptable salt thereof with acids.

3,726,879
CERTAIN SUBSTITUTED 2-ANILINO-NICOTINIC ACID DERIVATIVES

Ernst Jucker, Ettingen, Adolf Lindenmann, Basel, and Fulvio Gadient, Birsfelden, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 578,158, Sept. 9, 1966. This application Oct. 14, 1968, Ser. No. 767,495

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 R **3 Claims**

The invention concerns nicotinic acid derivatives, namely, 2-(2-methyl-3-nitro-phenylamino)nicotinic acid and its alkali metal and alkaline early metal salts. The compounds have pharmacological properties characterizing them as anti-inflammatories.

3,726,880
ORGANIC AMIDES AND METHODS FOR THEIR PRODUCTION

David B. Capps, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,467

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 E **7 Claims**

Carbamoylmethyl esters of 5-chlorodithio-2-pyridinecarbamic acid optionally having various forms of substitution on the amide nitrogen atom. The compounds are antiparasitic agents having nematocidal activity. They can be produced by reacting a tertiary amine salt of 5-chlorodithio-2-pyridine-carbamic acid with a 2-haloacetamide compound. Certain of the compounds can also be produced by reacting 3-(5-chloro-2-pyridyl)rhodanine with ammonia or a primary amine.

3,726,881
N - AMINOXY-ACETYL - N' - ISONICOTINOYL-HYDRAZINE AND THE PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

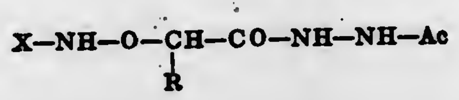
Lajos Kisfaludy, Agnes Patthy, nee Lukats, Lajos Dancsi, Gyorgy Fekete, and Istvan Szabo, Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,226

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 AM **1 Claim**

N,N'-diacyl hydrazine derivatives having tuberculostatic activity and corresponding to the general formula



$$X{-}NH{-}O{-}\underset{\displaystyle R}{\underset{|}{CH}}{-}CO{-}NH{-}NH{-}Ac \qquad (I)$$

wherein X represents hydrogen or an acyl radical, R represents hydrogen or a substituted or unsubstituted alkyl, aralkyl or aryl group, and Ac is the acyl radical of a substituted or unsubstituted aliphatic, aromatic or heterocyclic carboxylic acid, as well as the pharmaceutically acceptable acid addition salts thereof and/or the optically active isomers of such compound containing an asymmetric carbon atom.

3,726,882
ASHLESS OIL ADDITIVES

Thornton P. Traise, Chicago Heights, and Roger W. Watson, Batavia, Ill., and Randel Q. Little, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Original application Nov. 8, 1968, Ser. No. 774,497. Divided and this application Oct. 15, 1970, Ser. No. 81,189

Int. Cl. C07d *31/42;* **C08g** *37/22, 37/36*

U.S. Cl. 260—296 **3 Claims**

This invention concerns the condensation product of an aldehyde reactant having more than one carbon atom and/or ketone reactant, formaldehyde, an alkylene polyamine, an alkyl-substituted phenol, and a methyl-substituted aminopyridine. These compositions can be used as ashless alkaline additives for lubricating oils.

3,726,883
2,2-DI- AND 2,2,3-TRI-LOWER ALKYL CHROMAN- AND CHROMEN-OLS AND SALTS, ETHERS AND ESTERS THEREOF

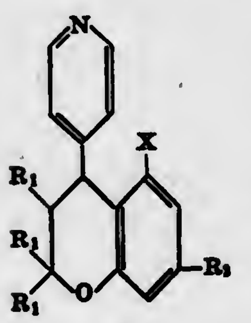
Raj Kumar Razdan, Belmont, Mass., and William Raymond Thompson, Ithaca, N.Y., assignors to Beecham Group Limited, Brentford, England

No Drawing. Continuation-in-part of application Ser. No. 36,466, May 11, 1970, which is a continuation-in-part of application Ser. No. 1,543, Jan. 8, 1970, which is a continuation-in-part of application Ser. No. 866,743, Oct. 15, 1969, which in turn is a continuation-in-part of application Ser. No. 630,808, Apr. 14, 1967, all now abandoned. This application June 9, 1971, Ser. No. 151,578

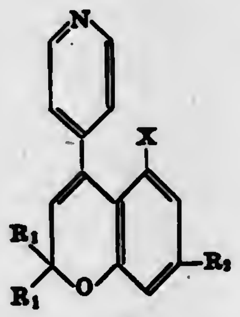
Int. Cl. C07d *31/28*

U.S. Cl. 260—297 B **26 Claims**

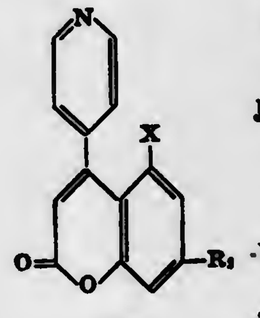
Novel chemical compounds and their salts, ethers and esters are disclosed wherein the compounds have the formulas:



(I)



(II)



(III)

in which

R_1 is lower alkyl having 1 to 6 carbon atoms,

R_2 is alkyl having 1 to 20 carbon atoms or cycloalkyl-lower-alkyl, the cycloalkyl part having 3 to 8 carbon atoms, and

X is OH or a pharmaceutically acceptable salt including an alkali metal salt or alkaline earth metal salt, or an etherified or esterified OH-group, exclusive of amino acid esters.

Compounds I and II possess beneficial pharmacodynamic activity with respect to the cardiovascular and central nervous system, and compounds III are intermediates for use in the preparation of compounds I and II.

3,726,884
CARBALKOXYALKANE SULFINIC ACID HALIDES AND ESTERS

Paul C. Aichenegg, Shawnee Mission, Kans., and Richard A. Thornhill, Kansas City, Mo., assignors to Chemagro Corporation, Kansas City, Mo.

Filed Sept. 8, 1970, Ser. No. 70,463

Int. Cl. C07c *145/00*

U.S. Cl. 260—481 R **12 Claims**

Carbalkoxyalkane sulfinic acid halides and esters, e.g., 1-carbo-lower alkoxy-lower-1-alkane-1-sulfinic acid chlorides or bromides or sulfinic or thiosulfinic acid esters of hydrocarbon alcohols, haloalkyldithioalkyl alcohols or haloaryl alcohols which are useful as plant growth-regulating agents and as herbicidally and fungicidally active agents, as well as intermediates therefor.

3,726,885
NITROSO-SUBSTITUTED ESTERS OF FLUOROCARBON ACIDS

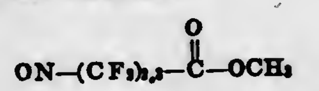
Ward H. Oliver, Mobile, Ala., and Calvin D. Padgett, Waldo, and Eugene C. Stump, Jr., Gainesville, Fla., assignors to PCR, Inc., Gainesville, Fla.

No Drawing. Application May 2, 1968, Ser. No. 726,203, which is a continuation-in-part of abandoned application Ser. No. 586,664, Oct. 14, 1966. Divided and this application Sept. 1, 1970, Ser. No. 68,779

Int. Cl. C07c *93/02*

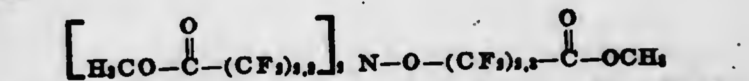
U.S. Cl. 260—482 P **3 Claims**

Compounds of the formulas



$$ON{-}(CF_2)_{2,3}{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}OCH_3$$

and



$$\left[H_3CO{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}(CF_2)_{2,3}\right]_2 N{-}O{-}(CF_2)_{2,3}{-}\overset{\displaystyle O}{\overset{\|}{C}}{-}OCH_3$$

are produced by reacting methyl nitrite and perfluoroglutaric anhydride or perfluorosuccinic anhydride and then decarboxylating the resultant product. The compounds, which can be hydrolyzed to produce the corresponding nitroso-substituted fluorocarbon acids, are used as comonomers in nitroso rubbers.

3,726,886
ADDUCTS OF ALKENYL ISOCYANATES WITH HYDROXYMETHYLATED DIPHENYL OXIDE AND DERIVATIVES THEREOF

James T. K. Woo, Robert M. Nowak, and Dietrich H. Heinert, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,882

Int. Cl. C07c *125/06*

U.S. Cl. 260—482 B **8 Claims**

Novel bis(N-alkenylcarbamates) are prepared by reacting (a) vinylisocyanate or isopropenyl isocyanate with

(b) a hydroxymethylated diphenyl oxide bearing at least two hydroxymethyl groups or an oxyalkylated and/or a halogenated derivative thereof. These divinyl compounds are useful monomers and cross-linking agents.

3,726,887

PROCESS OF MAKING POLYESTERPOLYOLS

Gerhard Pohl, Grossauheim, Karl-Heinz Rink, Hanau, and Wolfgang Triebel, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

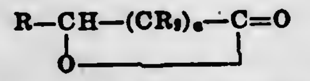
Filed July 20, 1970, Ser. No. 56,414

Claims priority, application Germany, July 18, 1969, P 19 36 587.8

Int. Cl. C07c *69/66*

U.S. Cl. 260—484 A **11 Claims**

Polyesterpolyols are made by subjecting a lactone of the formula



$R{-}CH{-}(CR_2)_n{-}C{=}O$

in which R is hydrogen or alkyl of 1–10 carbon atoms and *n* is an integer from 4 to 10, to polymerization in the presence of water, an alkali hydroxide, an earth alkali hydroxide or a mixture of these hydroxides or of water with these hydroxides, the water or hydroxides or mixtures thereof being present in an amount between about 0.03 and 1.0 mole for each mole of lactone and the reaction being effected at a temperature between about 50 and 300° C.

There is thus formed an ω-hydroxy-polylactone carboxylic acid which then is esterified with a polybasic alcohol to form the polyesterpolyol.

3,726,888

ESTERIFICATION AND EXTRACTION PROCESS

Jimmy L. Hatten, Kurt R. Nauck, Jr., and Samuel S. Mims, Odessa, Tex., assignors to El Paso Products Company, Odessa, Tex.

Filed Mar. 8, 1971, Ser. No. 121,705

Int. Cl. C07c *69/44*

U.S. Cl. 260—485 S **11 Claims**

There is disclosed an improvement in the process for the recovery of organic acids from mixtures thereof contained in dilute aqueous solutions whereby the acids are esterified with an alcohol or alkylene glycol and extracted with a water-immiscible solvent whereby an organic phase and a spent aqueous phase are formed, the improvement in further contacting the resulting organic phase with a portion of the spent aqueous phase followed by washing with an aqueous alcoholic solution, which procedures minimize excessive fouling in heat exchangers used to supply heat for solvent recovery and also minimize the quantity of half esters formed in the organic phase.

3,726,889

SYNTHESIS OF 2,2′-IMINOBIS(BENZOTHIAZOLES)

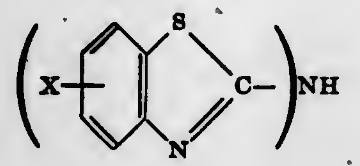
John J. D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,659

Int. Cl. C07d *91/46*

U.S. Cl. 260—305 **3 Claims**

2,2′-iminobis(benzothiazoles) of the formula



wherein X is hydrogen, alkyl, alkoxy, nitro, halo or hydroxy are prepared by reacting a 2-aminobenzenthiol with S,S′-di-(lower alkyl)cyanoimidodithiocarbonate.

3,726,890

PROCESS FOR THE PRODUCTION OF HIGH PURITY BENZTHIAZYL-SULPHENAMIDES

Gottfried Gollmer and Hermann Wolz, Cologne, and Adolf von Friedrich, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 20, 1970, Ser. No. 56,705
Claims priority, application Germany, Aug. 8, 1969, P 19 40 365.7

Int. Cl. C07d *91/44*

U.S. Cl. 260—306.6 A **1 Claim**

Improvement in the process of producing benzthiazylsulphenamides by the oxidative condensation of 2-mercapto-benzthiazole with an amine in stoichiometric or in excess quantity wherein benzthiazyl-sulphenamide product is washed with a 10 to 50% by volume aqueous cyclohexylamine solution to improve the purity thereof.

3,726,891

FUSED 1,2,4-THIADIAZOLINES

Kurt H. Pilgram and Richard D. Skiles, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Dec. 2, 1970, Ser. No. 94,590

Int. Cl. C07d *19/02*

U.S. Cl. 260—306.7 **4 Claims**

Novel fused 1,2,4-thiadiazolines, their preparation and use as herbicides.

3,726,892

CERTAIN 5-SULFAMOYL-1,3,4-THIADIAZOL-2-YLUREAS

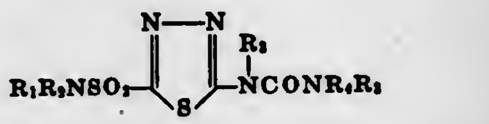
Tony Cebalo, Indianapolis, Ind., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Continuation-in-part of application Ser. No. 867,385, Oct. 17, 1969. This application Oct. 2, 1970, Ser. No. 77,719

Int. Cl. C07d *91/62*

U.S. Cl. 260—306.8 D **14 Claims**

Novel thiadiazole compounds are produced having the general structure:



wherein

R_1 is hydrogen or a substituted or unsubstituted lower acyclic hydrocarbon radical, the substituents being selected from the class consisting of halo, hydroxy, cyano, and lower alkoxy,

R_2 is R_1 or a lower alkoxy radical, except that R_1 and R_2 cannot both be hydrogen,

R_3 is hydrogen or a lower acyclic hydrocarbon radical,

R_4 is hydrogen, a lower acyclic hydrocarbon radical, or a lower cycloalkyl radical, and,

R_5 is hydrogen, a lower cycloalkyl radical, a lower alkoxy radical or a substituted or unsubstituted lower acyclic hydrocarbon radical, the substituents being selected from the class consisting of halo, hydroxy, cyano, or lower alkoxy, except that R_4 and R_5 cannot both be hydrogen or a lower cycloalkyl radical. The compounds and derivatives thereof have particular use as herbicides.

3,726,893

2-(p-PHENYLBENZYL)OXAZOLINES

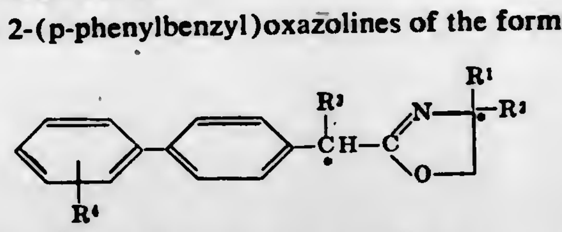
Ying-Ho Chen and Carl Dalton Lunsford, Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 82,159, Oct. 19, 1970. This application Sept. 9, 1971, Ser. No. 179,237

Int. Cl. C07d *85/36*

U.S. Cl. 260—307 F **6 Claims**

Novel 2-(p-phenylbenzyl)oxazolines of the formula:



wherein R^1 and R^2 are selected from the group consisting of hydrogen, lower-alkyl and hydroxylower-alkyl, R^3 is selected from the group consisting of hydrogen and lower-alkyl, and R^4 is selected from the group consisting of hydrogen, fluorine, bromine, chlorine and trifluoromethyl are prepared by reacting p-phenylphenylacetic acids with aminoalcohols under dehydrating conditions. The novel products of the structural formula set forth hereinabove have anti-inflammatory activity. The asterisks serve to point out asymmetric carbon atoms present in some of the novel compounds.

3,726,894

THE COMPOUND 1-(2-HYDROXYETHYL)-4-PHENYL-2-IMIDAZOLIDINETHIONE

Larry Dean Spicer, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 24, 1971, Ser. No. 156,484

Int. Cl. C07d *49/30*

U.S. Cl. 260—309.7 **1 Claim**

A process for preparing *dl*-6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole hydrochloride by contacting 4-phenyl-1-vinyl-2-imidazolidinethione with diborane, oxidizing the resulting product in aqueous base to produce 1-(2-hydroxyethyl)-4-phenyl - 2 - imidazolidinethione, converting the hydroxyethyl grouping to haloethyl and cyclizing to give *dl*-6-phenyl-2,3,5,6-tetrahydromidazo[2,1-b] thiazole hydrohalide is described.

The products of the invention are useful as highly effective anthelmintic agents.

3,726,895

DIGLYCIDYL DERIVATIVES OF COMPOUNDS CONTAINING TWO N-HETEROCYCLIC RINGS

Juergen Habermeier, Allschwil, Hans Batzer, Arlesheim, and Daniel Porret, Binningen, Switzerland, assignors to Ciba-Geigy Limited, Basel, Switzerland

No Drawing. Filed Oct. 13, 1970, Ser. No. 80,493

Claims priority, application Switzerland, Nov. 18, 1969, 17,105/69

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **6 Claims**

New diglycidyl ethers of binuclear, five-membered or six-membered, unsubstituted or substituted N-heterocyclic compounds containing styrene oxide as an adduct, which possess two N atoms per heterocyclic ring, obtained by reaction of binuclear, five-membered or six-membered, unsubstituted or substituted N-heterocyclic compounds, such as bis-(hydantoin) or bis-(dihydrouracil) compounds, for example 1,1′-methylene-bis-(5,5-dimethylhydantoin), bis-(5,5-dimethylhydantoinyl-3)-methane or 1,1′-methylene-bis-(5,6-dihydrouracil), with styrene oxide to give the appropriate monohydroxy or dihydroxy compounds, and subsequent glycidylation of the OH groups or of the OH group and NH group to give the corresponding glycidyl ethers.

3,726,896

1-BENZYL-3(2,3-DIHYDROXYPROPOXY) INDAZOLE

Jose Amato, Marta Stamburgo, and Edmundo Fischer, Buenos Aires, Argentina, assignors to Szabo Hnos. Kessler & Cia, Buenos Aires, Argentina

No Drawing. Filed May 6, 1970, Ser. No. 35,294

Int. Cl. C07d *49/18*

U.S. Cl. 260—310 C **1 Claim**

1 benzyl 3 (alpha hydroxy propoxy) indazole, compounds and compositions including 1 benzyl 3 (beta, alpha dihydroxy propoxy) indazole and the metallic salts of their corresponding hemisuccinates in the primary or secondary form; utility of the compounds includes analgesics, and anti-inflammatories.

3,726,897

1,2,3,8 - TETRAHYDRODIBENZO (3,4:6,7)CYCLOHEPTA[1,2-c]PYRROLES AS CNS-DEPRESSANTS

Walter Schindler, deceased, by Jacques Gosteli and Leonhard Gysin, legal representatives, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed May 19, 1971, Ser. No. 145,010

Claims priority, application Switzerland, May 25, 1970, 7,672/70

Int. Cl. C07d *27/54*

U.S. Cl. 260—313.1 **26 Claims**

Compounds of the class of 1,2,3,8-tetrahydrodibenzo [3,4:6,7]cyclohepta[1,2-c]pyrrole which may be substituted in the 2-position by an alkyl group and/or in the 5-position by chlorine or the methyl or the methoxy group respectively and pharmaceutically acceptable acid addition salts thereof have a depressant effect on the central nervous system; they can be prepared from the corresponding 10,11 - bisbromomethyl-5H-dibenzo[a,d]cycloheptenes and a primary amine; the compounds are active ingredients of pharmaceutical compositions.

3,726,898

INDOL-2-YLPHENYLACETIC ACIDS AND ESTERS

Robert L. Duncan, Jr., and Robert F. Boswell, Jr., Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,144

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.13 R **5 Claims**

The present invention discloses indol-2-ylphenylacetic acids and esters wherein the indol-2-yl radical is attached to the phenyl radical of the phenylacetic acid moiety at the meta and para positions. The indol-2-ylphenylacetic acids are useful in ameliorating distress in animals caused by inflamed tissue. The esters of the indol-2-ylphenylacetic acids are useful precursors. The novel compounds are prepared by reacting phenylhydrazine and monosubstituted phenylhydrazines with lower alkyl m- and p-acetylphenylacetates to give the corresponding hydrazones. The latter are cyclized in polyphosphoric acid or in an acidic alcoholic medium to the indol-2-ylphenylacetates which are hydrolyzed to the acids. The precursor hydrazones having the free carboxylic acid moiety are also useful in ameliorating inflamed tissue.

3,726,899

N,N'-BIS(4-BENZILYL-SUBSTITUTED) TETRACARBOXYLIC IMIDES

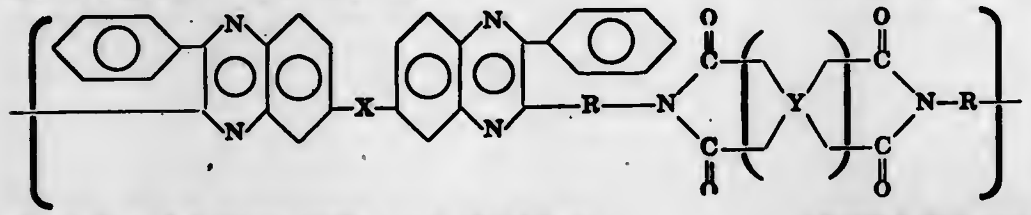
Joseph M. Augl, Sterling, Va., and James V. Duffy, Beltsville, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Original application Mar. 26, 1971, Ser. No. 128,524, now Patent No. 3,654,226. Divided and this application Nov. 16, 1971, Ser. No. 199,354

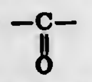
Int. Cl. C07d *27/52*

U.S. Cl. 260—326 N **3 Claims**

Phenylated imide quinoxaline co-polymers consisting essentially of units of the formula

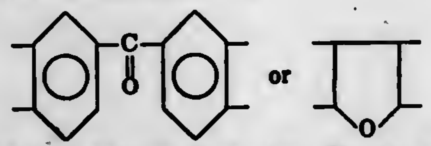


wherein X is a direct bond, O, S, SO SO$_2$ or

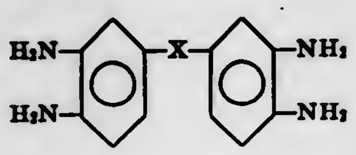


$$-\underset{\underset{O}{\|}}{C}-$$

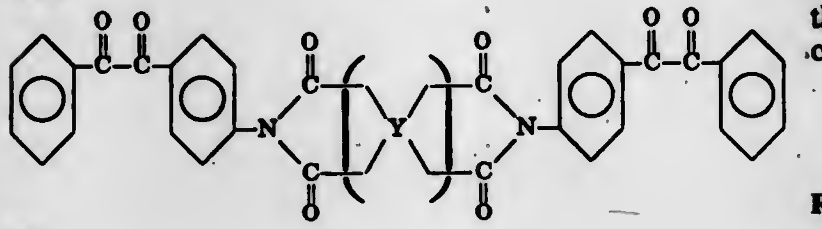
R is m- or p-phenylene and Y is



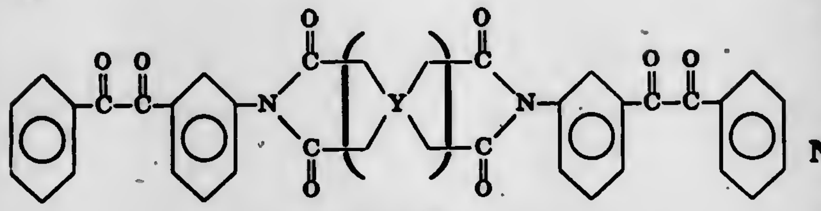
which are useful as coatings for fibers, graphite precursors, films and laminating materials are prepared by contacting



with



or



3,726,900

DIBENZO (a–d) CYCLOHEPTADI (OR TRI) ENE-5:2'-DIOXALANES (1,3')

Claude P. Fauran, Paris, Jeannine A. Eberle, Chatou, Guy M. Raynaud, Paris, Claude J. Gouret, Mendon, Janine M. Thomas, Neuilly, and Gerard J. Huguet, Malesherbes, France, assignors to Delalande S.A., Courbevoie, Hauts-de-Seine, France

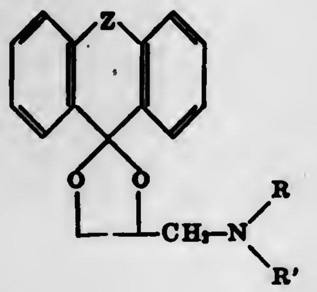
No Drawing. Filed Apr. 12, 1971, Ser. No. 133,441

Claims priority, application France, Apr. 15, 1970, 13,522; Feb. 19, 1971, 7105662

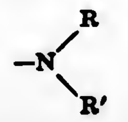
Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 **5 Claims**

A compound of the formula



in which Z is —CH$_2$—CH$_2$— or —CH=CH—, and R and R' each is an alkyl 1–3C or



is pyrrolidino, piperidino, hexamethyleneimino or morpholino. The compounds are prepared by condensing, in the presence of stannic chloride in chloroform or carbon tetrachloride, an epibromohydrin with dibenzo (a–d) cycloheptadi (or tri) enone. This intermediate is then condensed, in benzene with a secondary amine to obtain the compound. The compounds possess analgesic, sedative, antihistaminic, anti-serotonenic, anti-inflammatory, anticonvulsant and anti-depressant properties.

3,726,901

OIL-SOLUBLE DERIVATIVES OF NITRO-TETRAETHYLENEPENTAMINE POLYBUTANE AND TRIMELLITIC ANHYDRIDE

Richard J. Lee, Park Forest, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Aug. 8, 1969, Ser. No. 848,732

Int. Cl. C07c *63/32*

U.S. Cl. 260—346.3 **1 Claim**

Oil-soluble compounds are prepared by heating at reflux temperature a mixture of an alkane nitro-amine, containing at least about ten carbon atoms, and an organic polybasic aliphatic or aromatic acid, or the anhydride thereof; compounds so formed are useful additives in oleaginous compositions.

3,726,902

FURFURYL AMINO-COUMARINS

Rudi Beyerle, Bruchkobel, Ingeburg Lydia Katharina Stachel, Frankfurt am Main-Fechenheim, Rolf-Eberhard Nitz, Bergen-Enkheim, and Klaus Resag and Eckhard Schraven, Frankfurt am Main-Fechenheim, Germany, assignors to Casella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

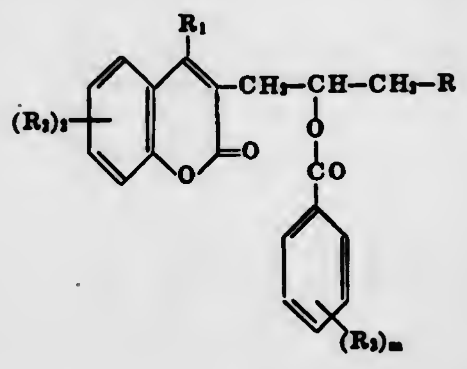
No Drawing. Original application Jan. 8, 1969, Ser. No. 789,919, now Patent No. 3,652,557. Divided and this application July 27, 1971, Ser. No. 166,598

Claims priority, application Germany, Jan. 19, 1968, P 16 68 877.0

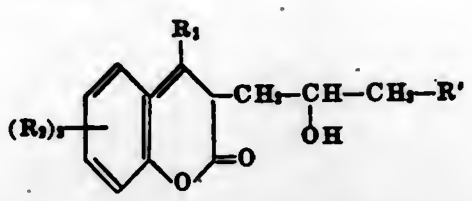
Int. Cl. C07d *7/26*

U.S. Cl. 260—343.2 R **3 Claims**

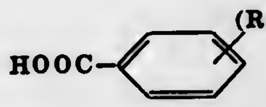
The present invention relates to new coumarin compounds useful as coronary dilators and having the formula



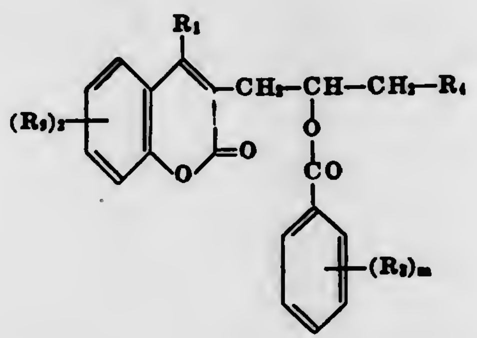
or the hydrochloric acid addition salts thereof, and to methods of preparing same either by acylating, in the presence of acid-binding agents, if desired, coumarin derivatives having the formula



with acylating agents selected from the group consisting of alkoxybenzoic acid having the formula



and functional derivatives thereof, or by condensing, in the presence of acid-binding agents, if desired, coumarin derivatives having the formula



with an amine having the formula RH, wherein R is selected from secondary furfurylamino and secondary tetrahydrofurfurylamino, which is bound via the nitrogen atom; R$_1$ is selected from the group consisting of alkyl radicals having 1–4 carbon atoms and phenyl; R$_2$ is selected from the group consisting of 5,6-, 6,7-, and 7,8-positioned alkoxy groups having 1–4 carbon atoms; R$_3$ is selected from alkoxy groups having 1–4 carbon atoms; R$_4$ is selected from the group consisting of chlorine and bromine; R' is selected from the group consisting of secondary furfurylamino and secondary tetrahydrofurfurylamino; and *m* is selected from the group consisting of 1, 2, and 3.

3,726,903

FLUORO COMPOUNDS

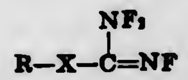
Robert J. Koshar, Lincoln Township, Washington County, Charles D. Wright, White Bear Lake, Joseph La Mar Zollinger, Woodbury Township, Washington County, and Douglas H. Dybvig and Donald R. Husted, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Mar. 6, 1964, Ser. No. 351,581

Int. Cl. C07c *123/00;* **C07d** *5/00*

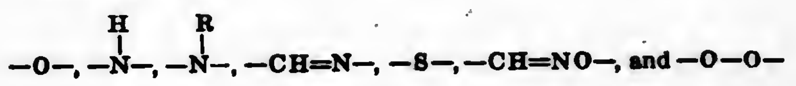
U.S. Cl. 260—347.7 **14 Claims**

2. A compound of the formula



$$R-X-\overset{\overset{NF_2}{|}}{C}=NF$$

wherein R is a radical having from 1 to 30 carbon atoms, of the group consisting of alkyl, aryl, polyhaloalkyl, polyhaloaryl, alkaryl, aralkyl, polyhaloalkaryl, polyhaloaralkyl, and heterocyclic radicals which are free from functional groups which react with the trifluoroformamidino group, and X is a divalent linking radical of the group consisting of



$$-O-,\ -\overset{\overset{H}{|}}{N}-,\ -\overset{\overset{R}{|}}{N}-,\ -CH=N-,\ -S-,\ -CH=NO-,\ \text{and}\ -O-O-$$

3,726,904

2,3 - DIHYDRO - 5-(2-NITRO-1-ALKENYL)-BENZOFURAN - 2 - CARBOXYLIC ACID AND PHARMACEUTICALLY ACCEPTABLE SALTS

Ernst Habicht, Oberwil, Basel-Land, Switzerland, Bernard Libis, Saint-Louis, France, and Janos Zergenyi, Riehen, Basel-Stadt, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,032

Int. Cl. C07d *5/36*

U.S. Cl. 260—346.2 R **3 Claims**

Compounds of the class of 2,3-dihydro-5-(2-nitro-1-alkenyl)-benzofuran- and 2,3 - dihydro - 5 - (2 - nitro-1-alkenyl)-benzo[b]thiophene - 2 - carboxylic acid and pharmaceutically acceptable salts thereof have diuretic and saluretic activity; pharmaceutical compositions containing such compounds and methods of producing diuresis and saluresis in mammals comprising administering them are provided; a typical embodiment is 2,3-dihydro - 5 - (2 - nitro-1-propenyl)-6,7-dimethyl-benzofuran-2-carboxylic acid.

3,726,905

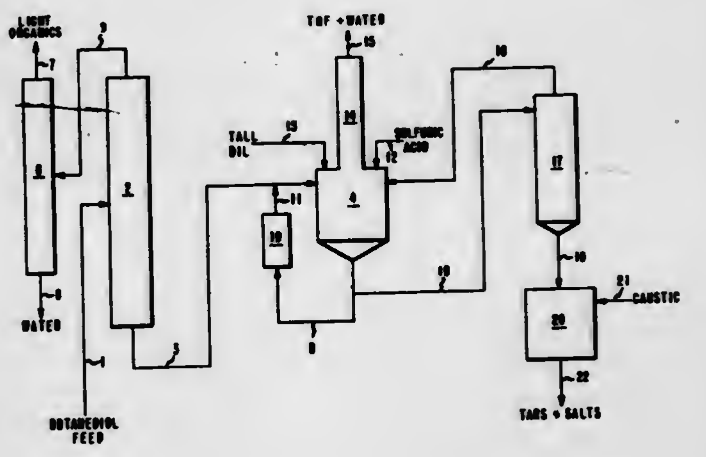
CONVERSION OF BUTANEDIOL TO TETRAHYDROFURAN IN THE PRESENCE OF TALL OIL

John S. Coats, Houston, and Victor J. Reilly, Seabrook, Tex., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 1, 1971, Ser. No. 158,866

Int. Cl. C07d *5/02*

U.S. Cl. 260—346.1 R **14 Claims**



Butanediol is converted to tetrahydrofuran by reacting a feed stream containing, by weight, about 1 to 20 percent water, about 80 to 99 percent butanediol, and about 0.05 to 5 percent combined high boiling organic tars and alkali or alkaline earth metal salts with 5 to 25 percent by weight of sulfuric acid in the presence of tall oil containing less than about 95 percent by weight of fatty acids and having an acid number of less than about 195 in an amount sufficient that the reaction medium contains 2 to 60 percent by weight of tall oil. The presence of tall oil improves the conversion of butanediol to tetrahydrofuran in the primary reactor and allows recovery of increased amounts of tetrahydrofuran from a purge stream using a wiped film evaporator.

3,726,906
ORGANOTIN PROCESS

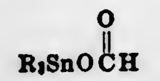
Gerald H. Reifenberg, Hightstown, and William J. Considine, Somerset both of N.J., assignors to M&T Chemicals Inc., New York, N.Y.

Division of Ser. No. 773,329, Nov. 4, 1968, Pat. No. 3,652,618. This application Nov. 9, 1970, Ser. No. 88,238

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **4 Claims**

This invention is a method for preparing compounds of the formula R_3SnSnR_3 comprising pyrolyzing a triorganotin formate of the formula



$$R_3SnO\overset{O}{\overset{\|}{C}}H$$

wherein R is a hydrocarbon selected from the group consisting of alkyl, alkenyl, aralkyl, and cycloalkyl radicals, and separating R_3SnSnR_3.

3,726,907
REACTIVE POLYFUNCTIONAL SILANES

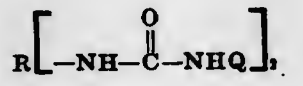
Giuliana C. Tesoro, Dobbs Ferry, N.Y., and Wing Kai Lee, Hackensack, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 640,388, May 22, 1967, Pat. No. 3,576,033. This application July 13, 1970, Ser. No. 61,036

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **7 Claims**

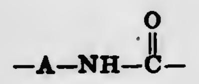
This invention relates to novel silyl ureas useful as finishing agents. These compounds are of the structure:



$$R\left[-NH-\overset{O}{\overset{\|}{C}}-NHQ\right]_2$$

wherein R is a divalent organic radical selected from the group consisting of:

a. chains of linear polymers terminated on both ends by arylenecarbamoyl radicals of the structure

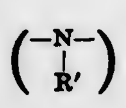


$$-A-NH-\overset{O}{\overset{\|}{C}}-$$

wherein A is arylene, and

b. hydrocarbon radicals,

wherein Q is a silyalkyl radical having affixed to the silicon atom three substituents selected from the group consisting of alkyl, alkoxy, and aryloxy at least one substituent of which is selected from the group consisting of alkoxy and aryloxy, with the proviso that said alkyl moiety of the silyalkyl can be interrupted by ether oxygen (—O—), and imino groups



$$\left(\begin{array}{c}-N-\\ |\\ R'\end{array}\right)$$

wherein R′ is selected from the group consisting of hydrogen, aryl and alkyl.

3,726,908
SUBSTITUTED O-CARBAMYLHYDROXAMATES

James B. Buchanan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 670,494, Aug. 31, 1967, Pat. No. 3,576,834, which is a continuation-in-part of Ser. No. 602,134, Dec. 16, 1966, abandoned, which is a continuation-in-part of Ser. No. 361,277, April 20, 1964, abandoned. This application Aug. 25, 1970, Ser. No. 66,877

Int. Cl. C07c *119/18*

U.S. Cl. 260—453 R **5 Claims**

Substituted O-carbamylhydroxamates such as methyl O-(methylcarbamyl)thiolacetohydroxamate useful as pesticides.

3,726,909
9,15-DIHYDROXY PROSTANOIC ACIDS AND ESTERS THEREOF

Philip F. Beal, III, 3411 Lorraine Ave., and John E. Pike, 2312 Lorraine Ave., both of Kalamazoo, Mich.

Division of Ser. No. 520,876, Jan. 17, 1966, abandoned, which is a continuation-in-part of Ser. No. 480,107, Aug. 16, 1965, abandoned. This application Oct. 16, 1970, Ser. No. 81,594

Int. Cl. C07c *61/32*, *69/74*

U.S. Cl. 260—468 D **9 Claims**

9,15-Dihydroxyprostanoic acid has been prepared.

3,726,910
(((ALKYLTHIO)ALKYL)THIO)PHENYL CARBAMATES

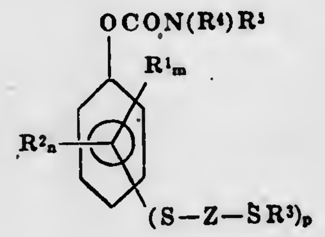
Walter Reifschneider, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed April 1, 1970, Ser. No. 24,819

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **10 Claims**

Novel (((alkylthio)alkyl)thio)phenyl carbamates are claimed, corresponding to the formula



wherein R^1 represents a lower alkyl, lower alkoxy, fluoro, chloro, bromo or iodo group; R^2 represents an R^1 or a cyclopentyl, cyclohexyl, phenyl, naphthyl, nitro, carboxy, carbalkoxy, trifluoromethyl or cyano group; *m* represents an integer from 0 to 3; *n* represents an integer from 0 to 2; Z represents a 1 to 4 carbon straight-chain or branched-chain alkylene group; R^3 represents a lower alkyl, lower haloalkyl, lower alkenyl, or lower alkynyl group; *p* represents an integer from 1 to 2; R^4 represents a lower alkyl, vinyl or phenyl group; R^5 represents a lower alkyl or an H group; and the sum of $m+n+p$ is an integer from 1 to 5. The terms "lower alkyl", "lower haloalkyl" and "lower alkoxy" represent groups containing from 1 to 4 carbon atoms. The terms "lower alkenyl" and "lower alkynyl" represent groups containing from 2 to 4 carbon atoms. The compounds are useful as pesticides.

3,726,911
N-SUBSTITUTED (5,8-DIMETHYL-5,6,7,8-TETRAHYDRO-1-NAPHTHYL) CARBAMATES

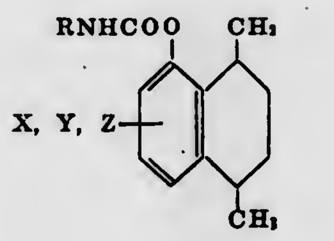
Edward R. Degginger, Convent Station, and James M. Balquist, Morristown, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 8, 1970, Ser. No. 1,567

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C **6 Claims**

Materials can be protected from attack by insects, mites and nematodes by applying to the material an N-substituted (5,6-dimethyl-5,6,7,8-tetrahydro-1-naphthyl)carbamate having the formula



wherein R is a phenyl group or an alkyl radical; X, Y, and Z are substituents independently occupying the 2, 3, and 4 positions; X is hydrogen, fluorine, chlorine, bromine, or lower alkyl; Y is hydrogen, fluorine, chlorine, bromine, nitro, lower alkyl, or lower alkoxy; and Z is hydrogen or nitro. The carbamates, which are novel compounds, are prepared by reacting an isocyanate of the formula RNCO wherein R is as defined above with a 5,8-dimethyl-5,6,7,8-tetrahydro-1-naphthol having corresponding X, Y and Z substituents. The tetrahydronaphthol reactants wherein Z is hydrogen can be prepared by cyclialkylating a phenol having corresponding X and Y substituents (Y not being nitro) with 1,5-hexadiene in the presence of a catalyst such as aluminum phenate. Tetrahydronaphthols wherein Z and/or Y are nitro can be prepared by nitrating the cyclialkylation product.

3,726,912
SUBSTITUTED ALKANOLAMINE CHELATING AGENTS

Avis L. McCrary, and David A. Wilson, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 2, 1970, Ser. No. 52,102

Int. Cl. C07c *143/04*, *143/10*, *143/12*

U.S. Cl. 260—513 N **8 Claims**

Hydroxyalkylated alkylenediamines and polyalkylenepolyamines wherein the amino hydrogen atoms have been replaced by carboxymethyl radicals and at least one 2-hydroxy-3-sulfopropyl radical are effective iron chelating agents useful for promoting plant growth. The compounds are particularly effective for chelating iron at relatively high pH levels.

3,726,913
DERIVATIVES OF AMINOALKANOIC ACIDS

Aldo Garzia, Lodi, Italy, assignor to Istituto Chemioterapico Italiano S.p.A., Milan, Italy

Filed June 26, 1970, Ser. No. 50,331

Int. Cl. C07c *103/30*

U.S. Cl. 260—519 **6 Claims**

(3,4,5-trialkoxy benzoyl) amino alkanoic acids and their pharmaceutically-acceptable salts for prophylaxis and treatment of cardiac disorders.

3,726,914
PROCESS FOR THE PRODUCTION OF ARYL CARBOXYLIC ACIDS

Robert M. Engenbrecht, deceased, late of St. Louis, Mo. (by Alice M. Engelbrecht, executrix); James C. Hill, Chesterfield, and Richard N. Moore, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 29, 1970, Ser. No. 50,981

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 M **16 Claims**

Aryl carboxylic acids are produced from alkyl substituted aryl compounds or partially oxidized alkyl substituted aryl compounds by the oxidative reaction of the corresponding alkyl substituted aryl compounds, partially oxidized alkyl substituted aryl compounds or mixtures thereof with an alkali metal dichromate in aqueous solution to form an alkali metal aryl carboxylate and chromic oxide, separation of the reaction products, oxidation of the chromic oxide to chromium trioxide in an electrolytic cell, reaction of the chromium trioxide with the alkali metal aryl carboxylate to form the corresponding aryl carboxylic acid and an alkali metal dichromate. The oxidation of p-toluic acid to terephthalic acid is an illustrative example of the process of invention. Other aryl carboxylic acids which can be produced by this process include benzoic acid, trimellitic acid, and 2,6-naphthalene dicarboxylic acid. Benzoic acid is useful as a preservative. The aryl di- and tricarboxylic acids are useful in the production of polyesters.

3,726,915
PHTHALIC ACID PURIFICATION WITH COPPER ACTIVATED PALLADIUM ON CARBON CATALYSTS

Hans P. Pohlmann, Highland, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed July 13, 1970, Ser. No. 54,568

Int. Cl. C07c *51/42*; B01j *11/16*

U.S. Cl. 260—525 **3 Claims**

Elemental noble metals of the platinum group as reduction catalysts are known from the work of E. B. Maxted and A. Marsden reported in J. Chem. Soc. (1940) pages 469–474 to tend to be deactivated by copper. However the alloying of copper with palladium deposited on carbon in the respective weight ratio of less than 0.5:1.0 substantially enhances the catalytic activity of that palladium reduction catalyst especially the selective reduction of formylbenzoic acid impurities in crude phthalic acid products.

3,726,916
6-HYDROPEROXYHEXANOIC ACID PREPARATION

Jean-Claude Brunie; Michel Costantini; Noel Crenne, all of Lyon, and Michel Jouffret, Villeurbanne, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Sept. 26, 1969, Ser. No. 861,464

Claims priority, application France, Sept. 30, 1968, 68168175

Int. Cl. C07c *73/06*

U.S. Cl. 260—531 R **3 Claims**

6-Hydroperoxyhexanoic acid, a novel compound useful for introducing acidic groups into polymers, is made from hexanediol by monosulphonation, followed by oxidation first to convert the $—CH_2OH$ group to —COOH and then with hydrogen peroxide.

3,726,917
PROCESS FOR PREPARING ADIPIC ACID

Jean Claude Brunie; Michel Costantini; Noel Crenne, and Michel Jouffret, all of Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Oct. 2, 1970, Ser. No. 77,749

Claims priority, application France, Oct. 6, 1969, 6934016

Int. Cl. C07c *51/18*

U.S. Cl. 260—533 C **9 Claims**

Adipic acid is obtained from a cyclohexane oxidation product containing cyclohexyl hydroperoxide and by-products including 6-hydroperoxy-hexanoic acid, obtained by liquid phase oxidation of cyclohexane with a molecular oxygen-containing gas and without a metal catalyst by washing the oxidation product with water, separating the aqueous phase containing 6-hydroperoxy-hexanoic acid and subjecting the 6-hydroperoxy-hexanoic acid to oxidation with molecular oxygen under pressure.

3,726,918
PROCESS FOR PREPARING ALKYL AND ARYL PHOSPHONOTHIOIC AND PHOSPHINOTHIOIC HALIDES

Arthur D. F. Toy, Stamford, Conn., and Eugene H. Uhing, Ridgewood, N.J., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,905
Int. Cl. C07f *9/34, 9/42*

U.S. Cl. 260—543 P **8 Claims**

Alkyl or aryl phosphonothioic dihalides and phosphinothioic monohalides are prepared by reacting an alkyl halide or an aryl halide with a pentavalent thiophosphorus compound having at least two halogens attached thereto, and preferably three halogens such as thiophosphoryl halide, in the presence of a halogen acceptor such as phosphorus, or sulfur under at least autogenous pressure at a temperature of from 200°C. to 450°C. The compounds obtained are useful as constituents in insecticides, fungicides, pharmaceuticals, and as intermediates in preparation of other organophosphorus compounds.

3,726,919
BENZENE DERIVATIVES

Kenneth Robert Harry Wooldridge, Brentwood, and Berkeley Basil, Highwood, Near Chelmsford, both of England, assignors to May & Baker Limited, Dagenham, Essex, England

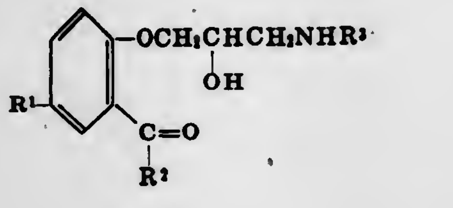
Filed Dec. 19, 1968, Ser. No. 785,403

Claims priority, application Great Britain, Dec. 22, 1967, 58,516/67; May 14, 1968, 56,513/68; Aug. 2, 1968, 37,103/67

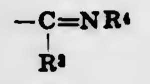
Int. Cl. C07c *103/38*

U.S. Cl. 260—562 A **7 Claims**

Benzene derivatives of the formula:



wherein R^1 represents alkanoylamino of not more than nine carbon atoms, R^2 represents alkyl of one through six carbon atoms, and R^3 represents alkyl of one through six carbon atoms or cycloalkyl of three through six carbon atoms, possess pharmacodynamic properties and are useful in the treatment of various cardiac disorders. Moreover, they can be used as starting materials for corresponding compounds in which the ketone group —COR^2 is replaced by a grouping



$$-\underset{\substack{|\\ R^3}}{C}=NR^4$$

wherein R^4 represents, for example, a hydroxy group, or an optionally substituted ureido or thioureido group, which possess similar pharmacodynamic properties.

3,726,920
1,3-BIS(4-CHLOROPHENYL)-2-PROPEN-1-ONE GUANYLHYDRAZONE HYDROCHLORIDE AND ANALOGS THEREOF USEFUL AS ANTIMALARIALS

David W. Henry, Menlo Park, Calif., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 6, 1970, Ser. No. 1,061
Int. Cl. C07c *129/00*

U.S. Cl. 260—564 F **1 Claim**

The disclosure describes three analogous compounds, 1,3-bis(4-chlorophenyl)-2-propen-1-one guanylhydrazone hydrochloride, 1,3-bis(4-chlorophenyl)-2-buten-1-one guanylhydrazone hydrochloride, and 1,3,3-tris(4-chlorophenyl)-2-propen-1-one guanylhydrazone hydrochloride. The compounds are useful in the prevention and treatment of malaria.

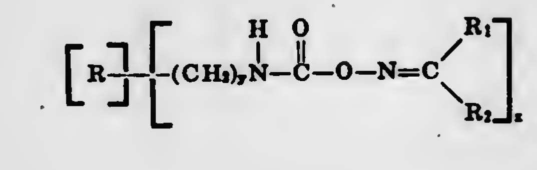
3,726,921
NOVEL DERIVATIVES OF POLYISOCYANATES PREPARED FROM POLYMERIC FAT ACIDS AND CERTAIN OXIMES

Marwan R. Kamal, Dhahran, Saudi Arabia, assignor to General Mills, Inc., Minneapolis, Minn.

Division of Ser. No. 606,584, Jan. 3, 1967, Pat. No. 3,493,426. This application Feb. 7, 1969, Ser. No. 797,665
Int. Cl. C07c *131/00*

U.S. Cl. 260—566 AC **6 Claims**

Compounds of the formula



$$\left[R\right]\left[-(CH_2)_y\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-O-N=C\begin{matrix}R_1\\ \\ R_2\end{matrix}\right]_x$$

prepared by reacting oximes of one to 11 carbon atoms and polymeric fat acid polyisocyanates, aqueous emulsions of such compounds and a process of treating leather and fibrous materials with such compounds.

3,726,922
PROCESS FOR THE MANUFACTURE OF N,N-BIS(2-CHLOROETHYL)-2-NITRO-4-ALKYL-ANILINE

Harold M. Foster, Park Forest; Thomas C. Rees, Park Forest South, and Floyd G. Spence, Park Forest, all of , Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed March 16, 1970, Ser. No. 20,107
Int. Cl. C07c *87/60*

U.S. Cl. 260—577 **2 Claims**

A novel compound N,N-bis(2-chloroethyl)-2-nitro-p-toluidine, and a direct process for its preparation by the orthomononitration of N,N-di-(2-haloalkyl), 4-substituted anilines with only concentrated nitric acid with suppression of formation of nitrous acid, or nitrite ions in aqueous acid medium, without the formation of 2,6-dinitro-4-substituted product. Specifically, a process for the manufacture of N,N-bis(2-chloroethyl)-2-nitro-p-toluidine starting with p-toluidine as raw material.

The instant mononitro compounds, and particularly N,N-bis(2-chloroethyl)-2-nitro-p-toluidine, are repellents for Mexican bean beetles and beetle larvae.

3,726,923
PROCESS FOR THE MANUFACTURE OF N,N-DICHLOROALKYL-2,6-DINITRO-4-ALKYL ANILINE

Harold M. Foster; Thomas C. Rees, and Floyd G. Spence, all of Park Forest, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed March 16, 1970, Ser. No. 20,124
Int. Cl. C07c *87/60*

U.S. Cl. 260—577 **3 Claims**

A process for the manufacture of N,N-dihaloalkyl-2,6-dinitro-4-substituted anilines from a 4-substituted aniline. Specifically, a process for the direct ortho-dinitration of N,N-di(2-haloalkyl)-4-substituted tertiary aromatic amines in the presence of at least a twofold excess over theoretical of concentrated nitric acid and a catalytic amount of nitrous acid, or a derivative thereof capable of generating nitrite ions in aqueous acid, optionally in a muliphase liquid system having an aqueous phase and a hydrophobic essentially immiscible oragnic phase, with the formation of a minimum of unwanted by-products. A process for the manufacture of N,N-bis(2-chloroethyl)-2,6-dinitro-*p*-toluidine starting with *p*-toluidine as raw material and including the orthodinitration of N,N-bis(2-chloroethyl)-*p*-toluidine. The N,N-dihaloalkyl-dinitro compounds made by the instant process are selective herbicides effective for weed control in crops of cotton, annual legumes and related plants.

3,726,924
METHOD FOR THE PREPARATION OF TRIS (DIMETHYLAMINO) METHANE

Willy Leimgruber, and Alexander E. Wick, both of Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed March 26, 1971, Ser. No. 128,572
Int. Cl. C07d *13/10*

U.S. Cl. 260—583 P **2 Claims**

A method for the methylenation of catechols via the reaction of catechols with methylene chloride in the presence of selected strong bases is described. This process has wide applicability in the field of synthetic organic chemistry, especially in natural product syntheses.

3,726,925
PREPARATION OF TRIALKYLAMINES

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company, Los Angeles, Calif.

Filed June 24, 1970, Ser. No. 49,503
Int. Cl. C07c *85/00, 85/02*

U.S. Cl. 260—583 R **9 Claims**

A trialkylamine is prepared by contacting a dialkylamine with a liquid reaction medium containing a ruthenium, osmium, rhenium or technetium metal catalyst, preferably in complex association with a biphyllic ligand at a temperature of 50°–400Φv C. A typical reaction comprises contacting dib tylamine with ruthenium trichloride and triphenylphosphine to produce tributylamine and butylamine.

3,726,926
PROCESS FOR PREPARING N-ALKYLAMINES

Patrick M. Brown, Baltimore, and James M. Maselli, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed March 19, 1971, Ser. No. 126,281
Int. Cl. C07c *85/00, 85/02*

U.S. Cl. 260—585 R **4 Claims**

A process for the manufacture of N-alkylamines from hydrogen, carbon monoxide, and ammonia wherein a catalyst comprising 70–98 weight percent of a Group VIII metal, 0.01–20 weight percent of a Group III metal, and 0.01–20 weight percent of either a Group IA or IIA metal is used.

3,726,927
AROMATIC SULPHONES

Victor Jeffrey Leslie, Potters Bar, and John Brewster Rose, Letchworth, both of England, assignors to Imperial Chemical Industries, Limited, London, Great Britain

Filed July 20, 1970, Ser. No. 56,709

Claims priority, application Great Britain, June 19, 1970, 29,910/70; June 3, 1970, 26,834/70; Feb. 31, 1969, 38,437/69

Int. Cl. C07c *147/06*

U.S. Cl. 260—607 A **1 Claim**

A 4-(4-halophenylsulphonyl)biphenyl (halogen being Cl or F) is a valuable intermediate for preparing aromatic sulphones which are useful as starting materials for polymerization reactions to give polysulphones containing biphenyl residues in the polymer chain.

3,726,928
2,2'-THIOBIS(4,6-DI-TERT.-BUTYLRESOURCINOL)

Charles H. Fuchsman, Cleveland Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Division of Ser. No. 879,559, Nov. 24, 1969, Pat. No. 3,644,649. This application June 1, 1971, Ser. No. 148,968
Int. Cl. C07c *149/38*

U.S. Cl. 260—609 F **1 Claim**

Rodent repellents 2,2'-methylenebis(4,6-di-tert.-butylresorcinol) and 2,2'-thiobis(4,6-di-tert.-butylresorcinol), of which the latter is a novel compound are taught.

3,726,929
PROCESS FOR THE PRODUCTION OF DIHALOPHENOLS

Kenneth Richard Payne, and Malcolm Howard Milnes, both of Chesterfield, England, assignors to Coalite and Chemical Products Limited, Bolsover, near Chesterfield, Derbyshire, England

Filed Feb. 7, 1969, Ser. No. 797,664

Claims priority, application Great Britain, Feb. 9, 1968, 6,574/68

Int. Cl. C07c *39/30*

U.S. Cl. 260—623 R **2 Claims**

Dihalophenols are produced by the alkaline hydrolysis of trihalobenzenes in an organic solvent. The process is effected in the presence of a hydrocarbon effective to entrain reaction water or hinder sublimation of the trihalobenzene, and/or the said solvent is a C_2-C_4 glycol which is removed from the reaction mixture before the dihalophenols are liberated.

3,726,930
PREPARATION OF 3,5-DINITROBENZOTRIFLUORIDE COMPOUNDS

Robert A. Smith, Anaheim; Kirby A. Salisbury, Santa Ana, and Morris A. Leaffer, Palo Alto, all of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Oct. 29, 1970, Ser. No. 85,224
Int. Cl. C07c *79/12*

U.S. Cl. 260—646 **13 Claims**

3,5-Dinitrobenzotrifluoride compounds are prepared by nitration of the corresponding benzotrifluorides with a mixture of oleum and alkali metal nitrate in which the mixture has an SO_3:MNO_3 molar ratio of 1.5 to 2.0. Alternatively a portion of the alkali metal nitrate can be replaced by nitric acid, but the molar ratio of SO_3 to total nitrate remains the same. The reaction takes place at a temperature of up to about 225°C. in relatively short periods of time.

3,726,931

PROCESS OF PREPARING FLUORETHYLENE

Lloyd E. Gardner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 719,712, April 8, 1968, Pat. No. 3,607,955, which is a division of Ser. No. 398,442, Sept. 22, 1964, Pat. No. 3,413,360. This application Dec. 4, 1970, Ser. No. 95,330

Int. Cl. C07c *17/20, 21/18*

U.S. Cl. 260—653.4 **5 Claims**

Hydrofluorination and dehydrofluorination reactions are accomplished over a catalyst bed formed by heating a bed of particles of porous alumina to a temperature of at least 220°F. and flowing therethrough a gaseous mixture of HF and an inert diluent until the hot zone of chemical reaction has passed completely through said bed.

3,726,932

METHOD FOR PREPARING HALOGENATED ALKANES AND ALKENES

Charles R. Mullin, and Donald J. Perettie, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed March 13, 1969, Ser. No. 807,116

Int. Cl. C07c *21/04*

U.S. Cl. 260—654 R **1 Claim**

A method for preparing halogenated alkanes and alkenes which comprises reacting by contacting, for 0.005 to 0.1 seconds at a temperature of 675° to 850°C., a halogenating agent of the formula CCl_xBr_{4-x}, wherein x is an integer from 0 to 4, with a compound of the formula R_2CH_2, wherein each R is H, Cl or Br. The utilization of the above conditions prevents the formation of large amounts of undesirable tars.

3,726,933

ALKALINE EARTH METAL ORGANOMETALLIC COMPOUNDS AND METHOD FOR MAKING THE SAME

Richard R. Smith, Cuyahoga Falls, and Stuart D. Nielsen, Stow, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Jan. 18, 1971, Ser. No. 107,524

Int. Cl. C07f *3/02, 3/04, 3/00*

U.S. Cl. 260—665 R **11 Claims**

Orgoanometallic compounds of high carbanion yield are prepared by metallation with alkaline earth metals such as beryllium, barium, strontium, magnesium, calcium or radium or mixture of the same of certain acidic organic compounds having a pKa value of from about 15 to 35 on the MSAD scale in the presence of protic polar solvents, e.g., barium dissolved in monomethyl amine and reacted with triphenyl methane to yield trityl barium. Such organometallic compounds formed by metal-hydrogen exchange reaction are useful in initiating anionic growth-type polymerization of monomers, e.g., alkylene oxides and vinyl compounds, to form homopolymers and copolymers. The persistence of polymer carbanions created by such catalysts makes possible the controlled preparation of a variety of polymers, including block and telechelic polymers.

3,726,934

PROCESS FOR THE SEPARATION OF STYRENE FROM ETHYL BENZENE

William F. Strazik, St. Ann, and Eli Perry, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 20, 1971, Ser. No. 210,115

Int. Cl. C07c *15/10*

U.S. Cl. 260—669 A **6 Claims**

Styrene is separated from organic mixtures comprising styrene and ethyl benzene by contacting the mixture against one side of a polymeric membrane and withdrawing at the other side a vaporous mixture having increased styrene concentration. The polymer membrane is an acrylonitrile-containing polymer or acrylonitrile-containing polymer blend. Exemplary of the polymer membranes are copolymers of acrylonitrile and acrylic acid, 2-methyl-5-vinylpyridine, isobutylene, isoprene, and styrene and blends of polyacrylonitrile and poly(ethylenimine).

3,726,935

PREPARATION OF 1,6,8-DECATRIENE

Theodore Augur Koch, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 5, 1972, Ser. No. 250,498

Int. Cl. C07c *5/22*

U.S. Cl. 260—677 R **8 Claims**

A method for preparing 1,6,8-decatriene by contacting 1,4,9-decatriene, in the vapor phase and in the absence of oxygen, with an alumina catalyst. Preferred catalysts are promoted with an alkali metal salt.

3,726,936

SELECTIVE HYDROGENATION OVER ALUMINA-SUPPORTED CATALYSTS HAVING SUBSTANTIAL AREA IN LARGE PORES

Emory W. Pitzer, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 16, 1970, Ser. No. 81,600

Int. Cl. C07c *11/02*

U.S. Cl. 260—677 H **10 Claims**

Catalysts comprising iron, nickel or cobalt, and antimony or arsenic supported on alumina having relatively few pores smaller in diameter than 500 A and a surface area not less than 2 M^2/g contributed by pores having diameters larger than about 500 A are used for selective hydrogenation of hydrocarbons.

3,726,937

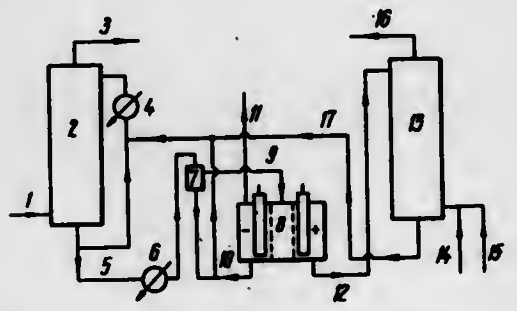
PROCESS FOR THE RECOVERY OF IODINE

Gennady Arkadievich Stepanov, ulitsa Pervomaiskaya, 9, kv. 3; Alexandr Nikitich Bushin, ulitsa Pervomaiskaya, 9, kv. 21, both of Yaroslavl; Yakov Iosifovich Turian, ulitsa Sverdlova, 44, kv. 97, Krasnodar; Yakov Yakovlevich Kirnos, ulitsa Pervomaiskaya, 9, kv. 5, Yaroslavl; Valentin Alexandrovich Kolobikhin, prospekt Lenina, 36, kv. 28, Yaroslavl; Pavla Sergeevna Baranova, prospekt Lenina, 36, kv. 51, Yaroslavl; Vadim Alexeevich Kolpakov, Uglichskoe shosse, 10, kv. 10, Yaroslavl; Vladimir Ivanovich Buralkov, ulitsa Uritskogo, 36, kv. 108, Yaroslavl; Vladimir Ilich Sherashov, ulitsa Tolbukhina, 58/47, kv. 15, Yaroslavl; Jury Nikolaevich Rastvorov, Tutaevskoe shosse, 51, kv. 50, Yaroslavl; Elena Nikolaevna Emelyanova, ulitsa Pervomaiskaya, 11a, kv. 21, Yaroslavl, and Irina Mikhailovna Shishkina, ulitsa Chkalova, 76, kv. 38, Yaroslavl, all of U.S.S.R.

Filed Nov. 18, 1970, Ser. No. 90,519

Int. Cl. C07c *5/20*

U.S. Cl. 260—681.5 R **3 Claims**



A process for the recovery of iodine from the products of iodative dehydrogenation of hydrocarbons containing iodine and hydrogen iodide which consists in processing said products of dehydrogenation of hydrocarbons with an aqueous solution of sodium hydroxide, sodium carbonate or a mixture thereof until a weakly alkaline solution of iodine salts (pH = 8 –10), containing iodide and iodate, is obtained. Said solution of iodine salts is electrolyzed to separately obtain the solutions of iodine and alkali, which contain undecomposed salts of iodine as well. The solution of alkali is recycled to the stage for alkali treatment of dehydrogenation products. Iodine is blown off from its solution by oxygen, an oxygen-containing gas or a mixture thereof with steam and recycled to the stage of dehydrogenation of hydrocarbons, and the solution of iodine salts free of iodine is recycled to the stage for alkali treatment of dehydrogenation products.

The process is continuous. It enables complete recovery of iodine (up to 99.7 –99.9 percent), makes it possible to eliminate the formation of waste and crystalline iodine during the process as well as corrosive medium and dangerously explosive compounds.

3,726,938

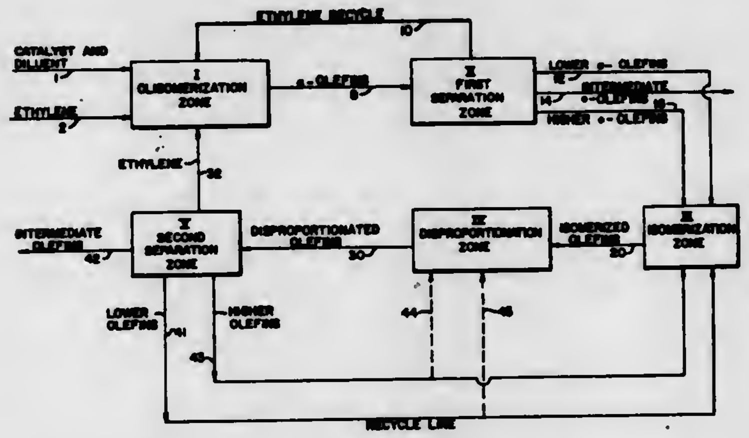
OLEFIN PRODUCTION

Albert J. Berger, 16 Fairview Road, Loundonville, N.Y.

Continuation-in-part of Ser. No. 36,240, May 11, 1970, abandoned. This application Nov. 16, 1971, Ser. No. 201,595

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **8 Claims**



Ethylene is converted to linear monoolefins of a selected range of carbon atoms by (1) oligomerizing ethylene to linear α-olefins (2) separating the linear α-olefins into a lower α-olefin fraction, and intermediate α-olefin fraction of a selected range of carbon atoms and a higher α-olefin fraction (3) recovering the intermediate α-olefin fraction as product (4) isomerizing and disproportionating at least a portion of the lower and higher α-olefin fractions to a mixture of monoolefins (5) separating the mixture of monoolefins into a lower monoolefin fraction, an intermediate monoolefin fraction of a selected range of carbon atoms and a higher monoolefin fraction (6) recovering the second intermediate monoolefin fraction as product, and (7) recycling at least a portion of the lower and higher monoolefin fractions for further isomerization and disproportionation.

3,726,939

DIMERIZATION OF OLEFINS WITH CHROMIUM HALIDE COMPLEX CATALYSTS SYSTEMS

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 778,307, Nov. 22, 1968, Pat. No. 3,627,700, which is a continuation-in-part of Ser. Nos. 635,649, May 3, 1967, abandoned, and Ser. No. 635,700, May 3, 1967, abandoned. This application March 29, 1971, Ser. No. 129,226

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D **11 Claims**

Olefins are dimerized by contacting the olefin with a homogeneous catalyst comprising a chromium halide complex in combination with an ethylaluminum dichloride adjuvant. Additionally, a heterogeneous catalyst is prepared by depositing upon a suitable support the homogeneous combination mentioned above and contacting the olefin to produce dimers thereof.

3,726,940

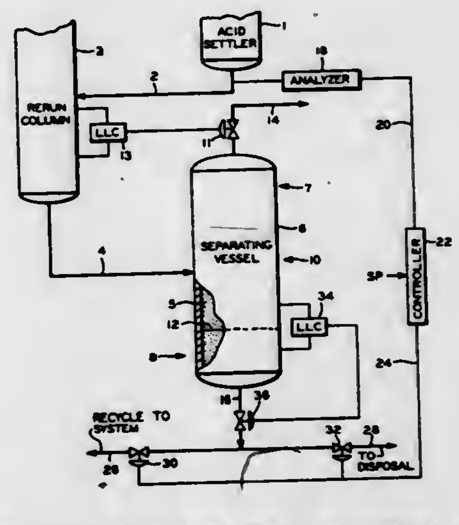
REDUCING HF-WATER PHASE DISPOSAL IN ALKYLATION

William P. Cannady, and Joe Van Pool, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed March 26, 1971, Ser. No. 128,383

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.48 **4 Claims**



A method and apparatus for processing a hydrogen fluoride-containing, analyzed catalytic fluid, separating therefrom a hydrogen fluoride-water phase and recycling or disposing of said phase in response to the concentration of water in the analyzed fluid relative to a desired value of said concentration.

3,726,941

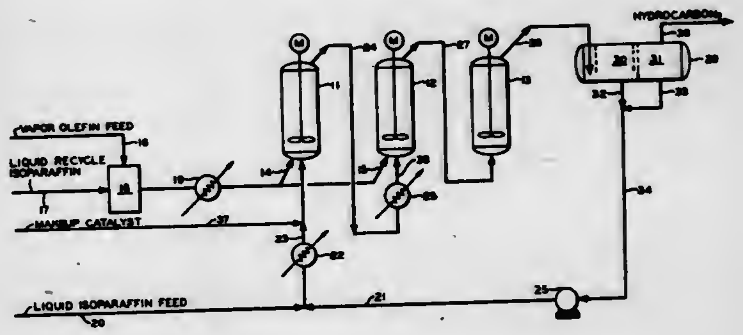
CONTROL OF REACTION TEMPERATURE IN A PLURALITY OF ALKYLATION REACTORS

John H. Randall, and Oliver P. Proctor, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 22, 1971, Ser. No. 117,384

Int. Cl. C07c *3/56*

U.S. Cl. 260—683.57 **5 Claims**



In an alkylation process reacting an isoparaffin and an olefin using a metal halide catalyst, such as isobutane and ethylene in the presence of aluminum chloride complex type catalyst, the catalyst is recovered and recycled as catalyst and as the cooling agent to control the temperature of reaction in a reaction zone. In one embodiment the recovered catalyst is precooled before recycle to a reaction zone, thus reducing the amount of recycle material required for control of reaction temperature.

In another embodiment the effluent from a first reaction zone is cooled prior to being fed with fresh olefin feed and recycle isobutane into a second reaction zone. In another embodiment, the fresh isoparaffin feed is mixed with the recovered catalyst before it is cooled for recycle to reduce the viscosity of the stream and improve heat exchange efficiency.

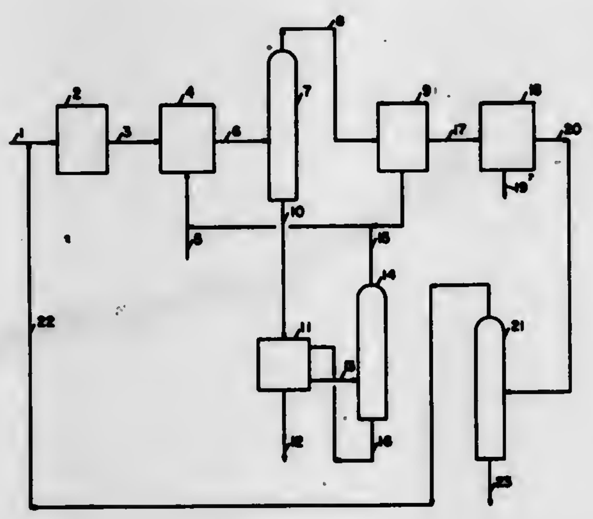
3,726,942
PRODUCTION OF GASOLINE COMPONENTS INCLUDING 2-METHYL-2-METHOXYPROPANE

Kenneth E. Louder, Wilmington, Del., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Nov. 22, 1971, Ser. No. 200,725

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.61 **6 Claims**



Process of producing 2-methyl-2-methoxypropane and alkylate from a stream of mixed C_4's wherein said stream is fed to a dehydrogenation unit, the dehydrogenation unit effluent is fed to an etherification unit along with methanol which selectively reacts with the isobutene present to form 2-methyl-2-methoxypropane. The unreacted C_4's are sent to an alkylation unit where the olefins present react with isobutane to form alkylate. The unreacted products of the process possess a higher overall octane rating than the alkylate which is normally produced.

3,726,943
ETHYLENICALLY UNSATURATED MONOMER POLYMERIZATION WITH SILYL ACYL PEROXIDES AND ACYL PEROXY POLYSILOXANES

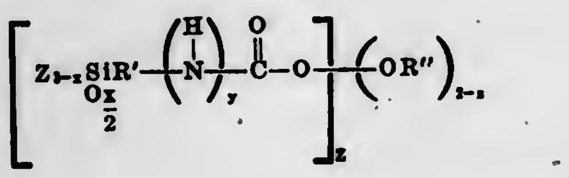
John R. Joy, Stevenson, Md., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 82,817, Oct. 21, 1970. This application Aug. 12, 1971, Ser. No. 171,356

Int. Cl. C08f *35/02*

U.S. Cl. 260—827 **10 Claims**

There is described herein a copolymer formed by the polymerization of a) a polysiloxane of a silyl acylperoxy compound containing at least one of the following structures;

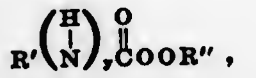


$$\left[Z_{3-x}\underset{O_{\frac{x}{2}}}{Si}R'-\left(\overset{H}{\underset{|}{N}}\right)_y-\overset{O}{\overset{\|}{C}}-O-\right]_z\left(OR''\right)_{2-z}$$

wherein R′ is an alkylene, aralkylene or alkarylalkylene radical, R″ is an alkyl or aralkyl radical, Z is a monovalent hydrolyzable radical or monovalent organic radical bonded to the silicon atom by a carbon to silicon bond and wherein *x* is an integer from 0 to 3 inclusive, and provided that when *x* is greater than zero, the oxygen atom is in turn bonded to another silicon whereby to form a siloxane, wherein said siloxane and any remaining siloxane units in said siloxane composition are of the formula;

$$Z'_wSiO_{\frac{4-w}{2}}$$

wherein Z′ is Z or



$$R'\left(\overset{H}{\underset{|}{N}}\right)_y\overset{O}{\overset{\|}{C}}OOR'',$$

wherein Z, R′, R″ and *y* are as herein defined and *w* is 1 to 3 inclusive; *y* is 0 to 1, and *z* is 1 or 2; with the proviso that when *y* is 0, the acyl carbonyl carbon is bonded to R′, the R′ having at least 2 sequential carbon atoms separating the acyl carbonyl carbon atom from the silicon atom; with the further proviso that when *y* is 1, *z* is 1 and the nitrogen atom is bonded to a carbon atom of R′, the R′ having at least 3 sequential carbon atoms separating the nitrogen from the silicon atom, and b) an ethylenically unsaturated monomer.

3,726,944
RESILIENT MATERIAL OF PARTICULATE RUBBER IN A BINDER OF BUTADIENE AND COUMARONL INDENE POLYMERS

Richard J. Bennett, and Duane W. Gagle, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed March 10, 1971, Ser. No. 123,049

Int. Cl. C08f *39/00*

U.S. Cl. 260—829 **9 Claims**

An article of manufacture and a process for producing same is provided. The article is comprised of discrete particulate matter bound into a solid resilient mass by a binder material comprised of a butadiene-styrene copolymer and a tackifying resin.

3,726,945
HOMOGENEOUS MIXTURES OF POLYAMIDES AND HYDROXYL-CONTAINING POLYOLEFINES

Ludwig Bottenbruch; Dietrich Michael, and Werner Nielinger, all of Krefeld Bockum, Germany, assignors to Farbenfabriken Bayer AG, Krefeld-Bockum, Germany

Continuation-in-part of Ser. No. 28,562, April 14, 1970, abandoned. This application Feb. 11, 1972, Ser. No. 225,619

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 L **5 Claims**

The invention relates to homogeneous injection mouldable compositions which comprise 70 to 99.9 percent by weight of a polyamide and 0.1 to 30 percent by weight of a hydroxyl-containing polyolefine. Saponified copolymers of ethylene and vinyl acetate are suitable for use as hydroxyl-containing polyolefines.

3,726,946
POLYVINYLCHLORIDE MODIFIED BY A GRAFT COPOLYMER OF VINYL CHLORIDE ONTO POLYPENTENAMER

Febo Severini; Alberto Valvassori, both of Milan, and Alberto Pagliari, Saronno, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Feb. 23, 1971, Ser. No. 118,097

Claims priority, application Italy, Feb. 24, 1970, 21025 A/70

Int. Cl. C08f *39/00*

U.S. Cl. 260—876 R **4 Claims**

There are disclosed new, high-impact resistant compositions based on polyvinylchloride and comprising graft copolymers of vinyl monomers and certain rubbery polyalkenamers having a narrow molecular weight distribution. Unexpectedly, the graft copolymers function to improve the mechanical properties, more particularly the impact resistance, of the compositions, as compared to polyvinylchloride, per se.

That polyvinylchloride tends to be brittle and to have relatively low impact resistance is well known. In the past, it has been attempted to overcome the brittleness of polyvinylchloride, and its relatively low impact resistance by incorporating various plasticizers with it. A problem has been the tendency of the plasticizers to "bleed," a result of a basic incompatibility of the polyvinylchloride and the plasticizers available.

3,726,947
PHOSPHORUS UREAS

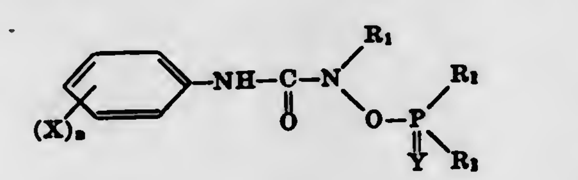
Hans Moser, Basle, and Christian Vogel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 28, 1970, Ser. No. 41,638

Int. Cl. C07f *9/08*; **C07c** *127/18*; **A01n** *9/36*

U.S. Cl. 260—938 **3 Claims**

N-(Alkoxy-phosphinyloxy)- and N-(alkoxy-phosphinothioyloxy)-N-alkyl-N′-substituted ureas of the formula



(I)

In this formula:

R_1 represents methyl or ethyl,

R_2 and R_3 each independently represent a lower alkoxy or dialkylamino radical,

X represents a lower alkyl, alkoxy, alkylthio or halogenoalkyl radical, halogen or the cyano group,

Y represents oxygen or sulfur, and

n represents a number from 0 to 3,

which are useful as herbicides in a method for controlling weeds and wild grasses are described. Compositions containing such compounds are also described.

3,726,948
PHOSPHONAMIDOTHIOATES

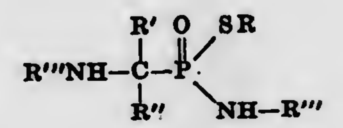
Marion F. Botts, Independence, Mo., assignor to Chemagro Corporation, Kansas City, Mo.

Filed May 28, 1970, Ser. No. 41,650

Int. Cl. A01n *9/36*; **C07f** *9/44*

U.S. Cl. 260—944 **7 Claims**

Compounds of the formula



in which

R is alkyl of one to seven carbon atoms or cyclohexyl,

R′ and R″ each individually is alkyl of one to six carbon atoms, phenyl, 2-thienyl, p-tolyl or R′ and R″ taken together with the adjacent carbon atom form a cyclopentyl group, and

each R‴ is the same or a different alkyl or alkenyl of one to seven carbon atoms, arylalkyl, cycloalkyl having five or six ring carbon atoms, furfuryl, tetrahydrofurfuryl, alkylthioalkyl or alkoxyalkyl, which are useful as herbicides and growth regulants, and process for their preparation.

3,726,949
ALKYL(PHENYL-(4-) SUBSTITUTED 2,2-DICHLOROVINYL PHOSPHATES

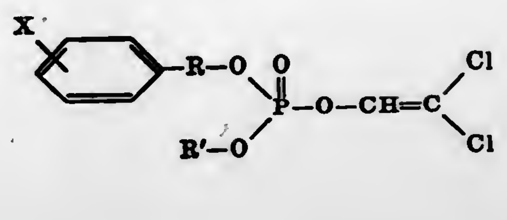
Marvin H. Goodrow, San Diego, Calif., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 819,978, April 28, 1969, abandoned. This application July 29, 1971, Ser. No. 167,512

Int. Cl. A01n *9/36*; **C07f** *9/08*

U.S. Cl. 260—951 **9 Claims**

Internal helminth parasites of warm-blooded animals are controlled by compounds having the formula:



wherein X is a member of the group consisting of hydrogen, methoxy, chlorine or fluorine and R is a C_4 hydrocarbon which may be saturated or unsaturated and R′ is an alkyl group of one to three carbon atoms.

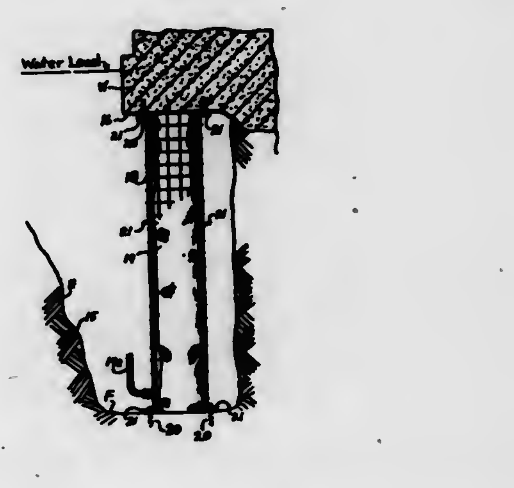
3,726,950
METHOD FOR PRODUCING SUB-AQUEOUS AND OTHER CAST-IN-PLACE CONCRETE STRUCTURES IN SITU

Lee A. Turzillo, 2078 Glengary Road, Akron, Ohio

Continuation-in-part of Ser. No. 647,026, June 19, 1967, abandoned. This application Jan. 2, 1970, Ser. No. 44

Int. Cl. E04b *1/32*, *1/36*

U.S. Cl. 264—32 **33 Claims**



Method for repairing or forming structural bodies of self-hardening fluid cement mortar, in a sub-aqueous or other situs, utilizing body-forming cavity including body-shaping walls of porous fabric in combination with openwork matrix means. Fluid mortar or like cementitious material pumped into cavity to fill same and expand fabric walls against tensional restraint of fixedly maintained matrix means. Pressure of fluid material continued against restraint of matrix means until small proportions of fluid material oozes into the porous fabric, and indicates attainment of lowered water-cement ratio in formed body, and then fluid material is allowed to set and harden in said given formed shape.

Some, if not all, forms of the invention are particularly useful for under-water installations, such as breakwaters because forming matrices thereof are capable of withstanding rough seas or storm waves without damage during the construction processes, and because the fluid cement mortar pumping operations are possible in minimum of time when rough water conditions subside.

3,726,951

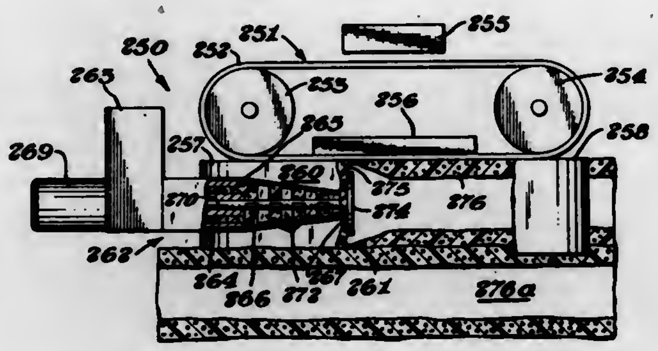
METHOD FOR PREPARING WALLED STRUCTURES FROM FOAMABLE THERMOSETTING SYNTHETIC RESINOUS MATERIAL

Hubert S. Smith, Bay City, and Donald R. Wright, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 785,417, Oct. 7, 1968, abandoned, which is a division of Ser. No. 513,998, Dec. 15, 1965, Pat. No. 3,443,276. This application June 11, 1970, Ser. No. 45,597

Int. Cl. B29d *27/04*

U.S. Cl. 264—46 **10 Claims**



Walled structures are prepared of foam-in-place plastic material employing a depositing head having a pair of opposed side forming belts on top of the forming belts which are driven at a predetermined rate. Foamable material is passed to the channel formed by the belts as the depositing or foaming head progresses about the structure.

3,726,952

METHOD OF MOLDING INTERGRAL SKIN POLYURETHANE FOAMS HAVING MOLD RELEASE PROPERTIES

Heinrich Boden, Opladen; Wulf Von Bonin; Helmut Kleimann, and Harald Mergard, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft

Filed Oct. 21, 1970, Ser. No. 82,793

Claims priority, application Germany, Oct. 24, 1969, P 19 53 637.9

Int. Cl. B29d *27/04;* **G08g** *22/36;* **C08g** *22/44*

U.S. Cl. 264—48 **7 Claims**

A process is disclosed which eliminates the necessity of applying a mold release agent to the mold when producing integral skinned polyurethane foam moldings in closed molds. This is accomplished by incorporating in the foamable reaction mixture an additive, which imparts mold release properties, said additive containing at least 25 aliphatic carbon atoms and being the salt of an aliphatic carboxylic acid and either a primary amine or an amine which contains either amide or ester groups.

3,726,953

METHOD OF FORMING SHEET MATERIAL

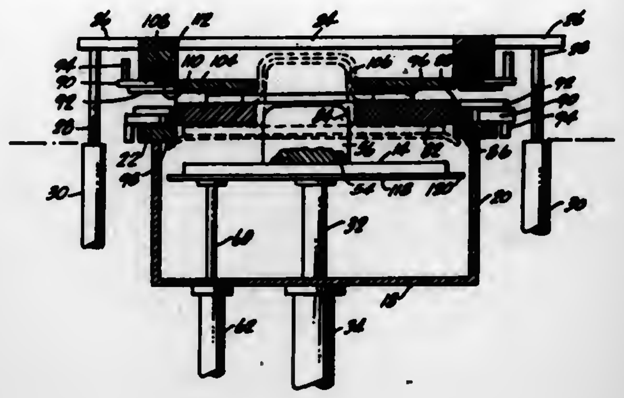
Robert M. Jones, Fullerton, and Howard G. Nourse, Palos Verdes, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Division of Ser. No. 733,016, May 29, 1968, Pat. No. 3,570,067. This application June 3, 1970, Ser. No. 54,029

Int. Cl. B29c *17/04*

U.S. Cl. 264—89 **2 Claims**

Upright airtight chamber with open upper end houses vertically moving platen carrying form block. First draw ring mounted on rim of chamber with aperture corresponding to form block. Second draw ring with corresponding aperture above first ring and movable up and down to load and slidably grip heat-softened sheet of thermoplastic material between rings. Form block passes up through apertures to flow-form sheet. Pressure and vacuum means to blow-form sheet up or down into dome shape before form block is actuated. When forming is virtually complete, vacuum may be applied instantaneously to snap sheet back on form block for accurate shaping.



3,726,954

METHOD OF FILLING MOLDS WITH FIBROUS MATERIAL

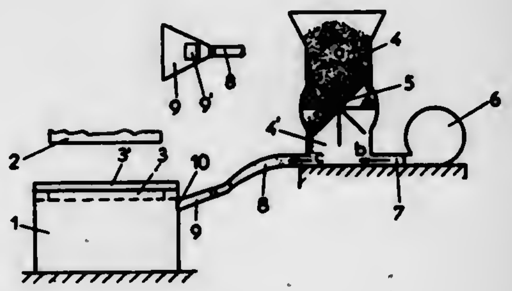
Edmund Munk; Herbert Haas, both of In den Klaeren 25, and Gerd Weinberg, Lerchenweg 14, all of Oberstenfeld, Germany

Continuation of Ser. No. 655,024, July 21, 1967, abandoned. This application Oct. 7, 1970, Ser. No. 78,959

Claims priority, application Germany, July 29, 1966, F 49820

Int. Cl. B65b *1/16, 39/04*

U.S. Cl. 264—121 **6 Claims**



The nonflowing molding materials are blown into the mold cavity which has a screen defining one surface of the article to be molded. The materials first fill up the remote areas of the cavity as the carrying air vents through the screen. As the cavity fills up to the feeding nozzle, a vent flap in the nozzle body opens up, allowing the carrying air to vent through the screened opening exposed by the flap until the mold is completely filled and the air is cut off.

3,726,955

PROCESS FOR PRODUCING FILAMENTS AND YARNS OF BLENDED INCOMPATIBLE POLYMERS

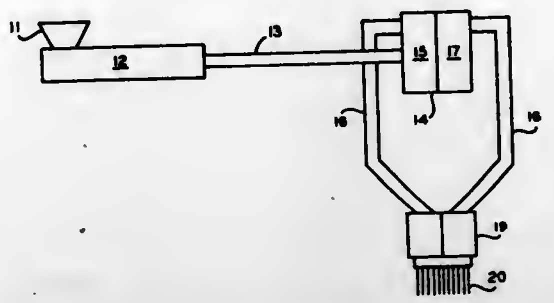
James K. Hughes; Albert F. Stegelman, both of Greenville, S.C., and Louis C. Bearer, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 11, 1971, Ser. No. 105,500

Int. Cl. B29f *3/10;* **D01d** *5/22*

U.S. Cl. 264—171 **6 Claims**

Conjugate filaments the components of which are comprised of the same constituents in dissimilar relative concentrations are produced by allowing the constituents of the molten stream of blended incompatible polymers partially to segregate in a forced flow conduit so that material removed from the outer periphery of the stream near the wall of the conduit will be of different relative concentration of constituents than material remaining near the center of the conduit and then removing separate streams of partially segregated material which are fed through suitable spinnerets to produce conjugate filaments. In another embodiment yarns the filaments of which are comprised of the same constituents in dissimilar relative concentrations are produced in the same manner.



3,726,956

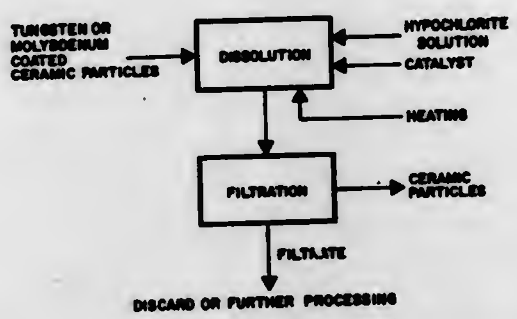
METHOD FOR DISSOLVING MOLYBDENUM AND TUNGSTEN

Gary L. Silver, 30 Bradstreet Road, Apt. 6, Centerville, Ohio

Filed Feb. 23, 1972, Ser. No. 228,614

Int. Cl. C01g *56/00*

U.S. Cl. 423—4 **4 Claims**



Method of dissolving tungsten or molybdenum materials such as molybdenum coatings from fissionable materials such as nuclear fuel ceramic particles by contacting the molybdenum with sodium hypochlorite (NaClO) solution until desired dissolution is generally complete.

3,726,957

CONVERSION OF METAL SULFATES TO SULFUR AND SUBSTANTIALLY SULFIDE-FREE SOLID

Wilton H. Lind, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 17, 1971, Ser. No. 116,049

Int. Cl. C01f *11/08*

U.S. Cl. 423—170 **8 Claims**

The invention is a method of producing a sulfur-containing product substantially wholly in the form of elemental sulfur and a substantially sulfur-free solid from a metal sulfate of formula $M_x(SO_4)_y$, where M is a metal, x and y are integers, and $2y$ equals the valence of M multiplied by x. The process comprises contacting a metal sulfate containing material with a reducing gas which includes carbon monoxide and carbon dioxide, using in the contacting at least enough carbon monoxide to provide a mole ratio of total carbon monoxide contacted to total metal sulfate contacted of at least $3y$, maintaining during the contacting a mole ratio of carbon dioxide to carbon monoxide of at least 1, maintaining during the contacting the concentration of carbon monoxide in the reducing gas at greater than .5 volume percent and substantially excluding sulfur dioxide from the feed to the reducing zone. The process is preferably carried out for a time sufficient to convert at least 90 percent of the metal sulfate to sulfur and a substantially sulfur-free solid. The preferred metal sulfate comprises calcium sulfate.

3,726,958

REDUCTION OF SO_2 IN GAS MIXTURES

Eugene L. Holt, Elmhurst, N.Y., and Albert B. Welty, Jr., Westfield, N.J., assignors to Esso-Research and Engineering Company

Filed Feb. 22, 1971, Ser. No. 117,628

Int. Cl. C01b *17/04*

U.S. Cl. 423—243 **9 Claims**

A sulfur dioxide-rich off gas stream obtained, as for example, by regeneration of a flue gas desulfurization sorbent, is treated with a hydrocarbon oil in the liquid phase at a temperature of about 250 F. to about 800°F. in order to reduce the sulfur dioxide. The hydrocarbon oil is preferably an inexpensive refinery stream, e.g., gas oil, catalytic cycle stock, or residuum. Hydrogen sulfide formed in the reduction can be reacted with a further quantity of sulfur dioxide to form elemental sulfur. At least a portion of the hydrocarbon oil after reaction with sulfur dioxide may be burned in a furnace in which flue gas containing sulfur dioxide is formed.

3,726,959

PROCESS FOR MAKING SODIUM PERBORATE TETRAHYDRATE

Helmut Honig, Sehnde; Helmut Dillenburg, Bad Honningen, and Rudolf Siegel, Niederbieber, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hanover, Germany

Filed Jan. 28, 1971, Ser. No. 110,668

Claims priority, application Germany, Jan. 30, 1970, P 20 04 158.1

Int. Cl. C01b *15/12*

U.S. Cl. 423—281 **8 Claims**

Sodium perborate tetrahydrate is made by reacting, in solution, metaborate with hydrogen peroxide. Up to the time when crystallization sets in the reaction partners being used in a stoichiometric amount or hydrogen peroxide being present in a barely stoichiometric amount or in a slight excess, the temperature of the reaction is maintained at at least 15°C and the component solutions are employed in concentrations so as to provide for formation of 90–160 g per liter of starting solution of sodium perborate tetrahydrate. Once crystallization has started, the precipitation is continued with an excess of sodium metaborate and the mass is cooled so as to cause a temperature drop. After crystallization is complete, the precipitated sodium perborate is then separated out and dried.

The product is pourable, abrasion-resistant and has a low bulk density.

3,726,960

SODIUM ALUMINUM PHOSPHATE CHEESE EMULSIFYING AGENT

Russell N. Bell, Ardsley, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed May 6, 1970, Ser. No. 35,268

Int. Cl. C01b *15/16, 25/26*

U.S. Cl. 423—306 **4 Claims**

The invention provides a composition which is useful as a cheese emulsifying agent, and the process for making the same. The composition has the empirical formula:

$$Na_8Al_2(OH)_2(PO_4)_4$$

3,726,961

CALCINATED SODIUM ALUMINUM PHOSPHATE, A METHOD OF PREPARING THE SAME AND DENTIFRICE COMPOSITIONS CONTAINING THE SAME

Julian E. Blanch, Stamford, Conn.; William J. Kirkpatrick, Peekskill, and Thomas J. Sayers, Yonkers, both of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 753,851, Aug. 20, 1968, abandoned. This application March 23, 1971, Ser. No. 127,372

Int. Cl. C01b *15/16, 25/26*

U.S. Cl. 423—306 **7 Claims**

An alkali metal aluminum acid orthophosphate that is prepared by reacting an alkali metal compound and a reactive trivalent inorganic aluminum compound with aqueous phosphoric acid to form a crystalline product. The crystalline product is then calcined at a temperature ranging between 300° and 600° C. The calcined product is unexpectedly insoluble in aqueous solutions and exhibits excellent characteristics as a polishing agent when combined with dentifrice formulations.

3,726,962

SODIUM ALUMINUM PHOSPHATE AND PROCESS FOR PREPARATION

Reginald E. Vanstrom, Dobbs Ferry, N.Y., and Julian E. Blanch, Stamford, Conn., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 815,209, April 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 649,782, June 2, 1967, abandoned. This application April 29, 1971, Ser. No. 138,804

Int. Cl. C01b *25/36, 25/26, 25/30*

U.S. Cl. 423—306 **4 Claims**

A compound of the general formula:

$$Na_3Al_2H_{15}(PO_4)_8 \cdot 2.5H_2O$$

and process for preparing said compound which comprises reacting a sodium compound selected from sodium hydroxide, sodium carbonate, sodium aluminate and sodium orthophosphate; a trivalent aluminum compound selected from sodium aluminate and hydrated alumina; and a phosphorus containing compound selected from orthophosphoric acid and sodium orthophosphate, said reaction being conducted in the presence of a minor amount of water at a temperature between about 75°C. and about 105°C. wherein the reactants are present in an amount sufficient to provide a sodium aluminum acid orthophosphate with an atomic ratio of Na:Al:P of about 3:3:9.

3,726,963

PRODUCTION OF BARIUM CARBONATE FROM BARIUM SULFATE

Jens Tiedemann, Hurth-Burbach, and Heinz Harnisch, Lovenich, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed March 30, 1971, Ser. No. 129,579

Claims priority, application Germany, May 2, 1970, P 20 21 662.0

Int. Cl. C01f *11/18*

U.S. Cl. 423—431 **6 Claims**

Production of barium carbonate by treatment of barium sulfate with an excess of an aqueous sodium carbonate solution under pressure and at temperatures higher than 100° C. The starting material is an aqueous barium sulfate suspension which contains sodium carbonate together with a phosphorus compound dissolved therein.

3,726,964

PROCESS FOR THE PRODUCTION OF CARBON BLACK

Joseph C. Krejci, Phillips, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 18, 1970, Ser. No. 90,585

Int. Cl. C09c *1/50*

U.S. Cl. 423—455 **7 Claims**

Carbon black is produced by the pyrolytic decomposition of a hydrocarbon feed with hot combustion gases, at least a portion of the hydrocarbon feed being introduced into the reactor at supersonic velocity. The process is preferably conducted in a vertical reactor by injecting the hydrocarbon feedstream downward into the reactor into the hot combustion gases and the reaction mass passed through the carbon black formation zone at a velocity of about 3.5 to about 11 feet per second, a temperature of about 2,400° F to about 2,500° F, and a pressure of about 15 psia to about 30 psia. Nozzels for introducing the hydrocarbon feed at supersonic velocity or a combination of supersonic and subsonic velocities are disclosed.

3,726,965

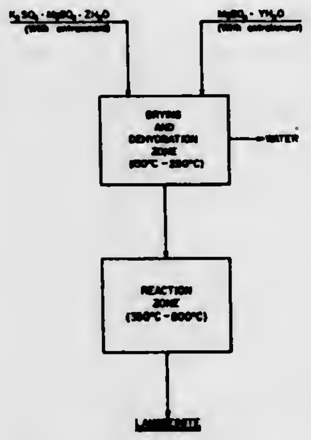
PRODUCTION OF LANGBEINITE FROM A POTASSIUM MAGNESIUM SULFATE SALT AND MAGNESIUM SULFATE

Ulrich E. G. Neitzel, Ogden, and Frederick J. Andreasen, Brigham City, both of Utah, assignors to Irving Trust Company

Filed Feb. 19, 1971, Ser. No. 116,871

Int. Cl. C01d *5/12, 5/00;* **C01f** *5/40*

U.S. Cl. 423—551 **16 Claims**



A process for producing langbeinite comprising reacting a solid potassium magnesium sulfate salt and magnesium sulfate at temperatures above about 350° C. Potassium magnesium sulfate salts such as schoenite ($K_2SO_4 \cdot MgSO_4 \cdot 6H_2O$) or leonite ($K_2SO_4 \cdot_4 \cdot 4H_2O$) when admixed with magnesium sulfate, for example, a magnesium sulfate hydrate such as epsomite ($MgSO_4 \cdot 7HO$), and heated to temperatures above 350° C produce a substantially anhydrous, non-hygroscopic reaction product which is substantially pure langbeinite ($K_2SO_4 \cdot 2MgSO_4$) when at least equimolar quantities of the potassium magnesium sulfate salt and magnesium sulfate are utilized and the reaction is carried to completion.

3,726,966

BARIUM PROMOTED IRON OXIDE FOR USE AS A CATALYST IN STEAM-IRON PROCESS FOR PRODUCING HYDROGEN

Harlin D. Johnston, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 6, 1970, Ser. No. 78,566

Int. Cl. C01b *1/08*

U.S. Cl. 423—658 **4 Claims**

Barium is incorporated with iron oxide to prepare a catalyst or contact mass for use in steam-iron process for producing hydrogen. A process for producing hydrogen using such catalyst is set forth.

ERRATUM

For Class 423—15 see:
Patent No. 3,726,650

3,726,967

DRY, FREE-FLOWING HAIR BLEACHING COMPOSITION

Fritz Artur Vorsatz, and Adolf Friedrich Risch, both of Karlsruhe, Germany, assignors to Societe anonyme dite: L'Oreal, Paris, France

Filed May 14, 1970, Ser. No. 37,318

Int. Cl. A61k *7/12*

U.S. Cl. 424—62 **3 Claims**

An essentially dry, free-flowing bleaching composition comprises granules of an essentially homogeneous mixture of discrete particles including a bleaching agent such as a per salt and a binding agent such as polyvinylpyrrolidone or glucose.

3,726,968

THE INHIBITION OF PERSPIRATION WITH SODIUM TETRAPHENYLBORON

Maurice E. Loomans, Green Township, Hamilton Cty., Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed March 5, 1971, Ser. No. 121,591

Int. Cl. A61k *7/00*

U.S. Cl. 424—65 **2 Claims**

Antiperspirant compositions containing sodium or lithium tetraarylboron compounds as antiperspirant agents.

3,726,969

ACCELERATING THE LYSIS OF BLOOD CLOTS WITH UROKINASE AND A BENZYLAMINE DERIVATIVE

Robert Phillip Johnson, Jacksonville, Fla., and James Harold Short, Lake Forest, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 761,821, Sept. 23, 1968, abandoned. This application June 9, 1971, Ser. No. 151,481

Int. Cl. A61k *19/00*

U.S. Cl. 424—94 **10 Claims**

Benzylamine and simple ring-substituted derivatives thereof have been found to potentiate blood clot lysis induced by urokinase when a combination of urokinase and these (substituted) benzylamines are brought in contact with clots of blood from vertebrate animals.

3,726,970

SYNERGISTIC ANTI-BACTERIAL AND ANTI-FUNGAL COMPOSITIONS CONTAINING AN ALKALI METAL SALT OF 2-MERCAPTOPYRIDINE-1-OXIDE AND AN ALKALI CHROMATE

Guenter K. Weisse, Northford, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 786,410, Dec. 23, 1968, abandoned. This application Feb. 12, 1971, Ser. No. 115,074

Int. Cl. A01n *11/00, 9/22*

U.S. Cl. 424—131 **10 Claims**

This invention relates to synergistic anti-bacterial and anti-fungal compositions comprising mixtures of an alkali metal salt of 2-mercaptopyridine-1-oxide and an alkali metal chromate in the amounts of about 1.5:1 to about 1:7 parts by weight of the mercaptopyridine salt to the chromate salt.

3,726,971

ALKENE-NITRILE-PROTEIN COMPLEX AS A RUMINANT FEED MATERIAL

Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 27, 1970, Ser. No. 84,476

Int. Cl. A61k *21/00;* **A23k** *1/18*

U.S. Cl. 424—177 **2 Claims**

Improved protein feed material for ruminants which is resistant to digestive breakdown in the rumen but not in the abomasum and/or intestines which comprises the reaction product of a protein-containing feed material and an alkene nitrile. Exemplary of such alkene nitriles is acrylonitrile.

3,726,972

HALOSILANE-PROTEIN CROSSLINK AS RUMINANT FEED MATERIAL

Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 27, 1970, Ser. No. 84,513

Int. Cl. A27k *1/00*

U.S. Cl. 424—177 **4 Claims**

Improved protein feed material for ruminants which is resistant to digestive breakdown in the rumen but not in the abomasum and/or intestines which comprises the reaction product of a protein-containing feed material and a halosilane. Exemplary of such halosilanes is trimethyl chlorosilane.

3,726,973

1-ALKOXY(-ALK ENYLOXY,-PHENOXY)-1-THIONO-3-CHLORO(3-ALKYL) PHOSPHOLINES COMPOSITIONS AND THEIR USE

Reinhard Schliebs, Koeln-Flittard; Hanshelmut Schlor, Wuppertal, and Bernhard Homeyer, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 830,122, June 3, 1969, Pat. No. 3,644,598. This application Aug. 20, 1971, Ser. No. 173,677

Claims priority, application Germany, June 14, 1968, P 17 68 662.3

Int. Cl. A01n *9/36*

U.S. Cl. 424—209 **12 Claims**

Compositions comprising 1-alkoxy(-alkenyloxy,-phenoxy)-1-thiono-3-chloro(3-alkyl) phospholines, i.e., 1-(alkoxy, alkenyloxy, chloroalkoxy, alkylphenoxy, alkylmercaptophenoxy and chloro-substituted phenoxy)-3-(chloro and alkyl)-Δ^3 and Δ^2-phospholines, and their use in combating nematodes, arthropods, especially acarids and insects, and fungi.

3,726,974

INSECTICIDAL AND ACARICIDAL METHODS USING OXIMINO PHOSPHATES AND PHOSPHONATES

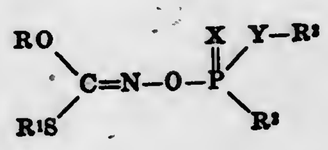
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 26,070, April 6, 1970, Pat. No. 3,660,541. This application Jan. 20, 1972, Ser. No. 219,548

Int. Cl. A01n *9/36*

U.S. Cl. 424—210 **6 Claims**

Compounds having the formula



$$(RO)(R^1S)C{=}N{-}O{-}P({=}X)(Y{-}R^3)(R^2)$$

in which X is oxygen or sulfur; Y is oxygen or sulfur; R is alkyl; R^1 is alkyl; R^2 is alkyl or alkoxy and R^3 is (1) phenyl, or (2) mono-, di- or tri- substituted phenyl wherein the substituent is (a) nitro or (b) halogen, and their use as insecticides, and acaricides are disclosed.

3,726,975
SYNERGISTIC INSECTICIDAL COMPOSITIONS OF O,O-DIMETHYL-5-(N-METHYL-CARBAMOYLMETHYL)-THIOL-THIONOPHOSPHATE AND AN O,O-DIALKYL-DITHIOPHOSPHORYL-ACETIC ACID DERIVATIVE

Denis Bassand, Binningen, Switzerland, assignor to Sandoz Ltd., (also known as Sandoz AG), Basel, Switzerland

Continuation-in-part of Ser. Nos. 786,382, Dec. 23, 1968, abandoned, and Ser. No. 23,075, March 26, 1970, abandoned. This application Aug. 19, 1971, Ser. No. 173,241

Claims priority, application Switzerland, Jan. 4, 1968, 85/68; April 3, 1969, 5159/69

Int. Cl. A01n *9/02, 9/36*

U.S. Cl. 424—211 **8 Claims**

Insecticidal compositions comprising O,O-dimethyl-S- (N-methyl-carbamoylmethyl)-thiol-thionophosphate and an O,O-dialkyl-dithiophosphoryl-acetic acid or a lower alkyl ester thereof.

3,726,976
TREATMENT OF ARTHRITIS WITH COMBINATIONS OF ANTIHISTAMINIC COMPOUNDS AND DIURETICS

Joseph Glasser, 8801 Shore Road, Brooklyn, N.Y.

Filed March 20, 1968, Ser. No. 714,413

Int. Cl. A61k *27/00*

U.S. Cl. 424—246 **8 Claims**

Therapeutic treatment of arthritis. Involves internally administering specified antihistaminic compounds in conjunction with specified diuretic compounds.

3,726,977
2-NITRO-11-(1-PIPERAZINYL)-DIBENZ (B,F) (1,4) OXAZEPINES COMPOSITIONS IN THE TREATMENT OF DEPRESSION

Jean Schmutz, Muri; Fritz Hunziker, and Franz Martin Kunzle, both of Berne, all of Switzerland, assignors to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 57,316, July 22, 1970, which is a continuation-in-part of Ser. No. 797,281, Feb. 6, 1969, Pat. No. 3,546,226, which is a continuation-in-part of Ser. Nos. 371,123, May 28, 1964, abandoned, and Ser. No. 712,956, March 14, 1968, abandoned. This application Nov. 1, 1971, Ser. No. 194,515

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **3 Claims**

Pharmaceutical compositions containing 2-nitro-11-(1-piperazinyl)-dibenz [b,f] [1,4] oxazepine or its pharmaceutically acceptable acid addition salts are useful in the treatment of depression.

3,726,978
TETRAHYDROPYRIDAZINES AND PYRIDAZINONES AS ANTI-INFLAMMATORY AGENTS

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 680,002, Nov. 2, 1967, Pat. No. 3,586,681, which is a continuation-in-part of Ser. No. 566,719, July 21, 1966, abandoned. This application Jan. 11, 1971, Ser. No. 105,605

Int. Cl. A61k *27/00, 27/12*

U.S. Cl. 424—250 **11 Claims**

1-Lower alkyl-3-substituted-1,4,5,6-tetrahydropyridazines, and the corresponding 2-lower alkyl-6-substituted-4,5-dihydro-3(2H)-pyridazinones are useful as anti-inflammatory agents.

3,726,979
METHOD OF PRODUCING SEROTONIN ANTAGONISM

Enrique Hong, Calzada Xochimilco 77, Mexico

Filed April 9, 1971, Ser. No. 132,912

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **10 Claims**

Certain quinazolinedione derivatives have been found to be effective serotonin antagonists when administered to warm blooded animals either orally or parenterally.

3,726,980
PHARMACEUTICAL PREPARATIONS CONTAINING ANILIDES OF QUINUCLIDINE-2-AND QUINUC LIDINE-3-CARBOXYLIC ACID AND METHODS FOR USING THEM

Rune Verner Sandberg, Badstigen 10, Jarna; Berndt Olof Harald Sjoberg, Kummelvagen 24, Sodertalje, and Claes Philip Tegner, deceased, late of Hovslagarvagen 21, Sodertalje, Sweden (by Gunnel Margareta Tegner, heiress)

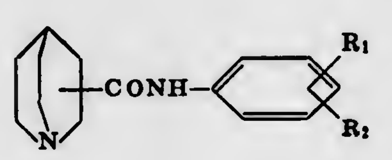
Continuation-in-part of Ser. No. 729,947, May 17, 1968, Pat. No. 3,579,523. This application Oct. 26, 1970, Ser. No. 84,142

Claims priority, application Sweden, May 23, 1967, 7251/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **13 Claims**

Pharmaceutical preparations containing anilides of quinuclidine-2- and quinuclidine-3-carboxylic acid of the formula



(I)

and their therapeutically acceptable acid addition salts, wherein R_1 and R_2 may be the same or different and represent hydrogen, halogen, or alkyl having at most three carbon atoms. These preparations are particularly useful in dosage form for anesthetizing animal tissue and in treating arrhythmia in animals, including man.

3,726,981
GLYCIDAMIDES

Carolyn M. Quick, Manteca, Calif., assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 5,109, Jan. 22, 1970, Pat. No. 3,646,211. This application Oct. 8, 1971, Ser. No. 187,884

Int. Cl. A61k *27/00*

U.S. Cl. 424—278 **4 Claims**

2-Phenylglycidamides such as 3-chloro-2-(2,4-dichlorophenyl) glycidamide, are described. The compounds have utility in the polymer field and also possess useful biological activity.

3,726,982
GLYCIDAMIDES FOR INDUCING A SEDATIVE RESPONSE

Carolyn M. Quick, Manteca, Calif., assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 5,109, Jan. 22, 1970, Pat. No. 3,646,211. This application Oct. 8, 1971, Ser. No. 187,883

Int. Cl. A61k *27/00*

U.S. Cl. 424—278 **4 Claims**

2-Phenylglycidamides such as 3-chloro-2-(2,4-dichlorophenyl) glycidamide, are described. The compounds have utility in the polymer field and also possess useful biological activity.

3,726,983
PHARMACEUTICAL COMPOSITIONS COMPRISING TETRAHYDROPYRAN-2'-YL PROSTAGLANDIN ETHERS

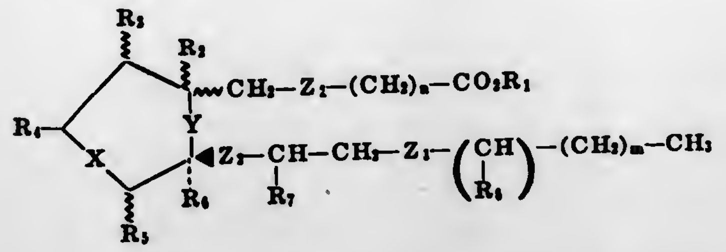
Ned M. Weinshenker, Sunnyvale, Calif., and Niels H. Andersen, Seattle, Wash., assignors to ALZA Corporation

Filed May 14, 1971, Ser. No. 143,583

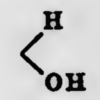
Int. Cl. A61k *27/00*

U.S. Cl. 424—283 **20 Claims**

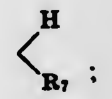
Novel pharmaceutical compositions comprising compounds of the formula



wherein R_1 is hydrogen or an alkyl group; R_2 and R_6 are hydrogen when y is a single bond and R_2 and R_6 are absent when y is a double bond; R_3 is keto,



or



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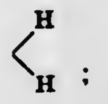
R_4 is hydrogen or



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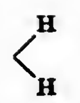
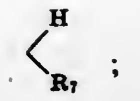
R_5 is hydrogen,



or



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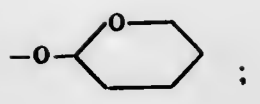
R_7 is



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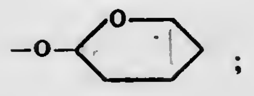
R_8 is hydrogen, or



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Z_1 is a cis or trans —CH=CH— or $—CH_2CH_2—$; Z_2 is trans —CH=CH— or $—CH_2CH_2—$; *x* is a single bond or a double bond and *x* is a double bond when R_4 and R_5 are hydrogen; *y* is a single or a double bond; *n* is 1 to 5; *m* is 0 to 6; its non-toxic slats and a non-toxic carrier. The novel compositions comprising the tetrahydropyran-2'-yl prostaglandin ethers possess valuable pharmacological properties as modifiers of smooth muscle activity, gastric secretion, blood pressure, lipolysis and the reproductive system. The compositions comprising the tetrahydropyran-2'-yl prostaglandin ethers can also be used for the relief of asthma and nasal congestion and as platelet anti-clumping agents.

ELECTRICAL

3,726,984
HEATING ELEMENTS, ASSEMBLIES COMPRISING SEVERAL OF THESE ELEMENTS, FURNACES CONSTRUCTED BY MEANS OF SAID ELEMENTS OR ASSEMBLIES, AND PREHEATING METHOD FOR SAID FURNACES

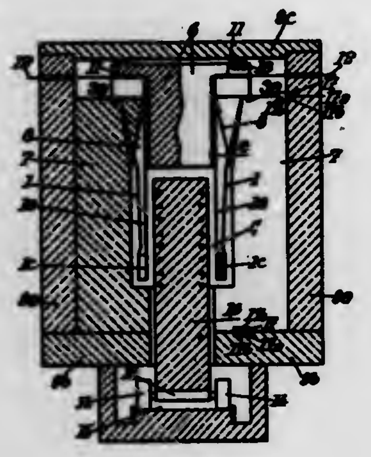
Anne-Marie Anthony nee Barbier, Meudon; Krzysztof Dembinski, Tigy; Michele Faucher nee Dupre, Fontenay le Fleury, and Lucien Dupont, Vouzon, all of France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Paris-Defense, France

Filed Nov. 23, 1970, Ser. No. 91,847

Claims priority, application France, Nov. 24, 1969, 6940379

Int. Cl. H05b *3/10*

U.S. Cl. 13—20 **11 Claims**



The furnace has n superposed rows of m heating elements suspended on supports, the assembly bounding a heating cavity in the form of a tunnel. The elements are U-shaped and suspended at the ends of their arms. The furnace enables temperatures of 2000° to 2200°C to be achieved.

3,726,985
CRYOGENIC CABLE CONSTRUCTION

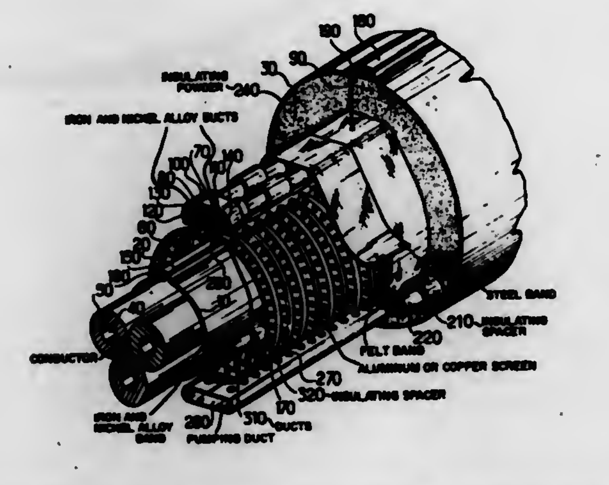
Marcel Aupoix, Paris, and Francois Moisson-Franckhauser, Bretigny-sur-Orge, both of France, assignors to Compagnie Generale D'Electricite- and L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed March 6, 1972, Ser. No. 232,077

Claims priority, application France, March 5, 1971, 7107609

Int. Cl. H01v *11/00*

U.S. Cl. 174—15 C **8 Claims**



A cryogenic cable having an invariable length as a function of the temperature. The cable comprises in particular an inner enclosure which contains electric conductors and which is made of an iron and nickel alloy having a small thermal expansion coefficient, a thermal screen equipped with radial corrugations and cooling conduits or ducts formed integral therewith. These conduits are also made of an iron and nickel alloy having a small thermal expansion coefficient. The corrugations of the screen allow for absorbing the longitudinal stresses. Barriers for ensuring fluid-tightness are disposed at each end of the cable between the inner and the outer enclosures.

3,726,986
SUSPENSION TYPE ELECTRIC APPARATUS HAVING A PLURALITY OF RADIALLY DISPOSED BUFFER DEVICES

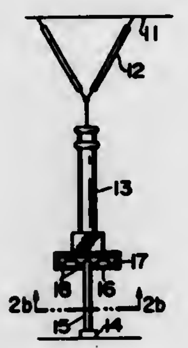
Shigeo Higaki; Masatoshi Harada; Tadao Yashiro, and Maebashi Ohminato, all of Maebashi-shi, Japan, assignors to Nishin Electric Co., Ltd., Kyoto-shi, Kyoto, Japan

Filed Sept. 13, 1971, Ser. No. 180,056

Claims priority, application Japan, Nov. 30, 1970, 45/106117; Nov. 30, 1970, 45/106118

Int. Cl. H02b *5/00*

U.S. Cl. 174—43 **9 Claims**



A suspension type electric apparatus wherein a variety of buffer devices are connected between the lower end of the electric apparatus and a fixed ground support. Each of the buffer devices is connected at one end to the ground support and at the other end to the electric apparatus. In accordance with one embodiment of the present invention, at least one of the ends of each buffer device is provided with a universal coupling, and the buffer devices are arranged in substantially a horizontal plane such that the vertical force component on the apparatus produced by an earthquake or wind pressure will be as small as possible. In another embodiment of the present invention, each of the buffer devices comprises a plurality of resilient bodies having different operational ranges, so that the spring constant of the buffer device will be larger in response to a larger lateral displacement of the electric apparatus.

3,726,987
GLASS OR CERAMIC-TO-METAL SEALS

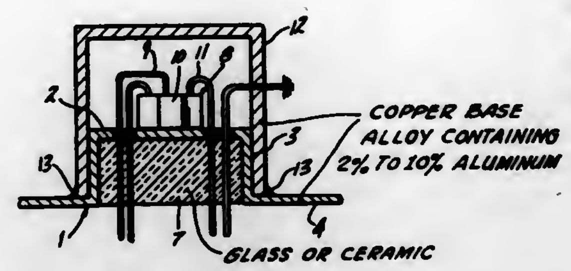
Michael J. Pryor, Woodbridge, and James M. Popplewell, Guilford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 78,899, Oct. 7, 1970, Pat. No. 3,676,292. This application Feb. 17, 1972, Ser. No. 227,240

Int. Cl. H01j *5/00*

U.S. Cl. 174—50.61 **9 Claims**

Glass or ceramic-to-metal composites or seals wherein the glass or ceramic is bonded to a copper base alloy having a thin film of Al_2O_3 on its surface. The Al_2O_3 film comprises at least 10 percent, up to 100 percent, of the oxide film thickness on the metal. The copper base alloy preferably contains 2 to 10 percent aluminum with C.D.A. Alloy 638 being the most preferred alloy. The invention also includes the process of bonding the glasses or ceramics to the metal. Substantial mismatch between the coefficient of thermal expansion of the glasses or ceramics and the copper base alloys may be tolerated in accordance with this invention.



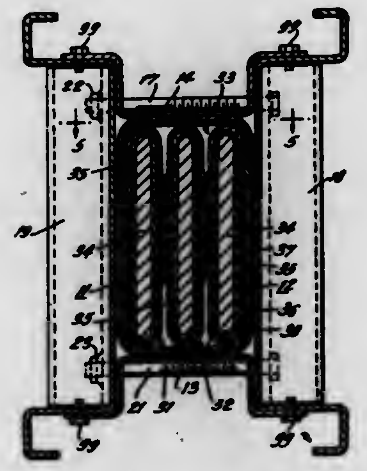
3,726,988
WEATHERPROOF BUS DUCT

Russell S. Davis, Spartanburg, S.C., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed July 17, 1972, Ser. No. 272,373

Int. Cl. H02g *5/06*

U.S. Cl. 174—68 B **10 Claims**



A bus duct unit of the type having bus bars stacked in face-to-face relationship, separated from one another and from the metal enclosure by solid insulation only, is constructed for outdoor service by providing a pliable jacket constructed of rubber-like silicone material for the outside of the bus bar stack.

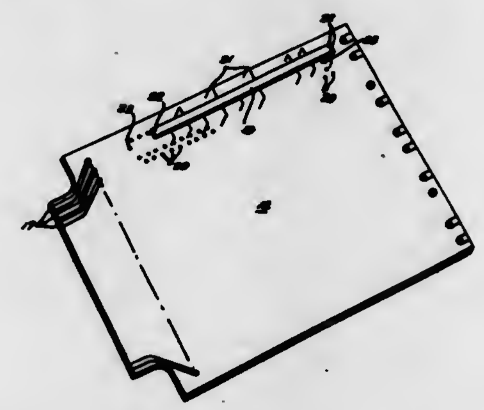
3,726,989
CIRCUIT MODULE PROVIDING HIGH DENSITY INTERCONNECTIONS

Arthur M. Lesley, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed July 27, 1970, Ser. No. 64,909

Int. Cl. H05k *1/04*

U.S. Cl. 174—68.5 **7 Claims**



A multilayer conductor strip construction for interconnections in a circuit module is disclosed wherein narrow, flat and elongated sections of multilevel laminations retain the high density characteristic of multilayer construction and lateral extensions of flat conductors outside the laminations expose ends of the conductors at connection sites of a printed circuit board. Uniformly spaced holes in the circuit boards provide the sites for solder connections to circuit components positioned over the strips. The holes are arranged in parallel rows between conductor strips and are staggered to provide for high density interlacing of conductor ends projecting laterally from opposing sides of adjacent strips.

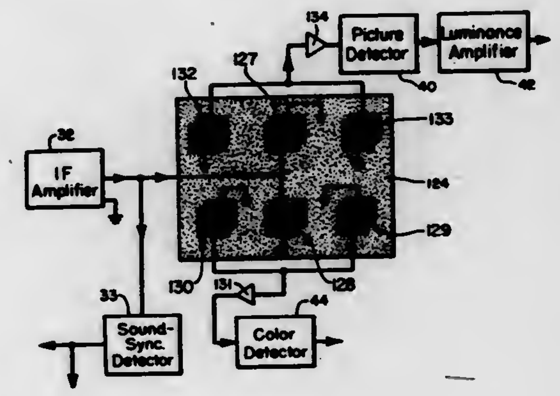
3,726,990
ACOUSTIC SURFACE WAVE DEVICE FOR SEPARATING THE LUMINANCE AND CHROMINANCE SIGNALS AND ADJUSTING THEIR DELAYS

Robert Adler, Northfield; Adrian J. DeVries, Elmhurst, both of Ill., and Fleming Dias, Palo Alto, Calif., assignors to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 817,093, April 17, 1969, Pat. No. 3,582,540. This application May 10, 1971, Ser. No. 141,910

Int. Cl. H04n *9/00*

U.S. Cl. 178—5.4 R **1 Claim**



A signal splitter and time delay equalizer for use in a color television receiver having a luminance channel and a chrominance channel exhibiting unequal delay times comprises an acoustic-surface-wave propagating medium. A program signal, having luminance and chroma signal components, is applied to an input transducer which is coupled to a first portion of the medium and which responds to the program signal to launch acoustic surface waves on the medium. First and second output transducers, coupled to different portions of the medium, develop output signals for application to the luminance and chroma channels, respectively. The output transducers are spaced unequal amounts from the input transducer to compensate for the unequal delay times of the luminance and chroma channels.

3,726,991
COLOR TELEVISION IMAGE PICKUP SYSTEM

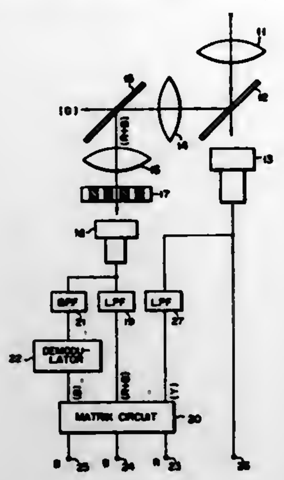
Yasuo Takeumura, Kawasaki, and Kazuo Hamaguchi, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation of Ser. No. 680,202, Nov. 2, 1967, Pat. No. 3,636,247. This application Oct. 29, 1971, Ser. No. 193,889

Int. Cl. H04n *9/08*

U.S. Cl. 178—5.4 R **8 Claims**

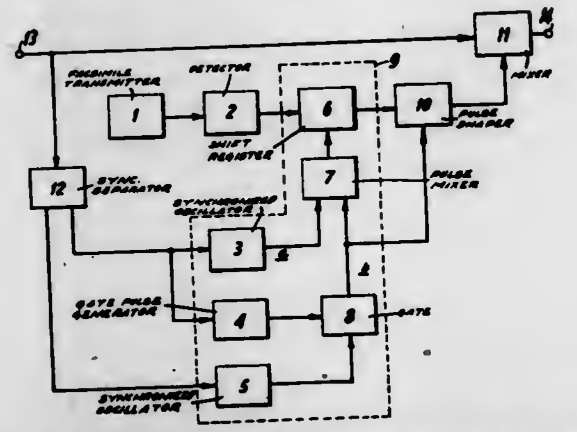
A light from the picked up object is divided into two portions by a first optical system. A luminance signal is produced from one of the divided portions and a chromaticity signal is obtained from the other divided portion by a second optical system. This second optical system is intended to picks up first and second color lights and is arranged such that the first color light is left intact and the second color light is intercepted in



the form of stripes. The chromaticity and luminance signal are than combined to produce a three color signal.

3,726,992
MULTIPLEX COMMUNICATION SYSTEM FOR TRANSMITTING TELEVISION AND FACSIMILE SIGNALS

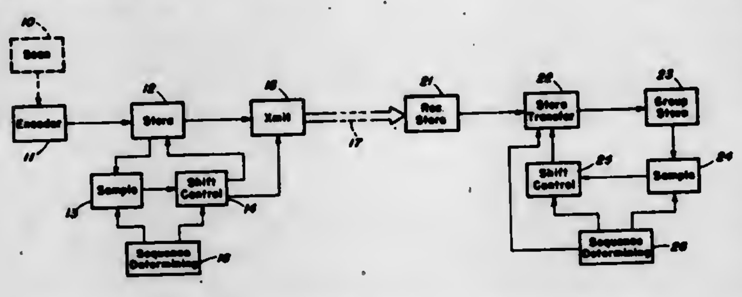
Fumio Eguchi, Osaka, and Fumio Ando, Tokyo, both of Japan, assignors to Mainichi Broadcasting System, Osaka and Nippon Electric Company Limited, Tokyo, both of Japan
Continuation of Ser. No. 696,972, Jan. 4, 1968, abandoned.
This application Dec. 7, 1970, Ser. No. 95,982
Int. Cl. H04n *7/08*
U.S. Cl. 178—5.6 **10 Claims**



A multiplex communications system is described in which a continuous signal having a relatively narrow frequency band such as a facsimile signal, may be superimposed on a signal having periodic idle intervals such as a television signal.

3,726,993
DATA COMPRESSION METHODS AND APPARATUS

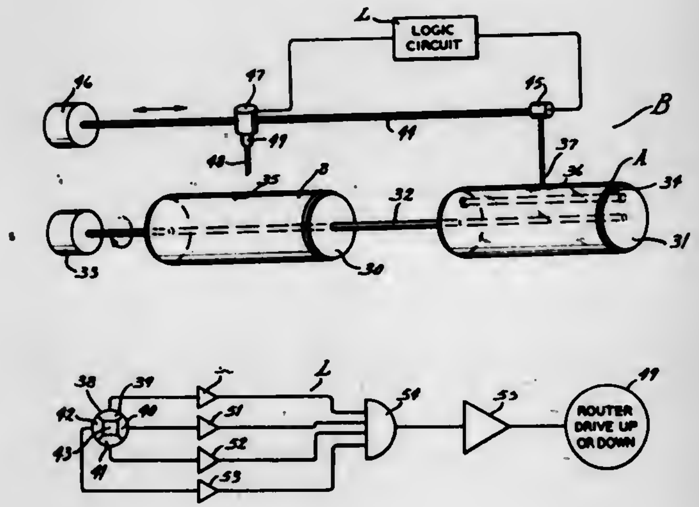
Pierre A. Lavallee, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 10, 1971, Ser. No. 206,795
Int. Cl. H04n *7/12*
U.S. Cl. 178—6 **35 Claims**



Data compression methods and the apparatus therefor are provided in accordance with the teachings of the present invention. According to one embodiment of this invention data signals are progressively combined to form successively decreasing numbers of groups of combined signals until a single group of signals is obtained. Those groups of combined signals containing non-redundant information are selectively transmitted. The selectively transmitted groups of combined signals are received and decoded whereby original data signals are regenerated. The data signals may comprise a multibit digital word or may represent video information. Encoding of the data signals removes redundant portions therefrom.

3,726,994
AUTOMATIC ROUTING SYSTEM

Donald K. Ross, St. Louis County, Mo., assignor to World Color Press, Inc., Maryland Heights, Mo.
Filed Oct. 2, 1970, Ser. No. 77,539
Int. Cl. H04n *1/24*
U.S. Cl. 178—6.6 B **6 Claims**



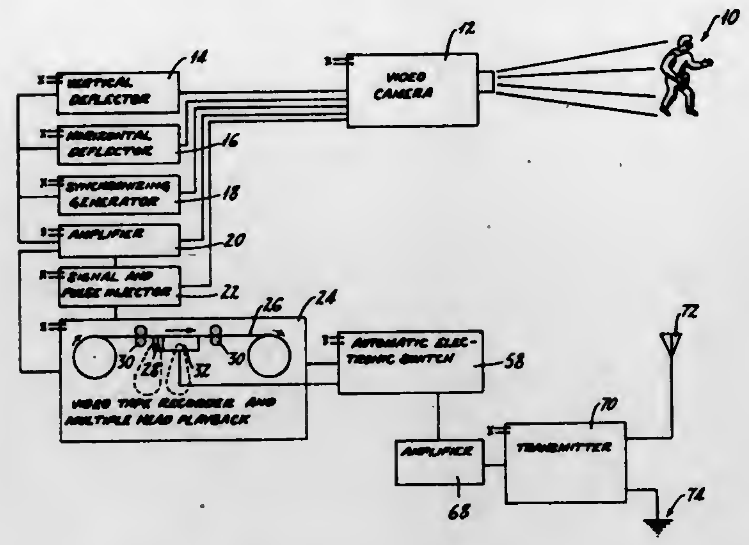
A system for effecting the automatic routing of metal from the non-printing areas of a printing press plate comprising preparing the art work negative to accord the portions thereof corresponding to the non-printing areas of the plate to have a discrete density, or a specific reversed dot percentage, subjecting the negative to a light source, causing a photocell head sensitive to the said discrete density to scan the negative, and providing a router controlled by said head being moved correspondingly with respect to the printing plate.

3,726,995
METHOD AND APPARATUS FOR MORE SLOWLY TELECASTING LIVE SPORTS EVENTS INSTANTLY AS THEY TAKE PLACE

Herbert G. Lehmann, 5 Kent Road, Easton, Conn.
Filed Jan. 7, 1971, Ser. No. 104,703
Int. Cl. H04n *5/84*
U.S. Cl. 178—6.6 A **7 Claims**

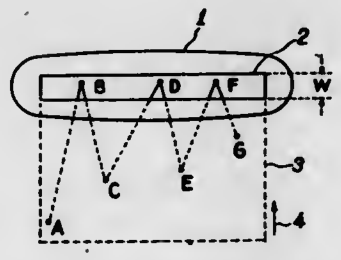
A method and apparatus by which actual live action plays, as for example football plays starting from the line-up at the line of scrimmage and calling of the signals, and ending with the termination of the scrimmage and blowing of the official's whistle (which grounds the ball), are semi-automatically telecast in slower motion during the actual time the play is occurring. In the case of a football play, the last portions of small groupings (seven frames) of the slower motion telecast which occur during the period that the players are active are discarded and therefore not telecast; instead the undiscarded portions are spread over substantially the entire period of time that is consumed by the line action. The apparatus involves making a record or storing information, as on video tape of a recorder or else on a record disk, and substantially simultaneously playing back the stored information in a manner to

produce a large number of small intervals of slower action than the actual live action. The playback information is modified but is still compatible with the television H.F. transmitter and with the synchronization of the telecasting and receiving equipment, as by relating picture portions of the video tape information to a suitable composite wave or to command and synchronizing pulses, erase or blanking pulses, etc. some of which are of the type utilized for a normal or conventional telecast to thereby maintain receiver synchronization. In the illustrated embodiment of the invention, the slower-action is obtained by the use of multiple play-back heads which are arranged to give the effect of physical displacement at uniform intervals "upstream" of the initial playback head, in conjunction with electronic switching of the heads under the control of "command" pulses added to the video tape.



3,726,996
PATTERN RECORDING SYSTEM

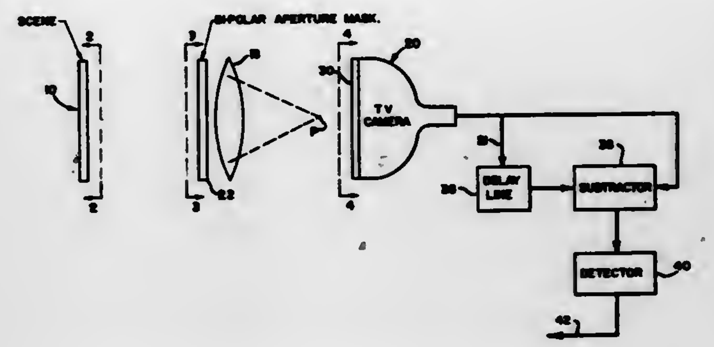
Ritsuzo Yamanaka, Hino-shi, Tokyo, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha, a/k/a Iwatsu Electric Co., Ltd., Tokyo-to, Japan
Filed Feb. 24, 1971, Ser. No. 118,254
Claims priority, application Japan, Feb. 27, 1970, 45/16210
Int. Cl. G01d *9/38*
U.S. Cl. 178—6.7 R **8 Claims**



A recording system for recording an image pattern indicated by an X-signal and a Y-signal of a rectangular coordinate system comprises an optical fiber tube for displaying said image pattern having a substantially rectangular display screen. One side of the display screen side is more than a corresponding side of a substantially rectangular area which just includes the image pattern and the other side is less than another side of said substantially rectangular area. The image pattern displayed on the substantially rectangular display screen is shifted along the direction of the other side of the display screen by the use of a feeding signal, such as a saw-tooth wave, having a period substantially equal to or more than *n*-times the period of the set of the X-signal and Y-signal, where *n* is an integer obtained by dividing the corresponding side of said substantially rectangular area by the length of the other side of said substantially rectangular display screen. The print paper travels along the shift direction of the image pattern in synchronism with the shift speed of the image pattern.

3,726,997
OPTICAL PROCESSING SYSTEM

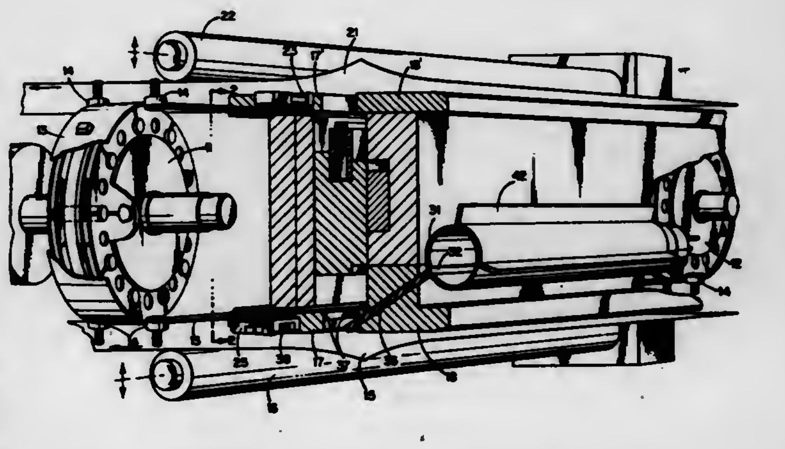
Donald V. Gnau, and Buckley C. Pierstorff, both of East Aurora, N.Y., assignors to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.
Filed Feb. 26, 1969, Ser. No. 802,547
Int. Cl. G06k *9/00;* **H04n** *3/00*
U.S. Cl. 178—6.8 **4 Claims**



An optical processing system for detecting the presence of certain shapes in a scene, having a bipolar aperture mask, a lens, a television camera located beyond the focal plane of the lens, a stripped mask adjacent the camera; the aperture mask has portions, corresponding to the shape to be detected, of dissimilar optical properties, and adjacent strips of the stripped mask have respective optical properties corresponding to that of each of the respective portions of the aperture mask.

3,726,998
LIGHT PIPE ILLUMINATED SCAN READER

Anthony D. Szpak, Parma, and Howard K. Graves, Cleveland, both of Ohio, assignors to Phonocopy, Inc., Wilmington, Del.
Filed Aug. 9, 1971, Ser. No. 169,947
Int. Cl. H04n *1/24*
U.S. Cl. 178—7.6 **11 Claims**



A facsimile scanning system having an endless belt transport for the read heads illuminates the scan line by means of an elongated linear lamp of uniform output and a flat plate light pipe thereby simplifying the illumination of the scan line and eliminating the need for a light source moving with the scanning read heads. The scan heads contain only a photoresponsive element thereby reducing the mass and with an improved pulley-belt system jitter free scanning of the heads can be achieved without edge guides for the scan heads.

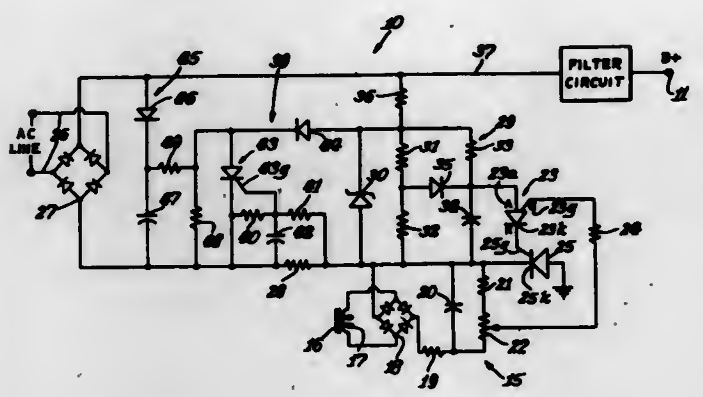
3,726,999
TELEVISION RECEIVER CIRCUIT PROVIDING FEEDBACK FROM HORIZONTAL DRIVER TRANSFORMER TO POWER SUPPLY

Erwin J. Dreiske, Oak Park, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Oct. 20, 1971, Ser. No. 190,985

Int. Cl. G05f *1/56, 1/64*

U.S. Cl. 178—7.3 R **13 Claims**



A power supply for use in a television receiver having feedback means providing improved regulation thereof for use as the B+ voltage of the receiver. The feedback signal is taken from the horizontal driver transformer. The power supply is directly connected to the AC power line.

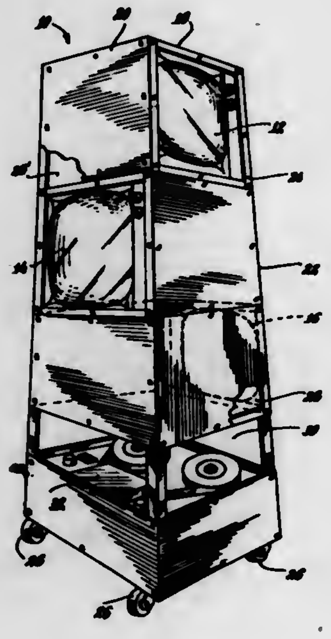
3,727,000
MULTI-DIRECTIONAL VIDEO DISPLAY CONSOLE

John S. Lolos, Bloomfield, N.J., assignor to National Talent Service, Inc., New York, N.Y.

Filed Sept. 24, 1971, Ser. No. 183,438

Int. Cl. A47b *81/06*; **H04n** *5/64*; **H05k** *5/00*

U.S. Cl. 178—7.9 **1 Claim**



A multi-directional video display console is described wherein a pillar is formed of an upright transportable frame. The frame has vertically separated recesses sized and oriented to hold television receiver sets which are oriented in different directions for a multi-directional display. A video tape playback device is mounted in a bottom-located cavity and connected to drive the television sets in order to provide a common television program for multi-directional display in viewing rooms, dormitories and the like.

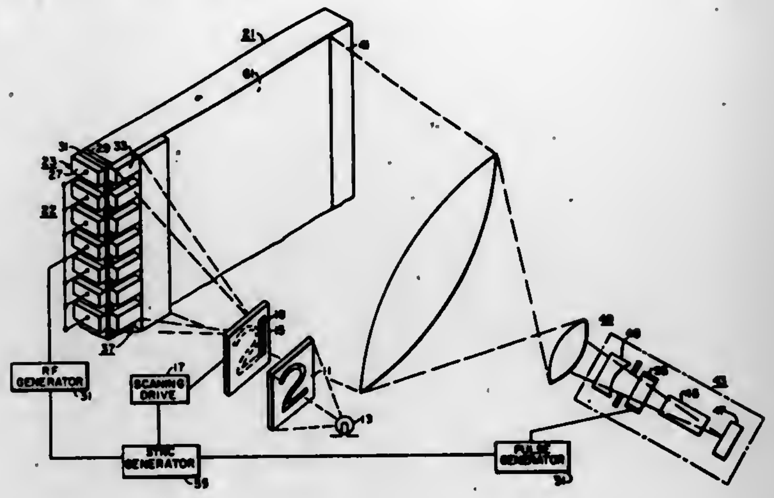
3,727,001
DISPLAY OF MANIFESTATION

Milton Gottlieb, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 12, 1971, Ser. No. 198,225

Int. Cl. H04n *5/66*

U.S. Cl. 178—7.3 D **9 Claims**



There is disclosed apparatus and a method for producing a real-time (instantaneous), two-dimensional display of a manifestation which may specifically be a live scene or an image on a transparency or, more generally, a system of signals such as that produced by a phased array radar. A plurality of transducers energized from a radio-frequency electrical source is connected to an opto-acoustic medium, for example a block of quartz, through a linear array of photo-acoustic elements whose impedance can be varied in accordance with the radiation impinging on them. The elements are insulated from each other. The manifestation is scanned linearly and the light from the scanning lines is impinged in sequence on the array of photo-acoustic elements producing a moving acoustic pattern on the opto-acoustic medium. Coherent light from a laser is projected on the medium intermittently in synchronism with the producing of the complete acoustic patterns on the medium to produce a visual display.

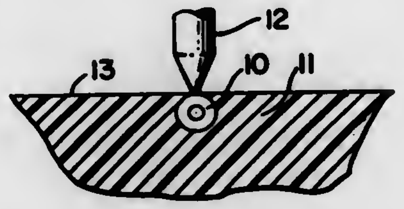
3,727,002
MAGNETIC METHOD FOR DIGITALLY IDENTIFYING THE LOCATION OF AN APPLIED FORCE

Charles B. Pear, Jr., Greenlawn, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.

Filed March 29, 1971, Ser. No. 128,934

Int. Cl. G08c *21/00*

U.S. Cl. 178—18 **23 Claims**



A method and apparatus for digitally identifying the location of an applied force by utilizing the changes in the properties of a magnetic material in response to the application of a force to the material. In one embodiment, a matrix of similarly-oriented magnetic cores is arranged so that the rows and columns of cores are sequentially driven by a driving signal from a core driver circuit. Sense lines are provided for both the rows and the columns of cores and are arranged so that the row sense lines thread a like number of cores in each row in each of a first direction and a second or opposite direction. The column sense lines are also located so that a like number of cores in each column are threaded in each of a first direction and a second direction. In the absence of a force

applied to any one of the cores, the resultant sensed output from the column sense lines as the rows of cores are sequentially driven is substantially zero, since the sensed output produced by the cores threaded by the sense lines in one direction is cancelled by the sensed output produced by the cores threaded by the sense lines in a second direction. When a force is applied to a core, a signal is sensed by the column sense lines during the sequential driving of the rows of cores which cause a control circuit to actuate a counter to indicate the X-coordinate of the location of the force. Similarly, when the columns of cores are being driven, a signal is sensed by the row sense line during the sequential driving of the columns of cores which causes the control circuit to indicate a count on a Y-counter to indicate the Y-coordinate of the force. The respective coordinates thus indicate the location of the force. In an alternative embodiment, the column drive lines are used as sensing lines when the rows of cores are being sequentially driven, while the row drive lines are used as the sense lines when the columns of cores are sequentially driven. Circuit modifications to effect a reduction in the number of leads threading each core for the alternative embodiment are thus disclosed.

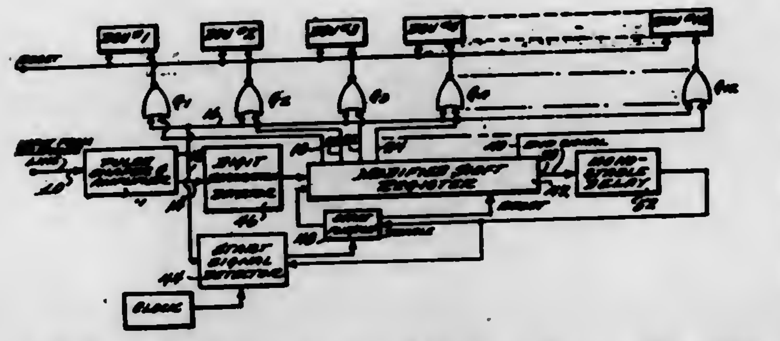
3,727,003
DECODING AND DISPLAY APPARATUS FOR GROUPS OF PULSE TRAINS

Theodoros G. Paraskevakos, Athens, Greece, assignor to Paraskevakos Electronics & Communication, Inc., Wilmington, Del.

Filed March 18, 1971, Ser. No. 125,705

Int. Cl. H04l *25/38*

U.S. Cl. 178—28 **18 Claims**



Receiving apparatus for decoding a plurality of signal pulse trains, each pulse train representing one digit of a calling telephone number or other data values and for displaying the complete telephone number and data in decimal notation after decoding. Special means are employed for detecting the end of each pulse train and the occurrence of a uniquely identifiable pulse train representing the beginning of a complete series of pulse trains corresponding to the series of digits in a calling telephone number or other data group and for routing each pulse train to a corresponding decoding and display stage. Other embodiments utilize electromechanical printing devices which are not limited to any particular number of digits.

3,727,004
LOUDSPEAKER SYSTEM

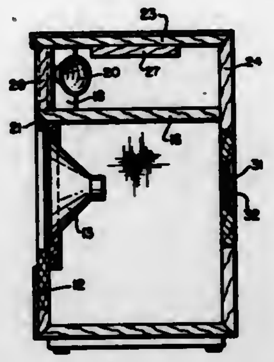
Amar G. Bose, Natick, Mass., assignor to Bose Corporation, Framingham, Mass.

Continuation-in-part of Ser. No. 690,695, Dec. 4, 1967, Pat. No. 3,582,553. This application Feb. 16, 1971, Ser. No. 115,237

Int. Cl. H04r *1/28*

U.S. Cl. 179—1 D **21 Claims**

A loudspeaker system includes a 10-inch high compliance woofer in a 1.5 cubic foot substantially fluid-tight enclosure. A pair of smaller speakers functioning as upper frequency radiators are supported on the top of the enclosure closely adjacent to the front edge with the axes of these small loudspeakers subtending an angle of substantially 90° so that the angle of each axis to the rear surface of the enclosure is substantially 45°. These small loudspeakers face the rear of the system, and fiberglass behind these speakers attenuates back radiation from them while being transparent to low frequency radiation produced by the woofer so that such radiation does not deflect the small speakers. The woofer and small speakers are fed in parallel, the small speakers receiving their energy through a network that allows increased transmission with increasing frequency. Both woofer and small speakers radiate energy over a common middle frequency range.



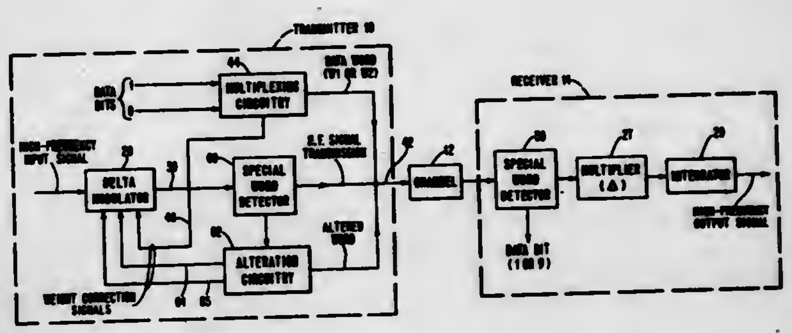
3,727,005
DELTA MODULATION SYSTEM WITH RANDOMLY TIMED MULTIPLEXING CAPABILITY

Peter A. Franaszek, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,313

Int. Cl. H04j *3/12*

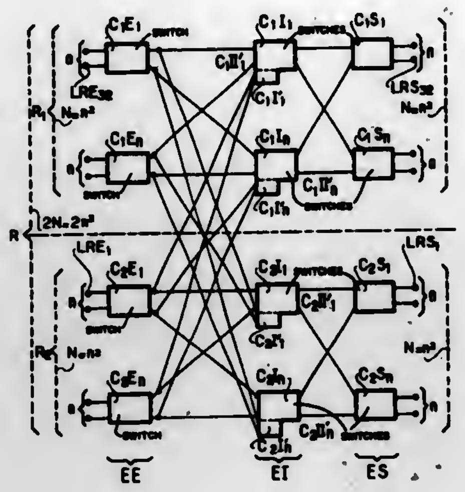
U.S. Cl. 179—15 BY **8 Claims**



The principal feature of this multiplexed delta modulation system is its ability to introduce digital data or other low-frequency information signals into a high-frequency digitized signal stream at random times, without loss of synchronization or undue degradation of the high-frequency signal. When a low-frequency data bit is to be introduced into a bit stream representing the high-frequency signal, such a bit first is converted into a multibit code word W1 or W2, depending upon whether a 1 or 0 data bit is to be transmitted. The code word W1 or W2 they may be inserted into the transmitted bit stream at any random time, replacing a bit pattern of corresponding length in said stream which otherwise would represent the coincident portion of the high-frequency signal. The code word W1 or W2 is recognized as a data bit representation at the receiver regardless of where it occurs in the bit stream. If a bit pattern identical with W1 or W2, but not representing a low-frequency data bit, should appear by change in the high-frequency digitized signal, such a bit pattern is altered prior to its transmission so that it will not be mistaken for a data bit at the receiver. The delta modulation process automatically is adjusted to compensate for: (1) any difference between the numerical weight of an introduced bit pattern W1 or W2 and the numerical weight of the bit pattern which it replaces, or (2) in the case of a bit pattern fortuitously identical with W1 or W2, the difference between the respective numerical weights of such a bit pattern before and after its alteration.

3,727,006
MULTI-STAGE TIME CONNECTION NETWORK

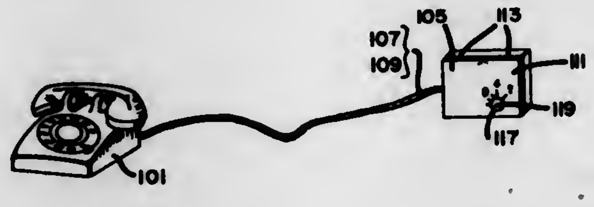
Jean-Baptiste Jacob, Kertanguy, France, assignor to C. I. T. Compagnie Industrielle Des Telecommunications, France
Filed Feb. 10, 1971, Ser. No. 114,250
Claims priority, application France, Feb. 10, 1970, 7004661
Int. Cl. H04q *11/04*
U.S. Cl. 179—18 GF **6 Claims**



Test device comprising a central memory storing a record of the engaged states of the paths in a multi-stage switching network, consisting more particularly of a single memory block for two connection networks whose intermediate switches can receive data from the input switches of any of the networks, whereas they can transmit the said data only to the output switches of the network to which they belong.

3,727,007
TELEPHONE SECURITY DEVICE

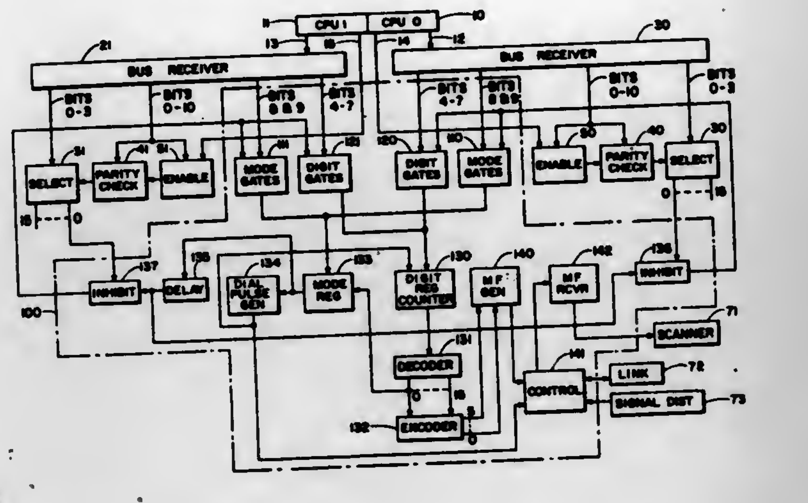
Richard Glenn Catlin, Winnipeg, Manitoba, Canada, assignor to Commercial Communications Ltd., Winnipeg, Manitoba, Canada
Filed Nov. 18, 1970, Ser. No. 90,767
Claims priority, application Canada, Nov. 19, 1964, 067861
Int. Cl. H04m *3/38*
U.S. Cl. 179—18 DA **9 Claims**



In order to prevent the unauthorized use of dial-type telephone to make long distance calls, the security device of the present invention is connected to the wall-box at which the telephone cord is connected to the telephone Company's wiring. In position, it permits the effective dialing of up to say eight digits, and then prevents the effective dialing of any further digits until the telephone handset has been replaced and removed. The number of digits permitted will depend upon the type of installation, eight digits being used in a PABX: in a PABX a long distance direct dialed call requires the dialing of 9–1– and seven digits, i.e. 9 digits in all, and any attempted call is aborted in the absence of the last digit. A pulse-group counter stops the transmission of enough pulse-groups to make a distance-direct-dialed call. By the added subject matter of the present application, a zero detector circuit is added to disable all attempts to make long distance calls through the telephone operator.

3,727,008
DIAL PULSE AND MULTIPLE FREQUENCY SIGNALLING SENDER/MULTIPLE FREQUENCY SIGNALLING RECEIVER APPARATUS

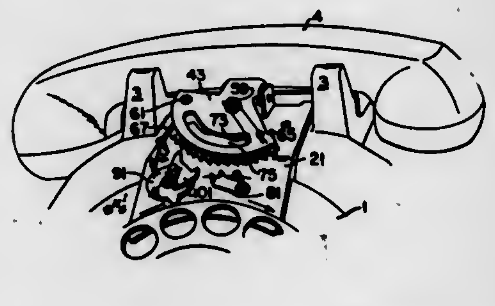
Arthur Edward Dodson, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Canada
Filed Oct. 18, 1971, Ser. No. 189,942
Int. Cl. H04q *3/54*
U.S. Cl. 179—18 ES **9 Claims**



A sender/receiver apparatus responds to signals from a central processing unit in a telephone electronic switching office to send multiple frequency (MF) signals and dial pulse (DP) signals. Under direct control of the CPU, the apparatus will also receive MF signals. Control of DP signal timing and the number of dial pulses sent is inherent within the apparatus. The duration of time over which MF signalling extends is controlled directly by the CPU. Interface circuitry allows the CPU to monitor the MF sending and MF receiving functions directly. DP signalling may be monitored indirectly through simultaneous generation of MF signals corresponding to each dial pulse.

3,727,009
TELEPHONE SECURITY DEVICE HAVING KEY LOCK

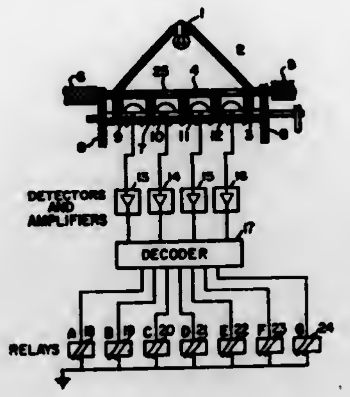
Rainseford H. Ireland, Winnipeg, Manitoba, Canada, assignor to Boissevain Manufactured Products Ltd., Boissevain, Manitoba, Canada
Filed Sept. 24, 1970, Ser. No. 75,437The portion of the term of this patent subsequent to Jan. 12, 1988, has been disclaimed.
Int. Cl. H04m *1/66*
U.S. Cl. 179—90 D **9 Claims**



A telephone security device is intended to prevent unauthorised use of the distant-direct-dialing facility on dial-type telephones. It makes use of a mechanism which is stepped by operation of the dial to call a digit, and which after a predetermined number of digits has been called locks the dialing mechanism to prevent further dialing. The predetermined number is so selected as to prevent the desired misuse of the telephone.

3,727,010
AUTOMATIC CARD DIALING DEVICE USING PHOTOCELL READOUT

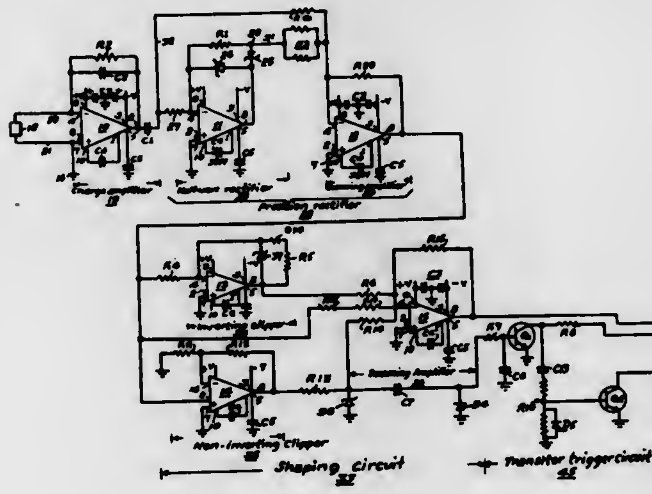
Hiroshi Fuyama, Kawasaki, and Osamu Iida, Kanagawa, both of Japan, assignors to Nippon Communication Industrial Company, Limited, Kanagawa-ken, Japan
Continuation of Ser. No. 74,449, Sept. 22, 1970, abandoned.
This application Feb. 26, 1971, Ser. No. 119,343
Claims priority, application Japan, Sept. 24, 1969, 44/90095
Int. Cl. H04m *1/48*
U.S. Cl. 179—90 CS **1 Claim**



An optically sensed automatic telephone dialer adaptable for use with either multi-frequency or dial pulse signalling. The dialer includes means for controlling the rate at which the record card is ejected and an electromagnet for intermittently arresting the ejection of the card, as successive digits in the stored number are sensed.

3,727,011
SIGNAL CONDITIONER FOR IMPROVED UTILIZATION OF RECORDING RANGE OF UNBIASED MAGNETIC TAPE

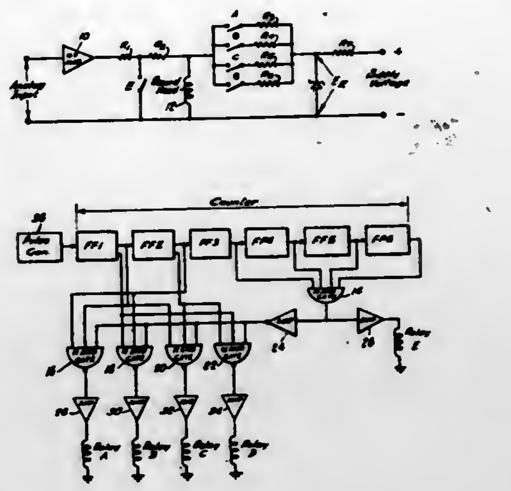
Clive L. Nickerson, Ashland, and Leslie A. McClaine, Wellesley Hills, both of Mass., assignors to The United States of America as represented by the Secretary of the Army
Filed June 16, 1971, Ser. No. 153,652
Int. Cl. G11b *5/02, 5/44*
U.S. Cl. 179—100.2 K **8 Claims**



An electronic signal conditioner that supplies magnetic recording head current that is a non-linear function of the input signal to be recorded and wherein extended linear dynamic range of a magnetic tape recording system is realized by utilizing the input-output characteristic of the conditioner to compensate for the non-linear behavior of unbiased magnetic tapes.

3,727,012
CALIBRATING A CARRIER ERASE MAGNETIC TAPE ANALOG RECORDING SYSTEM

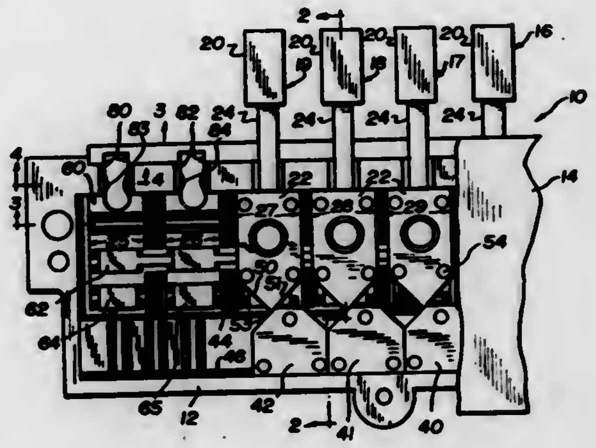
Percy T. Cox, and Albert P. Richter, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Continuation of Ser. No. 832,903, June 13, 1969, abandoned.
This application Nov. 19, 1971, Ser. No. 200,358
Int. Cl. G11b *5/02, 5/44*
U.S. Cl. 179—100.2 K **2 Claims**



Herein disclosed is a system for increasing the temperature range of magnetic tape analog recording systems by periodically interrupting analog signals being recorded and introducing fixed calibration current levels proportional to the analog voltage across the recording head.

3,727,013
INTERLOCKED PUSH-BUTTON SWITCH ASSEMBLY WITH PUSH BUTTON ACTUATOR INDEXING MEANS

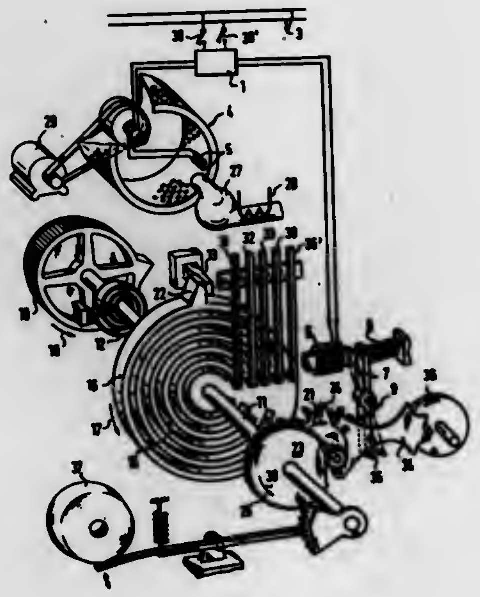
Thomas F. Osika, Gary, and John T. Risley, Highland, both of Ind., assignors to McGill Manufacturing Company, Inc., Valparaiso, Ind.
Filed Nov. 24, 1971, Ser. No. 201,761
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 **5 Claims**



A pushbutton switch having a sliding block-type switch action wherein a longitudinally displaceable pushbutton moves a block-like actuator to selectively engage one or more of a plurality of laterally displaceable members to return a previously actuated pushbutton to the unactuated position. A plurality of sets of guide rails, one set for each pushbutton, receive the bottom of the block-like actuator portions for supporting and guiding the same over their longitudinal movement. Each of the rails has a step-like cross-section and the block-like actuator is set on the base portion of each of the steps of the responsive sets of rails and is guided over its longitudinal movement by the wall portions. A projection extends from each of the actuators and slidably engages respective grooves in the switch housing. The grooves have restricted portions which simulate a detent action by deflecting the pushbutton actuator with the same being moved in a longitudinal direction to the actuated position.

3,727,014
RETARDED TYPE SWITCH CONTROL ARRANGEMENT FOR A DRIER

Konstantin Apel, Lehrenweg 8, D-7758 Meersburg, Germany
Filed May 14, 1971, Ser. No. 143,519
Claims priority, application Switzerland, May 14, 1970, 7193/70
Int. Cl. H01h *43/00*
U.S. Cl. 200—33 R **4 Claims**

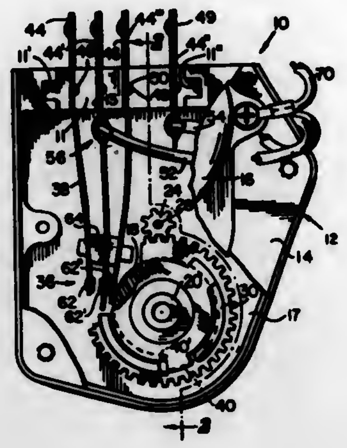


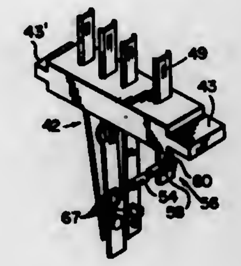
A control circuit for a drier having a heater, blower and a motor for a sensor mounted within the drier housing for determining the water content of the material therein. A desired dryness of the material is set by a manually settable control switch and a spring driven switching mechanism actuated by the control switch actuates a plurality of switches each individually controlling the heater, blower and motor. A control circuit comprises the wetness of the material within the drier with the setting of the control switch whereby the spring driven switching mechanism is unlocked to return the control switch to "zero" so as to prevent further drying of the material.

3,727,015
CAM OPERATED PROGRAM TIMER ASSEMBLY WITH REPLACEABLE LEAF SPRING CONTACT STRUCTURE

Elmo W. Voland; Harold T. Simmons, and Pauker Kurt, all of Indianapolis, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Continuation of Ser. No. 731,228, May 22, 1968, abandoned. This application April 12, 1971, Ser. No. 133,437
Int. Cl. H01h *9/08, 43/10*
U.S. Cl. 200—38 R **10 Claims**

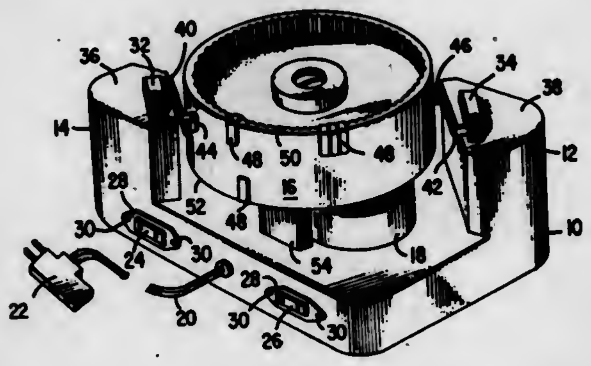
A timer having switch means responsive to a cam programming means, the cam programming means being driven through a timer motor through a clutch operated drive means. The cam programming means and the switch means are disposed within a housing. Electrical terminals are mounted in the housing and extend through the housing and are unitarily constructed with the switch means. The motor electrical leads are connected to the switch means and the terminal means inside the housing through a quick disconnect means. The clutch drive means comprises a gear means having ratchet means adapted to engage corresponding ratchet means on the cam programming means.





3,727,016
CAM OPERATED TIMER SWITCH INCLUDING H-SHAPED DRUM AND ADJUSTABLE CAMS

Arthur C. Andley, Paxson Road, R. D. No. 1, Solebury Township, Buck County, Pa.
Filed Oct. 18, 1971, Ser. No. 190,144
Int. Cl. H01h *43/10*
U.S. Cl. 200—38 CA **7 Claims**



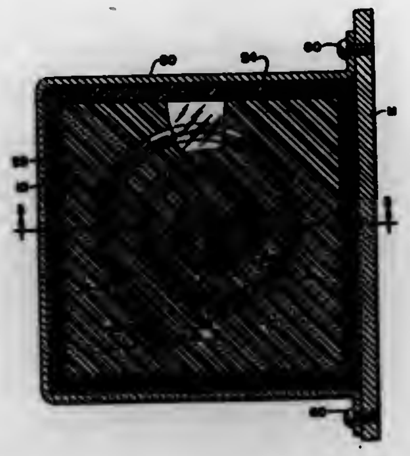
A time controlled switching apparatus is herein described having a drum member journaled for rotation about a vertical axis. A base member is provided for supporting the drum and for housing a syncronous motor operatively adapted to rotate the drum at a speed of one revolution per 24 hours. Camming elements, consisting of U-shaped clips, may be attached to axially extending, marginal, upper and lower edges of the drum.

A switching member may be mounted on the base adjacent each of the upper and lower edges of the drum to be actuated upon the operative engagement of a camming element therewith. One radially extending surface of the drum may be formed to display indicia representing each of the 24 hours of a day. The marginal edges may be formed with four axially extending detents disposed between each representation of an hour and that of the next position the clips.

One leg of each clip may be sized of such a width, with respect to the diameter of the drum, that one clip will actuate one switching member for a 15 minute interval in response to rotation of the drum. Each switching member may be associated with circuitry adapted for connection with a source of electrical power and further adapted with a plug for connection with a domestic lighting circuit, or the like.

3,727,017
RADIOACTIVE TIMING MECHANISM

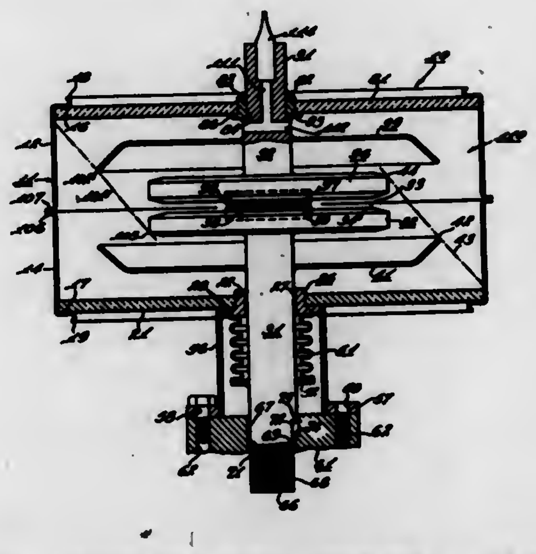
Carleton H. Schlesman, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy
Filed Nov. 17, 1952, Ser. No. 321,063
Int. Cl. H01h *29/28*
U.S. Cl. 200—81.6 **6 Claims**



2. A radioactive timing apparatus for closing an electrical circuit comprising, in combination, a tubular member, a quantity of electrical conducting fluid mounted in said tubular member, a first volume of gas on one side of said fluid, a second volume of gas on the other side of said fluid, a quantity of radioactive material in said first volume of gas and adapted to increase the first volume as the material disintegrates, and a pair of spaced contacts mounted in said tubular member on the side thereof of the second volume of gas whereby the fluid is caused to move to engage the contacts in a predetermined period of time as the first volume of gas is increased.

3,727,018
DISK VACUUM POWER INTERRUPTER

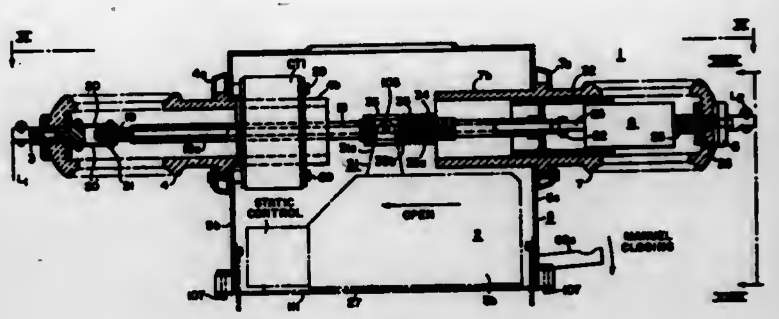
Henry J. Wesoloski, Cohasset, and August Arns, Jr., North Easton, both of Mass., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Sept. 16, 1971, Ser. No. 181,095
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **5 Claims**



A vacuum circuit interrupter comprising a cylindrical envelope having upper and lower ceramic or glass closure insulator plates through which axially aligned relatively movable contact rods having impedance means comprising a pair of relatively shallow cylindrical metallic shields that are concentrically affixed to associated ones of the contact rods.

3,727,019
VACUUM-TYPE CIRCUIT INTERRUPTER WITH GROUNDED METALLIC HOUSING AND REMOVABLE OPERATING MECHANISM TRAY

Ian J. Harvey, Bloomington, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 770,490, Oct. 25, 1968, Pat. No. 3,564,465. This application Nov. 10, 1970, Ser. No. 88,287
Int. Cl. H01h *3/54, 33/66*
U.S. Cl. 200—144 B **8 Claims**

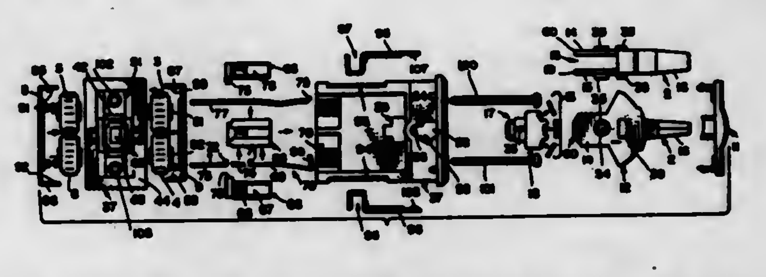


A circuit interrupter of the vacuum type is provided, of the in-line type, having a central grounded housing and oppositely-extending hollow bushing structures, through which extends an elongated conducting operating rod actuating the movable contact of a vacuum-type circuit-interrupter unit disposed in one of the hollow bushing structures.

An insulating main operating lever provides additional insulation between the grounded operating mechanism structure and the live elongated conducting operating rod, which effects the movement of the movable contact within the vacuum-type circuit interrupter.

3,727,020
ELECTRICAL SWITCH UNIT

James R. Bailey, Chicago, Ill., assignor to Switchcraft, Inc., Chicago, Ill.
Filed Nov. 22, 1971, Ser. No. 200,761
Int. Cl. H01h *9/16*
U.S. Cl. 200—167 A **8 Claims**



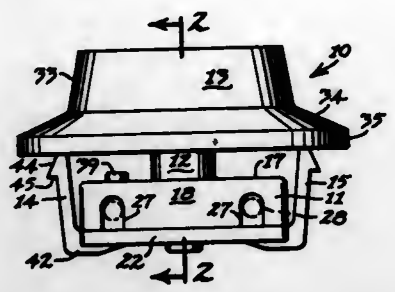
A lever-operated illuminated electrical switch unit is provided having front of panel mounting and removal, front of panel relamping, front of panel color changes and front of panel switch module changes. A novel lamp assembly and a novel actuator assembly are provided which can be removed simply by removing an escutcheon plate which snaps into place. Simplified means for mounting the switch unit from the front of a panel are also provided.

3,727,021
ROTARY SWITCH HOUSING

Fritz Preis, c/o Lasko Metal Products, Inc., P.O. Box 130, Franklin, Tenn.
Filed June 22, 1972, Ser. No. 265,268
Int. Cl. H01h *9/04*
U.S. Cl. 200—168 G **2 Claims**

A housing for a rotary switch having a rotary shaft in which the housing walls are integrally formed of an insulated plastic material, a boss is integrally formed on the top wall of the housing for tightly receiving the rotary shaft, and a knob is fixed to the top of a spindle having a radial skirt terminating in an annular rim at a level below the top of the boss.

The switch housing may be further characterized by having a pair of opposed integrally formed upstanding latching ears



adapted to engage a pair of mating latch holes in a horizontal mounting plate or wall to hold the switch housing in place against the bottom surface of the wall.

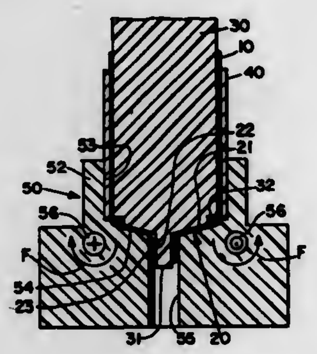
3,727,022
ELECTROMAGNETIC HEATING AND SEALING

Peter W. Hamilton, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 17, 1972, Ser. No. 272,234

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.43 9 Claims



A method and apparatus for electromagnetically (i.e., induction) heating and sealing materials, as exemplified by a laminated collapsible dispensing tube body having metallic and polymeric layers therein, the metallic layer being circumferentially discontinuous (i.e., having a seam) and a thermoplastic closure therefore, is provided. The prior art difficulties resulting from the discontinuity in the metallic layer are overcome by the provision of shielding, either alone or in combination with means for focusing the electromagnetic energy.

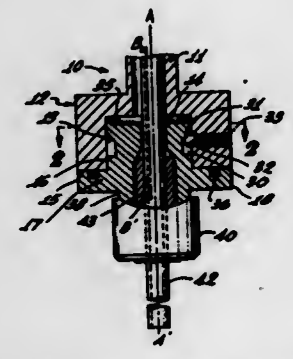
3,727,023
DRIVER FOR BORING BAR FOR ELECTRIC DISCHARGE MACHINE

Carl Eugene Monnich, 9915 McBroom St., Sunland, Calif.

Filed June 16, 1971, Ser. No. 153,609

Int. Cl. B23p *1/08, 1/12*

U.S. Cl. 219—69 V 2 Claims



A device for rotary drive of a boring bar in an electric discharge boring machine. A head is rotated on a fixed axis and seats an eccentric on an axis eccentric to the axis of rotation of the head. The eccentric mounts a boring bar on an axis which is laterally offset from the center of the eccentric, and ormally concentric with the axis of the head. Rotary adjustment of the eccentric relative to the head adjusts the diameter of the hole formed by the boring bar by linearly proportionate increments.

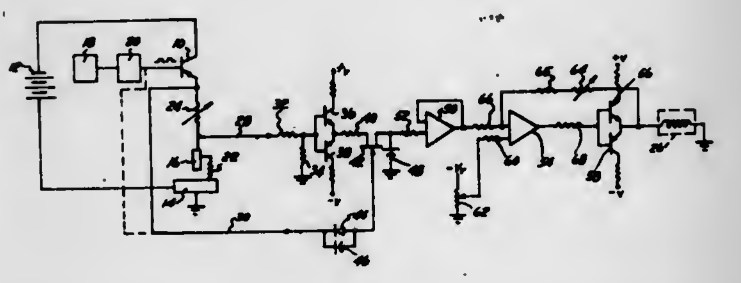
3,727,024
ELECTRICAL DISCHARGE MACHINING SERVO CONTROL CIRCUIT

Oliver A. Bell, Jr., Mooresville, N.C., assignor to Elox Inc., Davidson, N.C.

Filed Aug. 12, 1971, Ser. No. 171,263

Int. Cl. B23p *1/14*

U.S. Cl. 219—69 G 5 Claims



A servo feed control circuit in which servo feed control of the cutting operation is related to gap electrical parameter during machine pulse on-time. A gap voltage sensing network is connected to an electrical servo feed means through a field effect transistor, which transistor in turn is rendered conductive through a keying arrangement effective during machining pulse on-time only.

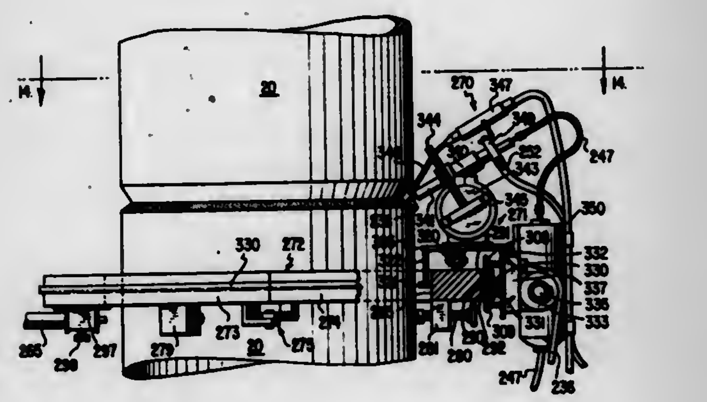
3,727,025
METHOD FOR WELDING VERTICALLY EXTENDING PIPE SECTIONS TOGETHER

Anthony J. Dibenedetto, Metairie, La., assignor to Rig Hammers, Inc., Westwego, La.

Continuation-in-part of Ser. No. 828,409, April 4, 1969, abandoned. This application March 24, 1970, Ser. No. 22,161

Int. Cl. B23k *9/18*

U.S. Cl. 219—73 4 Claims



A method for welding substantially vertically extending pipe sections together in end-to-end relationship, wherein at least one of the adjacent ends of the sections is bevelled to provide a welding space between the sections, and a means for depositing weld metal is moved about the sections to deposit weld metal in such space while all of the welding parameters are controlled and maintained irrespective of environmental-induced movements of the sections.

3,727,026
METHOD OF OPERATING AN ELECTRON-BEAM APPARATUS AND ELECTRON-BEAM SYSTEM

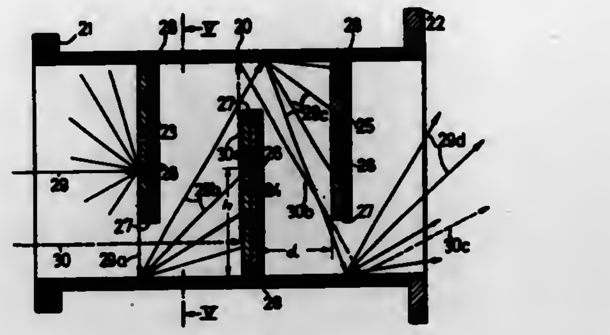
Siegfried Baumgartner, Sixnitgern, and Wolfgang Lippacher, Munich, both of Germany, assignors to Krauss-Mafei Aktiengesellschaft, Munich, Germany

Filed Feb. 22, 1971, Ser. No. 117,675

Claims priority, application Germany, Feb. 24, 1970, P 20 08 387.8

Int. Cl. B23k *15/00*

U.S. Cl. 219—121 EM 10 Claims



An electron-beam apparatus, for example, for the electron-beam welding of metal or other workpieces comprises an evacuatable chamber and a duct connecting this chamber with a suction source, e.g. a vacuum pump. To prevent the passage of secondary emissions, e.g. X-rays, through this duct, the invention provides a plurality of baffle members in spaced relation along the duct and swingable into a position generally parallel to the duct axis during evacuation of the chamber to prevent obstruction of the fluid flow thereto. Subsequent to evacuation and during electron-beam welding, however, the baffles, shutters or shielding members extend transversely to the axis to intercept the X-rays.

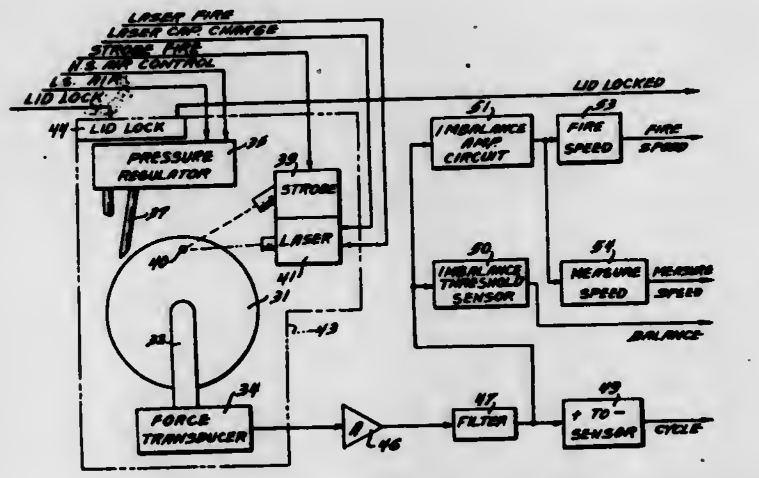
3,727,027
METHOD OF BALANCING VERY SMALL ROTATING OBJECTS USING AIR JET ACCELERATION

Willard D. Kaiser, Grove City, and Charles W. Rodman, Columbus, both of Ohio, assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed March 25, 1971, Ser. No. 127,902

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 LM 1 Claim



A system of balancing extremely small rotating devices is described. The device to be balanced is mounted on its own axes and rotated at a high rotational speed driven by an air blast. By this means only the device being balanced is rotated and the mass of fixtures need not be considered. The amount of imbalance is measured and a laser beam is used to remove a portion of the rotating device to reduce the imbalance.

3,727,028
ULTRA HIGH PRESSURE-TEMPERATURE APPARATUS

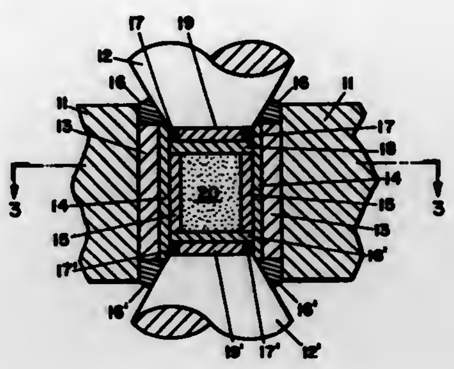
Tatsuo Kuratomi, 2-18, 4-chome, Hamatake, Chigasaki-shi, Japan

Continuation-in-part of Ser. No. 18,143, March 10, 1970, Pat. No. 3,647,331. This application Dec. 3, 1971, Ser. No. 204,414

Claims priority, application Japan, March 10, 1969, 44/17548

Int. Cl. B21j *1/06*; B30b *11/32*

U.S. Cl. 219—149 4 Claims



An improvement in ultra high pressure-temperature apparatus in which two concentric, adiabatic, electrically non-conductive, thermostable cylinders, the inner cylinder comprising beryllium oxide, are utilized to protect the outer portions of the apparatus from the pressures and temperatures generated within the innermost parts of the apparatus.

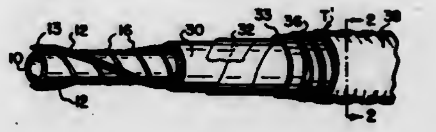
3,727,029
COMPOSITE ELECTRICALLY HEATED TUBING PRODUCT

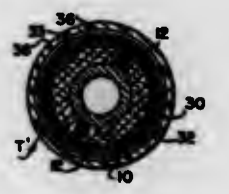
Albert E. Chrow, Chagrin Falls, Ohio, assignor to Samuel Moore and Company, Mantua, Ohio

Division of Ser. No. 672,377, Oct. 2, 1967, Pat. No. 3,522,413, which is a division of Ser. No. 379,638, July 1, 1964, Pat. No. 3,355,572. This application July 6, 1970, Ser. No. 52,668

Int. Cl. H05b *3/58*

U.S. Cl. 219—301 10 Claims



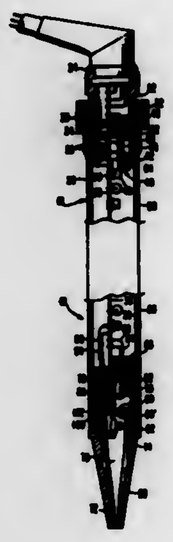


An armored, corrosion-resistant, deformable composite tubing of uniform construction throughout its length which is adapted for use as a temperature-controlled sampling tubing comprises a flexible, heat conductive sampling line means having a passageway for transmitting a fluid therethrough. At least two electrical heating lines are helically disposed in heat transferring engagement around said sampling line, with the lines being in symmetrically disposed relationship with respect to each other and in engaging relation to the peripheral surface of said sampling line. A layer of fibrous filler material is disposed in encompassing and contacting relation around said sampling line means and said heating lines along the length thereof, and a layer of flexible tape helically is wound around the filler layer in encompassing and contacting relation to provide a moisture impervious barrier around the filler layer. A flexible polymeric layer encompassing and contacting said tape provides a protective and moisture resistant barrier, and a flexible, metallic, protective armor layer enclosing and contacting said polymeric layer provides high strength and crush resistance; and a flexible, polymeric outer sheath encompassing and contacting said protective armor layer throughout substantially its entire outer periphery so as to mechanically interlock therewith provides corrosion and moisture resistance.

3,727,030
HAND PROBE FOR MANUALLY OPERATED OPTICAL SCANNING SYSTEM

David Harwood McMurtry, Portola Valley, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,466
Int. Cl. G06k *7/10*; E04g *17/00*
U.S. Cl. 235—61.11 E **13 Claims**

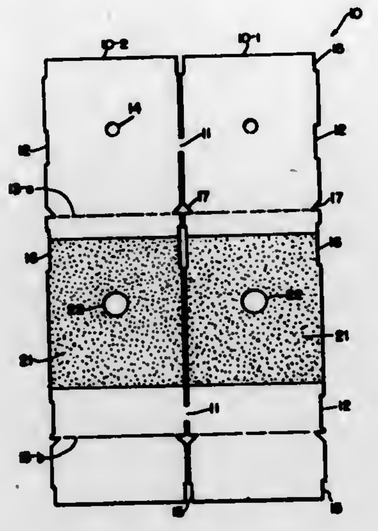


A low-cost hand held probe for scanning retrospective pulse modulation bar coding documents of high density comprises a bundle of many discrete optical image fibers which is optically divided into a pair of light carrying conduits by means of an aperture plate having two contiguous apertures therein. One aperture transmits light from a source of illumination down one optical conduit to a paper document. The light emanating from the document end of the bundle travels horizontally through the fibers of the paper to the optical fibers forming the other optical conduit. This light is transmitted up through the bundle to a photosensitive device coupled to circuitry for determining the degree of reflected light. The optical bundle is preferably tapered and is drawn in a unit which eliminates critical alignment problems and reduces the number of operations for manufacture. The apertures are parts of a circle whereby orientation of the probe is virtually unnecessary in most applications. Where orientation is desired, the tip is faced at an angle normal to and at an angle away from normal to the longitudinal axis of the probe in one alternate embodiment and the fiber optic bundle is bent in another alternate arrangement. These structures assist the operator in orienting the light apertures with respect to the document being scanned.

3,727,031
CONTROL TICKET

Burton R. Marmer, Natick, and Richard F. Stucchi, Hudson, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 681,730, Nov. 9, 1967, abandoned. This application Oct. 16, 1970, Ser. No. 81,553
Int. Cl. G06k *19/00*; G11b *5/00*
U.S. Cl. 235—61.12 M **2 Claims**

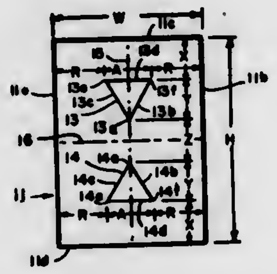


A ticket having a layer of magnetic material over a portion thereof, said ticket and said layer being provided with an aligned aperture therethrough for receiving an alignment probe of a rotatable recording head.

3,727,032
DOCUMENT FORMAT

Charles Herbert Olmstead, 12 Otsego Road, Worcester, Mass.

Continuation-in-part of Ser. No. 56,185, July 10, 1970, abandoned, which is a continuation of Ser. No. 790,792, Jan. 13, 1969, abandoned. This application Sept. 29, 1971, Ser. No. 184,822
Int. Cl. G06k *1/00*; G09b *11/04*
U.S. Cl. 235—61.12 R **16 Claims**



A document comprising a sheet of material having a plurality of rectangular areas adapted to be written on and defined by lines and two triangular shaped non-mark areas formed in each of the rectangular areas, the triangular areas positioned within this area so that their apices generally point towards each other and spaced apart from each other by a land area within said rectangular areas.

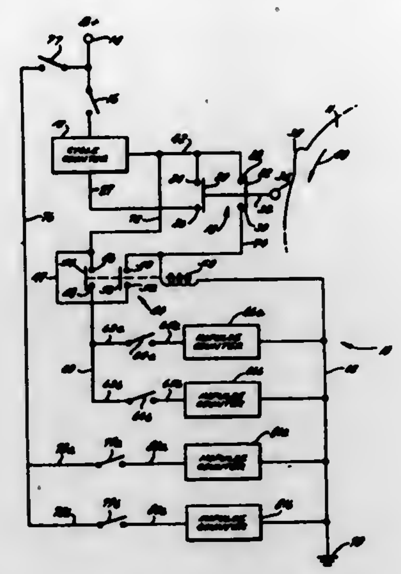
3,727,033
YARN MEASURING APPARATUS FOR USE WITH WARP KNITTING MACHINES

Rudolph G. Bassist, Lancaster, Pa., assignor to Travis Mills Corp., New York, N.Y., a part interest

Filed Feb. 12, 1971, Ser. No. 114,874
Int. Cl. G07c *3/10*; G06m *3/08*
U.S. Cl. 235—92 PD **9 Claims**

An apparatus including a machine cycle counter and at least one impulse counter operable only concomitantly with the

cycle counter. A yarn measuring device is responsive to rotation of the warp beam for providing pulses, the number of pulses being proportional to the linear amount of yarn drawn from the warp beam. Another impulse counter is operable independently of the cycle counter and also receives pulses from the yarn measuring apparatus. The yarn measuring apparatus

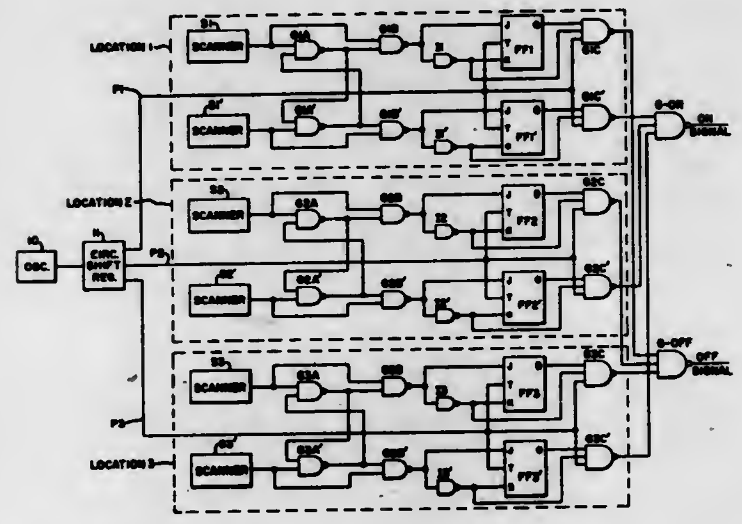


may include a roller engaging and rotatable by the warp beam, the roller carrying at least one magnet. A magnetically operable switch adjacent to the circular path through which the magnet travels is operated each time the magnet passes it so as to produce a pulse. Alternatively, the roller may include a light source for energizing a light-sensitive detector each time the light source passes it, so as to produce a pulse.

3,727,034
COUNTING SYSTEM FOR A PLURALITY OF LOCATIONS

Joseph T. Pope, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Jan. 19, 1972, Ser. No. 218,993
Int. Cl. G06m *3/08*; H03k *21/02*
U.S. Cl. 235—92 LG **6 Claims**

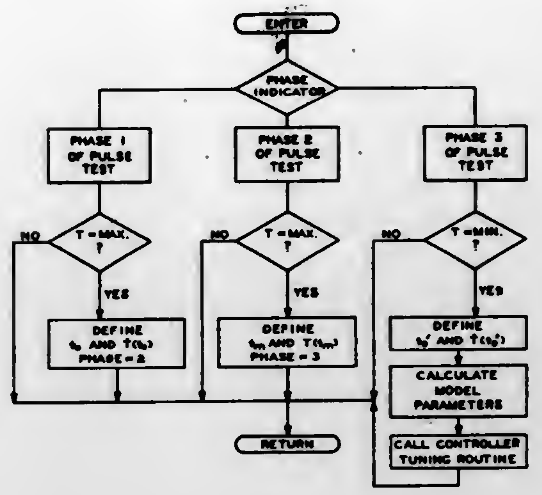


This system provides an accurate count of people or objects moving in opposite directions at each of a plurality of locations. The system includes two spaced scanners at each location to provide signals that indicate the direction of movement. The scanner signals are applied to logic circuits that produce an up (or on) signal, or a down (or off) signal, depending upon the direction of movement. Sequential timing signals are provided so that each up or down signal is sequentially produced, even though the scanner signals at two or more different locations may occur simultaneously.

3,727,035
PULSE TEST OF DIGITAL CONTROL SYSTEM

Troy J. Pemberton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 3, 1971, Ser. No. 149,583
Int. Cl. G06f *15/46*; G05b *17/02*
U.S. Cl. 235—150.1 **3 Claims**

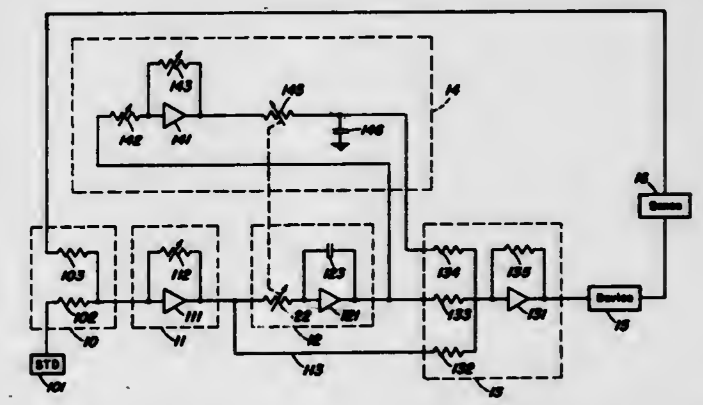

ENTER
PHASE INDICATOR
PHASE 1 OF PULSE TEST
PHASE 2 OF PULSE TEST
PHASE 3 OF PULSE TEST
NO
T = MAX. ?
YES
T = MAX. ?
T = MIN. ?
DEFINE t_0 AND $T(t_0)$ PHASE = 2
DEFINE t_m AND $T(t_m)$ PHASE = 3
DEFINE t_0' AND $T(t_0')$
CALCULATE MODEL PARAMETERS
CALL CONTROLLER TUNING ROUTINE
RETURN

In a direct digital control system, a pulse test method is provided for computing data which can be employed to revise tuning coefficients used in the process model. On initiation of the test, the direct digital control operation is suspended and the controlled variable is pulsed. Revised tuning coefficients of the mathematical model defining the control loop are computed from detected changes in the measured variable. These coefficients can be inserted into the control loop model to provide more accurate process control.

3,727,036
CONTROL STABILIZING TECHNIQUES

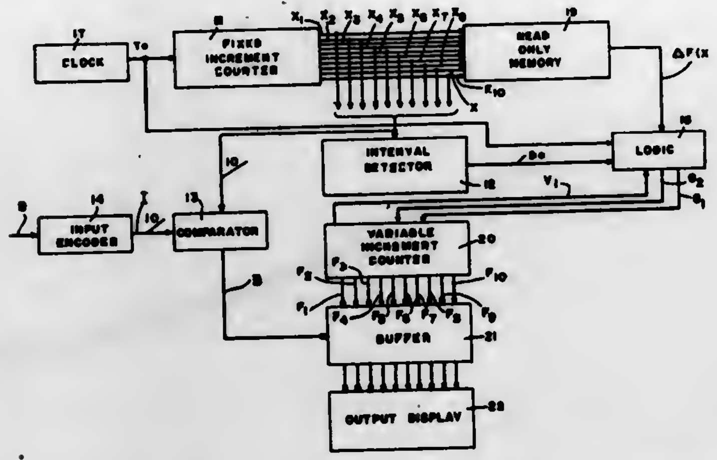
Ward F. O'Connor, Denville, N.J., and Van Vliet, Greenwich, Conn., assignors to The Lummus Company, Bloomfield, N.J.

Filed Sept. 23, 1971, Ser. No. 183,089
Int. Cl. G05b *11/42*
U.S. Cl. 235—150.1 **13 Claims**



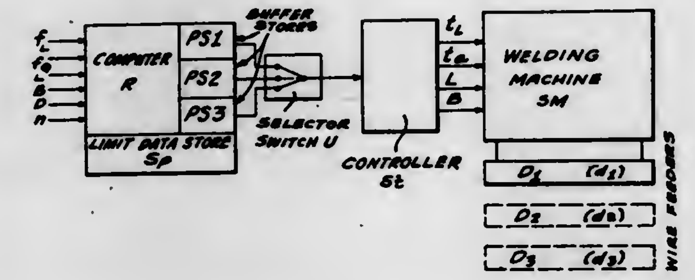
A method of and apparatus for reducing the fluctuations in the operation of a device are disclosed in accordance with the teachings of the present invention wherein said device is regulated by a control signal in accordance with a desired standard of performance. The control signal is produced by combining a first signal that is proportional to an error signal characterizing the performance of said device, with a second signal that is proportional to the integral of said error signal and a third signal that is proportional to the inverse of said second signal and having a time delay with respect to said second signal. The third signal is produced by inverting said second signal and adding a time delay thereto.

3,727,037
VARIABLE INCREMENT DIGITAL FUNCTION GENERATOR
Alan H. Zorn, 1938 Moreland Road, Abington, Pa.
Filed Aug. 27, 1971, Ser. No. 175,623
Int. Cl. G06f *7/38*; G06j *1/00*
U.S. Cl. 235—150.53 **6 Claims**



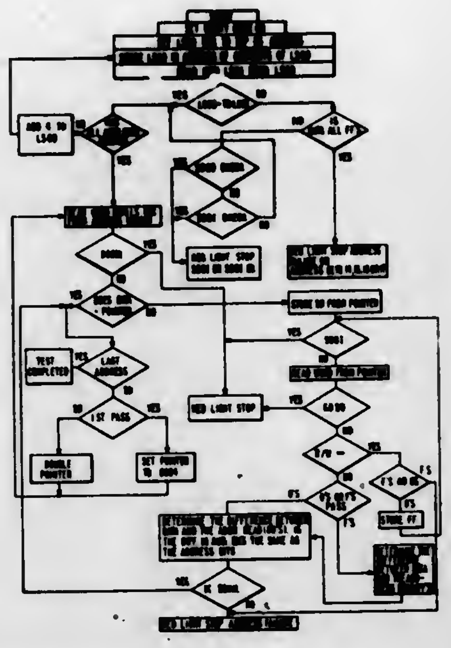
A digital sine function generator having a read-only-memory for storing increments of a sine function thereon, where the storage size of the read-only-memory is limited such that the total number of memory bits as well as the number of bits at each address is less than that required to register all of the sine function increments. Accordingly the function is coded into the memory ambiguously where in the steep or high slope region of the sine function, identical code is used to indicate large increments corresponding to small increments in the relatively level region of the function. An interval detector determines the region of the function which is being read out of the memory and corrects or weights the code at the corresponding locations thus correcting for the ambiguity.

3,727,038
APPARATUS FOR MANUFACTURING WELDED WIRE MESH MATS FOR REINFORCING CONCRETE
Josef Ritter; Wilhelm Boyer; Gerhard Ritter, and Klaus Ritter, all of Graz, Styria, Austria, assignors to EVG Entwicklungsund Verwertungsgesellschaft, Graz, Austria
Continuation of Ser. No. 838,901, July 3, 1969, abandoned
Filed Oct. 21, 1971, Ser. No. 191,360
Int. Cl. G06f *15/46*; B23k *29/00*
U.S. Cl. 235—151.1 **10 Claims**



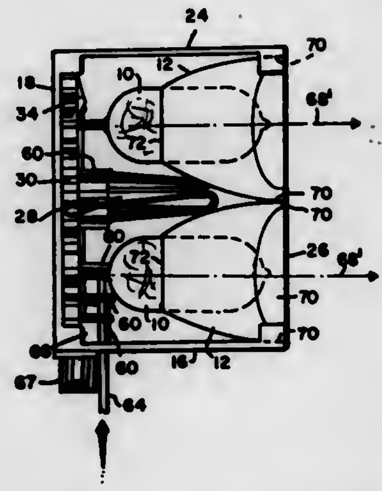
A computer controlled apparatus for manufacturing welded wire mesh mats for reinforcing concrete is described. The welding machine has means for adjusting the longitudinal wire spacing, the transverse wire spacing, the mat length and the mat width. The adjustment device is controlled by automatic controllers which receive orders from the computer. The computer contains a limit data store in which can be stored standard limiting values for the wire mat such as limits derived from official building regulations, and the computer, on the basis of input data relating to the desired longitudinal and transverse strengths of the mat, taken in combination with the standard limiting values, determines the economically best combination of values for the mats and transmits corresponding orders to the controllers of the welding machine.

3,727,039
SINGLE SELECT LINE STORAGE SYSTEM ADDRESS CHECK
Floyd A. Baker, Apalachin, and Wayne R. Sitler, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 2, 1971, Ser. No. 168,302
Int. Cl. G11c *29/00*
U.S. Cl. 235—153 AM **4 Claims**



A method is disclosed for detecting address line failures employing a series of three tests. A first test is performed to determine whether a first group of address bit lines have failed resulting in an indication of an access to a location beyond the limits of the storage system. A second series of tests is performed to determine whether any address line has become short-circuited so as to always indicate a logic 1 resulting in an error indication. A third series of tests is performed to determine whether any address line is opened resulting in the continual presence of a logic 0. The tests are performed sequentially on all address lines accessing the storage system up to and including the last address to be tested in the system.

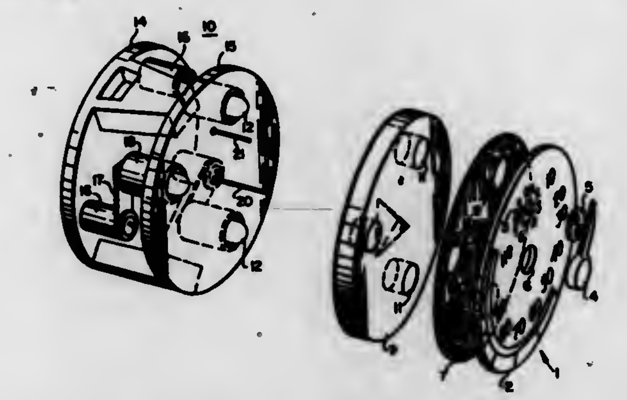
3,727,040
PERCUSSIVE PHOTOFLASH LAMP ARRAY
Donald E. Armstrong, Williamsport; David R. Broadt, Lewisburg, and John J. Vetere, Williamsport, all of Pa., assignors to GTE Sylvania Incorporated, Danvers, Mass.
Filed June 6, 1972, Ser. No. 260,271
Int. Cl. G03b *15/02*
U.S. Cl. 240—1.3 **11 Claims**



A photoflash unit comprising a plurality of axially mounted, percussively-ignitable flashlamps arranged in a planar array with respectively associated reflectors and preenergized

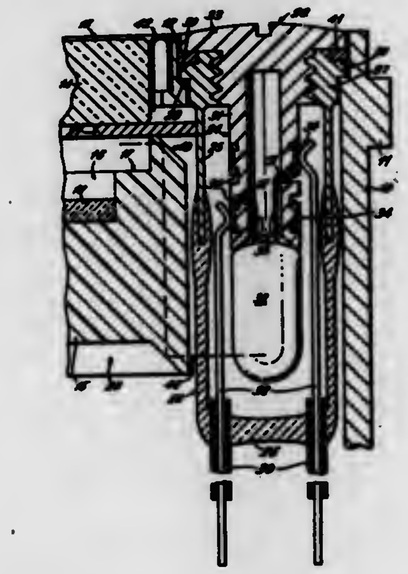
striker springs. The unit is receivable on a camera having a shutter responsive actuating member and includes a mechanism for sequentially releasing the striker springs to fire respective flashlamps in response to successive indexing by the camera actuating member. All reflectors of the array face in one direction, and each reflector is of flatted parabolic shape and disposed coaxially about its associated flashlamp so that the longitudinal axis of the flashlamp is substantially colinear with the optical axis of the reflector.

3,727,041
INSTRUMENT POINTER CONSTRUCTION
Harold T. Scott, Lynn, Mass., assignor to General Electric Company, Wilmington, Mass.
Filed June 1, 1972, Ser. No. 258,822
Int. Cl. G01d *11/28*
U.S. Cl. 240—2.1 **5 Claims**



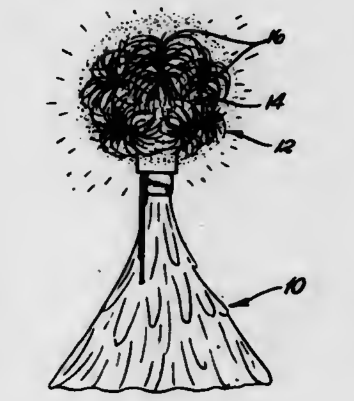
A rearwardly illuminated instrument dial is provided which has a main dial scale around the outer periphery and a sub-dial in one quadrant. The instrument pointer for the sub-dial scale is a metallic disc mounted flush with the dial surface and having openings in the form of the dial pointer. This configuration results in equal illumination level over the entire dial face particularly in the area of the sub-dial while permitting transmitting dial scale member to be easily fabricated.

3,727,042
ELECTRIC LAMP HOLDERS
William Henry Reginald Evans, and John Richard Burgess, both of Cheltenham, England, assignors to Smiths Industries Limited, London, England
Filed July 7, 1971, Ser. No. 160,471
Claims priority, application Great Britain, July 10, 1970, 33,563/70; Nov. 10, 1970, 53,351/70
Int. Cl. G01d *11/28*
U.S. Cl. 240—2.1 **12 Claims**



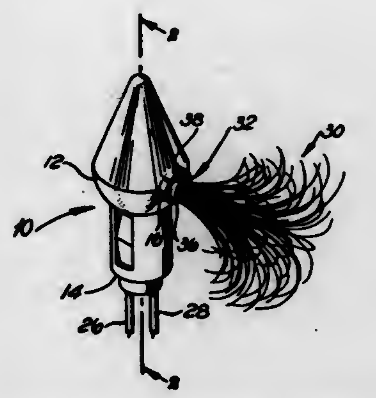
An electric lamp holder comprises an electric lamp support and a housing therefor. The housing is of cylindrical form, one end and an adjacent cylindrical wall portion of the housing being of glass, and the remainder of the housing being of a metal having a coefficient of expansion which is substantially the same as that of the glass. Electrical connection to the electric lamp carried by the support is provided by a pair of resilient electrical contacts extending through the glass end wall of the housing. A plurality of these holders are mounted within a casing of a pressurized indicating instrument to illuminate from the rear a display face of the instrument. The housings are air-tight and are mounted in apertures in the casing, air-tight seals being provided between the housings and the instrument casing so as to enable the electric lamps to be replaced without depressurizing the instrument.

3,727,043
ORNAMENTAL GLOBE UTILIZING OPTICAL FIBERS
Lamar J. Wall, Seal Beach, Calif., assignor to Poly-Optics, Inc., Santa Ana, Calif.
Filed June 11, 1971, Ser. No. 152,305
Int. Cl. A47g *33/16*
U.S. Cl. 240—10 T **9 Claims**



An illuminated globe carrying sprays of optical fibers in which a hollow globular body is formed with openings for receiving the bundled ends of a plurality of optical fiber sprays. An electric lamp within the hollow body illuminates the optical fibers.

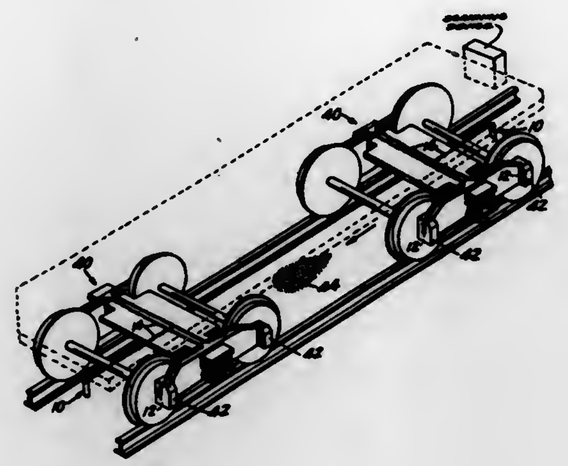
3,727,044
FIBER OPTICS DECORATIVE ORNAMENT
Jeffrey L. Monroy, Santa Ana, Calif., assignor to Poly-Optics, Inc., Santa Ana, Calif.
Filed June 11, 1971, Ser. No. 152,310
Int. Cl. F21p *1/02*
U.S. Cl. 240—10 R **19 Claims**



A decorative structure comprising a hollow body enclosing an electric lamp and carrying a spray of optical fibers laterally thereof. The hollow body is formed of separate but matingly-engageable anterior and posterior members, each defining opposing coincident annular surfaces, an opening being formed through the coincident surfaces at the juncture of the anterior and posterior members to receive the bundled ends of an optical fiber spray. In one embodiment, the anterior member is coniform. In another embodiment the anterior member is spheriform and the structure incorporates a plurality of optical fiber sprays.

3,727,045
SENSING SYSTEM AND DEVICE

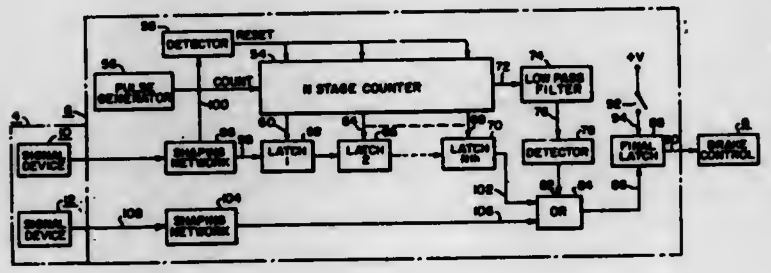
Joseph M. Warren, White Bear Lake, and Richard S. Wilcox, Marine on St. Croix, both of, Minn., assignors to Minnesota Minning and Manufacturing Company, Saint Paul, Minn.
Filed Dec. 28, 1970, Ser. No. 101,518
Int. Cl. B60q *9/00*
U.S. Cl. 246—169 A 8 Claims



A novel device and system are provided for the detection of overheated journals and bearings on a moving vehicle. In one embodiment retroreflective material is propelled to the roadway beneath the vehicle, e.g., a train, to form a target. The target is then exclusively detected by an optical scanner located on a rearward portion of the vehicle.

3,727,046
VEHICLE TRAVEL SPEED CONTROL AND MONITORING METHOD AND APPARATUS

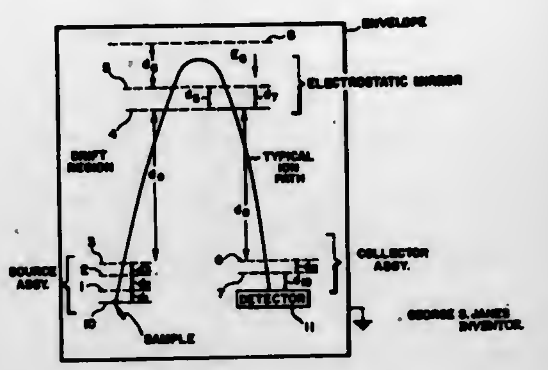
David H. Woods, 1263 Harvest Dr., Monroeville, Pa., and George M. Thorne-Booth, 4614 Sendero Pl., Tarzana, Calif.
Filed Jan. 4, 1971, Ser. No. 103,697
Int. Cl. B61l *3/22*
U.S. Cl. 246—182 C 20 Claims



For a vehicle traveling along a path between first and second stations in accordance with a predetermined speed-distance profile, a first plurality of control markers are disposed along the path at predetermined intervals, and a second plurality of control markers are also disposed along the path at predetermined intervals relative to the first plurality of markers. The vehicle carries cooperative marker sensing travel control apparatus, including a signal counter and other signal logic elements for sensing any overspeed condition of the vehicle relative to the desired speed distance profile and for sensing the time it takes the vehicle to travel from one control marker to the next control marker. In response to the sensing of an overspeed condition, the vehicle is brought to a substantially fail-safe controlled stop in relation to the comfort and safety of any passengers or cargo.

3,727,047
TIME OF FLIGHT MASS SPECTROMETER COMPRISING A REFLECTING MEANS WHICH EQUALIZES TIME OF FLIGHT OF IONS HAVING SAME MASS TO CHARGE RATIO

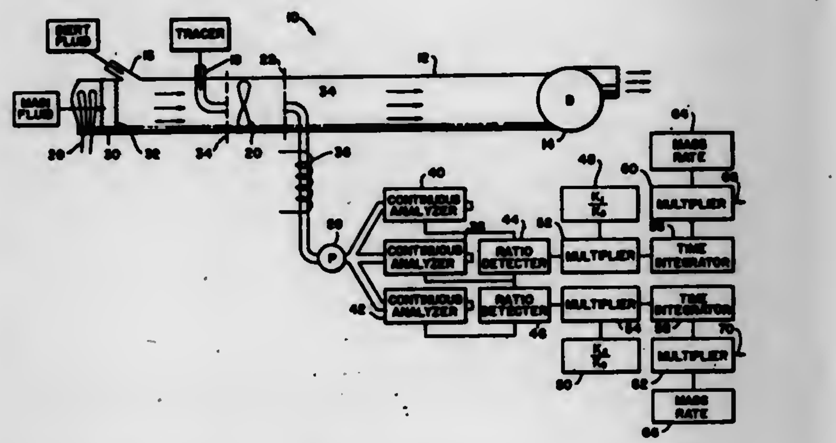
George Sargent James, Lincoln, Mass., assignor to Avco Corporation, Cincinnati, Ohio
Filed July 22, 1971, Ser. No. 165,067
Int. Cl. B01d *59/44*
U.S. Cl. 250—41.9 TF 27 Claims



In a time of flight mass spectrometer ions accelerated from the source are reflected by a soft reflection field toward the detector, the magnitude and direction of the reflection field being such as to lengthen the time of flight of ions of relatively high initial kinetic energy more than ions of relatively low initial kinetic energy so that ions of the same mass to charge ratio, but of different initial velocity will have the same total time of flight from the source to the detector. Thus, ions of a given charge to mass ratio which enter the system at different initial energies at a given time will all arrive at the detector at the same time.

3,727,048
CHEMICAL TRACER METHOD OF AND STRUCTURE FOR DETERMINATION OF INSTANTANEOUS AND TOTAL FLUID FLOW MASS AND VOLUME

Rudy M. Haas, 8171 Forestlawn, Detroit, Mich.
Filed May 10, 1971, Ser. No. 141,749
Int. Cl. G01n *21/26*
U.S. Cl. 250—43.5 MR 20 Claims

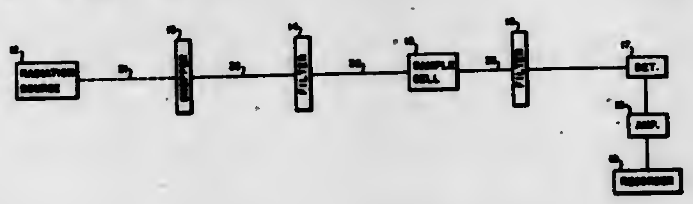


Total mass flow of a fluid component is determined by structure for and the method of inserting a chemical tracer into a flowing fluid at a known mass flow rate, removing a mixed sample of the flowing fluid and tracer, analyzing the concentration of tracer and the concentration of a component of the flowing fluid, the total mass of which is to be determined, determining the ratio of tracer to component of interest, integrating the ratio over a predetermined time and multiplying the result by the mass flow rate of the tracer inserted into the main fluid flow. The total particulate mass flow and total volume flow as well as instantaneous mass, particulate mass and volume flows are determined by similar structures and methods.

A method of expressing tracer concentrations in analyzers rather than in main fluid flow tubes and a method of taking into account tracer components present in the main flow tube before insertion of the tracer into the main fluid flow are provided. Cancellation of tracer components in the main fluid flow upstream of the point of injection of tracer is also disclosed.

3,727,049
METHOD FOR DETERMINING IMMISCIBLE WATER CONTENT OF FLUIDS BY SPECTROPHOTOMETER

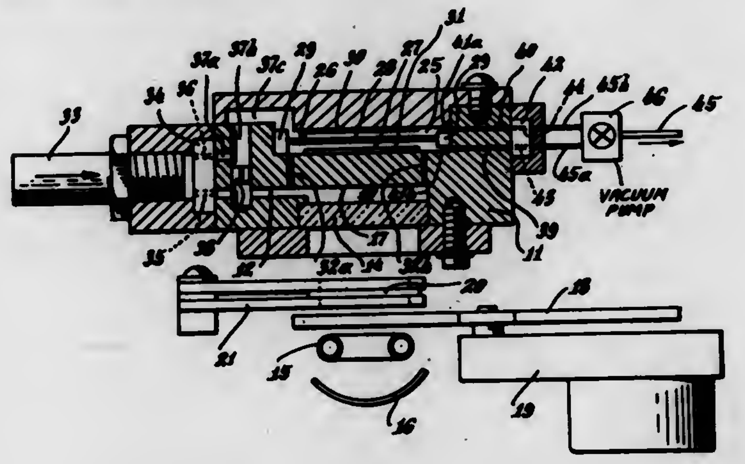
Raymond A. Saunders, Hyattsville, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 1, 1967, Ser. No. 635,974
Int. Cl. G01n *21/26*
U.S. Cl. 250—43.5 R 6 Claims



A process is given for determining the relative proportion of water present in a fluid medium which involves mixing the medium with solvent to form a solution and analyzing the solution by spectrophotometric means to determine the total water content of the medium.

3,727,050
GAS ANALYZER

Edwin L. Kerr, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Sept. 20, 1971, Ser. No. 181,975
Int. Cl. H01j *37/00*; G01m *21/12*
U.S. Cl. 250—43.5 R 14 Claims



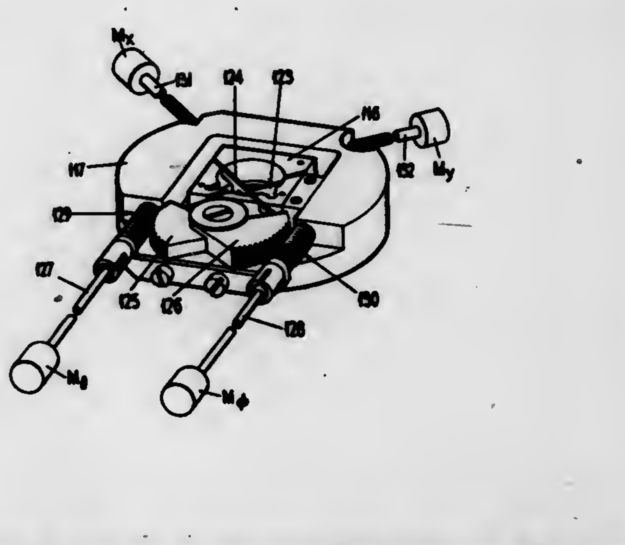
A gas analyzer for determining the presence and proportional amount of gases of interest in a sample, such as a sample of automobile exhaust gas, utilizes a very thin cell having a window in one side to admit chopped radiation, such as infrared radiation of a wavelength coinciding with an absorption band of the gas of interest. Heat absorbed from the applied radiation by a gas component of interest increases its temperature and hence increases the pressure of the sample. This pressure increase is measured to determine the proportional amount of a gas of interest present by means of the modulated output of a low-frequency microphone associated with the cell. The thickness of the cell is from about 0.1 mm. to about 4 mm.; with a cell this thin the heat loss to the window and to the back wall is so rapid that a slow chopping rate can be applied such that absorption of radiation by the gas of interest approaches a steady state during the sample illuminating portion of the chopping cycle. The measured concentration is thus independent of small variations in the chopping rate. Even a very small quantity of a gas of interest is measured rapidly and accurately. Specificity is facilitated by initially reducing the pressure of the sample in the cell to a fraction of an atmosphere, for example, one tenth. When the pressure is thus reduced, a method is provided for selecting a new cell thickness or chopping rate such that there is little loss in sensitivity at the reduced pressure.

This invention relates to gas analyzers for analyzing gas mixtures, and is of the general type in which absorption of radiation by a component of interest is detected and measured as means for determining the presence of such component and measuring the proportional amount present. In particular the invention is an analyzer which is particularly adapted for rapidly and accurately detecting and measuring very low concentrations of gases of interest which may be present in the mixture.

The gas analyzer of this invention is simple to operate and economical to manufacture. It is, for example, particularly suited for quick, on the spot analysis of automobile exhaust gases for reliably and inexpensively checking compliance with air pollution control standards for automobile exhaust emissions.

3,727,051
ELECTRON MICROSCOPE WITH AUTOMATICALLY ADJUSTED SPECIMEN STAGE

Richard Stockbridge Page, Great Dunmow, England, assignor to Associated Electrical Industries Limited, London, England
Filed June 22, 1971, Ser. No. 155,474
Claims priority, application Great Britain, June 29, 1970, 31,456/70
Int. Cl. H01j *37/20*
U.S. Cl. 250—49.5 B 15 Claims

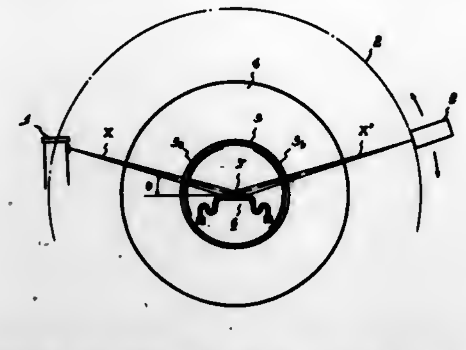


A specimen stage for an electron microscope having a control system for automatically maintaining a selected point of the specimen in the center of the field of view, during tilting of the specimen. One disclosed control system comprises an electrical computing circuit, including potentiometers coupled to the stage for sensing tilting and the position of the point under observation. In another embodiment, the control system comprises an enlarged-scale mechanical model of the specimen stage, upon which measurements are made.

3,727,052
SPECIMEN HEATING DEVICE

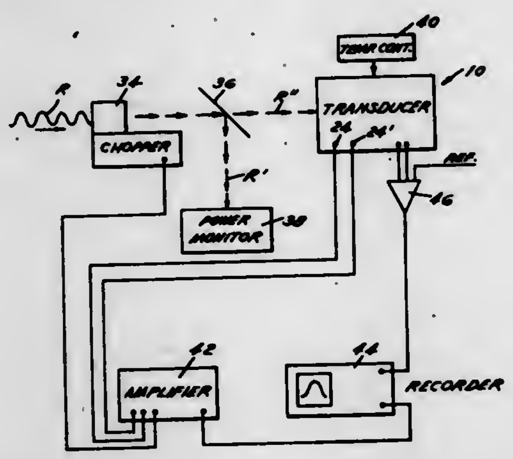
Masaaki Hino, Showa-machi, Akishima-shi, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan
Filed March 10, 1971, Ser. No. 122,811
Int. Cl. G01n *23/20*
U.S. Cl. 250—51.5 3 Claims

A device for holding and heating a specimen for an X-ray apparatus, for example, an X-ray diffractometer. The device comprises a heater ribbon of an electrical resistance heating material having a flat specimen face. There is a recess cut in the heater ribbon for housing the specimen such that substantial sample temperature uniformity is achieved.



3,727,053
METHOD AND APPARATUS FOR DETECTING RADIATION BY MEANS OF THE PYROMAGNETIC EFFECT

Rodger M. Walser, 2407 Trail of Madrones, and Robert W. Bene, 4904 Timberline, both of Austin, Tex.
Filed May 3, 1971, Ser. No. 139,707
Int. Cl. G01s *5/00*
U.S. Cl. 250—83.3 H 17 Claims



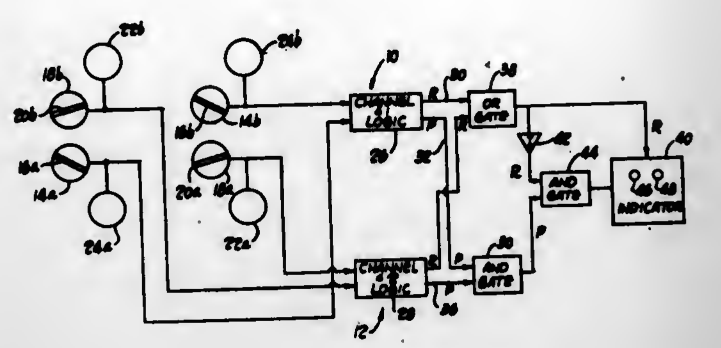
Method and apparatus for detecting electromagnetic radiation by means of the pyromagnetic effect. A pyromagnetic material is magnetically and thermally biased for operation within a magnetic transition region. Within the magnetic transition region the magnetic moment of the material changes very rapidly with temperature. Time-varying radiation incident upon the pyromagnetic material is transformed into heat to produce a time rate of change in the material temperature and thereby a time rate of change in the magnetic moment. The changing magnetic moment induces a voltage in a coil to indicate that radiation has been detected.

3,727,054
X-RAY INSPECTION APPARATUS LOGIC CIRCUITRY

Norman A. Herrick, Mentor, Ohio, assignor to Picker Corporation, White Plains, N.Y.
Continuation of Ser. No. 818,697, April 23, 1969, abandoned. This application May 10, 1971, Ser. No. 141,928
Int. Cl. G01n *23/02*
U.S. Cl. 250—83.3 D 39 Claims

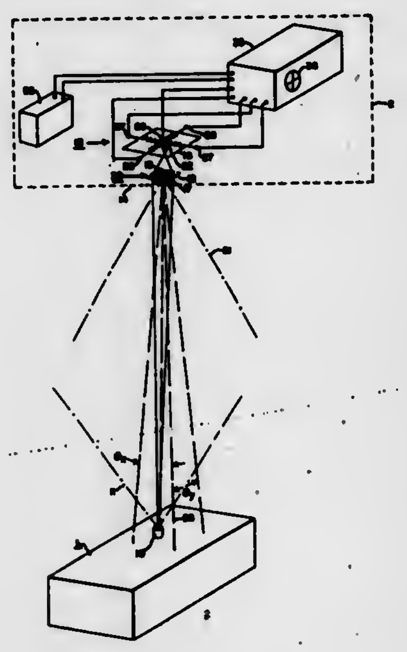
In X-ray inspection apparatus for responding to signals indicating a change in density of a material being inspected, such as caused by the occurrence of transverse seams or splices in the material, logic circuitry provides indications of normal splices, open splices, splices that taper by more than a predetermined amount, splices that are too wide or too narrow to be acceptable, consecutive splices that occur too closely together, and indications of an excess number of splices occurring in the material.

Two pairs of X-ray responsive elements are utilized, one pair being located adjacent each edge of a relatively flat material being inspected. The elements are so arranged that one element of each pair responds to splices of one orientation, and the other two elements respond to splices of a different orientation.



3,727,055
OPTICAL POSITIONING SYSTEM

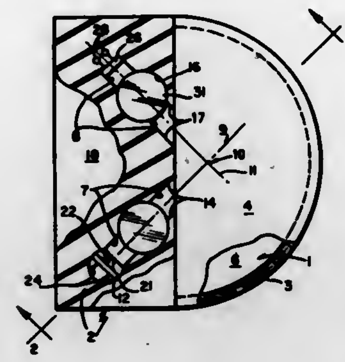
John Lewis David, Clinton; John Stafford Frichtel, Remsen, and Lawrence Louis Zuppan, New Hartford, all of N.Y., assignors to General Electric Company, Utica, N.Y.
Filed Sept. 24, 1970, Ser. No. 75,021
Int. Cl. G01j *1/00*
U.S. Cl. 250—83.3 H 12 Claims



A positioning system is provided for positioning one movable object carrying a detector unit with respect to another movable object carrying a source of radiation. The detector unit has an axis of symmetry of response to the radiation provided by the source. At least one output is provided by the detector unit indicative of an error angle in one degree of freedom, the error angle being defined as the angle between the axis of symmetry and a line drawn from the source to the detector unit. Relative positioning of the objects is controlled in response to the detector unit output.

3,727,056
PHOTON COUPLERS WITH SOLID STATE LAMPS

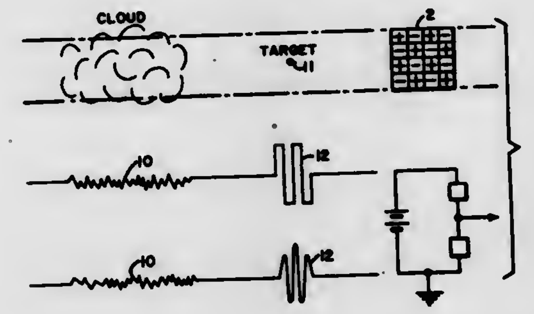
Robert B. Enemark, Weymouth, Mass., assignor to Electro Signal Lab., Inc., Weymouth, Mass.
Filed March 3, 1972, Ser. No. 231,659
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 3 Claims



A smoke detector with a ribbon of light from a linear array of light emitting diodes directed to an intersection with a ribbon-like path of view of an optically parallel photobar intersecting the light ribbon. A constant current source supplies low current to the diodes.

3,727,057
INFRARED DETECTOR DEVICE WITH A MOSAIC OF OPPOSITELY-POLED ADJACENT ELEMENTS

Richard F. Higby, Severna Park, and Mike Lauriente, Clarksville, both of Md., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa.
Filed June 15, 1962, Ser. No. 202,771
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 H 1 Claim

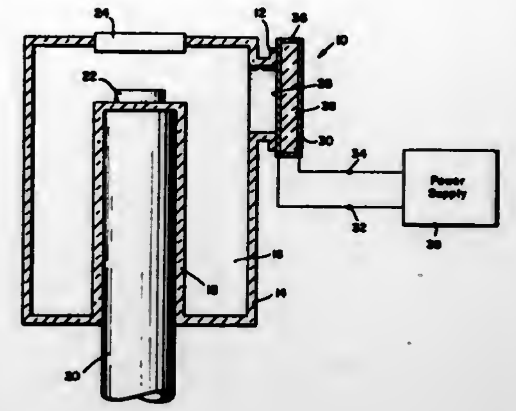


An infrared detector device incorporating a checkerboard arrangement of photoconductor detector elements is disclosed. Adjacent elements are oppositely poled, resulting in the cancellation of background signals on any two adjacent elements, thereby providing background discrimination.

3,727,058
HYDROGEN ION DEVICE

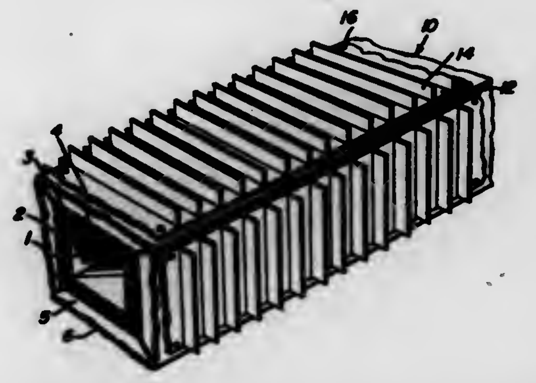
Alfred F. Schrey, Ontario, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Feb. 16, 1971, Ser. No. 115,453
Int. Cl. G01t *1/16*; B01k *3/00*; G01n *27/62*
U.S. Cl. 250—83.3 H 8 Claims

A dihydrogen orthophosphate salt crystal body, either KH_2PO_4 or $NH_4H_2PO_4$, is provided with a hydrogen transparent metal coating on opposing surfaces, and is protected on the remaining surfaces with a protective insulator coating. When the metal coated surfaces are in contact with gas mixtures having different hydrogen partial pressures, current flow between the metal coatings and hydrogen ion flow through the salt body are directly related. Thus, when connected to a power supply, the salt body acts as a hydrogen pump.



3,727,059
CONTAINER FOR TRANSPORTING RADIOACTIVE MATERIALS

Stanton L. Reese, 11409 Duryea Dr., Potomac, Md.
Filed Jan. 26, 1971, Ser. No. 109,925
Int. Cl. G21f *5/00*
U.S. Cl. 250—108 R 11 Claims

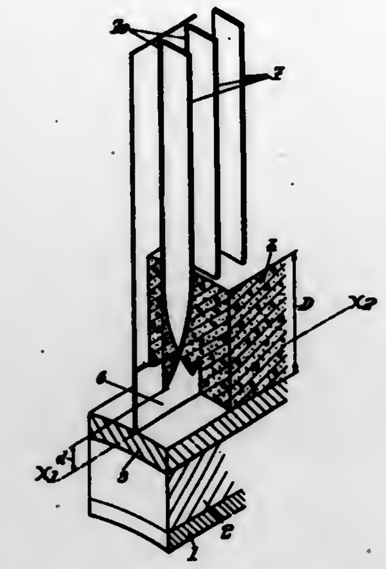


A container for transporting radioactive materials utilizing a removable system of heat conducting fins is provided which permits a substantial reduction in the weight of the container during transport, increases the heat dissipation capability of the container and substantially reduces the scrubbing operation after loading and unloading the radioactive material from the container. The detachable fins are made of a light weight highly heat conductive metal such as aluminum or aluminum alloys.

3,727,060
PACKAGE FOR THE STORAGE AND TRANSPORTATION OF RADIOACTIVE SUBSTANCES CONTAINING BOTH NEUTRON AND GAMMA RADIATION ABSORBING MATERIAL

Paul Blum, Saint-Nom-la-Breteche, France, assignor to Transnucleaire, Societe Pour les Transports de L'Industrie Nucleaire, Paris, France
Filed Aug. 13, 1970, Ser. No. 63,529
Claims priority, application France, Aug. 13, 1969, 6927937; Jan. 14, 1970, 7001265; May 8, 1970, 7016914
Int. Cl. G21f *1/02*, *5/00*
U.S. Cl. 250—108 R 13 Claims

The package has a composite wall comprising from inside to outside, a inner shell surrounding the useful cavity, a layer of dense material for protection against gamma radiations and an outer shell. A layer of neutron-absorbing material is arranged against the other surface of the outer shell, heat conducting elements, such as fins or pins, being fixed against the outer shell and projecting at the surface of the layer.



3,727,061

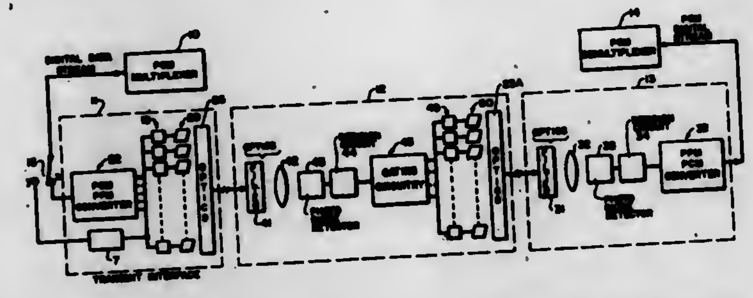
PULSE LASER COMMUNICATION SYSTEM

Larry U. Dwerkin, Red Bank, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed July 6, 1970, Ser. No. 52,498

Int. Cl. H04b *9/00*

U.S. Cl. 250—199 **13 Claims**



A wide band tactical pulsed laser communication system capable of operating at high bit rates wherein an incoming digital data stream, as for example, a multi-channel time division multiplexed pulse code modulated signal, first is converted into a pulse position modulated signal and the corresponding pulse position modulated pulses of each channel are applied by way of appropriate gating circuitry in sequence to an array of injection lasers, each capable of generating optical signals at relatively high peak power.

3,727,062

ACOUSTO-OPTIC INFORMATION TRANSLATION SYSTEM WITH REFERENCE BEAM FOR CONTROL PURPOSES

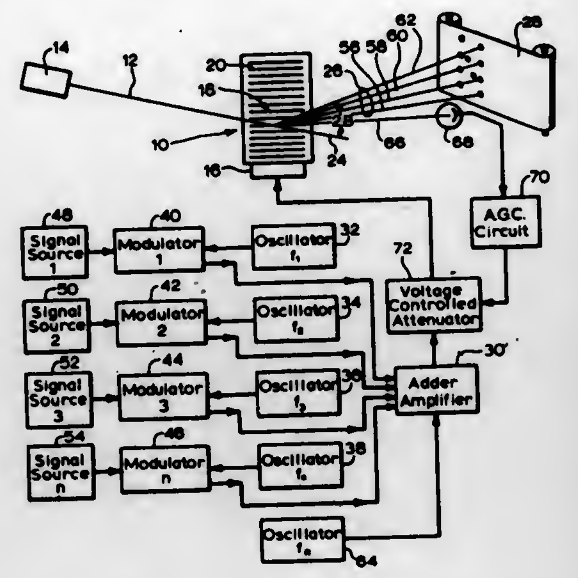
Leigh Curtis Foster, Atherton, Calif., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed March 10, 1972, Ser. No. 233,645

Int. Cl. H04b *9/00*

U.S. Cl. 250—199 **5 Claims**

An acousto-optic image-forming system utilizing a spatially coherent light beam includes a Bragg cell modulator and means for generating in the cell a plurality of sound wave patterns effective to diffract the light beam into a like plurality of writing (or display) beams. Each writing beam is modulated with image information independently of all others such that a plurality of lines (or line elements) of information, here disclosed as a line of alphanumeric characters, can be written or displayed with a single scan of the beams. A novel feedback automatic gain control (AGC) system causes the intensity of each beam to be independent of variations in intensity in the remaining beams. The AGC system includes means for producing a reference sound wave pattern which diffracts a separately detectable reference light beam. A photo detector senses variations in the reference light beam and generates a control signal which is fed back to a driver for the Bragg cell modulator to effect the AGC.



3,727,063

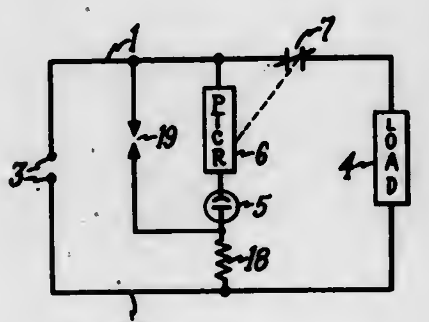
LIGHTING CONTROL DEVICE

Charlie B. Turner, Hendersonville, N.C., assignor to General Electric Company

Filed Nov. 23, 1971, Ser. No. 201,278

Int. Cl. H01j *39/12*

U.S. Cl. 250—206 **1 Claim**



Photoelectric control device for switching loads such as street lighting luminaires on and off in response to ambient light levels. The circuit includes a photoelectric cell and a positive temperature co-efficient resistor (PTCR) connected in series across the luminaire load and normally closed contacts of a thermal switch in series with the luminaire load operating in response to the heat level of the PTCR, which thereby serves to compensate for varying levels of ambient temperature.

3,727,064

OPTO-ISOLATOR DEVICES AND METHOD FOR THE FABRICATION THEREOF

Michael Lucien Bottini, San Jose, Calif., assignor to Monsanto Company, Saint Louis, Mo.

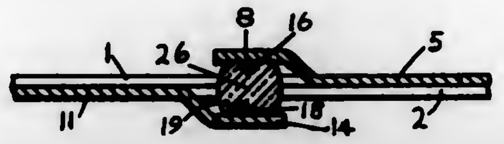
Filed March 17, 1971, Ser. No. 125,044

Int. Cl. H01j *39/12*

U.S. Cl. 250—217 S **11 Claims**

The disclosure herein relates to opto-isolators (emitter-detector coupled pairs) and to a method for the fabrication and

packaging thereof into devices having a plural lead dual-in-line configuration. Disclosed herein are plastic-packaged devices for optical electronic coupling between light-emitters and light sensors (detectors) useful to effect a variety of electronic functions, and provide extremely high electrical isolation between input and output together with ultra-fast speed of response.



3,727,065

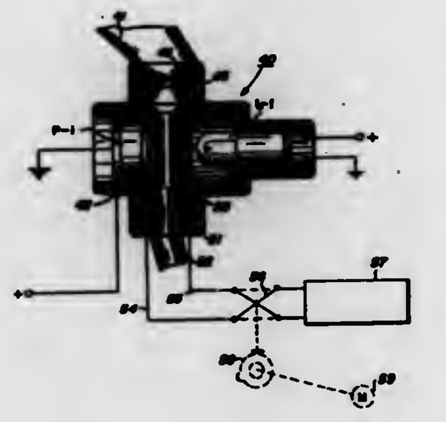
AUTOMATIC DEVELOPABILITY CONTROL SYSTEM

John Maksymiak, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,208

Int. Cl. G01n *21/26*

U.S. Cl. 250—218 **10 Claims**



A developability control system for an electrostatic recording apparatus in which a sensor including two parallel spaced NESA glass plates through which developer material flows are connected in a circuit wherein each is electrically charged alternately for equal periods of time. While each plate is charged, it is adapted to attract toner. A light source on one side of the two plates and a photocell on the other side "senses" the sum toner deposit on the two plates at all times thereby effecting a steady state control signal.

3,727,066

PROBE PHOTOMETER WITH FLUID SENSING DEVICE

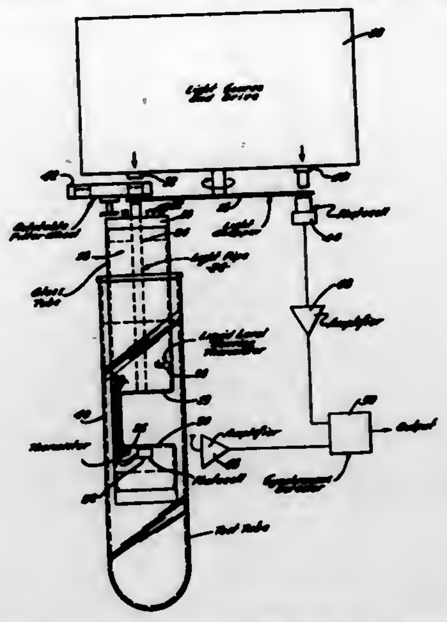
Allan L. Louderback, Temple City, and Robert P. Owen, Pasadena, both of Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation of Ser. No. 706,112, Feb. 16, 1968, abandoned. This application May 1, 1970, Ser. No. 31,847

Int. Cl. G01n *21/26*

U.S. Cl. 250—218 **9 Claims**

The invention is concerned with an improved probe-type of photometer, the probe of which may be inserted directly into a liquid or gas, to measure the light transmission through the fluid; and which may be used, for example, for spectrophotometric, turbidity, colorimetric, densitometer, or other measurements.



3,727,067

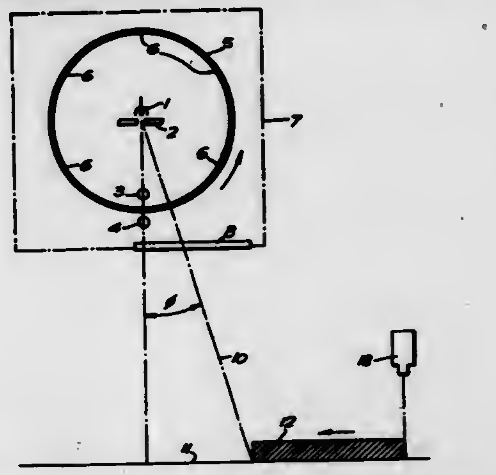
RADIATION RESPONSIVE POSITION DETECTORS

Richard Shepherd, Middlesborough, England, assignor to Decca Limited, London, England

Filed Aug. 30, 1971, Ser. No. 176,163

Int. Cl. G01b *11/28*; G01n *21/30*; H01j *3/14*

U.S. Cl. 250—219 LG **4 Claims**



A radiation responsive position detector comprising a sealed enclosure having a window, said enclosure containing a motor, a hollow cylinder which is connected to the motor to be driven thereby, said cylinder being rotatable about its principal axis and having axially directed slits spaced around its curved part, a radiation responsive device with a mask that is inside the cylinder and has an elongate aperture parallel to the slits, and means for indicating when the cylinder is in a predetermined angular position, said means including a photocell and a light source, one disposed within the cylinder, the other outside the cylinder to define an optical path which intersects the path of the rotating slits.

3,727,068

BOTTLE INSPECTION APPARATUS

Bertram George Poynton, Bromham; Terry John Rich, and Jeffrey Jerome Sainsbury, both of Kempston, all of England, assignors to Fords (Finsbury) Limited, Bedford, England

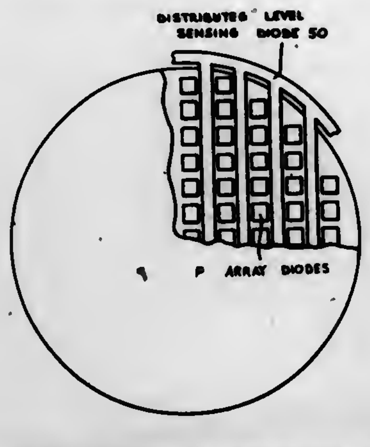
Filed Dec. 21, 1971, Ser. No. 210,351

Claims priority, application Great Britain, Feb. 11, 1971, 4,489/71

Int. Cl. G06m *7/00*; H01j *39/12*

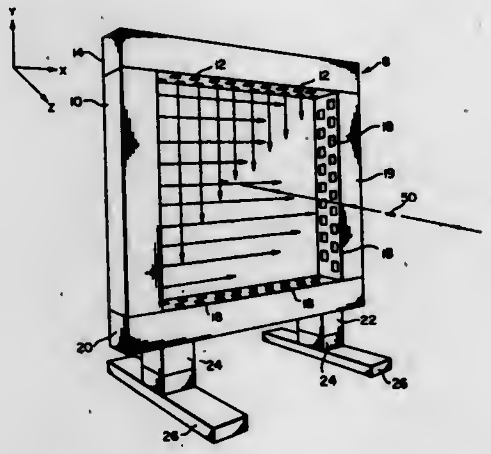
U.S. Cl. 250—220 M **7 Claims**

An integrated photocell device for bottle inspection comprises a multiplicity of inspection photodiodes and a level sensing photodiode, which measures the average light transmission through a bottle, arranged in a suitable array for scanning an area of a bottle to be inspected. The level sensing diode is in the form of a grid distributed over the photocell device and the inspection diodes are disposed within the grid. The inspection diodes are each connected in an electrical circuit which is adapted to be triggered by a pulse applied thereto and to restore to its initial state within a time determined by the intensity of the illumination of the photodiode. The individual inspection circuits are connected in parallel to a load resistor, the output voltage across which drops to zero when all the circuits have restored to their initial states. The level sensing diode is connected in a similar circuit to each inspection diode and is connected to a separate load resistor. Means is provided for comparing the times taken for the two output voltages to return to zero, after the application of a pulse, in order to determine whether or not a bottle being scanned by the device should be rejected as being dirty or faulty.



3,727,069
TARGET MEASUREMENT SYSTEM FOR PRECISE PROJECTILE LOCATION

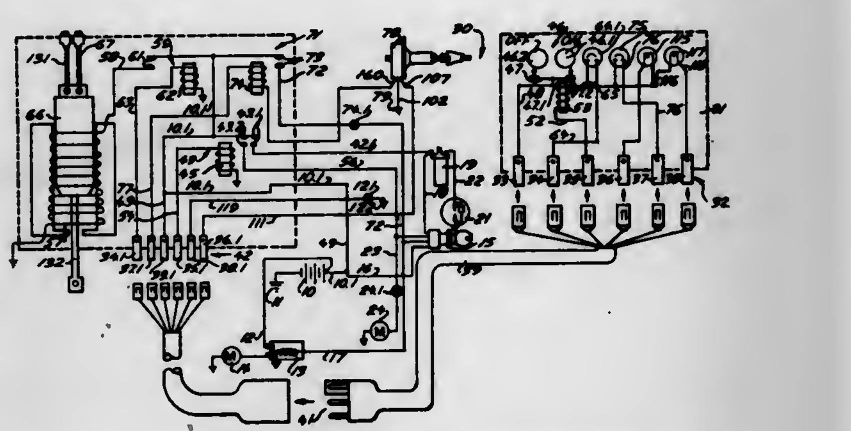
Eugene Casson Crittenden, Jr., Monterey, Calif.; Richard Allan King, Singapore, Republic of Singapore, and Thomas Clyde Andrews, Fresno, Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed July 21, 1971, Ser. No. 164,739
Int. Cl. G01p *3/68*
U.S. Cl. 250—222 R 13 Claims



A target system for measuring the location and diameter of a projectile in a frame of reference, including vertical and horizontal banks of light sources for projecting collimated beams of light across the target area, and corresponding vertical and horizontal banks of light receptors for indicating the location and diameter of a projectile passing through the target frame. A plurality of light receptors receive impinging light from each light source, each light receptor receiving a predetermined portion of a corresponding collimated light beam. When a light beam is interrupted by a projectile, the light receptors indicate the location and diameter of a projectile in increments less than the width of the collimated beam. Output signals from the light receptors are converted to numerically coded signals by coupling the output signals from the light receptors to a plurality of amplifiers, less in number than the number of light receptors, according to a predetermined coding pattern.

3,727,070
REMOTE CONTROL AUTOMOBILE ENGINE STARTING APPARATUS

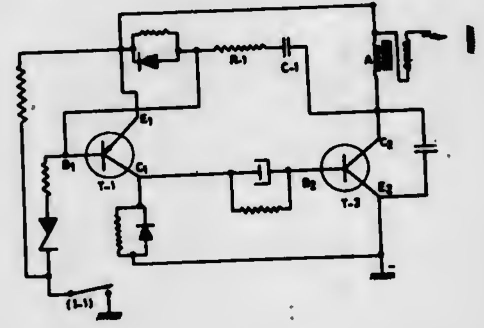
George H. K. Liang, 526 East 16th Avenue, Vancouver, British Columbia, Canada
Filed Oct. 12, 1971, Ser. No. 188,075
Int. Cl. H02p *9/04*
U.S. Cl. 290—38 3 Claims



Remote control automobile engine starting apparatus having a remote control panel, an electrically energized solenoid having a plunger connected to throttle linkage of the engine carburetor for increasing fuel flow, circuitry including relays energized by manually operated switches on the control panel for connecting the automobile battery to the engine ignition coil and a starting motor solenoid switch, and a vacuum operated switch responsive to changes in air pressure in the carburetor intake for opening circuitry between the battery and the starting motor solenoid switch when the engine is started.

3,727,071
IMPULSE GENERATOR TO IGNITE COMBUSTION ENGINES

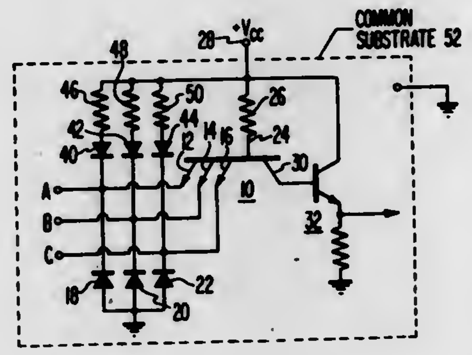
German Ripoll Moran, Hilarion Eslava 33, Madrid, Spain
Filed Nov. 5, 1971, Ser. No. 196,084
Claims priority, application Spain, Nov. 5, 1970, 162,977
Int. Cl. F01p *3/06*
U.S. Cl. 307—10 R 2 Claims



An impulse generator for igniting combustion engines has an electronic circuit installed between the breaker points and the high voltage coil thereof. A first transistor has its emitter connected to the coil and its base connected to the points so that closing of the points causes actuation of the first transistor. The collector of the first transistor passes electric current through an electrolytic condenser to actuate a second transistor, thereby feeding the primary of the coil so that when the points open, the collector of the first transistor loses voltage and interrupts the collector-emitter passage of the second transistor to originate high voltage in the secondary coil. When high voltage occurs in the coil, there is an inverse damping oscillation in the collector of the second transistor which is channelled toward a condenser and resistor, shunt-connected to the collector of the second transistor from where current is transmitted to the base of the first transistor which it actuates, and the cycle is begun again.

3,727,072
INPUT CIRCUIT FOR MULTIPLE EMITTER TRANSISTOR

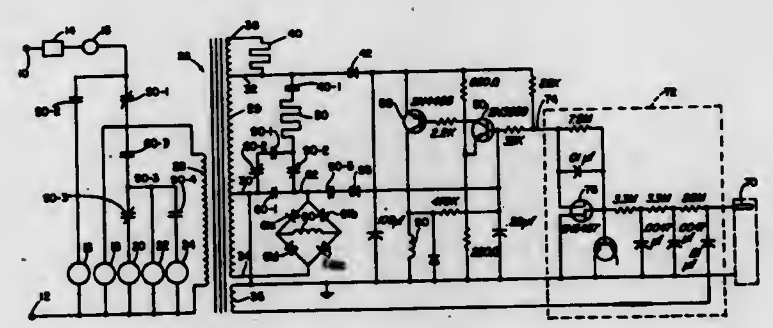
Charles Felix Madrazo, and Robert George Saenz, both of Palm Beach, Fla., assignors to RCA Corporation, Princeton, N.J.
Filed Nov. 9, 1971, Ser. No. 196,890
Int. Cl. H03k *17/00*
U.S. Cl. 307—218 7 Claims



The emitter electrodes of a multiple emitter transistor are coupled to ground by one set of diodes and to the supply voltage terminal through resistors and another set of diodes. The emitter electrodes serve as input terminals to a circuit such as a transistor-transistor logic (T^2L) circuit. In the absence of input signals, the resistors and the second set of diodes maintain these input terminals at a fixed voltage level providing high speed, and high noise immunity performance. The second set of diodes insures that undesired currents do not flow through the resistors.

3,727,073
FLAME SENSOR CONTROL CIRCUIT

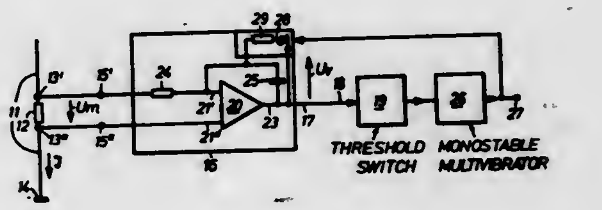
Philip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.
Division of Ser. No. 15,014, Feb. 20, 1970, Pat. No. 3,644,074. This application Aug. 2, 1971, Ser. No. 168,074
Int. Cl. H01h *37/00*
U.S. Cl. 307—117 2 Claims



Control apparatus featuring a condition sensor, a first relay responsive to a signal from the condition sensor, the first relay being in a first state in the absence of a signal from the condition sensor and being switched to a second state in response to a signal from the condition sensor, a control relay adapted to be switched between first and second states, circuitry responsive to an operation request for switching the control relay from the first state to the second state after a time interval, and clamping circuitry operative in response to the detection of the first relay in its second state during the time interval to clamp the first relay in the second state and the control relay in the first state, overriding the influence of the condition sensor on the first relay.

3,727,074
SWITCHING ARRANGEMENT RESPONSIVE TO ELECTRICAL CHARGE

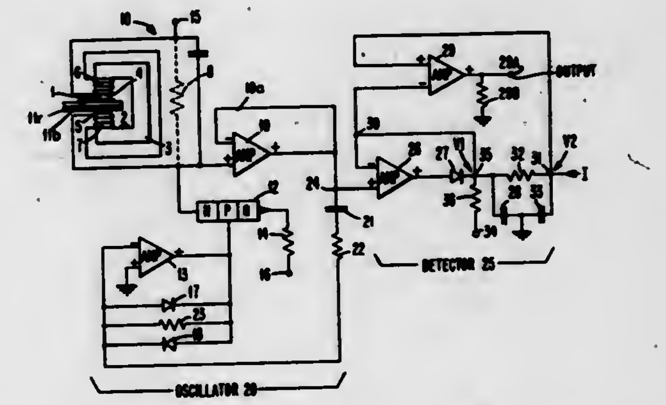
Helmut Keller, Renningen, and Horst Gschwendtner, Esslingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 13, 1971, Ser. No. 171,591
Claims priority, application Germany, Aug. 22, 1970, P 20 41 800.2
Int. Cl. G01r *19/00*
U.S. Cl. 307—125 15 Claims



An arrangement for generating an electrical switching process when a predetermined quantity of electrical charge has passed through an electrical conductor. A resistor used as a measuring element is connected in series with the electrical conductor, and the voltage appearing across the resistor is applied to an integrator. The switching device in the form of a trigger circuit provides a trigger signal when the output voltage from the integrator has attained a predetermined threshold magnitude. This threshold magnitude is selectable in correspondence to a predetermined and selected quantity of electrical charge to be passed through the electrical conductor. The trigger signal is also used to clear the integrator circuit.

3,727,075
MISSING TYPE DETECTOR

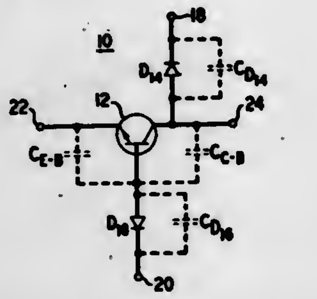
Frederick Buckley, Vestal; George Melnyk, and Bruce A. Wolfe, both of Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 24, 1972, Ser. No. 228,979
Int. Cl. G01n *27/00*; H02j
U.S. Cl. 307—149 7 Claims



A moving train of type elements associated with a high speed printer are passed through the gap of an inductor. The inductor, which is part of a tank circuit of an oscillator, provides a magnetic field across the gap which induces eddy currents in the type elements. The oscillator provides an output signal which is responsive to the changes in the effective resistance of the inductor caused by changes in the eddy currents whenever at least a predetermined portion of at least one of the type elements is missing.

3,727,076
LOW POWER DIGITAL CIRCUIT UTILIZING AVALANCHE BREAKDOWN

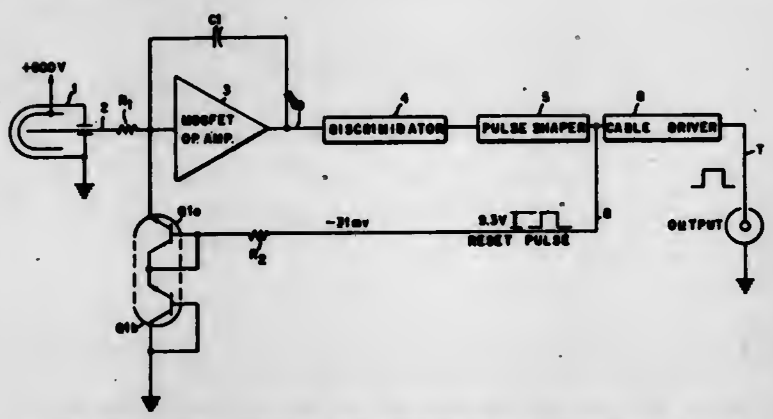
Jerry Mar, Scotch Plains, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 30, 1971, Ser. No. 214,130
Int. Cl. H03k *19/22*
U.S. Cl. 307—218 15 Claims



A low power circuit utilized to perform logic and switch functions comprises a single junction transistor with a first diode connected in series with the base and a second diode connected in series with the collector. This circuit, which utilizes avalanche breakdown of both diodes, requires no DC voltages or overlapping pulses.

3,727,077
SMALL-CURRENT INTEGRATOR

Floyd M. Glass, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Aug. 25, 1971, Ser. No. 174,838
Int. Cl. G06g *7/12*
U.S. Cl. 307—229 4 Claims

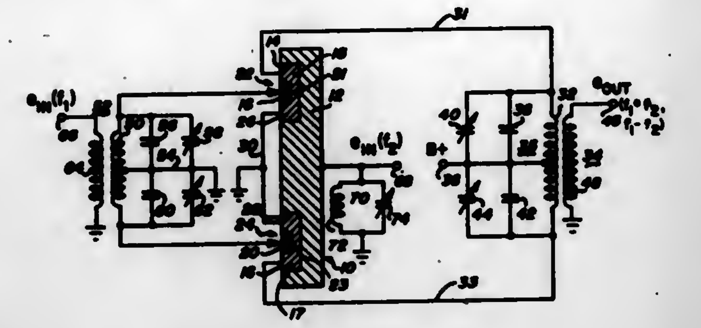


An integrating circuit for quantizing currents as small as 10^{-12} ampere is set forth. The over-all integrating principle is fairly conventional. However, a much simplified and improved charge removal technique and an electrometer-type operational amplifier having common-mode feedback for stabilization in the event of radiation damage substantially improves operation.

3,727,078
INTEGRATED CIRCUIT BALANCED MIXER APPARATUS

Donald L. Wollesen, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Continuation of Ser. No. 21,104, March 19, 1970. This application March 30, 1972, Ser. No. 239,549
Int. Cl. H03k *5/20*
U.S. Cl. 307—233 5 Claims

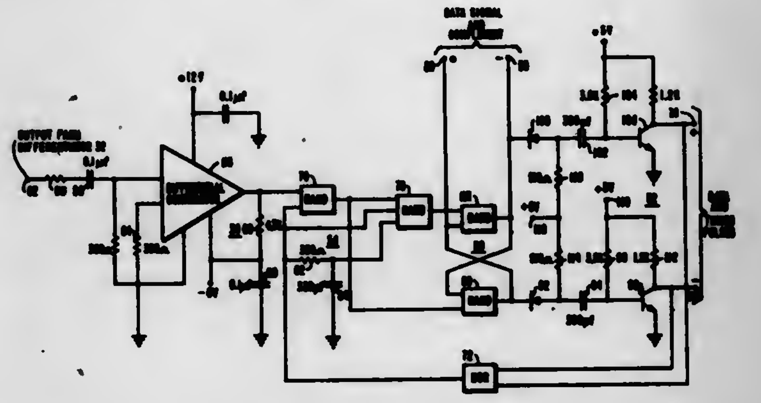
Balanced mixer circuit apparatus using two matched integrated circuit field effect transistors as active elements wherein one input signal is applied to the gates of the transistors in push-pull relationship and a second input signal is applied to the substrates of the transistors in a common mode push-push manner. Both input signals thus look into



capacitive loads which for practical purposes can be considered to be open circuits, thereby averting any harmonic distortion which might otherwise be produced by loading of the input drive circuits.

3,727,079
ZERO CROSSING DETECTING CIRCUIT

B. Charles Garrett, Sepulveda, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Dec. 6, 1971, Ser. No. 204,817
Int. Cl. H03k *5/00*
U.S. Cl. 307—235 11 Claims

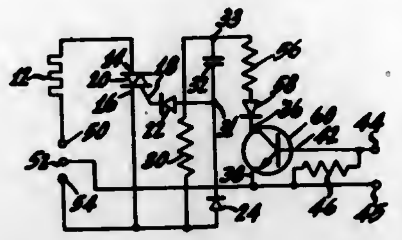


A circuit is provided for detecting each zero crossing of a data signal without interference from noise during a data detecting or decoding operation. The zero crossing detecting circuit determines the occurrence of each zero crossing of the data signal by constantly comparing the data signal with a reference level such as ground. A bistable latch responds to each occurrence of a zero crossing of the data signal to change state and to thereby generate a pulse denoting the occurrence of the zero crossing. The pulse which is of selected duration is applied to logic circuitry to prevent the latch from changing state in response to a succession of immediately following noise-produced zero crossings.

3,727,080
SWITCHING CIRCUITS

George Draper Hanchett, Summit, N.J., assignor to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 71,389, Sept. 11, 1970, Pat. No. 3,671,778, which is a continuation of Ser. No. 590,320, Oct. 28, 1966, abandoned. This application March 27, 1972, Ser. No. 238,358
Int. Cl. H03k *17/56*
U.S. Cl. 307—252 B 14 Claims

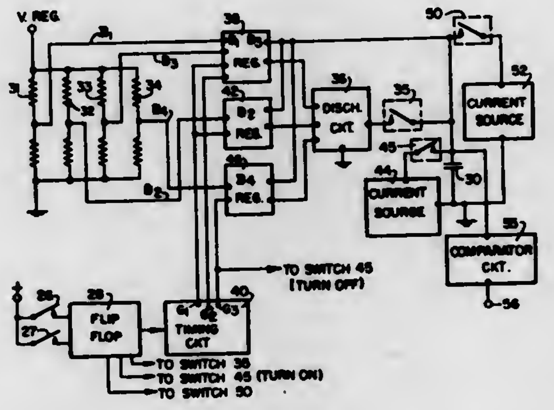
A bidirectional gate controlled device, such as a triac, is connected in circuit with a load and a pair of input terminals adapted for connection to a source of alternating current of the type having a first terminal, a second terminal, and a third intermediate terminal. A time constant circuit for controlling the conduction state of the device is connected to a given one of said pair of input terminals and a third input terminal adapted for connection to said third terminal of the AC source. The time constant circuit is adapted to charge only



when the AC source is of a given polarity; its discharge duration being sufficient to provide a triggering signal to the gate of the device to trigger it into consecutive conduction in both of its conduction directions.

3,727,081
REGULATOR FOR CONTROLLING CAPACITOR CHARGE TO PROVIDE COMPLEX WAVEFORM

William F. Davis; Howard G. Shumway, both of Tempe, and Thomas M. Frederiksen, Scottsdale, all of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 15, 1971, Ser. No. 189,630
Int. Cl. H03k *4/02*, *4/12*
U.S. Cl. 307—260 17 Claims

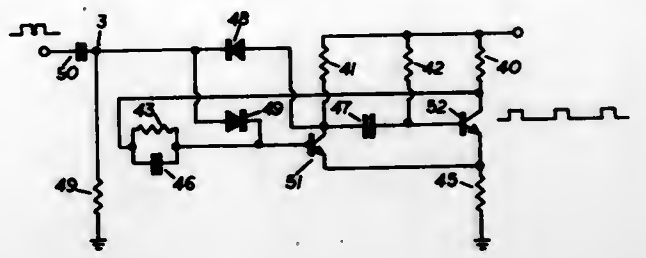


In fuel injection ignition systems, it is necessary to provide control of the open time of the fuel injector valves which varies with the engine speed. However, for efficient operation with a minimum of pollution, the relationsip of valve open time to engine speed is not a simple relationship, and factors other than engine speed are involved. It has been found that the open time should change with engine speed by steps not directly related to engine speed. This can be accomplished by providing a waveform which varies with time across a capacitor by a regulator system which controls both increase and decrease of the voltage across the capacitor. This voltage waveform, which varies with time and is independent of engine speed, can then be combined with a ramp voltage initiated at a particular point of rotation of the engine at the time the injector valves are opened. The valves can then be turned off when the combined voltage has the desired relation to a voltage produced by manifold pressure to provide the required open time for the injector valves.

3,727,082
CODE CONVERTER

Jorge G. Codina, Hartsdale, N.Y., assignor to Comard Controls Inc., New York, N.Y.
Filed Oct. 4, 1971, Ser. No. 185,969
Int. Cl. H03k *17/00*
U.S. Cl. 307—265 1 Claim

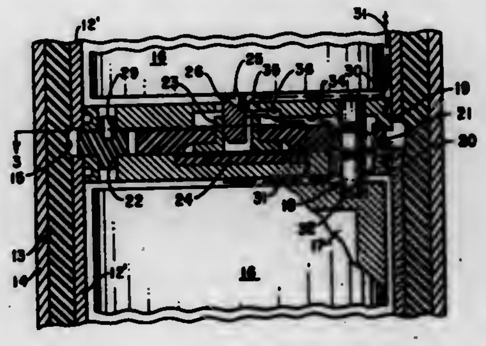
Apparatus reservoir to a pulse duration modulation type incoming signal to derive therefrom a pulse position modulation type output signal. The apparatus includes a differentiation network responsive to the incoming signal, a one shot multivibrator to produce the output signal and means including



two diode bearing paths having diodes of reversed polarity interposed between the network and the multivibrator.

3,727,083
ALL BONDED THERMIONIC ENERGY CONVERTER

Robert R. Hobson, San Jose, Calif., and John B. Dunlay, Wayland, Mass., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Sept. 1, 1970, Ser. No. 78,327
Int. Cl. H02n *3/00*
U.S. Cl. 310—4 9 Claims

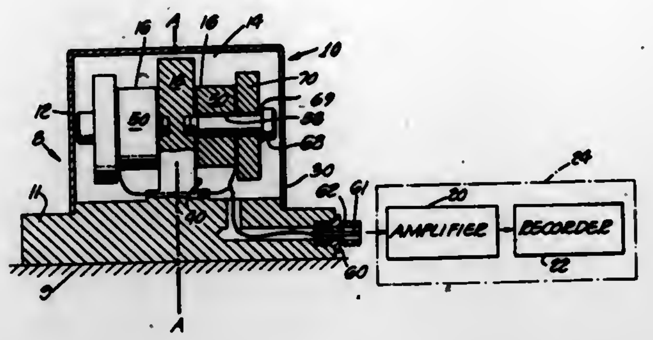


A thermionic fuel element for electrical power generation having an all bonded sheath-sheath insulator collector assembly. The thus bonded assembly is provided with at least one internal groove by which an emitter intercell sub-assembly is bonded to the first-mentioned assembly. The subassembly is constructed to provide the required electric interconnections between a series of interconnected collector-emitter units or cells as well as providing passageways for an alkali metal vapor located in an interelectrode space, while providing proper spacing between the collector and emitter units thereof. In addition each sub-assembly includes means which readily allows the sub-assembly to be inserted, aligned and secured to the first-mentioned assembly while supporting the emitter, maintaining the emitter to collector gap, and providing a heat transfer path to the first-mentioned assembly.

3,727,084
ACCELEROMETER UTILIZING SHEAR RESPONSIVE X-CUT LITHIUM NIOBATE

Howard C. Epstein, South Pasadena, Calif., assignor to Becton, Dickinson Electronics Company, Pasadena, Calif.
Filed June 29, 1970, Ser. No. 50,657
Int. Cl. H01v *7/02*; H04r *17/00*
U.S. Cl. 310—9.5 12 Claims

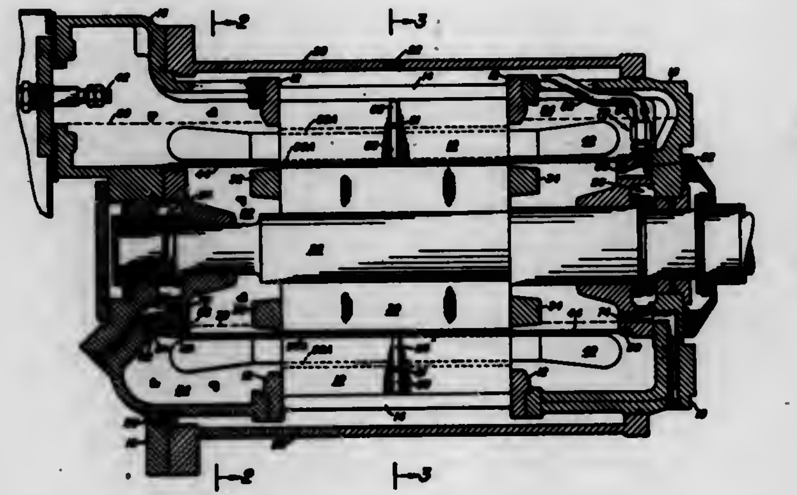
The accelerometer of this invention utilizes a a lithium niobate crystal operated in the shear mode with the shearing planes parallel to a mirror plane and with the axis of the acceleration arranged at an angle of about 32° in the second and fourth quadrants of the Y–Z planes of the crystal. This accelerometer has high efficiency and operates effectively over a wide range of temperatures including high temperatures above 1,000°F.



3,727,085

ELECTRIC MOTOR WITH FACILITY FOR LIQUID COOLING

Peter B. Goetz, Martinsville, N.J., and Wilbert E. Bullert, Woodbridge, both of N.J., assignors to General Dynamics Corporation, Avenel, N.J.
Filed Sept. 30, 1971, Ser. No. 185,016
Int. Cl. H02k *9/00*
U.S. Cl. 310—54 15 Claims



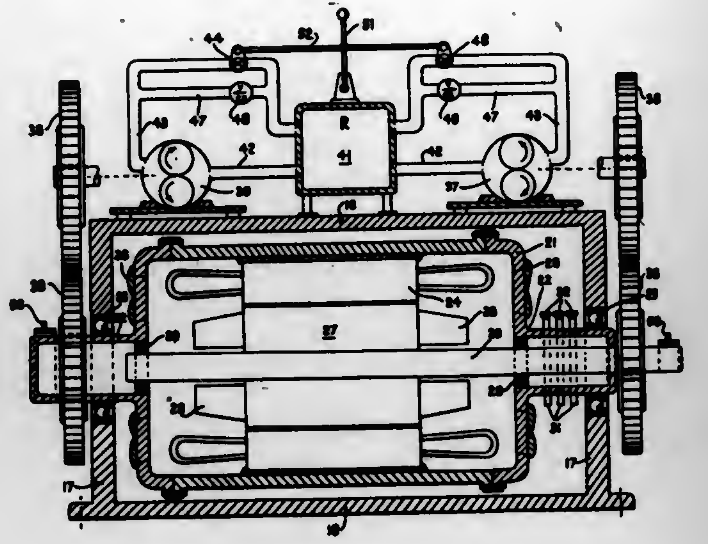
A liquid cooled electric motor is disclosed having a rotor surrounded by a stator and separated from the stator by a gap. A sleeve of insulating non-magnetic material separates the rotor from the stator and divides the motor housing into a stator cavity and a rotor cavity. The stator cavity is filled with a vaporizable refrigerant to a level covering the stator windings of the motor. A porting structure connects the lower portion of the rotor cavity to the stator cavity such that liquid refrigerant fills the rotor cavity to a predetermined level. The refrigerant cools both the rotor and the stator; thereby providing large horsepower output with a minimum motor size.

3,727,086

MOTOR WITH RELATIVELY ROTATABLE STATOR AND ROTOR

Homer E. Cherwink, deceased, late of 1515 Fowler Cr. Road, Sonoma, Calif. (Hazel O. Cherwink, administratrix)
Filed June 1, 1971, Ser. No. 148,576
Int. Cl. H02k *23/60*
U.S. Cl. 310—119 2 Claims

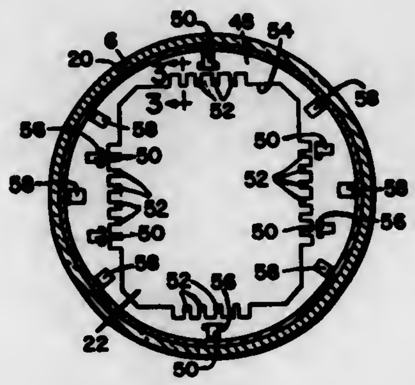
The "stator" of a polyphase a.c. motor is rotatably mounted in a base and arranged to drive a first pump and the rotor to drive both the load of the motor and a second pump. By valve arrangements, the pump outputs create varying back-pressures which control the relative speeds of rotation of the rotor and stator, and thus the speed of rotation of the shaft driving the load is varied.



3,727,087

MEANS FOR SECURING PLANAR MEMBER TO CATHODE RAY TUBE FACEPLATE

David R. Steinberg, and William T. Sutton, both of Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.
Filed Nov. 16, 1970, Ser. No. 89,715
Int. Cl. H01j *29/12, 29/02, 19/50*
U.S. Cl. 313—91 8 Claims

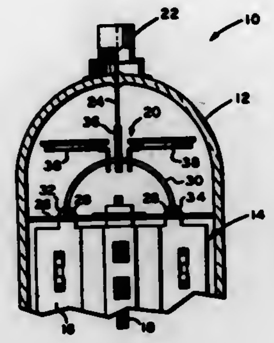


A planar member such as a phosphor coated fiber optic plate, having a thermal coefficient of expansion that is incompatible with that of a cathode ray tube envelope and faceplate, is accurately supported a precise distance from the inner surface of the faceplate by a plurality of step-shaped supports having a spacer portion disposed between the planar member and faceplate and a shoulder portion adjacent to the periphery of the planar member. A conductive disc having an opening therein is situated adjacent to the planar member so that a plurality of fingers which project inwardly from the opening contact the peripheral portion of the planar member. Means are provided for securing the disc to the supports in such a manner that the fingers apply a retaining force to the planar member and make electrical contact thereto.

3,727,088

METHOD AND STRUCTURE FOR ELIMINATING CORONA DISCHARGE IN HIGH VOLTAGE ELECTRON DISCHARGE DEVICES

William A. Allgaier, Emporium, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.
Filed Oct. 21, 1971, Ser. No. 191,395
Int. Cl. H01j *19/70*
U.S. Cl. 313—178 1 Claim

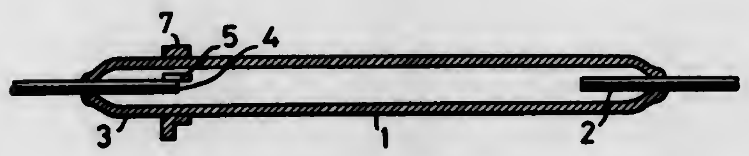


A high voltage electron discharge device, such as the horizontal output tube for a color television receiver, has a getter assembly electrically and mechanically connected to the anode whereby the getter is maintained at anode potential.

3,727,089

SMALL SIZED STROBOSCOPIC TUBE FOR PHOTOGRAPHIC USE

Shing Cheung Chow, 12A Suffolk Road, Kowloon, Hong Kong
Filed June 21, 1971, Ser. No. 155,144
Claims priority, application Japan, June 24, 1970, 45/62297
Int. Cl. H01j *61/26*
U.S. Cl. 313—178 7 Claims



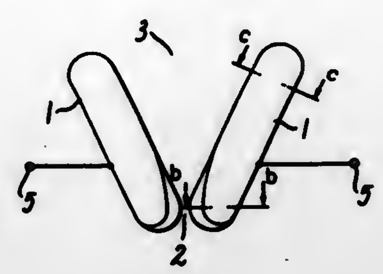
A discharge tube provided with a pair of electrodes is filled with an inert gas and is adapted for use with photographic apparatus as a stroboscope or the like. At least one getter of metals such as titanium, tantalum and zirconium is mounted on or near one of the electrodes. The getter is heated by the near electrode and the ion flow in the tube.

3,727,090

DISCHARGE GAP STRUCTURE FOR LIGHTING ARRESTERS

Tohei Nitta; Yoshikazu Shibuya; Naoya Yamada, and Yukio Fujiwara, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed March 1, 1971, Ser. No. 120,028
Claims priority, application Japan, March 9, 1970, 45/19926; March 3, 1970, 45/18054; March 11, 1970, 45/20638
Int. Cl. H01j *17/04*
U.S. Cl. 313—214 7 Claims

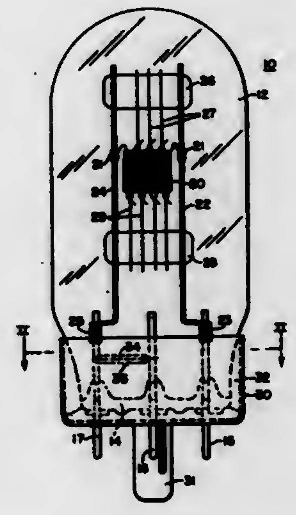
Discharging gap structures are disclosed including two discharge electrodes disposed in divergently spaced, opposite relationship. End portions of the electrodes define a minimum gap size and each have a radius of curvature less than the minimum gap size. The radius of curvature is not greater than 0.3 of the minimum gap size and smaller than that of the other end portions of the electrodes defining a larger gap size. An arc-extinguishing plate may be positioned 15 mm or more from the electrodes with a space adjacent the electrodes filled with 0.1 gram or more of SF_6 gas.



3,727,091

HALOGEN-CYCLE INCANDESCENT LAMP HAVING A PLATINIZED INTERIOR FUSE

Aristide R. DeCaro, Edison, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 11, 1971, Ser. No. 142,303
Int. Cl. H01k *1/50, 1/66*
U.S. Cl. 313—222 6 Claims



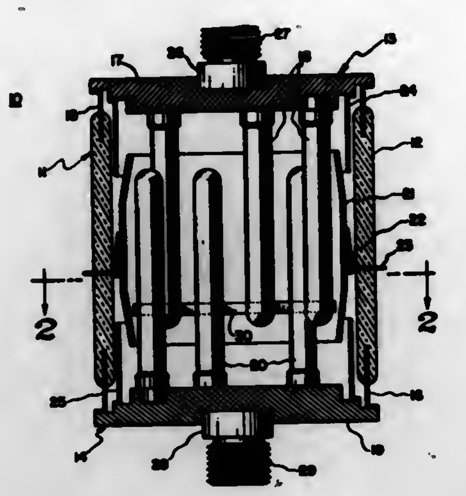
A halogen-containing single-ended electric lamp of the type used in slide projectors is provided with a platinum-coated fuse wire of nickel or Nichrome alloy which is located within the envelope and connected in series with the tungsten filament. The platinum coating is of such thickness that it protects the wire from the hot corrosive atmosphere within the operating lamp and prevents the fusible core metal from contaminating the lamp and disrupting the halogen-regenerative cycle.

3,727,092

HIGH POWER VACUUM FUSE APPARATUS

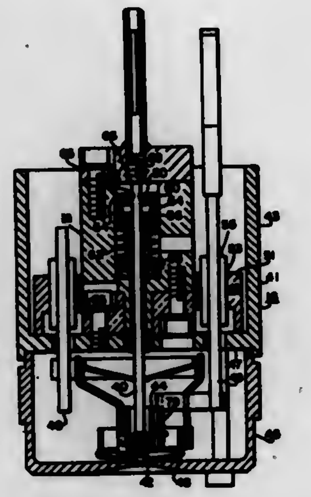
James J. Keenan, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed March 20, 1972, Ser. No. 235,946
Int. Cl. H01j *21/00*; H01h *39/00*
U.S. Cl. 313—233 17 Claims

Vacuum fuse apparatus includes a pair of arcing electrode assemblies in the form of an interleaved array. A fusible element is connected between members of each electrode assembly. When the current carrying capacity of the fusible member is exceeded it fails and an arc is struck between parallel gaps of the interleaved rod array. Arc is extinguished upon occurrence of a zero value of current through fuse device.



3,727,093
ELECTRON BEAM APPARATUS

Joel H. Fink, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 20, 1971, Ser. No. 108,039
Int. Cl. H01j *1/94, 1/20*; H01l *1/16*
U.S. Cl. 313—237 3 Claims

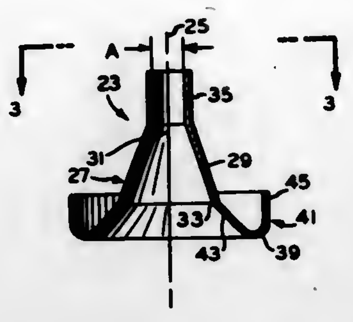


A high energy electron beam apparatus is provided having a cathode assembly for operation within a high temperature environment. The assembly associated with the cathode is subjected to high temperature generated by the cathode and associated excitation source. More specifically, this invention is directed to the support assembly associated with and about the cathode which includes sealed conductors with insulation means provided thereabout and also means for supporting and positioning a bolt type cathode accurately with respect to the assembly.

3,727,094
LEAKAGE INHIBITING SHEILDING MEANS

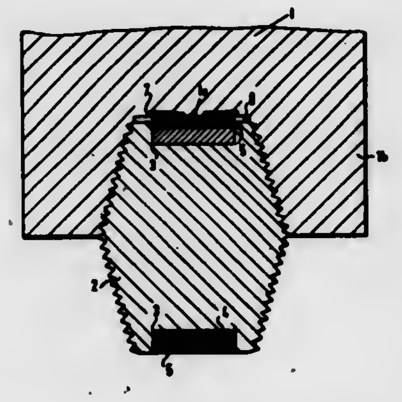
Henry W. Roeber, Waterloo, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.
Filed Aug. 3, 1972, Ser. No. 277,616
Int. Cl. H01j *1/52, 61/04*
U.S. Cl. 313—313 7 Claims

A shielding means for inhibiting the formation of electrical leakage between the stem leads of an electron discharge device, is a substantially infundibular shaped member formed for umbrella-fashion-attachment to an individual lead to effect better shielding of the bead area surrounding the lead. A hollow conic section, extending below a tube-like attachment portion, has an annular basal-oriented projecting portion with a peripheral upward turned portion therearound. The integral shaping of the upward turned portion with the contiguous projecting portion provides beneficial structural reinforcement and rigidity to the structure.



3,727,095
SCREW NIPPLE CONNECTION FOR CARBON AND GRAPHITE ELECTRODES

Heinz Hesselmann, Mulheim, Germany, assignor to C. Conradty, Nurnberg, Germany
Filed Jan. 8, 1971, Ser. No. 104,907
Claims priority, application Germany, Jan. 13, 1970, P 20 01 212.8
Int. Cl. H01j *1/00*; H05b *7/14*
U.S. Cl. 313—357 5 Claims



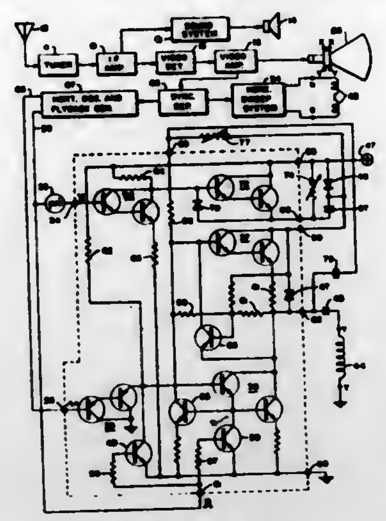
An arrangement for securing a threaded nipple to a carbon or graphite electrode against turning, according to which that end face of the threaded nipple which is to be connected to the electrode is provided with an axial recess into which is introduced a cement adapted to swell under the influence of heat and a fitting member provided with teeth which in response to a swelling of said cement are brought into locking engagement with teeth provided in a recess in the end face of the electrode to which said nipple is to be connected.

3,727,096
DEFLECTION DRIVER CONTROL CIRCUIT FOR A TELEVISION RECEIVER

Milton E. Wilcox, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 3, 1971, Ser. No. 112,280
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD 8 Claims

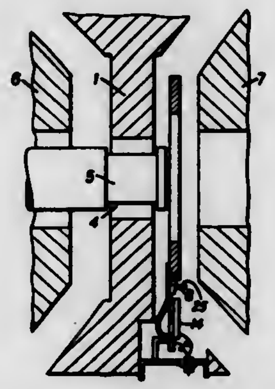
A monolithic integrated vertical deflection coil driver circuit for a television receiver is disclosed. To permit driving of a vertical deflection coil directly from output transistors located on the monolithic integrated circuit chip, a flyback control circuit using an energy storage capacitor is employed to obtain a voltage pulse in excess of the voltage of the power

supply and having sufficient energy to provide proper vertical deflection flyback. The voltage necessary to initiate flyback is low enough to be compatible with monolithic integrated circuit technology.



3,727,097
MAGNETRONS

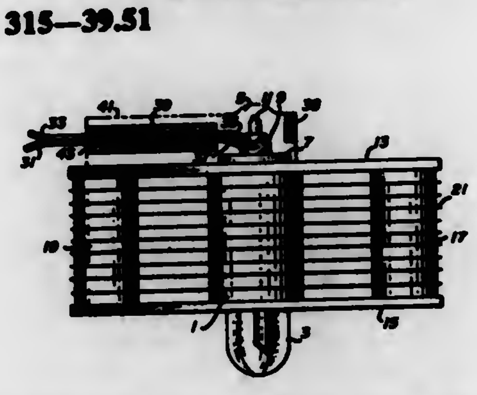
Brian Frederick Cooper, Chelmsford, Essex, England, assignor to English Electric Valve Company Limited, London, England
Filed July 28, 1971, Ser. No. 166,934
Claims priority, application Great Britain, July 21, 1971, 38,081/70
Int. Cl. H01j *25/50*
U.S. Cl. 315—39.55 13 Claims



In a magnetron in which tuning is effected by a movable conductive member adjacent one end face of the anode block whose position is controlled by a piezo-electric transducer inside the envelope of the magnetron the transducer is shielded from the cathode by a layer of glass and/or a metal shield, thus reducing the deterioration of the transducer.

3,727,098
MAGNETRON FILTER BOX

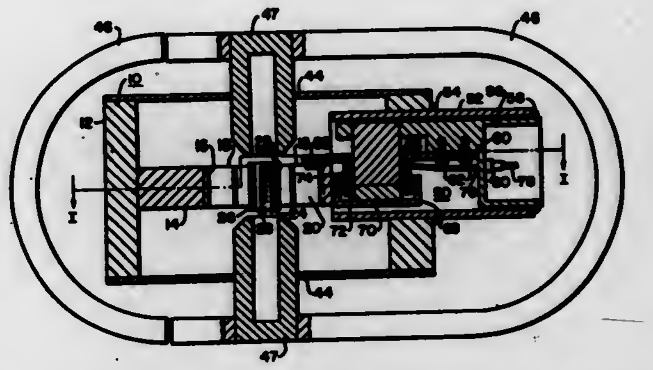
Paul Wythe Crapuchettes, Woodside, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.
Filed July 22, 1971, Ser. No. 165,113
Int. Cl. H01j *25/50*
U.S. Cl. 315—39.51 14 Claims



A magnetron filter box of novel construction serves to dissipate and filter out spurious signals appearing at the filament terminals of a magnetron. The filter box includes: two (or more) elongated electrical conductors spaced and insulated from one another which are provided with adjacent end portions of each adapted for connection to a respective one of the filament terminals of the magnetron which provide a current carrying path to the filament; microwave dissipative material of a predetermined volume is placed about and surrounds the electrical conductors minimally all along a portion of the lengths; and a metal container of predetermined dimension and volume encloses the microwave dissipative material and underlying conductors and is adapted to enclose additionally the stem or terminal end of the magnetron either with or without the metal pole piece as part of the container combination. The relative geometry between the dissipative material and the metal enclosure is such as to form a microwave cavity of a low-Q factor, suitably less than 100, and adjacent portions of the metal enclosure and the dissipative material is such as to define by analogy a transmission line with a "lossy" characteristic impedance, suitably less than 50 ohms.

3,727,099
TUNED CAVITY DEVICE

Bruce K. Burwell, Southport, and Kenneth Powell, Horseheads, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 4, 1963, Ser. No. 255,759
Int. Cl. H01j *25/50*
U.S. Cl. 315—39.59 9 Claims

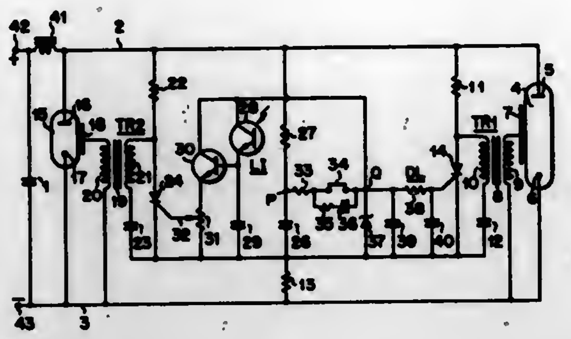


1. A magnetically operable vibrating reed assembly comprising a support, an elongated reed having one end thereof secured to said support with the other end thereof remaining free to vibrate, said elongated reed having a plurality of longitudinally extending slots therein adjacent the free end of said reed to break up any radio frequency currents induced in said reed, coil means secured to said reed, means to supply an electrical current through said coil means, and means for the establishment of a magnetic field perpendicular to the longitudinal axis of said coil whereby said reed is caused to vibrate.

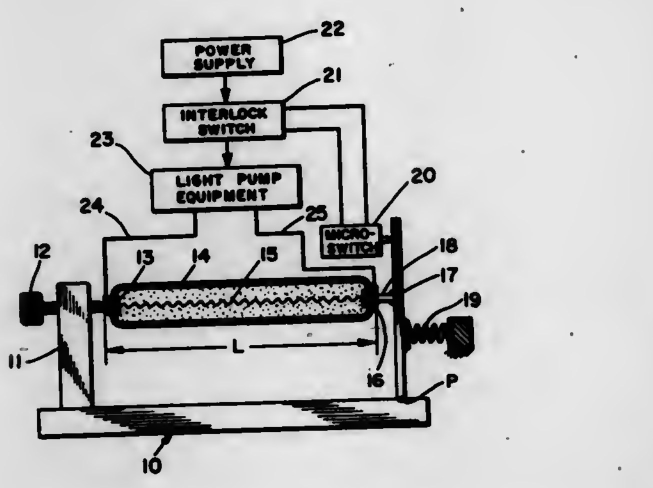
3,727,100
ELECTRONIC FLASH APPARATUS HAVING CONTROL MEANS FOR PRE-ENABLING LIGHT RESPONSIVE CIRCUIT MEANS

Kaoru Kuraishi, Tokyo; Nobuo Yajima, Yokohama, and Shigemi Igarashi, Tokyo, all of Japan, assignors to Toshiba Photo Products Co., Ltd., Tokyo, Japan
Filed Sept. 29, 1971, Ser. No. 184,759
Claims priority, application Japan, June 28, 1971, 46/46970
Int. Cl. G01j *1/46*; H05b *41/32, 41/40*
U.S. Cl. 315—151 14 Claims

An electronic flash apparatus including a flash tube for producing light illuminating an object to be photographed by discharge of stored voltage charge in a storage capacitor; and a light responsive integrating circuit adapted to receive light reflected from the object for generating a discharge terminating signal when a quantity of received light reaches a predetermined value, and a switching element or a quench tube for terminating the discharge across the flash tube in response to the discharge terminating signal. A delay circuit is provided for causing the light responsive integrating circuit to be ready to receive the light reflected from the object prior to the production of light by the flash tube in order to measure the light with accuracy from the instant of the production of light.



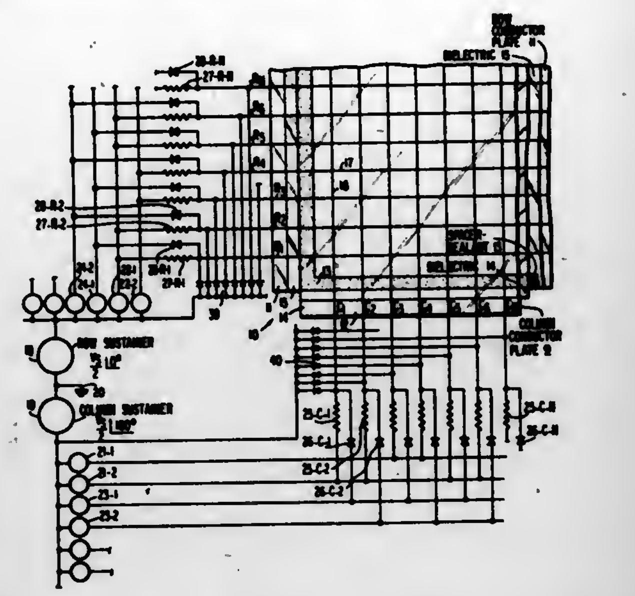
3,727,101
LASER LAMP FAILURE DETECTION METHOD AND MEANS
Leonard Charles Debenedictis, Los Angeles, Calif., assignor to Union Carbide Corporation, New York, N.Y.
Filed Aug. 9, 1971, Ser. No. 169,905
Int. Cl. H05b *41/36*
U.S. Cl. 315—107 **4 Claims**



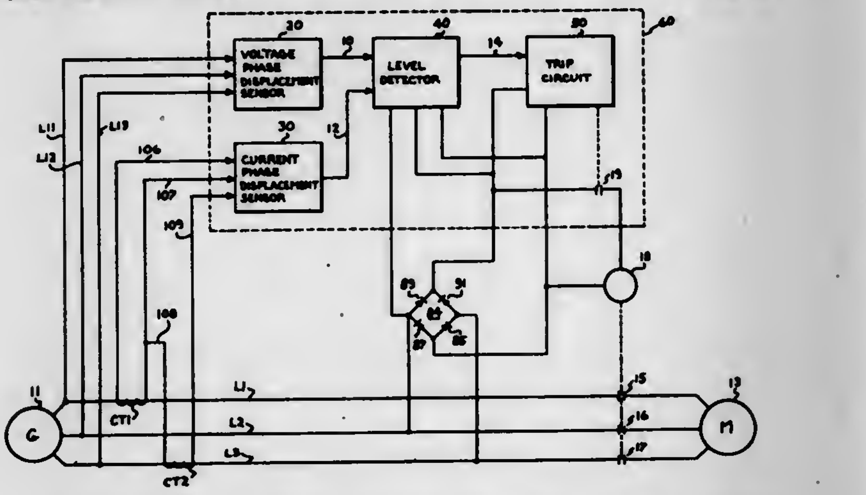
Imminent failure of a lamp pump for a laser is anticipated by detecting a change in a physical dimension of the lamp normally occuring just prior to a failure. This change in physical dimension can be utilized to automatically terminate operation of the lamp.

3,727,102
SELECTION AND ADDRESSING CIRCUITRY FOR MATRIX TYPE GAS DISPLAY PANEL
William E. Johnson, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 3, 1970, Ser. No. 60,402
Int. Cl. H05b *37/00*
U.S. Cl. 315—169 R **3 Claims**

There is disclosed a collection and addressing diode-resistor logic matrix for row column conductor arrays in a gas discharge display and memory panel wherein the alternating sustaining currents from the panel are caused to bypass the logic circuits in returning to the sustaining signal source by a diode for each conductor in the row-column conductor array.



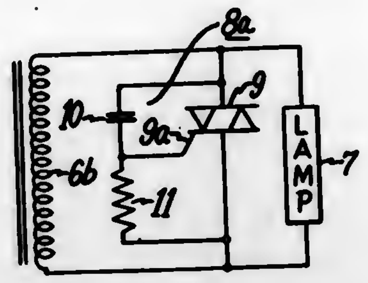
3,727,103
THREE PHASE SYSTEM MONITORING AND CONTROL CIRCUIT
David C. Finch, and Charles E. Konrad, both of Roanoke, Va., assignors to General Electric Company, Salem, Va.
Filed June 30, 1972, Ser. No. 268,087
Int. Cl. H02h *3/38*
U.S. Cl. 317—13 R **15 Claims**



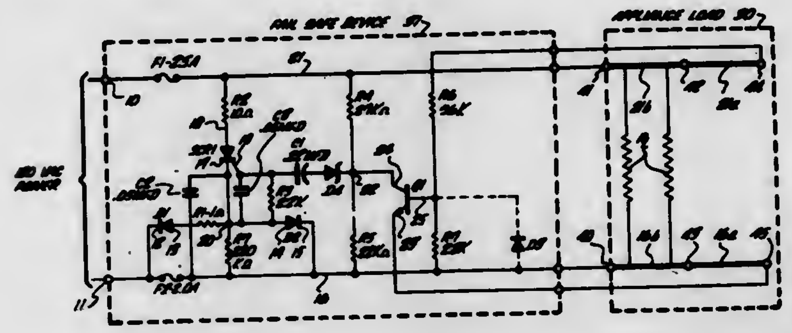
A three-phase system monitoring and control circuit wherein the control circuit has a thyristor in series with a fuse and a relay having contacts in the three-phase system. The thyristor is controlled by a gating circuit having a unijunction transistor oscillator with an RC charging network. A system voltage monitor supplies a charging voltage to the network. If the voltage monitor detects system voltages exceeding a predetermined minimum, the oscillator is triggered. The system current monitor supplies a discharging voltage during improper phase sequence to prevent triggering. Triggering of the oscillator and the subsequent gating of the thyristor indicate there are no lost or reversed phases in the three-phase system.

3,727,104
PROTECTIVE CIRCUIT FOR LIGHTING SYSTEM
Wayne R. Neal, Fletcher, and Norman E. Miller, Asheville, both of N.C., assignors to General Electric Company
Filed Dec. 8, 1971, Ser. No. 205,872
Int. Cl. H02h *7/04*
U.S. Cl. 317—14 R **12 Claims**

Solid state protective circuit for reducing high open circuit voltage across lamps in secondary circuit of constant current regulator system. The protective circuit includes a triac connected across the lamp load and triggered into conduction by a circuit connected to the triac gate electrode and comprising series-connected capacitor and resistor which triggers the triac upon a rapid rate of rise of the open circuit voltage.

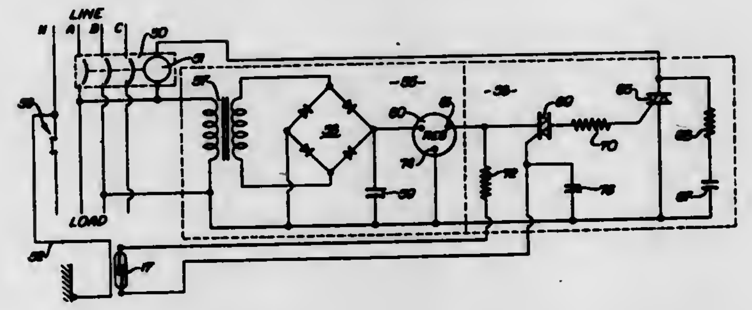


3,727,105
FAIL-SAFE POWER CUT-OUT DEVICE
Jerome S. Hochheiser, Northridge, Calif., assignor to Anthony's Manufacturing Company, Inc., San Fernando, Calif.
Continuation-in-part of Ser. No. 48,887, June 15, 1970, abandoned. This application June 24, 1971, Ser. No. 156,405
Int. Cl. H02h *3/00*
U.S. Cl. 317—16 **15 Claims**



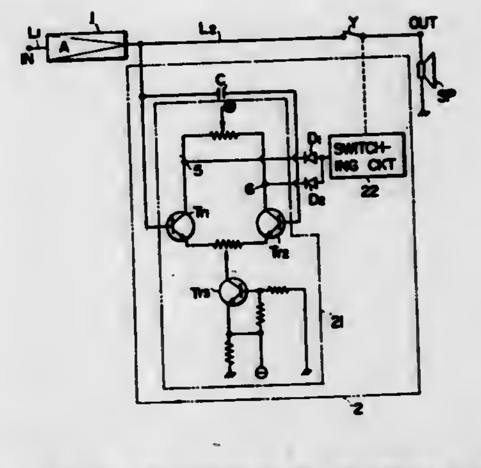
A circuit is disclosed in which one or more power line fuses are automatically blown in the event of an open circuit or other interruption in the power circuit so as to prevent electric shock to anyone coming in contact with the damaged equipment. The circuit employs a current valve such as a silicon controlled rectifier (SCR) normally held in a cut-off mode. The valve is rapidly actuated in the event of equipment damage to effectively short circuit the line and blow the fuses.

3,727,106
GROUND FAULT PROTECTION SYSTEM
James T. Mendel, Fair Oaks, and Ronald G. Whitaker, Los Angeles, both of Calif., assignors to Zinsco Electric Products, Los Angeles, Calif.
Filed June 9, 1972, Ser. No. 261,486
Int. Cl. H02h *7/26*
U.S. Cl. 317—18 R **11 Claims**



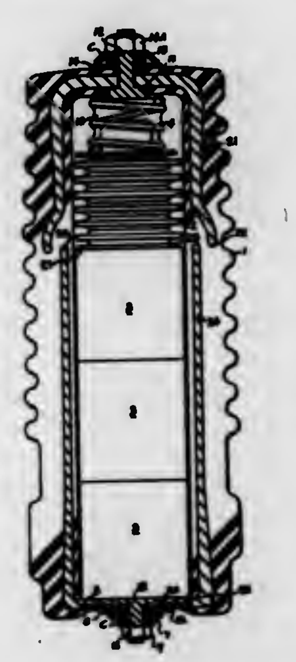
A ground fault protector for use with an A. C. electrical power distribution system and particularly suited for operation at current levels in the range of 150 to 1,200 amperes. A ground fault protector for sensing fault current in the ground strap and tripping the circuit breaker switch to open the power lines. A magnetically operated reed switch mounted at the ground strap and a solid state circuit actuated by reed switch closure to energize the breaker trip coil, with current sensitivity provided by an adjustable mounting for the reed switch, eliminating adjustment in the electronics.

3,727,107
CURCUIT FOR PROTECTING A.C. LOAD FROM DIRECT CURRENTS
Seijiro Fujie, Hodogaya-ku, Yokohama-shi, and Kentaro Tani, Ohta-ku, Tokyo, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Nov. 16, 1971, Ser. No. 199,183
Claims priority, application Japan, Nov. 16, 1970, 45/113495
Int. Cl. H02h *7/20*
U.S. Cl. 317—33 R **4 Claims**



A protective circuit for protecting an output circuit and a load circuit of a signal amplifier from abnormal conditions and including a differential amplifier for detecting the abnormal conditions of the output circuit and the load circuit. The circuit is particularly useful for protection of an output-condenser-less amplifier.

3,727,108
SURGE ARRESTER
Arthur C. Westrom, Stone Mountain, Ga., assignor to Kearney National Inc., Atlanta, Ga.
Filed Feb. 15, 1972, Ser. No. 226,428
Int. Cl. H02h *9/06*
U.S. Cl. 317—68 **6 Claims**



A surge arrester incorporates conventional valve block means and gap structure connected in series and disposed within a water tight housing of elastomeric material. The ground and line terminals protrude through openings in the housing and are sealed thereto. One of the terminals extends through a pressure relieving cap which itself is sealed to the housing in water tight fashion and a stress relief element is interconnected with each terminal of the arrester and generally surrounds the adjacent portions of the gap structure and block means respectively.

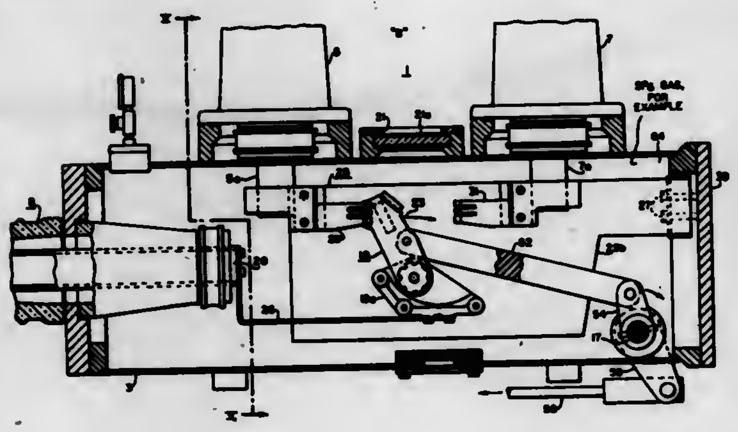
3,727,109
TANK-TYPE GROUNDING AND TEST DEVICE WITH LINE, BUS AND TEST TERMINAL BUSHINGS

John M. Kozlovic, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 17, 1971, Ser. No. 116,106

Int. Cl. H02b *1/20*

U.S. Cl. 317—103 18 Claims



A tank type grounding and test device is provided for metal-clad switchgear, which takes the place of the usual circuit breaker within the metal-clad switchgear housing. This equipment includes bus-and-line terminal bushings (identical to circuit-breaker bushings), and, additionally, a test bushing, which extends out of each of the pole-units, and is accessible from the front of the equipment. Interiorly of each tank, constituting a single pole-unit, is a rotatable selector switch, which is manually selectively positioned to contact either the bus or line terminals. The equipment performs three important functions, namely determining whether or not either the bus or line terminals are energized, secondly providing a ground connection to either the bus or line terminals, and thirdly, when desired, enabling a high-voltage test to be imposed upon either the line or bus circuits.

The selector switch is manually selected to one of its two positions before the equipment is moved into an operative position within the cubicle. After the equipment is positioned in an operative position within the cubicle, it is impossible to move the selector switch to its other alternative position.

The grounding device is of the same dimensions, and can be rolled into the same cell structure of the metal-clad switchgear equipment which accommodates the usual circuit-breaker unit.

3,727,110
MOUNTING ASSEMBLY FOR PLUG IN TIMING DEVICES

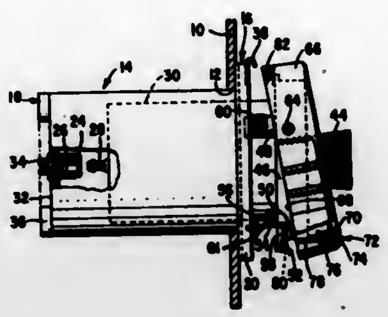
Bernard J. Sopko, Jr., Fairfield, and Frank J. Papa, Jr., Montville, both of N.J., assignors to Industrial Timer Corporation, Parsippany, N.J.

Filed Feb. 28, 1972, Ser. No. 229,925

Int. Cl. H02b *1/08*

U.S. Cl. 317—120 10 Claims

A mounting assembly for an electrical timing device including a cylindrical receptacle having a plurality of sockets adapted to receive a plurality of electrical terminal pins mounted on the rear of the timing device. The receptacle includes a panel mounting flange disposed about the open end thereof and having a latch member thereon. The electrical timing device includes a dial housing on which is pivotably mounted a bezel. The bezel is provided with a recess so that when the timing device is inserted within the receptacle the recess is gripped by the latch and the bezel then acts as an engaging lever for forcing the timing device into the receptacle so that the pins are properly inserted into the socket. The dial housing has a plurality of gripping members which engage the inner wall of the receptacle when the device is properly inserted. A clamping screw held captive in the bottom of the bezel engages a pivotable one of the gripping members and as the screw is threaded into the member it provides an outward locking force between the inside of the receptacle and the gripping members.



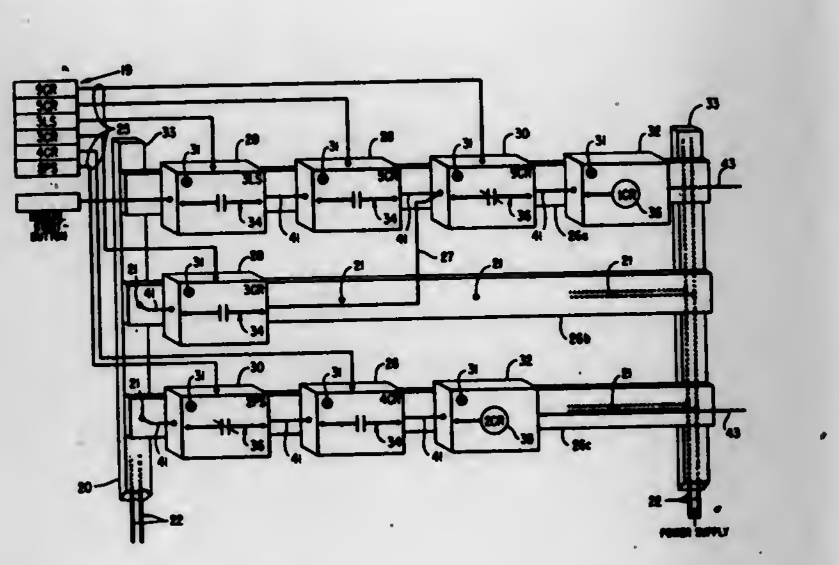
3,727,111
CONTROL SYSTEM FORMING A LOGIC DISPLAY

Arthur L. Vaughn, Warren, Ohio, assignor to Bailey Meter Company, Wickliffe, Ohio

Filed Feb. 17, 1972, Ser. No. 227,112

Int. Cl. H02j

U.S. Cl. 317—135 9 Claims



A sequence control system having switching and output modules arranged on a mounting member to form a ladder network which displays and implements the control logic appearing on a ladder drawing of the control system.

The mounting member utilizes a ladder-shaped structure having contact and output modules mounted on the structure legs and powered through the struts connecting these legs.

Each contact module is an AND gate having displayed on its face the normal state of the contacts it represents and the controlling element of that module. Each output module is a driver element having displayed on its face the element it controls. The modules are arranged according to a ladder drawing which drawing is displayed by the sum total of the module faces when the control system is assembled.

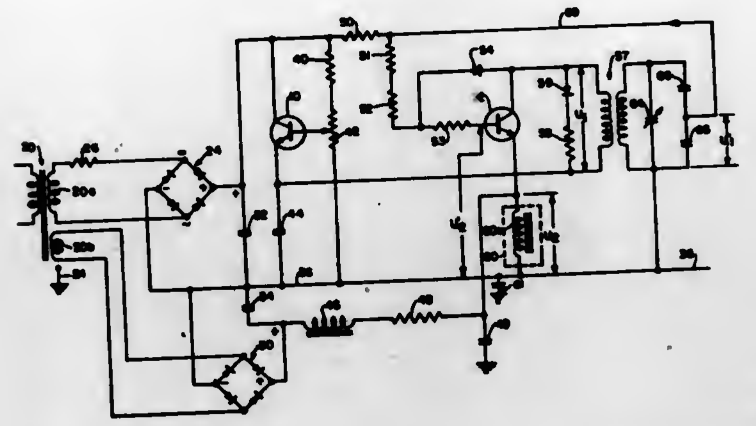
3,727,112
GENERATOR FOR PRODUCING ULTRASONIC ENERGY

Gabriel Popescu, Astoria, N.Y., assignor to Surgical Design Corp., Long Island City, N.Y.

Continuation-in-part of Ser. No. 854,240, Aug. 29, 1969, Pat. No. 3,629,726. This application June 14, 1971, Ser. No. 152,947

Int. Cl. H03b *5/40*

U.S. Cl. 317—146 17 Claims



A generator for producing energy in the ultrasonic range for driving a transducer having variable load characteristics in which the generator includes an oscillator circuit having the capability of accepting and operating with transducers whose natural resonant frequencies vary over a wide range; which has good frequency stability under low or no-load conditions of operation; and good frequency stability under loaded conditions of the transducer. The generator circuit also includes a self-monitoring circuit for keeping a relatively constant output power over wide ranges of loading of the transducer.

3,727,113
CONTROL SYSTEM FOR ELECTROPHOTOGRAPHIC REPRODUCTION MACHINES

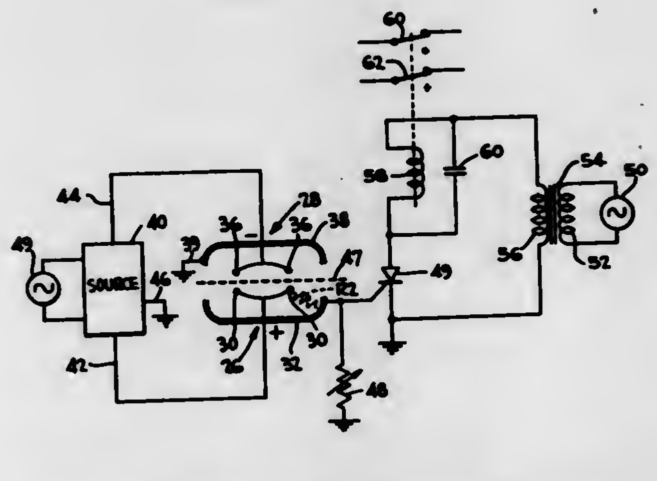
Guy Paul Weber, 25 Rue Verdier Monetti, 76 Arques La Bataille, France

Filed Feb. 28, 1972, Ser. No. 229,934

Claims priority, application France, March 15, 1971, 7108886

Int. Cl. H01h *47/32*

U.S. Cl. 317—148.5 B 10 Claims



A control system for electrophotographic reproduction machines including a control device responsive to increased current between corona charging wires and a surrounding screen caused by the introduction of a foreign body in proximity to the corona charging wires, the control device operating peripheral equipment in the electrophotographic reproduction machines.

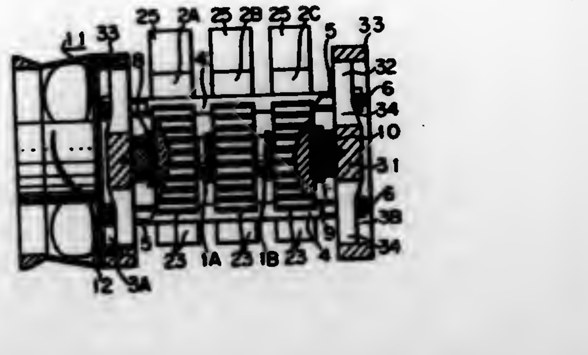
3,727,114
AIR COOLED SEMICONDUCTOR STACK

Seiichi Oshima, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1971, Ser. No. 168,559

Int. Cl. H01l *3/00; 5/00*

U.S. Cl. 317—234 R 6 Claims



A pair of end plates having windows sandwiches an alternate assembly of semiconductor elements and finned cooling members and is fastened by stud bolts to form a semiconductor stack. The windows of the end plates serve to pass a flow of cooling air in the direction of the longitudinal axis of the stack. Cooling fins on the cooling members extend along and substantially radially with respect to the longitudinal axis of the semiconductor stack.

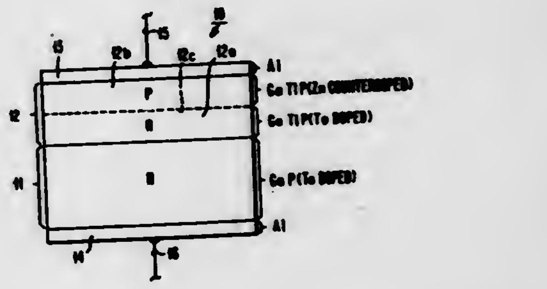
3,727,115
SEMICONDUCTOR ELECTROLUMINESCENT DIODE COMPRISING A TERNARY COMPOUND OF GALLIUM, THALLIUM, AND PHOSPHOROUS

David Ching-Ting Shang, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 24, 1972, Ser. No. 237,761

Int. Cl. H05b *33/00*

U.S. Cl. 317—235 R 10 Claims

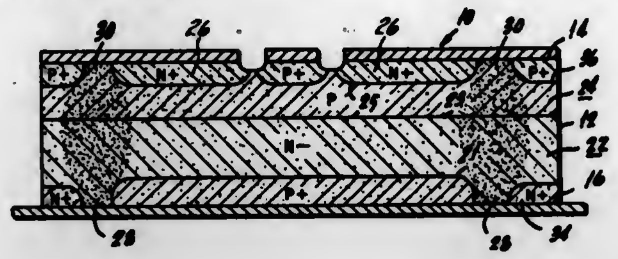


A semiconductor electroluminescent diode, sometimes hereinafter referred to as a light emitting diode or simply LED, is a formed ternary compound of gallium, thallium and phosphorous. The diode is extremely versatile and has a variety of ambient temperature responsive operating characteristics which provide multiple light emitting characteristics. For example, at room temperature, i.e., 27°C, it emits light in the yellow bandwidth when forward biased and no light when reversed biased. At −196°C it has a bipolar characteristic. More specifically, at −196°C it has a discontinuous operating characteristic comprised of two portions when biased in the forward direction. In one portion, it emits light in the yellow bandwidth. In the other, it emits in the green bandwidth. When biased in the reverse direction and operating at the −196°C environment, it again exhibits a discontinuous operating characteristic having two portions and emits light in the yellow bandwidth in each portion.

3,727,116
INTEGRAL THYRISTOR-RECTIFIER DEVICE

Albert William Thomas, Somerville, N.J.; John Manning Savidge Neilson, Norristown, Pa., and Leon Stanley Greenberg, Somerville, N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 5, 1970, Ser. No. 34,820
Int. Cl. H01l *17/00*
U.S. Cl. 317—235 R **7 Claims**

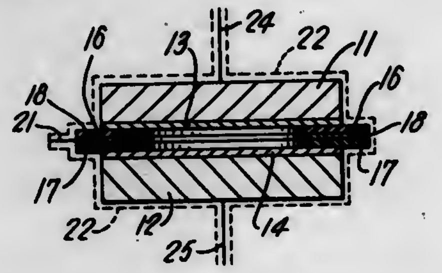


A semiconductor switching device comprising a silicon controlled rectifier (SCR) and a diode rectifier integrally connected in parallel with the SCR in a single semiconductor body. The device is of the NPNP or PNPN type, having gate, cathode, and anode electrodes. A portion of each intermediate N and P region makes ohmic contact to the respective anode or cathode electrode of the SCR. In addition, each intermediate region includes a highly conductive edge portion. These portions are spaced from the adjacent external regions by relatively low conductive portions, and limit the conduction of the diode rectifier to the periphery of the device. A profile of gold recombination centers further electrically isolates the central SCR portion from the peripheral diode portion.

3,727,117
THREE-TERMINAL CAPACITOR

Max Charles Robinson, 150 Graydon Hall Drive, Toronto, Ontario, Canada

Division of Ser. No. 44,431, June 8, 1970, abandoned. This application Jan. 28, 1972, Ser. No. 221,735
Claims priority, application Great Britain, June 13, 1969, 29,992/69
Int. Cl. H01g *1/06*
U.S. Cl. 317—242 **3 Claims**



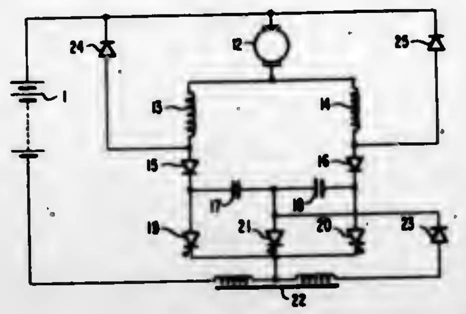
A three-terminal capacitor comprising a pair of electrodes and a pair of insulating rings separating said electrodes. A shield is connected to a third electrode formed by depositing a thin conducting film on one of the flat surfaces of at least one of the rings. The third electrode is interposed between the pair of rings whereby the electrical dimensions of the three-terminal capacitor are determined by the dimensions of the rings.

3,727,118
CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR

Noriaki Makino, Kyoto, Japan, assignor to Nippon Yusoki Co., Ltd., Kyoto, Japan

Filed May 26, 1970, Ser. No. 40,650
Claims priority, application Japan, Dec. 10, 1969, 44/117790; Dec. 10, 1969, 44/117791
Int. Cl. H02p *5/16*
U.S. Cl. 318—297 **7 Claims**

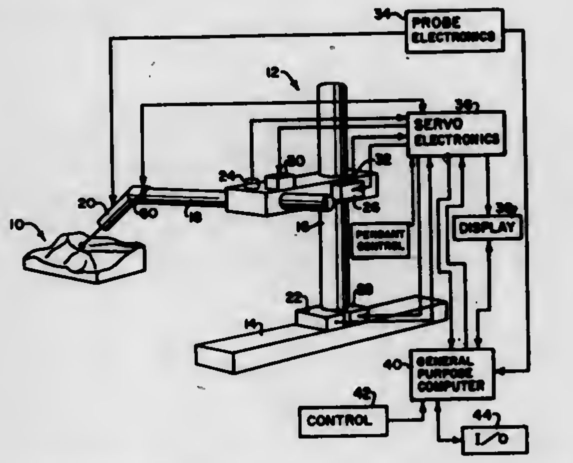
A contactless reversible device in an electric car in which an armature of a direct current electric motor is connected to two series field coils wound in opposite directions. A blocking diode is connected in series with a main thyristor which is connected to the other end of the series of field coils, and two capacitors are connected to the anodes of the thyristors. An auxiliary thyristor is connected in parallel with a series connection of a transformer and reverse charging diode and the series-parallel circuit is connected between the intermediate of the connection of the capacitors and the cathodes of the main thyristors. The other end of the transformer is connected to the negative terminal of the battery, the other end of the armature is connected to the positive terminal of the battery, and flywheel diodes are connected to the positive terminal of the battery and the anodes of the blocking diodes.



3,727,119
SERVO CONTROLLED AUTOMATIC INSPECTION APPARATUS

William W. Stanley; Harry L. Hosterman, both of Akron, and Edwin R. Rader, Tallmadge, all of Ohio, assignors to Information Development Corporation, Akron, Ohio

Filed Feb. 1, 1971, Ser. No. 111,532
Int. Cl. G05b *19/42*
U.S. Cl. 318—568 **3 Claims**



This invention relates to an automatic inspection apparatus which utilizes a computer along with a digital servo system and a system of probe control which interlocks the servo system with a data register and the computer to provide surface readout information in digital form for any surface, but preferably a surface having orthogonal dimensional relationships.

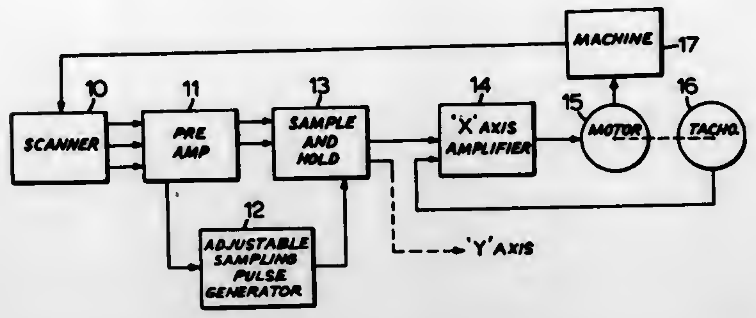
3,727,120
WIDTH CONTROLLED SAMPLIER PULSING A SAMPLE-HOLD THEREBY EFFECTING A LOW-PASS FILTER FOR A SAMPLE-DATA SERVO

George S. Jewell, Ancaster; Robert E. Parker, Dundas; William Dell, Hamilton; Richard J. Etherington, Ancaster, and Henry Webber, Dundas, all of Canada, assignors to Westinghouse Canada Limited, Hamilton, Ontario, Canada

Filed July 1, 1971, Ser. No. 158,797
Int. Cl. G05b *21/02*
U.S. Cl. 318—636 **3 Claims**

Servo systems may be subject to disturbances if they respond to signals above a certain frequency, if for example,

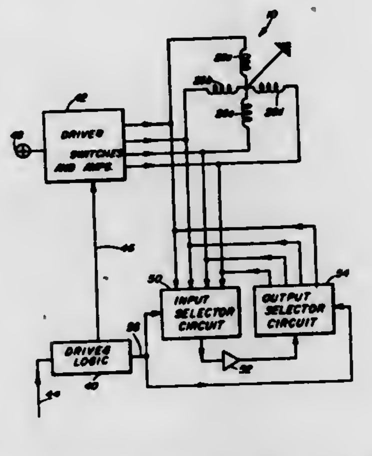
the frequency is related to the natural resonance of the mechanical portion of the servo system. Filters have been used in the past to eliminate this source of instability. The present invention discloses a simple electronic circuit which operates as a filter suitable for use in certain servo systems, specifically of the sample-data servo type. The circuit includes a sample-hold capacitor which is larger than normal whereby it may not charge fully during a single sample period if the sampling pulse is varied in width. Thus, several sample periods may be necessary before the sample-hold capacitor is fully charged and the effect of this circuit is similar to introducing a low-pass filter into the servo system.



3,727,121
STEP MOTOR DAMPING METHOD AND APPARATUS

Leonard G. Rich, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, Hartford, Conn.

Filed April 8, 1971, Ser. No. 132,355
Int. Cl. H02k *29/00*
U.S. Cl. 318—696 **15 Claims**



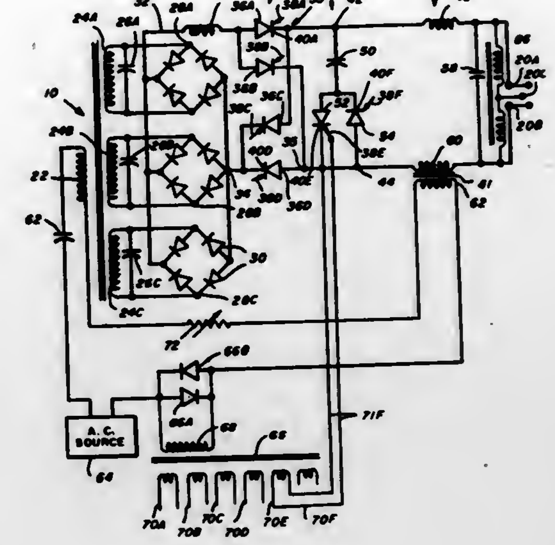
A step motor damping apparatus and method which provide electrical damping of the step motor motion. A damping control signal is derived from the electromotive force induced in certain stator pole windings of the step motor by the moving motor armature. A damping force on the armature is produced by energizing the same or other motor poles in response to the damping signal.

3,727,122
FIELD MODULATED ALTERNATOR SYSTEM AND CONTROL THEREFOR

William L. Hughes; Hansel J. Allison, and Ramachandra G. Ramakumar, all of Stillwater, Okla., assignors to Oklahoma State University, Stillwater, Okla.

Continuation-in-part of Ser. No. 69,675, Sept. 4, 1970, Pat. No. 3,663,945. This application July 20, 1971, Ser. No. 164,351
Int. Cl. H02m *5/44*
U.S. Cl. 321—69 R **29 Claims**

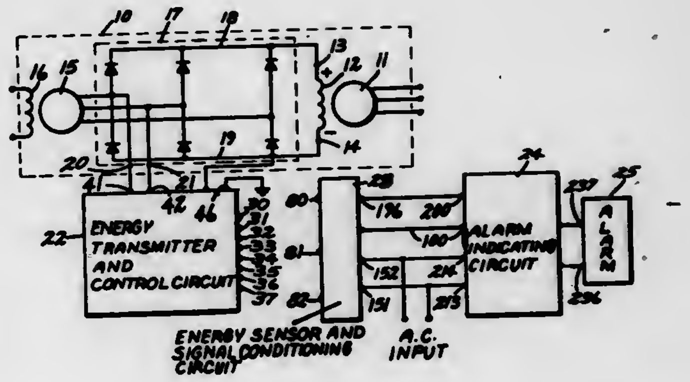
A polyphase alternator of basic frequency F_2 with a field circuit excited with alternating current of frequency F_1, and including full wave rectifier means across each phase of the alternator, all connected in additive relation, to provide a pulsating direct current, switching means responsive to the field current to convert this pulsating current to an alternating single-phase current of frequency F_1, and capacitors across each phase of the alternator to partially tune the alternator stator windings.



3,727,123
BRUSHLESS GENERATOR FIELD GROUND DETECTION SYSTEM

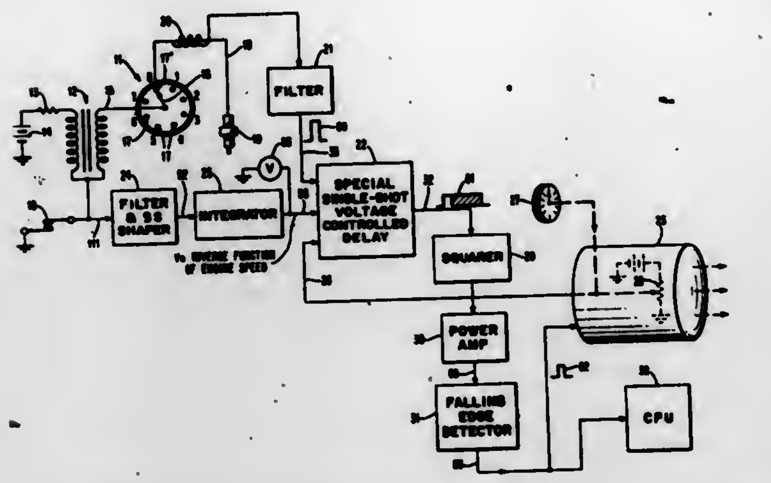
Forest D. Smith, Saint Louis Park, Minn., assignor to Electric Machinery Mfg. Company, Minneapolis, Minn.

Filed Feb. 22, 1972, Ser. No. 228,080
Int. Cl. H02k *11/00*
U.S. Cl. 322—99 **9 Claims**



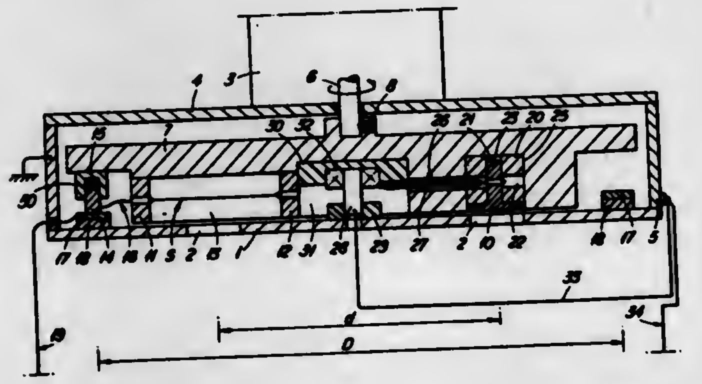
A ground detection apparatus for detecting and warning of a ground condition in the rotating field windings of rotating electrical machinery. A plurality of light emitting diodes mounted for rotation with the rotating field of an electrical machine transmit light energy as they rotate. A control circuit also mounted for rotation with the rotating field and connected to the light emitting diodes causes the light emitting diodes to change their energy transmission state upon a ground in the rotating field windings. Light sensitive sensors are mounted in a fixed nonrotating position so as to receive the light energy transmitted by the light emitting diodes and produce an output signal upon such receipt. The light sensitive sensors are connected through signal conditioning circuits to an alarm. The alarm provides an indication of a grounded field winding condition after the grounded condition has been maintained for a predetermined time.

3,727,124
SPEED CONTROLLED TIMING LIGHT
Hooshang Kahen, Forest Hills, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed April 30, 1970, Ser. No. 33,467
Int. Cl. F02p *17/00*
U.S. Cl. 324—16 R **6 Claims**



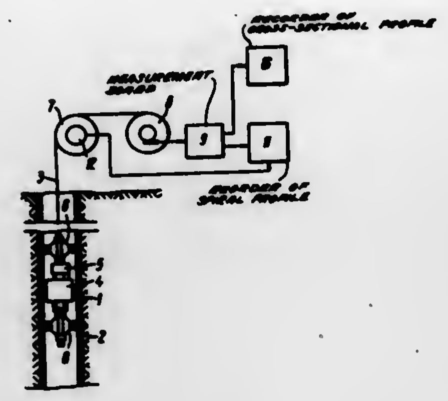
A control circuit for an internal combustion engine timing light includes an integrating circuit for producing a voltage inversely proportional to engine speed and a delay circuit which is activated by the firing of the last cylinder of the engine to initiate a time delay pulse varying in amount of delay as a function of engine speed in response to the voltage. The delay circuit has an output coupled through a falling edge detector which produces an output at the end of the time delay to actuate the timing light.

3,727,125
APPARATUS FOR MEASURING ELECTROSTATIC PROPERTIES OF MATERIALS
Marcel Meurier, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France
Filed April 29, 1971, Ser. No. 138,545
Claims priority, application France, April 29, 1970, 7015725
Int. Cl. G01r *29/12, 5/28*
U.S. Cl. 324—32 **8 Claims**



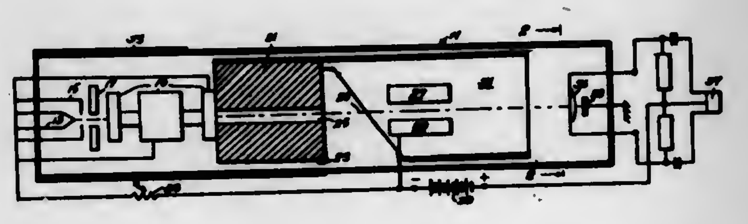
Apparatus for measuring the electrostatic properties of materials in situ is generally portable, and consists of a casing with holes arranged along the circumference of a circle at one end of the casing, and a synchronous electric motor outside the casing at the other end, a rotor, driven by the motor, inside the casing, with an high tension electrode and a probe fixed in the rotor. The electrode, the probe, and the holes in the casing are at the same distance from the axis of the rotor. The electrode is connected to an high tension supply via a contact on the rotor contacting a circular track, and charges the material to be tested by the corona effect; the probe is connected to electronic sensing apparatus via contacts on the axis of the rotor, and responds to the charge on the material to be tested by induction.

3,727,126
PROFILOGRAPH FOR EXAMINING PIPES IN OIL WELLS
Mark Lazarevich Kisolman; Mikhail Borisovich Shots, and Viktor Petrovich Larin, all of Grozny, U.S.S.R., assignors to Severo-Kavkansky Neftyanoi Nachno-issledovatelsky, Grozny, U.S.S.R.
Filed Sept. 11, 1970, Ser. No. 71,608
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 R **4 Claims**



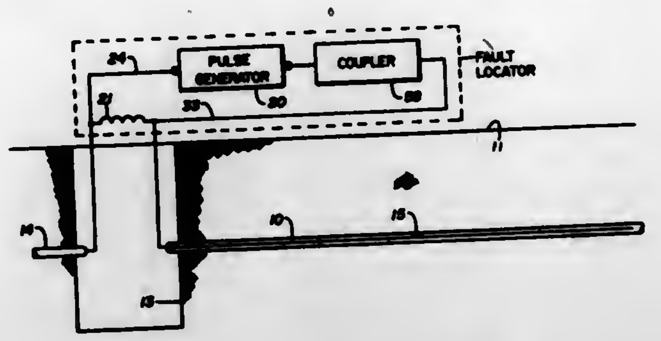
A device for determining the wear of casing pipes in wells, comprising an exploration unit having a housing wherein there is mounted a pickup transformer fed from an a.c. source and connected to a recorder. The characteristic features of the invention consist in that at the place of the pickup location the housing of the exploration unit has in its central part a channel to let through the drilling mud, while the pickup transformer is connected with a drive for its rotation. The device measures the pipe wall thickness, the ovality thereof, and the shape of wear in the pipe so as to provide measurement of the residual strength of the pipe.

3,727,127
HIGH SENSITIVITY ELECTRON BEAM MAGNETOMETER
Hermann Heidenwolf, Adnet, Austria, assignor to The United States of America as represented by the Secretary of the Army
Filed Jan. 25, 1971, Ser. No. 109,240
Int. Cl. G01r *33/02*
U.S. Cl. 324—44 **7 Claims**



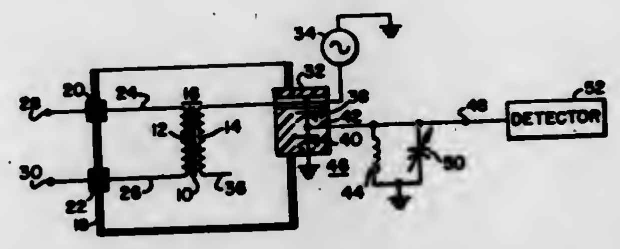
An electron beam magnetometer having a sensitivity equal to 10^{-6} gauss or better comprising an evacuated envelope, means for generating a stream of electrons positioned in the interior thereof, control grid and focusing electrode means positioned downstream along the axis of the generated electrons, a pair of cores of a ferromagnetic material for densifying an induced magnetic flux positioned downstream of the focusing electrode means so as to form an air gap for the passage of the electron beam, deflection means located downstream of the magnetic flux densifying material, target means connected to suitable indicating means located downstream of the deflection means and final acceleration anode means located adjacent the target means. All of said components are operably connected to a suitable power source.

3,727,128
TDR CABLE FAULT LOCATION
Michael A. McFerrin, 2334 Chart Drive, Dallas, Tex.
Continuation-in-part of Ser. No. 77,126, Oct. 1, 1970, abandoned. This application Aug. 9, 1971, Ser. No. 170,315
Int. Cl. G01r *31/11*
U.S. Cl. 324—52 **18 Claims**



A fault in an insulated electrical cable of known propagation velocity is located by applying to the cable a voltage at about rated cable voltage to ionize material in the region of the fault and concurrently applying a high powered D.C. pulse having an abrupt onset to the cable at about a peak of the alternating voltage to produce reflections from the mismatch at the location of the ionized material. The time interval between application of the D.C. pulse and the return of the reflection is then measured to indicate the distance to the fault.

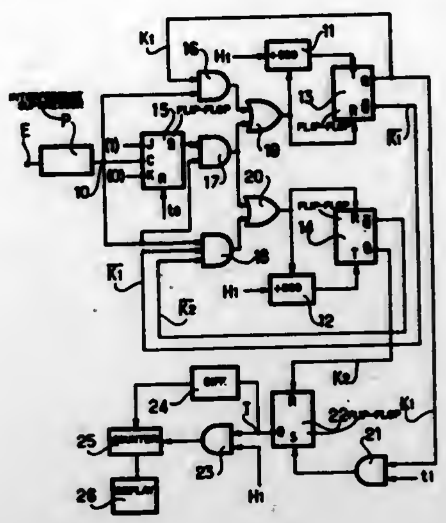
3,727,129
LOGARITHMIC-RESPONSE CORONA DETECTOR
George T. Hummert, Verona, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 5, 1971, Ser. No. 112,975
Int. Cl. G01r *15/10, 31/12*
U.S. Cl. 324—54 **4 Claims**



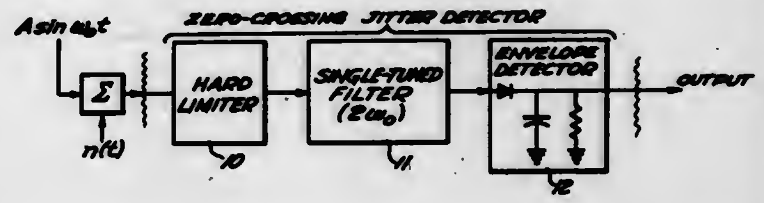
Apparatus for detecting and measuring corona discharges. A sensing circuit is connected to the apparatus, material or sample which is being tested. The output of the sensing circuit is connected to a detector which converts the corona produced pulse signal from the sensing circuit into a voltage which can be observed. The response of the detector circuit is such that the output voltage thereof is approximately equal to the logarithm of the input voltage produced by the corona discharge. The amplitude of the pulse may be observed by an oscilloscope, a chart recorder, or a meter.

3,727,130
NUMERICAL DISPLAY DISTORTION METER
Pierre Estienne, Rosny-sous-Bois, France, assignor to Compagnie Industrielle Des Telecommunications, Paris, France
Filed Oct. 28, 1971, Ser. No. 193,443
Claims priority, application France, Oct. 28, 1970, 7038963
Int. Cl. G01r *23/16*
U.S. Cl. 324—77 A **10 Claims**

A numerical display distortion meter for signals featuring amplitude transitions at instants characteristic of the data embodied in the signals includes first and second counters of clock pulses, reset means responsive to the transitions in the distorted signal for resetting the first counter only if its count exceeds half its capacity and for resetting said second counter only if its count is less than half its capacity, and means for determining the time difference between the counts in said first and second counters at the end of an operation cycle.



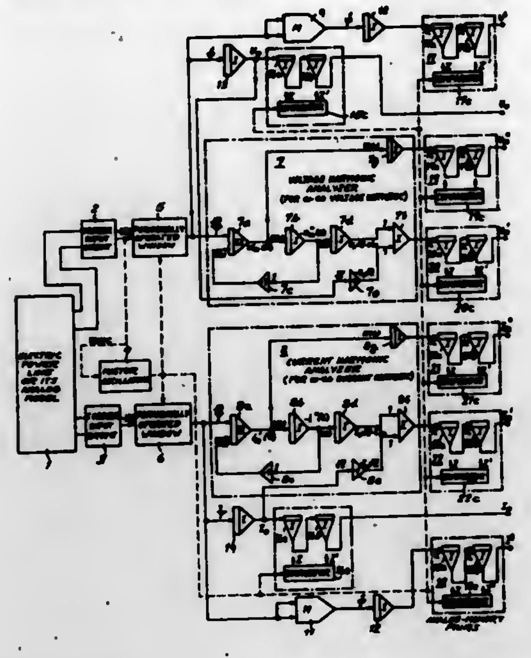
3,727,131
ZERO-CROSSING JITTER DETECTION METHOD AND CIRCUIT
Charles McD. Puckette, IV, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed June 22, 1971, Ser. No. 155,463
Int. Cl. G01r *23/16*
U.S. Cl. 324—77 R **19 Claims**



An electronic circuit and method for providing a d.c. voltage proportional to the randomness of the zero-crossings of an input sine wave signal includes a hard limiter for converting the sine wave to a square wave of the same frequency, a narrow band filter tuned to twice the frequency of the input sine wave signal for removing all the spectral energy except that centered at the second harmonic and a circuit for converting any energy at the output of the filter to a d.c. component which represents the randomness of the zero-crossings (zero-crossing jitter).

3,727,132
METHOD OF AND SYSTEM FOR MEASURING ELECTRICAL POWERS IN AN ENERGETIC DEFORMANT STATE
Ion S. Antonie, and Mihai A. Leon, both of Bucharest, Romania, assignors to Ministerul Industriei Constructiilor De Masini, Bucharest, Romania
Filed Oct. 12, 1971, Ser. No. 188,466
Int. Cl. G01r *21/00*
U.S. Cl. 324—142 **10 Claims**

A method of and system for ascertaining the magnitudes of active power, reactive power, apparent and deformant power with a electrical power line system operating in an energetic deformant state. The voltage and current waveforms, which are periodic but nonsinusoidal with respect to the time variation in the so-called "deformant state," are collected from the power line system and processed in suitable operational amplifiers, operating as integrators, in such a way as to yield the sine and cosine harmonics of those waveforms. These harmonics are further processed in summing amplifiers and multiplying devices to permit the active, reactive, apparent and deformant powers be obtained as output signals. The entire process is carried out automatically by analog circuitry which performs the mathematical operations as described.



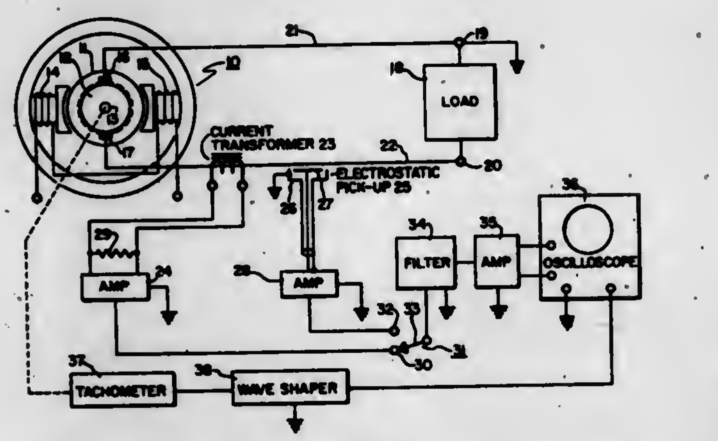
3,727,133
DETECTION OF COMMUTATION DEFECTS

James A. Marvin, Minneapolis, Minn.; Francois D. Martzloff, and Bjorn Weichbrodt, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,771

Int. Cl. G01r *31/02*

U.S. Cl. 324—158 MG 3 Claims



A signal is derived corresponding to variations in the unidirectional current flowing in the external power lines to a direct current rotating machine. A second signal is derived from the first signal having a period equal to the period of revolution of a commutator divided by the number of commutator segments. The appearance in the second signal of peaks short in duration in relation to said period indicates a defect in commutation of current in the armature winding of the direct current machine.

3,727,134
AUTO EQUALIZER APPARATUS

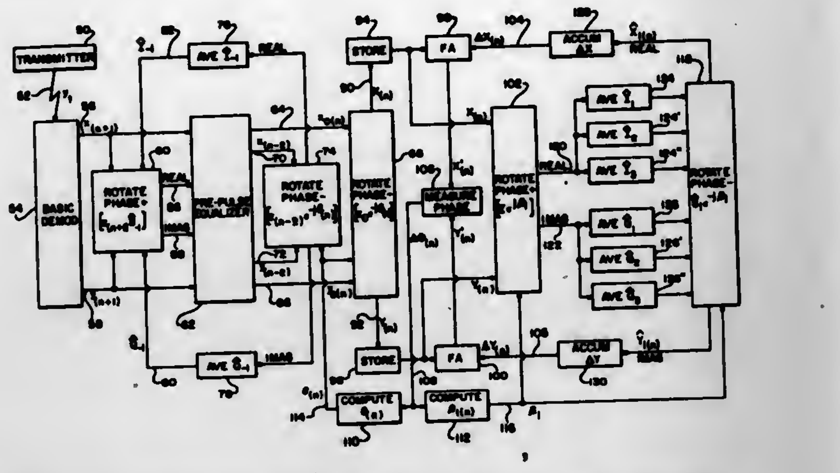
William J. Melvin, Costa Mesa, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed March 29, 1971, Ser. No. 128,769

Int. Cl. H03h *7/36*

U.S. Cl. 325—30 14 Claims

Circuitry for detecting and measuring distortion components in a differentially coherent phase shift keyed signal received at a receiver after transmission over a transmission facility and further circuitry for altering the amplitude and phase of the received signal by an amount indicative of the measured value. The equalizer measures both pre and post pulse distortion products in producing the adjusted output signal. The disclosure also illustrates a special preamble which may be used prior to the main message to hasten the measurement and adjustment process time over the time required if random sampled data is used in the measurement process. The equalizer algorithm utilizes the fact that the phase and amplitude of prepulse and postpulse interference of any particular pulse can be measured relative to the main pulse by making the other interference pulses and the main pulse orthogonal.



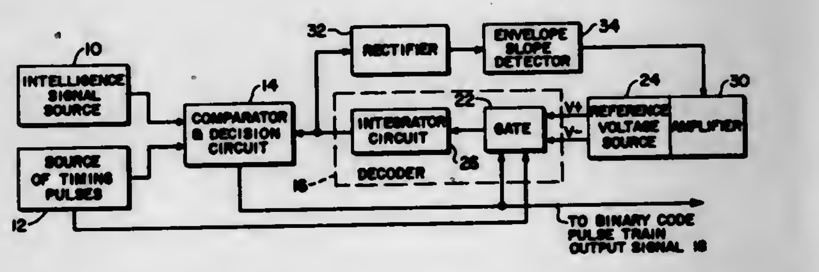
3,727,135
ADAPTIVE CODE MODULATION IMPROVEMENT IN DIGITAL CODE MODULATORS

Johann Holzer, Elberon, N.J., assignor to The United States of Americ as represented by the Secretary of the Army

Filed April 27, 1971, Ser. No. 137,902

Int. Cl. H03k *13/22*

U.S. Cl. 325—38 B 4 Claims



Digital code modulators are improved by addition of feedback means for adaptive code modulation to continuously match the dynamic range of the digital decoder to the dynamic range of the input signal. There is derived from the signal generated locally in the decoder a quantity representative of the average rate of change in the input signal over an immediately preceding short time interval, and this quantity is fed back to adapt the magnitude of a reference input to the decoder.

3,727,136
AUTOMATIC EQUALIZER FOR PHASE-MODULATION DATA TRANSMISSION SYSTEMS

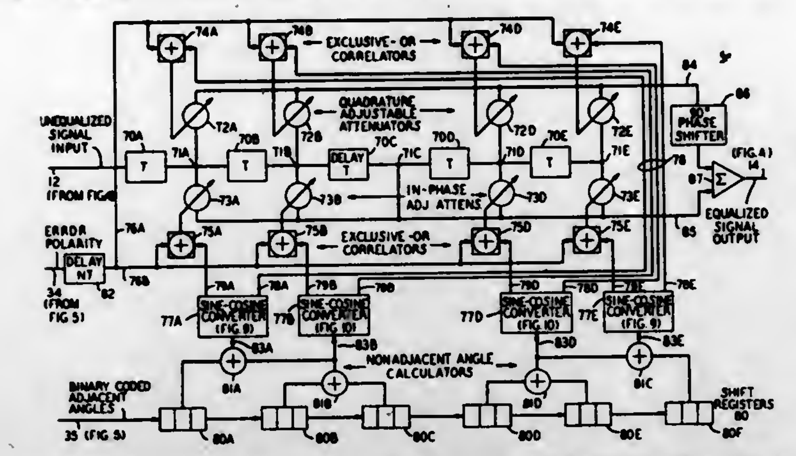
Henry Charles Schroeder, East Brunswick; John Robert Sheehan, Red Bank, both of N.J., and Robert John Tracey, Belmont, Calif., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 17, 1971, Ser. No. 199,693

Int. Cl. H04b *1/12*

U.S. Cl. 325—320 9 Claims

An adaptive transversal equalizer for phase-modulated data transmission systems employs a tapped delay line provided with separate in-phase and quadrature sets of weighting attenuators operating on time spaced samples of passband signals appearing at each tap. The two sets of selectively attenuated tap signals are then combined to form the equalized output signal. Control signals for adjusting the respective sets of weighting attenuators according to a zero-forcing algorithm are derived solely from the phase differences among adjacent and nonadjacent received signal samples.



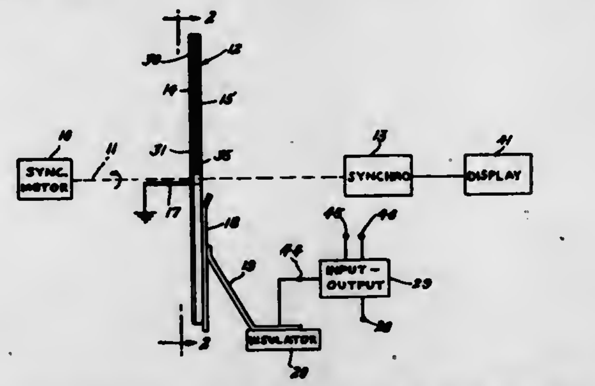
3,727,137
ANTENNA PATTERN SIMULATOR

Morris Barron, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 19, 1971, Ser. No. 116,782

Int. Cl. H04b *1/72*

U.S. Cl. 325—67 6 Claims



A simulated antenna polar pattern signal is generated by apparatus including a 6 inch pattern wheel driven by a synchronous motor. The pattern wheel is a dielectric disc with copper plating on predetermined portions of one side of the disc and a stationary metal probe mounted flat against the other side of the disc. Rotation of the disc relative to the probe forms a varying capacitance in a circuit that modulates a carrier signal in accordance with the antenna polar pattern.

3,727,138
ARRANGEMENT FOR INDICATING FIELD STRENGTH AT THE INPUT OF AN FM RECEIVER

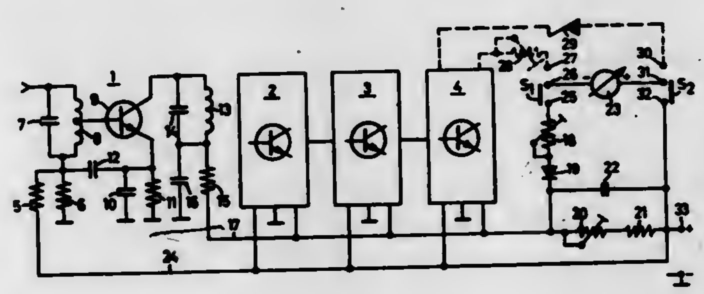
Karl Traub, Furth, Germany, assignor to Grundig E.M.V. Elektro-Mechanische, Furth/Bay, Germany

Filed Nov. 20, 1970, Ser. No. 91,251

Claims priority, application Germany, Nov. 29, 1969, P 19 60 022.7

Int. Cl. H04b *1/16*

U.S. Cl. 325—347 7 Claims



The collectors of intermediate frequency amplifiers are connected in common via a common resistor to the supply. A D.C. measuring instrument connected across the common resistor is an indication of the field strength at receiver input.

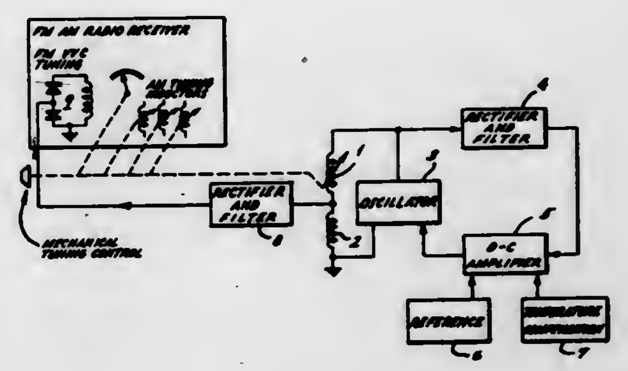
3,727,139
VOLTAGE SUPPLY FOR VOLTAGE VARIABLE CAPACITOR DIODE TUNING

Stuart L. Gallant, Philadelphia, Pa., and John W. Waring, Palmyra, N.J., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Aug. 10, 1971, Ser. No. 170,591

Int. Cl. H04b *1/26*

U.S. Cl. 325—453 9 Claims



An oscillator is amplitude stabilized by means of a high gain feedback loop and is used to apply an a-c signal to a variable-inductor voltage divider. The divider output, which has an amplitude proportional to the magnitude of inductance, is rectified and filtered to produce a d-c voltage that is used to tune the voltage variable capacitor elements of a radio receiver tuner. Thus voltage variable capacitor tuning is accomplished by means of a variable inductor transducer.

3,727,140
UHF AND VHF TUNER FOR TELEVISION

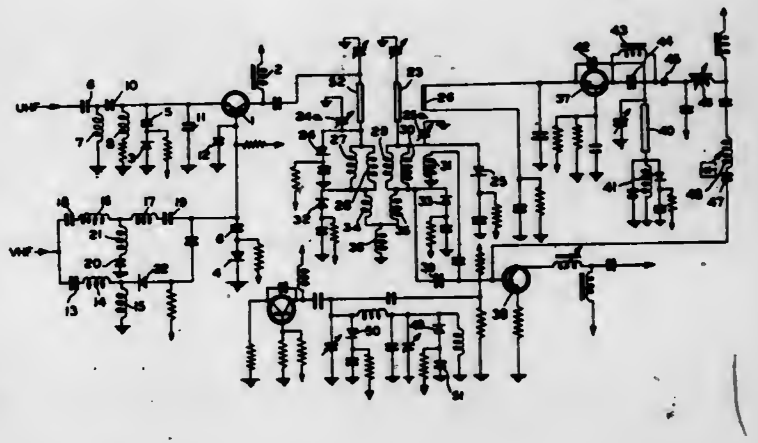
Carlos Rodrigalvarez Nieto, Torre Izarra 14, and Luis Arteaga Vera, Uriburu 19, both of Mondragon, Spain

Filed Oct. 9, 1969, Ser. No. 865,029

Claims priority, application Spain, Oct. 11, 1968, 359,059

Int. Cl. H04b *1/18*

U.S. Cl. 325—458 7 Claims



UHF and VHF tuner for television. The tuner has a radioamplifier for all bands in which silicon transistors with amplifying elements are used. The transistor of the radioamplifier is used in common emitter for UHF and in common base for VHF, the commutation of bands being accomplished by means of diodes of commutation. The oscillator-mixer for the UHF is formed of a transistor in common base while the local oscillator of the UHF band uses as a variable capacity diode a variable tuning element. The VHF oscillator which uses a transistor in common emitter amplifies the intermediate frequency (I.F.) of the UHF.

3,727,141

TRIGGER CIRCUIT FOR A BISTABLE MULTIVIBRATOR

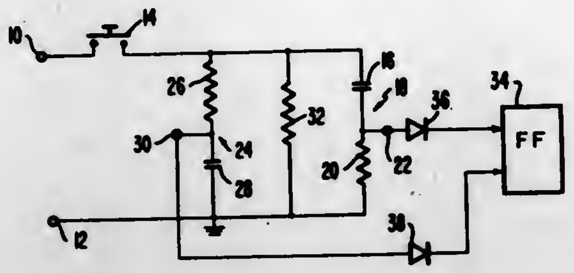
Joseph C. Finlay, Glascow, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 10, 1971, Ser. No. 197,388

Claims priority, application Great Britain, April 3, 1971, 8,632/71

Int. Cl. H03k *5/00*

U.S. Cl. 328—60 14 Claims



A set-reset trigger circuit for a bistable multivibrator is provided in which a pair of electrical charging circuits are manually coupleable across a source of electric power in a mutually reverse order with respect to their individual elements to immediately thereby produce a set pulse at an output of one of the charging circuits and to subsequently thereby produce a reset pulse at an output of the other charging circuit.

3,727,142

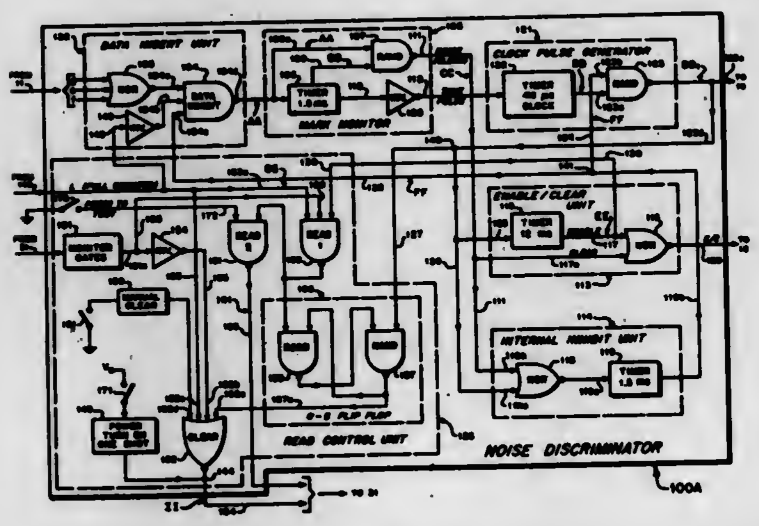
PULSE STREAM NOISE DISCRIMINATOR

Richard G. De Sipio, Philadelphia; Thomas F. Long, Warminster, and Henry R. Beyer, Chalfont, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of Ser. No. 644,439, May 31, 1967. This application Dec. 2, 1968, Ser. No. 781,306

Int. Cl. H03k *5/18, 5/20*

U.S. Cl. 328—111 14 Claims



An apparatus for determining the quality of an input data pulse stream by continuously monitoring each respective pulse thereof for a specified duration. The data pulses are rejected as noise if the duration thereof is less than that of a desired signal and the apparatus provides lock out and clear signals to prevent the data from being processed. If a valid data pulse stream is detected, a clock signal is developed which functions, through other circuitry, to enable a sequence register to accept this data and clock it into appropriate flip-flops therein. In addition, an inhibit signal is developed to prevent the reception of any signals during the processing of the valid data pulse stream. An automatic/manual read control unit functions to clear and then enable a display to read the valid data pulse stream temporarily stored in the sequence register.

3,727,143

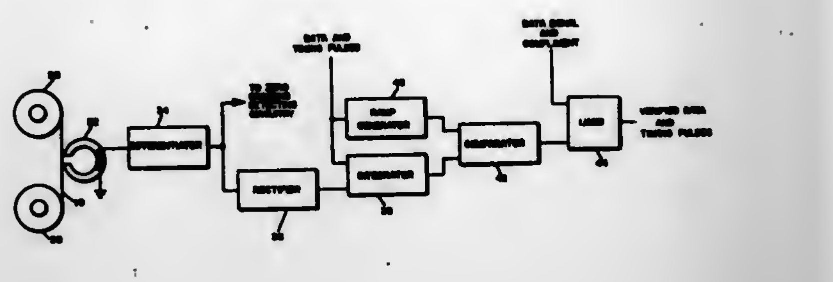
INTEGRATING LEVEL SENSING CIRCUIT

B. Charles Garrett, Sepulveda, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Dec. 6, 1971, Ser. No. 205,076

Int. Cl. H03k *5/20*

U.S. Cl. 328—150 12 Claims



A circuit is provided for accepting valid data signals to the exclusion of unwanted signals of similar character which may result from improper recordings or from noise, in a digital data system employing magnetic recording. The data signal as derived from the recording is rectified and then integrated between each successive pair of zero crossings thereof. The results of each integration are compared with a reference signal of ramp waveform generated simultaneously therewith to selectively gate pulses corresponding to the zero crossings of a data signal of minimum acceptable amplitude to the output of the circuit to the exclusion of pulses produced by the zero crossings of noise or data signals of less than the minimum acceptable amplitude. Integration of the data signal reduces noise disturbance without attenuating the signal, and the use of a ramp signal rather than fixed threshold signals makes the circuit independent of frequency.

3,727,144

MEMORY CIRCUIT EMPLOYING A BIPOLAR ULTRASONIC DELAY LINE

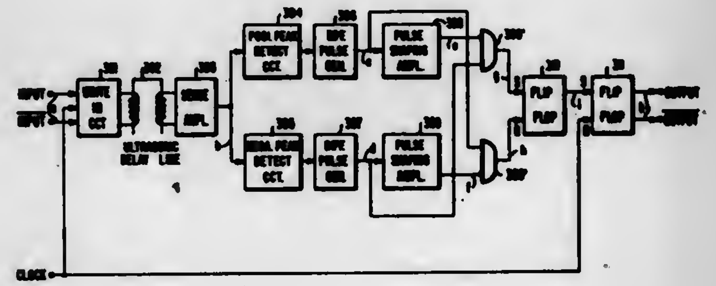
Takakazu Senoo, Minato-ku, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed April 1, 1971, Ser. No. 130,424

Claims priority, application Japan, April 3, 1970, 45/28949

Int. Cl. H03k *5/00*

U.S. Cl. 328—164 5 Claims



Disclosed is a memory system including an ultrasonic delay line storing data signals having a period T, the data signals being stored as a bipolar signal. The positive and negative peaks of the bipolar signal are sensed to produce peak pulses. These peak pulses are used to generate a replica of the stored data signal. Ambiguous peak pulses are eliminated by passing all peak pulses through inhibit gate means, the gate means being operated to block each of those peak pulses which represents a peak of the bipolar signal occurring within a predetermined time, *t*, from its adjacent preceding peak. The predetermined time t is selected to be within the range defined as $T/2<t<T$.

3,727,145

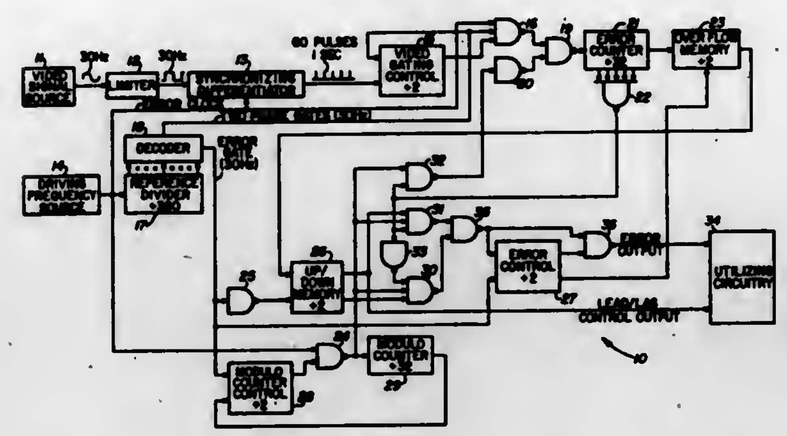
DIGITAL MODULO COMPLEMENTARY PHASE DETECTOR

Dean P. Huntsinger, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Nov. 3, 1971, Ser. No. 195,352

Int. Cl. H04l 27/22

U.S. Cl. 329—104 5 Claims



A digital modulo complementary noncontinuous phase detector for input signals conditioned to a pulse density representation. The detector uses one error counter and a modulo counter wherein, with counter operation, numbers added are represented as a pulse train that the error counter accumulates with the pulse total representative of numerical magnitude and error counter direction represents sign.

3,727,146

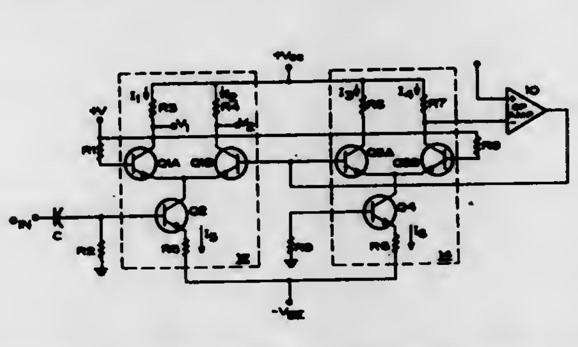
LINEAR, VOLTAGE VARIABLE, TEMPERATURE STABLE GAIN CONTROL

Richard Smith Hughes, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 20, 1971, Ser. No. 209,843

Int. Cl. H03g *3/30*

U.S. Cl. 330—29 3 Claims



An electronic gain control circuit having first and second differential amplifiers and an operational amplifier wherein the first differential amplifier is coupled to the input and provides the controlled output, the second differential amplifier is coupled to the first differential amplifier and controls the gain of the circuit, and the operational amplifier is coupled to the second differential amplifier for temperature stability and linearity.

3,727,147

BAND-PASS FILTER

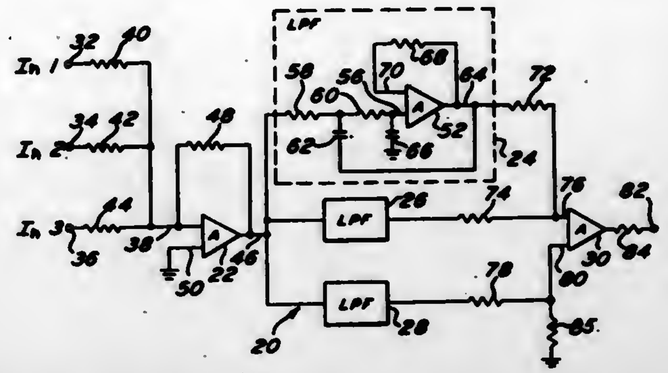
Kenneth I. DeWitt, Chalfont, Pa., assignor to Senex, Inc., Philadelphia, Pa.

Filed April 21, 1971, Ser. No. 136,084

Int. Cl. H03f *3/68*

U.S. Cl. 330—84 4 Claims

A class of band-pass filters are provided, each of which comprises a plurality of low pass active filters. Each of the filters has related resonating frequency and damping characteristics. The resonating frequency and damping characteristics for each of the filters causes all of the poles of the filters to be along a line parallel to the outputs of the filter so that the output signals of the filters are summed with alternate ones of the filters having the output signal inverted with respect to the other of the filters.



3,727,148

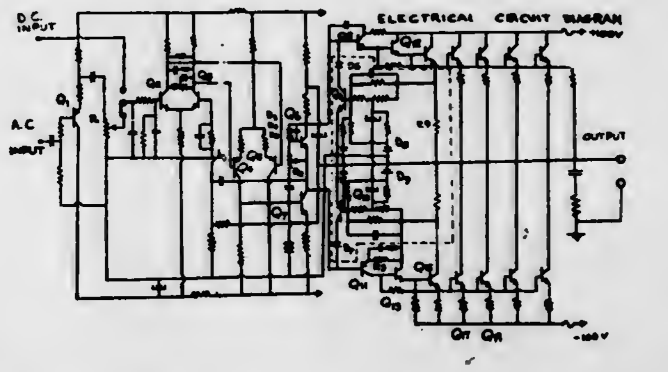
AMPLIFIER WITH PROTECTIVE ENERGY LIMITER CIRCUIT COMPONENTS

Robert W. Carver, 19555 23rd Avenue N.W., Seattle, Wash.

Filed Jan. 10, 1972, Ser. No. 216,754

Int. Cl. H03g *11/08*

U.S. Cl. 330—207 P 5 Claims



A direct coupled state high fidelity amplifier incorporates an energy limiting circuit to provide protection against the user accidentally overloading and damaging the amplifier. The energy limiting circuit is designed so that the output transistors of the amplifier cannot be required to carry a specified amount of power for a longer period than would permit their safe operation without damage. This is done by examining and limiting the time integral of the product of voltage and current, i.e., energy, that the output transistors of the amplifier absorb. The result of using the energy limiting circuit is an increase in the efficiency of utilization of the output transistors, which in turn allows for an increase in power supplied by the amplifier to other components of the stereo system, while reducing the number of output transistors required.

3,727,149

BURST CONTROL CIRCUIT HAVING A VOLTAGE RESPONSIVE OSCILLATOR

Kenji Kimura, Tokyo, Japan, assignor to Shiba Electric Co. Ltd., Tokyo, Japan

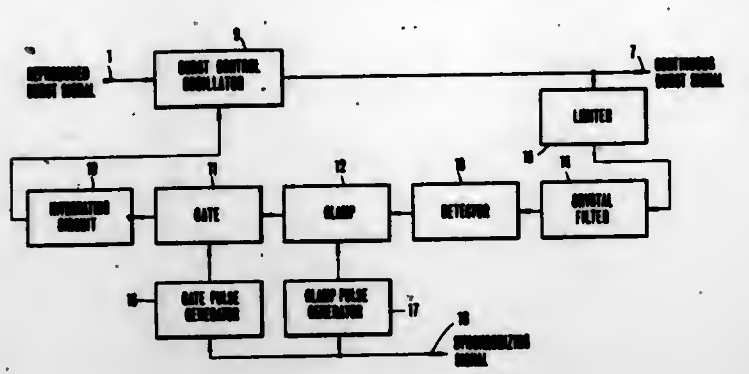
Filed Aug. 25, 1971, Ser. No. 174,721

Claims priority, application Japan, Aug. 29, 1970, 45/75445

Int. Cl. H03b *3/04*; H04n *9/46*

U.S. Cl. 331—1 R 6 Claims

A burst control circuit for producing a continuous signal synchronized in phase with an intermittent burst signal and comprising a voltage-responsive control oscillator having a natural oscillation frequency, means for comparing the frequency the continous signal with the natural oscillation frequency of the control oscillator and means responsive to the output from the comparing means for producing an error



signal and applying it to the oscillator to make equal the natural frequency of oscillation of the control oscillator with the continous signal.

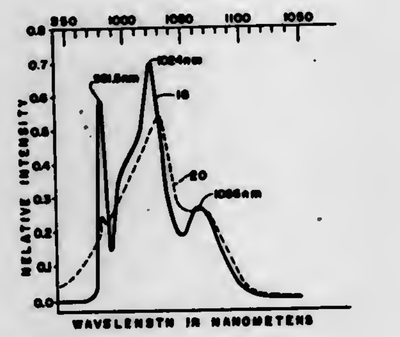
3,727,150
YTTERBIUM GLASS LASER WITH AN OUTPUT IN THE 1,024 NANOMETERS RANGE

Charles C. Robinson; Robert R. Shaw, both of Sturbridge, Mass., and Joseph T. Fournier, Storrs, Conn., assignors to American Optical Corporation, Southbridge, Mass.

Filed Oct. 22, 1971, Ser. No. 191,936

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 10 Claims



A laser device containing an optically resonant laser cavity which is reflective for a light with an optical center between the 1,020–1,032 nanometer range and an ytterbium doped glass host, the composition of which is selected so that the host is capable of exhibiting fluorescence peaked between the 1,020–1,032 nanometer range of the spectrum. The glass composition is a silicate glass which includes a monovalent alkali metal oxide selected from a member of the group consisting of rubidium, cesium, potassium and mixtures thereof. The foregoing monovalent alkali metal oxides have been found to increase the fluorescent peaks of ytterbium doped glasses between 1,020–1,032 nanometers, making laser action at this wavelength possible.

3,727,151
INTEGRATED CIRCUIT FOR ELECTRONIC TIMEPIECES

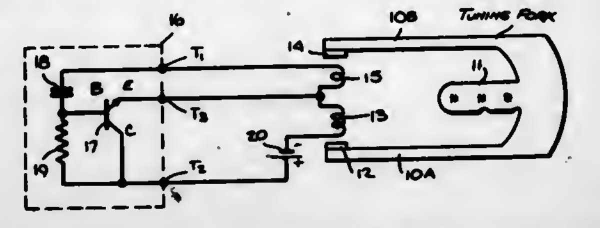
Dale R. Koehler, Westwood, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.

Filed April 17, 1972, Ser. No. 244,644

Int. Cl. H03b *5/30*

U.S. Cl. 331—116 M 7 Claims

An integrated electronic circuit operating in conjunction with an electromagnetic transducer for sustaining a tuning fork in vibration, the fork serving as a frequency standard for a timepiece. The electronic circuit includes a super-gain transistor whose output is connected through an external power source to the drive coil of the transducer associated with the tuning fork to produce current pulses for actuating the fork. The voltage induced in the phase-sensing coil of the transducer is applied to the input of the transistor through a coupling capacitor, a resistor providing base current for the transistor, whereby regeneration occurs to sustain oscillation at a rate determined by the resonance frequency of the fork.



The capacitor has a value in the picofarad range, this small value being offset by a large resistor value in excess of 100 megohms, the resultant decrease in base current being compensated for by an increase in current gain effected by the super-gain transistor. The capacitor, the resistor and the transistor are fabricated as a monolithic device, making possible a miniature timepiece construction.

3,727,152
SIGNAL COMBINER OR DIVIDER FOR DIFFERING FREQUENCIES

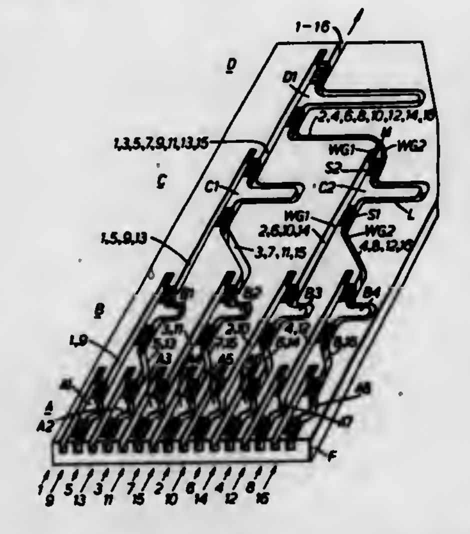
Janos Bodonyi, Bickacre, England, assignor to The Marconi Company Limited, London, England

Filed June 28, 1971, Ser. No. 157,308

Claims priority, application Great Britain, July 9, 1970, 33,300/70

Int. Cl. H01p *5/12*

U.S. Cl. 333—6 8 Claims



An electrical signal combiner or separator for combining signals of different frequencies for transmission along a common signal path or for separating similar signals received over a common signal path consists of devices formed by grooving in a block structure and interconnected by other grooving similarly formed in the block, the devices being arranged in sets each of a different number, the numbers in the sets increasing by a factor of two, and one set consisting only of one device, each pair of devices in any set (except that consisting of one device) having two parts, one in each device, connected through two grooves to two of the ports of a device in another set.

3,727,153
AUTOMATIC EQUALIZER USING RECIRCULATION

Gerald K. McAuliffe, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

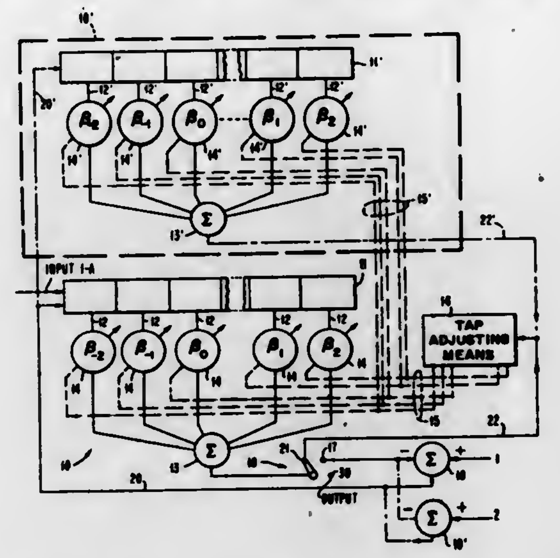
Filed June 30, 1971, Ser. No. 158,416

Int. Cl. H04b *3/04*

U.S. Cl. 333—18 30 Claims

An automatic equalizer with extremely fast convergence is disclosed. The weight setting procedure or algorithm used is

basically an iterative operation which can be conveniently expressed by the function $1+A+A^2+\ldots+A^{n-1}$ where $n=0, 1$ 2, 3, . . . , and wherein the function has n+1 terms. The tap setting algorithm results from the modification of an input signal represented by the function 1−A in an equalizer having a plurality of tap settings; subsequently converting the modified function in a summer which adds the values 1 or 2 to the negative of the modified signal; recirculating the resulting function and subjecting it to a further modification in the



equalizer, the modification being the same as that initially applied and utilizing the resulting output to adjust the tap settings of an equalizer to modify an input signal represented by the function 1−A during the next succeeding iteration. This procedure is carried out iteratively until the value A which represents the distortion of the signal due to sidelobes is reduced to substantially zero value. The tap setting may be accomplished by totally replacing the previous tap settings with net tap settings or the previous tap setting may be incremented to provide a new tap setting.

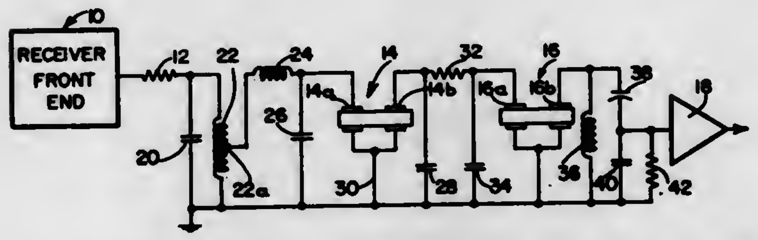
3,727,154
BANDPASS FILTER INCLUDING MONOLITHIC CRYSTAL ELEMENTS AND RESISTIVE ELEMENTS

James L. Dailing, Glen Ellyn; Corwin E. Livenick, Hickory Hills, and Stanley Malinowski, Park Ridge, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 16, 1970, Ser. No. 98,722

Int. Cl. H03h *7/06, 7/08, 9/00*

U.S. Cl. 333—72 12 Claims



A bandpass filter circuit includes a pair of monolithic crystal filter elements and a resistance-capacitance network, which may be a lattice network, connected between the crystal filter elements. The crystal filter elements are dual-coupled resonators which have a pair of resonator spots formed on a quartz wafer, and the resonators have relatively well defined bandpass characteristics extending above and below their resonant frequencies and provide an abrupt change in attenuation at the limits of the bandpass frequencies. The resistance-capacitance network used with the crystal filter elements acts to relocate the pole frequencies so that the characteristic curve of the complete filter closely approximates a Gaussian shape in the vicinity of the bandpass. The bandpass filter circuit thus formed is particularly adapted for use in a mobile receiver where extraneous undesired signals may occur in the crystal filter elements resulting from impulse type signals, such as that produced by spark discharge of the ignition system, and these undesired signals are greatly reduced or eliminated.

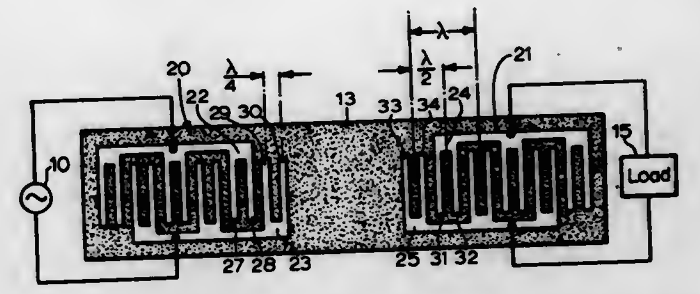
3,727,155
ACOUSTIC SURFACE WAVE FILTER

Adrian J. DeVries, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed March 20, 1972, Ser. No. 235,991

Int. Cl. H03h *9/00, 9/30*

U.S. Cl. 333—72 5 Claims



A surface-wave integratable filter includes an input transducer for launching acoustic surface waves along a path in a propagating medium. An output transducer responds to those surface waves by developing output signals. One or both transducers takes the form of an iterative series of conductive ribbons disposed laterally across the path. The ribbons are spaced apart by a distance of one-fourth the wavelength of the acoustic waves. The input or output signals are coupled across adjacent pairs of successive ribbons with the center-to-center distance between such adjacent pairs being one-half the wavelength.

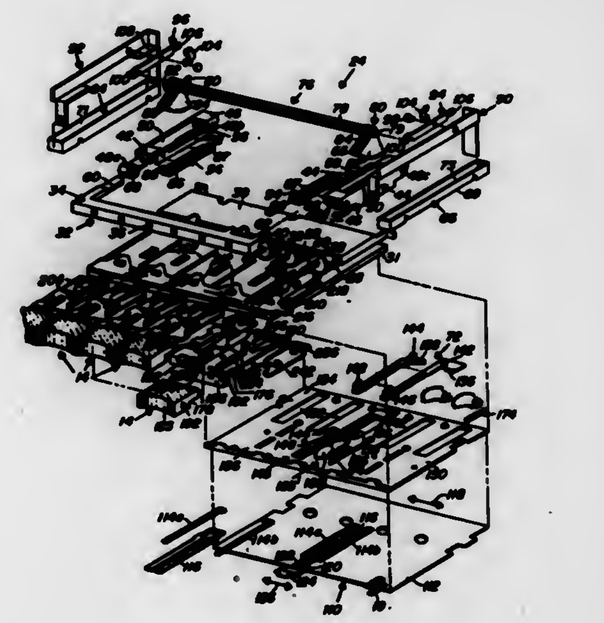
3,727,156
PUSHBUTTON RADIO TUNER DEVICE

Emery E. Olah, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 1, 1972, Ser. No. 222,488

Int. Cl. H03j *5/06*

U.S. Cl. 334—7 17 Claims



A radio tuner device for a pushbutton radio receiver includes a tuning core assembly mounted on a pair of roller brackets movable along a pair of spaced tracks for changing the radio frequency reception of the radio receiver. An equalizer assembly comprising a rack and gear arrangement, interconnects the brackets to insure equalized movement thereof along respective tracks to provide in turn equalized movement of tuning cores with respect to stationary tuning coils included in the tuning core assembly. A pushbutton actuated memory assembly mounted on a lower plate includes U-shaped clamping springs and associated memory bars, the latter of which are held in preselected locations by the former for positioning the movable core carriage to locations relative to those of the memory bars in response to the depression of corresponding pushbutton mechanisms. The pushbutton mechanisms are mounted on an upper plate and may be lifted to release lever arms incorporated therein which serve to compress the U-shaped clamping springs upon depression of a corresponding pushbutton mechanism from the released position, to permit movement of an associated memory bar to a new location, corresponding to a desired radio frequency setting. Thereafter, upon depression of the pushbutton mechanism, the tuning core carriage is returned to the new location. A unique manual tuning declutch assembly provided in each pushbutton mechanism includes a plate movable in a direction transverse the movement of the pushbutton mechanism in response to the depression of the latter from a normal position, to move a declutch bar in a like direction for disengagement of the manual tuning control mechanism. The declutch assembly is disabled upon depression of the pushbutton mechanism subsequent to releasing the latter for resetting a memory bar. Push-button actuator assemblies mounted on a plate sandwiched between the upper and lower plates are provided to move the core carriage to a position set by a corresponding memory bar. Each pushbutton actuator assembly includes a rack and gear arrangement. Movement of a pair of racks toward each other in response to the depression of an associated pushbutton mechanism clamps a stationary memory bar and the core carriage between respective projections extending from the rack members, moving the core carriage to a position relative to the location of the memory bar.

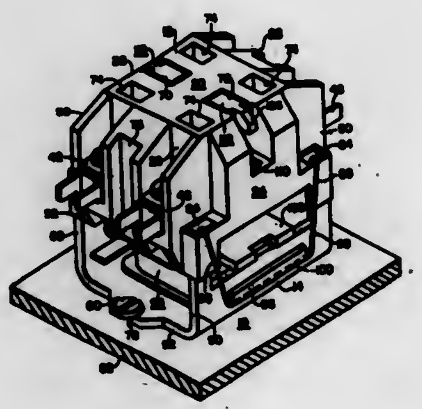
3,727,157
ELECTRIC CONTROL DEVICE

Kurt A. Grunert; Thomas R. Rehm, both of Beaver, and Charles R. Paton, New Brighton, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 17, 1972, Ser. No. 218,104

Int. Cl. H01h *50/04*

U.S. Cl. 335—132 **7 Claims**



An electric control device or contactor adapted for mounting on a mounting panel and comprising an electrically insulating housing and a mounting bracket the latter of which is fixedly attached to a mounting panel and the former of which is readily detachably mounted on the bracket for easy access to the interior of the device; and means separable from the housing and bracket comprising an elongated wire-like member having end portions engaging wire-engaging means in the housing and in the mounting bracket.

3,727,158
CONTROL APPARATUS EQUIPPED WITH A RELAY

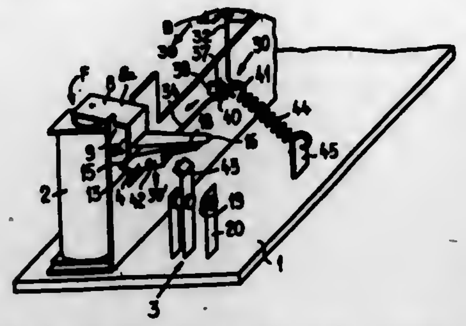
Roger Ludi, Boppelsen, Switzerland, assignor to R. Ludi AG, Regensdorf, Switzerland

Filed July 9, 1971, Ser. No. 161,203

Claims priority, application Switzerland, July 13, 1970, 10608/70

Int. Cl. H01h *61/01*

U.S. Cl. 335—145 **8 Claims**



A control apparatus equipped with a relay, especially for automatic firing installations, wherein the armature of the relay carries a transmission element which acts upon a bank of contacts. The transmission element is pivotably supported at the armature and through the agency of a control or positioning element engaging with the transmission element is operatively connected with an actuation element serving for adjusting the transmission element.

3,727,159
MAGNETIC CONVERGENCE DEVICE FOR USE IN AN IN-LINE TYPE COLOR CATHODE RAY TUBE

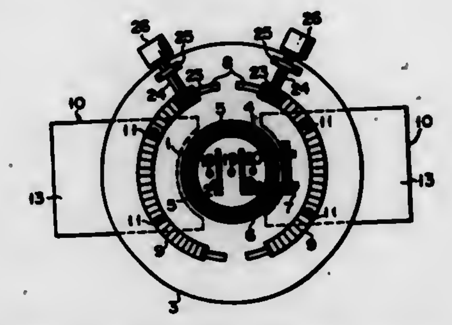
Shigeo Takenaka; Kazuhiko Idaka, and Yuichi Sakamoto, all of Fukaya-shi, Saitama-ken, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed March 17, 1972, Ser. No. 235,841

Claims priority, application Japan, March 20, 1971, 46/18737

Int. Cl. H01f *7/00*

U.S. Cl. 335—212 **4 Claims**



A mounting plate having first and second arcuate slits is mounted on the neck portion of an in-line type color cathode ray tube. On both surfaces of the mounting plate are slidably disposed first and second arcuate racks and first and second magnetic convergence units each having an E-shaped convergence core, by means of screws passing through the arcuate slits. First and second pinions geared to the arcuate racks are fixed to one end of first and second shafts rotatably fitted to the mounting plate, the other end of the shafts being fixed to the first and second adjusting wheels.

3,727,160
RETAINING CLIP FOR A SOLENOID ASSEMBLY

Alan W. Churchill, Morristown, N.J., assignor to Automatic Switch Company, Florham Park, N.J.

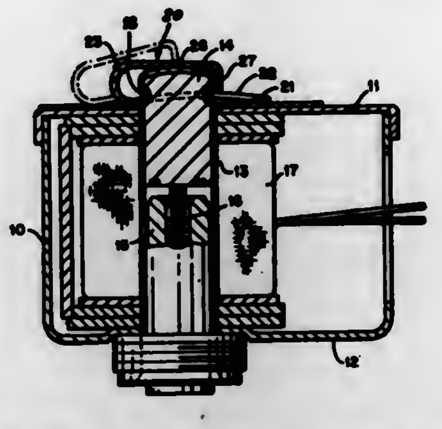
Filed March 24, 1972, Ser. No. 237,726

Int. Cl. H01f *3/00*

U.S. Cl. 335—251 **11 Claims**

A solenoid assembly including a core tube having a peripheral groove, a housing having a hole through which the

core tube extends, and a retaining clip coupled to the groove to prevent the core tube from slipping into the housing. The retaining clip is a unitary, preferably metallic, structure having a main section and a locking member. The main section includes a hole which is slightly larger in diameter than the core tube, and a smaller diameter hole extension, the edge of the hole extension being engageable with the groove. The locking member extends over the main section and includes a projection which extends perpendicularly towards the center of the hole. To attach the clip to the assembly, the hole is slipped over the core tube and the main section is pushed against the housing. As the main section is pushed towards the wall, the projection abuts the end of the core tube and causes the locking member to bend. Thereafter, as the clip is moved perpendicularly with respect to the axis of the core tube, the edge of the radial hole extension engages the groove, the projection reaches the circumferential edge of the end of the core tube and snaps past it as the locking member straightens out, thereby locking the assembly in place.



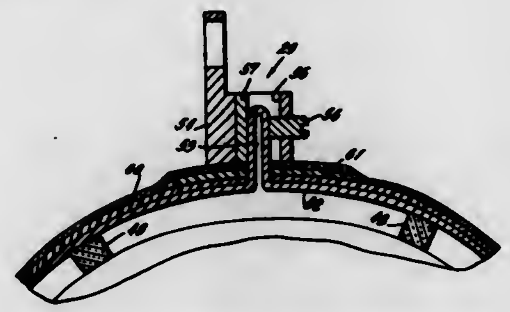
3,727,161
TRANSFORMER FOLD-OUT WINDING TAP WHICH IS INTEGRAL WITH TRANSFORMER WINDING

James R. Ruckel, King of Prussia, Pa.; Charles P. Rizzo, Clementon, N.J., and Silvio A. Marella, Jr., Philadelphia, Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed July 29, 1971, Ser. No. 167,174

Int. Cl. H01f *15/10*

U.S. Cl. 336—107 **6 Claims**



A winding tap for a transformer coil consists of an integral portion of the winding at the outer surface of the full coil which is bent or folded outwardly. The outwardly bent portion receives a compression lug to serve as a tap for making connection to an intermediate portion of the winding.

3,727,162
POWER SUPPLY ARRANGEMENT

Yuko Shinryo, and Hideyuki Tsuruno, Nagasaki, Nagasaki Prefecture, both of , Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

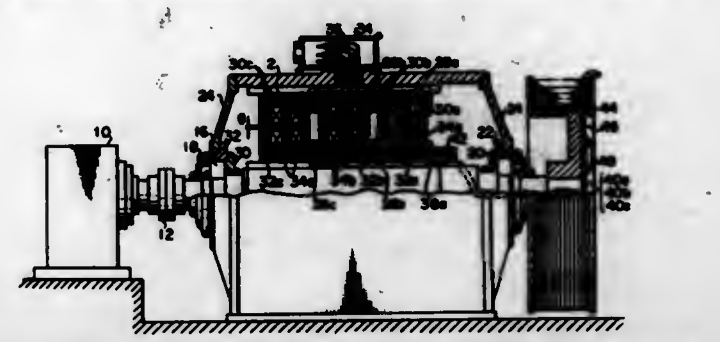
Filed June 5, 1972, Ser. No. 259,816

Claims priority, application Japan, June 10, 1971, 46/41281

Int. Cl. H01f *19/00*

U.S. Cl. 336—120 **3 Claims**

The disclosed arrangement comprises a rotary transformer including a stator winding connected to an AC source and rotor winding, and a length of cable wound on a drum rotatable along with the rotor winding, and having one end connected to the rotor winding and the other end connected to a power utilization device at a separate position. When a distance between the drum and device changes, the associated driving device is operated to rotate both the rotor winding and drum to case the cable to be paid out from or drawn in the drum in accordance with the change in distance between the drum and utilization device.



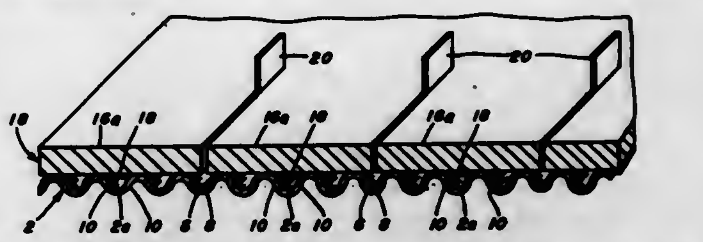
3,727,163
AN ELECTRIC COIL

Louis M. Butcher, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 10, 1971, Ser. No. 179,288

Int. Cl. H01f *27/32*

U.S. Cl. 336—206 **7 Claims**



An electrical conductor-dielectric laminate having an elongated electrically conductive strip and a dielectric web adhesively secured to the conductive strip. The adhesive securing the conductive strip to the dielectric is spaced inwardly from the transverse edges of the dielectric web. The dielectric web has nonplanar portions between the adhesive and the transverse edges to provide a restricted width. The dielectric web has a restricted width generally equal to the width of the conductive strip and an expanded width greater than the width of the conductive strip.

An electrical coil wound from the electrical conductor-dielectric laminate having the expanded width dielectric web serving as an electrical insulator between adjacent conductive wraps of the coil.

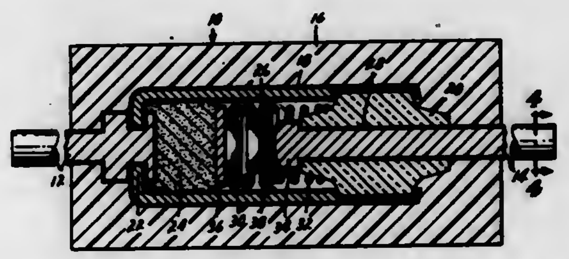
3,727,164
TEMPERATURE-RESPONSIVE ELECTRICAL SWITCH

Michael D. Cartier, and Gaylord L. Greff, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 14, 1972, Ser. No. 271,745

Int. Cl. H01h *37/76*

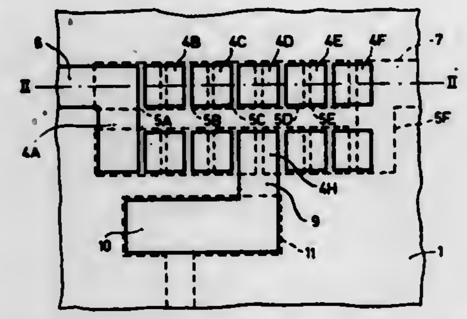
U.S. Cl. 337—405 **7 Claims**



An improved, temperature-responsive electrical switch is provided which is actuated at temperatures above 250° C., the switch utilizing fusible pellets prepared from imide or substituted melamine compounds.

3,727,165
VOLTAGE-DEPENDENT RESISTOR

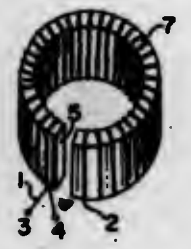
Siegfried Hendrik Hagen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 6,203, Jan. 27, 1970, abandoned.
This application Feb. 22, 1972, Ser. No. 228,095
Claims priority, application Netherlands, Feb. 1, 1969, 6901659
Int. Cl. H01c *7/10*
U.S. Cl. 338—20 **9 Claims**



Voltage-dependent resistor comprising a one-grain-thick layer provided with electrode layers which are in contact with the grains and which are arranged in a pattern of islands partly overlapping each other and located on either side of the layer, so that mutually insulated parts of the grain layer can be connected in series.

3,727,166
NONINDUCTIVE TWISTED-WIRE RESISTOR

Tatsuo Kobayashi, Yokohama, Japan, assignor to E. R. D. Corporation, Tokyo, Japan
Filed March 26, 1970, Ser. No. 22,800
Claims priority, application Japan, March 27, 1969, 44/22736
Int. Cl. H01c *3/02*
U.S. Cl. 338—63 **3 Claims**

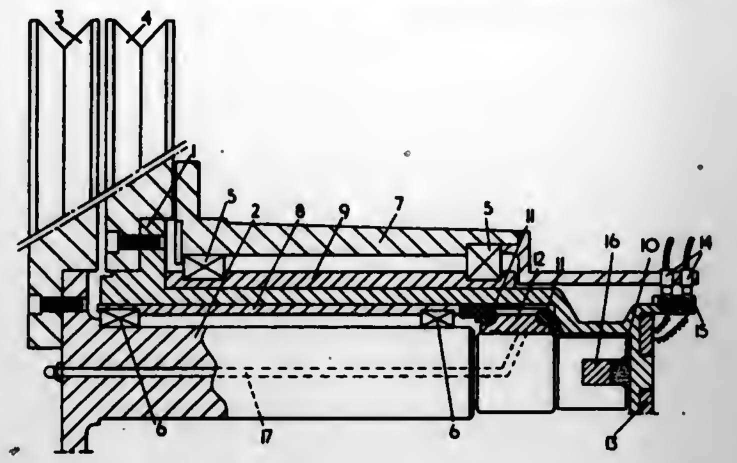


A noninductive resistor is provided which includes supply and return insulated wires twisted together with one end each having the wires integrally connected and the other ends including respective electrical terminals. Part of the insulation may be removed so that a contact arm may slide therealong for resistor adjustment. The twisted resistor may be wound around a toroidal base for use.

3,727,167
ROTARY HIGH CURRENT PICK-OFF

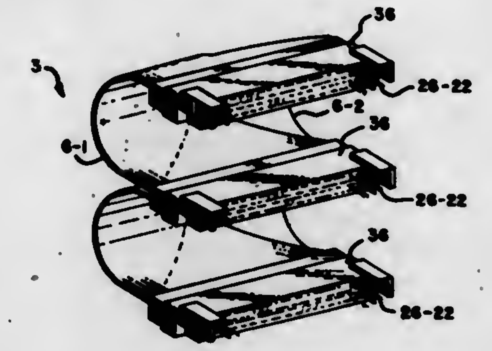
Walter Roland Tole, High Wycombe, and John Kyriakis, Wembley, both of England, assignors to Beta Instrument Company Limited, High Wycombe, Buckinghamshire, England
Filed Dec. 10, 1970, Ser. No. 96,857
Claims priority, application Great Britain, Dec. 10, 1969, 60,335/69
Int. Cl. H01r *39/30*
U.S. Cl. 339—8 L **3 Claims**

An electric conductor comprising two electrically conducting members at least one of which is rotatable. Both members are in contact with an electrically conducting liquid consisting of a metal or alloy having a melting point in the range of 0° to 150°.



3,727,168
FLAT CABLE HARNESS

Homer Ernst Henschen, Carlisle, and Dale Richard Zell, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 8, 1971, Ser. No. 196,492
Int. Cl. H05k *1/07*
U.S. Cl. 339—17 F **20 Claims**

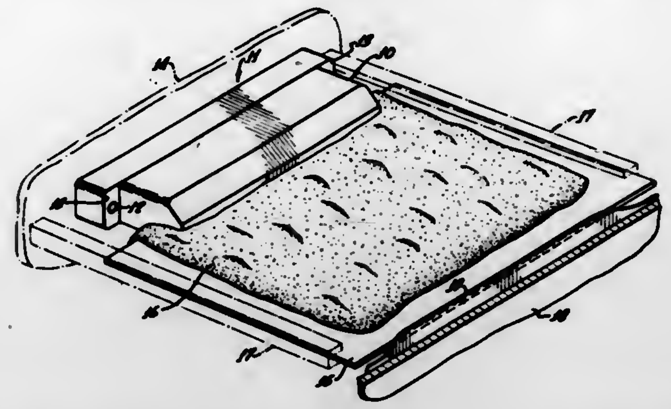


Electrical harness for electrically commoning the corresponding positions of a first plurality of multi-row electrical connectors comprises flat cables, each of which contains a number of conductors equal to the number of positions in each connector row. The cables have at least one side edge which extends sinuously so that each cable has alternate wide and narrow portions. Terminals are crimped onto the conductors in the wide portions of the cables and, in one embodiment, the terminals are inserted into the rows of complementary connectors which can be mated with the first connectors whereby the corresponding positions of the first connectors are commonly connected. One alternative embodiment is disclosed which does not require the complementary connectors while another alternative embodiment does not require the first connectors.

3,727,169
CONNECTOR FOR PRINTED CIRCUIT BOARDS

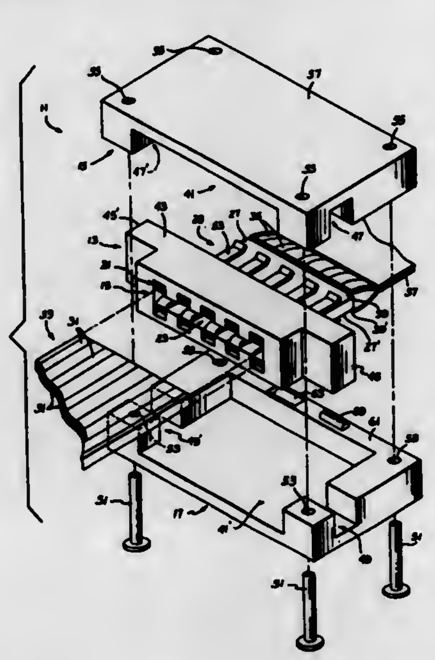
Merlin L. Crane, and Michael J. Hewett, both of Banning, Calif., assignors to The Deutsch Company Electronic Components Division, Banning, Calif.
Filed Nov. 12, 1970, Ser. No. 88,600
Int. Cl. H01r *7/02, 13/70;* H05k *1/04*
U.S. Cl. 339—17 L **10 Claims**

An electrical connector for a printed circuit board in which a plug has right-angled pins with first end portions extending to one end of the printed circuit board, with a space being provided between the body of the plug and the circuit board to allow inspection, after which the surfaces are covered with potting material. Posts on the plug enter openings in the circuit board to align the board and transmit loads. The opposite ends of the pins extend through a sealing gasket which is compressed by the forward end of the receptacle and has protrusions around the pins that enter corresponding recesses in the receptacle body in forming a seal. A peripheral O-ring seal also is provided between the plug are contained in the receptacle, held by rear-release retainer clips. Several openings in the forward face of the plug selectively can receive keying pins to enter corresponding openings in the receptacle, with stop pins being positionable in the receptacle openings to preclude mismating of the plug and receptacle. The keying pins and stop pins are held by releasable retainer clips similar to those used in retaining the socket contacts.



3,727,170
FLAT CABLE CONNECTOR

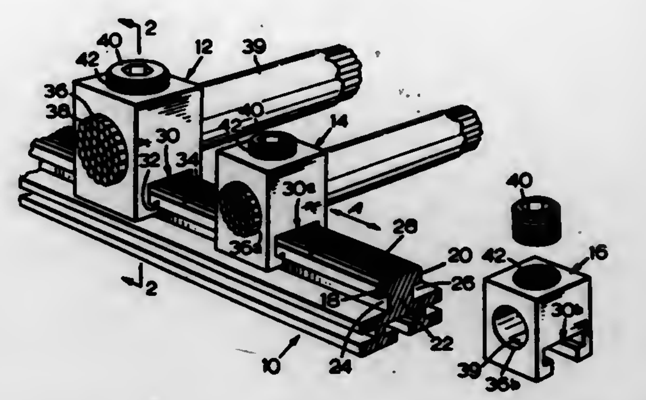
John L. Mosier, Kane, and George D. Powley, Johnsonburg, both of Pa., assignors to GTE Sylvania Incorporated
Filed April 20, 1971, Ser. No. 135,599
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 F **7 Claims**



A connector assembly for providing contact between the conducting surfaces of a printed circuit board and conductors located within a flat cable. This connector comprises an insulating body having a channel therein for receiving the printed circuit board and a tail portion extending from said insulating body. A plurality of electrical contacts are established within the insulating body, each having first contacting portions for contacting the conducting surfaces of the circuit board and second contacting portions which protrude externally from the insulating body substantially parallel to and at a predetermined distance from designated surfaces of the tail portion, thereby forming a slot for receiving the leading edges of the flat cable. To provide electrical contact in this area, the insulative material on one side of the flat cable is stripped away, exposing the conductors to the second contacting portions of the contacts.

3,727,171
BUS CONNECTOR ASSEMBLY

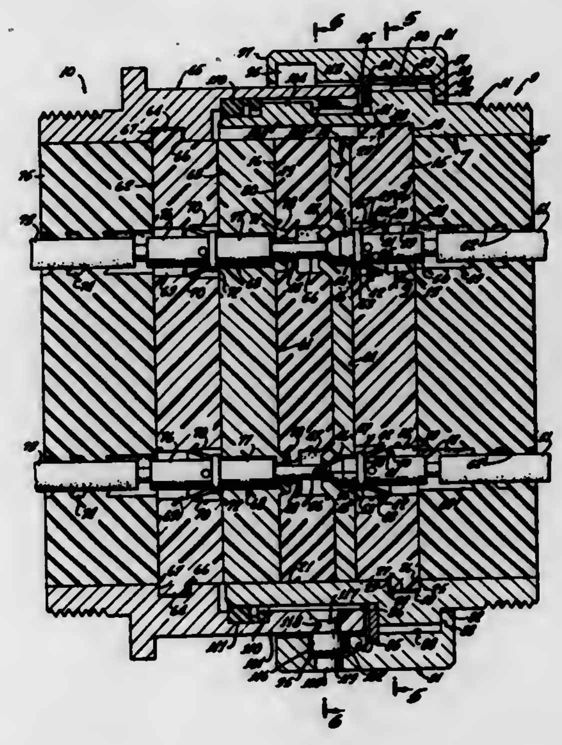
Sidney J. Coles, Carlisle; Bernard C. Teal, Ancaster, Ontario, and Gordon D. Waye, Three Rivers, Quebec, all of Canada, assignors to Westinghouse Canada Limited, Hamilton, Ontario, Canada
Filed July 23, 1971, Ser. No. 165,461
Int. Cl. H01r *13/60*
U.S. Cl. 339—22 B **2 Claims**



A bus bar having a T-shaped cross section for receiving a sliding bus connector which is provided with a T-shaped recess corresponding to the T-shaped bus bar is disclosed herein. The bus connector is further provided with an aperture which is in partial communication with said recess to receive a suitable cable conductor therein. A set screw assures intimate contact of the wire conductor and the bus bar because of the common communication and the set screw pressure on the cable simultaneously fixes the location of the connector on the bus bar.

3,727,172
ELECTRICAL CONNECTOR

Kenneth M. Clark, Beaumont, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.
Continuation-in-part of Ser. No. 83,782, Oct. 26, 1970, abandoned. This application July 29, 1971, Ser. No. 167,317
Int. Cl. H01r *13/42*
U.S. Cl. 339—59 M **24 Claims**



An electrical connector that includes an insert assembly held in the shell by means of outwardly projecting lugs on the insert that are rearwardly moved through longitudinal slots in the shell upon assembly, followed by rotation of the insert to position the lugs between opposed shoulders on the shell, which thereby prevents relative axial movement of the shell and insert. The insert includes continuous openings between the forward and rearward ends, each of the openings receiving a contact which is retained between a rearwardly facing shoulder in each opening and integral resilient fingers on the insert, which incline forwardly and inwardly from the circumferential wall of the opening to engage the rearward contact shoulder. The openings for the contacts include tapering surfaces which contract a longitudinally split insertion and removal tool so that it can enter a smaller portion of the opening adjacent the spring fingers as the contact is installed and removed, allowing the tool to be more readily manufactured in smaller sizes with a relatively wide longitudinal slot. The plug and receptacle are held together by a bayonet coupling that includes pins on the receptacle which enter grooves in a rotatable but axially fixed coupling ring around the plug shell, the bayonet grooves including inner portions that fall within a radial plane and have no forwardly inclined recesses at their inner ends. A detent to prevent inadvertent rotation of the coupling ring after the connector has been mated is provided by a leaf spring which is carried by the plug shell and has an outwardly projecting portion adapted to enter a recess in the inner wall of the coupling ring.

3,727,173

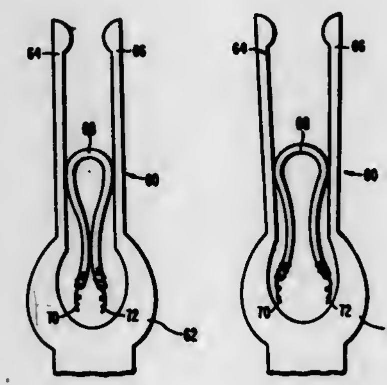
ZERO-INSERTION FORCE CONNECTOR

Lewis S. Goldmann, Ossining; Dexter A. Jeannotte, Clinton Corners, and Bogdan Krall, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,181

Int. Cl. H01r ***13/54, 13/62***

U.S. Cl. 339—74 R **9 Claims**



A zero-insertion force connector comprising a supply means for providing a thermal source and a base means adapted to support one or more pairs of mating contacts. A reversible motion actuator means comprising a temperature responsive nickel-titanium alloy is adapted for connection to the mating contacts. The actuator means is selectively responsive to the thermal source for opening the mating contacts for providing zero-insertion force for an electrical interconnection package having one or more pairs of electrical contacts thereon.

3,727,174

HOUSING FOR ELECTRICAL CONNECTORS

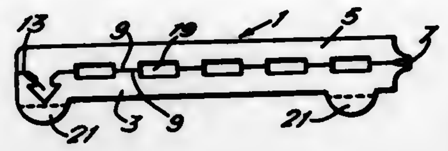
Alan William Ronald Pedmore, St. Albans, and Ian Bruce Page, Hemel Hempstead, both of England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed April 1, 1970, Ser. No. 24,749

Int. Cl. H01r ***13/50***

U.S. Cl. 339—210 M **1 Claim**

An insulating housing for an electrical connector is formed by extruding plastics material to provide two housing parts connected together by a reduced cross-section part which forms a hinge extending in the extrusion direction so that the two housing parts are closable to embrace an electrical connector.



3,727,175

FORK-SHAPED CONTACT SPRING TO PRODUCE A SEPARABLE ELECTRIC CONNECTION

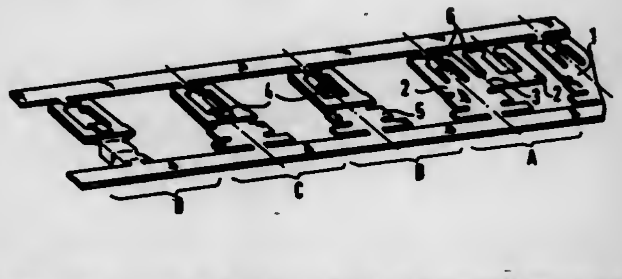
Hans August Hebert Grenda, Meersburg, Germany, assignor to Holzer Patent AG, Zug, Switzerland

Filed March 19, 1971, Ser. No. 125,961

Claims priority, application Switzerland, March 20, 1970, 4229/70

Int. Cl. H01r ***11/22***

U.S. Cl. 339—258 R **2 Claims**



An electrical contact element of the two-fingered spring-like contact type is formed so that the spaced contact fingers are folded along an axis parallel to the fingers and extend normal to the plane of the attaching flange and are also bent about an axis extending between them so that each contact finger forms the arm of a V. A retaining flange is wrapped around the folded contact element to retain the contact fingers in their overlapped relationship.

3,727,176

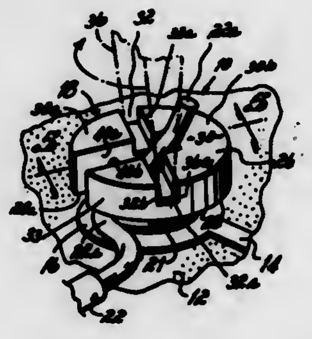
ELECTRICAL TERMINAL

John J. Oezer, Cincinnati, Ohio, assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed June 4, 1971, Ser. No. 150,006

Int. Cl. H01r ***7/16***

U.S. Cl. 339—271 **13 Claims**



An electrical terminal including an integral threaded shank and enlarged screw head having in the upper surface of the head a uniform depth cross-slot engageable with the tip of a screwdriver and a non-uniform depth wire slot which intersects the screw slot. One end of the bottom surface of the wire slot intersects the lower surface of the head at a point spaced from the head periphery by a distance approximately equal to one-half the diameter of the wire, while the other end of the bottom surface of the wire slot lies above the lower surface of the head. In use, a wire is positioned in the wire slot with the free end thereof at the intersection of the slots. A screwdriver is then positioned in the cross-slot overlying the inserted wire and is urged axially to clamp the inserted wire between the bottom of the screwdriver and the bottom of the wire slot. Simultaneously, the screwdriver is rotated to thread the terminal into a cooperative support member. As a consequence of rotating the terminal while simultaneously clamping the inserted wire with the screwdriver tip, the wire wraps around the shank of the terminal, and as the screw advances further the wrapped portion eventually becomes clamped between the lower surface of the head and the upper surface of the support member in which the terminal is threaded.

3,727,177

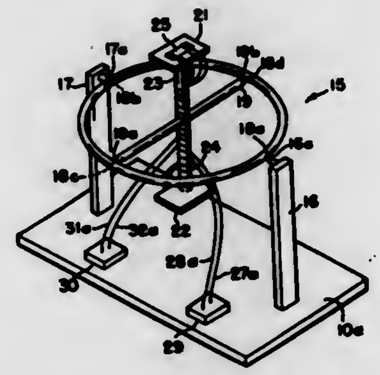
SHORT SCHULER ATTITUDE/HEADING REFERENCE SYSTEM

Frank J. Fuller, Granada Hills, and Donald E. Walters, Oxnard, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1971, Ser. No. 201,664

Int. Cl. G01c ***17/18***

U.S. Cl. 340—2 **8 Claims**



A pair of sensors each responsive to changes in the earth's magnetic field are orthogonally mounted with respect to each other and suitably electrically connected and pumped to provide signals representative of their heading. Mounting the two sensors each on a separate bob of a compound pendulum minimizes inductive mutual coupling and erroneous signals while the pendulum serves as a stable vertical reference from which the relative orientation of the chips are determined. Suspending a sonobuoy carrying the compound pendulum and sensors a considerable distance below the water surface from a sparbuoy via an elastic line tends to block the transfer of vertical and lateral accelerations to ensure that the compound pendulum provides a more stable vertical reference.

3,727,178

ECHO SOUNDING DISTANCE MEASUREMENT METHOD AND APPARATUS

Wolfgang Stedtnitz, Neukrug, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

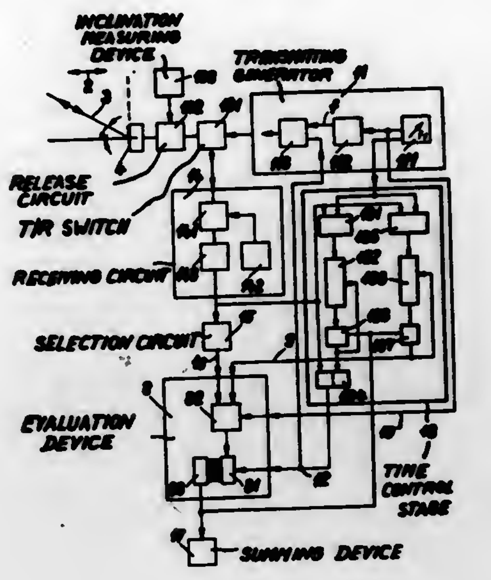
Filed Sept. 8, 1971, Ser. No. 178,658

Claims priority, application Germany, Sept. 12, 1970, P 20 45 276.0

Int. Cl. G01s ***9/68***

U.S. Cl. 340—3 R **18 Claims**

A method and apparatus for measuring the length of the component in a predetermined direction of a distance to a point through a sound transmitting medium by radiating a narrow beam of sound energy from an electroacoustic transducer array of the type which produces a beam whose angular direction is a function of the frequency of the excitation signals applied thereto, directing the beam toward the point at a predetermined angle to the component direction and providing a length indication based on a combined function of the elapsed time between transmission of the beam and reception of its reflected version and the frequency of the signals supplied to the transducer array.



3,727,179

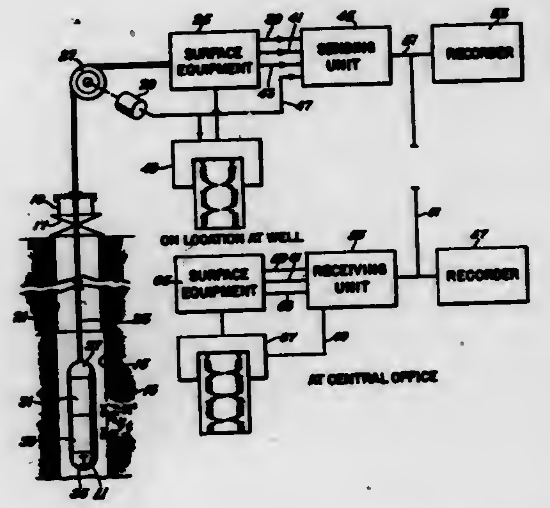
DATA TRANSMISSION RESPONSIVE TO SYNCHRONIZATION SIGNAL

Kenneth A. Bennett, Odessa, Tex., assignor to Petrodata, Inc., Odessa, Tex.

Filed Aug. 8, 1969, Ser. No. 848,511

Int. Cl. G01v ***1/22***

U.S. Cl. 340—15.5 DT **19 Claims**

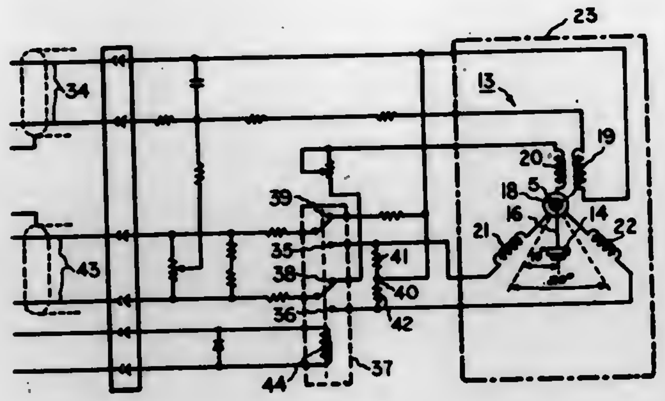


Method and apparatus for transmitting well logging data containing a plurality of functions relating to a plurality of parameters measured by a downhole tool in a borehole penetrating subterranean formations, characterized by transmitting the respective functions, unaltered by surface equipment, on a line sharing basis over a monoline cable in response to a synchronization signal such as formed by a frequency-type signal having at least repetitive pulses of a given polarity from a depth measuring device; and receiving and discriminating the respective functions at a point spaced from the point of transmission in response to a slave synchronization signal that retains the functions synchronized with the sequence of transmission. The raw data at the received location exactly duplicates the raw data logged and eliminates any data being lost through operator error at the well site. Both broader and more specific embodiments and apparatus are also disclosed.

3,727,180
ON-BOARD AIRCRAFT WEIGHT AND C. G. SYNCHRO-TYPE SELF-CHECKING ATTITUDE SENSOR

Fred J. Lingel, Lynnfield, and Alexander Filipov, Concord, both of Mass., assignors to BLH Electronics, Inc., Waltham, Mass.

Filed March 23, 1971, Ser. No. 127,226
Int. Cl. G01c *19/32*
U.S. Cl. 340—27 AT **5 Claims**

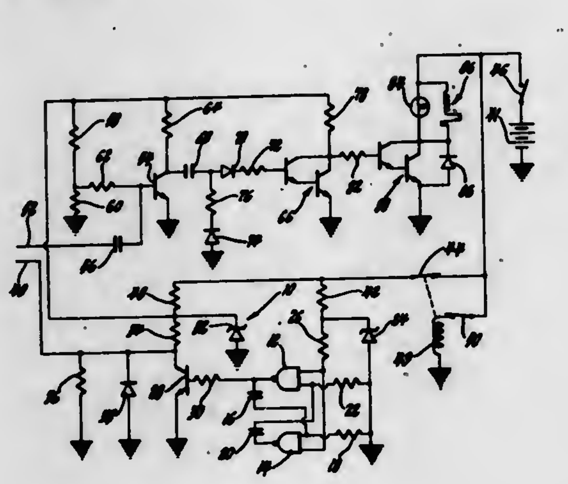


In an on-board aircraft weight and c. g. system, compensation for effects of pitch or slope of the craft is provided by a synchro-type attitude sensor in which a relatively light weight, immersed in a damping fluid within close confines of a container, is suspended for limited fore-aft tilting about the axis of a precision-bearing synchro-rotor; the stator windings of the synchro include a normally-disabled winding having a close coupling with the rotor winding over the limited tilting range, and selective switching causes the normally disabled winding to yield an electrical output which serves as a test of electrical operating characteristics of the sensor.

3,727,181
VEHICLE SEAT OCCUPANT SENSOR

Samuel B. Robbins, Rochester, and Yoshitaka Yoshida, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 31, 1972, Ser. No. 222,180
Int. Cl. G08b *21/00*
U.S. Cl. 340—52 E **3 Claims**

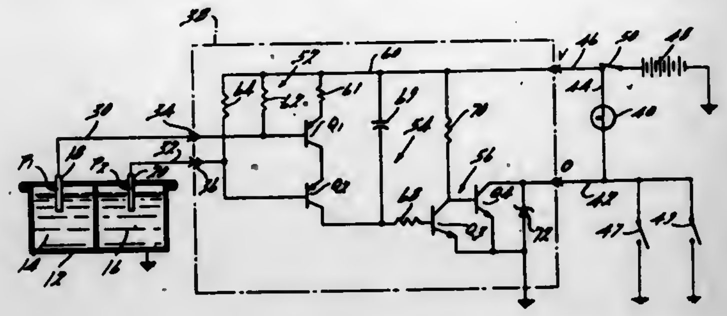


An antenna embedded in the seat of a vehicle is coupled to the output of an oscillator to generate an electromagnetic field having a frequency at which the electromagnetic field is absorbed by a vehicle occupant when in the field. A receiving antenna is positioned within the generated electromagnetic field and is coupled to a detector. An indicator is coupled to the detector to indicate the presence of an occupant in the seat when the intensity of the electromagnetic field in proximity to the receiving antenna decreases due to absorption of the electromagnetic field by an occupant in the seat.

3,727,182
DUAL SENSOR, ELECTRONIC MONITORING AND SIGNAL WARNING CIRCUIT FOR SPLIT MASTER BRAKE CYLINDER

George D. Snyder, Oak Park, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed June 1, 1971, Ser. No. 148,676
Int. Cl. G08b *21/00*
U.S. Cl. 340—59 **4 Claims**



A dual sensor monitoring and signal warning circuit apparatus for monitoring and indicating a low brake fluid level condition in either reservoir of a split master brake cylinder. A pair of electrically conducting probes, one of which is provided for each reservoir, is connected to the input of a different one of a pair of transistors, which are serially connected in a logic form of gating circuit whose output actuates a lamp driver circuit when the fluid in either reservoir falls below the level of the sensor probe therein.

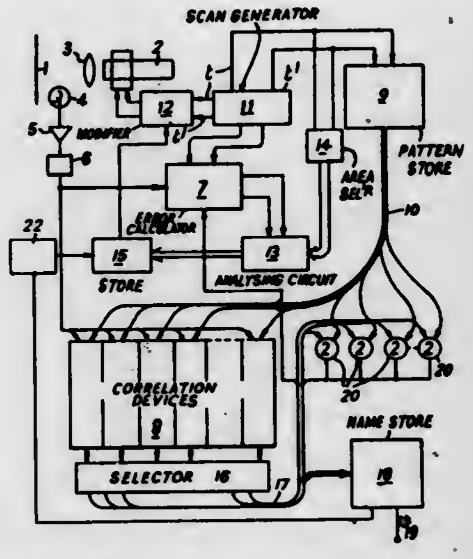
3,727,183
PATTERN RECOGNITION DEVICE INCLUDING MEANS FOR COMPENSATING FOR REGISTRATION ERRORS

Christopher Archibald Gordon LeMay, Osterley, England, assignor to EMI Limited, Hayes, Middlesex, England

Continuation of Ser. No. 753,282, Aug. 16, 1968, abandoned. This application May 11, 1971, Ser. No. 142,378

Claims priority, application Great Britain, Aug. 16, 1967, 37,657/67

Int. Cl. G06k 9/04
U.S. Cl. 340—146.3 H **9 Claims**



A pattern recognition device according to the invention comprises means for scanning an input pattern to derive a representation thereof, means for comparing the representation with each representation of a plurality of known patterns to identify the known pattern most similar to the input pattern and means for deriving an error signal representing a registration error between the input pattern and the known pattern most similar thereto. Means are then provided for utilizing the error signals to produce successive modifications of the scanning waveforms of the scanning means in dependence upon the error signals to tend to reduce the error signal.

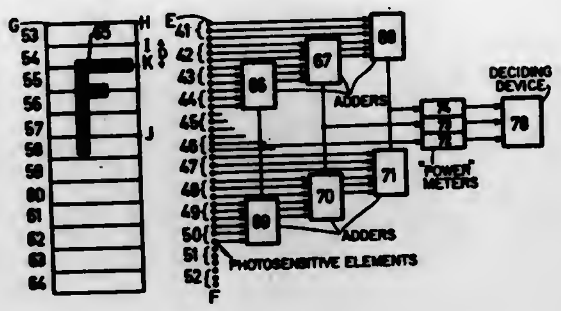
3,727,184
POSITION DETECTOR FOR CHARACTERS

Engel Roza, Emmasingel, Eindhoven, and Leendert Hendricus Wallast, Rijswijk, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 28, 1971, Ser. No. 157,161

Claims priority, application Netherlands, June 27, 1970, 7009520

Int. Cl. G06k 9/04
U.S. Cl. 340—146.3 H **8 Claims**



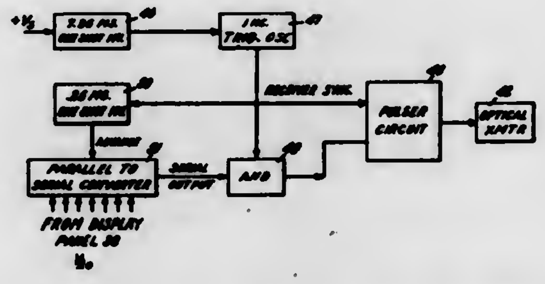
The position of characters is determined by means of a row of photosensitive elements defining a band of sectors, the band being displaceable in the transverse direction. The elements are combined to from groups, each consisting of an equal number of, for example, adjoining sub-rows of elements. The overall length of a group is equal to the character dimension along the row. The position of the character is determined by processing the added signal of a group.

3,727,185
TIME-SHARE TRANSMITTER

Clifford M. Jones, Waynesboro, Va., and John D. Harnden, Jr., Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 778,218, Nov. 22, 1968, Pat. No. 3,590,508, which is a division of Ser. No. 449,177, April 19, 1965, Pat. No. 3,432,846. This application Dec. 17, 1970, Ser. No. 99,192

Int. Cl. G09f *9/36;* **G08c** *15/06*
U.S. Cl. 340—147 R **1 Claim**

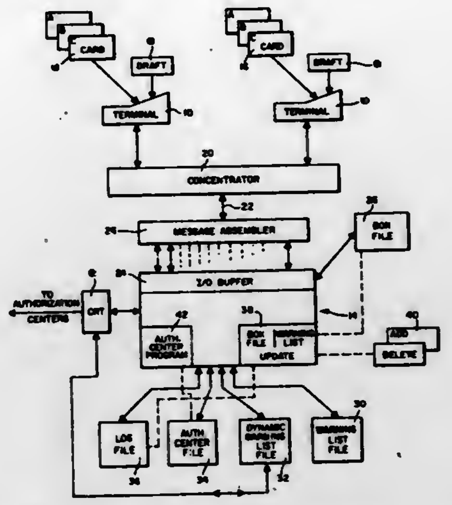


A time-share transmitter for providing parallel-to-serial conversion of information includes a triggered pulse generator for developing the output information and time-share receiver synchronizing pulses in time separated form. A flip-flop triggered by a first one-shot multivibrator generates timing pulses for triggering the pulse generator as well as initiating operation of a multistage parallel-to-serial converter which converts the information to serial form. The serial output of the converter is connected to an AND logic circuit having a second input from the flip-flop, and the output of the AND circuit supplies the information pulses to the triggered pulse generator.

3,727,186
METHOD OF AND APPARATUS FOR CREDIT VERIFICATION

Kenrick O. Stephenson, Jr., Upper Montclair, N.J.; George D. Telepke, Rydal, Pa., and C. Philip Strakosch, Tappan, N.Y., assignors to Digital Data Systems Corporation

Filed Feb. 26, 1971, Ser. No. 119,256
Int. Cl. G06k *5/00;* **H04q** *5/00*
U.S. Cl. 340—149 A **14 Claims**

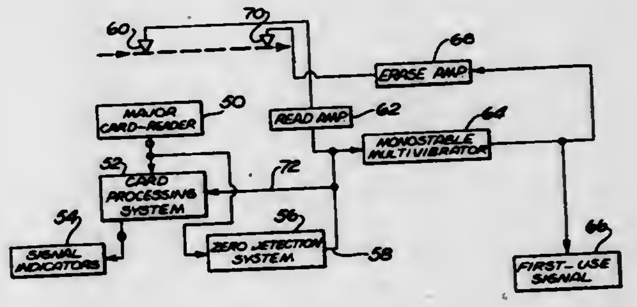


A credit verification system comprising a multiplicity of point-of-sale terminals and a programmed central processing unit with data storage equipment communicating with the terminals for automatically performing a credit check on the accounts corresponding to the credit cards inserted in the terminals. Each of the terminals is adapted to receive and operate with a plurality of different credit cards representing different credit card plans with the data storage equipment storing account information for each of the credit plans. After the various credit checks are performed by the central processing unit, the transaction authorization is communicated to the terminals. In certain instances, the central processing unit may refer the transaction to a video display terminal where an operator establishes voice communication with an external authorization center.

3,727,187
CREDIT CARD VERIFICATION SYSTEM

Daniel Norwich, Beverly Hills, Calif., assignor to Telecredit, Inc., Los Angeles, Calif.

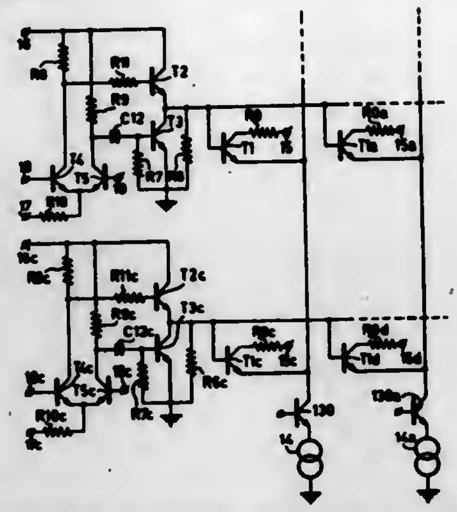
Filed Oct. 28, 1971, Ser. No. 193,417
Int. Cl. G05b *1/00;* **G06k** *5/00*
U.S. Cl. 340—149 A **10 Claims**



A credit card verification system is disclosed for use with identification cards carrying a changeable recording medium. On presentation, cards are sensed to provide signals that are indicative of the credit status of the bearer and additionally, the system senses signals to indicate that the card is being used for the first time, providing such is the case. The initial-use situation is indicated by the system (as a caution) and the card is cleared of such representations for further use. As disclosed, the initial-use signals are developed from an individual signal on the card and a specific code of the data signals.

3,727,188
FAST SELECTION UNIT FOR STORES

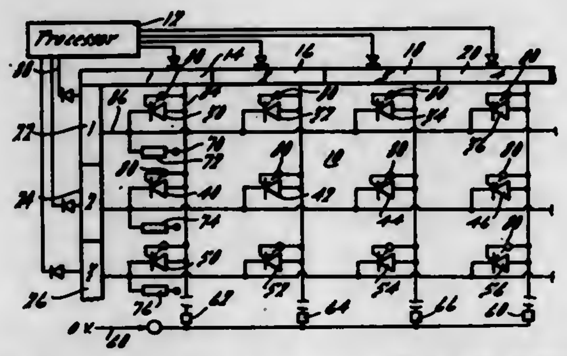
Johannes Bernardus Horsten, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed July 12, 1971, Ser. No. 161,904
Claims priority, application Netherlands, July 15, 1970, 701432
Int. Cl. G11c *7/00*; H03k *5/01*
U.S. Cl. 340—166 R 7 Claims



In a store information is written or read by means of short current pulses in selected conductors which are associated with given storage elements. Used as switching elements are transistors which in the conducting state, however, can store a large charge in the base-emitter capacitance. For quick depletion of this charge a second transistor is brought to the conducting state for a short period at the end of the current pulse.

3,727,189
INTERFACE SYSTEM HAVING PHOTO RESPONSIVE MATRIX

David A. Entrekin, Fenton, Mich., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Continuation of Ser. No. 777,861, Nov. 21, 1968, abandoned.
This application Aug. 26, 1971, Ser. No. 175,385
Int. Cl. H04n *3/14*
U.S. Cl. 340—166 R 2 Claims

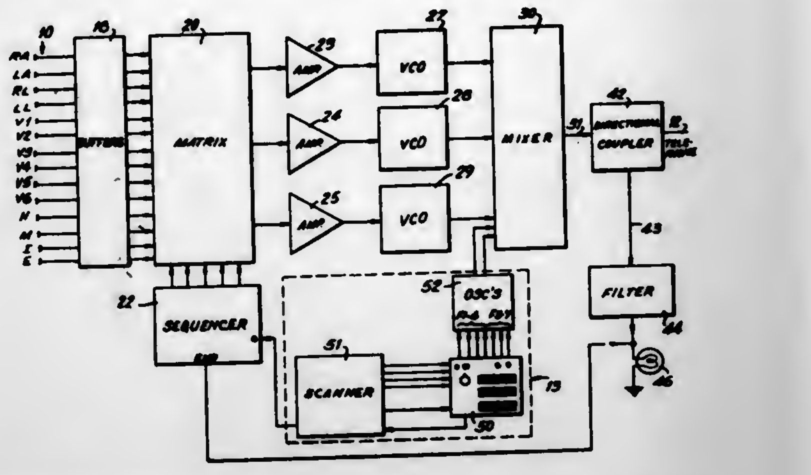


An interface assembly, system and method for inputting information from a source to a data processor, for example, a computer, which includes a means for translating electrical information into a non-electrical signal and retranslating the non-electrical signal back to an electrical signal to eliminate noise. The interface system also has a capability of being readily checked to facilitate locating troubles in the system.

3,727,190
PATIENT SIGNAL DISPATCHER

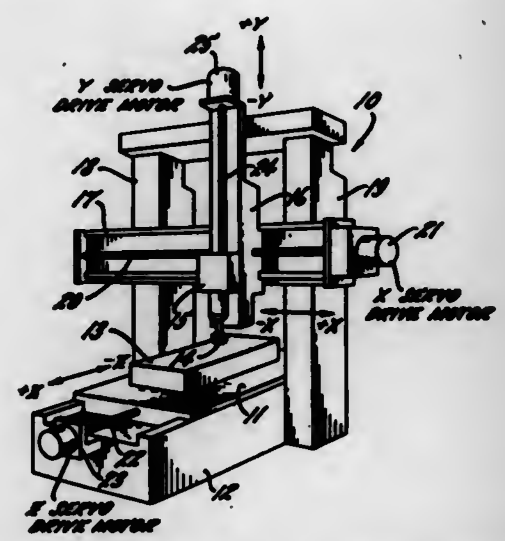
Joseph H. Vogelman, Roslyn, and Bernard Feinerman, Suffern, both of N.Y., assignors to Chromalloy American Corporation, New York, N.Y.
Filed Nov. 9, 1970, Ser. No. 87,784
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 10 Claims

In various medical electrical apparatus a patient's clinical information is entered, transmitted, and stored electrically. Accompanying this clinical data is information as to the patient's identity, e.g., name, age, when and where the clinical data was taken, etc. The invention is a novel and improved apparatus for, and a method of, entering patient identification information. The information is entered manually, stored in a memory, the stored information is displayed to an operator and then added to the clinical information.



3,727,191
ACCELERATION-DECELERATION FOR NUMERICAL CONTROL

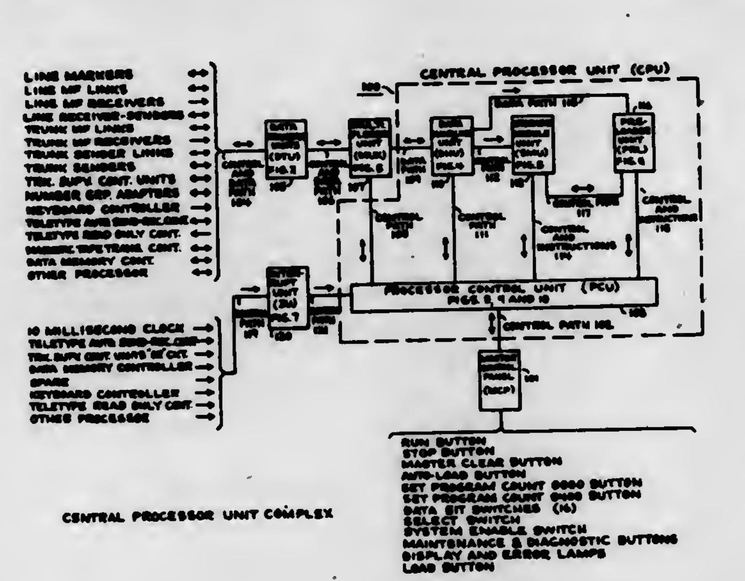
John K. McGee, Houston, Tex., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.
Filed March 15, 1971, Ser. No. 124,356
Int. Cl. G06f *15/46*
U.S. Cl. 340—172.5 49 Claims



Methods and apparatus for accomplishing fully automatic acceleration/deceleration in a numerical control system of the iterative computation type such that disclosed and claimed in applicant's copending U.S. application which issued on Apr. 11, 1972 as U.S. Pat. No. 3,656,124. Any step-change in the velocity called for by a multi-axis program of movement for a movable member is accomplished wholly automatically and at a predetermined rate dV/dt (acceleration or deceleration) which is readily changed to be within the capability of driving servos and such that overshoot and undue time stretch are avoided. In particular, velocity is controlled by iteratively changing position servo command numbers *XSC* and *YSC* (for two axes) by amounts ΔX and ΔY during each of very short, successive time periods ΔT, where ΔX and ΔY are computed during each period to be proportional to a desired velocity number *PVA*. Whenever a new velocity is to be put into effect, a second velocity number *PVC* may be abruptly changed by a large amount, and thereafter the desired velocity number *PVA* is incremented by a predetermined amount ΔV during each period ΔT until *PVA* becomes equal to *PVC*, so that the acceleration or deceleration value is $\Delta V/\Delta T$. The quantity ΔV is preferably changed as a monotonic function of the velocity difference *PVC–PVA*, and to reduce time stretch may be made proportional to that difference. By "looking ahead" with computations which determine the distance which will be traveled by the movable member during deceleration from a given velocity to a lower one, the deceleration is started at an instant which results in the lower velocity being reached almost exactly at the time a given path segment is completed. The apparatus and methods are carried out with a data processing system which includes a time-shared arithmetic computer, and are equally effective whether the system is operating to perform linear or circular interpolation.

3,727,192
CENTRAL PROCESSING SYSTEM HAVING PRELOADER AND DATA HANDLING UNITS EXTERNAL TO THE PROCESSOR CONTROL UNIT

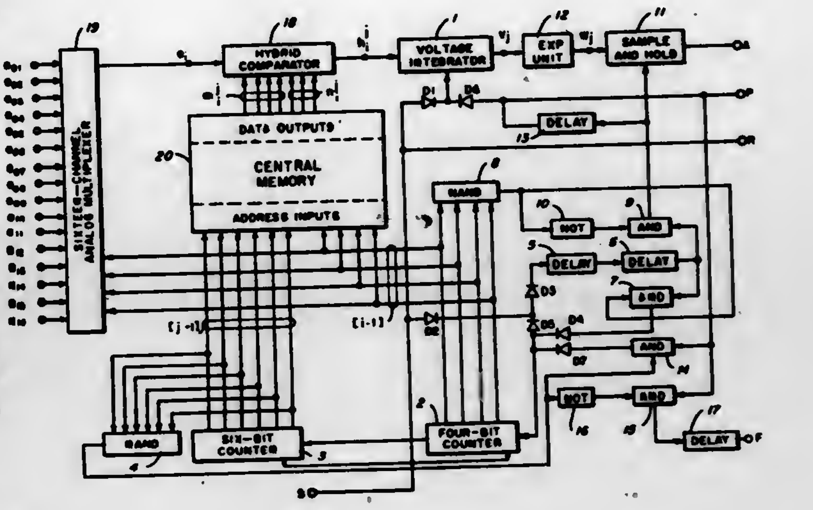
Thomas K. Cheney, Worthington; Albert D. Patterson, Galion; Henry E. Rendine, Wickliffe, Ohio, and James A. Watts, Stockholm, Sweden, assignors to North Electric Company, Galion, Ohio
Filed April 30, 1971, Ser. No. 139,014
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 41 Claims



A central processor unit (CPU) is used as a control element in an automatic telephone system. Certain other elements of the telephone system and peripheral devices thereof assigned various priority levels call for the services of the central processor unit by interrupting the central processor unit via an interrupt unit (IU). The central processor unit controls and supervises other elements of the telephone system and peripheral devices thereof via a multiplexer (MUX) and one or a plurality of data transfer units (DTU). The central processor unit comprises a data handling unit (DHU), a memory or storage module unit (SMU), a hardwired logic preloader (PRE), and a processor control unit (PCU) which, under control of a program stored in SMU, controls the various elements of the central processor unit and the associated telephone system. The data handling unit is a unit segregated from but cooperating with the processor control unit and includes segmented registers, shift control and character transfer gates for accommodating either words or characters. The processor control unit contains control logic and clock means which cooperate to stop the clock as required in the provision of asynchronous operation of the processor control unit with internal and external elements such as the shift control in the data handling unit, and the multiplexer unit. Communication between personnel and the central processor unit is effected by means of a master control panel (MCP) with manual controls and indication lamps thereon; and by means of keyboards via data transfer and multiplexer units.

3,727,193
SIGNAL VECTOR RECOGNITION SYSTEM

Victor W. Bolie, c/o School of Electrical Engineering, Oklahoma State University, Stillwater, Okla.
Filed May 18, 1971, Ser. No. 144,546
Int. Cl. G06f *7/02*
U.S. Cl. 340—172.5 8 Claims



This invention is directed to apparatus for the automatic categorization of any N-element stimulus pattern which can be represented by a plurality of analog voltages. It comprises memory means for storing in retrievable form a plurality of N-element reference vectors and a plurality of N-element tolerance vectors which represent the degree of uncertainty of the corresponding plurality of reference vectors. Comparison means are provided to determine the degree of similarity between the stimulus vector and a selected one of the reference vectors. The plurality of comparisons between the stimulus vector and the various reference vectors are displayed in the form of an output response vector. Means are also provided for determining which of the many reference vectors comprise the most orthogonal subset.

3,727,194
NON-DESTRUCTIVE READOUT OF A COLOR CENTER MEMORY BY USING INFRARED ILLUMINATION

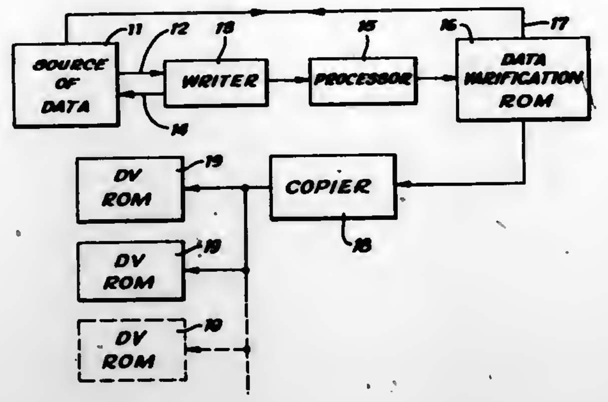
Irwin Schneider, 2402 Daphne Lane, Alexandria, Va.
Continuation-in-part of Ser. No. 708,299, Feb. 26, 1968, Pat. No. 3,580,688. This application Dec. 24, 1970, Ser. No. 101,400
Int. Cl. G11c *13/02*, *13/04*; G02b *27/28*
U.S. Cl. 340—173 CC 13 Claims

A method of information storage and retrieval in optical memory systems requiring only one highly focussed excitation source. M or M_A color centers in alkali halide memory elements are reoriented by optical means along discrete lattice directions for writing or erasing binary information in predetermined portions of the memory elements. By subjecting the memory element to intense unfocussed infrared light during interrogation, readout is accomplished with the same optical means without destruction of the stored information.

3,727,195
METHOD AND SYSTEM FOR READ ONLY MEMORY

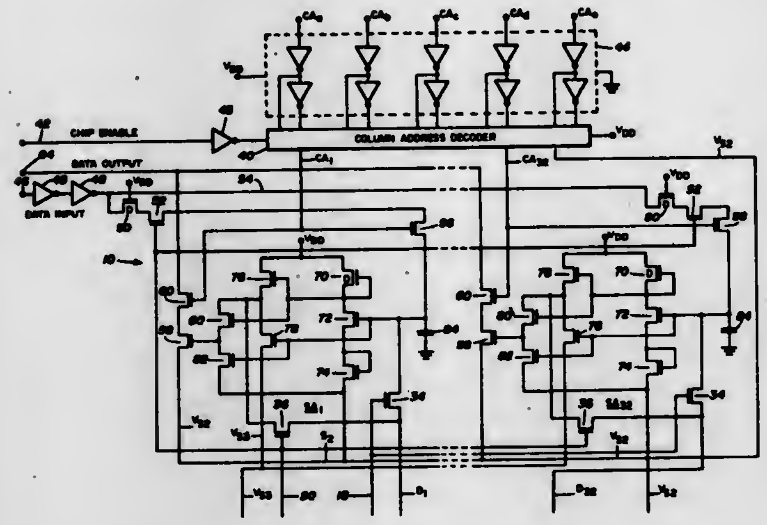
Thomas D. McLaughlin, San Jose, Calif., assignor to O.R.O.M. Inc., San Jose, Calif.
Filed July 20, 1970, Ser. No. 56,468
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LM 7 Claims

A read only memory and a system and method for producing the read only memory. An optical writer which may be controlled by a magnetic medium such as tape or disc, computer or direct input by electro mechanical switching or keyboards, writes an optical master recording. A copier generates a plurality of copies of the master recording. Each of the copies is then utilized as a program or data store for an optical read only memory.



3,727,196
DYNAMIC RANDOM ACCESS MEMORY

Vernon G. McKenny, Garland, Tex., assignor to Mostek Company, Carrollton, Tex.
Filed Nov. 29, 1971, Ser. No. 202,939
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 DR **8 Claims**



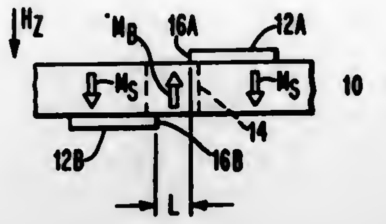
A dynamic random access memory utilizing MOSFET transistors formed on a single semi-conductor chip is described. The random access memory utilizes 1,024 binary storage cells arrayed in rows and columns. Each row of cells has a read line and a write line. Each column of cells has one data line used for both read and write functions. Each cell is comprised of a write transistor and a pair of read transistors. The write transistor couples a capacitive storage node to the data line and is controlled by the write line.

The read transistors are connected in series between the data line and V_{SS}, and one is controlled by the read line and the other is controlled by the voltage on the storage node. A sense amplifier is provided for each data line and is used to apply data through the write transistor to the storage node, and to sense the state of the second read transistor controlled by the data stored on the storage node. The chip includes row and column address means for selecting a particular cell for either read or write mode.

The chip also includes a number of features to prevent bipolar injection caused by forward biasing a PN junction as a result of capacitive coupling between various nodes in the circuit, and other features which prevent the loss of data from the storage node.

3,727,197
MAGNETIC MEANS FOR COLLAPSING AND SPLITTING OF CYLINDRICAL DOMAINS

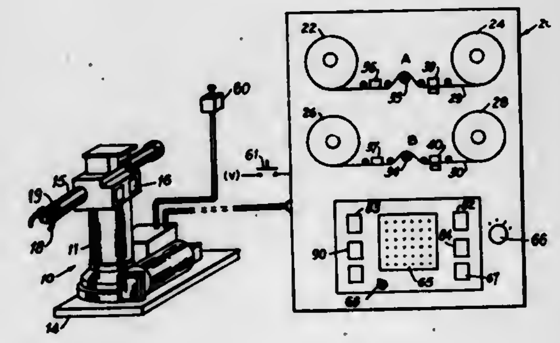
Hsu Chang, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1970, Ser. No. 103,244
Int. Cl. G11c *19/00, 11/14*
U.S. Cl. 340—174 TF **13 Claims**



A very simple means for splitting or collapsing cylindrical domains which can be located anywhere on a magnetic sheet in which the domains exist. Soft magnetic materials such as permalloy are used to create strong local magnetic fields which act on the domains to split or collapse them. In one embodiment, the permalloy elements are located on both sides of the magnetic sheet, while in another embodiment these elements are located on the same side of the magnetic sheet. No extra external power (current or magnetic field) is required in these devices; the propagation field is sufficient to establish the required energy for splitting or collapsing domains.

3,727,198
CONTROLLED WORK PERFORMING APPARATUS HAVING CONTROL SYSTEM WITH RECORD MAKING CAPABILITY

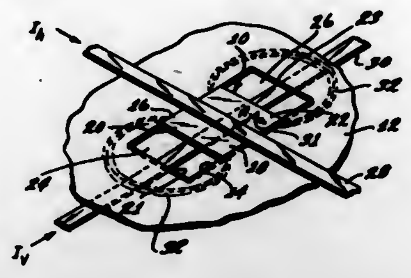
Jeffrey Lowenson, White Plains, N.Y., assignor to AMF Incorporated, White Plains, N.Y.
Filed March 26, 1971, Ser. No. 128,434
Int. Cl. G11b *5/86, 31/00*
U.S. Cl. 340—174.1 K **10 Claims**



Work performing apparatus whose cycle of operation is controlled by programmed control signals transcribed from magnetic tape. Two magnetic tape decks on the apparatus permit one recorded cycle of control signals which occupies less than the full capacity of one tape to be automatically recorded a plurality of times onto a tape on the second tape deck to fill the recording capacity of the second tape. The second full tape then may be used as a master tape to prepare another tape having successively occurring program cycles which fill the recording capacity of that tape. The two tapes having successively recorded program cycles are used in the respective tape decks which are operated alternately to cause the apparatus to perform successive cycles of operation without interruption.

3,727,199
STATIC MAGNETIC MEMORY SYSTEM

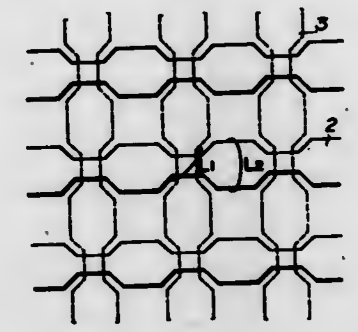
Carl M. Lekven, Los Angeles, Calif., assignor to Signals Galaxies, Inc., Van Nuys, Calif.
Continuation of Ser. No. 805,320, March 7, 1969, abandoned. This application April 20, 1971, Ser. No. 135,765
Int. Cl. G11c *11/08, 5/02, 11/14*
U.S. Cl. 340—174 TF **10 Claims**



A magnetic memory element is disclosed along with a process for producing such elements in plurality to constitute a static magnetic memory or digital information storage system. Individual binary storage members are afforded directionally preferential magnetic characteristics by flux circuits to establish the preferred axis of magnetization. Conductors for driving the individual binary storage members (for storing and sensing) are provided in an organized pattern to accomplish selectivity. A batch-production process is also disclosed.

3,727,200
LAMINATED FERRITE SHEET MEMORY

Seihin Kobayashi, No. 2523 Washizu, Kosai-cho; Michihiro Torii, No. 389 Washizu, Kosai-cho, and Tomohiro Itoh, No. 940 Furumi, Kosai-cho, all of Shizuoka-ken, Japan
Filed Oct. 20, 1970, Ser. No. 82,391
Claims priority, application Japan, Oct. 27, 1969, 44/86207
Int. Cl. G11c *5/02*
U.S. Cl. 340—174 WB **7 Claims**

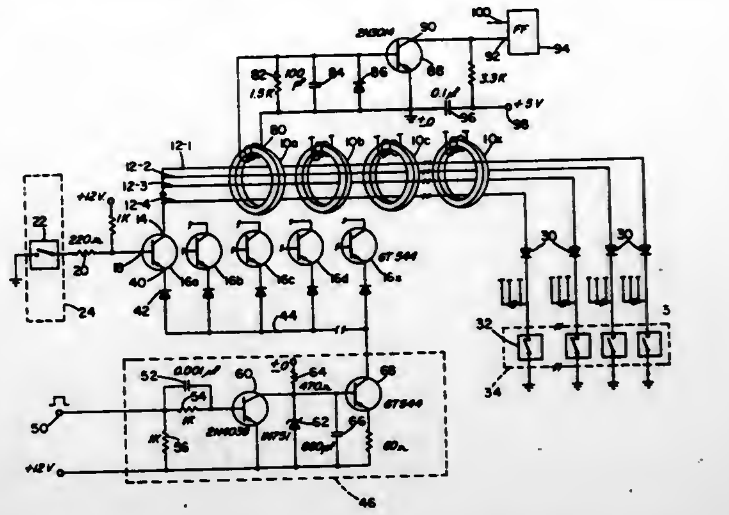


In a laminated ferrite sheet memory within which upper conductive windings and lower conductive windings are embedded to intersect with each other, each of said conductive windings has different circumferential length at the intersections and at other places except the intersections. The circumferential length at the intersections is shorter than that at the other places.

3,727,201
INFORMATION STORAGE SYSTEM

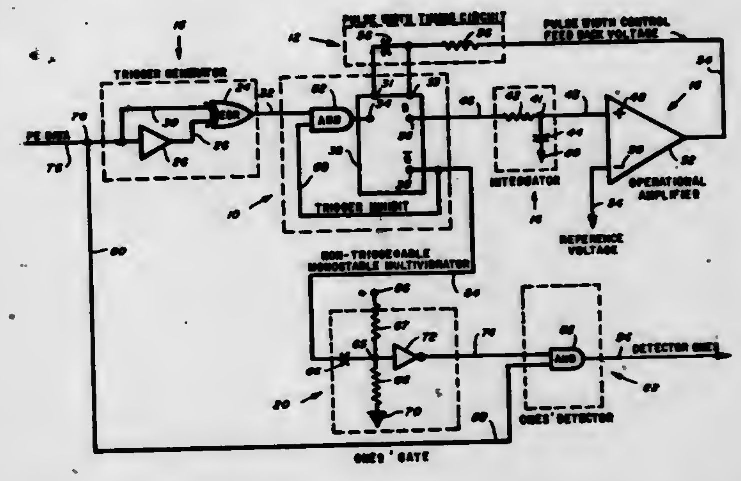
Shu-Kuang Ho, Chelmsford, and An Wang, Lincoln, both of Mass., assignors to Wang Laboratories, Inc., Tewksbury, Mass.
Filed Sept. 22, 1970, Ser. No. 74,369
Int. Cl. G11c *5/06, 17/00*
U.S. Cl. 340—174 SP **4 Claims**

A fixed information storage system includes a plurality of magnetic elements, each of which has linear magnetic characteristics and has a readout winding coupled to it. A plurality of data lines are arranged so that each data line links a different group of magnetic elements. A constant current source, in response to input signal, applies a current pulse to a selected data line to produce output signals in the readout windings of those magnetic elements coupled to the selected data line.



3,727,202
APPLICATION OF AN AUTOMATIC PULSE WIDTH CONTROLLED, MONOSTABLE MULTIVIBRATOR FOR DETECTING PHASE ENCODED INFORMATION ON MAGNETIC TAPE

Larry W. Fort, Broken Arrow, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.
Continuation-in-part of Ser. No. 216,534, Jan. 10, 1972. This application Jan. 10, 1972, Ser. No. 216,692
Int. Cl. G11b *5/44, 23/30*
U.S. Cl. 340—174.1 A **8 Claims**



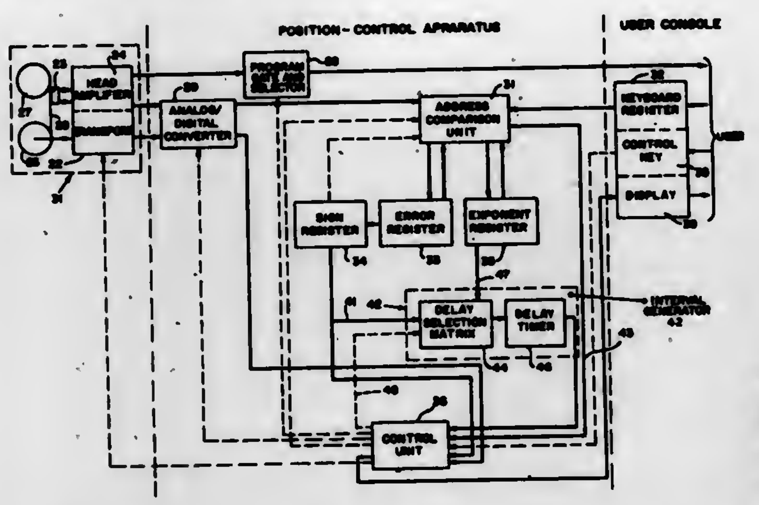
This invention describes an apparatus for detecting data transitions in a phase-encoded signal. It comprises a trigger means to generate trigger pulses at each signal transition in the phase-encoded signal, whether phase or data transition. The output of the trigger generator goes to an automatic pulse-width-controlled monostable multivibrator which, responsive to the trigger pulses, generates a series of pulses of constant pulse width, which occur at each data transition. This multivibrator circuit is inhibited from operating at phase transitions and so it selects the data transitions and provides uniform pulses, of a selected magnitude of the basic time period. Having selected only the data transitions to create a pulse, there is then derived from the multivibrator output in a ONES' gate a series of short positive pulses which occur at each of the data transitions which are separated by the basic time period. The output of the ONES' gate goes to a ONES' detector, which compares the polarity of the pulses from the ONES' gate with the polarity of the phase-encoded signal immediately after each data transition. Those transitions which have a positive potential then pass through the ONES' detector and are indicated as detected logical ones.

3,727,203
ADDRESS COMPARATOR WITH TIME INTERVAL MATCHING TRANSPORT CHARACTERISTICS

Edward R. F. W. Crossman, 2935 Elmwood Court, Berkeley, Calif.

Filed March 1, 1972, Ser. No. 230,914
Int. Cl. G11b *27/10*

U.S. Cl. 340—174.1 J **20 Claims**



An information storage and retrieval apparatus and method are disclosed in which apparatus is provided to move the relative positions of a storage medium, such as a magnetic tape, and reading means from a current address to a desired or target address. The apparatus includes a comparator means for comparing the current address to a given target address and generating an error signal, and additionally includes generator means formed to respond to the error signal and select one of a plurality of time intervals during which the medium and reading means are sequentially repositioned with respect to each other. The time intervals are precalibrated to match the transporting characteristics of the apparatus repositioning the medium and reading means and each time interval may be elicited by a range of errors of differing magnitude. The apparatus iteratively reads the current address, transports for a precalibrated time interval, reads a second address and transports again until the current address read is substantially equal to the target address, at which time the medium can be advanced to the target address and storage or retrieval of data accomplished. The apparatus preferably includes a tape recorder having a slow forward reading speed and fast forward and reverse tape repositioning speeds. The precalibrated time intervals are matched to the incremental number of addresses normally traversed by the tape transport during a start-up, continued motion and braking of the tape transport. The apparatus and method preferably include precalibrated jump times based upon the logarithm of the error between the target and current addresses. Additionally, a stored datum initially representing the positional error can be decremented at a variable rate in order to reduce the number of iterations necessary to reach the target address. Tape transport motion sensing apparatus and address signal verification means are also disclosed.

3,727,204
ASYNCHRONOUS BUFFER DEVICE

Oscar Bernardus Philomenus Rikkert de Koe, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

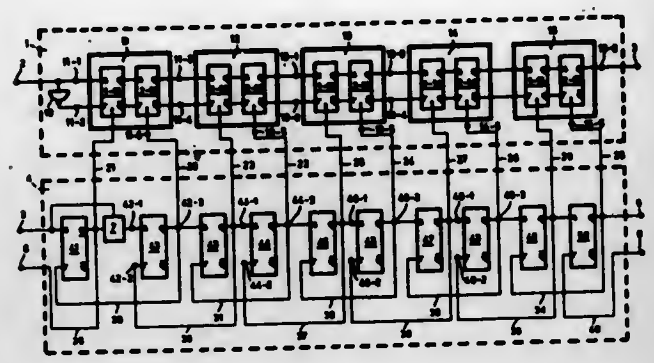
Filed April 21, 1972, Ser. No. 246,150

Claims priority, application Netherlands, April 23, 1971, 7105512

Int. Cl. H03k *21/16*

U.S. Cl. 340—172.5 **2 Claims**

An asynchronous buffer device comprising an information shift register and a bookkeeping register, the shift rate of the information stored in the shift register and the shift rate of the control signals which control the information flow in the shift register and which are stored in the bookkeeping register being adapted to each other in that the information register and the bookkeeping register are composed of set-reset elements which are associated with each other in a one-to-one relationship, and which each comprise two inputs and two outputs, the two outputs of each set-reset element in the shift register being interconnected to the two inputs of the next set-reset element, only one output which is the same for all set-reset elements being interconnected in the bookkeeping register to an input which is the same for all set-reset elements.

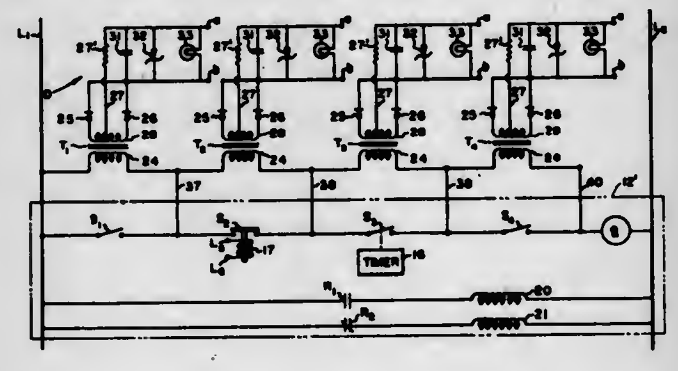


3,727,205
FAULT DETECTION APPARATUS

George Scourtes, Detroit, Mich., assignor to Wilson Engineering, Inc., Saginaw, Mich.

Filed Dec. 17, 1969, Ser. No. 885,897
Int. Cl. G08b *21/00, 23/00*

U.S. Cl. 340—256 **4 Claims**



Fault detection apparatus for use with an electric control circuit for a machine tool or other instrumentality having a plurality of devices each of which must function in a predetermined manner to establish a predetermined circuit condition, the apparatus having means operable in response to faulty operation of any of such devices to indicate specifically which of such devices is faulty.

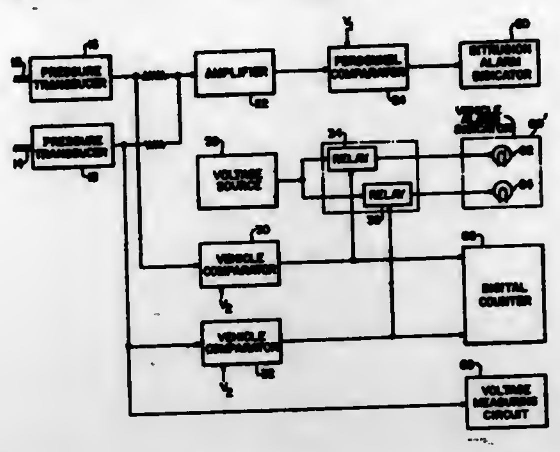
3,727,206
PERSONNEL-VEHICLE INTRUSION DETECTION SYSTEM

Fred G. Geil, and Arthur Nelkin, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1971, Ser. No. 144,724
Int. Cl. G08b *13/10*

U.S. Cl. 340—258 R **6 Claims**

A perimeter intrusion detection system includes a pair of flexible tube members spaced apart and buried beneath the surface of the ground, coupled with transducer means to generate an electrical indication of changes in surface pressure attributable to personnel or vehicular movement across the surface of the ground. Electronic monitoring circuitry interprets these electrical indications generated by the transducers and generates electrical signals identifying the surface intrusion to be either that of personnel or vehicle. Electronic monitoring circuitry provides further discrimination of the vehicular intrusion by providing electrical indication of the direction, speed and weight of the intruding vehicle.

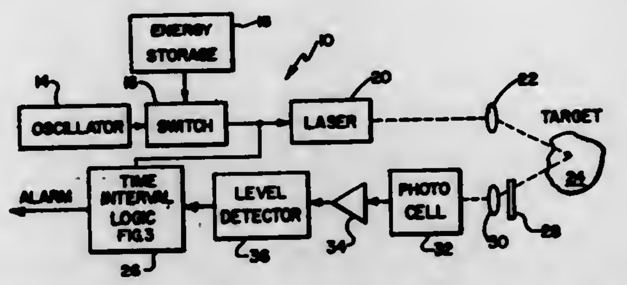


3,727,207
INTRUSION DETECTOR

Danilo V. Missio, Belmont, and Herbert Wellman, Burlington, both of Mass., assignors to Systron-Donner Corporation, Concord, Calif.

Filed June 24, 1970, Ser. No. 49,333
Int. Cl. G08b *13/18*

U.S. Cl. 340—258 B **9 Claims**



An optical intrusion detector which in one package employs a radar-type concept with a time interval logic circuit to measure small changes in transmitted and received signals. A plurality of measured optical pulses are transmitted to a passive reflective target, such as a tree, fence, or other dense object, and reflected back to the same source. The rate of change between the transmitted and received pulses is measured. When the rate of change in the transmitted and received signals varies from a predetermined level, an alarm is actuated. The time interval logic employed in the detector employs three flip-flop circuits and associated circuitry. The associated circuitry with a first flip-flop circuit will cause a third flip-flop circuit to be actuated to generate an alarm signal when the time interval between the pulses transmitted and received exceeds a predetermined level. A second flip-flop circuit functions in combination with the third flip-flop circuit to indicate when a decrease in the time between the transmitted and received pulses is measured to actuate an alarm.

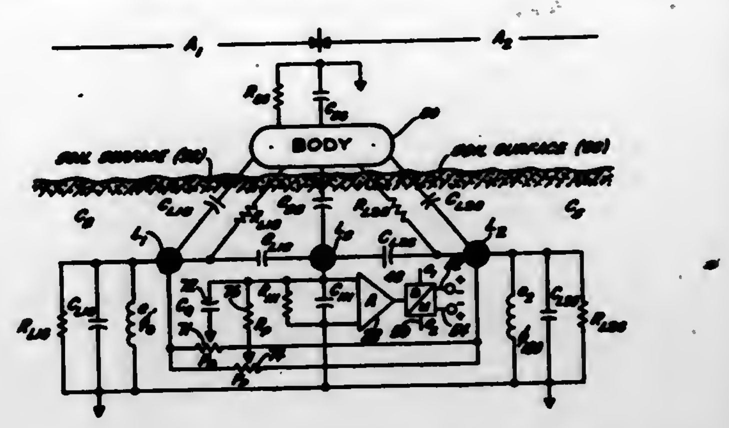
3,727,208
SURVEILLANCE SYSTEM AND METHOD FOR USE ABOVE OR BELOW GROUND WITH DIRECTION AND LOCATION OF CROSSING INIDICATION

James R. Anderson, and Herbert J. Wilde, both of Minneapolis, Minn., assignors to Research Incorporated, Eden Prairie, Minn.

Filed Jan. 11, 1971, Ser. No. 105,190
Int. Cl. G08b *13/26*

U.S. Cl. 340—258 C **6 Claims**

Two parallel field generating lines are placed either above or below the surface of the ground and are energized with alternating current so that the two lines have a 180° phase relationship with respect to each other. A SENSING line is disposed between the field generating lines. Owing to the out-of-phase relationship, a signal is derived that is indicative of the direction the intruder moves. Zones are provided utilizing different frequencies to define the point at which the intruder crosses. When embedded beneath the ground, the system is unaffected by either wet or dry soil conditions.

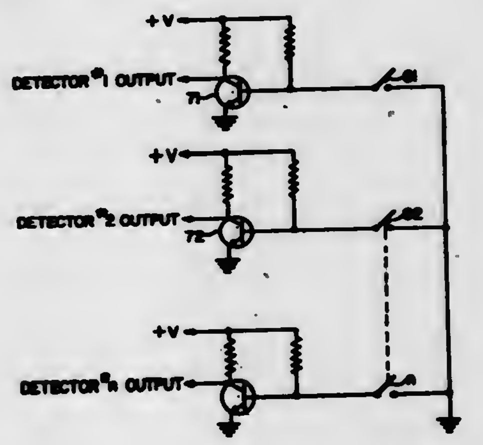


3,727,209
DIGITAL ACCELEROMETER

Marvin H. White, Laurel, Md.; Richard G. Hamel, Margate, Fla., and David D. O'Sullivan, Bethesda, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1970, Ser. No. 80,394
Int. Cl. G01p *15/04*; H01h *35/14*

U.S. Cl. 340—262 **8 Claims**



A threshold accelerator switch is mounted on an object to indicate when the object is being subjected to a predetermined acceleration. The emitter and base terminals of a transistor are connected across the switch contacts. When the object is subjected to a predetermined acceleration, the switch contacts close causing the base electrode of the transistor to be shorted out, thus turning off the transistor. A plurality of switches and transistors can be mounted on a single object in order to measure the acceleration profile of the object.

The invention herein described was made in the course of or under a contract or subcontract thereunder, with the Department of the Army.

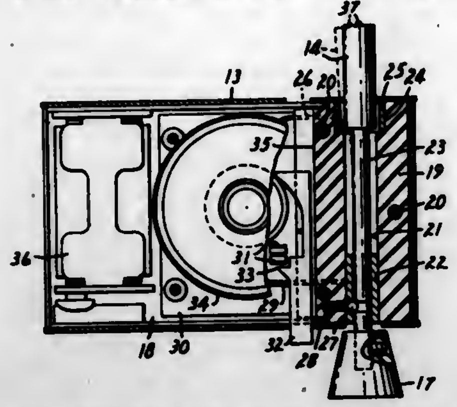
3,727,210
LOCK AND ALARM DEVICE

Paul Maddison Hawkins, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed April 23, 1971, Ser. No. 136,820
Int. Cl. E05b *45/12*

U.S. Cl. 340—274 **7 Claims**

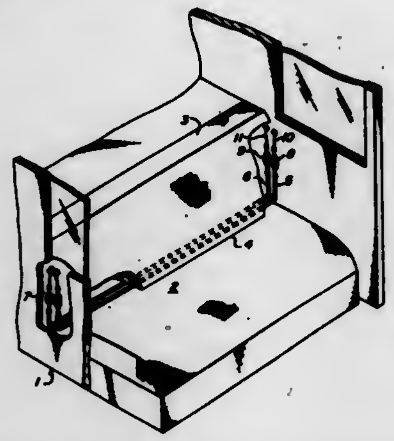
A bolt-type lock wherein the bolt is supported by a resilient member in the projected locking position such that the bolt can be deflected upon a predetermined opening force being applied against the closure members. Electrical contact means are positioned at the opening through which the bolt is pro-



jected and spaced from the bolt to be contacted by the bolt and close a circuit when said predetermined force is applied.

3,727,211
BACKSEAT OBJECT DETECTOR FOR POLICE VEHICLE

Calvin L. Guy, 9448 South 7th Avenue, Phoenix, Ariz.
Filed Feb. 28, 1972, Ser. No. 229,857
Int. Cl. G08b *21/00*
U.S. Cl. 340—278 **5 Claims**

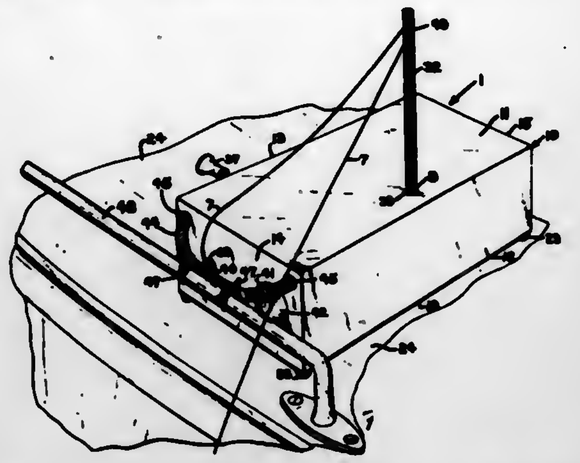


In order to detect any attempt to discard or conceal evidentiary objects by a person being transported in the rear seat of a police vehicle, a pair of spaced apart, generally parallel resilient tubes wrapped with conductive tape in a predetermined pattern are stretched across the rear seat beneath the backrest portion thereof. The conductive foil of one of the resilient tubes is coupled to one side of the vehicle electrical system, and the conductive foil of the second resilient tube is connected to one side of an indicator lamp which has its other side, in turn, connected to the second side of the vehicle electrical system. Thus, the resilient tubes function as a switch which will cause the indicator lamp to light when the conductive portions thereof are pushed together as would be the case when an attempt is made to conceal an object by sliding it beneath the backrest. Such an attempt is thereby immediately brought to the attention of the driver or other front seat occupant of the police vehicle, and the attempt to conceal the object is correspondingly immediately associated with the specific rear seat occupant. Preferably, the indicator lamp is disposed in such a manner as to be visible only to the front seat occupants and is colored in such a manner as to attract immediate attention when it is energized. Test means in the form of a switch shunting the tubes may be incorporated for routinely checking the integrity of the system.

3,727,212
BOAT ANCHOR MOVEMENT SIGNAL DEVICE

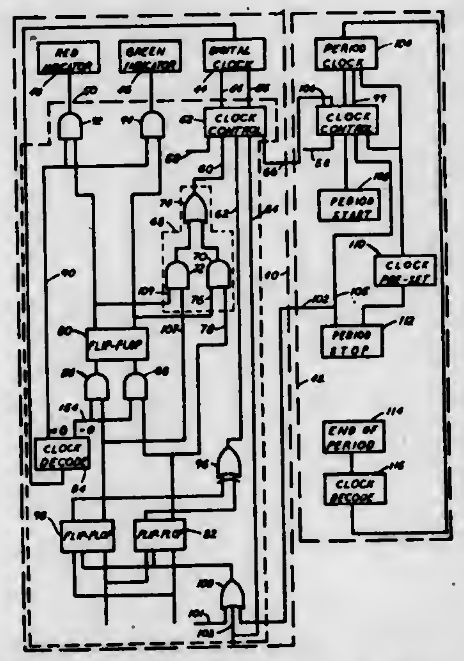
Kenneth I. Jones, 1 White Cap Circle, Lyndon, Kans.
Filed June 28, 1971, Ser. No. 157,426
Int. Cl. G08b *21/00;* **B63b** *45/08*
U.S. Cl. 340—282 **7 Claims**

A warning signal device for boats indicating a movement to a different relative position on a body of water includes a support member to be mounted on a boat and a signal member energized by a switch upon a selected magnitude of movement of a member having a line member connected to one end thereof and a weight connected to the line and placed on the bottom surface of the body of water whereby relative movement increasing distance between the weight and the boat energizes the signal member.



3,727,213
MATSIDE WRESTLING SCOREBOARD

Aelred J. Kurtenbach, Brookings, S. Dak., assignor to Daktronics, Inc., Brookings, S. Dak.
Filed Oct. 22, 1971, Ser. No. 191,943
Int. Cl. G08b *23/00*
U.S. Cl. 340—323 **13 Claims**

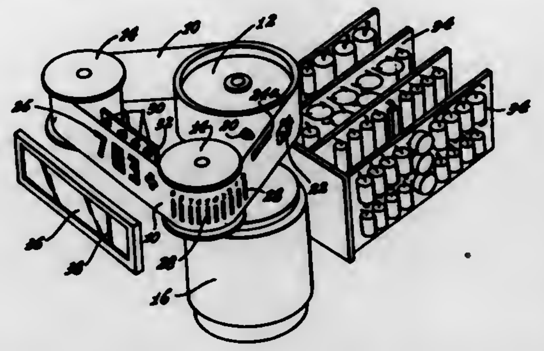


A Wrestling Scoreboard including an Advantage Time Display and Advantage Indicators which display net advantage time in digital form and indicate which one of two wrestlers has accrued the net advantage time. In a preferred embodiment, the scoreboard is packaged in a multi-sided casing which is portable to permit positioning of the scoreboard adjacent a wrestling mat and each side is provided with a Match Display, Period Indicators, Period Time Display, a Match Score Display, and a Team Score Display in addition to the Advantage Time Display and pair of Advantage Indicators.

3,727,214
SYNCHRONIZED STROBOSCOPIC DISPLAY SYSTEM AND APPARATUS

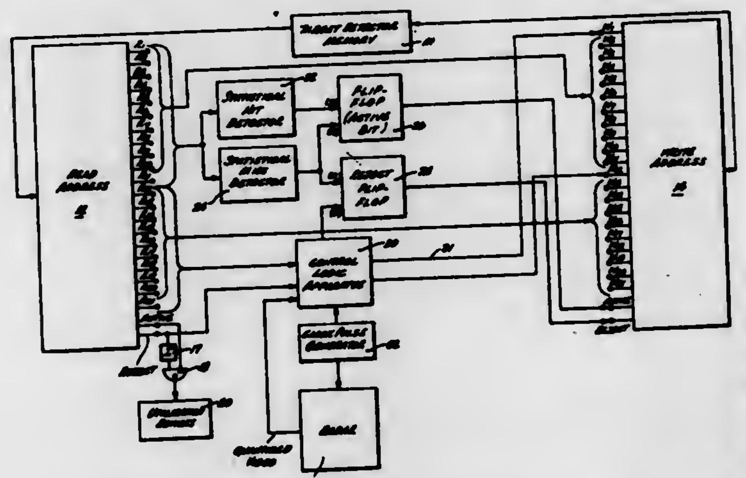
Ronald G. Wayne, Las Vegas, Nev., assignor to Ettie Boged, Las Vegas, Nev.
Continuation-in-part of Ser. No. 96,566, Dec. 9, 1970, abandoned. This application April 7, 1972, Ser. No. 241,918
Int. Cl. G08b *5/38*
U.S. Cl. 340—324 R **10 Claims**

An improved apparatus is provided for the display of analog information on a readable scale, for the instantaneous display of a variety of alpha-numeric characters and symbols, and for the conversion of analog information into digital data. In one embodiment of the apparatus, the data is stored on a rapidly moving information carrier, such as an endless belt. A synchronizing pulse signal is generated once for each cycle of rotation of the carrier, and this signal triggers the start of a timing interval whose length is controlled by a time delay circuit. The time delay circuit, in turn, responds to an input analog signal, or other variable. At the end of the timing interval, a circuit momentarily fires a light-emitting diode which illuminates the particular character or symbol on the carrier which is positioned in front of the light-emitting diode at the instant of firing. In a second embodiment analog quantities are measured by mounting the light-emitting diode on a movable carrier, such as a disc, which rotates in conjunction with a fixed scale, and by momentarily firing the light-emitting diode at a controlled angular position for each cycle by control circuitry, such as described above.



3,727,215
RADAR VIDEO PROCESSING APPARATUS

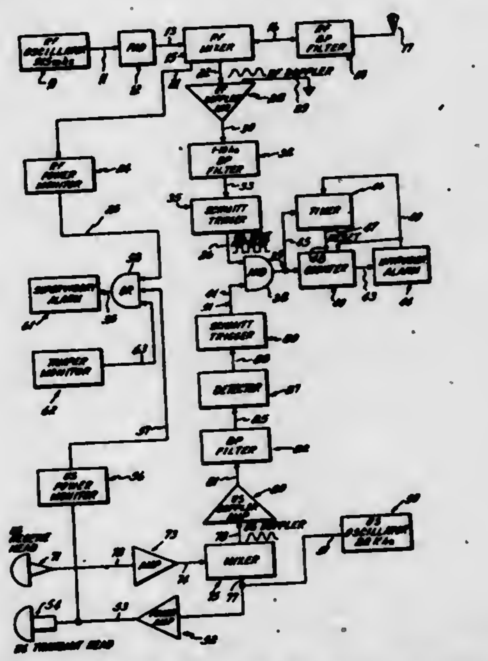
Richard Dean Wilmot, Fullerton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed April 2, 1965, Ser. No. 445,130
Int. Cl. G01s *7/30*
U.S. Cl. 343—5 DP **6 Claims**



1. An apparatus for processing successive video sweeps generated by a radar system and quantized into a series of range bins each including a "1" or a "0" representing a target hit or no target hit, respectively, said apparatus comprising means including a memory device having a plurality of channels including 1,2,3, . . . (*n*-1),*n* channels for storing *n* quantized video sweeps from said radar system, *n* being an integer no less than three, and means for storing active bits and reject bits; means coupled to said memory device and including a read address and a write address for reading from and writing into successive range bins of said plurality of channels in a direction corresponding to increasing ranges; means coupled from said read to said write address for transferring said quantized video from said 1,2,3, . . .(*n*-1) channels to said 2,3, . . .*n* channels, respectively; means including a statistical bit detector and a first bi-stable device coupled from said *n* channels of said read address to said write address for setting said first bistable device in response to *m* "1's" from the respective range bins of said *n* channels thereby to generate an active bit at an output thereof, *m* being an integer less than *n*; means including a statistical miss detector and a second bistable device, said statistical miss detector being coupled from said *n* channels of said read address to said first and second bistable devices for resetting said first and second bi-stable devices in response to a predetermined number less than *m* "1's" from the respective range bins of said *n* channels; means coupled to said write address and responsive to said quantized video sweeps generated by said radar system for setting said second bi-stable device thereby to generate reject bits concurrently with a predetermined number of "1's" in a number greater than said predetermined number of successive range bins in no less than one of said quantized video sweeps, and for writing said quantized video into said 1 channel of said *n* channels; and utilization means responsive to the simultaneous availability of active bits and to the non-availability of reject bits from said read address for processing targets detected by said radar.

3,727,216
ELECTROMAGNETIC AND ULTRASONIC DOPPLER CORRELATION INTRUSION ALARM SYSTEM

John Antonio, Fairfield, Conn., assignor to The Mosler Safe Company, Hamilton, Ohio
Filed Jan. 28, 1971, Ser. No. 110,735
Int. Cl. G01s *9/42*
U.S. Cl. 343—5 PD **8 Claims**

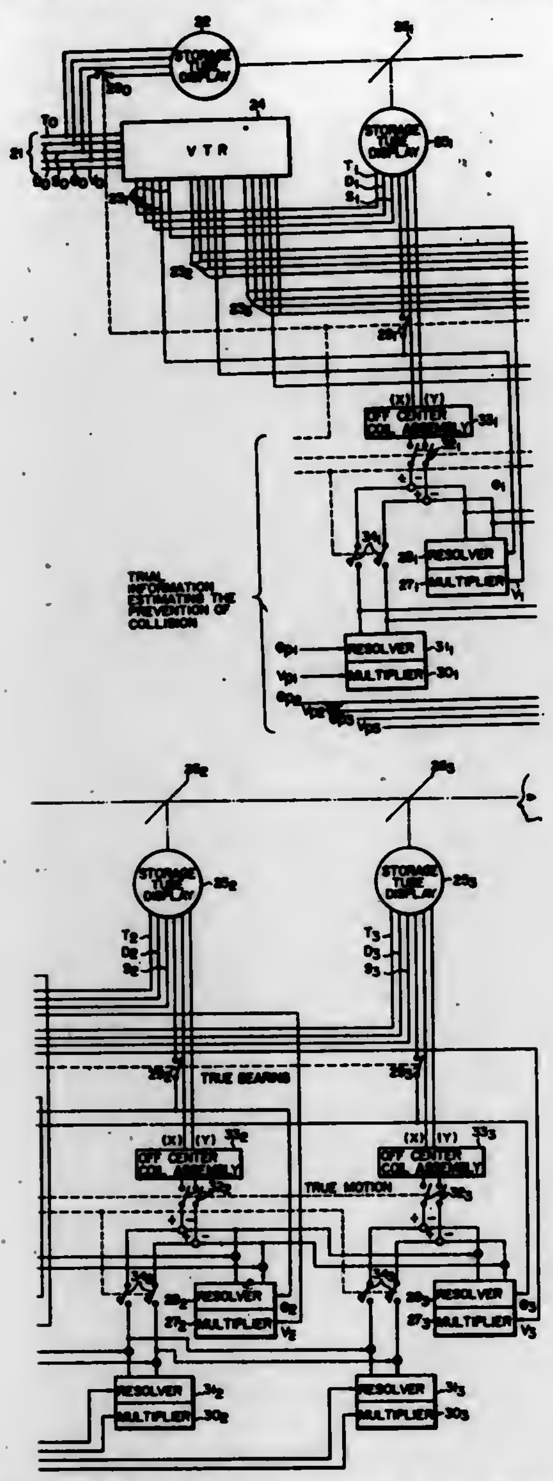


An intrusion alarm system includes an electromagnetic doppler sub-system and an ultrasonic doppler sub-system having outputs correlated to trigger an alarm. A threshold signal is produced when the detected ultrasonic doppler signal reaches a given level to open a gate. The electromagnetic doppler frequency signal is converted to a doppler frequency square wave which passes as a series of pulses through the opened gate. These pulses actuate an accumulator which is provided with a timed reset, which clears the accumulator at a specified time after the first pulse sets the timer, unless a prescribed minimum number of pulses have accumulated within the specified time to cause the alarm to be actuated.

3,727,217
SYSTEM FOR AVOIDING THE COLLISION OF A MOVING BODY WITH OTHER OBJECTS

Tomiji Nirasawa, Yokohama, Japan, assignor to Tokyo Keiki Co., Ltd., Tokyo, Japan
Filed April 28, 1970, Ser. No. 32,515
Claims priority, application Japan, April 29, 1969, 44/38642; April 29, 1969, 44/32646
Int. Cl. G01s *7/06*
U.S. Cl. 343—5 ST **16 Claims**

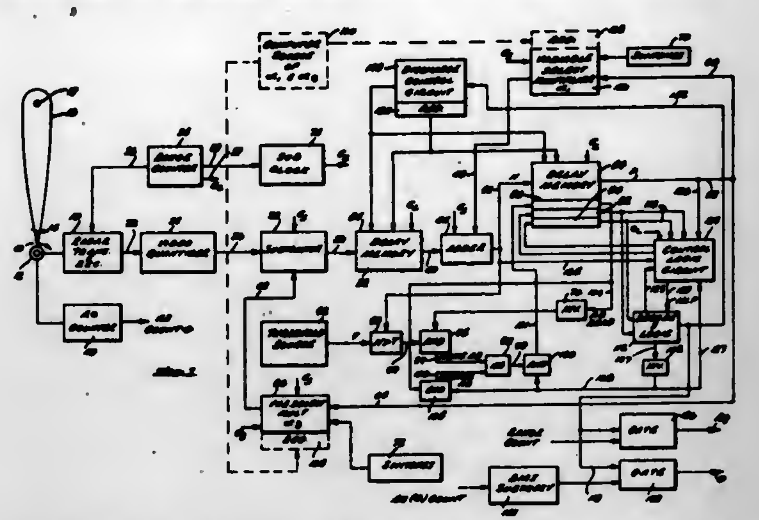
A system according to the present invention for avoiding the collision of a moving body with other objects comprises a device for storing for a relatively long period of time information including approaching dangerous objects obtained by



radar observation as well as information on the subject moving body.

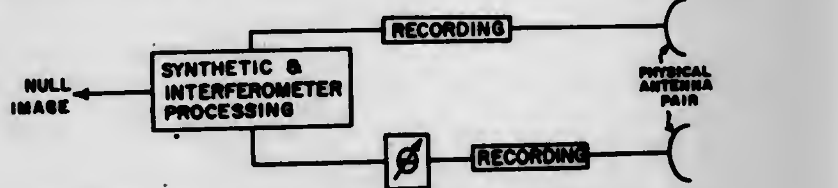
3,727,218
DIGITAL RADAR DETECTOR SYSTEM
Thomas C. Cantwell, Jr., Fullerton, and Richard D. Wilmot, Yorba Linda, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Jan. 29, 1971, Ser. No. 111,063
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 DP 12 Claims

An automatic digital target detector and azimuth measuring system that includes a digital filter whose amplitude weighting function corresponds to the antenna beam pattern so as to provide a desirable target detection probability and azimuth measurement accuracy. The target detector utilizes a digital matched time delay filter concept for target detection and azimuth beam splitting with only two sweeps of series connected delay or data storage being required. The binary weighted data is processed with a feedback path provided from the detector output to the input of each delay means, and with each feedback path including a variable multiplying factor which may be set or controlled to match the detector to different antenna beam shapes and beam widths, or may be set or controlled to operate with different or variable scan rates or with different radar pulse repetition frequencies. The detector is adaptable to different beam widths, to different scan rates



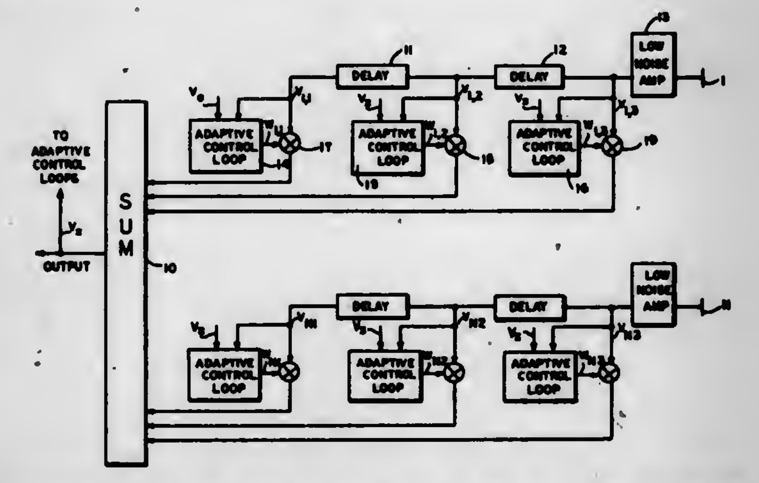
and to different pulse repetition frequencies by controlling the period of impulse response.

3,727,219
INTERFEROMETER NULL MULTIPLICATION TECHNIQUE AND APPARATUS
Leroy C. Graham, Phoenix, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio
Filed May 26, 1971, Ser. No. 147,113
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 CM 11 Claims



A technique and apparatus by which the signals from two interferometer antennas are recorded on the same film, but in separable form. The signals can be reproduced by the use of coherent light and a phase shift may be introduced into one of the reproduced signals to permit the formation of null images corresponding to varying depression angles.

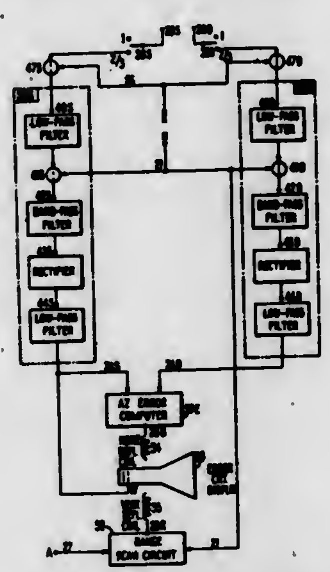
3,727,220
ADAPTIVE RECEIVING ARRAY METHOD AND APPARATUS FOR MTI RADAR
Lawrence E. Brennan, Tarzana, and Irving S. Reed, Santa Monica, both of Calif., assignors to Technology Service Corporation, Santa Monica, Calif.
Filed Sept. 13, 1971, Ser. No. 179,777
Int. Cl. G01s *9/42*
U.S. Cl. 343—7 A 18 Claims



Adaptive doppler signal processing is disclosed in coherent pulsed radars with phased array antennas. Outputs from each range ring are obtained for each of K consecutive pulses and from each of N receiving array elements. These KN outputs

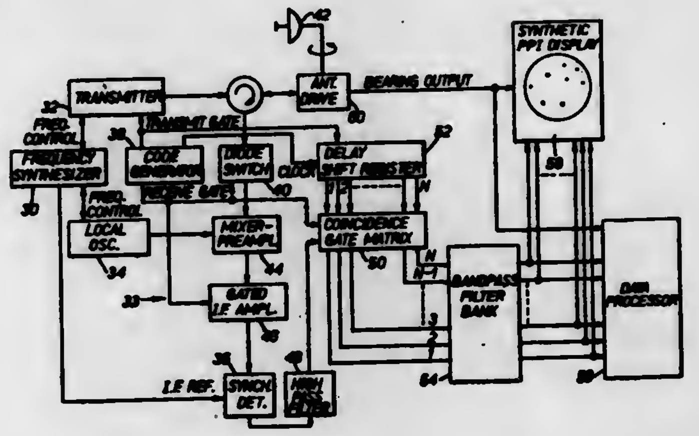
are multiplied by complex weights and added to obtain the system output. The complex weights are controlled adaptively. To improve the convergence rate of an adaptive 2-pulse moving-target-indicating system, the pulse outputs V_1 and V_2 from each of the N elements are first passed through a transformation matrix.

3,727,221
ERROR MEASURING DEVICE FOR A MONOPULSE TRACKING RADAR SYSTEM
Rene P. G. Julier, 89 Rue du Moulin du Piere, Hauts-de-seine, and Marc J. T. Schneider, 50 avenue Pasteur, 78 La Celle 8th, Yvelines, both of France
Filed May 18, 1970, Ser. No. 38,311
Int. Cl. G01s *9/14, 9/22*
U.S. Cl. 343—7.3 2 Claims



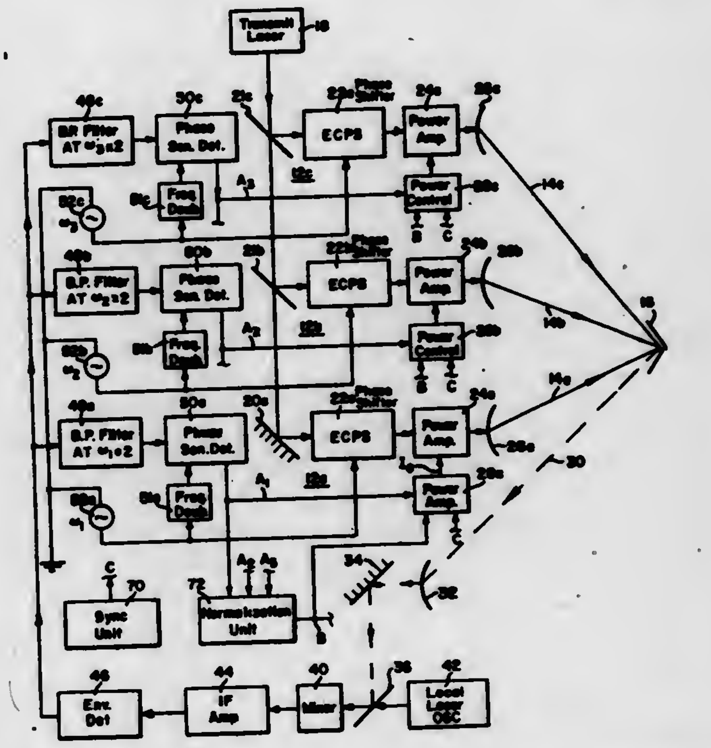
A coherent monopulse radar system for ground target tracking and evaluation of angular error between primary and secondary (such as shell burst phenomena) targets. Stroboscopic sampling of the received signals is provided, and each sampling circuit output is equipped with two Doppler filters, one for slow moving targets and the other for fast moving targets. The Doppler filters are switchable at will. Range and azimuth tracking circuits are included as is apparatus for measuring and displaying the range and azimuth of the secondary target with respect to the coordinates of the primary target during continuous primary target tracking.

3,727,222
PSEUDO-RANDOM CODED DOPPLER TRACKING AND RANGING
Walter C. Hollis, 19 Biltmore Boulevard, Massapequa, N.Y.
Filed Nov. 17, 1970, Ser. No. 90,276
Int. Cl. G01s *9/10*
U.S. Cl. 343—7.5 11 Claims



A gated continuous wave system is described in which the transmitter and receiver are gated alternately to transmit and receive signals. The gating of the transmitter and receiver is controlled by a code generator which cyclically produces pseudo-random sequences of gating pulses for both the receiver and transmitter. By this means, the reflected transmitted signal will always be sensed by the receiver provided that the delay does not exceed the period of each sequence of pseudo-random gating pulses.

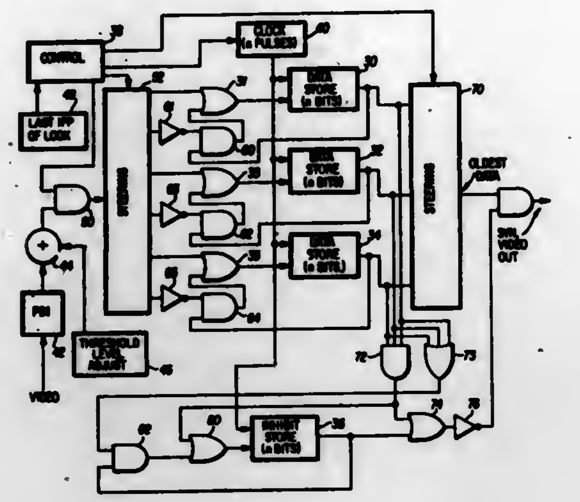
3,727,223
ADAPTIVE POWER REDISTRIBUTION SYSTEMS
Thomas R. O'Meara, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Feb. 24, 1972, Ser. No. 128,629
Int. Cl. G01s *7/42, 9/62*
U.S. Cl. 343—7.5 21 Claims



Herein are disclosed multiple path power transmission systems having monitoring and control subsystems associated with each path for separately sensing the efficiency thereof, and for redistributing the power among the paths in such a manner as to maximize the overall efficiency. Phase modulation at different frequencies or differing waveforms is applied in each transmission path; and modulation components in the received energy, indicative of the efficiency of the individual paths, are used to control the relative gain of the transmitting channels.

3,727,224
METHOD AND APPARATUS FOR POST THRESHOLD CANCELLATION
William R. Webb, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 26, 1971, Ser. No. 192,519
Int. Cl. G01s *9/42*
U.S. Cl. 343—7.7 15 Claims

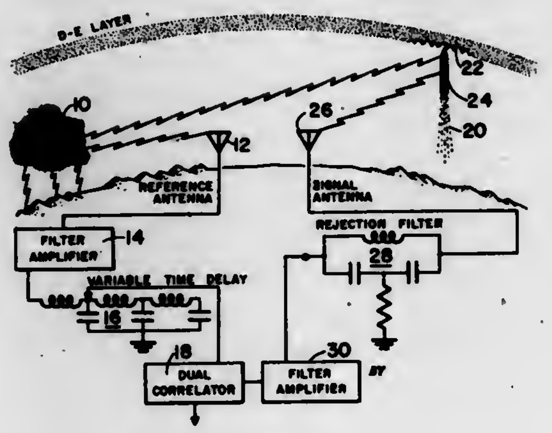
A post threshold canceller for use in an airborne moving target indicator system increases the rejection of slow moving targets by a factor of at least three to one while presenting only a minimal reduction in visibility of faster targets. A set of plural pulse rate frequencies are employed. In addition to the cancellation afforded through use of notch filters, the invention provides for inhibiting all targets which appear out of a notch in each pulse rate frequency of the set. In a receiver, there are provided a corresponding plurality of data storage registers, each having a number of bit storage positions corresponding to the maximum number of range cells for the highest pulse rate frequency employed for a given pulse width. During the last interpulse period of each look, a steering circuit directs the received signals into the appropriate data storage registers, in continuous succession. Control and gating circuits include an inhibit storage register with means for synchronizing the recirculation of data in all registers, and



steering and gating logic for successively clearing the oldest data from the data registers while identifying targets appearing out of a notch in each pulse rate frequency of the set, thereby to inhibit the target from producing a video output signal.

3,727,225
RANGING AND DETECTION SYSTEM

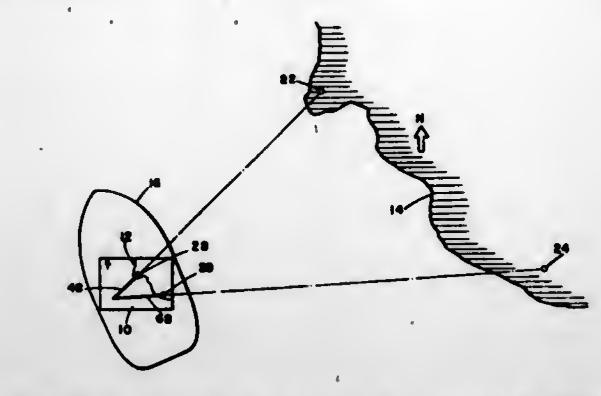
Donald J. Adrian, Corona, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 29, 1962, Ser. No. 199,568
Int. Cl. G01s *5/00*
U.S. Cl. 343—112 R **2 Claims**



2. A method for detecting long range missiles, nuclear explosions and the like at great distances comprising the steps of:
   a. utilizing the VLF portion of a lightning spectrum generated by lightning from a plurality of storms from thunderstorms concentrated in a certain geographical area as a fixed reference point source of VLF illuminating energy,
   b. detecting a signal directly from said lightning source of VLF energy for use as a reference signal,
   c. detecting said signal after being reflected from an ionospheric perturbation caused by any of missile exhaust trails, nuclear explosions and the like for use as a reflected energy signal,
   d. detecting said direct reference signal and said reflected energy signal at the same detection point,
   e. correlating the reference signal with the reflected energy signal to produce an output signal which represents the range between the ionospheric perturbation and the detection point.

3,727,226
NAVIGATION AID

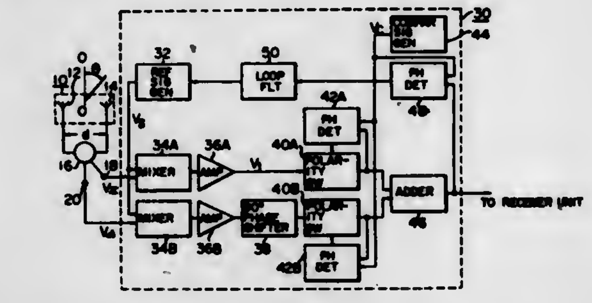
Elsmore W. Bush, La Jolla, Calif., assignor to Cubic Corporation, San Diego, Calif.
Filed July 21, 1971, Ser. No. 164,500
Int. Cl. G01s *5/08*
U.S. Cl. 343—112 PT **16 Claims**



A simple navigation aid for use on a vessel to provide a continuous indication of the vessel's position directly on a chart, which is oriented to the local shoreline. Two head units, each containing a directional antenna are mounted on the chart to pivot about the marked positions of two known radio transmitters, the antennas being coupled to a two channel receiver tuned to the selected transmitters. Each head unit contains an extensible and retractable tape member and the two tape members are pivotally connected at their extremities. The tape members are driven in and out in response to signals representing the boresight errors of the antennas and, when the antennas are locked on to the respective transmitters, the tape members form the apex of a triangle from the transmitters to the position of the vessel.

3,727,227
TRACKING ANTENNA SYSTEM

Kazuaki Takao, Kyoto, and Masakazu Takeuchi, Amagasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 15, 1970, Ser. No. 72,339
Claims priority, application Japan, Sept. 22, 1969, 44/75435
Int. Cl. G01s *3/42*
U.S. Cl. 343—117 A **4 Claims**



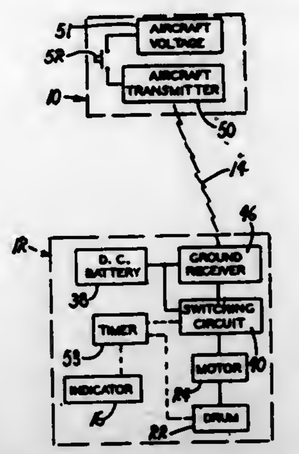
A tracking antenna system utilizing a sum and a difference signal of radio wave signals received by a pair of antennas. A control unit controls signals based upon the sum and difference signals to always bring them into in-phase relationship and adds the signals thus controlled, whereby a radio wave from a source is received always at its maximum sensitivity.

3,727,228
AUTOMATED FLAGGER

Hugh C. Taylor, P.O. Box 385, Five Points, Calif., and William A. Gunnarson, 1043 Adams, Los Banos, Calif.
Filed March 28, 1972, Ser. No. 238,815
Int. Cl. G08b *23/00;* **H04b** *07/00*
U.S. Cl. 343—225 **10 Claims**

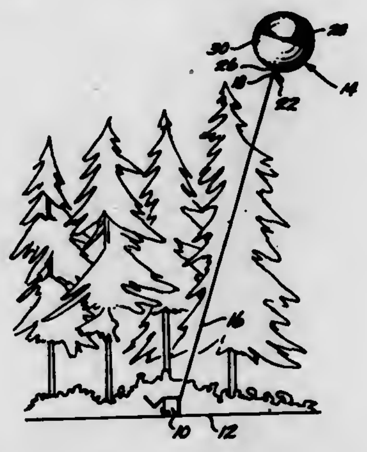
An automated flagger particularly suited for use as a marker in sequentially designating the location of each successive

path of a series of paths traversed by an aircraft engaged in so-called crop-dusting activities. The flagger is characterized by a readily detectable, displaceable marker and an intermittently operable, stationary winch attached to the marker and responsive to radio signals for advancing the marker in uniform increments so that the pilot of the aircraft can repeatedly reposition the marker, through a transmission of radio signals, and readily discern the location of each successive path to be followed in making sequential passes over the area.



3,727,229
BALLOON SIGNALLING APPARATUS

Bordean Wardell Clinger, Etna, Wyo., and Robert F. Parthum, 6176 127th Place, S.E., Bellevue, Wash.
Filed July 29, 1971, Ser. No. 167,103
Int. Cl. H01q *1/28*
U.S. Cl. 343—706 **8 Claims**

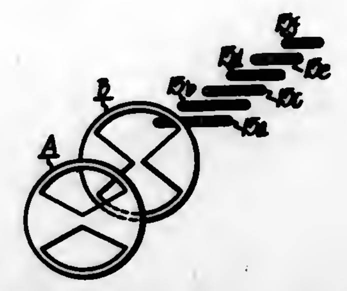


A lighter than air device is utilized to provide passive and/or active signalling in an apparatus which is semi-automatic in operation because of certain housing features. A twisted pair of cables is optionally utilized to cause a radar reflective surface of high energy reflecting design to rotate for 360° retransmission of search radar signals. The balloon structure has a hemispherical coating which rotates as the twisted pair of cables ravels and/or unravels about the axis along its extended length slowly thus causing blips to appear on the search radar screen and thereby identifying the location of the signalling apparatus.

3,727,230
ANTENNA HAVING A COMBINED DIPOLE AND LOOP PORTION

Toshitada Doi, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed March 3, 1971, Ser. No. 120,397
Claims priority, application, Japan, Nov. 21, 1970, 45/103070
Int. Cl. H01q *9/28*
U.S. Cl. 343—795 **9 Claims**

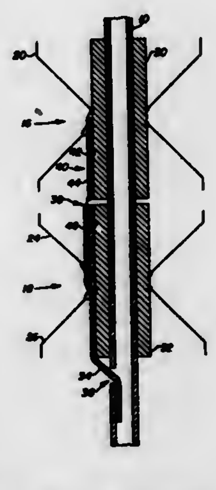
An antenna which in one embodiment is formed from a plate and which has openings formed therein wherein the opening comprises one-eighth to seven-eighths of the total area of the plate and which forms a composite antenna having



a dipole and loop portion. The antenna may also be formed in printed circuit form as a thin foil upon a supporting member and may be directly mounted on a television set, for example.

3,727,231
COLLINEAR DIPOLE ANTENNA

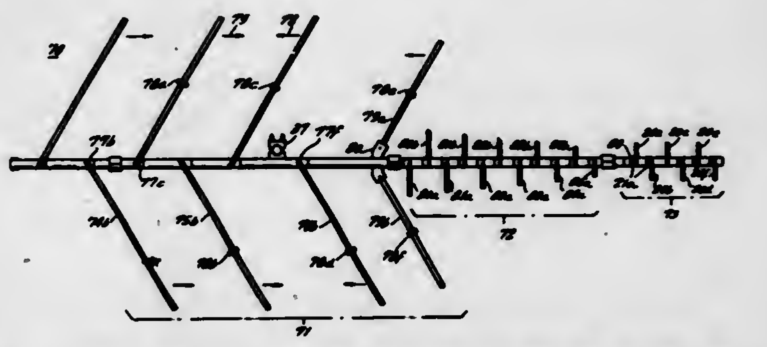
John W. Galloway, Richardson, and Leslie V. Griffee, Dallas, both of Tex., assignors to Collins Radio Company, Dallas, Tex.
Filed Sept. 24, 1971, Ser. No. 183,388
Int. Cl. H01q *21/12*
U.S. Cl. 343—813 **4 Claims**



A collinear dipole array antenna including feed means whereby the dipoles are energized in phase independent of frequency over the operating frequency range.

3,727,232
DIRECTOR ARRAY FOR ANTENNAS

Ronald D. Grant, Urbana, Ill., assignor to JFD Electronics Corporation, Brooklyn, N.Y.
Continuation of Ser. No. 23,232, March 25, 1970, abandoned. This application Dec. 3, 1971, Ser. No. 204,486
Int. Cl. H01q *21/12*
U.S. Cl. 343—815 **12 Claims**



A parasitic director array for use with active dipole sections of an antenna. In antennas having a relatively broad operating frequency range which may be of the order of 2:1 (i.e., wherein the operating frequency of the high end of the range is two or more times as great as the operating frequency at the low end of the range). The director array which is comprised of at least first and second conductive plates arranged in closely spaced fashion and staggered along the antenna mounting rod so that the conductive plates extend on opposite sides thereof operate as individual director elements near the high end of the operating band, while operating effectively as a single director element near the low end of the band so as to improve directivity and gain characteristics over the entire operating frequency band of the antenna active element region.

3,727,233
METHOD OF RECORDING AN ELECTRONIC IMAGE

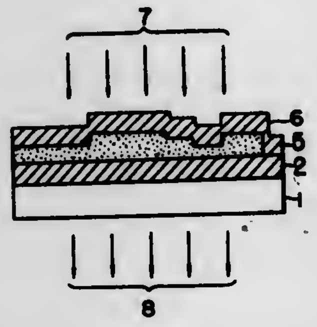
Keichi Kanaya; Hiroo Kawakatsu, and Nobufumi Atoda, all of Tokyo, Japan, assignors to Kogyo Gijutsuin Ministry of International Trade and Industry, Japanese Government, Tokyo-to, Japan

Filed Nov. 4, 1970, Ser. No. 86,830

Claims priority, application Japan, Nov. 6, 1969, 44/88408; Nov. 6, 1969, 44/88409

Int. Cl. G01d *15/34*

U.S. Cl. 346—1 8 Claims



A method of recording an electron image, in which a metal of high reflectivity is vacuum-evaporate on a substrate of glass, plastic, or the like, an electronic image is irradiated onto the organic film coated on the metal thereby to record the image by giving the reaction of polymerization, cross-linking, or degradation to said organic material to the extent corresponding to the irradiation intensity, and then the image is obtained which is quantitatively corresponding to the intensity distribution of the incident electrons by again vacuum-evaporating a metal of high reflectivity on the recorded image. Further, a method of recording an electronic image, in which the sensitivity of a recording plate is improved by using a pre-exposure method, whereby a recordable exposure range is increased thereby to control the lightness and color of the image.

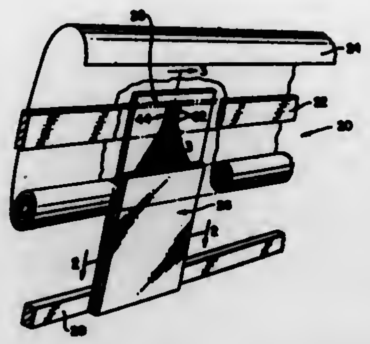
3,727,234
SLAVE PRINTING APPARATUS

John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 17,762, March 9, 1970. This application Nov. 18, 1971, Ser. No. 200,107

Int. Cl. G01d *5/00*

U.S. Cl. 346—33 R 6 Claims



An apparatus for producing character patterns which includes a first matrix, or "master" unit, of selectively energizable components (like resistors and electric lamps) which are arranged in a first array for producing a plurality of character patterns. A second matrix, or "slave" unit, which is easily replaceable, has selectively energizable second components (like resistors for printing on a thermally responsive medium, or light cells for printing on a light-responsive medium), which are arranged thereon in a second array for producing character patterns corresponding to those produced by the first matrix. A sensing element (like a semiconductor with a high negative coefficient of resistance, or a light-sensitive semi-conductor) is associated with each component of the first matrix, and this sensing element is effective to energize the associated component of the second matrix whenever the corresponding component of the first matrix is energized. Regardless of the number of energizable components present on the second matrix, only two connection leads for connection to a source of potential are required for the second matrix, making it easily replaceable when subjected to wear in cooperative association with a printing medium (like thermally or photographically responsive paper).

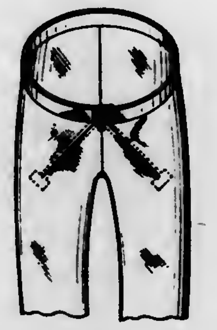
DESIGNS

APRIL 10, 1973

226,643
TROUSER

Lyman B. Cooper, R.D. 1, P.O. Box 56,
Yorktown Heights, N.Y. 10598
Filed Feb. 8, 1971, Ser. No. 113,801
Term of patent 14 years
Int. Cl. D2—*02*

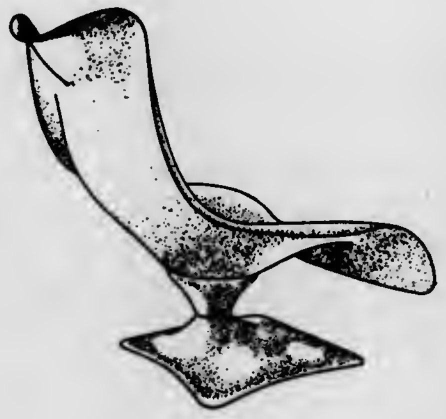
U.S. Cl. D2—28



226,644
ARMCHAIR

Oskar Kogoj, Miren, and Boris Ferlat, Kromberg, Yugoslavia, assignors to Institut pohistvene industrije MEBLO, Kromberg, Yugoslavia
Filed June 9, 1971, Ser. No. 151,621
Term of patent 3½ years
Int. Cl. D6—*02*

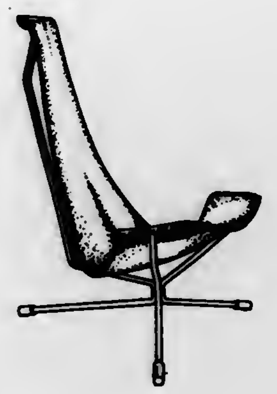
U.S. Cl. D6—26



226,645
CHAIR

Daniel L. Wenger, 635 Tigertail Road,
Los Angeles, Calif. 90049
Filed Mar. 5, 1971, Ser. No. 121,612
Term of patent 14 years
Int. Cl. D6—*02*

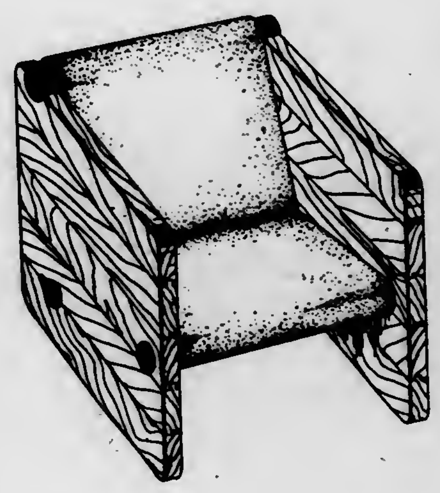
U.S. Cl. D6—31



226,646
ARMCHAIR

Eason Cross, Jr., 2309 Glasgow Road,
Alexandria, Va. 22307
Filed Mar. 25, 1971, Ser. No. 128,219
Term of patent 14 years
Int. Cl. D6—*02*

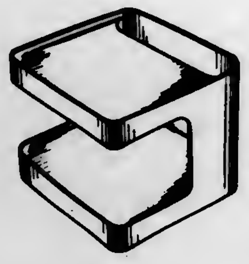
U.S. Cl. D6—71



226,647
COMBINED END TABLE AND BOOK RACK OR SIMILAR ARTICLE

Giuseppe Longato, Via Makalle 19, Padova, Italy
Filed May 3, 1971, Ser. No. 139,997
Claims priority, application Italy Nov. 11, 1970
Term of patent 7 years
Int. Cl. D6—*03*

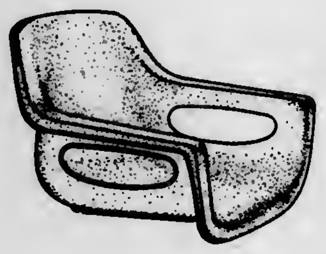
U.S. Cl. D6—179



226,648
MOULDED ARMCHAIR SEAT

Harry Sebel, Bankstown, and Dillon Charles Furey, Kirribilli, New South Wales, Australia, assignors to Sebel Limited, Bankstown, New South Wales, Australia
Filed June 16, 1971, Ser. No. 153,909
Claims priority, application Australia Dec. 16, 1970
Term of patent 14 years
Int. Cl. D6—*02*

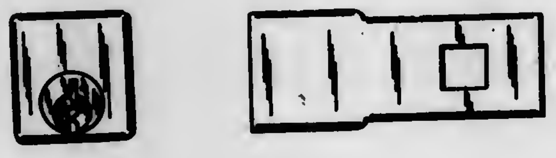
U.S. Cl. O6—197



226,649
LOCK FOR SETS OF DRAWERS IN OFFICE EQUIPMENT OR THE LIKE

George P. Patriquin, 69 Lynde St.,
Gardner, Mass. 01440
Filed Feb. 16, 1971, Ser. No. 115,900
Term of patent 14 years
Int. Cl. D8—*07*

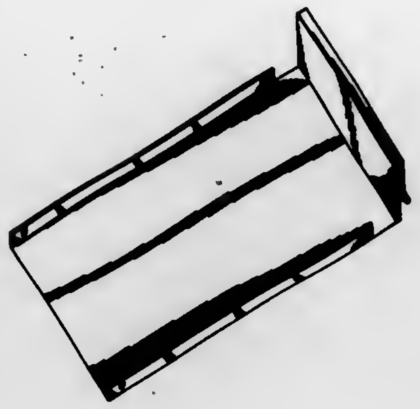
U.S. Cl. D8—120



226,650
MOUNTING BRACKET FOR TELEPHONE/TELETYPE INTERFACING APPARATUS

John P. Kennedy, Columbus, Ohio, assignor to Design Elements, Inc.
Filed Sept. 9, 1971, Ser. No. 179,258
Term of patent 14 years
Int. Cl. D19—*02*; D8—*08*

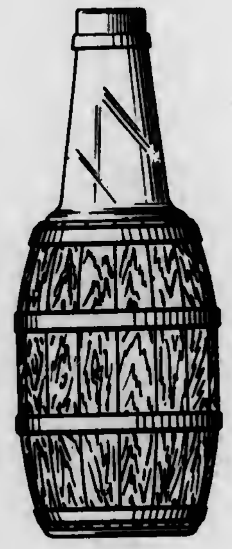
U.S. Cl. D8—233



226,651
BOTTLE

Howard Cooper, Suite 7707, 175 E. Delaware,
Chicago, Ill. 60611
Filed Jan. 20, 1971, Ser. No. 108,250
Term of patent 14 years
Int. Cl. D9—*01*

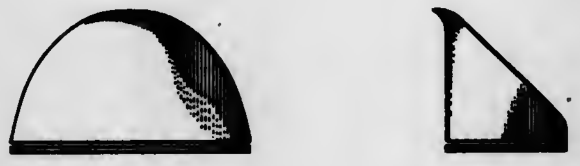
U.S. Cl. D9—28



226,652
POUR SPOUT ATTACHMENT FOR A PAINT CAN OR THE LIKE

G. Dean Kenney and Joyce J. Kenney, both of 2437 Belknap Ave., Billings, Mont. 59101
Filed Mar. 19, 1971, Ser. No. 126,385
Term of patent 14 years
Int. Cl. D9—*07*

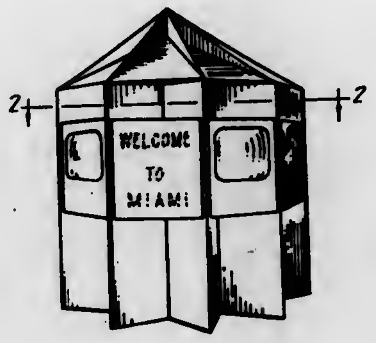
U.S. Cl. D9—290



226,653
COMBINED ADVERTISING AND DISPLAY BOOTH

Adriano Delgado, Fort Lauderdale, Fla.
(P.O. Box 4201, Panama 5, Panama)
Filed Apr. 12, 1971, Ser. No. 133,466
Term of patent 14 years
Int. Cl. D20—*99*

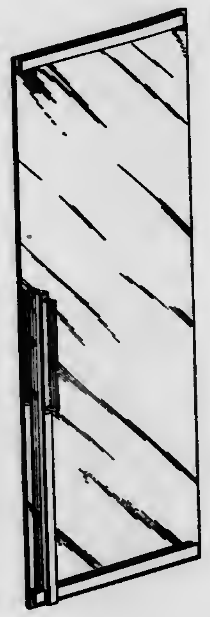
U.S. Cl. D13—2



226,654
DOOR

William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Original design application June 1, 1970, Ser. No. 23,254. Divided and this application June 17, 1971, Ser. No. 154,245
Term of patent 14 years
Int. Cl. D25—*02*

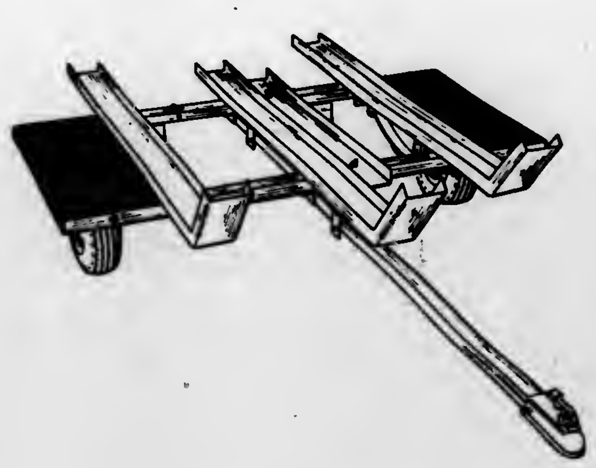
U.S. Cl. D13—1 M



226,655
TRAILER OR THE LIKE

James D. Ezell, 108 Pineland Circle,
Raleigh, N.C. 27612
Filed Feb. 22, 1971, Ser. No. 117,855
Term of patent 14 years
Int. Cl. D12—*10*

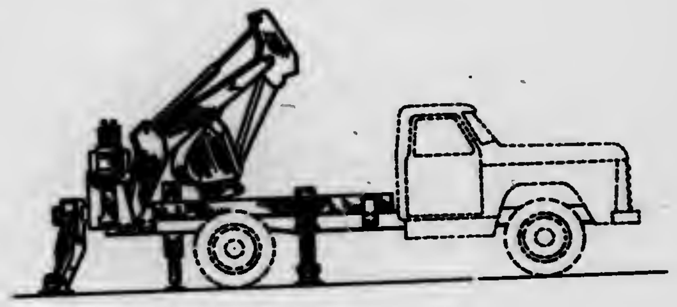
U.S. Cl. D14—3 E



226,656
VEHICLE FRAME AND BACKHOE ATTACHMENTS

Gerard S. Gremillion, 50 E. 54th St., Kansas City, Mo. 64112, and Bert M. McMillin, 10120 Wenonga Lane, Leawood, Kans.
Filed Mar. 22, 1971, Ser. No. 127,070
Term of patent 14 years
Int. Cl. D12—*13*

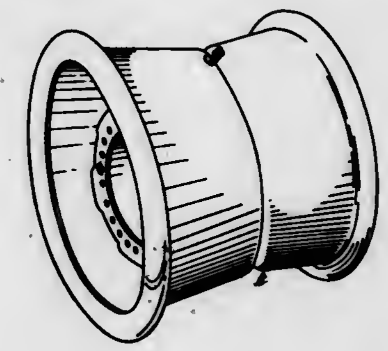
U.S. Cl. D14—3 R



226,657
TIRE RIM

Charles E. Grawey, Peoria, Keith E. Koch, Tremont, and Robert W. Untz, Hanna City, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 27, 1971, Ser. No. 212,881
Term of patent 14 years
Int. Cl. D12—*16*

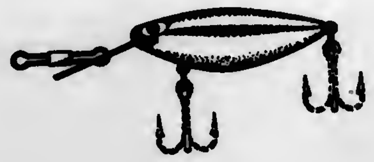
U.S. Cl. D14—30 R



226,658
FISHING LURE

William D. Storm, Norman, Okla., assignor to Storm Plastics, Inc., Norman, Okla.
Filed Oct. 4, 1971, Ser. No. 186,564
Term of patent 14 years
Int. Cl. D22—*05*

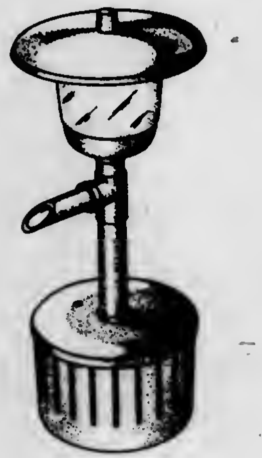
U.S. Cl. D22—28



226,659
COMBINED EXTERIOR LAMP AND FILTER FOR SMALL POOLS

Nakoto Yamazaki, 21–19 Higashi-Funabashi 7-chome, Funabashi, Japan
Filed Oct. 21, 1971, Ser. No. 191,570
Term of patent 14 years
Int. Cl. D23—*01;* D26—*03*

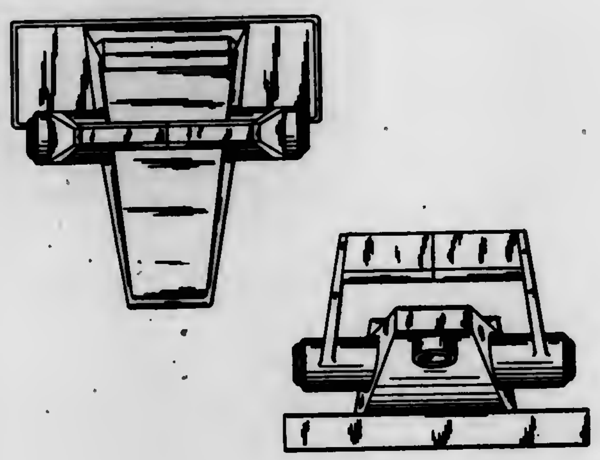
U.S. Cl. D23—4



226,660
FAUCET

George F. Mendenhall, Hinsdale, and Richard Stawowy, Chicago, Ill., assignors to Montgomery Ward & Co., Incorporated, Chicago, Ill.
Filed Aug. 11, 1971, Ser. No. 171,040
Term of patent 14 years
Int. Cl. D23—*01*

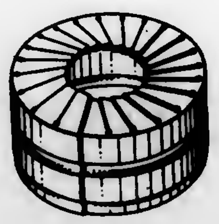
U.S. Cl. D23—25



226,661
HOLDER FOR TUBULAR INSULATION

Peder L. Christensen, Virum Torv 7, Virum, Denmark
Filed Mar. 4, 1971, Ser. No. 114,124
Term of patent 14 years
Int. Cl. D23—*99*

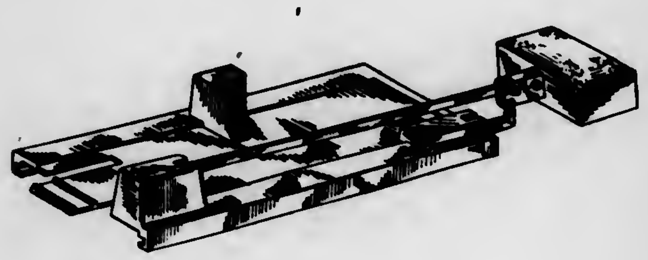
U.S. Cl. D23—167



226,662
EDUCATIONAL DEVICE FOR DEMONSTRATING MOMENTUM

Larry Harrison, Clifton Springs, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed May 19, 1971, Ser. No. 145,101
Term of patent 14 years
Int. Cl. D19—*07*

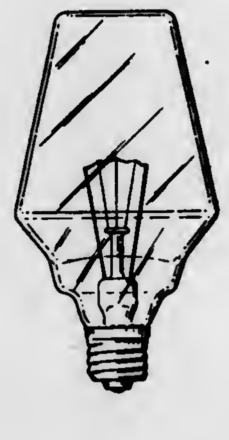
U.S. Cl. D25—1 R



226,663
LIGHT BULB OR THE LIKE

Yasuhiko Watanabe, 2779 Takada-cho, Kohoku-ku, Kanagawa-ken, Yokohama, Japan
Filed Apr. 7, 1971, Ser. No. 132,252
Claims priority, application Japan Mar. 8, 1971
Term of patent 14 years
Int. Cl. D26—*04*

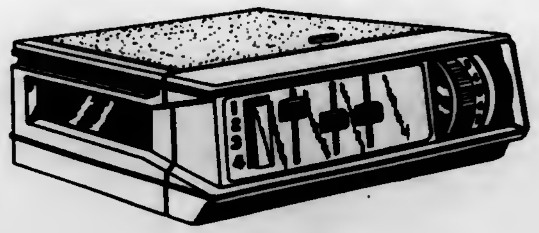
U.S. Cl. D26—8



226,664
TAPE PLAYER OR SIMILAR ARTICLE

Raymond J. Schmitz, Prospect Heights, and James F. Sellars, Jr., Addison, Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Nov. 2, 1970, Ser. No. 25,768
Term of patent 14 years
Int. Cl. D14—*02*

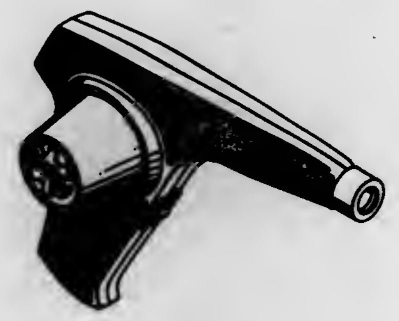
U.S. Cl. D26—14 B



226,665
HOT AIR GUN

Alvis R. Knowles, Carson, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.
Filed Mar. 19, 1971, Ser. No. 126,390
Term of patent 14 years
Int. Cl. D23—*99;* D28—*03*

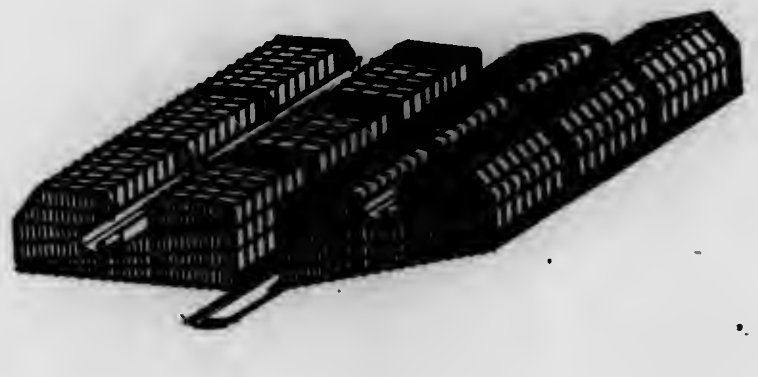
U.S. Cl. D23—162



226,666
LAY CYCLE CAGE APPARATUS

Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed Mar. 12, 1971, Ser. No. 123,932
Term of patent 14 years
Int. Cl. D30—*02*

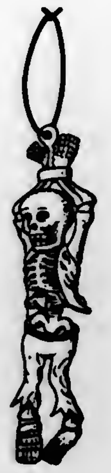
U.S. Cl. D30—1



226,667
TOY FIGURE

Alfons Adriaan den Ouden, 1 Esmoreitlaan, Antwerp, Belgium
Filed Sept. 22, 1971, Ser. No. 182,925
Claims priority, application Great Britain Mar. 30, 1971
Term of patent 14 years
Int. Cl. D21—*01*

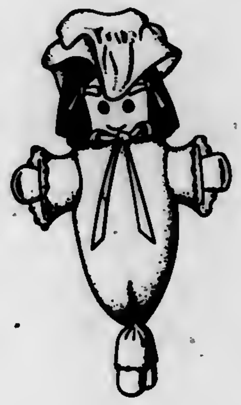
U.S. Cl. D34—4 R



226,668
DOLL

Maurice P. Bratt and Lenore Bratt, both of 1431 S. Holt Ave., Los Angeles, Calif. 90035
Filed Oct. 28, 1971, Ser. No. 193,617
Term of patent 14 years
Int. Cl. D21—*01*

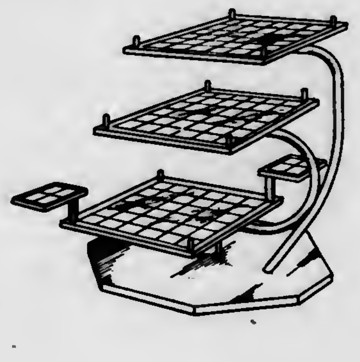
U.S. Cl. D34—4 R



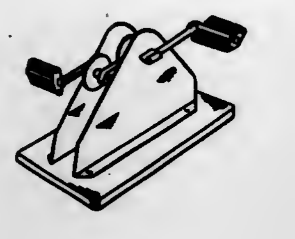
226,669
THREE DIMENSIONAL STAGGERED CHESSBOARD WITH MOVABLE SUPPORTS FOR CHESSMEN

Christopher M. Culver, 1098 Leigh St., and Dale A. Lane, 2595 Pioneer Pike, both of Eugene, Oreg. 97401
Filed Oct. 6, 1971, Ser. No. 187,230
Term of patent 14 years
Int. Cl. D21—*01*

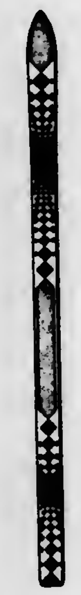
U.S. Cl. D34—5 SS



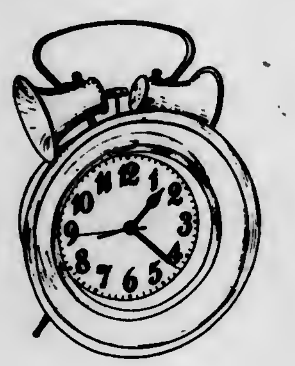
226,670
EXERCISING MACHINE
George Richard Nickels, 34 Kinkaid Road, Elizabeth East, Adelaide, South Australia, Australia
Filed Sept. 29, 1971, Ser. No. 184,975
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K



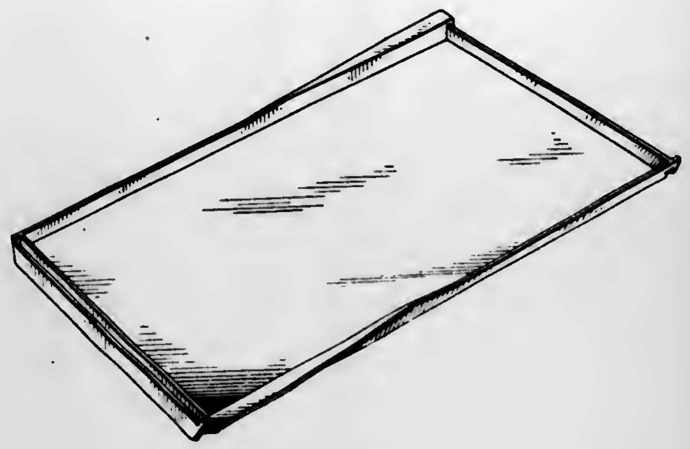
226,671
SKI
Anton Arnsteiner, Klausen 3, A-5730 Mittersill, Austria
Filed Feb. 23, 1971, Ser. No. 118,213
Claims priority, application Austria Aug. 24, 1970
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D



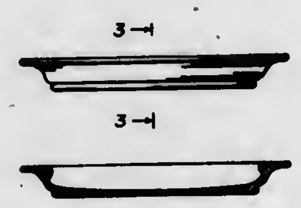
226,672
ALARM CLOCK
Waldemar Blessing, Waldkirch im Breisgau, Germany, assignor to Blessing-Werke KG, Waldkirch im Breisgau, Germany
Filed Sept. 20, 1971, Ser. No. 182,289
Claims priority, application Germany Mar. 20, 1971
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R



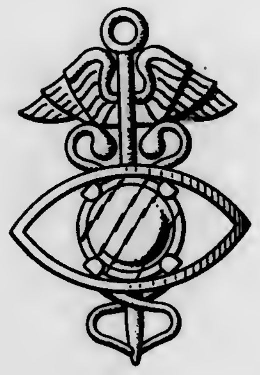
226,673
SERVING TRAY
Robert F. Bateman, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.
Filed Feb. 8, 1971, Ser. No. 113,786
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—10 E



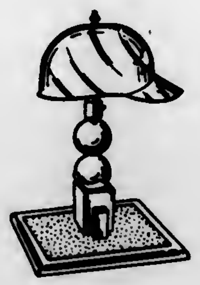
226,674
PLATE
Nicholas J. Bruno, 556 Rockland St., Westbury, N.Y. 11590
Filed Oct. 28, 1971, Ser. No. 193,612
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 K



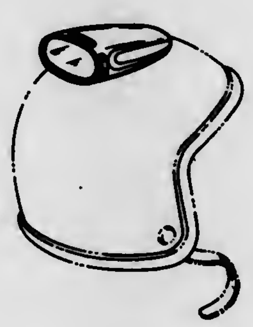
226,675
BRACELET CHARM
Frances L. Gange, 296 North St., East Aurora, N.Y. 14052
Filed Dec. 6, 1971, Ser. No. 205,458
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—17



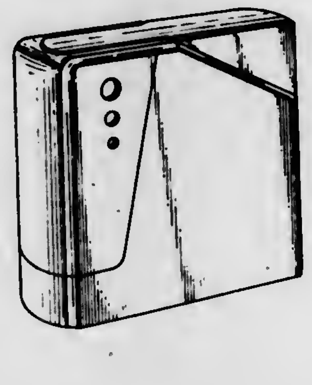
226,676
LAMP
Martin Felsen, 5743 Southminster, and Edward Stevens, 5610 Braes Valley, both of Houston, Tex. 77035
Filed Dec. 6, 1971, Ser. No. 205,465
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 C



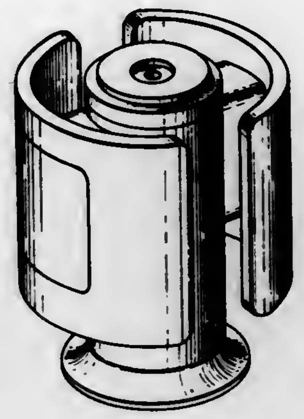
226,677
LAMP FOR HELMETS OR THE LIKE
Anthony M. Carlini, 24340 Cherry Hill Road, Dearborn, Mich. 48124
Filed Sept. 20, 1971, Ser. No. 182,301
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



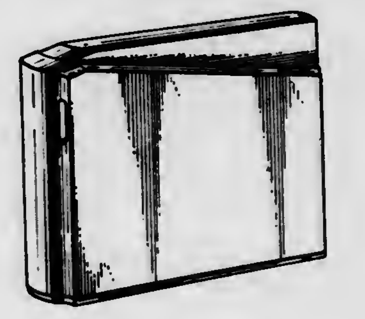
226,678
CIGARETTE LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki, Kawaguchi-shi, Saitama, Japan
Filed Dec. 21, 1971, Ser. No. 210,629
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



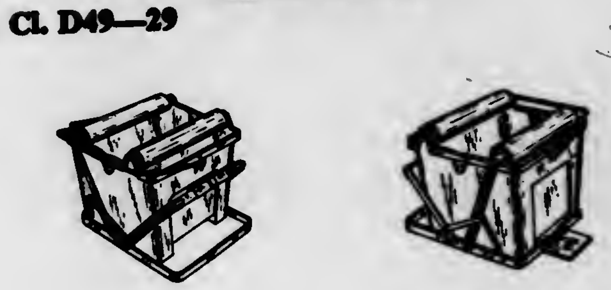
226,679
CIGARETTE LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitama, Japan
Filed Dec. 21, 1971, Ser. No. 210,630
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



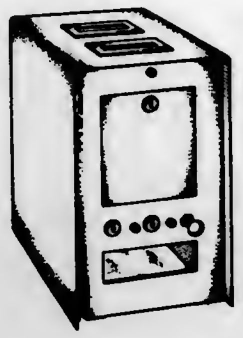
226,680
CIGARETTE LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitama, Japan
Filed Dec. 21, 1971, Ser. No. 210,632
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27



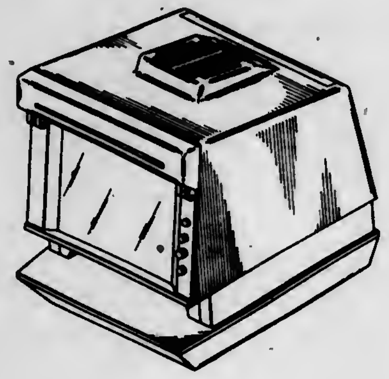
226,681
WRINGER
Douglas C. Bard, Muskegon, Mich., assignor to Beatrice Foods Company, Chicago, Ill.
Filed Sept. 29, 1971, Ser. No. 184,972
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D49—29



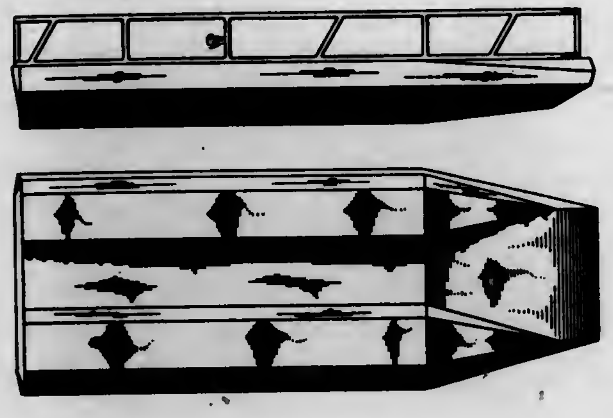
226,682
SAFETY DEPOSIT BOX
Max Sorensen, 2404 Wicker St., Dallas, Tex. 75234
Filed Feb. 19, 1971, Ser. No. 117,219
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D69—1



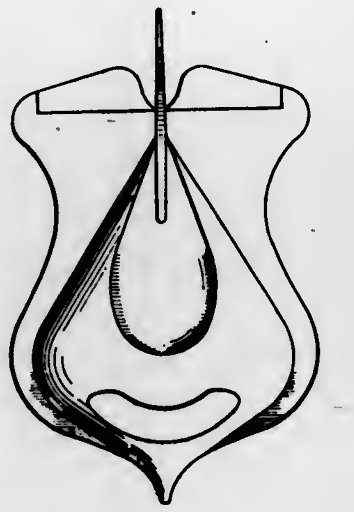
226,683
MICROFILM VIEWER-COPIER OR THE LIKE
Ulf R. Helgesson, Woodland Hills, Calif., assignor to Seaco Computer-Display Incorporated, Garland, Tex.
Filed Sept. 24, 1971, Ser. No. 183,722
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N

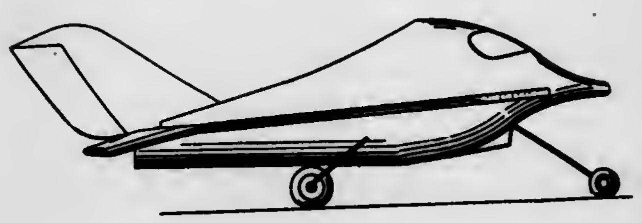


226,684
PLEASURE BOAT
Ronald A. Beyer, 2978 S. Cherry Ave., Fresno, Calif.
Filed Dec. 24, 1970, Ser. No. 26,640
Term of patent 3½ years
Int. Cl. D12—*06*
U.S. Cl. D71—1 Q

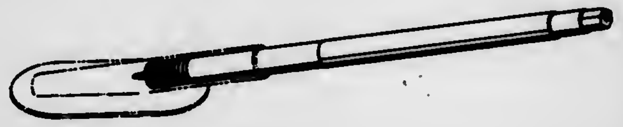


226,685
AIRCRAFT
Arthur O. Ackerson, Jr., Saginaw, Mich. (Rte. 1, P.O. Box 442B, Morehead City, N.C. 28557)
Filed Jan. 7, 1971, Ser. No. 104,834
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1 E

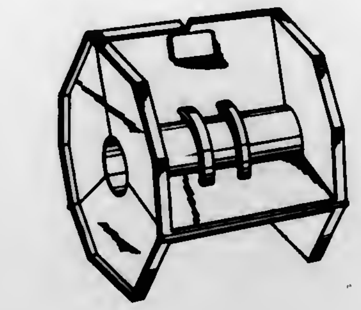




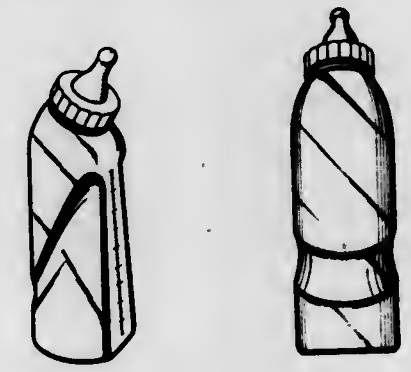
226,686
AIRCRAFT ELECTROSTATIC DISCHARGER
George M. Floyd, 541 Lansdowne Ave., Camden, N.J. 08104
Filed Dec. 8, 1971, Ser. No. 206,232
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D71—1 D



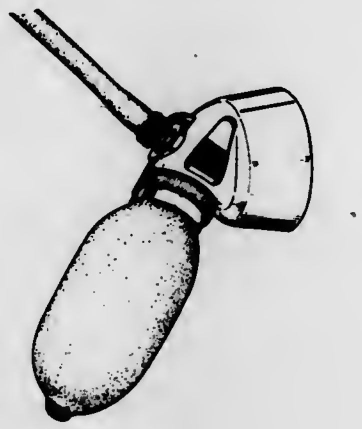
226,687
INDEX CARD HOLDER
Ira Saltz, Greenlawn, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Filed Sept. 23, 1971, Ser. No. 183,300
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—2 A



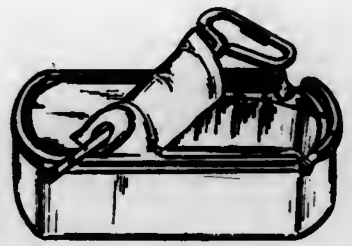
226,688
BABY BOTTLE
Hollister A. Thornton, P.O. Box 326, Greensboro, Ga. 30642
Filed Feb. 18, 1971, Ser. No. 116,745
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—8 A



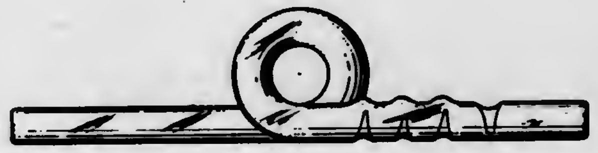
226,689
MANOMETER-PUMPING BALL UNIT FOR A BLOOD PRESSURE GAUGE
Blasius Speidel, Jungingen/Hohenzollern, Germany, assignor to Speidel & Keller KG, Jungingen/Hohenzollern, Germany
Filed Nov. 3, 1971, Ser. No. 195,538
Claims priority, application Germany May 4, 1971
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



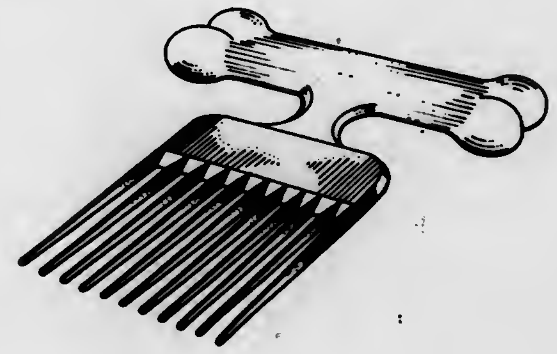
226,690
ASHTRAY
Ute Berger, 75 Wandersmannstrasse, Wiesbaden-Erbenheim, Germany
Filed Apr. 15, 1971, Ser. No. 134,529
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2 P



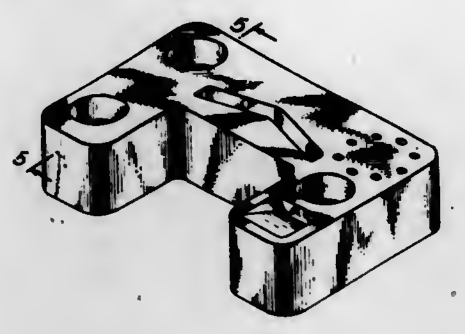
226,691
CIGARETTE HOLDER
Norman A. Berney, 1030 Della Drive, Beverly Hills, Calif. 90210, and Morris Karp, 1626 N. Kings Road, Los Angeles, Calif. 90069
Filed Apr. 21, 1971, Ser. No. 136,281
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8 B



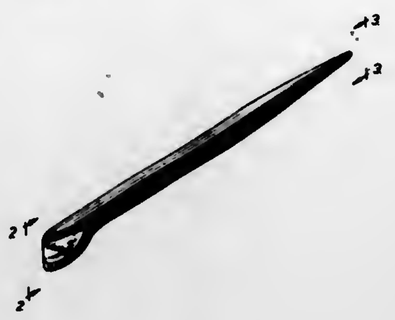
226,692
COMB
Sheldon Sherman, 8702 Allenwood Road, Randallstown, Md. 21133
Filed Nov. 10, 1971, Ser. No. 197,642
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



226,693
FLOATING TRAY FOR SOAPS AND LOTIONS OR THE LIKE
Marie R. Harper, 11916 S. Painter Ave., Whittier, Calif. 90605
Filed Sept. 29, 1971, Ser. No. 184,978
Term of patent 14 years
Int. Cl. D28—*99*
U.S. Cl. D86—10 A



226,694
NAIL CARE TOOL
Shogo Ishii, Tokyo, Japan, assignor to Syntak Company, Ltd.
Filed Nov. 1, 1971, Ser. No. 194,779
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 C



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TO WHOM
PATENTS WERE ISSUED ON THE 10TH DAY OF APRIL, 1973

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- Adler, Ronald E. Remote controlled drawing device. 3,726,019, Cl. 33-18.00r.
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- Agfa-Gevaert Aktiengesellschaft: *See—*
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  - Van Paesschen, August Jean; Herbots, Joseph Antoine; and Van Gossum, Lucien Janbaptist, 3,726,682.
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  - Hungate, Ernest C.; Ogletree, Harold A.; and Nickell, Grason T., 3,726,062.
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  - De Jonge, Hendrik A. P.; and De Jonge, Cornelis R. H. I., 3,726,837.
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  - Vedder, Helmut; Byrnes, Edward R.; and Rogers, Ronald D., 3,726,466.
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  - Schlegel, William R., 3,726,498.
- Allaria, Eugenio, to Fabbrica Italiana Magneti Marelli S.p.A. Device for removably holding a vehicle windshield wiper on the windshield wiper arm. 3,725,970, Cl. 15-250.320.
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  - Belsky, Stephen E.; and Bonfield, John H., 3,726,871.
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- Allum, Keith George; McKenzie, Samuel; and Pitkethly, Robert Chalmers, to British Petroleum Company Limited, The. Catalyst supports and transition metal catalyst supported thereon. 3,726,809, Cl. 252-431.00p.
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  - Searle, John Gilbert, 3,725,998.
- Alms, Erhard E.; and Mitchell, James E., to AFE Industries, Inc. Modular dock float. 3,726,098, Cl. 61-48.000.
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  - Bostwick, Norvan W.; Snyder, Warren E.; and Darborowski, Ignace J., 3,726,608.
- Amel, Ronald T.: *See—*
  - Prentice, James B.; Nicholson, Denzel Allan; and Amel, Ronald T., 3,726,639.
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- Anchor Hocking Corporation: *See—*
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- Anderson Harry T.: *See—*
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  - Smith, Arthur W.; and Baggenstoss, Elmer J., 3,726,486.
- Bahre, Ernst August, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Fascines. 3,726,096, Cl. 61-37.000.
- Bailey, James R., to Switchcraft, Inc. Electrical switch unit. 3,727,020, Cl. 200-167.00a.
- Bailey Meter Company: *See—*
  - Vaughn, Arthur L., 3,727,111.
- Baker, Bernard R.: *See—*
  - Wittrock, Henry J.; Baker, Bernard R.; and Bushey, Albert H., 3,726,721.
- Baker, Floyd A.; and Sitler, Wayne R., to International Business Machines Corporation. Single select line storage system address check. 3,727,039, Cl. 235-153.0am.
- Baker, Joseph W.: *See—*
  - Howe, Robert K.; and Baker, Joseph W., 3,726,662.
- Baldini, Walter. Method of manufacturing garment collars or lapels. 3,725,954, Cl. 2-143.000.
- Ballistic Research Industries,: *See—*
  - Kelly, Ward L.; and McAlvain, William L., 3,726,231.
- Balquist, James M.: *See—*
  - Degginger, Edward R..; and Balquist, James M., 3,726,911.
- Ban, Itsuki. Magnetic tape cartridge removing apparatus. 3,726,529, Cl. 274-4.00f.
- Banks, Kenneth, to Pilkington Brothers Limited. Apparatus for electrically welding a double walled glazing unit. 3,726,658, Cl. 65-40.000.
- Banyas, John D.; and Ross, Edward A., to Owens-Illinois, Inc. Method and apparatus for forming a finish on a glass container. 3,726,659, Cl. 65-70.000.
- Baranova, Pavla Sergeevna: *See—*
  - Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Turian, Yakov Iosifovich; Kirnos, Yakov Yakovlevich; Kolobikhin, Valentin Alexandrovich; Baranova, Pavla Sergeevna; Sherashov, Vadim; Rastvorov, Jury Nikolaevich; Emelyanova, Elena Nikolaevna; and Sishkina, Irina Mikhailovna, 3,726,937.
- Barbee, Gail G., to Caterpillar Tractor Company. Liquid level indicating means. 3,726,140, Cl. 73-299.000.
- Barbour, Richard H., Jr., to Comstock and Wescott, Inc. Method of cutting thick books. 3,726,167, Cl. 83-37.000.
- Bard, C. R., Inc.: *See—*
  - Norton, William J.; and Ferguson, Keith, 3,726,281.
- Bard, Wendell E.: *See—*
  - Flagg, John M.; Bard, Wendell E.; Christensen, Bernard E.; Stevens, Roy W., Jr.; and Dunn, Edgar J., 3,726,494.
- Barefoot, Charles A.; and Williams, Bryn T., to Carolina Medical Electronics, Inc. Hemostatic vascular cuff. 3,726,279, Cl. 128-327.000.
- Barenyi, Bela: *See—*
  - Wilfert, Karl; and Barenyi, Bela, 3,726,559.
- Barnbrook, Thomas George; and Wren, Frderick James, to Timken Company, The. Rolling bearing. 3,726,576, Cl. 308-207.000.
- Barnes & Jones, Inc.: *See—*
  - Reid, Samuel J.; Mullett, Edward J.; and Hogan, John B., 3,725,989.
- Baron, Gerhard; Bechthold, Horst; and Liebgott, Helmut, to Metallgesellschaft AG. Process for gasifying heavy hydrocarbons. 3,726,654, Cl. 48-215.000.
- Barron, Morris, to United States of America, Navy. Antenna pattern simulator. 3,727,137, Cl. 325-67.000.
- Barry, Henry F.: *See—*
  - Moore, Fred W.; Robitaille, Dennis R.; and Barry, Henry F., 3,726,694.
- Basil, Berkeley: *See—*
  - Wooldridge, Kenneth Robert Harry; and Basil, Berkeley, 3,726,919.
- Bassand, Denis, to Sandoz Ltd.; a/k/a Sandoz AG. Synergistic insecticidal compositions of O, O-dimethyl-S-(N-methyl-carbamoylmethyl)-thio-thionophosphate and an O, O-dialkyl-dithiophosphoryl-acetic acid derivative. 3,726,975, Cl. 424-211.000.
- Bassist, Rudolph G., 1/2 to Travis Mills Corporation. Yarn measuring apparatus for use with warp knitting machines. 3,727,033, Cl. 235-92.0pd.
- Batzer, Hans: *See—*
  - Habermeier, Juergen; Batzer, Hans; and Porrtt, Daniel, 3,726,895.
- Baumel, Anton, to Gebr. Bohler & Co., AG. Welding filling material. 3,726,668, Cl. 75-125.000.
- Baumgartner, Siegfried; and Lippacher, Wolfgang, to Krauss-Maffei Aktiengesellschaft. Method of operating an electron-beam apparatus and electron-beam system. 3,727,026, Cl. 219-121.0em.
- Bavchenkov, Eduard Viktorovich: *See—*
  - Petrovas, Albinas-Vitalis Mikaloyaus; Bavchenkov, Eduard Viktorovich; and Yargin, Evgeny Alexandrovich, 3,726,388.
- Baxter Laboratories, Inc.: *See—*
  - Magovern, George J.; and Cromie, Harry W., 3,725,961.
- Baxter Laboratories, Inc., mesne: *See—*
  - Louderback, Allan L.; and Owen, Robert P., 3,727,066.
- Bayer Aktiengesellschaft: *See—*
  - Boden, Heinrich; Von Bonin, Wulf; Kleimann, Helmut; and Mergard, Harald, 3,726,952.
  - Eimer, Johannes; Windemuth, Erwin; Berndt, Gerhard; and Koch, Hans-Joachim, 3,726,838.
  - Von Bonin, Wulf; Honig, Hans Ludwig; and Theuer, Werner, 3,726,822.
- Bayless, Robert G.; and Emrick, Donald D., to National Cash Register Company, The. Capsule wall treating utilizing condensation polymerization and capsule product. 3,726,803, Cl. 252-316.000.
- Beal, Philip F., III; and Pike, John E. 9,15-Dihydroxy prastanoic acids and esters thereof. 3,726,909, Cl. 260-468.00d.
- Beall, George H.; and Rittler, Hermann L., to Corning Glass Works. Glass-ceramics containing mullite. 3,726,695, Cl. 106-39.0dv.
- Beamish, Bernard Delacour; and Taylor, David Grieve. Apparatus for making stitchable articles, especially shoes substantially of fabric material and a method therefor. 3,726,399, Cl. 209-73.000.
- Beardmore, Geoffrey, to Smiths Industries Limited. Gas-lubricated bearings. 3,726,572, Cl. 308-9.000.
- Bearer, Louis C.: *See—*
  - Hughes, James K.; Stegelman, Albert F.; and Bearer, Louis C., 3,726,955.
- Beatrice Foods Co.: *See—*
  - Binding, Kenneth W.; and Cunningham, Stanley H., 3,726,410.
- Bechthold, Horst: *See—*
  - Baron, Gerhard; Bechthold, Horst; and Liebgott, Helmut, 3,726,654.
- Beckman Instruments, Inc.: *See—*
  - Klein, Gerald L., 3,726,144.
  - Neary, Michael P., 3,726,599.
- Becton, Dickinson Electronics Company: *See—*
  - Epstein, Howard C., 3,727,084.
- Bedford, Edward F.; and Russo, Thomas C., to ATCO, Inc. Apparatus for indicating magnitude of vibrations. 3,726,145, Cl. 73-457.000.
- Beecham Group Limited, mesne: *See—*
  - Razdan, Raj Kumar; and Thompson, William Raymond, 3,726,883.
- Beers, Eugene; Brown, Milton M.; Eckes, William A.; and Penaluna, William A., to Dymo Industries, Inc. Card embossing apparatus. 3,726,380, Cl. 197-6.600.
- Behrens, Joh. Friedrich: *See—*
  - Springer, Hans-Werner, 3,726,397.
- Beilman, John L., to Cornell Aeronautical Laboratory, Inc. Fluid speed indicating apparatus. 3,726,139, Cl. 73-181.000.
- Beisner, Lowell E. Musical sound recording method. 3,726,530, Cl. 274-46.000.
- Beith, Richard D., to ET Industries, Inc. Wheel structure. 3,726,566, Cl. 301-37.00r.
- Bell Canada-Northern Electric Research Limited: *See—*
  - Lucas, John Martin, 3,726,049.
- Bell, Oliver A., Jr., to Elox Inc. Electrical discharge machining servo control circuit. 3,727,024, Cl. 219-69.00g.
- Bell, Russell N., to Stauffer Chemical Company. Sodium aluminum phosphate cheese emulsifying agent. 3,726,960, Cl. 423-306.000.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Mar, Jerry, 3,727,076.
  - Schroeder, Henry Charles; Sheehan, John Robert; and Tracey, Robert John, 3,727,136.
- Belock, Robert J.: *See—*
  - Calder, Brooke J., Jr.; Risko, Bernard L.; and Belock, Robert J., 3,726,216.
- Beloit Corporation: *See—*
  - Sorenson, Alan R., 3,726,338.
- Belsky, Stephen E.; and Bonfield, John H., to Allied Chemical Corporation. Process for the preparation of tris(2-hydroxyethyl) isocyanurate. 3,726,871, Cl. 260-248.0ns.
- Bendix Corporation, The: *See—*
  - Coscia, Charles M., 3,726,310.
  - Helava, Uuno V.; Chapelle, Walter E.; and Hornbuckle, John A., 3,726,591.
  - Kosakowski, Henry Robert; and Smialowicz, Casimir Stanley, 3,726,138.

Miller, Donald L., 3,726,373.

Napp, Sidney M., 3,726,391.

Sauer, Rudolf G., 3,726,261.

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Walser, Rodger M.; and Bene, Robert W., 3,727,053.

Bennett, Foster C.: *See—*

Erickson, Stephen C.; and Bennett, Foster C., 3,726,305.

Bennett, Kenneth A., to Petrodata, Inc. Data transmission responsive to synchronization signal. 3,727,179, Cl. 340-15.5dt.

Bennett, Richard J.; and Gagle, Duane W., to Phillips Petroleum Company. Resilient material of particulate rubber in a binder of butadiene and coumarone indene polymers. 3,726,944, Cl. 260-829.000.

Bennison, Michael Newstead, to Clarkson, W. J., Limited. Material stitching apparatus. 3,726,241, Cl. 112-121.150.

Bens, Everett M.: *See—*

Morley, Carl H.; and Bens, Everett M., 3,726,802.

Benson, Hugh H.: *See—*

McKean, George W.; and Benson, Hugh H., 3,726,136.

Benson, Paul R.: *See—*

Carmanq Richard J.; and Benson, Paul R., 3,726,307.

Benteler-Werke Ag: *See—*

Lachenmayer, Wilhelm, 3,726,320.

Benton, Lawrence M., Jr. Electric visual display. 3,726,033, Cl. 40-52.00r.

Berchtold, Helmut; and Vollrath, Friedrich, to Bockemuhl, Johannes, Firma. Device for treating photographic material. 3,726,201, Cl. 95-100.000.

Berger, Albert J. Olefin production. 3,726,938, Cl. 260-683.00d.

Berger, Franz: *See—*

Boyd, Gordon A.; and Berger, Franz, 3,726,571.

Berger, Isaac: *See—*

Cavestany, Adrian V.; and Berger, Isaac, 3,726,267.

Berger, Sidney E.; and Williams, Thomas C., to Union Carbide Corporation. Silicon paper release compositions. 3,726,710, Cl. 117-93.310.

Berndt, Gerhard: *See—*

Eimer, Johannes; Windemuth, Erwin; Berndt, Gerhard; and Koch, Hans-Joachim, 3,726,838.

Bernhardt, Blaise: *See—*

Bernhardt, Blaise; and House, Donald (said House assor. to said), 3,726,256.

Bernhardt, Blaise; and House, Donald, said House assor. to said Bernhardt, Blaise. Demountable horse corral and trailer structure. 3,726,256, Cl. 119-20.000.

Berry Metal Company: *See—*

Greenewald, Herbert, Jr., 3,726,673.

Berstorff, Hermann, Maschinenbau, G.m.b.H.: *See—*

Gersbeck, Rolf, 3,726,627.

Berthelot, Louis Marie Joseph: *See—*

Calla, Pierre Joseph Frederic; Berthelot, Louis Marie Joseph; Sureau, Robert Frederic Michel; and Kremer, Gilbert Victor Henri, 3,726,852.

Berthon, Olivier: *See—*

Desre, Pierre; Berthon, Olivier; and Jacquet, Michel, 3,726,666.

Bertozzi, Eugene R., to Thiokol Chemical Corporation. Polyurethane prepolymers cured with melamine or dicyandiamide. 3,726,835, Cl. 260-75.0nh.

Beta Instrument Company Limited: *See—*

Tole, Walter Roland; and Kyriakis, John, 3,727,167.

Bethlehem Steel Corporation: *See—*

Wechsler, Richard L., 3,725,994.

Betts, Robert E., to United States of America, Army. Support and pressure sealant for carpet roll type solid propellant grain. 3,726,090, Cl. 60-255.000.

Beyer, Henry R.: *See—*

De Sipio, Richard G.; Long, Thomas F.; and Beyer, Henry R., 3,727,142.

Beyer, Herbert: *See—*

Linke, Horst; and Beyer, Herbert, 3,726,097.

Beyerle, Rudi; Stachel, Ingeburg Lydia Katharina; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, to Cassela Farbwerke Mainkur Aktiengesellschaft. Furfuryl amino-coumarins. 3,726,902, Cl. 260-343.20r.

Bibby, Malcolm M.; and Wise, Raleigh W., to Monsanto Company. Apparatus for indicating departure from predetermined limits. 3,726,132, Cl. 73-101.000.

Bickel, Hans; Mueller, Johannes; Bosshardt, Rolf; Peter, Heinrich; and Fechtig, Bruno, to Ciba-Geigy Corporation. Derivatives of 7-aminocephalosporanic acid. 3,726,865, Cl. 260-243.00c.

Billi, G., & C. S.p.A.: *See—*

Conti, Gianni, 3,726,110.

Negri, Ettore, 3,726,111.

Binard, William J.: *See—*

Dye, John F.; and Binard, William J., 3,726,283.

Bindernagel, Ali, to Kocks, Friedrich. Rolling mills. 3,726,119, Cl. 72-234.000.

Binding, Kenneth W.; and Cunningham, Stanley H., to Beatrice Foods Co. Ski clamping device. 3,726,410, Cl. 211-60.0sk.

Bird, Forrest M.; and Pohndorf, Henry L. Non-rebreathing valve assembly and compression bulb resuscititor using same. 3,726,274, Cl. 128-145.800.

Bird Machine Company, Inc.: *See—*

Bolton, Joseph A., III; and Le Blanc, Peter Edmund, 3,726,401.

Birkenmaier, Max; Brandestini, Antonio; and Ros, Mirko Robin; deceased (by Ros, Erika Emma, nee Marti; Siager, Franziska Jelena, nee Ross; and Ros, Cornelia Erica; heirs). Method of prestressing concrete pressure tanks. 3,725,999, Cl. 29-505.000.

Birkenmeyer, Robert D.; and Kagan, Fred, to Upjohn Company, The. $\Delta^{4''4}$-Analogs of lincomycin. 3,726,858, Cl. 260-210.00r.

Birkner, William B., to Morgan Adhesives Company. Method and apparatus to form shrink wrapped coil package. 3,726,396, Cl. 206-52.00r.

Bischoff, Gottfried, Bau Kompl. Gasiengigungs und Wasserruckkuhldnlagen Kommanditgesellschaft: *See—*

Hausberg, Gerhard; and Hegemann, Karl-Rudolf, 3,726,065.

Bishop, Charles D.: *See—*

Mondshine, William G.; and Bishop, Charles D., 3,726,271.

Bissell Inc.: *See—*

Yonkers, Robert A., 3,726,601.

Bjork, Albion P.; and Conner, James M., to Polaroid Corporation. Camera system including operation sequence control. 3,726,198, Cl. 95-37.000.

Black, Sivalls & Bryson, Inc.: *See—*

Arenson, Edwin M., 3,726,101.

Blanch, Julian E.: *See—*

Vanstrom, Reginald E.; and Blanch, Julian E., 3,726,962.

Blanch, Julian E.; Kirkpatrick, William J.; and Sayers, Thomas J., to Stauffer Chemical Company. Calcinated sodium aluminum phosphate, a method of preparing the same and dentifrice compositions containing the same. 3,726,961, Cl. 423-306.000.

Blate, Steven W.; Tschudy, Donald B.; Ross, Robert S.; Mellor, Fred W.; Kifor, Harry T.; and Davidson, William C., to Goodyear Aerospace Corporation. Inflated escape ramps. 3,726,375, Cl. 193-25.00b.

Blecker, Raymond H., to Simmons Company. Bed. 3,725,966, Cl. 5-312.000.

Blevens, Bertram G., to Cissell, W. M., Manufacturing Company. Garment sleever. 3,726,451, Cl. 223-74.000.

BLH Electronics, Inc.: *See—*

Hingel, Fred J.; and Filipov, Alexander, 3,727,180.

Bloembergen, Rudolf H.: *See—*

van der Meij, Pieter H.; and Bloembergen, Rudolf H., 3,726,653.

Blome, Johannes: *See—*

Engelbrecht, Bruno; Walker, Hans; Blome, Johannes; and Jordan, Friedemann, 3,726,405.

Blues, Ernest Thompson: *See—*

Bryce-Smith, Derek; and Blues, Ernest Thompson, 3,726,687.

Blum, Paul, to Transnucleaire, Societe pour les Transports de l'Industrie Nucleaire. Package for the storage and transportation of radioactive substances containing both neutron and gamma radiation absorbing material. 3,727,060, Cl. 250-108.00r.

Blumenthal, Warren B., to NL Industries, Inc. Zirconium tanning. 3,726,637, Cl. 8-94.250.

Blyle, Merrill; and Mitchell, Charles T., Jr., to Grace, W. R., & Co. Slip agent composition for spiral-wound paper cans. 3,726,820, Cl. 260-28.50r.

Bockelmann, Victor G., to United States of America, Navy. Load-controlled disreefing mechanism for parachutes. 3,726,500, Cl. 244-152.000.

Bockemuhl, Johannes, Firma: *See—*

Berchtold, Helmut; and Vollrath, Friedrich, 3,726,201.

Bockly, Erick: *See—*

Pankow, Gerrit; Morcher, Bernhard; Otto, Rigobert; and Bockly, Erick, 3,726,681.

Boden, Heinrich; Von Bonin, Wulf; Kleimann, Helmut; and Mergard, Harald, to Bayer Aktiengesellschaft. Method of molding integral skin polyurethane foams having mold release properties. 3,726,952, Cl. 264-48.000.

Bodkin, Lawrence E. Cuff link lock. 3,725,978, Cl. 24-97.000.

Bodonyl, Janos, to Marconi Company Limited, The. Signal combiner or divides for differing frequencies. 3,727,152, Cl. 333-6.000.

Boeing Company, The: *See—*

Pinckney, Robert L., 3,725,981.

Bogod, Ettie, mesne: *See—*

Wayne, Ronald G., 3,727,214.

Boissevain Manufactured Products Ltd.: *See—*

Ireland, Rainseford H., 3,727,009.

Bok, Lowell D.: *See—*

Warren, John H.; and Bok, Lowell D., 3,726,374.

Bolick, Ranse G., to United States of America, Navy. Integral propellant case ramjet projectile. 3,726,219, Cl. 102-38.000.

Bolie, Victor W. Signal vector recognition system. 3,727,193, Cl. 340-172.500.

Bollen, Romain Henri: *See—*

De Belder, Maurice Hector; Bollen, Romain Henri; Stievenart, Emile Frans; and Thiels, Albert Frans, 3,726,034.

Bolton, Joseph A., III; and Le Blanc, Peter Edmund, to Bird Machine Company, Inc. Screening machine. 3,726,401, Cl. 209-240.000.

Bolyos, Imre. Furniture frame construction. 3,726,561, Cl. 297-440.000.

Bonfield, John H.: *See—*

Belsky, Stephen E.; and Bonfield, John H., 3,726,871.

Bonk, Stanley P.: *See—*

Vasilakis, Andrew D.; and Bonk, Stanley P., 3,726,633.

Boram, William R.: *See—*

Acle, Luis, Jr.; Boram, William R.; and Long, John V., 3,726,831.

Borcherding, Elsa, 20% to Lee, Raymond, Organization, Inc., The. Magnetic educational toy. 3,726,026, Cl. 35-62.000.

Bornfleth, Ulrich; Selonke, Fritz; Koehn, Jurgen; and Lehmann, Frank-Dieter, to Hauni-Werke Korber & Co., KG. Method and apparatus for balanced automatic transport of cigarette trays or the like along an endless path. 3,726,383, Cl. 198-20.00r.

Borovinskaya, Inna Petrovna: *See—*

Merzhanov, Alexandr Grigorievich; Shkiro, Valentin Mikhailovich; and Borovinskaya, Inna Petrovna, 3,726,643.

Borrelli, Patsy J. Minnow pail. 3,726,039, Cl. 43-56.000.

Borrello, Guiseppe. Detesive particulate composition. 3,726,813, Cl. 252-539.000.

Borror, Alan L., to Polaroid Corporation. Film units comprising light reflecting materials and 9-(2-(N-alkyl)-fluorene optical filter agents and processes for their use. 3,726,675, Cl. 96-3.000.

Borsenberger, Paul M.; Guevara, Alfredo R.; and Stahr, Richard W., to Eastman Kodak Company. Dry, instant access electrosensitive recording elements and methods. 3,726,769, Cl. 204-2.000.

Bosch, Robert, G.m.b.H.: *See—*

Keller, Helmut; and Gschwendiner, Horst, 3,727,074.

Bose, Amar G., to Bose Corporation. Loudspeaker system. 3,727,004, Cl. 179-1.00d.

Bose Corporation: *See—*

Bose, Amar G., 3,727,004.

Bosshardt, Rolf: *See—*

Bickel, Hans; Mueller, Johannes; Bosshardt, Rolf; Peter, Heinrich; and Fechtig, Bruno, 3,726,865.

Bostwick, Norvan W.; Snyder, Warren E.; and Darborowski, Ignace J., to AMBAC Industries, Incorporated. Fuel injection pump timing device. 3,726,608, Cl. 417-212.000.

Boswell, Robert F., Jr.: *See—*

Duncan, Robert L.; and Boswell, Robert F., Jr., 3,726,898.

Bothe, Werner, to Maschinenfabrik Hasenclever GmbH. Forging press with adjustable working gap. 3,726,123, Cl. 72-441.000.

Botkin, Lawrence A., to Fruehauf Corporation. Containerized tank system. 3,726,431, Cl. 220-12.000.

Bottenbruch, Ludwig; Michael, Dietrich; and Nielinger, Werner, to Farbenfabriken Bayer Aktiengesellschaft. Homogeneous mixtures of polyamides and hydroxyl-containing polyolefines. 3,726,945, Cl. 260-857.001.

Bottini, Michael Lucien, to Monsanto Company. Opto-isolator devices and method for the fabrication thereof. 3,727,064, Cl. 250-217.00s.

Botts, Marion F., to Chemagro Corporation. Phosphonamidothioates. 3,726,948, Cl. 260-944.000.

Bower, H. W.; and Brannan, Glenn. Banner hanger. 3,726,035, Cl. 40-125.00g.

Bowers, David L.; and Adams, Theodore P., to General Electric Company. Body organ stimulus pulse generator with decoupled timing circuit and voltage multiplier. 3,726,285, Cl. 128-419.00p.

Boyd, Gordon A.; and Berger, Franz, to Autologic Limited. Machine tools. 3,726,571, Cl. 308-3.000.

Boydell, Kenneth Raymond, to Dowty Technical Developments Limited. Fluid-pressure-operable systems. 3,726,089, Cl. 60-422.000.

Boyer, Wilhelm: *See—*

Ritter, Josef; Boyer, Wilhelm; Ritter, Gerhard; and Ritter, Klaus, 3,727,038.

Boynton, Kenneth G.; and Diggins, Thomas R., to Hollis Engineering, Inc. Wave soldering apparatus. 3,726,465, Cl. 228-37.000.

Brack, Karl; Gorey, Edward F.; and Schwuttke, Guenter H., to International Business Machines Corporation. Ion implanted semiconductor structures. 3,726,719, Cl. 148-1.500.

Bradley, Earl C., Jr. Pipe joint retainer gland. 3,726,549, Cl. 285-356.000.

Brandestini, Antonio: *See—*

Birkenmaier, Max; Brandestini, Antonio; and Ros, Mirko Robin, 3,725,999.

Brannan, Glenn: *See—*

Bower, H. W.; and Brannan, Glenn, 3,726,035.

Brant, Victor George. Screens. 3,726,055, Cl. 52-581.000.

Braun, Otto; and Weber, Hans, to Demag Aktiengesellschaft. Device and method for controlling the movement of a deformation roll. 3,726,117, Cl. 72-7.000.

Braunskhweigische Maschinenbauanstalt: *See—*

Mushack, Franz, 3,726,715.

Bray, Donald T., to Desalination Systems, Inc. Reverse osmosis water purifying system with gradient barrier water storage container. 3,726,793, Cl. 210-23.000.

Bredbury, David O. Rectilinear magazine. 3,726,038, Cl. 42-50.000.

Bremer, Norman C., 1/2 to Wallace, Maury. Fast-response two-phase thermometer. 3,726,141, Cl. 73-368.300.

Brengman, Fred C.; Brengman, Keith; and Anderson, James L., to Societe d'Assistance Technique pour Produits Nestle S.A. Comminuting method and apparatus. 3,726,208, Cl. 99-233.110.

Brengman, Keith: *See—*

Brengman, Fred C.; Brengman, Keith; and Anderson, James L., 3,726,208.

Brennan, Lawrence E.; and Reed, Irving S., to Technology Service Corporation. Adaptive receiving array method and apparatus for MTI radar. 3,727,220, Cl. 343-7.00a.

Brenneisen, Manfred, to Schwanog, Schwarzwalder Normteile Siegfried Guntert KG. Measuring device. 3,726,018, Cl. 33-147.00j.

Breslow, Bertram A.: *See—*

Kruse, Howard W.; Breslow, Bertram A.; and Szypulski, Raymond W., 3,726,728.

Breuer, Oswald: *See—*

Hauschopp, Alois; Ostrop, Berthold; Breuer, Oswald; and Steinkuhl, Bernd, 3,726,564.

Breyer, Norman N.; and Mostovoy, Sheldon, to LaSalle Steel Company. Elimination of lead embrittlement in steel. 3,726,669, Cl. 75-129.000.

BRI Corporation, mesne: *See—*

Howard, William A., 3,726,265.

Britannic Majesty's Government of the: *See—*

Arenson, Edwin M., 3,726,085.

British Aluminum Company, Limited, The: *See—*

Clegg, Robert Stanley, 3,726,332.

British Petroleum Company Limited: *See—*

Squire, John Mansel; and Gammon, Geoffrey James, 3,726,846.

British Petroleum Company Limited, The: *See—*

Allum, Keith George; McKenzie, Samuel; and Pitkethly, Robert Chalmers, 3,726,809.

Silver, Howard Bernard, 3,726,798.

Squire, John Mansel; and Gammon, Geoffrey James, 3,726,848.

British Railways Board: *See—*

Davies, John; Lones, Emyr Gwyn; Hodgson, William Henry; Young, John Dixon; and Llewellyn, David Thomas, 3,726,724.

British Steel Corporation: *See—*

Davies, John; Lones, Emyr Gwyn; Hodgson, William Henry; Young, John Dixon; and Llewellyn, David Thomas, 3,726,724.

Broadt, David R.: *See—*

Armstrong, Donald E.; Broadt, David R.; and Vetere, John J., 3,727,040.

Bromberg, Henry, 1/2 to Wang, Herbert. Molding apparatus. 3,726,626, Cl. 425-346.000.

Brown, Cicero C. Extensible coupling for well pipes. 3,726,546, Cl. 285-91.000.

Brown, Henry C. Speed-reducing coupling. 3,726,158, Cl. 74-804.000.

Brown, Milton M.: *See—*

Beers, Eugene; Brown, Milton M.; Eckes, William A.; and Penaluna, William A., 3,726,380.

Brown, Patrick M.; and Maselli, James M., to Grace, W. R., & Co. Process for preparing N-alkylamines. 3,726,926, Cl. 260-585.00r.

Brunie, Jean Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, to Rhone-Poulenc S.A. Process for preparing adipic acid. 3,726,917, Cl. 260-533.00c.

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Bryan, John F., Jr., to Trakwork Equipment Company. Track welding system. 3,726,232, Cl. 104-15.000.

Bryce, William Dean, to United Kingdom of Great Britain and Northern Ireland, Minister of Aviation Supply in Her Britannic Majesty's Government of the. Combustion systems. 3,726,087, Cl. 60-39.650.

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Brzoska, Leonard M. Tool for applying suspension clamps to power lines. 3,726,160, Cl. 81-3.0cp.

Buchanan, James B., to Du Pont de Nemours, E. I., and Company. Substituted O-carbamylhydroxamates. 3,726,908, Cl. 260-453.00r.

Buckley, Frederick; Melnyk, George; and Wolfe, Bruce A., to International Business Machines Corporation. Missing type detector. 3,727,075, Cl. 307-149.000.

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Bukovich, George D.; Vos, LeRoy A.; and Woehler, Gary B., to Sperry Rand Corporation. RHD-Card transportation and positioning. 3,726,519, Cl. 271-3.000.

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Bunker-Ramo Corporation, The: *See—*

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Bunting, Robert L., Jr. Continuous casting process. 3,726,331, Cl. 164-57.000.

Burbach, Henry Edward, to Combustion Engineering, Inc. Method and apparatus useful in combustion gas purification. 3,726,239, Cl. 110-1.00j.

Burckhardt, Manfred H., to Daimler-Benz Aktiengesellschaft. Device for preventing the over-braking of vehicles with hydraulic brake installations. 3,726,567, Cl. 303-21.00f.

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Burgio, Antonio. Separable button assembly. 3,725,980, Cl. 24-108.000.

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Buroni, Vittorio, to Industrie Pirelli Societa Per Azioni. Method for preparing an oil-filled cable having a corrugated sheath for cutting and cable so prepared. 3,726,008, Cl. 29-628.000.

- Burroughs Corporation: *See—*
  - Finlay, Joseph C., 3,727,141.
- Burwell, Bruce K.; and Powell, Kenneth, to Westinghouse Electric Corporation. Tuned cavity device. 3,727,099, Cl. 315-39.590.
- Bush, Elsmore W., to Cubic Corporation. Navigation aid. 3,727,226, Cl. 343-112.0pt.
- Bushey, Albert H.: *See—*
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- Bushin, Alexandr Nikitich: *See—*
  - Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Turian, Yakov Iosifovich; Kirnos, Yakov Yakovlevich; Kolobikhin, Valentin Alexandrovich; Baranova, Pavla Sergeevna; Sherashov, Vadim; Rastvorov, Jury Nikolaevich; Emelyanova, Elena Nikolaevna; and Siahkina, Irina Mikhailovna, 3,726,937.
- Buss Aktiengesellschaft: *See—*
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- Butcher, Louis M., to Aluminum Company of America. Electric coil. 3,727,163, Cl. 336-206.000.
- Butterfield, Delwin W. Pump mounting assembly. 3,726,610, Cl. 417-360.000.
- Bybvig, Douglas H.: *See—*
  - Koshar, Robert J.; Wright, Charles D.; Zollinger, Joseph La Mar; Bybvig, Douglas H.; and Husted, Donald R., 3,726,903.
- Byrnes, Edward R.: *See—*
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- Cade, Philip J., to Electronics Corporation of America. Flame sensor control circuit. 3,727,073, Cl. 307-117.000.
- Calder, Brooke J., Jr.; Risko, Bernard L.; and Belock, Robert J., to Austin Powder Company. Detonation device and method for making the same. 3,726,216, Cl. 102-27.00r.
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- Calla, Pierre Joseph Frederic; Berthelot, Louis Marie Joseph; Sureau, Robert Frederic Michel; and Kremer, Gilbert Victor Henri, to Ugine Kuhlmann. Bicarbonate salts of indazolium and benzimidazolium dyestuffs. 3,726,852, Cl. 260-157.000.
- Cameron Iron Works, Inc.: *See—*
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  - Matsumoto, Kazuya, 3,726,595.
  - Ogiso, Mitsutoshi; and Ishikawa, Mitsuo, 3,726,200.
  - Tanaka, Hiroshi; and Itoh, Yoshio, 3,726,782.
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- Cappe, David B., to Parke, Davis & Company. Organic amides and methods for their production. 3,726,880, Cl. 260-294.80e.
- Capra, Uberto Italy. Control system for horizontal scrubbing brush of vehicle-washing station. 3,725,967, Cl. 15-21.00e.
- Carborundum Company, The: *See—*
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- Carmack, Philip W.; and Sweigart, David J., to United States of America, Army. Off-axis alignment device. 3,726,600, Cl. 356-253.000.
- Carmanq Richard J.; and Benson, Paul R., to Cameron Iron Works, Inc. Pressure control apparatus. 3,726,307, Cl. 137-487.500.
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- Carrier Corporation: *See—*
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- Carter, William A., Jr.; and Preban, Arnold G., to Inland Steel Company. Process for galvanizing a ferrous metal article. 3,726,705, Cl. 117-51.000.
- Cartier, Michael D.; and Groff, Gaylord L., to Minnesota Mining and Manufacturing Company. Temperature-responsive electrical switch. 3,727,164, Cl. 337-405.000.
- Carver, Robert W. Amplifier with protective energy limiter circuit components. 3,727,148, Cl. 330-207.00p.
- Casadevall, James L., to Martin-Marietta Corporation. High performance ablative material construction. 3,726,751, Cl. 161-58.000.
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  - Wetherill, Richard H.; and Gregg, Anton T., 3,726,570.
- Caterpiller Tractor Company: *See—*
  - Grooss, Frank A., 3,726,540.
- Catlin, Richard Glenn, to Commercial Communications Ltd. Telephone security device. 3,727,007, Cl. 179-18.0da.
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- Cavestany, Adrian V.; and Berger, Isaac, to Carrier Corporation. Flue gas venting arrangement. 3,726,267, Cl. 126-85.00b.
- Cebalo, Tony, to Air Products and Chemicals, Inc. Certain 5-sulfamoyl-1,3,4-thiadiazol-2-ylureas. 3,726,892, Cl. 260-306.80d.
- Cegedur GP: *See—*
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- Chen, Ying-Ho; and Lunsford, Carl Dalton, to Robins, A. H., Company, Incorporated. 2-[p-Phenylbenzyl] oxazolines. 3,726,893, Cl. 260-307.00f.
- Cheney, Thomas K.; Patterson, Albert D.; Rondina, Henry E.; and Watts, James A., to North Electric Company. Central processing system having preloader and data handling units external to the processor control unit. 3,727,192, Cl. 340-172.500.
- Cherio, Vittorii; and Mignone, Giuseppe. Semi-automatic apparatus for filling foodstuff into tubular nettings. 3,726,059, Cl. 53-64.000.
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- Chevron Research Company: *See—*
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- Chisholm, Douglas S., to Dow Chemical Company, The. Doubled loop inverting and conveying apparatus. 3,726,386, Cl. 198-33.0ac.
- Chiu, Thomas T., to Dow Chemical Company, The. Wash-resistant antistatic coating compositions. 3,726,821, Cl. 260-29.6nr.
- Chow, Shing Cheung. Small sized stroboscopic tube for photographic use. 3,727,089, Cl. 313-178.000.
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- Christensen, Sheldon L. Livestock scale. 3,726,353, Cl. 177-208.000.
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- Church, George W., Jr.: *See—*
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- Church, Victor E.; and Huber, William B., to Motorola, Inc. Cartridge locking mechanism for a miniature tape player. 3,726,456, Cl. 226-89.000.
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  - Habicht, Ernst; Libis, Bernard; and Zergenyi, Janos, 3,726,904.
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- Ciba-Geigy Limited: *See—*
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- Cichy, Paul, to Carborundum Company, The. Apparatus for producing oxide refractory material having fine crystal structure. 3,726,621, Cl. 425-6.000.

- Ciskowski, Jerome C. Method for making shaded artwork. 3,726,702, Cl. 117-37.00r.
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- Clark, Kenneth M., to Deutsch Company Electronic Components Division, The. Electrical connector. 3,727,172, Cl. 339-59.00m.
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- Colas, Francois, to Cegedur GP. Load-carrying pallet. 3,726,236, Cl. 108-51.000.
- Coldren, Arthur P.; and Cryderman, Robert L., to American Metal Climax, Inc. Hot-rolled low alloy steels. 3,726,723, Cl. 148-12.000.
- Cole, Ned S. Muscle exercising device. 3,726,273, Cl. 128-2.00s.
- Colemin, Thomas R. Tree felling machine. 3,726,326, Cl. 144-34.00r.
- Coles, Sidney J.; Teal, Bernard C.; and Waye, Gordon D., to Westinghouse Canada Limited. Bus connector assembly. 3,727,171, Cl. 339-22.00b.
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- Commissariat a l'Energie Atomique: *See—*
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- Cook, Charles E. Fertilizer dispenser. 3,726,304, Cl. 137-268.000.
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  - Hares, George B.; and Morgan, David W., 3,726,698.
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- Cox, Percy T.; and Richter, Albert P., Jr., to Texaco Inc. Calibrating a carrier erase magnetic tape analog recording system. 3,727,012, Cl. 179-100.20k.
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  - Arangelovich, Dan; and Dahl, Walter Charles, 3,726,244.
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  - Burckhardt, Manfred H., 3,726,567.
  - Helmer, Josef, 3,726,153.
  - Wilfert, Karl; and Barenyi, Bela, 3,726,559.
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- Dalton, Thomas B., to Westran Corporation. Assist mechanism for fold-up landing gear. 3,726,543, Cl. 280-150.500.
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- Dankel, Douglas D.: *See*—
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- Davis, Russell S., to I-T-E Imperial Corporation. Weatherproof bus duct. 3,726,988, Cl. 174-68.00b.
- Davis, Steven S.; and Durrant, Morris F., to Envirotech Corporation. Agitator mounting for drum filters. 3,726,510, Cl. 259-101.000.
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  - De Troyer, Georges D.; and De Santis, Raymond P., 3,726,622.
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  - Nickerson, James K., 3,726,845.
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  - Bottenbruch, Ludwig; Michael, Dietrich; and Nielinger, Werner, 3,726,945.
  - Gollmer, Gottfried; Wolz, Hermann; and von Friedrich, Adolf, 3,726,890.
  - Schliebs, Reinhard; Schlor, Hanshelmut; and Homeyer, Bernhard, 3,726,973.
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  - Anthony, Anne-Marie, nee Barbier; Dembinski, Krzysztof; Faucher, Michele, nee Dupre; Le Fleury, Fontenay; and Dupont, Lucien, 3,726,984.

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  - Nicholls, Lawrence G., 3,726,539.
- Given, Richard A., 30% to Canada-Cities Service, Ltd., 30% to Imperial Oil Limited, 30% to Atlantic Richfield Canada, Ltd. and 10% to Gulf Oil Canada Limited. Process for integration of extraction processing streams. 3,726,786, Cl. 208-11.000.
- GKN Sankey Limited: *See—*
  - Sharp, Herbert John; and Humphrey, Victor William Stanley, 3,725,995.
- Gladwin, Floyd R. Trash compactor. 3,726,211, Cl. 100-100.000.
- Glanz, Ronald P.; and Shelor, Clifford D., to Westvaco Corporation. Direction change apparatus for sheet conveyance systems. 3,726,168, Cl. 83-79.000.
- Glass, Floyd M., to United States of America, Atomic Energy Commission. Small-current integrator. 3,727,077, Cl. 307-229.000.

- Glasser, Joseph. Treatment of arthritis with combinations of antihistaminic compounds and dioretics. 3,726,976, Cl. 424-246.000.
- Glav, Ola, to Aktiebolaget Carl Munters, mesne. Exchanger packing. 3,726,706, Cl. 117-62.000.
- Glaxo Laboratories Limited: *See—*
  - Phillipps, Gordon Hanley; Stephenson, Leslie; and Newall, Christopher Earle, 3,726,864.
- Glosten, Lawrence R. Notched stern barge and towboat combination. 3,726,248, Cl. 114-235.00r.
- Gmitter, George T.; and Mudde, John P., to General Tire & Rubber Company, The. Polymerization of episulfides using metal containing catalysts. 3,726,840, Cl. 260-79.000.
- Gnau, Donald V.; and Pierstorff, Buckley C., to Cornell Aeronautical Laboratory, Inc. Optical processing system. 3,726,997, Cl. 178-6.800.
- Gobel, Le Moyne D.: *See—*
  - Williams, James C.; Purdy, Karl T.; and Gobel, Le Moyne D., 3,726,161.
- Goetz, Peter B.; and Bullert, Wilbert E., to General Dynamics Corporation. Electric motor with facility for liquid cooling. 3,727,085, Cl. 310-54.000.
- Goff, Riymon L.; and Venable, Frederick D., to TRW Inc. Hydraulic device. 3,726,356, Cl. 180-66.00f.
- Gold, Edward, to Philco-Ford Corporation. Thermal mechanical processing of aluminum alloy. 3,726,725, Cl. 148-12.700.
- Goldhofer, Alois. Loading and unloading device. 3,726,421, Cl. 214-77.00r.
- Goldmann, Lewis S.; Jeannotte, Dexter A.; and Krall, Bogdan, to International Business Machines Corporation. Zero-insertion force connector. 3,727,173, Cl. 339-74.00r.
- Gollmer, Gottfried; Wolz, Hermann; and von Friedrich, Adolf, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of high purity benzthiazyl-sulphenamides. 3,726,890, Cl. 260-306.60a.
- Goodrich, B. F.q Company, The: *See—*
  - Warren, John H.; and Bok, Lowell D., 3,726,374.
- Goodrich, George M.; Williams, Robert G.; and Webbere, Fred J., to General Motors Corporation. Control of continuous casting operation. 3,726,333, Cl. 164-82.000.
- Goodrow, Marvin H., to Shell Oil Company. Alkyl(phenyl-C_4-)substituted 2,2-dichlorovinyl phosphates. 3,726,949, Cl. 260-951.000.
- Goodyear Aerospace Corporation: *See—*
  - Blate, Steven W.; Tschudy, Donald B.; Ross, Robert S.; Mellor, Fred W.; Kifor, Harry T.; and Davidson, William C., 3,726,375.
  - Graham, Leroy C., 3,727,219.
- Gordon, Aby Abraham. Security system. 3,726,238, Cl. 109-2.000.
- Gorey, Edward F.: *See—*
  - Brack, Karl; Gorey, Edward F.; and Schwuttke, Guenter H., 3,726,719.
- Gosteli, Jacques: *See—*
  - Schindler, Walter, 3,726,897.
- Gotham, Robert W.; McKnight, Robert J.; and Neuwirth, Frank F., to Unex Conveying Systems Inc. Conveyor assembly. 3,726,376, Cl. 193-35.00r.
- Gottlieb, Milton, to Westinghouse Electric Corporation. Display of manifestation. 3,727,001, Cl. 178-7.30d.
- Gouget, Jacques Maurice. Safety urinal. 3,725,962, Cl. 4-110.000.
- Gouret, Claude J.: *See—*
  - Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; Gouret, Claude J.; Thomas, Janine M.; and Huguet, Gerard J., 3,726,900.
- Goutos, George. Apparatus for removing particulate matter from a filter chamber. 3,726,402, Cl. 210-107.000.
- Graber, Adolf Wilhelm. Process and apparatus for the manufacture of pile fabrics. 3,725,984, Cl. 28-4.00r.
- Grabovac, Bosko. Dial torque wrench. 3,726,134, Cl. 73-139.000.
- Grace, W. R., & Co.: *See—*
  - Blyle, Merrill; and Mitchell, Charles T., Jr., 3,726,820.
  - Brown, Patrick M.; and Maselli, James M., 3,726,926.
  - Ketley, Arthur Donald; Kehr, Clifton Leroy; and Touchette, Jennie Lee, 3,726,676.
- Graham, Leroy C., to Goodyear Aerospace Corporation. Interferometer null multiplication technique and apparatus. 3,727,219, Cl. 343-5.0cm.
- Gramdy, Andrew J., to United States of America, Army. Universal smoke marking grenade for dry and inundated areas. 3,726,226, Cl. 102-65.000.
- Grand, Paul Sheldon, to Colgate-Palmolive Company. Compositions containing aminopolyureylene resin. 3,726,815, Cl. 252-544.000.
- Grant, Donald S., to Merrow Machine Company. Connection of tubular element to a garment. 3,725,955, Cl. 2-90.000.
- Grant, Ronald D., to JFD Electronics Corporation. Director array for antennas. 3,727,232, Cl. 343-815.000.
- Graves, Howard K.: *See—*
  - Szpak, Anthony D.; and Graves, Howard K., 3,726,998.
- Graves, Paul D. Rotary internal combustion engine. 3,726,259, Cl. 123-8.230.
- Gray Tool Company: *See—*
  - Holbert, Marvin L., Jr., 3,726,341.
- Grayson, Allan S.: *See—*
  - Grayson, Barry H.; and Grayson, Allan S., 3,726,012.
- Grayson, Barry H.; and Grayson, Allan S. Dental apparatus with enhanced handpiece manipulability. 3,726,012, Cl. 32-22.000.
- Greenberg, Leon Stanley: *See—*
  - Thomas, Albert William; Neilson, John Manning Savidge; and Greenberg, Leon Stanley, 3,727,116.
- Greene, George J., Jr., to Greene Research Engineering Co Pump. 3,726,612, Cl. 417-454.000.
- Greene Research Engineering Co.: *See—*
  - Greene, George J., Jr., 3,726,612.
- Greenewald, Herbert, Jr., to Berry Metal Company. Method of making alloyed copper. 3,726,673, Cl. 75-153.000.
- Greenspan, George: *See—*
  - Leeming, Michael R. G.; and Greenspan, George, 3,726,765.
- Greenstein, Bernard; Langston, Perry Robert, Jr.; Narken, Bernt; and Turetzky, Melvin Norris, to International Business Machines Corporation. Process for forming a multi-layer glass-metal module adaptable for integral mounting to a dissimilar refractory sustrate. 3,726,002, Cl. 29-577.000.
- Gref, Hans: *See—*
  - Herzhoff, Peter; Gref, Hans; and Schweicher, Wolfgang, 3,726,628.
- Gregg, Anton T.: *See—*
  - Wetherill, Richard H.; and Gregg, Anton T., 3,726,570.
- Grenda, Hans August Herbert, to Holzer Patent AG. Fork-shaped contact spring to produce a separable electric connection. 3,727,175, Cl. 339-258.00r.
- Gresch, Pratteln Walter: *See—*
  - Weber, Wilhelm G.; Gresch, Pratteln Walter; and Stojanovic, Muttenz Ivan, 3,726,648.
- Griffee, Leslie V.: *See—*
  - Galloway, John W.; and Griffee, Leslie V., 3,727,231.
- Griffis, Roy A.; Rauterkus, L. Thomas; and Torzala, Terence, 1/2 to Systems Research Laboratories, Inc. and 1/2 to Trans-Med Systems Inc. Pulmonary information transmission system. 3,726,270, Cl. 128-2.080.
- Grim, John R.; and Hunter, Alan D., to Trane Company, The. Air duct connector. 3,726,545, Cl. 285-3.000.
- Groff, Gaylord L.: *See—*
  - Cartier, Michael D.; and Groff, Gaylord L., 3,727,164.
- Grooss, Frank A., to Caterpiller Tractor Company. Tandem axle suspension system for heavy-duty vehicle. 3,726,540, Cl. 280-104.50a.
- Gropper, Hans: *See—*
  - Trieschmann, Hans-Georg; Zizlsperger, Johann; Gropper, Hans; Stark, Kurt; and Fauth, Karl Heinz, 3,726,842.
- Grundig E.M.V. Elektro-Mechanische: *See—*
  - Traub, Karl, 3,727,138.
- Grunert, Kurt A.; Rehm, Thomas R.; and Paton, Charles R., to Westinghouse Electric Corporation. Electric control device. 3,727,157, Cl. 335-132.000.
- Gschwendiner, Horst: *See—*
  - Keller, Helmut; and Gschwendiner, Horst, 3,727,074.
- GTE Sylvania Incorporated: *See—*
  - Allgaier, William A., 3,727,088.
  - Armstrong, Donald E.; Broadt, David R.; and Vetere, John J., 3,727,040.
  - Mosier, John L.; and Powley, George D., 3,727,170.
  - Roeber, Henry W., 3,727,094.
- Guevara, Alfredo R.: *See—*
  - Borsenberger, Paul M.; Guevara, Alfredo R.; and Stahr, Richard W., 3,726,769.
- Guhde, Donald Joseph, to Lubrizol Corporation, The. Metal conditioning compositions. 3,726,720, Cl. 148-6.15r.
- Gulf Oil Canada Limited: *See—*
  - Given, Richard A., 3,726,786.
- Gunnarson, William A.: *See—*
  - Taylor, Hugh C.; and Gunnarson, William A., 3,727,228.
- Guntner, Corinne Siebelt: *See—*
  - Siebelt, Raymond J., 3,726,188.
- Gustafson, David R.: *See—*
  - Parker, Joseph D.; and Gustafson, David R., 3,726,758.
- Guth, Lauren W., to General Electric Company. Rack level adjustment apparatus in an appliance cabinet. 3,726,580, Cl. 312-351.000.
- Gutman, Arnold D., to Stauffer Chemical Company. Insecticidal and acaricidal methods using oximino phosphates and phosphonates. 3,726,974, Cl. 424-210.000.
- Gutte, Richard: *See—*
  - Dalibor, Horst; Stenzel, Gunter; and Gutte, Richard, 3,726,739.
- Guy, Calvin L. Backseat object detector for police vehicle. 3,727,211, Cl. 340-278.000.
- Gwozdz, Joseph W., to McKinney Manufacturing Company, mesne. Hinge with radial and thrust bearings. 3,725,973, Cl. 16-136.000.
- Gysin, Leonhard: *See—*
  - Schindler, Walter, 3,726,897.
- Haaglund A.B., & Soner: *See—*
  - Gelfgren, Erik Kurt Hannes; Peterson, Karl Verner; and Sundin, Olle, 3,726,382.
- Haas, Herbert: *See—*
  - Munk, Edmund; Haas, Herbert; and Weinberg, Gerd, 3,726,954.
- Haas, Rudy M. Chemical tracer method of and structure for determination of instantaneous and total fluid flow mass and volume. 3,727,048, Cl. 250-43.5mr.
- Haas, Werner E. L.: *See—*
  - Adams, James E.; and Haas, Werner E. L., 3,726,584.
- Habermeier, Juergen; Batzer, Hans; and Porrtt, Daniel, to Ciba-Geigy Limited. Diglycidyl derivatives of compounds containing two N-heterocyclic rings. 3,726,895, Cl. 260-309.500.

Habicht, Ernst; Libis, Bernard; and Zergenyi, Janos, to Ciba-Geigy Corporation. 2,3-Dihydro-5-(2-nitro-1-alkenyl)-benzofuran-2- carboxylic acid and pharmaceutically acceptable salts. 3,726,904, Cl. 260-346.20r.

Hackmyer, Saul A. Self-lathering shaver. 3,726,009, Cl. 30-41.000.

Hafner, Otto Paul. Means for fastening overlying metal sheets. 3,726,000, Cl. 29-21.100.

Hagen, Siegfried Hendrik, to U.S. Philips Corporation. Voltage-dependent resistor. 3,727,165, Cl. 338-20.000.

Haile, Ernest. Planting wall. 3,726,042, Cl. 47-34.120.

Haines, Robert S., to International Business Machines Corporation. Magnetic recording media including compositions of carbon modified chromium oxide. 3,726,714, Cl. 117-235.000.

Halasa, Adel F., to Firestone Tire & Rubber Company, The. Process for copolymerizing conjugated dienes with monovinyl aromatic monomers. 3,726,844, Cl. 260-83.700.

Hale Fire Pump Company: *See—*

Eberhardt, H. Alfred, 3,726,308.

Hales, John H. Inflatable finger for a drapery eating and stretching apparatus. 3,726,448, Cl. 223-32.000.

Haley, John S.: *See—*

Phillips, Alfred R.; Haley, John S.; and Clifton, Edward A., 3,726,321.

Halik, Michael, to United States of America, Army. Liquid timing device. 3,726,518, Cl. 267-157.000.

Hall, Richard H. Pocket article and method of making the same. 3,725,960, Cl. 2-248.000.

Hamaguchi, Kazuo: *See—*

Takemura, Yasuo; and Hamaguchi, Kazuo, 3,726,991.

Hamel, Richard G.: *See—*

White, Marvin H.; Hamel, Richard G.; and O'Sullivan, David D., 3,727,209.

Hamilton, Peter W., to Procter & Gamble Company, The. Electromagnetic heating and sealing. 3,727,022, Cl. 219-10.430.

Hamner, Glen P.: *See—*

Kimberlin, Charles N., Jr.; and Hamner, Glen P., 3,726,791.

Hanchett, George Draper, to RCA Corporation. Switching circuits. 3,727,080, Cl. 307-252.00b.

Hanford, George W.: *See—*

Falcone, Joseph R.; Falcone, Anthony, Jr.; and Hanford, George W., 3,726,430.

Hansen, Gerhard. Apparatus for labelling containers made of thermoplastic synthetic material. 3,726,746, Cl. 156-566.000.

Hanson, Ivor G.: *See—*

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Harada, Masatoshi: *See—*

Higaki, Shigeo; Harada, Masatoshi; Yashiro, Tadao; and Ohminato, Hideaki, 3,726,986.

Hares, George B.; and Morgan, David W., to Corning Glass Works. Optical glass with controlled ultraviolet transmission. 3,726,698, Cl. 106-54.000.

Harnden, John D., Jr.: *See—*

Jones, Clifford M.; and Harnden, John D., Jr., 3,727,185.

Harnden, Warren B.; and Morrill, Eugene H., to Illinois National Bank & Trust Company. Electroflotation apparatus. 3,726,780, Cl. 204-275.000.

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Harper, David William: *See—*

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Harrell, Larry D.; and Daniels, Jesse, to Lilliston Corporation. Peanut digger shaker inverter. 3,726,345, Cl. 171-101.000.

Harris, Brantly. Portable spray apparatus. 3,726,443, Cl. 222-333.000.

Harris, David Andrew; and Hart, Bruce Edward, to Johns-Manville Corporation. Textural panel. 3,726,056, Cl. 52-506.000.

Harris, Edward J., to Harris, Frances. Process of manufacturing radial tires. 3,726,735, Cl. 156-132.000.

Harris, Edward J., to Harris, Frances. Tire builder. 3,726,742, Cl. 156-400.000.

Harris, Frances: *See—*

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Harris, Edward J., 3,726,742.

Harris, Norman E., to United States of America, Army. Dehydrated food coated with edible oil, gelatin glycerin aqueous emulsion. 3,726,693, Cl. 99-199.000.

Hart, Bruce Edward: *See—*

Harris, David Andrew; and Hart, Bruce Edward, 3,726,056.

Harvey, Ian J., to Westinghouse Electric Corporation. Vacuum-type circuit interrupter with grounded metallic housing and removable operating mechanism tray. 3,727,019, Cl. 200-144.00b.

Harvey, R. J., Instrument Corporation: *See—*

Kravetz, Michael A.; and Schreiber, Eric C., 3,726,646.

Hasegawa, Goro; and Yamazaki, Keizo, to Canon Kabushiki Kaisha. Apparatus for automatic electronic flash photography. 3,726,197, Cl. 95-10.0ce.

Hashizume, Kiyoshi; Shigemitsu, Masahiro; Kumano, Iaso; Miyatake, Masayuki; Katsura, Hiromitsu; and Oshima, Masahiro, to Toyo Ink Manufacturing Co., Ltd. Quinacridone pigment and method of making the same. 3,726,873, Cl. 260-279.00r.

Hasselblad, Fritz Victor: *See—*

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Hastings Manufacturing Company: *See—*

Quinlan, William J.; and Huver, Lawrence L., 3,725,971.

Shaltis, Robert J., 3,726,403.

Hatten, Jimmy L.; Nauck, Kurt R., Jr.; and Mims, Samuel S., to El Paso Products Company. Esterification and extraction process. 3,726,888, Cl. 260-485.00s.

Hauni-Werke Korber & Co., KG: *See—*

Bornfleth, Ulrich; Selonke, Fritz; Koehn, Jurgen; and Lehmann, Frank-Dieter, 3,726,383.

Hausberg, Gerhard; and Hegemann, Karl-Rudolf, to Bischoff, Gottfried, Bau Kompl. Gasiengigungs und Wasserruckkuhldnlagen Kommanditgesellschaft. Apparatus for cleaning flue gases of blast furnaces and the like. 3,726,065, Cl. 55-223.000.

Hauschopp, Alois; Ostrop, Berthold; Breuer, Oswald; and Steinkuhl, Bernd, to Gewerkschaft Eisenhutte Westfalia. Chain guiding structure for longwall mining. 3,726,564, Cl. 299-34.000.

Hawk, Grover G.; Martin, Frank A.; and Poulson, Tracy A., to Hoover Company, The. Methods of treating electrical heating elements. 3,726,713, Cl. 117-231.000.

Hawkins, Paul Maddison, to Minnesota Mining and Manufacturing Company. Lock and alarm device. 3,727,210, Cl. 340-274.000.

Hawkins, Peter A. Taylor, 1/2 to Pattersons Venture Limited. Bale bander. 3,726,210, Cl. 100-7.000.

Hawley, Roger S.; and Kuntz, Irving, to Esso Research and Engineering Company. Compounding polyether elastomers. 3,726,828, Cl. 260-33.6aq.

Haws, Gerald W.: *See—*

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Hays, John A. Combined closure and dispensing cap for tubes and bottles. 3,726,446, Cl. 222-513.000.

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Hegemann, Karl-Rudolf: *See—*

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Heidenwolf, Hermann, to United States of America, Army. High sensitivity electron beam magnetometer. 3,727,127, Cl. 324-44.000.

Heimann, Richard H.; Kassel, Aaron; and Kopelman, Donald F., to Technicon Instruments Corporation. Method and device for introducing for mixing a first liquid into a second liquid. 3,726,297, Cl. 137-1.000.

Heinert, Dietrich H.: *See—*

Woo, James T. K.; Nowak, Robert M.; and Heinert, Dietrich H., 3,726,886.

Heinrichs, Roland P., to Uniwave, Inc. Coalescing nozzle. 3,726,482, Cl. 239-467.000.

Heist, C. H., Corporation: *See—*

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Helava, Uuno V.; Chapelle, Walter E.; and Hornbuckle, John A., to Bendix Corporation, The. Stereoplotting apparatus for correlating image points disposed along epipolar lines. 3,726,591, Cl. 356-2.000.

Hellmann, John V.; and Richwine, Carl L., to General Motors Corporation. Method of making a disk tape commutator. 3,726,003, Cl. 29-597.000.

Helmer, Josef, to Daimler-Benz Aktiengesellschaft. Mounting supports for the ends of brake bands of automatic transmissions. 3,726,153, Cl. 74-606.000.

Helms, Harold E.; Schwedland, Ronald P.; and Waters, Floyd, Jr., to General Motors Corporation. Cooled jet flap vane. 3,726,604, Cl. 415-115.000.

Helwig, Carl W. Portable wig dryer. 3,726,022, Cl. 34-103.000.

Hemisphere Novelties, Inc.: *See—*

Wolfeld, Max, 3,725,977.

Hendrickson, Sandra E. Method of cutting cloth for making clothes from patterns and apparatus therefor. 3,726,165, Cl. 83-13.000.

Henkel & Cie GmbH: *See—*

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Henry, David W., to United States of America, Army. 1,3-bis(4-chlorophenyl)-2-propen-1-one guanylhydrazone hydrochloride and analogs thereof useful as antimalarials. 3,726,920, Cl. 260-564.00f.

Henschen, Homer Ernst; and Zell, Dale Richard, to AMP Incorporated. Flat cable harness. 3,727,168, Cl. 339-17.00f.

Hepher, Martin; and Sperry, John Arthur, to Norprint Limited Autotype Division. Photopolymerisation with leuco indigo dye derivatives. 3,726,677, Cl. 96-33.000.

Herbert, Donald G., to Singer Company, The. Print hammer with high repetition rate. 3,726,213, Cl. 101-93.00c.

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Van Paesschen, August Jean; Herbots, Joseph Antoine; and Van Gossum, Lucien Janbaptist, 3,726,682.

Herbstritt, Karl, to Rolls-Royce Limited. Engine fuel supply control system. 3,726,086, Cl. 60-39.28r.

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Feild, George B.; and Kim, Charles W., 3,726,079.

Mirolli, Joseph E.; and Vandenberg, Edwin J., 3,726,841.

Herrick, Norman A., to Picker Corporation. X-ray inspection apparatus logic circuitry. 3,727,054, Cl. 250-83.30d.

Herrmann, Helmut Friedrich; and Dizon, Rolando M., to Metalloxyd Gesellschaft mit beschrankter Haftung. Apparatus for producing an aluminum foil or band with an electrically insulating or decorative coating thereon. 3,726,783, Cl. 204-300.000.

Herwig, Heinz; Mueller, Manfred; and Schoenefeld, Paul, to Filterwerk Mann & Hummel GmbH. Apparatus to regulate the intake air temperature of combustion engine prime movers. 3,726,512, Cl. 261-39.00b.

Herzhoff, Peter; Gref, Hans; and Schweicher, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Extruder for the production of foils. 3,726,628, Cl. 425-461.000.

Hesselmann, Heinz, to Conradty, C. Screw nipple connection for carbon and graphite electrodes. 3,727,095, Cl. 313-357.000.

Hesston Corporation: *See—*

Long, William D., 3,726,047.

Heuser, Gunther; and Vollkommer, Norbert, to Dynamit Nobel Aktiengesellschaft. Stabilization of polyesters. 3,726,830, Cl. 260-45.80a.

Heusler, Helmut; and Maly, Dieter, to Orenstein & Koppel Aktiengesellschaft. Hydraulically operable apparatus for making slit trenches. 3,726,349, Cl. 175-45.000.

Heyman, Albert A., to Maryland Cup Corporation. Method and apparatus for measuring shrinkage. 3,726,125, Cl. 73-15.00r.

Hidding, Walter E. Apparatus for packaging and handling stacks of handles. 3,726,398, Cl. 206-65.00k.

Higaki, Shigeo; Harada, Masatoshi; Yashiro, Tadao; and Ohminato, Hideaki, to Nishin Electric Co., Ltd. Suspension type electric apparatus having a plurality of radially disposed buffer devices. 3,726,986, Cl. 174-43.000.

Higashimura, Einosuke; Hirai, Keiichi; Okamoto, Eisaku; Sasaki, Masami; Sekimoto, Yukihiko; and Horiba, Akiyoshi, to Nitto Chemical Industry Co., Ltd. and Mitsubishi Rayon Co., Ltd. Acrylamide type earth resistance producing agent and method of use thereof 3,726,812, Cl. 252-521.000.

Higby, Richard F.; and Lauriente, Mike, to Westinghouse Electric Corporation. Infrared dectector device with a mosaic of oppositely-poled adjacent elements. 3,727,057, Cl. 250-83.30h.

Higgins, Larry: *See—*

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Hill, James C.: *See—*

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Hilliard, Merle: *See—*

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Hingel, Fred J.; and Filipov, Alexander, to BLH Electronics, Inc. On-board aircraft weight and C.G. synchro-type self-checking attitude sensor. 3,727,180, Cl. 340-27.0at.

Hinners, Georg: *See—*

Dierl, Rudolf; Rontgen, Peter; and Hinners, Georg, 3,726,359.

Hino, Masaaki, to Nihon Denshi Kabushiki Kaisha. Specimen heating device. 3,727,052, Cl. 250-51.500.

Hintze, Rudolf. Cooling unit with rotating compressor-condensor-evaporator-combination. 3,726,107, Cl. 62-499.000.

Hirai, Keiichi: *See—*

Higashimura, Einosuke; Hirai, Keiichi; Okamoto, Eisaku; Sasaki, Masami; Sekimoto, Yukihiko; and Horiba, Akiyoshi, 3,726,812.

Hirschman, Shalom Z. Feminine hygienic pad. 3,726,277, Cl. 128-285.000.

Hitachi, Ltd.: *See—*

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Hiyama, Ryu, to Nippon Gakki Seizo Kabushiki Kaisha. Rotary loudspeaker. 3,726,358, Cl. 181-31.00a.

Ho, Shu-Kuang; and Wang, An, to Wang Laboratories, Inc. Information storage system. 3,727,201, Cl. 340-174.0sp.

Hobson, Robert R.; and Dunlay, John B., to United States of America, Atomic Energy Commission. Bonded thermionic energy converter. 3,727,083, Cl. 310-4.000.

Hochheiser, Jerome S., to Anthony's Manufacturing Company, Inc. Fail-safe power cut-out device. 3,727,105, Cl. 317-16.000.

Hochman, Jack M.: *See—*

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Keller, John E.; Hochman, Jack M.; and Foster, James Q., 3,726,785.

Hodgson, William Henry: *See—*

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- Kalb, Paul J. Credit card mailer. 3,726,471, Cl. 229-92.800.
- Kali-Chemie Aktiengesellschaft: *See—*
  - Honig, Helmut; Dillenburg, Helmut; and Siegel, Rudolf, 3,726,959.
- Kalopissis, Gregoire: *See—*
  - Ghilardi, Giuliana; Kalopissis, Gregoire; De Beaulieu, Henri Philippe; and Abegg, Jean-Louis, 3,726,638.
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- Kalthoff, Robert J.; and O'Brien, Richard C., to OK Partnership, mesne. Document retrieval apparatus and method. 3,726,400, Cl. 209-80.500.
- Kamal, Marwan R., to General Mills, Inc. Novel derivatives of polyisocyanates prepared from polymeric fat acids and certain oximes. 3,726,921, Cl. 260-566.0ac.
- Kamo, Takeshi: *See—*
  - Nakamura, Masashi; Yamazaki, Junichiro; Kamo, Takeshi; and Akiba, Shin, 3,726,733.

Kanai, Yoshio; Honda, Haruomi; Sanno, Yasushi; Nohara, Akira; and Kanno, Morio, to Takeda Chemical Industries, Ltd. Pyridine thioacetamide derivatives. 3,726,878, Cl. 260-294.80e.

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Kanno, Morio: *See*—
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Kaplan, Burton. Method and apparatus for the instruction of finger spacing in playing stringed instruments. 3,726,174, Cl. 84-470.000.

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Kasabov, Yordan Dimitrov, to Tzentralen Institut zi Elementi. Method of producing diffused high-resistivity microresistors. 3,726,726, Cl. 148-187.000.

Kassel, Aaron: *See*—
  Heimann, Richard H.; Kassel, Aaron; and Kopelman, Donald F., 3,726,297.

Kaszuba, Robert J.: *See*—
  Stratton, Robert R.; and Kaszuba, Robert J., 3,726,420.

Katsura, Hiromitsu: *See*—
  Hashizume, Kiyoshi; Shigemitsu, Masahiro; Kumano, Iaso; Miyatake, Masayuki; Katsura, Hiromitsu; and Oshima, Masahiro, 3,726,873.

Katz, Ira; Wilson, Richard A.; Evers, William J.; Vock, Manfred H.; and Verhoeve, Gerrit W., to International Flavors & Fragrances, Inc. Novel cyclic flavoring compositions and processes. 3,726,692, Cl. 99-140.00r.

Kawakatsu, Hisazo: *See*—
  Kanaya, Koichi; Kawakatsu, Hisazo; and Atoda, Nobufumi, Japan, 3,727,233.

Kearney National Inc.: *See*—
  Westrom, Arthur C., 3,727,108.

Keegan, James J., III: *See*—
  Richardson, Robert W.; and Keegan, James J., III, 3,726,732.

Keenan, James J., to General Electric Company. High power vacuum fuse apparatus. 3,727,092, Cl. 313-233.000.

Kehr, Clifton Leroy: *See*—
  Ketley, Arthur Donald; Kehr, Clifton Leroy; and Touchette, Jennie Lee, 3,726,676.

Kehring Company: *See*—
  Sallberg, David W.; and Meyer, Walter E., 3,726,334.

Kelco Company: *See*—
  Schuppner, Harry R., Jr., 3,726,690.
  Schweiger, Richard G., 3,726,796.

Keller, Helmut; and Gschwendiner, Horst, to Bosch, Robert, G.m.b.H. Switching arrangement responsive to electrical charge. 3,727,074, Cl. 307-125.000.

Keller, John E.; Hochman, Jack M.; and Foster, James Q., to Esso Research and Engineering Company. Coal liquefaction using high and low boiling solvents. 3,726,785, Cl. 208-8.000.

Keller, Joseph D., to Martin-Marietta Corporation. Component side printed circuit soldering. 3,726,007, Cl. 29-626.000.

Kellis, Warren D.; and Wilson, Elmer B., to Alsco Anaconda, Inc., mesne. Gutter with protective coating. 3,726,051, Cl. 52-11.000.

Kelly, Ward L.; and McAlvain, William L., to Ballistic Research Industries,. Sabot bullet. 3,726,231, Cl. 102-93.000.

Kelsey-Hayes Company: *See*—
  Evans, Anthony C., 3,726,367.

Kemble, Mern S., to Cenco Medical Industries, Inc., mesne. Suture packaging. 3,726,057, Cl. 53-21.0fc.

Kemp, Kenneth Albert Walters. Liquid fuel pumping apparatus. 3,726,263, Cl. 123-139.0bd.

Kendall, Claud A. Bifocal corneal contact lens and method of making same. 3,726,587, Cl. 351-161.000.

Kendall Company, The: *See*—
  Dye, John F.; and Binard, William J., 3,726,283.
  Patel, Bhupendra C., 3,726,282.

Kenney, Edward J.: *See*—
  Sundby, Bjorn; Kenney, Edward J.; and Wixon, Harold E., 3,726,797.

Kern, Connie. Pleat forming device. 3,726,449, Cl. 223-35.000.

Kerr, Edwin L., to Perkin-Elmer Corporation. Gas analyzer. 3,727,050, Cl. 250-43.50r.

Kessler Products, Co., Inc.: *See*—
  Ullman, Myron E., Jr., 3,726,579.

Ketley, Arthur Donald; Kehr, Clifton Leroy; and Touchette, Jennie Lee, to Grace, W. R., & Co. Process for forming a continuous tone negative and positive image. 3,726,676, Cl. 96-27.000.

Keyes, Richard E.; and Lingert, Ralph E., to Finn Equipment Company, The. Distributor for fragile particulate materials. 3,726,441, Cl. 222-178.000.

Khlebalin, Vladimir Sergeevich: *See*—
  Eskin, Ilia Jurievich; Zak, Ilia Samuilovich; Kuznetsov, Sergei Vasilievich; Khlebalin, Vladimir Sergeevich; and Lozovsky, Mikhail Srulevich, 3,726,242.

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Kidde, Walter, Company, Inc., mesne: *See*—
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Kim, Charles W.: *See*—
  Feild, George B.; and Kim, Charles W., 3,726,079.

Kim, Dong H.: *See*—
  Santilli, Arthur A.; and Kim, Dong H., 3,726,869.

Kimberlin, Charles N., Jr.; and Hamner, Glen P., to Esso Research and Engineering Company. Hydrogen production from an integrated coker gasifier system. 3,726,791, Cl. 208-127.000.

Kimberly-Clark Corporation: *See*—
  Stillings, Robert A., 3,726,750.

Kimura, Kenji, to Shiba Electric Co., Ltd. Burst control circuit having a voltage responsive oscillator. 3,727,149, Cl. 331-1.00r.

King, John: *See*—
  Smith, Richard I.; Higgins, Larry; and King, John, 3,725,965.

King, Richard Allan: *See*—
  Crittenden, Eugene Casson, Jr.; King, Richard Allan; and Andrews, Thomas Clyde, 3,727,069.

Kiritani, Masataka: *See*—
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Kirnos, Yakov Yakovlevich: *See*—
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Kiselman, Mark Lazarevich; Shots, Mikhail Borisovich; and Larin, Viktor Petrovich, to Severo-Kavkazsky neftyanoi nanchno-issledovatelsky. Profilograph for examining pipes in oil wells. 3,727,126, Cl. 324-34.00r.

Kisfaludy, Lajos; Patthy, Agnes, nee Lukats; Dancsi, Lajos; Fekete, Gyorgy; and Szabo, Istvan, to Richter Gedeon Begyeszeti Gyar RT. N'-Aminoxy-acetyl-N'-isonicotinoyl-hydrazine and the pharmaceutically acceptable salts thereof. 3,726,881, Cl. 260-295.0am.

Kishida, Yukichi: *See*—
  Kuwabara, Yoshimi; Sugita, Sadao; Inokuma, Hiroyuki; Iwai, Issei; Kishida, Yukichi; Iwashige, Tadahiro; Ishida, Noboru; and Miyamura, Toshihide, 3,726,686.

Kistner, Jerome L.; and Gettle, Robert E., to Mosler Safe Company. Fiche-to-fiche copier. 3,726,590, Cl. 355-100.000.

Kitz, Joseph Lawrence, to Alphabet Unlimited. Method of sewing knitted fabrics. 3,725,958, Cl. 2y243.00b.

Kiwalle, Jozef; Merritt, Paul H.; and Sluetz, Edward J., to Production Technology Inc., mesne. Method for flash removal from heat and pressure welded articles. 3,725,997, Cl. 29-470.300.

Klaus-Gerd Hoes, Firma: *See*—
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Kleimann, Helmut: *See*—
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Klein, Georg Anton: *See*—
  Stocker, Emil; Klein, Georg Anton; and Schnabel, Ernfred, 3,726,853.

Klein, Gerald L., to Beckman Instruments, Inc. Synchronously programmed sample dilutor apparatus. 3,726,144, Cl. 73-423.00a.

Klein, Gerhart P. Horizontal vertical sintering method. 3,726,674, Cl. 75-221.000.

Klein, Theodor, to Siemag Siegener Maschinenbau G.m.b.H. Conveyor. 3,726,389, Cl. 198-179.000.

Kleiner, Walter, to Staubli Ltd. Wedge coupling between a driving shaft and an eccentric ring of a dobby mechanism. 3,726,323, Cl. 139-66.000.

Klemenhagen, Dale A.: *See*—
  Klosterman, Albert L.; and Klemenhagen, Dale A., 3,726,070.

Kliott, Leon, to LCP Scientific, Inc. Composite materials producing sustained colored flames. 3,726,731, Cl. 149-109.000.

Klosterman, Albert L.; and Klemenhagen, Dale A., to Toro Manufacturing Corporation. Staggered blade mower. 3,726,070, Cl. 56-294.000.

Klushin, Nikolai Alexandrovich: *See*—
  Varnello, Eduard Petrovich; Klushin, Nikolai Alexandrovich; Maslakov, Petr Avramovich; Shmigalsky, Ladimir Nikiforovich; and Abramenkov, Eduard Alexandrovich, 3,726,508.

Klygis, M. Julius, to Illinois Tool Works Inc. Plastic container spout. 3,726,447, Cl. 222-567.000.

Klygis, M. Julius, to Illinois Tool Works Inc. Multiple container carrier. 3,726,558, Cl. 294-87.200.

Knaak, Rudiger, to Koppers-Wistra-Ofenbau Gesellschaft mit beschrankter Haftung. Industrial oven and method of operating the same. 3,726,515, Cl. 432-25.000.

Knapp, Kenneth M.: *See*—
  Knapp, Mary M.; and Knapp, Kenneth M., 3,725,968.

Knapp, Mary M.; and Knapp, Kenneth M. Double-dished pipeline pig. 3,725,968, Cl. 15-104.06r.

Knapsack Aktiengesellschaft: *See*—
  Tiedemann, Jens; and Harnisch, Heinz, 3,726,963.

Knight, Everett Walter, to Du Pont de Nemours, E. I., and Company. Stabilized adhesive solutions for polyvinyl chloride. 3,726,826, Cl. 260-30.40r.

Knoll A.G. Chemische Fabriken: *See*—
  Kubinyi, Hugo, 3,726,857.

Kobayashi, Seihin; Torri, Michihiro; and Itoh, Tomohiro. Laminated ferrite sheet memory. 3,727,200, Cl. 340-174.0wb.

Kobayashi, Tatsuo, to E.R.D. Corporation. Noninductive twisted-wire resistor. 3,727,166, Cl. 338-63.000.

Kobe Steel, Ltd.: *See*—
  Nakamura, Yoshimi, 3,726,078.

Koch, Hans-Joachim: *See*—
  Eimer, Johannes; Windemuth, Erwin; Berndt, Gerhard; and Koch, Hans-Joachim, 3,726,838.

Koch, Theodore Augur, to Du Pont de Nemours, E. I., and Company. Preparation of 1,6,8-decatriene. 3,726,935, Cl. 260-677.00r.

Kocks, Friedrich: *See*—
  Bindernagel, Ali, 3,726,119.

Koehler, Albert O. Expansible and collapsible spring acting, multi-sided structures and blanks therefor. 3,726,469, Cl. 229-41.00b.

Koehler, Dale R., to Bulova Watch Company, Inc. Integrated circuit for electronic timepieces. 3,727,151, Cl. 331-116.00m.

Koehn, Jurgen: *See*—
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  Mistarz, Robert J.; and Mojonnier, Albert B., Sr., 3,726,749.

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  Sterner, Russell L.; and Kohler, Henry A., 3,726,801.

Koizumi, Sumio; and Adachi, Hiroyuki, to Shinnei Electric Co., Ltd. Method and means for metering tape footage. 3,726,492, Cl. 242-201.000.

Kolbe, Joachim. Vehicle banking arm construction. 3,726,542, Cl. 280-112.00a.

Kolinski, Robert A. Rotary fluid power device. 3,726,615, Cl. 418-7.000.

Kolobikhin, Valentin Alexandrovich: *See*—
  Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Turian, Yakov Iosifovich; Kirnos, Yakov Yakovlevich; Kolobikhin, Valentin Alexandrovich; Baranova, Pavla Sergeevna; Sherashov, Vadim; Rastvorov, Jury Nikolaevich; Emelyanova, Elena Nikolaevna; and Sishkina, Irina Mikhailovna, 3,726,937.

Komatsu, Koei; Nishiyama, Shigeyuki; Ohshima, Noboru; and Sakabe, Nobuyuki, to Japan Synthetic Rubber Co., Ltd. Cyclic ethers and vinyl ethers as molecular weight regulators in alfin polymerizations. 3,726,832, Cl. 260-47.0ua.

Kometani, Yutaka; Fumoto, Syozo; and Tanigawa, Singo, to Daikin Kogyo Co., Ltd. Process for the preparation of ultra-fine polytetrafluoroethylene molding powder. 3,726,483, Cl. 241-5.000.

Komninos, John A., to Ciba-Geigy Corporation. Aqueous dyebath containing polyacrylonitrile and a nitrogen-containing compound. 3,726,641, Cl. 8-172.000.

Kondo, Asaji: *See*—
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  Maekawa, Yukio; Miyano, Shizuo; and Kondo, Asaji, 3,726,805.

Konishiroku Photo Industry Co., Ltd.: *See*—
  Kuwabara, Yoshimi; Sugita, Sadao; Inokuma, Hiroyuki; Iwai, Issei; Kishida, Yukichi; Iwashige, Tadahiro; Ishida, Noboru; and Miyamura, Toshihide, 3,726,686.

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Konstant, Anthony N., to Speedrack Inc. Storage rack and beam for use therein. 3,726,414, Cl. 211-148.000.

Kopelman, Donald F.: *See*—
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Koppers-Wistra-Ofenbau Gesellschaft mit beschrankter Haftung: *See*—
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Kormos, Kalman; and Szilagyi, Dezso, to General Signal Corporation. Corrosion resistant valving edge for butter-fly valve disc. 3,726,504, Cl. 251-306.000.

Kosaka, Toshihisi: *See*—
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Koszkowski, Henry Robert; and Smialowicz, Casimir Stanley, to Bendix Corporation, The. Digital displacement and displacement rate generator. 3,726,138, Cl. 73-179.000.

Koshar, Robert J.; Wright, Charles D.; Zollinger, Joseph La Mar; Bybvig, Douglas H.; and Husted, Donald R., to Minnesota Mining and Manufacturing Company. Fluoro compounds. 3,726,903, Cl. 260-347.700.

Kosonocky, Stephan; and Post, Lloyd D., to United States of America, Army. Inertial delay fuze. 3,726,229, Cl. 102-73.00r.

Kovach, Stephen M., to Ashland Oil, Inc. Hydrocarbon conversion process for the production of olefins and aromatics. 3,726,789, Cl. 208-80.000.

Kowalick, James F.: *See*—
  White, Wilmer; and Kowalick, James F., 3,726,222.

Kozlovic, John M., to Westinghouse Electric Corporation. Tank-type grounding and test device with line, bus and test terminal bushings. 3,727,109, Cl. 317-103.000.

Kraemer, Ronald G.: *See*—
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Krall, Bogdan: *See*—
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Kramer, John F. Fluid conduit arrangement. 3,726,322, Cl. 138-128.000.

Krasner, Dora A.: *See*—
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Krauss-Maffei Aktiengesellschaft: *See*—
  Baumgartner, Siegfried; and Lippacher, Wolfgang, 3,727,026.

Kravetz, Michael A.; and Schreiber, Eric C., to Harvey, R. J., Instrument Corporation. Apparatus to oxidize biological material. 3,726,646, Cl. 23-253.0pc.

Krawagna, Alois A.: *See*—
  Davidson, Thomas N.; Krawagna, Alois A.; and Humphrey, Frederick Harold, 3,726,442.

Krefting, Sherman: *See*—
  Woodward, Fred E.; Krasner, Dora A.; and Krefting, Sherman, 3,726,825.

Krejci, Joseph C., to Phillips Petroleum Company. Process for the production of carbon black. 3,726,964, Cl. 423-455.000.

Kremer, Gilbert Victor Henri: *See*—
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Kreake, Walter J.: *See*—
  Versoy, Irving R., 3,726,371.

Kretschmer, Willi K.; and Heady, Paul A., Jr., to United States of America, Navy, mesne. On-demand variable flow closed loop gas generator system with a variable area injector. 3,726,088, Cl. 60-39.74a.

Krooss, Robert J. Continuously moving apparatus for uniformly orienting bottles. 3,726,387, Cl. 198-33.0ad.

Krugler, Allen D., Jr., to Ford Motor Company. Actuator for an antiskid brake system. 3,726,568, Cl. 303-21.00f.

Kruse, Howard W.; Breslow, Bertram A.; and Szypulski, Raymond W., to United States of America, Navy. Binderless cast photoflash compositions. 3,726,728, Cl. 149-17.000.

Kubinyi, Hugo, to Knoll A.G. Chemische Fabriken. $\Delta^{4,20,22}$-Bufatrienolide rhamnoside ethers and process for their preparation. 3,726,857, Cl. 260-210.500.

Kuhlman, Harvey G. Moldable food depositing apparatus. 3,725,974, Cl. 17-32.000.

Kumano, Iaso: *See*—
  Hashizume, Kiyoshi; Shigemitsu, Masahiro; Kumano, Iaso; Miyatake, Masayuki; Katsura, Hiromitsu; and Oshima, Masahiro, 3,726,873.

Kump, Violet V., to Lee, Raymond, Organization, Inc., The. Sliding marker puzzle with selectively effective boundary. 3,726,528, Cl. 273-153.00a.

Kuntz, Irving: *See*—
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Kunzie, Franz Martin: *See*—
  Schmutz, Jean; Hunziker, Fritz; and Kunzie, Franz Martin, 3,726,977.

Kuraishi, Kaoru; Yajima, Nobuo; and Igarashi, Shigemi, to Toshiba Photo Products Co., Ltd. Electronic flash apparatus having control means for pre-enabling light responsive circuit means. 3,727,100, Cl. 315-151.000.

Kuratomi, Tatsuo. Ultra high pressure-temperature apparatus. 3,727,028, Cl. 219-149.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
  Enomoto, Satoru; Wada, Hisayuki; Fujioka, Mikio; and Koguro, Masao, 3,726,818.

Kurimoto, Mikishi; Ochiai, Yoshiki; Nomura, Kenji; and Tsuboi, Akira, to Toyoda Koki Kabushiki Kaisha. Machine tool with spaced turret heads mounted on a cross slide. 3,725,987, Cl. 29-27.00c.

Kurt, Pauker: *See*—
  Voland, Elmo W.; Simmons, Harold T.; and Kurt, Pauker, 3,727,015.

Kurtenbach, Aelred J., to Daktronics, Inc. Matside wrestling scoreboard. 3,727,213, Cl. 340-323.000.

Kusaka, Kazuki. Modular graphite cast iron containing calcium, rare earth metals and magnesium and a method for its production. 3,726,670, Cl. 75-130.00b.

Kushida, Hachiro, to Citizen Watch Company, Limited. Watch case. 3,726,082, Cl. 58-88.00g.

Kuwabara, Yoshimi; Sugita, Sadao; Inokuma, Hiroyuki; Iwai, Issei; Kishida, Yukichi; Iwashige, Tadahiro; Ishida, Noboru; and Miyamura, Toshihide, to Konishiroku Photo Industry Co., Ltd. and Sankyo Company Limited. Light-sensitive silver halide emulsion contining a pyrazole compound antifoggant. 3,726,686, Cl. 96-100.00r.

Kuznetsov, Sergei Vasilievich: *See*—
  Eskin, Ilia Jurievich; Zak, Ilia Samuilovich; Kuznetsov, Sergei Vasilievich; Khlebalin, Vladimir Sergeevich; and Lozovsky, Mikhail Srulevich, 3,726,242.

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La Plante, Ira J. Steering and stabilizing attachment for snow vehicles. 3,726,354, Cl. 180-5.00r.

Lachenmayer, Wilhelm, to Benteler-Werke Ag. Tubular construction arrangement. 3,726,320, Cl. 138-103.000.

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Lacount, Allen L. Catheter support. 3,726,280, Cl. 128-349.00r.
Lafferty, Gary S., Sr., to Milwaukee Electric Tool Corporation. Spring biased coupling for tool and chuck. 3,726,533, Cl. 279-97.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Explitation des Procedes Georges Claude: *See*—
Chevalier, Marcel, 3,726,300.
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Aupoix, Marcel; and Moisson-Franckhauser, Francois, 3,726,985.
Lamb, Vernon A.; Young, John P.; and Ng, Wahling H., to United States of America, Army. Surface preparation of maraging steel for electroplating. 3,726,773, Cl. 204-129.350.
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Lammers, Sidney G.; and Lammers, Michael W., to Dart Industries Inc. Mixing unit for water extendible polyester resins or the like. 3,726,509, Cl. 259-7.000.
Lancz, Albert Jay, to Colgate-Palmolive Company. Liquid laundry detergents and a process for preparing same. 3,726,814, Cl. 252-543.000.
Lang, Edgar R.: *See*—
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Langguth, Arthur F.: *See*—
Johnson, Clarence S.; and Langguth, Arthur F., 3,725,953.
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Larin, Viktor Petrovich: *See*—
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Lariviere, Alice Louise Rosalie, widow Giroux. Safety stopping device for marine engines. 3,726,264, Cl. 123-148.00s.
Lark, Wayne W.; Jennings, Marvin D.; and Howells, Arthur J., Jr., to International Harvester Company. Control circuit for front end loader. 3,726,428, Cl. 214-763.000.
Larsen, Knud: *See*—
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Leissner, Paul H.; and Janson, Karl A., to Rain Bird Sprinkler Mfg. Corporation. Deflector spoon for rotary sprinklers. 3,726,479, Cl. 239-233.000.
Lekven, Carl M., to Signal Galaxies, Inc. Static magnetic memory system. 3,727,199, Cl. 340-174.0tf.
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Lemor, Pierre C., to SKF Industrial Trading and Development Company. Adjustable screw and nut device. 3,726,151, Cl. 74-424.80a.
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Levy, Gabor B.; and Seltzer, David M., to Photovolt Corporation. Coulometric water titrator. 3,726,778, Cl. 204-195.00t.
Lewis, Charles Edward, to American Cyanamid Company. Boron complexes of O,O'-dihydroxyphenylazonaphthyl. 3,726,854, Cl. 260-197.000.
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Lindestrom, Lars-Erik, to Aktiebolaget Svenska Flaktfabriken. Distributing device in plants for the maintenance of a dustfree, bacteria free zone in a room. 3,726,204, Cl. 98-36.000.
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Lundquist, Jerry R.; and Stromatt, Robert W., to United States of America, Atomic Energy Commission. Nickel plating baths containing aromatic sulfonic acids. 3,726,768, Cl. 204-1.500.
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Lynch, Leonard J. Circuit board tool. 3,725,991, Cl. 29-203.00h.
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MacDonald, Hugh D.; Schultz, Roger L.; and Pitney, Lennord L., to United States of America, Army. Cartridge. 3,726,220, Cl. 102-39.000.
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MacLean-Fogg Lock Nut Co.: *See*—
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Madrazo, Charles Felix; and Saenz, Robert George, to RCA Corporation. Input circuit for multiple emitter transistor. 3,727,072, Cl. 307-218.000.
Maekawa, Yukio; Miyano, Shizuo; and Kondo, Asaji, to Fuji Photo Film Co., Ltd. Process for the production of amino acid-containing microcapsules. 3,726,805, Cl. 252-316.000.
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Magorien, Vincent G.; and Huffman, John A., to Seaton-Wilson, Incorporated. System for fluid decontamination. 3,726,063, Cl. 35-194.000.
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Matsumoto, Kazuya, to Canon Kabushiki Kaisha. Method for optical detection and/or measurement of movement of a diffraction grating. 3,726,595, Cl. 356-111.000.

Matsushima, Kiyoshi; Miyamoto, Masao; and Fukazawa, Nobuo. Alkoxy-benzyl-dithiocarbamic acid esters as selective herbicides. 3,726,661, Cl. 71-101.000.

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McCabe, Francis J. Fire link and method of actuating same. 3,725,972, Cl. 16-48.500.

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McCrary, Avis L.; and Wilson, David A., to Dow Chemical Company, The. Substituted alkanolamine chelating agents. 3,726,912, Cl. 260-513.00n.

McDole, Ewell E.; and Howard, Frank L., to Kaiser Aluminum & Chemical Corporation. Water based rolling lubricant. 3,726,799, Cl. 252-49.500.

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McLaughlin, Thomas D., to O.R.O.M. Inc. Method and system for read only memory. 3,727,195, Cl. 340-173.0lm.

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McMillan, Allen G. Apparatus for encasing product. 3,726,060, Cl. 53-138.00a.

McMurray, David C., to Irrigation and Power Equipment Inc. Moving pivot sprinkler irrigation system. 3,726,478, Cl. 239-212.000.

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Meier, Erwin; and Zehnder, Gottlieb, to Aktiengesellschaft Brown, Boveri & Cie. Apparatus for supercharging an internal combustion engine. 3,726,084, Cl. 60-13.000.

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Mergard, Harald: *See—*
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Meritt, Arthur D., to Sun Oil Chemical Company. Pressure control for flame systems. 3,726,298, Cl. 137-13.000.

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Merzhanov, Alexandr Grigorievich; Shkiro, Valentin Mikhailovich; and Borovinskaya, Inna Petrovna, to Filial Instituta Khimicheskoi Fiziki Akademii Nauk. Method of producing refractory carbides, borides, silicides, sulfides and nitrides of metals of Group I, V, and VI of the periodic system. 3,726,643, Cl. 423-409.000.

Messer Griesheim G.m.b.H.: *See—*
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Metalloxyd Gesellschaft mit beschrankter Haftung: *See—*
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Miller, Alexander, to Miller Industries, Inc. Air diffuser and the like. 3,726,205, Cl. 98-110.000.

Miller, Donald L., to Bendix Corporation, The. Overrunning clutch with multiple magnet retardation. 3,726,373, Cl. 192-84.0pm.

Miller, Gordon R.: *See—*
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Miller, James F. Snap-off mud flaps. 3,726,544, Cl. 280-154.50r.

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Mirolli, Joseph E.; and Vandenberg, Edwin J., to Hercules Incorporated. Cross-linking polymers. 3,726,841, Cl. 260-79.000.

Miron, Xevier. Vehicle attachment for transporting snowmobiles. 3,726,423, Cl. 214-505.000.

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Mistarz, Robert J.; and Mojonnier, Albert B., Sr., to Koehring Company. Trapped cam assembly. 3,726,748, Cl. 156-580.000.

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Mitcham, Michael S.; and Pregnall, Richard A., to Owens-Corning Fiberglas Corporation. Apparatus and method for attenuating mineral fibers. 3,726,655, Cl. 65-1.000.

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- Norwich, Daniel, to Telecredit, Inc. Credit card verification system. 3,727,187, Cl. 340-149.00a.
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  - Proudlove, Michael Joseph, 3,726,337.
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- Obarski, Richard W., to United Engineering and Foundry Company. Testing machine for tires and the like. 3,726,124, Cl. 73-8.000.
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  - Dalzell, John F., 3,726,247.
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- Ohmura, Jukichi: *See—*
  - Nakahara, Yasuji; and Ohmura, Jukichi, 3,726,836.
- Ohshima, Noboru: *See—*
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- OK Partnership, mesne: *See—*
  - Kalthoff, Robert J.; and O'Brien, Richard C., 3,726,400.
- Okamoto, Eisaku: *See—*
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- Oki Densen Kabushiki Kaisha: *See—*
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  - Pryor, Michael J.; and Popplewell, James M., 3,726,987.
  - Weisse, Guenter K., 3,726,970.
- Oliver, Joseph R.: *See—*
  - Fletcher, Ralph A.; and Oliver, Joseph R., 3,726,390.
- Oliver Knitting Company: *See—*
  - Levin, Nathan; and Oliver, Thomas Anderson, Jr. (said Oliver assor. to), 3,726,113.
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- Oliverius, Wesley J. Material stripping apparatus and blade. 3,726,565, Cl. 299-37.000.
- Olmstead, Charles Herbert. Document format. 3,727,032, Cl. 235-61.12r.
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  - Jones, Elvis E.; Olstowski, Franciszek; and Parrish, Donald B., 3,726,827.
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  - Fukami, Masaharu; Sato, Masaki; and Mori, Toshiyuki, 3,726,272.
- O'Meara, Thomas R., to Hughes Aircraft Company. Adaptive power redistribution systems. 3,727,223, Cl. 343-7.500.
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  - Yamamoto, Nobuo; Yoneyama, Masakazu; Ueda, Hiroso; and Ono, Yoshiaki, 3,726,683.
- Orenstein & Koppel Aktiengesellschaft: *See—*
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- Orloff, John F.: *See—*
  - Reynolds, Perry J.; and Orloff, John F., 3,726,553.
- O.R.O.M. Inc.: *See—*
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- O'Rourke, William J. Apparatus for dispensing material from receptacles pivotally invertable at the ends of consecutive time periods. 3,726,438, Cl. 222-70.000.
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  - Dahlberg, Jan Anders; Moden, Anders Olof; and Ostlund, Carl Arne Gunnar, 3,726,775.
- Ostrop, Berthold: *See—*
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  - Mitcham, Michael S.; and Pregnall, Richard A., 3,726,655.
  - Shannon, Richard F., 3,726,755.
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  - Johnson, William E., 3,727,102.
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- Oy Tampella Ab: *See*—
  - Asikainen, Niilo Kalervo, 3,726,230.
- Oznibichine, Nicolas, to Hazemag Harlzerkleinerungs-und Zement-Maschinenbau Gesellschaft m.b.H. Impact breaker. 3,726,485, Cl. 241-32.000.
- Padek, Ted, to Detergent Engineering Corporation. Vehicle cleaning Corporation. 3,726,293, Cl. 134-45.000.
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- Pagan, Peter A.; and Mitchell, Paul T., to American Metal Bearing Company. Stern tube seal. 3,726,531, Cl. 277-59.000.
- Pagdin, William G.; Risley, Robert F.; and Smith, Wayne A., to Schlitz, Jos., Brewing Company. Tab slitting and flap folding apparatus. 3,726,061, Cl. 53-167.000.
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  - Podmore, Alan William Ronald; and Page, Ian Bruce, 3,727,174.
- Page, Richard Stockbridge, to Associated Electrical Industries Limited. Electron microscope with automatically adjusted specimen stage. 3,727,051, Cl. 250-49.50b.
- Page, Richard W. Foot controller for dental instruments. 3,726,013, Cl. 32-22.000.
- Page, Richard W. Stool. 3,726,560, Cl. 297-349.000.
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  - Severini, Febo; Valvassori, Alberto; and Pagliari, Alberto, 3,726,946.
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  - Palmer, Harold C., 3,726,266.
- Palmer, Harold C., to Palmer Chemical & Equipment Company, Inc. Gas-operated multiple shot projectile firing device. 3,726,266, Cl. 124-11.00r.
- Pandya, Vidyut K., to AquaMatic, Inc. Reciprocating valve. 3,726,313, Cl. 137-609.000.
- Panissidi, Hugo A., to International Business Machines Corporation. Integrated adder drive assembly including damper, hydraulic power supply, and paper tape feed. 3,726,190, Cl. 92-9.000.
- Pankow, Gerrit; Morcher, Bernhard; Otto, Rigobert; and Bockly, Erick, to Agfa-Gevaert Aktiengesellschaft. Multi-layered color photographic material. 3,726,681, Cl. 96-74.000.
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- Paraskevakos Electronics & Communication, Inc.: *See*—
  - Paraskevakos, Theodoros G., 3,727,003.
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  - Capps, David B., 3,726,880.
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- Parker, Ralph W. Replacement tube for the lacrimal drainage duct. 3,726,284, Cl. 128-350.00r.
- Parker, Robert E.: *See*—
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- Parks, Charles K. Icy beverage machine. 3,726,102, Cl. 62-70.000.
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- Parthum, Robert F.: *See*—
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- Patel, Bhupendra C., to Kendall Company, The. Inflation valve for catheter retention balloon. 3,726,282, Cl. 128-349.0bv.
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- Patterson, Billy R., to Lone Star Steel Company. Compression seal plug. 3,726,319, Cl. 138-90.000.
- Pattersons Venture Limited: *See*—
  - Hawkins, Peter A. Taylor, 3,726,210.
- Patthy, Agnes, nee Lukats: *See*—
  - Kisfaludy, Lajos; Patthy, Agnes, nee Lukats; Dancsi, Lajos; Fekete, Gyorgy; and Szabo, Istvan, 3,726,881.
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  - Oliver, Ward H.; Padgett, Calvin D.; and Stump, Eugene C., Jr., 3,726,885.
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- Pelham, Joseph E., to Thiokol Chemical Corporation. Demand gas generator system using solid propellant. 3,726,649, Cl. 23-281.000.
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  - Kadin, Saul B., 3,726,875.
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- Philco-Ford Corporation: *See*—
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  - Gold, Edward, 3,726,725.
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- Phillips Petroleum Company: *See*—
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  - Bennett, Richard J.; and Gagle, Duane W., 3,726,944.
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  - Gardner, Lloyd E., 3,726,931.
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  - Krejci, Joseph C., 3,726,964.
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- Picker, Patrick; Jolicoeur, Carmel; and Desnoyers, Jacques E., to University of Sherbrooke. Flow calorimeter. 3,726,644, Cl. 23-230.00r.
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- Pinckney, Robert L., to Boeing Company, The. Joint construction and method of fabrication. 3,725,981, Cl. 24-122.300.
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- Plath, Bernhard, to Amsted-Siemag Kette G.m.b.H. Rapid action clamp. 3,726,163, Cl. 82-36.00a.
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  - Borror, Alan L., 3,726,675.
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- Polypump Curacao N.V.: *See*—
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- Pompeo, Louis, to Duchess Mfg. Corporation. Link chain. 3,726,083, Cl. 59-85.000.
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- Potts, William F., to Liberty Combustion Corporation. Flame ignition. 3,726,630, Cl. 431-78.000.
- Poulin, Valmor R., Jr.: *See*—
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- Pratt, Henry, Company: *See*—
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- Price, William J.; Cooper, Richard W.; and Gates, Robert A. Mast or pole climbing device. 3,726,360, Cl. 182-134.000.
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- Procter & Gamble Company, The: *See*—
  - Hamilton, Peter W., 3,727,022.
  - Loomans, Maurice E., 3,726,968.
  - Prentice, James B.; Nicholson, Denzel Allan; and Amel, Ronald T., 3,726,639.
  - Seiden, Paul, 3,726,691.
- Proctor, Oliver P.: *See*—
  - Randall, John H.; and Proctor, Oliver P., 3,726,941.
- Production Technology Inc., mesne: *See*—
  - Kiwalle, Jozef; Merritt, Paul H.; and Sluetz, Edward J., 3,725,997.
- Prosser, Duane N.; and Sawdey, Norman J., to General Motors Corporation. Porcelain enameling of steel. 3,726,707, Cl. 117-70.00c.
- Prostor, Edo, to Iskra-Zavod Za Avtomatizacijo v Zdruzenem Podjetju Iskra, Kranj. Method of manufacturing flat-wire field coils. 3,726,005, Cl. 29-605.000.
- Proudlove, Michael Joseph, to Nuclear Power Group Limited, The. Nuclear reactors. 3,726,337, Cl. 165-47.000.
- Provost, George A., to American Velcro, Inc. Adhesive polyamide laminate with a coating comprising resorcinol, phenol and triisocyanate. 3,726,752, Cl. 161-67.000.
- Pryde Inc.: *See*—
  - Hyde, Robert W., 3,726,318.
- Pryor, Michael J.; and Popplewell, James M., to Olin Corporation. Glass or ceramic-to-metal seals. 3,726,987, Cl. 174-50.610.
- Puckett, James D., to Trico Leasing. AC scaffold frame. 3,726,362, Cl. 182-178.000.
- Puckette, Charles McD, IV, to General Electric Company. Zero-crossing jitter detection method and circuit. 3,727,131, Cl. 324-77.00r.
- Pugh, Emerson M.; and Eichelberger, Robert J., to United States of America, Army. Fluted liners for shaped charges. 3,726,224, Cl. 102-56.000.
- Puharich, Henry K., to Intelectron Corporation. Blood storage method. 3,726,762, Cl. 195-1.800.
- Pulcini, Aldo: *See*—
  - Dema, Andrea; Pulcini, Aldo; and Rossotti, Ernesto, 3,726,234.
- Pullman Incorporated: *See*—
  - Anderson, Steven A.; and Spence, John H., 3,726,419.
- Purdy, Karl T.: *See*—
  - Williams, James C.; Purdy, Karl T.; and Gobel, Le Moyne D., 3,726,161.
- Purvis, Howard A., to Texas Alloy Products Co., Inc. Refinery control valve. 3,726,306, Cl. 137-375.000.
- Putnam, Richard E.; and Augusty, Richard M., to Westinghouse Electric Corporation. Methods for detecting presence and measuring the concentration of minor overlapped components in gas chromatography. 3,726,127, Cl. 73-23.100.
- Quick, Carolyn M., to Shell Oil Company. Glycidamides. 3,726,981, Cl. 424-278.000.
- Quick, Carolyn M., to Shell Oil Company. Glycidamides for inducing a sedative response. 3,726,982, Cl. 424-278.000.

Quinlan, William J.; and Huver, Lawrence L., to Hastings Manufacturing Company. Windshield wiper assembly. 3,725,971, Cl. 15-250.360.

Quoos, Kurt: *See*—
Takritti, Nassir; Quoos, Kurt; Leifeld, Ferdinand; and Appenzeller, Valentin, 3,726,640.

Rabl, Richard, to Akkumulaloerenfabrik Dr. Leopold Jungfer. Device for the intermittent feed of a width of material. 3,726,458, Cl. 226-141.000.

Raczuk, Richard Charles. Variable exhaust system for combustion engine. 3,726,092, Cl. 60-314.000.

Rader, Edwin R.: *See*—
Stanley, William W.; Hosterman, Harry L.; and Rader, Edwin R., 3,727,119.

Radovich, Leroy N. Multi-purpose game puck. 3,726,526, Cl. 273-128.00r.

Rahlfs, Herbert: *See*—
von Casimir, Wolf; and Rahlfs, Herbert, 3,726,743.

Rain Bird Sprinkler Mfg. Corporation: *See*—
Leissner, Paul H.; and Janson, Karl A., 3,726,479.

Ralston Purina Company: *See*—
Marr, James E., 3,726,255.

Ramakumar, Ramachandra G.: *See*—
Hughes, William L.; Allison, Hansel J.; and Ramakumar, Ramachandra G., 3,727,122.

Randall, John H.; and Proctor, Oliver P., to Phillips Petroleum Company. Control of reaction temperature in a plurality of alkylation reactors. 3,726,941, Cl. 260-683.570.

Raper Corporation: *See*—
Aasland, Byron T.; and Dankel, Douglas D., 3,726,488.

Rastoin, Blaise. Flexible device for conveying powdery granular fibrous or fluid products. 3,726,392, Cl. 198-213.000.

Rastvorov, Jury Nikolaevich: *See*—
Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Turian, Yakov Iosifovich; Kirnos, Yakov Yakovlevich; Kolobikhin, Valentin Alexandrovich; Baranova, Pavla Sergeevna; Sherashov, Vadim; Rastvorov, Jury Nikolaevich; Emelyanova, Elena Nikolaevna; and Sishkina, Irina Mikhailovna, 3,726,937.

Rauterkus, L. Thomas: *See*—
Griffis, Roy A.; Rauterkus, L. Thomas; and Torzala, Terence, 3,726,270.

Raynaud, Guy M.: *See*—
Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; Gouret, Claude J.; Thomas, Janine M.; and Huguet, Gerard J., 3,726,900.

Razdan, Raj Kumar; and Thompson, William Raymond, to Beecham Group Limited, mesne. 2,2-di- and 2;2,3-tri-lower alkyl chroman- and chromen-ols, and salts, ethers and esters thereof. 3,726,883, Cl. 260-297.00b.

RCA Corporation: *See*—
Hanchett, George Draper, 3,727,080.
Madrazo, Charles Felix; and Saenz, Robert George, 3,727,072.
Thomas, Albert William; Neilson, John Manning Savidge; and Greenberg, Leon Stanley, 3,727,116.

R.D. Products Inc.: *See*—
Dalton, Robert L., 3,726,192.

Reaves, Woodrow W.: *See*—
Gerber, Melvin N.; and Reaves, Woodrow W., 3,726,225.

Redex Societe Anonyme: *See*—
Defontenay, Paul, 3,726,459.

Redman, Floyd W.: *See*—
Houghton, Graham K., Jr.; and Redman, Floyd W., 3,726,513.

Reed, Irving S.: *See*—
Brennan, Lawrence E.; and Reed, Irving S., 3,727,220.

Rees, Herbert, to Husky Manufacturing & Tool Works Limited. Ejector mechanism for molded articles. 3,726,625, Cl. 425-247.000.

Rees, Thomas C.: *See*—
Foster, Harold M.; Rees, Thomas C.; and Spence, Floyd G., 3,726,922.
Foster, Harold M.; Rees, Thomas C.; and Spence, Floyd G., 3,726,923.

Reese, Stanton L. Container for transporting radioactive material. 3,727,059, Cl. 250-108.00r.

Rehm, Thomas R.: *See*—
Grunert, Kurt A.; Rehm, Thomas R.; and Paton, Charles R., 3,727,157.

Reiche & Co.: *See*—
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Reiche, Carl-Heinz: *See*—
Arnold, Hans; and Reiche, Carl-Heinz, 3,726,121.

Reichhold-Albert-Chemie Aktiengesellschaft: *See*—
Dalibor, Horst; Stenzel, Gunter; and Gutte, Richard, 3,726,739.

Reichmann, Horst; and Rottmann, Gernot, to Vaillant, Joh., KG. Fin heat exchanger. 3,726,258, Cl. 122-250.00r.

Reid, Alexander Mailer; Harper, David William; and Forber, Albert, to Pilkington Brothers Limited. Method of producing elongate, clad glass member. 3,726,656, Cl. 65-3.000.

Reid, Samuel J.; Mullett, Edward J.; and Hogan, John B., to Barnes & Jones, Inc. Steam trap. 3,725,989, Cl. 29-157.10r.

Reifenberg, Gerald H.; and Considine, William J., to M & T Chemicals Inc. Organotin process. 3,726,906, Cl. 260-429.700.

Reifenhauser KG: *See*—
von Casimir, Wolf; and Rahlfs, Herbert, 3,726,743.

Reifschneider, Walter, to Dow Chemical Company, The. (((Alkylthio)alkyl)thio)phenyl carbamates. 3,726,910, Cl. 260-471.00c.

Reilly, Victor J.: *See*—
Coates, John S.; and Reilly, Victor J., 3,726,905.

Reisen, Dorothy Ann Carrier. Laminated helmet. 3,725,956, Cl. 2-200.000.

Resag, Klaus: *See*—
Beyerle, Rudi; Stachel, Ingeburg Lydia Katharina; Nitz, Rolf-Eberhard; Resag, Klaus; and Schraven, Eckhard, 3,726,902.

Research Incorporated: *See*—
Anderson, James R.; and Wilde, Herbert J., 3,727,208.

Resnicoff, Stanley W. Colhapsible display device. 3,726,412, Cl. 211-135.000.

Rey-Bellet, Gerald; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. 10-Carbamoyl-dibenzo [a,d] cyclohepta [1,4,6] trien-5-ones. 3,726,870, Cl. 260-247.70f.

Reynolds Metal Company: *See*—
Lee, Harry W., Jr., 3,726,020.

Reynolds Metals Company: *See*—
Whiteman, Benton A., 3,726,744.

Reynolds, Perry J.; and Orloff, John F., to Huck Manufacturing Company. Two-part pull type positive lock fasteners. 3,726,553, Cl. 287-189.36d.

Rhone-Poulenc S.A.: *See*—
Brunie, Jean Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,726,917.
Brunie, Jean-Claude; Costantini, Michel; Crenne, Noel; and Jouffret, Michel, 3,726,916.
Mourier, Marcel, 3,727,125.

Rhudy, John. S.; and Haws, Gerald W., to Marathon Oil Company. Method of polymer flooding. 3,726,342, Cl. 166-275.000.

Rich, Leonard G., to Gerber Scientific Instrument Company, The. Step motor damping method and apparatus. 3,727,121, Cl. 318-696.000.

Rich, Terry John: *See*—
Poynton, Bertram George; Rich, Terry John; and Sainsbury, Jeffrey Jerome, 3,727,068.

Richardson, Robert W.; and Keegan, James J., III, to Franklin Mint, Inc., The. Multi-step etching projection system. 3,726,732, Cl. 156-11.000.

Richter, Albert P., Jr.: *See*—
Cox, Percy T.; and Richter, Albert P., Jr., 3,727,012.

Richter Gedeon Begyeszeti Gyar RT: *See*—
Kisfaludy, Lajos; Patthy, Agnes, nee Lukats; Dancsi, Lajos; Fekete, Gyorgy; and Szabo, Istvan, 3,726,881.

Richterkessing, Frank H., to Cissell, W. M., Manufacturing Company, The. Garment finisher with attached assembly of fluid spraying guns. 3,726,450, Cl. 223-70.000.

Richwine, Carl L.: *See*—
Hellmann, John V.; and Richwine, Carl L., 3,726,003.

Rieck, Robert E.; and Morello, Edwin F., to Standard Oil Company. Double coated electrical conductor. 3,726,712, Cl. 117-218.000.

Riedmayer, Henry J.: *See*—
Johnston, Samuel A.; and Riedmayer, Henry J., 3,726,191.

Riester, Oskar; and Voigt, Armin, to Afga-Gevaert Aktiengesellschaft. Spectrally sensitizing quick-processing photographic material. 3,726,684, Cl. 96-95.000.

Rieter Machine Works, Ltd.: *See*—
Wurmli, Arthur, 3,726,076.

Rig Hammers, Inc.: *See*—
Dibenedetto, Anthony J., 3,727,025.

Rink, Karl-Heinz: *See*—
Pohl, Gerhard; Rink, Karl-Heinz; and Triebel, Wolfgang, 3,726,887.

Ripoll Moran, German. Impusle generator to ignite combustion engines. 3,727,071, Cl. 307-10.00r.

Risch, Adolf Friedrich: *See*—
Vorsatz, Fritz Artur; and Risch, Adolf Friedrich, 3,726,967.

Risko, Bernard L.: *See*—
Calder, Brooke J., Jr.; Risko, Bernard L.; and Belock, Robert J., 3,726,216.

Risley, John T.: *See*—
Osika, Thomas F.; and Risley, John T., 3,727,013.

Risley, Robert F.: *See*—
Pagdin, William G.; Risley, Robert F.; and Smith, Wayne A., 3,726,061.

Ritter, Gerhard: *See*—
Ritter, Josef; Boyer, Wilhelm; Ritter, Gerhard; and Ritter, Klaus, 3,727,038.

Ritter, Josef; Boyer, Wilhelm; Ritter, Gerhard; and Ritter, Klaus, to EVG Entwicklungs-und Verwerlungsgesellschaft m.b.H. Apparatus for manufacturing welded wire mesh mats for reinforcing concrete. 3,727,038, Cl. 235-151.100.

Ritter, Klaus: *See*—
Ritter, Josef; Boyer, Wilhelm; Ritter, Gerhard; and Ritter, Klaus, 3,727,038.

Rittler, Hermann L.: *See*—
Beall, George H.; and Rittler, Hermann L., 3,726,695.

Rizzo, Charles P.: *See*—
Ruckel, James R.; Rizzo, Charles P.; and Marella, Silvio A., Jr., 3,727,161.

Robbins, Daniel T. Envelope opening machine. 3,726,454, Cl. 225-99.000.

Robbins, Samuel B.; and Yoshida, Yoshitaka, to General Motors Corporation. Vehicle seat occupant sensor. 3,727,181, Cl. 340-52.00e.

Roberts, Kent S.: *See*—
Devey, Wayne A.; and Roberts, Kent S., 3,726,237.

Roberts Mfg., Inc., mesne: *See*—
Devey, Wayne A.; and Roberts, Kent S., 3,726,237.

Robinder, Ronald C., to Zenith Radio Corporation. Method of screening a color picture tube. 3,726,678, Cl. 96-36.100.

Robins, A. H., Company, Incorporated: *See*—
Chen, Ying-Ho; and Lunsford, Carl Dalton, 3,726,893.
Duncan, Robert L.; and Boswell, Robert F., Jr., 3,726,898.

Robins, Janis, to Ashland Oil, Inc. Foundry process and articles produced thereby. 3,726,867, Cl. 260-30.40n.

Robinson, Charles C.; Shaw, Robert R.; and Fournier, Joseph T., to American Optical Corporation. Ytterbium glass laser with an output in the 1024 nanometers range. 3,727,150, Cl. 331-94.500.

Robinson, John D., 50% to Robinson, Rebecci P. Temporary trailer running gear. 3,726,538, Cl. 280-81.00r.

Robinson, Max Charles. Three-terminal capacitor. 3,727,117, Cl. 317-242.000.

Robinson, Rebecci P.: *See*—
Robinson, John D., 3,726,538.

Robitaille, Dennis R.: *See*—
Moore, Fred W.; Robitaille, Dennis R.; and Barry, Henry F., 3,726,694.

Roche, Roland, to Commissariat a l'Energie Atomique. Control system for gas-filled control rod. 3,726,760, Cl. 176-86.00g.

Rodman, Charles W.: *See*—
Kaiser, Willard D.; and Rodman, Charles W., 3,727,027.

Rodrigalvarez Nieto, Carlos; and Arteaga Vera, Luis. UHF and VHF tuner for television. 3,727,140, Cl. 325-458.000.

Roeber, Henry W., to GTE Sylvania Incorporated. Leakage inhibiting shielding means. 3,727,094, Cl. 313-313.000.

Rogers, Ronald D.: *See*—
Vedder, Helmut; Byrnes, Edward R.; and Rogers, Ronald D., 3,726,466.

Rohm & Haas Company: *See*—
Smialkowski, Edwin J.; and Lang, Edgar R., 3,726,586.

Rohr Corporation: *See*—
Tontini, Remo, 3,726,091.

Rolamite Incorporated: *See*—
Cranston, Dean H., 3,726,040.

Rolls-Royce Limited: *See*—
Andrews, Edward George David, 3,726,433.
Herbstritt, Karl, 3,726,086.

Romano, Anthony J.: *See*—
Isaacs, Hugh S.; and Romano, Anthony J., 3,726,642.

Ronberg, Henry E.: *See*—
Gannett, James R.; McKee, James W.; Ronberg, Henry E.; and Warner, John D., 3,726,497.

Ronden, Clifford P., to Husky Briquetting, Inc. Synthetic fireplace log. 3,726,651, Cl. 44-14.000.

Rondina, Henry E.: *See*—
Cheney, Thomas K.; Patterson, Albert D.; Rondina, Henry E.; and Watts, James A., 3,727,192.

Ronnkvist, Ake E., to Longyear, E. J., Company. Rod welding apparatus for making threaded drill rods. 3,726,462, Cl. 228-6.000.

Rontgen, Peter: *See*—
Dierl, Rudolf; Rontgen, Peter; and Hinners, Georg, 3,726,359.

Roos, Axel Sven Olov, to Sandvik Aktiebolag. Means for clamping cutting inserts in a drill. 3,726,352, Cl. 175-413.000.

Roost, F., John: *See*—
Deen, Darrel B.; Roost, F., John; and Hrdy, James E., 3,726,029.

Roque, Ramon Masriera. Method and apparatus for knitting a net fabric. 3,726,112, Cl. 66-95.000.

Ros, Cornelia Erica: *See*—
Birkenmaier, Max; Brandestini, Antonio; and Ros, Mirko Robin, 3,725,999.

Ros, Erika Emma, nee Marti: *See*—
Birkenmaier, Max; Brandestini, Antonio; and Ros, Mirko Robin, 3,725,999.

Ros, Mirko Robin: *See*—
Birkenmaier, Max; Brandestini, Antonio; and Ros, Mirko Robin, 3,725,999.

Rosan, Jose, Sr. Insert with chip entrapment means. 3,726,180, Cl. 85-46.000.

Rose, James E.; and Zimmer-Galler, Roswitha, to United States of America, Navy. Pyrotechnic delay composition containing heavy metal soap. 3,726,730, Cl. 149-40.000.

Rose, John Brewster: *See*—
Leslie, Victor Jeffrey; and Rose, John Brewster, 3,726,927.

Rosenberg, Robert: *See*—
Cuomo, Jerome J.; Mayadas, Ashok F.; and Rosenberg, Robert, 3,726,776.

Rosocha, Bruno. Floor, rug and upholstery conditioning device. 3,726,602, Cl. 401-196.000.

Ross, Donald K., to World Color Press, Inc. Automatic routing system. 3,726,994, Cl. 178-6.60b.

Ross, Edward A.: *See*—
Banyas, John D.; and Ross, Edward A., 3,726,659.

Ross, John William, to Union Carbide Canada Limited. Ground freezing method and apparatus. 3,726,095, Cl. 61-36.00a.

Ross, Robert S.: *See*—
Blate, Steven W.; Tschudy, Donald B.; Ross, Robert S.; Mellor, Fred W.; Kifor, Harry T.; and Davidson, William C., 3,726,375.

Rossotti, Ernesto: *See*—
Dema, Andrea; Pulcini, Aldo; and Rossotti, Ernesto, 3,726,234.

Rothi, Robert D.: *See*—
Wheeler, Mildred S.; and Rothi, Robert D., 3,726,186.

Rothman, Allan J.; and Semple, J. Brooks, to S.R. Products, Inc. Electrically actuated sprinkler. 3,726,344, Cl. 169-37.000.

Rottmann, Gernot: *See*—
Reichmann, Horst; and Rottmann, Gernot, 3,726,258.

Rowley, Harold A., to Detrick, M. H., Company. Scrubbing apparatus for polluted gases. 3,726,064, Cl. 55-241.000.

Roza, Engel; and Wallast, Leendert Hendricus, to U.S. Philips Corporation. Position detector for characters. 3,727,184, Cl. 340-146.30h.

Rubery, Alfred Moffatt, to Lucas, Joseph, Industries Limited. Pistons for hydraulic piston type pumps and motors. 3,726,189, Cl. 91-506.000.

Ruckel, James R.; Rizzo, Charles P.; and Marella, Silvio A., Jr., to I-T-E Imperial Corporation. Transformer fold-out winding tap which is integral with transformer winding. 3,727,161, Cl. 336-107.000.

Ruge, Hans, to Klaus-Gerd Hoes, Firma. Apparatus for digging ditches. 3,726,099, Cl. 61-72.600.

Russell, Michael Frederick. Internal combustion engine. 3,726,365, Cl. 188-1.00b.

Russo, Thomas C.: *See*—
Bedford, Edward F.; and Russo, Thomas C., 3,726,145.

Rust, John B., to Hughes Aircraft Company. Image fixation in photochemical reproduction process. 3,726,688, Cl. 96-115.000.

Rymsza, Mark T., to MacLean-Fogg Lock Nut Co. Load binder. 3,726,507, Cl. 254-78.000.

Sadler, Leslie James: *See*—
Holland, Ernest Oliver; and Sadler, Leslie James, 3,726,004.

Saenz, Robert George: *See*—
Madrazo, Charles Felix; and Saenz, Robert George, 3,727,072.

Sainsbury, Jeffrey Jerome: *See*—
Poynton, Bertram George; Rich, Terry John; and Sainsbury, Jeffrey Jerome, 3,727,068.

Saito, Tadashi. Structure of fluid pulse cylinder for numeric control and a method of making the same. 3,726,184, Cl. 91-35.000.

Sakabe, Nobuyuki: *See*—
Komatsu, Koei; Nishiyama, Shigeyuki; Ohshima, Noboru; and Sakabe, Nobuyuki, 3,726,832.

Sakai, Kango: *See*—
Nishikawa, Takuitsu; Ninomiya, Akira; and Sakai, Kango, 3,726,701.

Sakamoto, Yuichi: *See*—
Takenaka, Shigeo; Idaka, Kazuhiko; and Sakamoto, Yuichi, 3,727,159.

Sakumura, Tuyoshi: *See*—
Fukushima, Yoshikiyo; Ishihara, Yasushi; Momota, Konzo; Usui, Yasuop; Sakumura, Tuyoshi; Sogo, Satoru; and Numokawa, Kogi, 3,726,461.

Salem, Kenneth G. Methods and apparatus for visually illustrating sound waves. 3,726,025, Cl. 35-19.00r.

Salem, Kenneth G. Air pollution light for naked eye detection of individual sub-micron sized particles. 3,726,593, Cl. 356-103.000.

Salisbury, Kirby A.: *See*—
Smith, Robert A.; Salisbury, Kirby A.; and Leaffer, Morris A., 3,726,930.

Sallberg, David W.; and Meyer, Walter E., to Kehring Company. Electrohydraulic ram velocity control circuit. 3,726,334, Cl. 164-155.000.

Sandbach, Peter, to Moore Business Forms Inc. Feed mechanism for feeding stationery having feed perforations. 3,726,455, Cl. 226-62.000.

Sandberg, Rune Verner; Sjoberg, Berndt Olof Harald; and Tegner, Claes Philip; deceased (Tegner, Gunnel Margareta; heiress). Pharmaceutical preparations containing anilides of quinuclidine-2-and quinuclidine-3-carboxylic acid and methods for using them. 3,76,980, Cl. 424-267.000.

Sandl, Dieter: *See*—
Muller, Hermann; Sandl, Dieter; and Wilsch, Herbert, 3,726,490.

Sandoz Ltd.: *See*—
Jucker, Ernst; Lindenmann, Adolf; and Gadient, Fulvio, 3,726,879.

Sandoz Ltd.; a/k/a Sandoz AG: *See*—
Bassand, Denis, 3,726,975.

Sandoz-Wander, Inc.: *See*—
Houlihan, William J., 3,726,978.
Manning, Robert E., 3,726,868.
Schmutz, Jean; Hunziker, Fritz; and Kunzie, Franz Martin, 3,726,977.

Sandvik Aktiebolag: *See*—
Roos, Axel Sven Olov, 3,726,352.

Sankyo Company Limited: *See*—
Kuwabara, Yoshimi; Sugita, Sadao; Inokuma, Hiroyuki; Iwai, Issei; Kishida, Yukichi; Iwashige, Tadahiro; Ishida, Noboru; and Miyamura, Toshihide, 3,726,686.

Sanno, Yasushi: *See*—
Kanai, Yoshio; Honda, Haruomi; Sanno, Yasushi; Nohara, Akira; and Kanno, Morio, 3,726,878.

Santilli, Arthur A.; and Kim, Dong H., to American Home Products Corporation. 5,6,7,8-Tetrahydro-8-(2-morpholinoethyl)-5-oxo- 2-phenylpyrido [2,3-d] pyrimidine-6-carbonitrile. 3,726,869, Cl. 260-247.50b.

Sapir, Said, to International Telephone and Telegraph Corporation. System for heating or air conditioning. 3,726,473, Cl. 236-11.100.

Sardisco, John B.: *See*—

Drechsel, Erhart K.; and Sardisco, John B., 3,726,660.

Sasaki, Masami: *See*—
Higashimura, Einosuke; Hirai, Keiichi; Okamoto, Eisaku; Sasaki, Masami; Sekimoto, Yukihiko; and Horiba, Akiyoshi, 3,726,812.

Sato, Masaki: *See*—
Fukami, Masaharu; Sato, Masaki; and Mori, Toshiyuki, 3,726,272.

Sato, Yoshikazu, to Nippon Seiko Kabushiki Kaisha. Numerically controlled lathe. 3,726,162, Cl. 82-3.000.

Sauer, Rudolf G., to Bendix Corporation, The. Acceleration enrichment signalling means for electronic fuel systems. 3,726,261, Cl. 123-32.0ea.

Saunders, Frank L; and Pelletier, Ronald R., to Dow Chemical Company, The. Preparation of film-forming latexes of polyvinylaromatic-polydiene block copolymers. 3,726,824, Cl. 260-29.7em.

Saunders, Raymond A., to United States of America, Navy. Method for determining immiscible water content of fluids by spectrophotometer. 3,727,049, Cl. 250-43.50r.

Savignano, Joseph Richard. Apparatus for securing artificial tooth to a jaw. 3,726,011, Cl. 32-10.00a.

Sawdey, Norman J.: *See*—
Prosser, Duane N.; and Sawdey, Norman J., 3,726,707.

Sayers, Thomas J.: *See*—
Blanch, Julian E.; Kirkpatrick, William J.; and Sayers, Thomas J., 3,726,961.

Sayles, David C., to United States of America, Army. Intumescent polymer compositions for rockets. 3,726,829, Cl. 260-41.50r.

Schaefer, Robert H., to General Motors Corporation. Power train control system. 3,726,094, Cl. 60-488.000.

Schauffler, Peter P. World transport game apparatus. 3,726,527, Cl. 273-134.0ac.

Schellenberg, Wolfgang, to Torkret GmbH. Pump construction. 3,726,614, Cl. 417-517.000.

Schick, John W., to Mobil Oil Corporation. Solid fuel covered with a combustible fibrous composition. 3,726,652, Cl. 44-14.000.

Schiff, Rein: *See*—
Taft, William G.; Schiff, Rein; and Iredale, A. John, 3,726,759.

Schindler, Walter; deceased (by Gosteli, Jacques; and Gysin, Leonhard; legal representatives), to Ciba-Geigy Corporation. 1,2,3,8-tetrahydrodibenzo (3,4 6,7) cyclohepta (1,2-c) pyrroles as CNS-depressants. 3,726,897, Cl. 260-313.100.

Schiegel, William R., to All American Industries, Inc. Pendant supporting and retaining device for arresting aircraft. 3,726,498, Cl. 244-110.00c.

Schlesman, Carleton H., to United States of America, Navy. Radioactive timing mechanism. 3,727,017, Cl. 200-81.600.

Schliebs, Reinhard; Schlor, Hanshelmut; and Homeyer, Bernhard, to Farbenfabriken Bayer Aktiengesellschaft. 1-Alkoxy(-alkenyloxy, -phenoxy)-1-thiono-3-chloro (3-alkyl) phospholines composition and their use. 3,726,973, Cl. 424-209.000.

Schlitz, Jos., Brewing Company: *See*—
Pagdin, William G.; Risley, Robert F.; and Smith, Wayne A., 3,726,061.

Schlor, Hanshelmut: *See*—
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Schmidt, Alvin J., to Lonergan, J. E., Company. Pilot valve. 3,726,301, Cl. 137-102.000.

Schmutz, Jean; Hunziker, Fritz; and Kunzie, Franz Martin, to Sandoz-Wander, Inc. 2-Nitro-11-(1-piperazinyl)-dibenz (b,f) (1,4) oxazepines compositions in the treatment of depression. 3,726,977, Cl. 424-250.000.

Schnabel, Ernfred: *See*—
Stocker, Emil; Klein, Georg Anton; and Schnabel, Ernfred, 3,726,853.

Schneider, Irwin. Non-destructive readout of a color center memory by using infrared illumination. 3,727,194, Cl. 340-173.0cc.

Schneider, Marc J. T.: *See*—
Julier, Rene P. G.; and Schneider, Marc J. T., 3,727,221.

Schneiter, Ali, to Ebauches S.A. Electric time-piece with chronograph indicator. 3,726,081, Cl. 58-39.500.

Schoenefeld, Paul: *See*—
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Schraven, Eckhard: *See*—
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Schreiber, Eric C.: *See*—
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Schrey, Alfred F., to Hughes Aircraft Company. Hydrogen ion device. 3,727,058, Cl. 250-83.30h.

Schroeder, Henry Charles; Sheehan, John Robert; and Tracey, Robert John, to Bell Telephone Laboratories, Incorporated. Automatic equalizer for phase-modulation data transmission systems. 3,727,136, Cl. 325-42.000.

Schultz, Roger L.: *See*—
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Schumann, Joseph M.; Stayboldt, Paul J.; and Corbin, John Alphonso S., to Trionics, Inc. Disposable syringe. 3,726,276, Cl. 128-227.000.

Schuppner, Harry R., Jr., to Kelco Company. Acidified food products containing xanthomonas colloid. 3,726,690, Cl. 99-139.000.

Schurr, George A., to Du Pont de Nemours, E. I., and Company. Stepped fluid energy mill. 3,726,484, Cl. 241-5.000.

Schut, Robert Norman, to Miles Laboratories, Inc. Aminomethylbicyclononenes and dihydro derivatives thereof. 3,726,872, Cl. 260-268.0bc.

Schwanog, Schwarzwalder Normteile Siegfried Guntert KG: *See*—
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Schwarz, Irving L. Foam sheet material means. 3,726,624, Cl. 425-145.000.

Schwedland, Ronald P.: *See*—
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Schweicher, Wolfgang: *See*—
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Schweiger, Richard G., to Kelco Company. Drilling fluid and method. 3,726,796, Cl. 252-8.50m.

Schwenzfeier, Otto Kurt, to Long-Lok Fasteners Corporation, mesne. Apparatus for forming self-locking fasteners. 3,726,740, Cl. 156-363.000.

Schwuttke, Guenter H.: *See*—
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SCI Systems, Inc.: *See*—
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SCM Corporation: *See*—
Ott, Robert E., 3,726,696.

Scott, Fred W. Docking device for young animals. 3,726,278, Cl. 128-303.00a.

Scott, Harold T., to General Electric Company. Instrument pointer construction. 3,727,041, Cl. 240-2.100.

Scott, Winfield H., Jr., to Clarkson Industries, Inc. Apparatus and system for removal of latex from waste water. 3,726,794, Cl. 210-104.000.

Scourtes, George, to Wilson Engineering, Inc. Fault detection apparatus. 3,727,205, Cl. 340-256.000.

Scovill Manufacturing Company: *See*—
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Searle, John Gilbert, to Allwood, Searle & Timney Limited. Friction welding. 3,725,998, Cl. 29-470.300.

Seaton-Wilson, Incorporated: *See*—
Magorien, Vincent G.; and Huffman, John A., 3,726,063.

Seegan, Anthony J. Portable hydraulic power tool unit. 3,726,348, Cl. 173-20.000.

Seiden, Paul, to Procter & Gamble Company, The. Process for producing polyglycerol ester fluffy frosting mixes. 3,726,691, Cl. 99-139.000.

Sekimoto, Yukihiko: *See*—
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Seltzer, David M.: *See*—
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Selvaggi, Victor E. Slide fastener. 3,725,983, Cl. 24-205.00r.

Semple, J. Brooks: *See*—
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Senoo, Takakazu, to Nippon Electric Company Limited. Memory circuit employing a bipolar ultrasonic delay line. 3,727,144, Cl. 328-164.000.

Severini, Febo; Valvassori, Alberto; and Pagliari, Alberto, to Montecatini Edison S.p.A. Polyvinylchloride modified by a graft copolymer of vinyl chloride onto polypentenamer. 3,726,946, Cl. 260-876.00r.

Severo-Kavkazsky neftyanoi nanchno-issledovatelsky: *See*—
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Shaffer, Gary W.; Norris, Lester R.; and Hutcheson, William H., to PPG Industries, Inc. Edge-vent detector. 3,726,453, Cl. 225-2.000.

Shaltis, Robert J., to Hastings Manufacturing Company. Dual flow spin-on the filter. 3,726,403, Cl. 210-132.000.

Shang, David Ching-Ting, to International Business Machines Corporation. Semiconductor electroluminescent diode comprising a ternary compound of gallium, thallium, and phosphorous. 3,727,115, Cl. 317-235.00r.

Shannon, Richard F., to Owens-Corning Fiberglas Corporation. High-strength foam material. 3,726,755, Cl. 161-168.000.

Shapiro, Jonas M. Automated irrigation system. 3,726,477, Cl. 239-70.000.

Sharp, Herbert John; and Humphrey, Victor William Stanley, to GKN Sankey Limited and Aro Plastic Building Supplies Limited. Moulding plastic articles. 3,725,995, Cl. 29-407.000.

Shashin Shokujiki Kenkyusho Co., Ltd.: *See*—
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Shaw, Robert R.: *See*—
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Shepherd, Charles J., to Container Corporation of America. Heavy duty container. 3,726,467, Cl. 229-23.00r.

Shepherd, Richard, to Decca Limited. Radiation responsive position detectors. 3,727,067, Cl. 250-219.0lg.

Sheppard, William L., to Mechanical Products, division of Aiken Industries, Inc. Magnetic valve. 3,726,315, Cl. 137-625.650.

Sherashov, Vadim: *See*—
Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Turian, Yakov Iosifovich; Kirnos, Yakov Yakovlevich; Kolobikhin, Valentin Alexandrovich; Baranova, Pavla Sergeevna; Sherashov, Vadim; Rastvorov, Jury Nikolaevich; Emelyanova, Elena Nikolaevna; and Sishkina, Irina Mikhailovna, 3,726,937.

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Foster, Harold M.; Rees, Thomas C.; and Spence, Floyd G., 3,726,923.

Sheung, Chu Yuen. Rotary combustion reciprocating piston engine. 3,726,260, Cl. 123-8.310.

Shiba Electric Co., Ltd.: *See*—
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Shibuya, Yoshikazu: *See*—
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Shimada, Shoji, to Nippon Steel Corporation. Rust prevention process for sheet steel plating base. 3,726,704, Cl. 117-51.000.

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Shinnei Electric Co., Ltd.: *See*—
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Shishkina, Irina Mikhailovna: *See*—
Stepanov, Gennady Arkadievich; Bushin, Alexandr Nikitich; Turian, Yakov Iosifovich; Kirnos, Yakov Yakovlevich; Kolobikhin, Valentin Alexandrovich; Baranova, Pavla Sergeevna; Sherashov, Vadim; Rastvorov, Jury Nikolaevich; Emelyanova, Elena Nikolaevna; and Sishkina, Irina Mikhailovna, 3,726,937.

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Short, James Harold: *See*—
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Short, Ralph H., to Clark Equipment Company. System and method for removable installation of swing circle for large crane. 3,726,418, Cl. 212-69.000.

Shotmeyer, Albert. Golf glove. 3,725,957, Cl. 2-161.00a.

Shots, Mikhail Borisovich: *See*—
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Sick, Erwin: *See*—
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Sidlauskas, Donald M. Upstanding rotatable child supporting pole having adjustable flexibility. 3,726,521, Cl. 272-41.000.

Siebelt, Raymond J., to Guntner, Corinne Siebelt. Fluid-operated engine. 3,726,188, Cl. 91-482.000.

Siegel, Norman H. Aerosol spray dispenser. 3,726,437, Cl. 222-70.000.

Siegel, Rudolf: *See*—
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Signal Galaxies, Inc.: *See*—
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Silberman, Ira J., to Diversified Products Corporation. Combination of a barbell with weight and collet device. 3,726,522, Cl. 272-84.000.

Siler, Joseph T. Fastener alignment means with adjustment bushing. 3,725,993, Cl. 29-271.000.

Silver, Gary L. Method for dissolving molybdenum and tungsten. 3,726,956, Cl. 423-4.000.

Silver, Howard Bernard, to British Petroleum Company Limited, The. Hydraulic fluid containing basic zinc carboxylates. 3,726,798, Cl. 252-15.000.

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Simons, Bennie P. Coin handling apparatus. 3,726,378, Cl. 194-92.000.

Singer Company, The: *See*—
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Singer, Karl. Advertising sign. 3,726,031, Cl. 40-31.000.

Sinkula, Anthony A., to Upjohn Company, The. Process for preparing erythromycin-2-amides. 3,726,856, Cl. 260-210.00e.

Sitler, Wayne R.: *See*—
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Sjostrand, Gerald D. System for dispensing fluids. 3,726,439, Cl. 222-145.000.

Skanes, Frederick A.; Ayranto, Roy O.; and Kraemer, Ronald G., to International Harvester Company. Process of manufacturing first and second tractor vehicles for different work in the field. 3,725,996, Cl. 29-428.000.

SKF Industrial Trading and Development Company: *See*—
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Sloane, R & G, Manufacturing Company, Inc.: *See*—
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Smith, Arthur W.; and Baggenstoss, Elmer J., to Ecology Engineering and Manufacturing Inc., mesne. Grinder pump. 3,726,486, Cl. 241-46.110.

Smith, Forest D., to Electric Machinery Mfg. Company. Brushless generator field ground detection system. 3,727,123, Cl. 322-99.000.

Smith, Hubert S.; and Wright, Donald R., to Dow Chemical Company, The. Method for preparing walled structures from foamable thermosetting synthetic resinous material. 3,726,951, Cl. 264-46.000.

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Smith, Orbert S.: *See*—
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Smith, Richard I.; Higgins, Larry; and King, John, to Leggett & Platt, Inc. Box spring assembly. 3,725,965, Cl. 5-260.000.

Smith, Richard R.; and Nielsen, Stuart D., to General Tire & Rubber Company, The. Alkaline earth metal organometallic compounds and method for making the same. 3,726,933, Cl. 260-665.00r.

Smith, Robert A.; Salisbury, Kirby A.; and Leaffer, Morris A., to United States Borax & Chemical Corporation. Preparation of 3,5-dinitrobenzotrifluoride compounds. 3,726,930, Cl. 260-646.000.

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Sorenson, Alan R., to Beloit Corporation. Controlled deflection roll with controlled temperature. 3,726,338, Cl. 165-89.000.
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Spicer, Larry Dean, to American Cyanamid Company. Compound 1-(2-hydroxyethyl)-4-phenyl-2- imidazolidinethione. 3,726,894, Cl. 260-309.700.
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Squire, John Mansel; and Gammon, Geoffrey James, to British Petroleum Company Limited. Polymerisation of styrene and similar monomers using a continuously increasing temperature cycle. 3,726,846, Cl. 260-86.700.
Squire, John Mansel; and Gammon, Geoffrey James, to British Petroleum Company, Limited, The. Polymerization of styrene and related monomers using a two stage continuous heating cycle. 3,726,848, Cl. 260-91.500.
Squires, George R. Adjustable metal shelving. 3,726,413, Cl. 211-148.000.
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Tanaka, Hiroshi; and Itoh, Yoshio, to Canon Kabushiki Kaisha. Cleaning device for wet-type electrophotographic device. 3,726,782, Cl. 204-299.000.
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- Tocci, Paul M., to TLC Corporation. Semisolid composition useful in thin layer chromatography method. 3,726,806, Cl. 252-317.000.
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Weissenfels, Franz; and Junger, Hans, to Dynamit Nobel Aktiengesellschaft. Process of producing a composite phenolic resin article and resultant article. 3,726,708, Cl. 117-76.00p.
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White, Fred K., to Miles Laboratories, Inc. Microbiological reaction chamber apparatus. 3,726,767, Cl. 195-127.000.
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Williams, Hubert L., to Clow Corporation. Butterfly valve with shim seat adjustment. 3,726,505, Cl. 251-307.000.
Williams, James C.; Purdy, Karl T.; and Gobel, Le Moyne D., to Consumer & Industrial Tools Corporation. Mechanically driven ratchet wrench. 3,726,161, Cl. 81-60.000.
Williams, Leonard H. Automatic stabilizer for powered irrigation pipe lines. 3,726,366, Cl. 188-6.000.
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Wolf, von Casimir. Pulsefree peristaltic pump. 3,726,613, Cl. 417-477.000.
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Wolfenden, Alan N., to AMF Incorporated. Roll covering machine. 3,726,736, Cl. 156-187.000.
Wolff, Richard C., to Garcia Corporation, The. Shotgun. 3,726,037, Cl. 42-40.000.
Wolfson, Frank C., to International Playtex Corporation. Underwire brassiere. 3,726,286, Cl. 128-473.000.
Wollesen, Donald L., to National Semiconductor Corporation. Integrated circuit balanced mixer apparatus. 3,727,078, Cl. 307-233.000.
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Cross, Eason, Jr. Arm chair. 226,646, 4-10-73, Cl. D6—71.
Culver, Christopher M., and D. A. Lane. Three dimensional staggered chessboard with movable supports for chessmen. 226,669, 4-10-73, Cl. D34—5.
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Grawey, Charles E., K. E. Koch, and R. W. Untz, to Caterpillar Tractor Co. Tire rim. 226,657, 4-10-73, Cl. D14—30 R.
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Kenney, G. D. and J. J. Pour spout attachment for a paint can or the like. 226,652, 4-10-73, Cl. D9—290.
Kenney, Joyce J.: *See—*
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330	3,726,071
CLASS 57	
34HS	3,726,073
34R	3,726,072
59	3,726,075
73	3,726,076
106	3,726,077
145	3,726,078
155	3,726,079
CLASS 58	
39.5	3,726,081
88G	3,726,082
CLASS 59	
85	3,726,083
CLASS 60	
13	3,726,084
36	3,726,085
39.28R	3,726,086
39.65	3,726,087
39.74A	3,726,088
255	3,726,090
264	3,726,091
314	3,726,092
422	3,726,089
445	3,726,093
488	3,726,094
CLASS 61	
36A	3,726,095
37	3,726,096
45D	3,726,097
48	3,726,098
72.6	3,726,099
CLASS 62	
3	3,726,100
52	3,726,101
70	3,726,102
117	3,726,103
140	3,726,104
156	3,726,105
294	3,726,106
499	3,726,107
CLASS 64	
15R	3,726,108
30A	3,726,109
CLASS 65	
1	3,726,655
3	3,726,656
23	3,726,657
40	3,726,658
70	3,726,659
CLASS 66	
40	3,726,110
49	3,726,111
95	3,726,112
163	3,726,113
CLASS 68	
134	3,726,114
CLASS 70	
33	3,726,115
364A	3,726,116
CLASS 71	
37	3,726,660
101	3,726,661
103	3,726,662
118	3,726,663
CLASS 72	
7	3,726,117
90	3,726,118
234	3,726,119
306	3,726,120
402	3,726,121
412	3,726,122
441	3,726,123
CLASS 73	
8	3,726,124
15R	3,726,125
	3,726,126
23.1	3,726,127
30	3,726,128
67.2	3,726,129
67.8R	3,726,130
71.5U	3,726,131
101	3,726,132
118	3,726,133
139	3,726,134
	3,726,135
155	3,726,136
160	3,726,137
179	3,726,138
181	3,726,139
299	3,726,140
368.3	3,726,141
401	3,726,142
422TC	3,726,143
423A	3,726,144
457	3,726,145
CLASS 74	
5	3,726,146
121	3,726,148
141.5	3,726,149
394	3,726,150
424.8A	3,726,151
552	3,726,147
	3,726,152
606	3,726,153
607	3,726,154
625	3,726,155
750B	3,726,156
753	3,726,157
804	3,726,158
866	3,726,159
CLASS 75	
.5A	3,726,664
30	3,726,665
68R	3,726,666
101	3,726,667
125	3,726,668
129	3,726,669
130B	3,726,670
134F	3,726,671
142	3,726,672
153	3,726,673
221	3,726,674
CLASS 81	
3CP	3,726,160
60	3,726,161
CLASS 82	
3	3,726,162
36A	3,726,163
CLASS 83	
1	3,726,164
13	3,726,165
37	3,726,167
58	3,726,166
79	3,726,168
247	3,726,169
556	3,726,170
643	3,726,171
CLASS 84	
304	3,726,172
388	3,726,173
470	3,726,174
	3,726,175
	3,726,176
	3,726,177
CLASS 85	
1JP	3,726,178
36	3,726,179
46	3,726,180
75	3,726,181
CLASS 86	
1R	3,726,182
CLASS 87	
58.34	3,726,074
CLASS 90	
13.9	3,726,183
CLASS 91	
35	3,726,184
290	3,726,185
384	3,726,186
468	3,726,187
482	3,726,188
506	3,726,189
CLASS 92	
5R	3,726,191
9	3,726,190
CLASS 95	
1.1	3,726,192
4.5R	3,726,193
10CE	3,726,197
10CT	3,726,194
	3,726,196
11L	3,726,195
37	3,726,198
53EA	3,726,199
53.3	3,726,200
100	3,726,201
CLASS 96	
3	3,726,675
27	3,726,676
33	3,726,677
36.1	3,726,678
48HD	3,726,679
52	3,726,680
74	3,726,681
84R	3,726,682
	3,726,683
86P	3,726,685
95	3,726,684
100R	3,726,686
114.6	3,726,687
115P	3,726,688
CLASS 98	
2.12	3,726,207
32	3,726,202
36	3,726,203
	3,726,204
110	3,726,205
115LH	3,726,206
CLASS 99	
3	3,726,689
139	3,726,690
	3,726,691
140R	3,726,692
199	3,726,693
233.11	3,726,208
289	3,726,209
CLASS 100	
7	3,726,210
100	3,726,211
CLASS 101	
21	3,726,212
93C	3,726,213
CLASS 102	
16	3,726,214
24R	3,726,215
27R	3,726,216
28R	3,726,217
38	3,726,218
	3,726,219
39	3,726,220
45	3,726,221
46	3,726,222
56	3,726,223
	3,726,224
65	3,726,225
	3,726,226
70.2R	3,726,227
73R	3,726,228
	3,726,229
78	3,726,230
93	3,726,231
CLASS 104	
15	3,726,232
172S	3,726,233
	3,726,234
CLASS 105	
396	3,726,235
CLASS 106	
14	3,726,694
39DV	3,726,695
48	3,726,696
52	3,726,697
54	3,726,698
59	3,726,699
300	3,726,700
CLASS 108	
51	3,726,236
92	3,726,237
CLASS 109	
2	3,726,238
CLASS 110	
1J	3,726,239
CLASS 112	
121.11	3,726,240
121.15	3,726,241
121.27	3,726,242
235	3,726,243
CLASS 113	
7A	3,726,244
CLASS 114	
61	3,726,245
67A	3,726,246
206R	3,726,247
235R	3,726,248
CLASS 115	
70	3,726,249
CLASS 116	
129	3,726,250
CLASS 117	
17	3,726,701
37R	3,726,702
47A	3,726,703
51	3,726,704
	3,726,705
62	3,726,706
70C	3,726,707
76P	3,726,708
93.31	3,726,709
	3,726,710
96	3,726,711
218	3,726,712
231	3,726,713
235	3,726,714
CLASS 119	
3	3,726,251
14.08	3,726,252
14.18	3,726,253
16	3,726,254
17	3,726,255
20	3,726,256
27	3,726,257
CLASS 122	
250R	3,726,258
CLASS 123	
8.23	3,726,259
8.31	3,726,260
32EA	3,726,261
41.1	3,726,262
139BD	3,726,263
148S	3,726,264
179K	3,726,265
CLASS 124	
11R	3,726,266
CLASS 126	
85B	3,726,267
262	3,726,268
CLASS 127	
5	3,726,715
CLASS 128	
2S	3,726,273
2.05F	3,726,269
2.08	3,726,270
	3,726,271
6	3,726,272
145.8	3,726,274
206	3,726,275
227	3,726,276
285	3,726,277
303A	3,726,278
327	3,726,279
349BV	3,726,282
	3,726,283
349R	3,726,280
	3,726,281
350R	3,726,284
419P	3,726,285
473	3,726,286
617	3,726,287
CLASS 132	
7	3,726,288
9	3,726,289
CLASS 133	
3R	3,726,290
4R	3,726,291
6	3,726,292

CLASS 134	
45	3,726,293
CLASS 135	
4R	3,726,294
25	3,726,295
CLASS 136	
100R	3,726,716
111	3,726,717
154	3,726,718
CLASS 137	
1	3,726,296
	3,726,297
13	3,726,298
75	3,726,299
88	3,726,300
102	3,726,301
117	3,726,302
205	3,726,303
268	3,726,304
341	3,726,305
375	3,726,306
487.5	3,726,307
527.8	3,726,308
528	3,726,309
576	3,726,310
596.17	3,726,311
596.2	3,726,312
609	3,726,313
625.17	3,726,316
	3,726,317
625.41	3,726,314
	3,726,318
625.65	3,726,315
CLASS 138	
90	3,726,319
103	3,726,320
123	3,726,321
128	3,726,322
CLASS 139	
66	3,726,323
68	3,726,324
CLASS 141	
317	3,726,325
CLASS 144	
34R	3,726,326
144.5	3,726,327
323	3,726,328
CLASS 148	
1.5	3,726,719
6.15R	3,726,720
6.27	3,726,721
11.3F	3,726,722
12	3,726,723
12.7	3,726,725
36	3,726,724
187	3,726,726
CLASS 149	
2	3,726,727
17	3,726,728
19	3,726,729
40	3,726,730
109	3,726,731
CLASS 150	
28R	3,726,329
CLASS 151	
22	3,726,330
CLASS 156	
11	3,726,732
17	3,726,733
62.2	3,726,734
132	3,726,735
187	3,726,736
210	3,726,737
276	3,726,738
308	3,726,739
334	3,726,741
363	3,726,740
400	3,726,742
494	3,726,743
502	3,726,744
510	3,726,745
566	3,726,746
580	3,726,747
	3,726,748
	3,726,749
CLASS 161	
57	3,726,750
58	3,726,751
67	3,726,752
144	3,726,753
161	3,726,754
168	3,726,755
CLASS 162	
50	3,726,756
290	3,726,757
299	3,726,758
CLASS 164	
57	3,726,331
82	3,726,332
	3,726,333
155	3,726,334
207	3,726,335
283	3,726,336
CLASS 165	
47	3,726,337
89	3,726,338
134	3,726,339
CLASS 166	
117	3,726,340
224	3,726,341
275	3,726,342
278	3,726,343
CLASS 169	
37	3,726,344
CLASS 171	
101	3,726,345
CLASS 172	
272	3,726,346
666	3,726,347
CLASS 173	
20	3,726,348
CLASS 174	
15C	3,726,985
43	3,726,986
50.61	3,726,987
68B	3,726,988
68.5	3,726,989
CLASS 175	
45	3,726,349
374	3,726,350
410	3,726,351
413	3,726,352
CLASS 176	
37	3,726,759
86G	3,726,760
87	3,726,761
CLASS 177	
208	3,726,353
CLASS 178	
5.4R	3,726,990
	3,726,991
5.6	3,726,992
6	3,726,993
6.6A	3,726,995
6.6B	3,726,994
6.8	3,726,997
7.3D	3,727,001
7.3R	3,726,999
7.6	3,726,998
7.9	3,727,000
18	3,727,002
28	3,727,003
67R	3,726,996
CLASS 179	
1D	3,727,004
15BY	3,727,005
18DA	3,727,007
18ES	3,727,008
18GF	3,727,006
90CS	3,727,010
90D	3,727,009
100.2K	3,727,011
	3,727,012
CLASS 180	
5R	3,726,354
	3,726,355
66F	3,726,356
124	3,726,357
CLASS 181	
31A	3,726,358
42	3,726,359
CLASS 182	
134	3,726,360
170	3,726,361
178	3,726,362
CLASS 184	
56R	3,726,363
CLASS 187	
29R	3,726,364
CLASS 188	
1B	3,726,365
6	3,726,366
106P	3,726,367
316	3,726,368
CLASS 192	
3TR	3,726,369
8C	3,726,370
12BA	3,726,371
26	3,726,372
84PM	3,726,373
107R	3,726,374
CLASS 193	
25B	3,726,375
35R	3,726,376
CLASS 194	
10	3,726,377
92	3,726,378
CLASS 195	
1.8	3,726,762
28R	3,726,763
30	3,726,765
80R	3,726,766
127	3,726,764
139	3,726,767
CLASS 197	
1R	3,726,379
6.6	3,726,380
168	3,726,381
CLASS 198	
10	3,726,382
20R	3,726,383
25	3,726,384
33AA	3,726,385
33AB	3,726,388
33AC	3,726,386
33AD	3,726,387
179	3,726,389
190	3,726,390
212	3,726,391
213	3,726,392
CLASS 200	
5	3,727,013
33R	3,727,014
38CA	3,727,016
38R	3,727,015
81.6	3,727,017
144B	3,727,018
	3,727,019
167A	3,727,020
168G	3,727,021
CLASS 204	
1.5	3,726,768
2	3,726,769
16	3,726,770
38B	3,726,771
39	3,726,772
129.35	3,726,773
157.1R	3,726,774
158R	3,726,775
192	3,726,776
195R	3,726,777
195T	3,726,778
197	3,726,779
275	3,726,780
286	3,726,781
299	3,726,782
300	3,726,783
CLASS 206	
16D	3,726,393
46FR	3,726,394
46ST	3,726,395
52R	3,726,396
56DF	3,726,397
65K	3,726,398
CLASS 208	
8	3,726,784
	3,726,785
11	3,726,786
59	3,726,787
	3,726,788
80	3,726,789
111	3,726,790
127	3,726,791
310	3,726,792
CLASS 209	
73	3,726,399
80.5	3,726,400
240	3,726,401
CLASS 210	
23	3,726,793
104	3,726,794
107	3,726,402
132	3,726,403
139	3,726,404
198C	3,726,405
233	3,726,795
242	3,726,406
435	3,726,407
493	3,726,408
CLASS 211	
46	3,726,409
60SK	3,726,410
126	3,726,411
135	3,726,412
148	3,726,413
	3,726,414
169	3,726,415
CLASS 212	
49	3,726,416
55	3,726,417
69	3,726,418
CLASS 213	
43	3,726,419
CLASS 214	
1QG	3,726,420
77R	3,726,421
83.24	3,726,422
505	3,726,423
620	3,726,424
621	3,726,425
658	3,726,426
701P	3,726,427
763	3,726,428
CLASS 215	
1C	3,726,429
9	3,726,430
CLASS 219	
10.43	3,727,022
69G	3,727,024
69V	3,727,023
73	3,727,025
121EM	3,727,026
121LM	3,727,027
149	3,727,028
301	3,727,029
CLASS 220	
12	3,726,431
27	3,726,432
46	3,726,433
54	3,726,434
CLASS 221	
59	3,726,435
CLASS 222	
70	3,726,437
	3,726,438
145	3,726,439
174	3,726,440
178	3,726,441
207	3,726,442
213	3,726,436
333	3,726,443
402.11	3,726,444
	3,726,445
513	3,726,446
567	3,726,447
CLASS 223	
32	3,726,448
35	3,726,449
70	3,726,450
74	3,726,451
91	3,726,452
CLASS 225	
2	3,726,453
99	3,726,454
CLASS 226	
62	3,726,455
89	3,726,456
90	3,726,457
141	3,726,458
152	3,726,459
CLASS 228	
3	3,726,460
5	3,726,461
6	3,726,462
15	3,726,463
19	3,726,464
37	3,726,465
44	3,726,466
CLASS 229	
23R	3,726,467
36	3,726,468
41B	3,726,469
52	3,726,470
92.8	3,726,471
CLASS 232	
1R	3,726,472
CLASS 235	
61.11E	3,727,030
61.12M	3,727,031
61.12R	3,727,032
92LG	3,727,034
92PD	3,727,033
150.1	3,727,035
	3,727,036
150.53	3,727,037
151.1	3,727,038
153AM	3,727,039
CLASS 236	
11	3,726,473
26E	3,726,474
102	3,726,475
CLASS 238	
10E	3,726,476
CLASS 239	
70	3,726,477
212	3,726,478
233	3,726,479
265.19	3,726,480
287	3,726,481
467	3,726,482
CLASS 240	
1.3	3,727,040
2.1	3,727,041
	3,727,042
10R	3,727,044
10T	3,727,043
CLASS 241	
5	3,726,483
	3,726,484
32	3,726,485
46.11	3,726,486
46.17	3,726,487
101.7	3,726,488
CLASS 242	
71.8	3,726,489
192	3,726,490
194	3,726,491
201	3,726,492
CLASS 244	
2	3,726,493
3.14	3,726,494
3.22	3,726,496
3.27	3,726,495
83R	3,726,497
110C	3,726,498
141	3,726,499
152	3,726,500
CLASS 246	
169A	3,727,045
182C	3,727,046
CLASS 248	
351	3,726,501
CLASS 250	
41.9TF	3,727,047
43.5MR	3,727,048
43.5R	3,727,049
	3,727,050
49.5B	3,727,051
51.5	3,727,052
83.3D	3,727,054
83.3H	3,727,053
	3,727,055
	3,727,057
	3,727,058
108R	3,727,059
	3,727,060
199	3,727,061
	3,727,062
206	3,727,063
217S	3,727,064
218	3,727,056
	3,727,065
	3,727,066
219LG	3,727,067
220M	3,727,068
222R	3,727,069
CLASS 251	
62	3,726,502
173	3,726,503
306	3,726,504
307	3,726,505
CLASS 252	
8.5M	3,726,796
8.8	3,726,797
49.5	3,726,799
75	3,726,798
95	3,726,800
188.3	3,726,802
316	3,726,803
	3,726,804
	3,726,805
317	3,726,806
356	3,726,807
425	3,726,808
431P	3,726,809
441	3,726,810
463	3,726,811
521	3,726,812
539	3,726,813
543	3,726,814
544	3,726,815
CLASS 254	
29	3,726,506
78	3,726,507
187R	3,726,801
CLASS 259	
1R	3,726,508
7	3,726,509
101	3,726,510
CLASS 260	
2.5AC	3,726,816
9	3,726,817
22CB	3,726,819
22CQ	3,726,818
28.5R	3,726,820
29.2TN	3,726,825
29.6NR	3,726,821
29.6RW	3,726,822
29.6M	3,726,823
29.7EM	3,726,824
30.4N	3,726,867
30.4R	3,726,826
31.8N	3,726,827
33.6AQ	3,726,828
41.5R	3,726,829
45.8A	3,726,830
47CP	3,726,831
47UA	3,726,832
65	3,726,833
	3,726,834
75NH	3,726,835
	3,726,836
77.5AQ	3,726,838
77.5UA	3,726,837
78.5CL	3,726,839
79	3,726,840
	3,726,841
80.76	3,726,842
80.78	3,726,843
83.7	3,726,844
85.3R	3,726,845
86.7	3,726,846
91.5	3,726,848
92.8R	3,726,847
93.1	3,726,849
124A	3,726,850
154	3,726,851
157	3,726,852
188	3,726,853
197	3,726,854
209R	3,726,855
210E	3,726,856
210R	3,726,858
210.5	3,726,857
232	3,726,859
239E	3,726,862
239.1	3,726,860
	3,726,861
	3,726,863
239.55D	3,726,864
243C	3,726,865
247.1	3,726,866
	3,726,868
247.5B	3,726,869
247.7F	3,726,870
248NS	3,726,871
268BC	3,726,872
279R	3,726,873
	3,726,874
281	3,726,875
283S	3,726,876
293.53	3,726,877
294.8E	3,726,878
	3,726,880
295AM	3,726,881
295.5R	3,726,879
296	3,726,882
297B	3,726,883
305	3,726,889
306.6A	3,726,890
306.7	3,726,891
306.8D	3,726,892
307F	3,726,893
309.5	3,726,895
309.7	3,726,894
310C	3,726,896
313.1	3,726,897
326N	3,726,899
326.13R	3,726,898
340.9	3,726,900
343.2R	3,726,902
346.1R	3,726,905
346.2R	3,726,904
346.3	3,726,901
347.7	3,726,903
429.7	3,726,906
448.8R	3,726,907
453R	3,726,908
468D	3,726,909
471C	3,726,910
479C	3,726,911
481R	3,726,884
482B	3,726,886
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U. S. GOVERNMENT PRINTING OFFICE : O - 1973

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE
April 17, 1973 Volume 909 Number 3

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PATENT OFFICE NOTICES

Certificates of Correction for the Week of Apr. 17, 1973

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Service by Publication

Robert L. Litle

In accordance with Rule 47 of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on August 30, 1971, of an application for patent entitled "Scintillation Counting Systems and Components," on behalf of Robert L. Litle, whose last known address is % P. A. Parish, Box 255, Grass Valley, Calif. 95945. The application was made in compliance with Rule 47(a) and 35 U.S.C. 116 by joint inventor Philip Ting without execution by the said Robert L. Litle. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said Robert L. Litle in connection with the said application must be taken within thirty days of the publication of this notice.

RICHARD A. WAHL,
Assistant Commissioner of Patents.

Disclaimer

3,371,343.—*William K. Sones,* Baltimore, Md. AUTO COHERENT PHASE CODING APPARATUS. Patent dated Feb. 27, 1968. Disclaimer filed Mar. 19, 1973, by the assignee, *the United States of America, as represented by the Secretary of the Air Force.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 3, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M, STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-20-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	3-16-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-15-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	12-17-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-10-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	8-21-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-16-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-03-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-22-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-06-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	5-26-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-01-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-03-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-10-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-28-72

Expiration of patents: The patents within the range of numbers indicated below expire during April 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,740,117 to 2,743,441, inclusive
Plant Patents	Numbers 1,467 to 1,471, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED APRIL 17, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T909,013

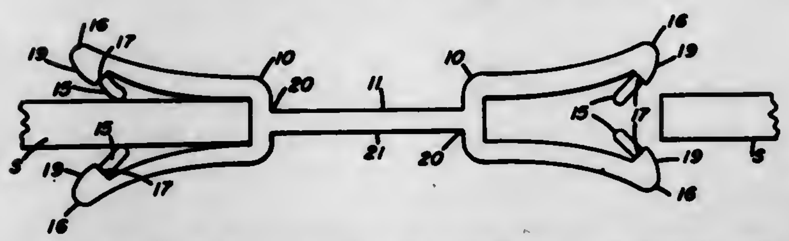
SLIDE STICK

Arthur C. Risberger, Jr., Webster, N.Y.
(1669 Lake Ave., Rochester, N.Y. 14650)

Filed Nov. 10, 1971, Ser. No. 197,352

Int. Cl. G09f *1/10*
U.S. Cl. 40—158

1 Sheet Drawing. 12 Pages Specification



A slide stick for returning a customer's processed and slide mounted transparencies so that a plurality of them can be simultaneously viewed by transmitted light without having to handle the slides individually. The slide stick preferably comprises two elongated substantially U-shaped channel sections connected in back-to-back relation by a web. A plurality of slides are inserted edgewise into each channel section in side-by-side relation and are frictionally held in place by resilient fingers extruding inwardly from each channel wall and rearwardly of the channels. The sticks are preferably of such length that two sticks will accommodate the number of slides obtained from a single roll of film, i.e. 12 or 20. The stick is preferably plastic and formed by a dual durometer extrusion technique, the channel sections and the web connecting them being formed of a plastic having a durometer hardness which renders these parts fairly rigid and the fingers formed from a plastic having a durometer hardness which makes them resilient.

T909,014

MASKING OF DEFECTS IN ELECTRO-PHOTOGRAPHIC ELEMENTS

Joseph Y. Kaukeinen, % Eastman Kodak Company, Kodak Park Division, 1669 Lake Ave., Rochester, N.Y. 14650

Filed Nov. 29, 1971, Ser. No. 203,017

Int. Cl. B44d *1/14*; G03g *5/00*
U.S. Cl. 117—2 R

No Drawing. 20 Pages Specification

A finely-divided electroscopic material with a high electrical resistance is deposited over a low conductivity electrical defect in the surface of a photoconductor element. The deposit of electroscopic material increases the effective electrical resistance of the defect area and thus, for example, reduces unwanted background density of a xerographic print made from such a photoconductor element. Preferably, the finely-divided electroscopic material is electrophoretically applied to the surface of a photoconductive element by means of a liquid developer composition. According to the invention an electrostatic charge is formed, in the dark, on the photoconductive layer of an electrographic element; then, in the dark, a finely-divided electroscopic resinous material carrying a charge of the same sign as the charge formed on the photoconductive layer is applied to said layer, whereby the electroscopic material is attracted to areas of the photoconductive layer which exhibit greater electrical conductivity than the rest of the photoconductive layer.

T909,015

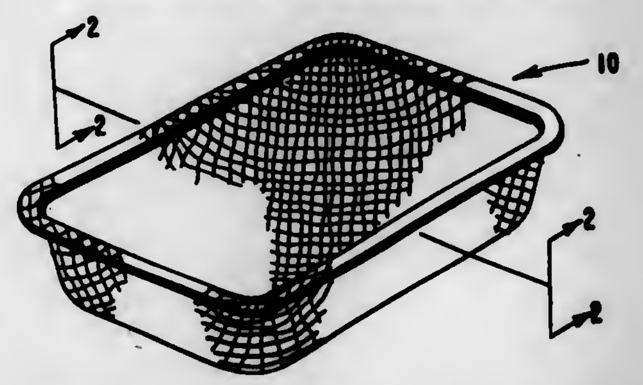
PLASTIC CONTAINER

James Thomas Pecka, Florence, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 111,263, Feb. 1, 1971. This application Mar. 10, 1972, Ser. No. 233,484

Int. Cl. B32b *1/00*
U.S. Cl. 161—89

1 Sheet Drawing. 10 Pages Specification



A thermoplastic container comprising a thermally formed thermoplastic netting member or first shell and a thermoplastic film member or second shell in contour-conforming configuration with and adhered to the netting member and in surface-surrounding relationship to its strands. The container is particularly useful for dispensing food products from vending machines since it can be subjected to electronic, convective or radiant heating.

T909,016

PRODUCTION OF LIQUID AMMONIUM POLYPHOSPHATE

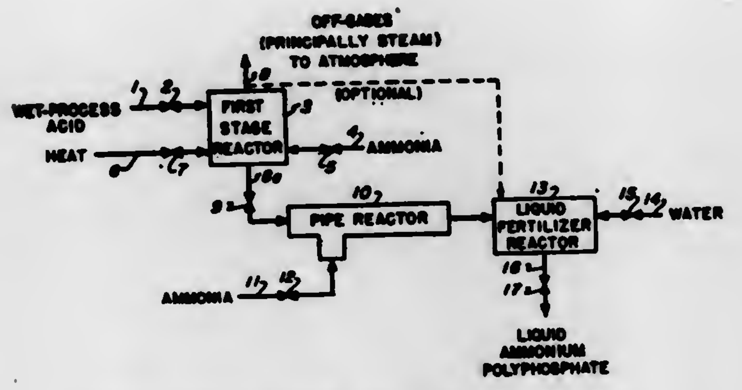
Horace C. Mann, Jr., 1942 Holiday Drive, Florence, Ala. 35630

Filed Mar. 24, 1972, Ser. No. 237,627

Int. Cl. C05b *7/00*
U.S. Cl. 71—34

1 Sheet Drawing. 24 Pages Specification

A process for the direct production of liquid fertilizer base solutions free of noncarbonaceous precipitates and that usually contains upwards of 80 percent polyphosphate but can contain in excess of 80 percent polyphosphate from wet-process orthophosphoric acid, ammonia, and water. The process involves partial neutralization of the feed wet-process acid and formation of some of the polyphosphate in the first reactor followed by further ammoniation of the partially neutralized acid in a second reactor which may be of the common pipe type and where the remainder of the polyphosphate is formed; the resultant melt from the pipe reactor is then processed directly into a liquid fertilizer. Sufficient heat, in addition to that derived from the heat of ammoniation, is added to the first reactor to form sufficient polyphosphate so that on further ammoniation, melts of high polyphosphate content are formed. The resultant liquid fertilizers contain sufficient polyphosphate to sequester the magnesium and other impurities that normally precipitate from liquid fertilizers made with wet-process orthophosphoric acids. The advantage of this process is that liquids higher in polyphosphate content than those usually made directly from wet-process superphosphoric acid and as high in polyphosphate content as those made by the TVA direct process from the wet-process superphosphoric acid can now be made with wet-process orthophosphoric acid without a separate concentration step.



PRODUCTION OF LIQUID AMMONIUM POLYPHOSPHATE FROM ORTHOPHOSPHORIC ACID

T909,017

SULFUR DIOXIDE REMOVAL FROM STACK GASES

John E. Jordan, 1306 30th St., Sheffield, Ala. 35660, and George M. Newcombe, 200 Seven Oaks Road, Apt. 8–G, Durham, N.C. 27704

Filed Apr. 13, 1972, Ser. No. 243,636

Int. Cl. C01b *17/00*
U.S. Cl. 423—242

3 Sheets Drawing. 18 Pages Specification

Sulfur oxides can be removed from waste gases by absorption in ammoniacal solution forming ammonium bisulfite, ammonium sulfite, and, unavoidably, ammonium sulfate. The absorber effluent solution may be treated with ammonium bisulfate to form ammonium sulfate and to release a concentrated stream of SO_2 suitable for conversion to H_2SO_4 or elemental sulfur. Ammonium sulfate may be crystallized from the solution and thermally decomposed to ammonia for recycle to the absorber and ammonium bisulfate for recycle to the SO_2 release step. The economics of the process are improved by operating the absorber with an ammoniacal solution having a high content of ammonium sulfate; subsequent treatment of the scrubber effluent with ammonium bisulfate and, after SO_2 release, with ammonia causes precipitation of ammonium sulfate without evaporation of the large amounts of water required in earlier concepts of this process.

T909,018

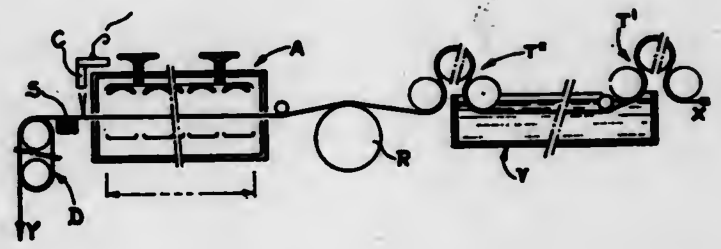
METHOD AND EQUIPMENT FOR HEAT-SETTING TREATMENT OF SYNTHETIC FILAMENTS BY MEANS OF INFRARED RAYS

Francesco Siclari, Bruno D'Alo, and Giulio Del Ninno, Milan, Italy, assignors to SNIA Viscosa Società Nazionale Industria Applicazion Viscosa, Milan, Italy

Filed May 15, 1972, Ser. No. 253,115

Int. Cl. B29c *25/00*
U.S. Cl. 264—346

1 Sheet Drawing. 21 Pages Specification



A method and apparatus for the heat-setting treatment of synthetic filaments are provided. The filaments are arranged in a parallel manner and are advanced under a predetermined tension through a processing chamber wherein the filaments are subjected to infrared rays. The filaments also may be subjected to a contact heating operation upstream and/or downstream of the infra red ray processing chamber.

Within the chamber and above the filaments are positioned radiators for generating the infrared rays. Below the filaments are positioned reflecting surfaces. The infrared ray radiators are adjustably positioned with respect to the filaments. Radiation intercepting means, preferably in the form of movable louvers, are positioned between the filaments and the radiators. The louvers are movable from a position perpendicular to the filaments to allow maximum infrared ray access thereto, to a position parallel to said filaments to substantially block access of infrared rays thereto. The chamber is provided with a device to create continuous circulation of air therethrough. Advantageously, the direction of air flow within the chamber is perpendicular to the direction of movement of the filaments.

T909,019

NUCLEAR CORE INLET FLOW ARRANGEMENT

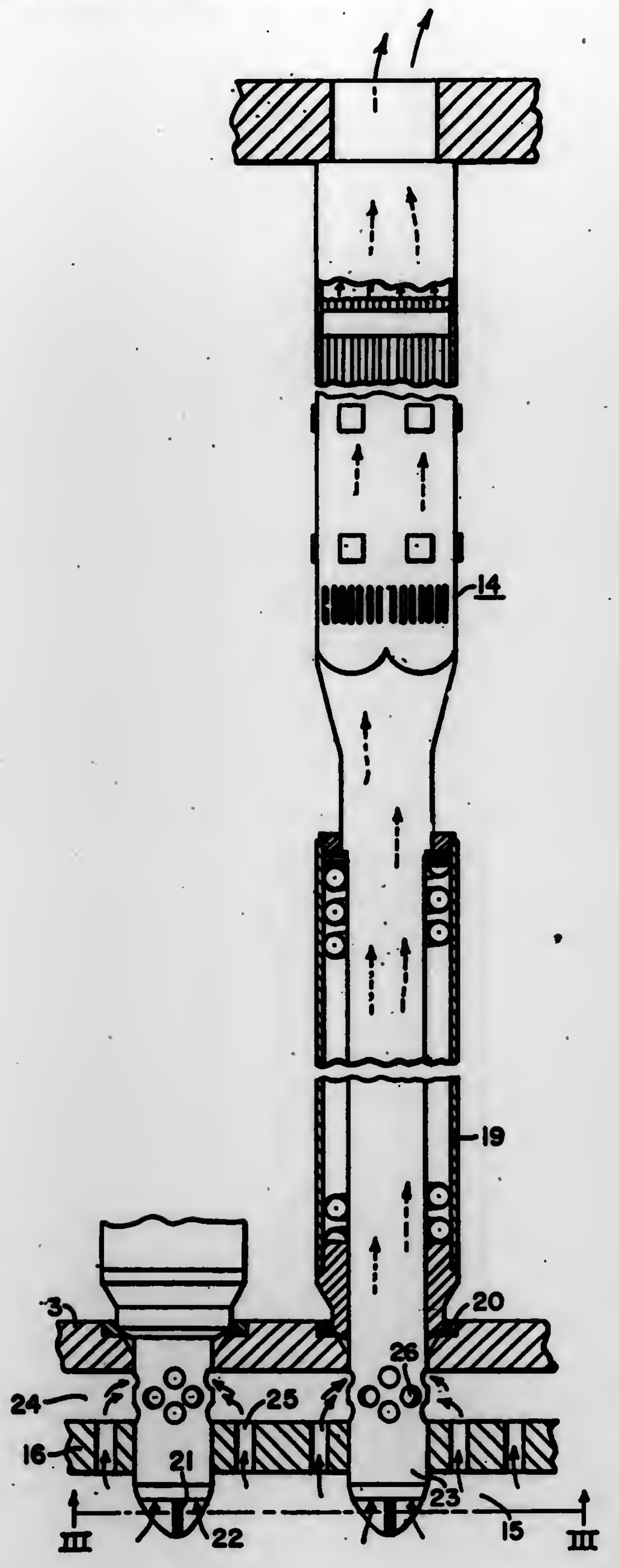
John F. Patterson, Jr., Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 13, 1972, Ser. No. 262,434

Int. Cl. G21c *15/22, 15/24, 19/28*
U.S. Cl. 176—61

1 Sheet Drawing. 11 Pages Specification

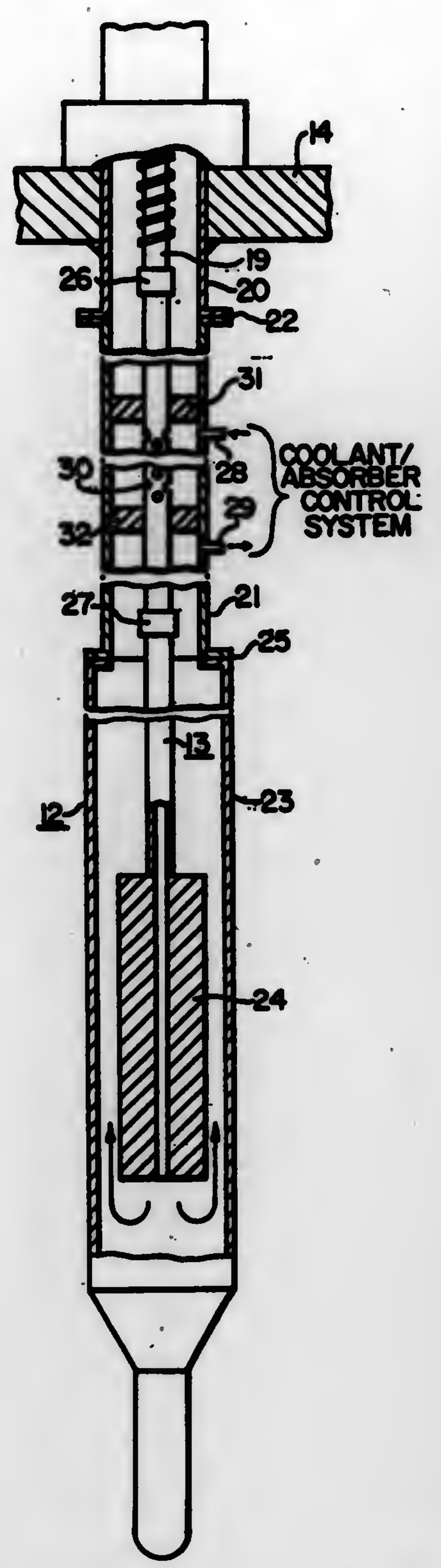
A nuclear core arrangement for admitting reactor coolant into nuclear reactor fuel assemblies. Inlet nozzles having main and alternate inlets are attached to the fuel assemblies. Each of the nozzle inlets receive reactor coolant from a separate flow plenum. The flow plenums are arranged in parallel and are separated by a perforated sealing member. Should the main inlet to the fuel assembly become clogged by debris, the alternate inlet supplies the fuel assembly with reactor coolant.



T909,020
COMBINED SOLID AND LIQUID SYSTEM FOR CONTROLLING NUCLEAR REACTORS

Reinhard Froelich, Scottdale, and Howard W. Yant, Greensburg, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 30, 1972, Ser. No. 267,812
Int. Cl. G21c *17/10*
U.S. Cl. 176—86 R
2 Sheets Drawing. 16 Pages Specification

A control system for a nuclear reactor comprising hollow mechanically operated control rods and a liquid neutron absorber which may be circulated through the hollow control rods. The liquid neutron absorber provides the nuclear reactor with a redundant safety system to deactivate the reactor.



T909,021
CIGARETTE FILTER

John E. Kiefer, Profit Acres, Kingsport, Tenn. 37663, and Robert C. Mumpower II, 2104 King Mill Pike, Bristol, Va. 24201
Filed Aug. 24, 1972, Ser. No. 283,459
Int. Cl. A24b *15/02;* **A24d** *1/06*
U.S. Cl. 131—267
No Drawing. 6 Pages Specification

This invention relates to a new and improved cigarette filter made from a crimped textile tow. The fibers within the filter are coated with a solution of glycerol and poly(ethylene glycol). The function of the coating, or additive, is to increase the efficiency of the filter for removing tar and nicotine from cigarette smoke. By appropriate choice of glycerol and poly(ethylene glycol) concentration on the fiber, the amounts of both tar and nicotine delivered by a filter cigarette can be adjusted over a significant range.

T909,022
INTERIMAGE EFFECTS IN PHOTOGRAPHIC COLOR ELEMENTS

James Leo Graham, % Eastman Kodak Company, Kodak Park Division, 1669 Lake Ave., Rochester, N.Y. 14650
Filed Sept. 21, 1972, Ser. No. 290,934
Int. Cl. G03c *7/16*
U.S. Cl. 96—22
No Drawing. 18 Pages Specification

Processes for providing multicolor photographic reproductions wherein silver images are developed in exposed photographic elements having at least two superposed hydrophilic colloid layers containing silver halide, and forming differently colored dye images in proportion to the silver images. This invention provides an improvement in such processes whereby undercut interimage effects are obtained in at least one of the dye images. These undercut interimage effects are obtained by introducing a compound selected from the group consisting of 2,3-dimethylthiazolium salt, S-β-hydroxyethylthiourea, 1-(2-mercaptoethyl)-1,4,4-trimethyl piperazinium salt, 2-thiobarbituric acid and 6-β-carboxyethyl - 4 - hydroxy-2-mercaptopyrimidine.

T909,023
INTERIMAGE EFFECTS IN PHOTOGRAPHIC COLOR ELEMENTS

Thomas J. Murray, % Eastman Kodak Company, Kodak Park Division, 1669 Lake Ave., Rochester, N.Y. 14650
Filed Sept. 21, 1972, Ser. No. 290,936
Int. Cl. G03c *7/16*
U.S. Cl. 96—22
No Drawing. 19 Pages Specification

Processes for providing multicolor photographic reproductions wherein silver images are developed in exposed photographic elements having at least two superposed hydrophilic colloid layers containing silver halide, and forming differently colored dye images in proportion to the silver images. This invention provides an improvement in such processes whereby undercut interimage effects are obtained in at least one of the dye images. These undercut interimage effects are obtained by introducing a compound selected from the group consisting of allyl thiourea, N,N′-bis(2-hydroxyethyl)dithiooxamide, β-mercaptoethanol, β-hydroxyethylisothiouronium nitrate, mercaptosuccinic acid, o-mercaptobenzoic acid. 5-ethyl-5-methyl-4-thiohydantoin, 2-thiouracil, 2-thioorotic acid, 1-acetyl-2-thiourea, 1-acetyl-2-thiohydantoin and 2-mercaptobenzothiazole.

T909,024
POLYMERIC COMPOSITIONS

James L. Suggs, 4241 Maplewood St., Kingsport, Tenn. 37660
Filed Oct. 2, 1972, Ser. No. 294,416
Int. Cl. C08g *17/10*
U.S. Cl. 260—861
No Drawing. 13 Pages Specification

Polyesters of 2,2,4-trimethylpentane-1,3-diol, an ethylenically unsaturated acid or anhydride such as maleic, and a polyhydric compound containing at least three hydroxyl groups are used with a vinyl monomer such as styrene, which is a solvent for the polyester, as a general purpose resin. The polyester is prepared with relatively little decomposition of the diol. The unsaturated polyester-vinyl monomer solution may be used as a general purpose resin for castings, coatings and the like by copolymerization using metal promoted, organic peroxide initiator systems at room temperatures. The polyol is present in amounts of from about 1 to about 30 mole percent, based on the combined moles of the polyol and diol. The polyester is present in the composition in amounts between about 40% and about 70% and the vinyl monomer in amounts of between about 60% and about 30%, by weight based on the total weight of the composition.

REISSUES

APRIL 17, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

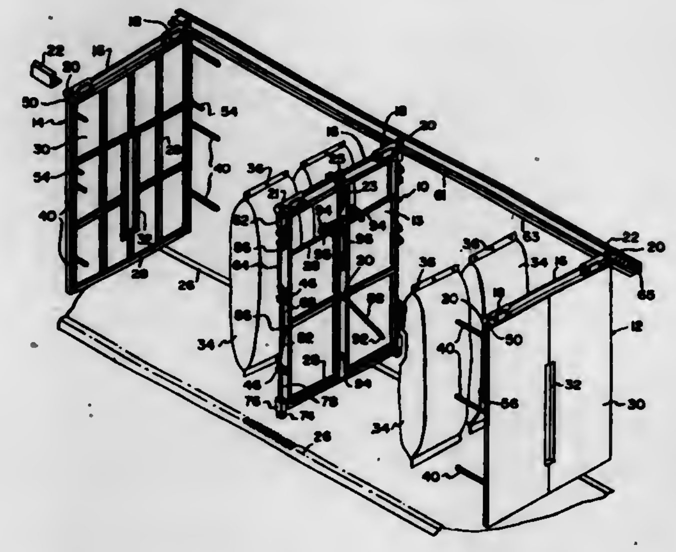
27,615
INFLATABLE BULKHEAD FOR RAILROAD CAR

Neuberne H. Brown, Jr., Colts Neck, N.J., David P. Butler, New City, and Jack M. Carter, White Plains, N.Y., Michael Ferik, Metuchen, N.J., and Paul E. Ogle, Elmwood Park, Ill.; said Frank assignor to said Ogle and said Brown, said Butler and said Carter assignors to General Foods Corporation

Original No. 3,427,997, dated Feb. 18, 1969, Ser. No. 639,696, May 19, 1967. Application for reissue Feb. 3, 1971, Ser. No. 112,440

Int. Cl. B60p *7/14;* **B61d** *45/00*

U.S. Cl. 105—369 BA **15 Claims**



This specification discloses inflatable cushioning bulkheads for protecting lading in a freight car by locking the lading against the end of the car or against another of the bulkheads. Each bulkhead consists of three rigid panels made from sheet metal, plywood, or the like, mounted on a frame with inflatable rubber bags sandwiched between the center and each of the end panels. The bulkhead may be expanded many times its original thicnkess by inflating the bags. The end panels are free to move toward and away from the center panel which is fixed to the car. The bags cushion the lading with a resilient resisting force which increases with the load imposed on the outer panel by the inertia of the lading. Links maintain the panels in parallel relation in all positions, from fully closed to fully opened. Means in the form of a pipe accessible through the end panels is provided to actuate latches at the top and bottom of the center panels to lock the center panel to the car. The same pipe is also used to conduct air to the inflatable bags and is accessible at the edge of the center panel. In an alternative form the center panel is built into the car as a stationary load bearing member.

27,616
PROTECTIVE DEVICE FOR FIRE HYDRANTS

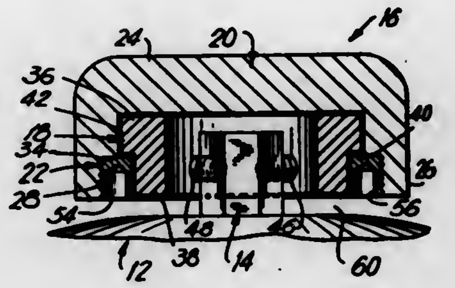
Raul Ralph Diaz, Brooklyn, N.Y., assignor to Angelo Soto, Brooklyn, N.Y.

Original No. 3,556,131, dated Jan. 19, 1971, Ser. No. 756,214, Aug. 29, 1968. Application for reissue Feb. 1, 1971, Ser. No. 111,776

Int. Cl. F16k *35/06*

U.S. Cl. 137—382.5 **2 Claims**

A device is provided for preventing the unauthorized operation of fire hydrants by concealing the hexagonal member or nut which permits the operation of the fire hydrant and permitting only a limited access thereto. The nut is concealed by connecting thereto a first member which is fixed thereon both axially and rotatably and by supporting on this first member a freely rotatable member which conceals the first member and prevents a rotative force from being applied to the nut. A special wrench is provided which enables authorized engagement of the nut through the limited access which is provided.



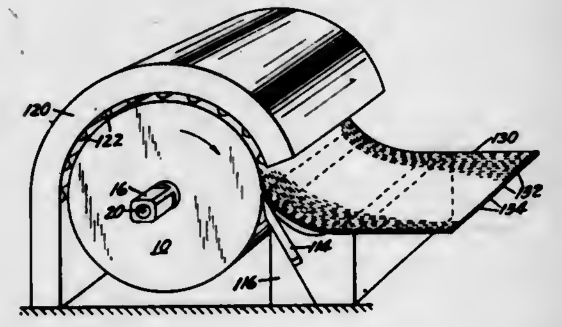
27,617
LOUVERED TRANSPARENT SHEETING MADE BY SKIVING

Frederick O. Olsen, Oakdale Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 3,524,789, dated Aug. 18, 1970, Ser. No. 660,754, Aug. 15, 1967. Application for reissue Jan. 21, 1971, Ser. No. 108,665

Int. Cl. B32b *31/00;* **B44f** *1/00*

U.S. Cl. 161—6 **12 Claims**



Skiving of a laminated billet having opaque layers while heating the surface provides a web with longitudinal louver-like elements. The surface is polished.

27,618
ROBBERY PROTECTION SYSTEM AND DEVICE FOR TEMPORARILY DISABLING A ROBBER AND VISIBLY MARKING HIS LOCATION

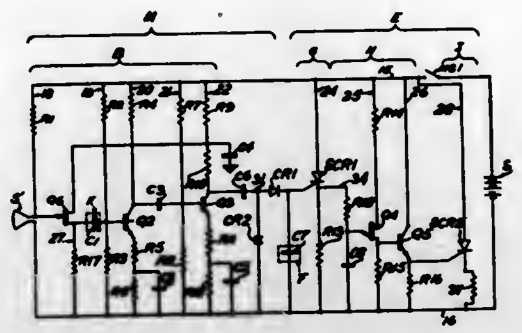
Harold J. Robeson, 2104 Clairmont Terrace, Atlanta, Ga. 30345

Original No. 3,564,525, dated Feb. 16, 1971, Ser. No. 668,903, Sept. 19, 1967. Application for reissue Feb. 3, 1972, Ser. No. 223,344

Int. Cl. G08b *13/24;* **H04b** *7/00*

U.S. Cl. 340—224 **11 Claims**

The present invention relates to a robbery protection system and device for temporarily disabling and visibly marking the location of a robber after his departure from the robbed premises and includes a transmitter for emitting an electric field in the proximity of the escape path of the robber, and a dummy packet of currency having concealed therein a disabling and marking charge as well as means for activating said charge upon detection of said electric field.



27,619
AMMONIUM NITRATE-ALKALI METAL NITRATE EXPLOSIVE CONTAINING ALUMINUM OF PARTICULAR SIZE DISTRIBUTION

Charles H. Grant, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original No. 3,307,986, dated Mar. 7, 1967, Ser. No. 419,262, Oct. 16, 1964, which is a continuation-in-part of Ser. No. 299,115, July 31, 1963. Application for reissue Aug. 4, 1969, Ser. No. 860,444

Int. Cl. C06b *1/04*

U.S. Cl. 149—21 **10 Claims**

1. A water resistant metallized, flowable explosive composition which comprises on a weight basis;

(a) to about 60 percent alkali metal nitrate,

(b) from about 10 to about 85 percent ammonium nitrate,

(c) from about 5 to about 25 percent water,

(d) from about 0.2 to about 1.5 percent of a member selected from the group consisting of water swellable gelling and thickening agents, and

(e) from about 5 to about 40 percent particulate aluminum, said aluminum ranging in size from about 4 to about 150 mesh U.S. Standard Sieve and having a gauge of from about 0.025 to about 30 mils and being further characterized in having a particle size distribution wherein from about 60 to about 80 percent is from about 12 to about 50 mesh the balance being substantially 50 to 100 mesh and wherein from about 5 to about 10 percent of the particles have a maximum gauge of about 1 mil, from about [10] *70* to about 80 percent have a gauge of from 1 to about 10 mils, balance ranging from 10 to about 30 mils in gauge.

27,620
COUPLING LINK

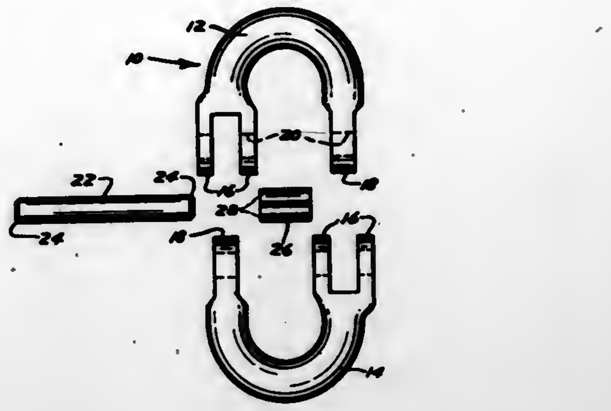
Edward J. Crook, Jr., Wayne, Ind., assignor to American Hoist & Derrick Company, St. Paul, Minn.

Original No. 3,453,822, dated July 8, 1969, Ser. No. 609,636, Jan. 16, 1967. Application for reissue June 28, 1971, Ser. No. 157,779

Int. Cl. F16g *13/06, 13/08*

U.S. Cl. 59—85 **7 Claims**

A coupling link having two identical half links having mating ears held together by a uniform diameter pin. A uniform dimension spring steel longitudinally split locking sleeves having a lesser nominal inner diameter than the pin is in clamping relation with the pin to virtually fill the space between the spaced ears. The pin is driven longitudinally through the ears and into the end of the sleeve to assemble the link and out of the ears and sleeve to disassemble the link.



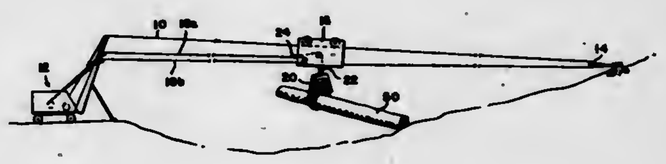
27,621
LOG YARDING SYSTEM

Maurice J. McIntyre, Coquitlam, British Columbia, and David G. Rennie, Burnaby, British Columbia, Canada, assignors to Skagit Corporation, Sedro Woolley, Wash.

Original No. 3,407,942, dated Oct. 29, 1968, Ser. No. 618,022, Feb. 23, 1967. Application for reissue July 18, 1969, Ser. No. 853,558

Int. Cl. B66c *19/00*

U.S. Cl. 212—84 **20 Claims**



A system of yarding logs wherein a log grapple is rigged to inhaul and outhaul lines extending between a yarding tower and the outlying outhaul tail block. The grapple can be suspended from a carriage and the carriage carried by the outhaul line or by a separate skyline. The grapple can be a two line, tag line-operated grapple or a single line grapple. In addition, a log yarding system may be provided with a carriage riding on a suspending line and rigged with a two-part inhaul line with a tag line connected to one part of the two-part inhaul line and extended through the carriage to a log engaging means.

27,622
NEW 5H-DIBENZ (B,F)AZEPINE DERIVATIVES

Walter Schindler and Hans Blattner, Basel, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Original No. 3,501,459, dated Mar. 17, 1970, Ser. No. 564,004, July 11, 1966, which is a continuation-in-part of Ser. No. 399,120, Aug. 25, 1964, which in turn is a division of Ser. No. 242,719, Dec. 6, 1962. Application for reissue Sept. 23, 1971, Ser. No. 183,235

Claims priority, application Switzerland, Apr. 17, 1962, 4,683/62; July 13, 1965, 9,799/65; July 26, 1965, 10,446/65

Int. Cl. C07d *41/08, 57/00;* **A61k** *27/00*

U.S. Cl. 260—239 D **39 Claims**

10-aminoalkyl-5H-dibenz[b,f]azepines and the corresponding 10,11-dihydro compounds, optionally bearing an alkyl substituent in the 5-position, possess pharmacological properties, e.g., they are antidepressants.

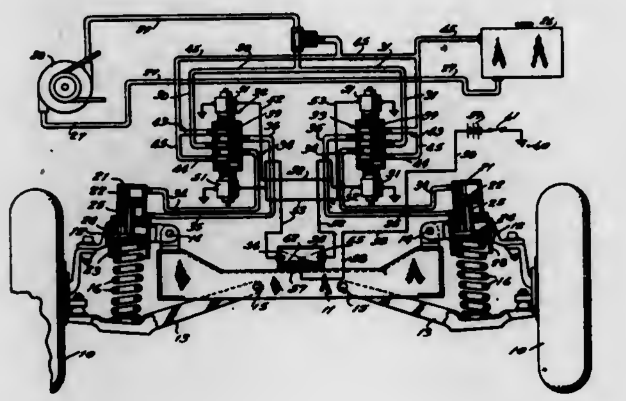
27,623

SUSPENSION SYSTEM FOR AUTOMOBILES

Joel C. Millican, 34 Burton Hill Drive,
Weatherford, Tex. 76086

Original No. 3,547,466, dated Dec. 15, 1970, Ser. No. 795,540, Jan. 31, 1969. Application for reissue June 15, 1971, Ser. No. 153,300

Int. Cl. B60g *11/00*
U.S. Cl. 280—124 A **8 Claims**



A [hydraulic suspension system for stabilizing the body structure of motor vehicles, especially passenger automobiles, and which] *wheel suspension system for motor vehicles, especially passenger automobiles and including upper and lower suspension links pivotally coupling the front wheels to the frame. Coupled between the links is a coil spring. The suspension system* is semiautomatically controlled by a system of hydraulic cylinders and pistons, the valves of which are activated by electrical circuits which are opened and closed by the motion of the vehicle body occasioned by road surface irregularities and lateral momentum due to deviations in the direction of travel, such as at curves and angular turns in the road.

27,624

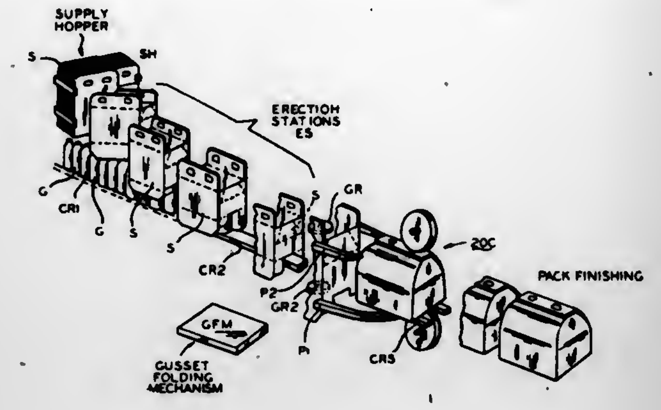
CARRIER CARTON

Charles Robert Helms, Barto, Pa., assignor to Container Corporation of America, Chicago, Ill.

Original No. 3,627,193, dated Dec. 14, 1971, Ser. No. 30,917, Apr. 22, 1970, which is a continuation-in-part of Ser. No. 754,331, Aug. 21, 1968, and a division of Ser. No. 863,049, Oct. 2, 1969. Application for reissue Mar. 29, 1972, Ser. No. 239,416

Int. Cl. B65d *5/02, 75/00*
U.S. Cl. 229—37 R **22 Claims**

A discrete group of articles, such as cans or bottles, are enclosed in a carrier sleeve. The articles are arranged in a double row in a carrier sleeve or a basket style carrier, both having gusset folded bottom closure panels. The carriers are applied to container groups in the form of a sleeve as the group moves from a first conveyor reach having a width substantially equal to the width of the double row, and on to a second conveyor reach substantially less in width than the first reach. The sleeve forming the carrier being adapted to move into position around the container group as it moves from the first reach to the second reach to hold the articles stably in the carrier. The sleeve has lower closure elements adapted to embrace the second reach, and structure is provided for moving the lower closure elements into position against the bottom of the group as the group moves from the second reach to a third reach.



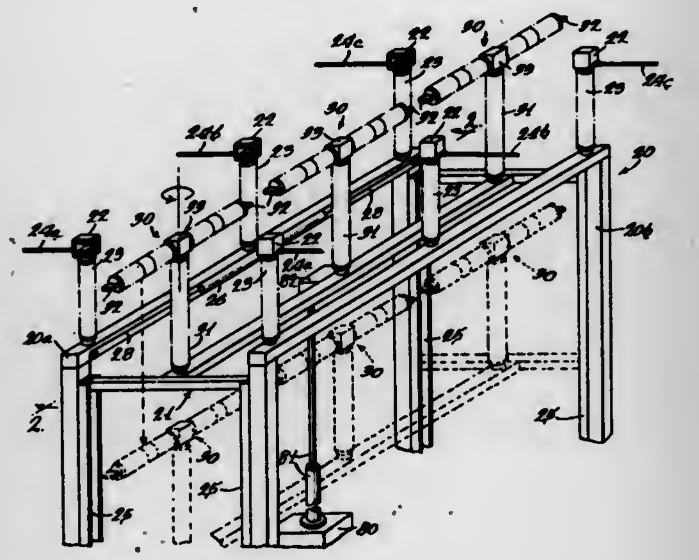
27,625

ISOLATING CIRCUIT BREAKER

Donald E. Weston, East Sebago, Maine, assignor to H. K. Porter Company, Inc.

Original No. 3,566,055, dated Feb. 23, 1971, Ser. No. 775,660, Nov. 14, 1968. Application for reissue Oct. 29, 1971, Ser. No. 193,836

Int. Cl. H01h *31/00*
U.S. Cl. 200—48 SB **30 Claims**



High tension electric circuit breaker comprising the combination of interrupter switch means and disconnect switch means so combined as to perform the functions of a high capacity circuit breaker, and also to perform the usual functions of a disconnecting switch, whereby to provide a single switch of novel structure attaining all of the functions of prior art circuit breakers, interrupters and disconnect switches.

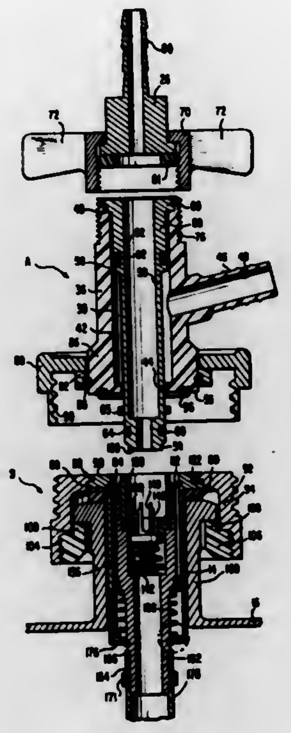
27,626

BEER TAPPING DEVICE

Mack S. Johnston, Encino, Calif., assignor to Draft Systems, Inc., Northridge, Calif.

Original No. 3,353,724, dated Nov. 21, 1967, Ser. No. 502,091, Oct. 22, 1965. Application for reissue Nov. 18, 1970, Ser. No. 90,885

Int. Cl. B65d *83/14*
U.S. Cl. 222—400.7 **18 Claims**



Disclosed is a tapping device for beer kegs and the like and, more particularly, a probe adapter for installation in a beer keg opening. The adapter is provided with a liquid valve opened when a probe is inserted into the adapter. Also forming a part of the adapter is a positive acting gas valve which has a closure member moved by the probe to permit gas to flow into the keg through the adapter. The gas flow path through the adapter is at all times separated from the liquid flow path.

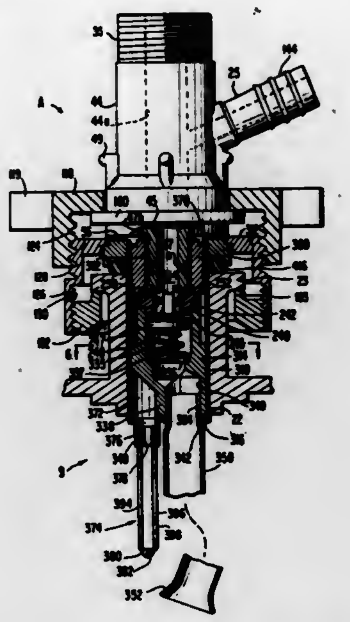
27,627

BEER TAPPING DEVICE

Mack S. Johnston, Rolling Hills, Calif., assignor to Draft Systems, Inc., Northridge, Calif.

Original No. 3,497,114, dated Feb. 24, 1970, Ser. No. 773,380, Nov. 5, 1968, which is a continuation-in-part of Ser. No. 676,291, Oct. 18, 1967. Application for reissue Dec. 31, 1970, Ser. No. 103,352

Int. Cl. B67d *5/54*
U.S. Cl. 222—400.7 **17 Claims**



Disclosed is a beer tapping device including an improved adapter for attachment in the beer outlet of a standard keg. The adapter is an all-metal brazed construction insertable from outside the keg with laterally offset liquid and gas passageways terminating within the keg. Also disclosed is a novel metallic valve retainer assembly which also segregates the beer and gas passageways in the adapter. A novel double seal construction on the coupling unit probe is also provided. The adapter is retained about the keg opening by an annular collar which is formed of tubular stock parts brazed one to the other. The adapter body is comprised of parts also formed from tubular and bar stock whereby an all-metal brazed and comparatively inexpensive construction is afforded.

PATENTS

GRANTED APRIL 17, 1973

GENERAL AND MECHANICAL

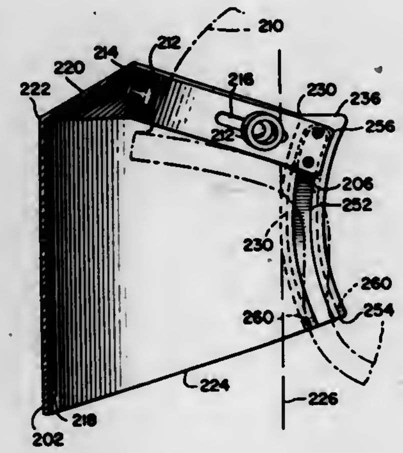
3,727,235
RETRACTABLE FACE PROTECTIVE ASSEMBLY

John Fisher, Dover, Del., assignor to ILC Industries, Inc., Dover, Del.

Continuation of Ser. No. 833,551, June 16, 1969, abandoned, which is a continuation-in-part of Ser. No. 719,183, April 5, 1968, abandoned. This application Jan. 13, 1972, Ser. No. 217,558

Int. Cl. A61f *9/04*

U.S. Cl. 2—10 **7 Claims**



Retractable face protective assembly, having a face shield and means to mount it on a support to be worn on the head. The mounting means are oppositely opposed guide means fixed or removably fixed on the support. A pair of tracks, one at each side of the shield, are adapted to frictionally slide about the guide means which sliding action directs shield movement for selective repositioning and holding the shield at desired positions relative to the support with shield movement controlled by its continuous sliding over the guide means when positioning force is applied to the shield.

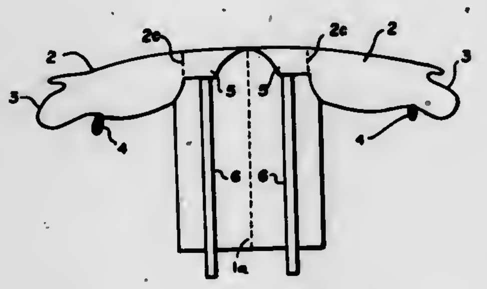
3,727,236
DISPOSABLE APRON

Kenneth F. Lloyd, 3243 Perkiomen, and Michael G. Sirak, 333 South 16th Street, both of Reading, Pa.

Filed June 15, 1971, Ser. No. 153,342

Int. Cl. A41b *13/04*

U.S. Cl. 2—51 **4 Claims**



This invention relates to an economical disposable apron preferably of paper, having integral sleeves and mittens to which are attached elastic loops which may be slipped over the wrists so as to adjust the mittens, as well as the length of the sleeves, to the sizes of the wearer. Shoulder extensions are provided for engaging the back of the shoulders of the wearer to provide a large frictional area of contact to keep the shoulder portions in place.

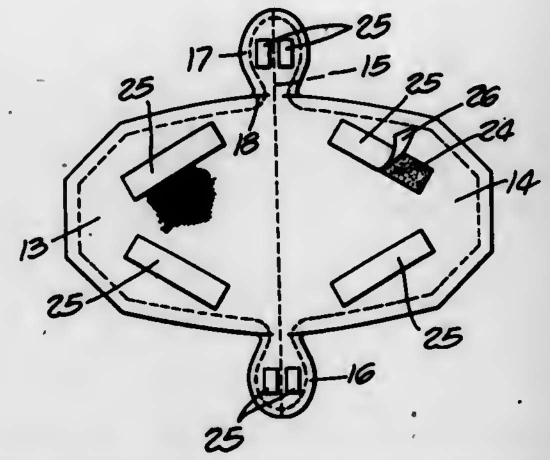
3,727,237
UNDERARM SHIELD

Linda R. Glatt, 2759 Monte Mar Terrace, Los Angeles, Calif.

Filed June 23, 1971, Ser. No. 155,945

Int. Cl. A41d *27/12*

U.S. Cl. 2—56 **2 Claims**



A one-piece dress shield is provided having symmetrical halves which are folded into registry with one another during use. Peripheral tab portions at each side of the fold line include adhesive on the surfaces facing the clothing for securement thereto and also serve as guides during emplacement in a garment. Additional elongated, peelable adhesive means on the main shield body are arranged to extend along the same general direction as the body edges and spaced inwardly therefrom. The shield body and tabs are formed from a plurality of identically shaped layer elements sandwiched together and edge sealed.

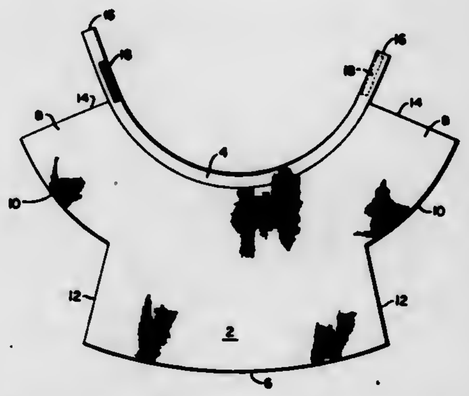
3,727,238
GARMENT FOR INVALID

Bernard R. Wolfson, 9207 Watson Road, Silver Spring, Md.

Filed Nov. 14, 1969, Ser. No. 876,884

Int. Cl. A41d *9/00*

U.S. Cl. 2—69 **7 Claims**



A novel garment is disclosed for particular use by invalids, comprising a full front and a partial back extending from above the wearer's hips upwardly to the waist or shoulders. In a preferred embodiment, the invention comprises a skirt-like garment having a front skirt panel resembling in appearance the front of a conventional skirt, and side panels substantially encircling the wearer's body above the hips. The front skirt and side panels terminate at their upper edges in a waist-encircling waistband having means to secure the ends thereof to each other and thus maintain the garment in position.

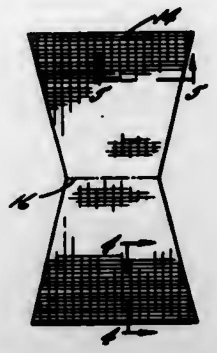
3,727,239
INEXPENSIVE CUFFS FOR DISPOSABLE GOWNS

Lenore E. Thompson, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 5, 1971, Ser. No. 140,442

Int. Cl. A41b *7/00*

U.S. Cl. 2—123 **6 Claims**



A stretchable, nonwoven cuff for use on articles of disposable apparel, such as industrial garments or hospital gowns or the like is disclosed. The cuff material is comprised of a scrim applique laminated to a stretchable polymeric foam while in a stretched condition. A sheet of material is folded onto itself so that the foam layers are in face to face contact. The folded sheet is then placed into a generally cylindrical shape and the sides are attached to one another with the end opposite the fold line being adapted to be attached to the article of apparel.

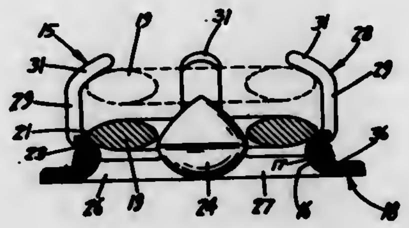
3,727,240
SUTURING MEMBER FOR IMPLANTABLE DEVICES SUCH AS HEART VALVES

Francis W. Child, Maple Plain, Minn., assignor to Medical Incorporated, Minneapolis, Minn.

Division of Ser. No. 817,988, April 21, 1969, Pat. No. 3,623,212. This application Oct. 22, 1971, Ser. No. 191,617

Int. Cl. A61f *1/22*

U.S. Cl. 3—1 **10 Claims**



A suturing member associated with an implantable device, as a heart valve, for accommodating sutures to join the device to living tissues. The suturing member has a porous fabric cover surrounding a semi-rigid core of plastic material. The outer surface of the plastic material is bonded to the inner surface of the fabric cover.

3,727,241
SOIL PUMP SEWAGE HANDLING SYSTEM, METHOD AND TOILET APPARATUS ADAPTED THEREFOR

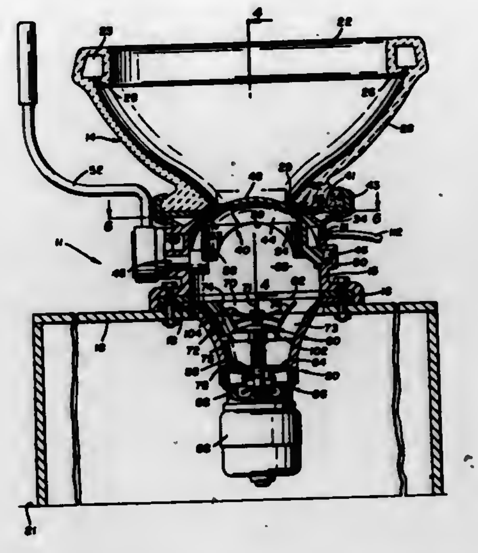
Alfred J. Drouhard, Jr., and John R. Weeks, Jr., both of Mansfield, Ohio, assignors to Mansfield Sanitary, Inc., Perrysville, Ohio

Filed Oct. 19, 1970, Ser. No. 81,748

Int. Cl. E03d *1/00, 3/00, 5/00*

U.S. Cl. 4—10 **2 Claims**

A sewage handling system, a toilet apparatus and a method by which waste may be pumped through a conduit of relatively small internal diameter. Heterogeneous mixtures of waste and flush fluid are emptied through a drain in the bowl portion of the toilet apparatus into a conically blending chamber therebeneath. Blade means are rotated at high speed within the blending chamber to transform the heterogeneous mixture into a homogeneous slurry that is easily transferred through the conduit into the holding tank by a pump means. A common motor drives both the blade means and the pump means, but in order to use a pump means that is low on power consumption some means must be employed to interrupt rotation of the blade means sufficiently to permit the homogeneous slurry to exit from the blending chamber and flood the intake off the pump means. In one embodiment of the invention disclosed this is accomplished by employing a clutch selectively to drive the blade means. Of particular suitability to this embodiment a baffle may be interposed between the blade means and the intake of the pump to minimize turbulence in proximity to the pump intake and thereby assure flooding of the pump intake even when rotation of the blade means is not absolutely precluded during the pumping stage of the flush cycle. In another embodiment a timing means deactivates the motor so as to interrupt rotation of the blade means for a predetermined time interval sufficient to permit the homogeneous slurry to pass from the blending chamber into the intake of the pump.



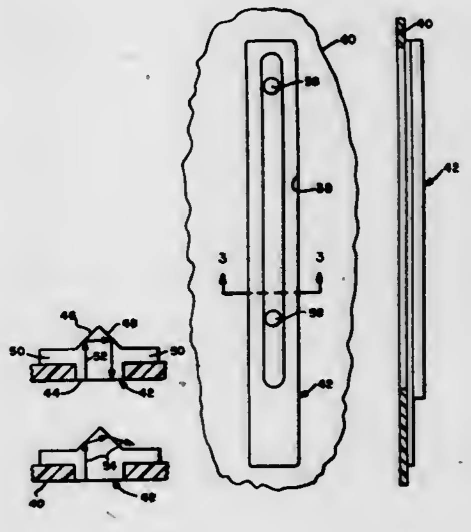
3,727,242
LIQUID LEVEL INDICATION APPARATUS

Marshall W. Miller, Ann Arbor, Mich., assignor to Thetford Corporation, Ann Arbor, Mich.

Filed Sept. 20, 1971, Ser. No. 181,735

Int. Cl. E03d *11/11*

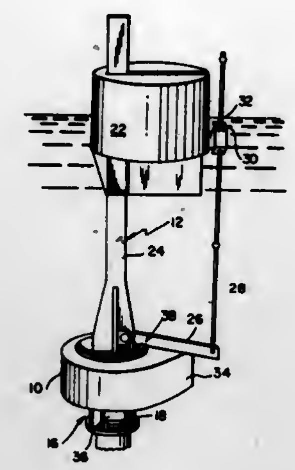
U.S. Cl. 4—10 **4 Claims**



Apparatus for indicating level of liquid in a recirculation type toilet or in other containers or tanks comprising an indicator lens which is free from any moving elements and indicates the level of the liquid by the application of the laws of light refraction.

3,727,243
WATER CLOSET SAFETY CONTROL

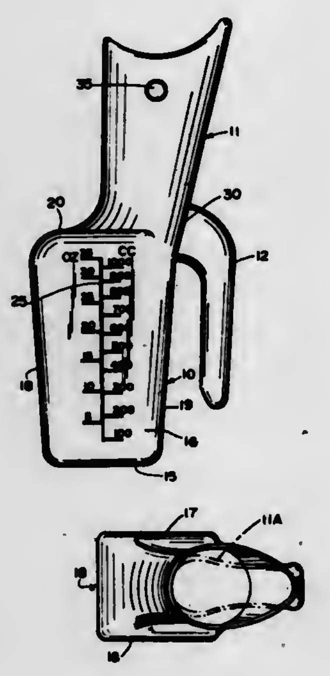
Frank D. Biniores, 7827 Arch Street, Little Rock, Ark.
Filed Dec. 30, 1971, Ser. No. 214,277
Int. Cl. E03d *1/36*
U.S. Cl. 4—41 **6 Claims**



A water closet safety control, more specifically, in a water closet supply tank of the type embodying a ball cock or fill valve float regulating the water supply, according as the level of water rises in the tank, a supplemental safety control operable to insure cutting off the water supply in the event of tank breakage, or other apparatus failure resulting in continued water flow.

3,727,244
DRY CLOSET URINAL

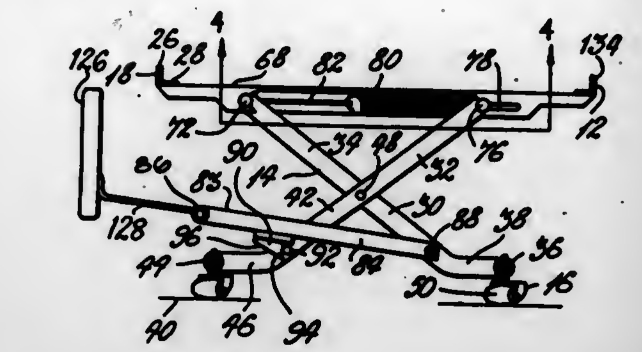
Delmas E. Collins, West Lafayette, Ohio, assignor to Jones-Zylon, Inc., West Lafayette, Ohio
Filed Oct. 1, 1970, Ser. No. 77,185
Int. Cl. E03d *13/00*
U.S. Cl. 4—110 **2 Claims**



A dry closet urinal suitable for male or female use and comprising a unitary, plastomeric, hollow body closed at one end and having a neck extending from the other end. The neck terminates in a mouth of ovular shape and the neck is resilient and capable of being deformed manually so as to facilitate use of the urinal where a rigid obstruction, such as a traction or body cast, interferes with normal use of the urinal. Upon release, the neck tends to return to its normal shape and thus provides a body seal.

3,727,245
SPRING-UP FURNITURE AND THE LIKE

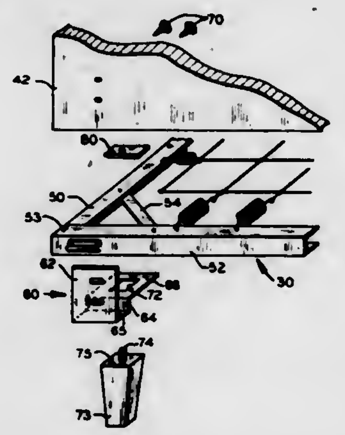
William Valentine Gerth, 13 Roosevelt Street, Waterloo, Ontario, Canada
Filed July 19, 1971, Ser. No. 163,829
Int. Cl. A47c *17/06;* **B62b** *1/00;* **A47b** *91/00*
U.S. Cl. 5—14 **5 Claims**



A rollable downwardly collapsible bed is accommodated beneath a combination chesterfield-bed. Straight-line rolling of the former at right angles to the length of the latter to and from its housing is achieved by (i) a set of barrel-shaped castors off-set from swivelling axes thereof so that even if grossly misaligned, an inch or so of horizontal movement rotates them all into parallel rolling posture such as to permit the bed to be rolled in a direction at right angles to its length and (ii) a guide bar having rounded leading corners bearable against the housing side portals which line up the bed for entry between said portals. The rolling bed also includes a cover for said housing when it is accommodated therewithin, said cover being secured to a locking bar by means of which the rollable bed is maintained in raised position. The chesterfield-bed includes adjustable cushioned back rest means (i) whereby standard parallel two-faced cushions may be supported at an angle and afterwards removed for bed use, and (ii) which may be retracted so as not to interfere with use of the bed over its entire width.

3,727,246
DEVICE FOR CONVERTING A CRIB TO A BED

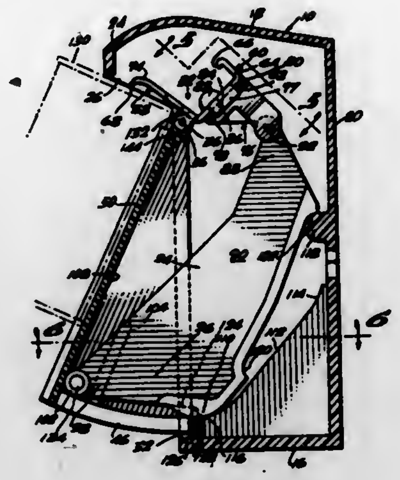
Bernard Germano, 5915 Buchanan, Toledo, Ohio
Filed May 14, 1971, Ser. No. 143,336
Int. Cl. A47c *19/02*
U.S. Cl. 5—282 R **5 Claims**



A device for converting a crib to a bed in the form of a spacer bracket with a locking arrangement, which spacer bracket is basically a U-shaped channel member with one vertical side of the channel extending higher than the other such side, the shorter side of the channel member having a perpendicular extension, said higher vertical side having bolt openings therein for attachment purposes to a bed headboard or a bed footboard, and said perpendicular extension of the shorter vertical side having an opening to receive a leg member for a regular bed, and where said perpendicular extension member serves as the vertical support member upon which portions of a bed spring member can rest.

3,727,247
CAN PUNCTURING AND BOTTLE CAP REMOVING DEVICE

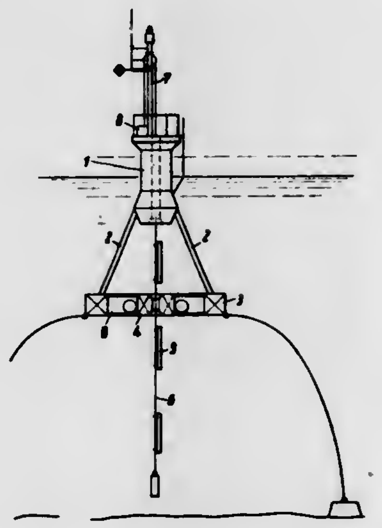
Jack Miller, 1410 20th Street, Miami Beach, Fla.
Filed June 28, 1971, Ser. No. 157,293
Int. Cl. B26b 7/44
U.S. Cl. 7—14.25 **12 Claims**



A device, either supported upon a horizontal surface or mounted on a wall, providing a casing and a lever swingable from an outwardly and downwardly projecting attitude to a vertical attitude substantially flush with the front of the housing. When a conventional can is properly positioned against the lever in its angular attitude and pressed inwardly to move the lever to its vertical attitude a puncturing bar swings downwardly to puncture the top wall of the can. When the lever is in its vertical attitude a bottle decapping device, integral with the puncturing bar, is positioned to engage the cap of a bottle to cause removal thereof when the bottle is swung inwardly toward the lever. Cam means are provided in the casing which is operable by the lever to actuate the puncturing bar and bottle decapper and to return the lever to its angular attitude after the can or bottle is removed from the device.

3,727,248
BUOY WITH ADJUSTMENTS FOR THE REDUCTION OF THE EFFECT OF THE SEA FORCES THEREON

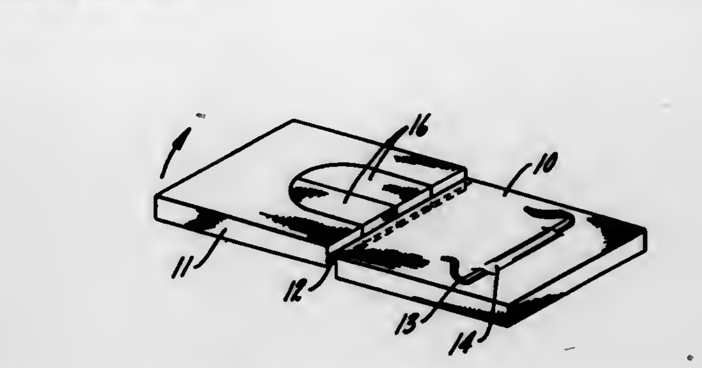
Hartmut H. O. Schulze, Hamburg, Germany, assignor to Hagenuk vormals Neufeldt & Kuhnke GmbH, Kiel, Germany
Filed July 7, 1970, Ser. No. 52,844
Claims priority, application Germany, July 18, 1969, P 19 36 558.3
Int. Cl. B63b *21/00*
U.S. Cl. 9—8 R **5 Claims**



A buoy specifically constructed for reducing the effect of wave and sea forces thereon. The horizontal diameter of the buoy at the surface of the water is relatively small, with the largest, stabilizing part of the displacement volume of the lower part of the buoy being at a water depth in which the amplitude of the vertical oscillations of the water is smaller than the amplitude movement of the buoy. The stabilizing part of the buoy comprises elongated bodies having an essentially horizontal longitudinal axis.

3,727,249
FOLDABLE YOKE LIFE PRESERVER

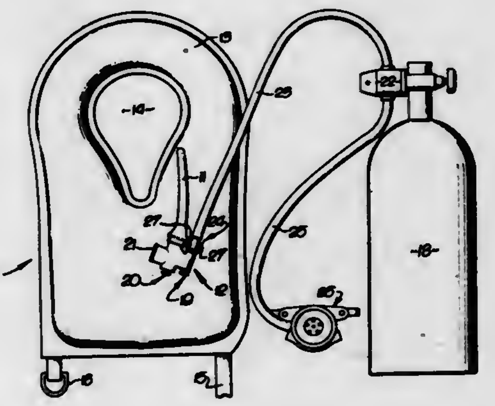
Bo Bengt Urban Bonthelius, Norr Malarstrand 78, S-112 35, Stockholm, Sweden
Filed March 9, 1972, Ser. No. 233,026
Int. Cl. B63c *9/0*
U.S. Cl. 9—312 **6 Claims**



A foldable life preserver is described which is usable as a boat cion. The opening for the head and neck of the user is closed by folding doors to allow the life preserver to be used as a solid cushion in either folded or opened form. The doors swing away in use to expose the opening and to provide additional buoyancy for supporting the wearer in an upright position in the water.

3,727,250
VEST INFLATION/EXHAUST VALVE ASSEMBLY

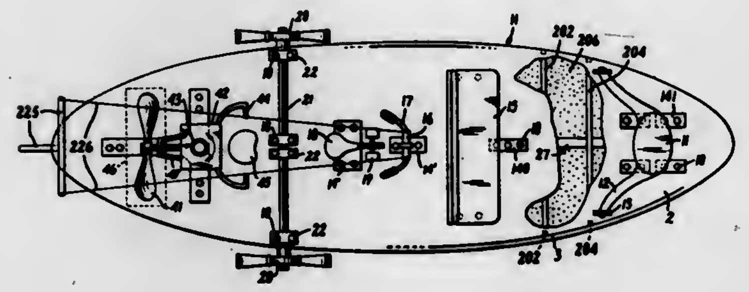
James P. Koehn, and Edwin M. Bethune, both of North Hollywood, Calif., assignors to Under Sea Industries, Inc., Compton, Calif.
Filed Dec. 2, 1971, Ser. No. 204,204
Int. Cl. B63c *11/18*
U.S. Cl. 9—313 **10 Claims**



An underwater buoyancy device such as a safety vest includes an air chamber and a tube communicating from the chamber to an inflation/exhaust valve assembly. The valve assembly facilitates vest inflation from a scuba supply tank or exhaustion to vent the air chamber or to permit breathing of air from the device. To this end, the assembly includes in a common housing: a quick-release coupling for a supply tank hose, an inflation valve for controlling air flow from the hose to the vest, a mouthpiece or like outlet, and an exhaust valve to control venting from the vest to the mouthpiece.

3,727,251
BOAT FOR USE AS A LIFEBOAT AND FOR OTHER PURPOSES

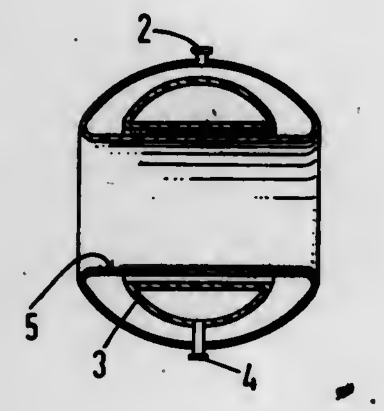
Shimon Neyll, General Delivery, U.S. Post Office, 13th & Washington Avenue, Miami Beach, Fla.
Filed June 28, 1971, Ser. No. 157,229
Claims priority, application Israel, July 7, 1970, 34863
Int. Cl. B63c *9/02*
U.S. Cl. 9—3 15 Claims



A boat having a double-ended hull of relatively shallow draft which is filled with a material impenetrable to water and having a specific gravity of less than 1.0. The boat hull has a substantially elliptical plan outline and a substantially flat flush deck, the buoyancy of the hull being such that the hull has very little freeboard so that the deck is substantially at water level. Means are embodied in the boat which allow for removably attaching various devices such as propulsion units, deck chairs and the like to the boat deck.

3,727,252
UPPER ARM SWIMMING RING

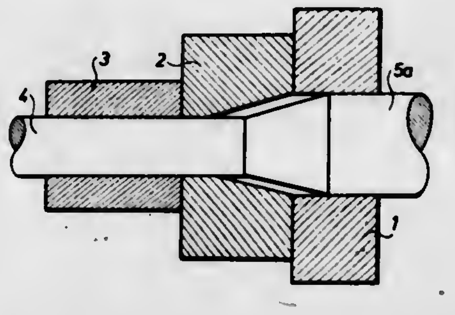
Heinz Bauermeister, Ottobrunner Strasse 18, Munich, Germany
Filed May 11, 1971, Ser. No. 142,332
Claims priority, application Germany, May 11, 1970, P 20 22 893.7; Sept. 2, 1970, P 20 43 531.8
Int. Cl. B63c *9/08*
U.S. Cl. 9—344 8 Claims



An inflatable upper arm swimming ring is provided with an additional buoyant body so that if air accidentally escapes from the ring there will still be sufficient buoyancy to hold the swimmer's head above the water. This additional buoyant body may be a separate inflatable member or a float.

3,727,253
PROCESS AND AN EQUIPMENT FOR THE PLASTIC FORMING OR SHAPING AND SIMULTANEOUS CHIP-FREE CHOPPING OF METAL BARS AND WIRES

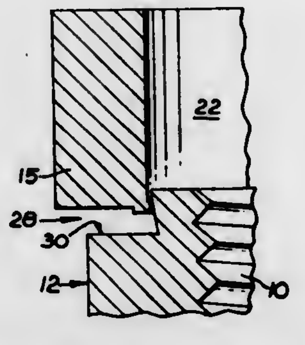
Janos Burany, Erno Csovak, Gabor Gulyas, Jozsef Nemeth, Ivan Vas, Andor Vollak, and Jozsef Erdosi, all of Budapest, Hungary, assignors to Gepipari Technologiai Intezet, Budapest, Hungary
Continuation of Ser. No. 03,287, Jan. 16, 1970, abandoned. This application March 21, 1972, Ser. No. 236,762
Int. Cl. B21d *53/24, 28/00*
U.S. Cl. 10—86 F 2 Claims



In a process and an apparatus for shearing metal bars under pressure, this bar is at the same time formed by cold flow and the pressure necessary for flowing is used for the purpose of the said shearing too.

3,727,254
METHOD OF FORMING AN INSERT BUSH

John Matthew Tildesley, Wolverhampton, Staffordshire, England, assignor to The Precision Screw & Manufacturing Company Limited, Dillenhall, England
Filed May 5, 1971, Ser. No. 140,538
Int. Cl. B21d *53/24*; B23p *19/08*
U.S. Cl. 10—86 R 2 Claims

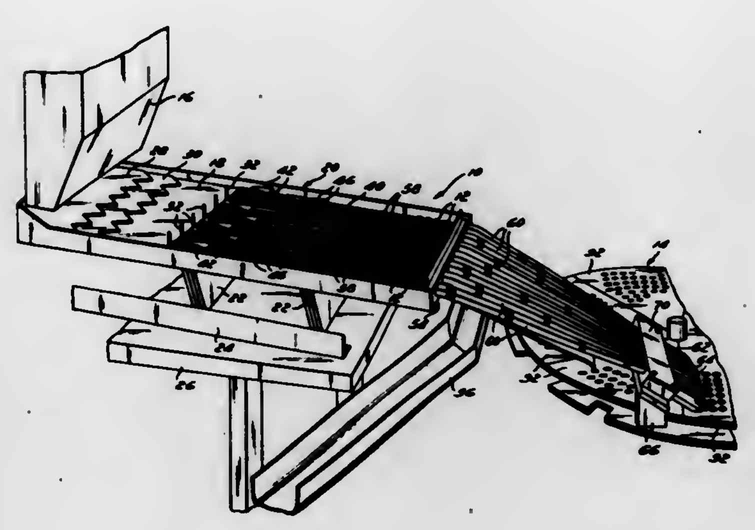


An insert for providing a screw-thread when pressed into soft material includes two rings connected together and having external inclined splines of opposite hand, so that in the pressing operation the two rings are contra-rotated, and can lock together. The insert is made as a one-piece construction, and is divided into two pieces which are fixed together, in a single press movement.

3,727,255
NUT LOADING MEANS

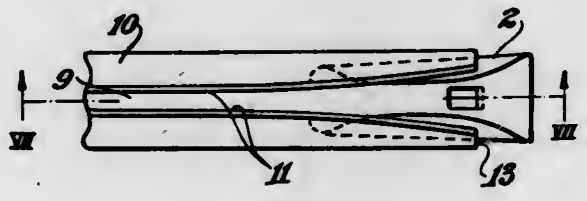
Thomas J. Gruss, South Euclid, Ohio, assignor to Zager, Inc., Cleveland, Ohio
Filed Oct. 5, 1970, Ser. No. 78,031
Int. Cl. B23g *1/20, 11/00*
U.S. Cl. 10—162 R 10 Claims

Scores of open-centered nut blanks in planar array are to be simultaneously tapped by a multiple spindle tapping head fed by an intermittently advancing train of transfer segments each carrying a planar array of sockets. Nut blanks are loaded in the sockets at a loading station, one transfer segment being loaded during each intermittent advance of the train. The nut blanks are delivered to a plurality of pick-off holders above the train at the loading station. The pick-off holders comprise side-leaf and top leaf gripping members. The blanks are held forwardly tipped in the feed direction of the train. Prior to receipt of nut blanks, the sockets forming the planar array are penetrated by fingers that are arranged in a corresponding finger array. During the ensuing advance of the segment, together with the fingers, the forwardly tipped nut blanks are engaged on their rearwardly facing undersides by the fingers and are picked off the holders and guided into the sockets. Each holder is immediately refilled and a number of nut blanks are successively picked off from each pick-off holder during the loading of a single transfer segment. Penetration of the sockets of a particular segment by the fingers is terminated prior to tapping of the nut blanks associated with such segment.



3,727,256
FEED DEVICE FOR LOADING BINDING BARS

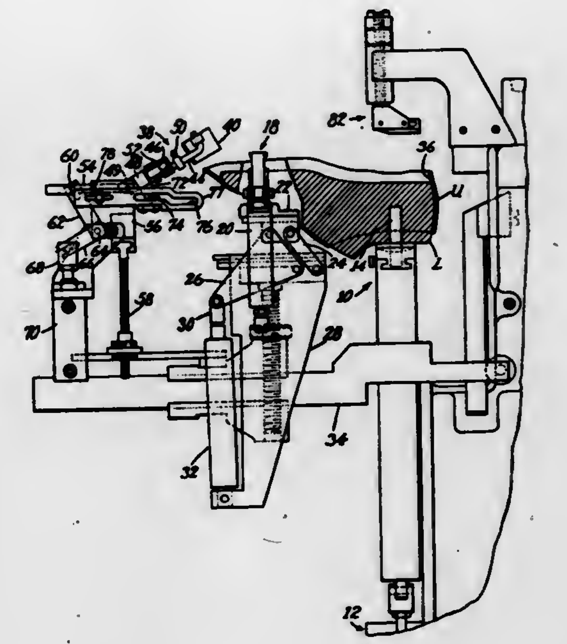
Anthony Howard Gill, Smallfield, near Horley, England, assignor to Arthur Gill (London) Limited, London, England
Filed July 9, 1971, Ser. No. 161,106
Claims priority, application Great Britain, July 22, 1970, 35,503/70
Int. Cl. B42f *1/02*
U.S. Cl. 11—1 R 3 Claims



A feed device for loading binding bars, comprises a channel member through which the edge of a stack of sheets may be advanced, the member including an insert portion adapted to open the nip of a binding bar on insertion thereinto and a mouth portion for receiving said stack of sheets whereby said stack may be slid into the binding bar.

3,727,257
APPARATUS FOR MAKING SHOES

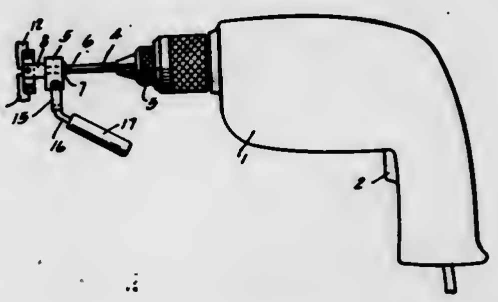
R. T. Pelletier, Beverly, and Karl V. Becker, Topsfield, both of Mass., assignors to USM Corporation, Flemington, N.J.
Division of Ser. No. 2,720, Jan. 14, 1970. This application Jan. 4, 1971, Ser. No. 103,788
Int. Cl. A43d *21/00*
U.S. Cl. 12—10.5 3 Claims



Machinery for lasting shoes in which an upper and an insole are assembled on a last with the insole registered on the last bottom at the heel end by the tensioned upper margin and at the toe end by a band. The heel end of the tensioned upper is lasted and secured to the registered insole.

3,727,258
DRILL TOOL ADAPTER

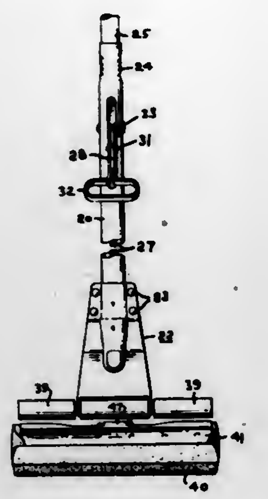
Chris Marion Brueck, P.O. Box 201, Wilton Junction, Iowa
Filed May 13, 1971, Ser. No. 142,929
Int. Cl. A47l *11/14*
U.S. Cl. 15—93 R 8 Claims



This invention relates to an adapter for portable power drills whereby the same may be used to provide power for operations other than drilling as, for example, for scraping, grinding or buffing. The tool to be used has a shaft which is engaged by the drill chuck and rotatably driven in the usual manner. In order to guide the tool as it is used the shaft rotates in a bearing adjacent the tool and that bearing is, in turn, provided with an handle pivotally secured thereto whereby the tool may be guided while the rotating tool shaft is steadied and prevented from chattering by the additional bearing support.

3,727,259
WRINGER MOP HEAD REPLACEMENT AND ACTUATOR MECHANISM

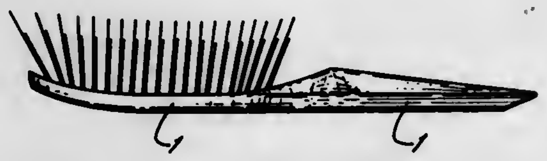
Frank G. Wilson, Grubb Road, Paoli, Pa.
Filed Sept. 28, 1971, Ser. No. 184,517
Int. Cl. A47l *13/144*
U.S. Cl. 15—119 A **1 Claim**



A wringer mop head replacement and actuator mechanism including a pair of spaced parallel wringer rollers carried at the lower end of a housing through which housing extends an operating crank upward through a hollow handle to pivotal securement with a pivoted crank handle, and which operating crank detachably connects at its lower end to the mop head by means of a cooperating snap-latch carried by the mop head. The crank handle is shiftable between up and detented center positions to similarly shift the operating crank and wring out the mop head by passing it between the rollers, and is shiftable to a down position to expel the mop head and lower end of the operating crank from the housing and from between the rollers to completely expose the snap-latch connection for fast mop head replacement. The mop head snap-latch consists of an inverted channel member holding a sponge absorbent element by compression of a marginal edge of the sponge between the channel member walls, the center of the channel base wall having an upstanding tunnel formation into which the operating crank lower end hook arm is slidable with the latter held in position by a shiftable latch plate biased resiliently upward by the sponge material to capture the hook arm.

3,727,260
BRUSH

Baard Spydevold, Oslo, Norway, assignor to A/S W. Jordon Borste & Penselfabrik, Oslo, Norway
Filed July 9, 1971, Ser. No. 161,096
Claims priority, application Norway, May 4, 1971, 1671/71
Int. Cl. A46b *3/16*
U.S. Cl. 15—159 A **1 Claim**

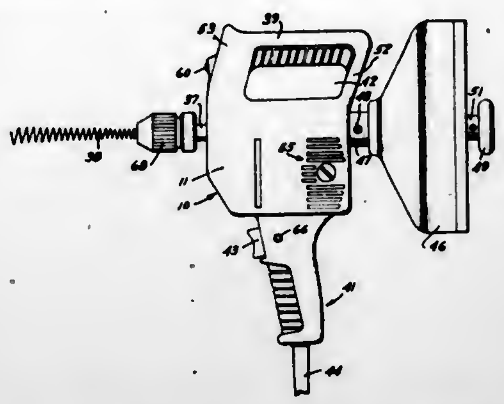


Brush having bristles of different lengths set in pairs.

3,727,261
PLUMBING TOOL

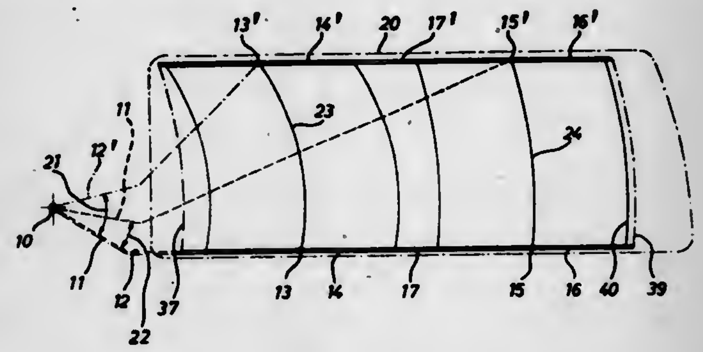
Aaron J. Levine, 3147 N. Cambridge Avenue, Chicago, Ill.
Filed Feb. 17, 1972, Ser. No. 227,229
Int. Cl. B08b *9/02*
U.S. Cl. 15—104.3 SN **11 Claims**

A plumbing tool which is usable in small spaces and which has an electric motor mounted so as to drive a hollow shaft through which a plumber's flexible sewer clean-out rod or other device such as a drill may be extended. A reservoir for the flexible sewer clean-out rod is mounted on the rear of the tool and supplies the flexible sewer clean-out rod to the tool as needed. A pair of handles is mounted on opposite sides of the housing for the motor and hollow shaft so as to allow a firm and positive control over the machine and balance for ease of handling.



3,727,262
WINDSHIELD WIPER ASSEMBLY FOR HEADLAMP

Hans-Christian Deutscher, Ludwigsburg, and Kurt Bauer, Kleiningersheim, both of Germany, assignors to SWF-Spezialfabrik fur Autoyubehor Gustav Rau, GmbH, Bietigham, Germany
Filed Sept. 14, 1971, Ser. No. 180,362
Claims priority, application Germany, Dec. 3, 1970, P 20 59 525.9
Int. Cl. B60s *1/32*
U.S. Cl. 15—250.23 **8 Claims**

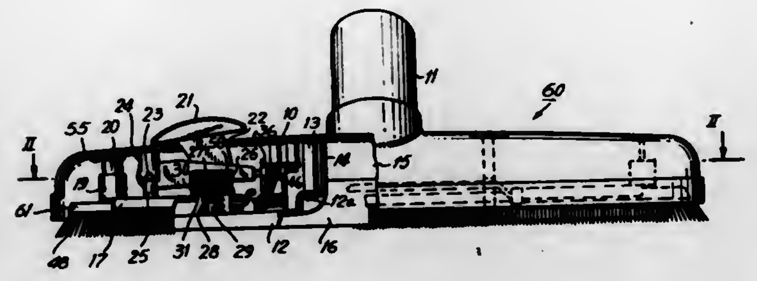


A windshield wiper assembly for use in association with a rectangular headlamp includes, a first wiper arm and a second wiper arm shorter than the first pivotally mounted for oscillation about the same pivotal mounting. The arms are connected at their respective outer ends to respective yokes or stirrups which engage the wiper blade. The individual yokes engage the blade at longitudinally spaced locations and the individual wiper blade arms which carry the yokes are connected to an operating mechanism which moves them through different angles of oscillation. The longer arm moves through a smaller angle of oscillation than the shorter arm so that the stirrups which engage and move the blade can move substantially parallel from one side of the headlight to the other.

3,727,263
MULTI-PURPOSE VACUUM CLEANER NOZZLE

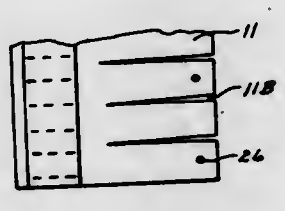
Axel Harry Johansson, Enskede, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Sept. 24, 1971, Ser. No. 183,510
Claims priority, application Sweden, Sept. 30, 1970, 13232/70
Int. Cl. A47l *9/06*
U.S. Cl. 15—373 **8 Claims**

A multi-purpose vacuum cleaner nozzle has a flat surface tool and a brush at the vicinity of a suction inlet for respectively cleaning rugs and floors. The flat surface tool and brush are movable with respect to one another and alternately moved into cleaning position by mechanism having a single operating member movable forward and backward between first and second positions and to which an external force only can be applied in one direction to impart movement thereto from its first to a second blocked position to bring the brush into cleaning position. The operating member cannot be moved directly from its second blocked position to its first position. The operating member can only be returned to its first position by initially moving it in the same one direction beyond the second blocked position to a third position. When the operating member, which is resiliently biased to its first position, is released after it has been moved to its third position, it can bypass the second blocked position and return to its first position to bring the flat surface tool into cleaning position.



3,727,264
CARPET ANCHORING STRIP

George Porzio, 9 Lakeland Drive, Bricktown, N.J.
Filed July 12, 1971, Ser. No. 161,597
Int. Cl. A47g *27/04*
U.S. Cl. 16—16 **1 Claim**

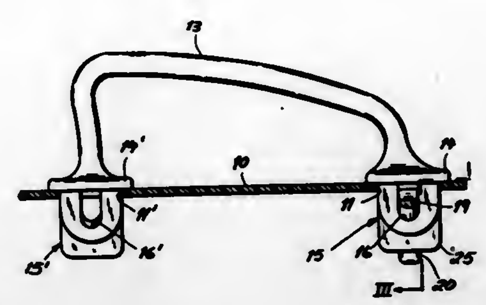


A carpet anchoring strip for wall-to-wall carpet when laid on a concrete floor which comprises two strips joined together, the one strip of a hardwood providing the pronged holding means for the edge of the carpet and the other strip of a soft, bendable material being adaptable to any irregularity in the concrete surface and easily anchored with metal anchoring nails and also bendable to lift slightly on its forward edge under extreme tensionable pull of the carpet without shearing its nailed, anchored fixation with the concrete floor. The anchoring strip is quickly and easily laid due to a small leading edge that abuts the wall or carpet abutment.

3,727,265
HANDLE CLAMP

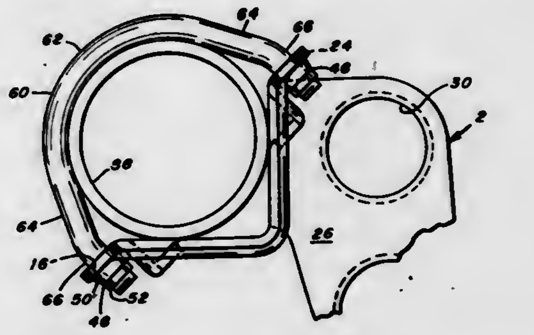
Nat Camp, 395 Westchester Avenue, Port Chester, N.Y.
Filed April 8, 1971, Ser. No. 132,410
Int. Cl. A47b *95/02*
U.S. Cl. 16—125 **7 Claims**

A handle to be attached to a lid has a pair of lugs passing through respective slots in the lid, each lug having a bore which lies on the opposite side of the lid upon such insertion and which is formed with a sill rising toward the handle. A pair of generally boot-shaped clips, made like the handle of a resiliently deformable plastic material such as polypropylene, have pointed stems which fit into the bores of the lugs and are provided with reduced portions forming recesses into which the sills may snap when the stems are fully pushed into the bores, thereby interlockingly engaging the lugs and preventing their withdrawal.



3,727,266
UNIVERSAL HINGE

James E. Ashworth, Moraga, Calif., assignor to U.S. Steel Corporation, Pittsburgh, Pa.
Filed May 13, 1971, Ser. No. 142,869
Int. Cl. E05d *5/02*
U.S. Cl. 16—158 **6 Claims**

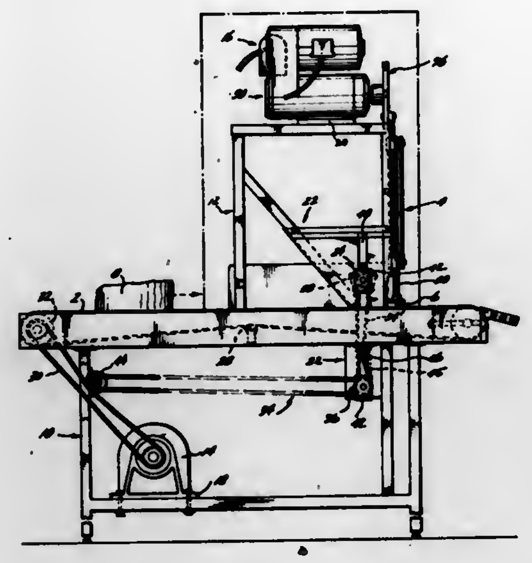


A gate hinge assembly includes a pair of hinge members of opposite hand. Each hinge member includes an L-shaped bracket having at least one outwardly extending bosses in each leg with a hole through each boss, and a hinge plate extending outwardly from one of the legs of the bracket. The gate has a cylindrical upwardly extending projection and a cylindrical downwardly extending projection at one end. Each bracket receives and is fastened to the gate post by means of a bolt passing around the post and through the hole in each leg. Preferably two holes are provided in each leg to permit assembly on posts of different sizes and/or shapes. The cylindrical projections of the gate are received in aligned holes in the top and bottom hinge plates. Two holes may be provided in each hinge plate to permit different types of swinging movement of the gate.

3,727,267
MEAT TENDERIZING MACHINE

Cecil M. Clark, 16457 6th S.W., Seattle, Wash.
Filed Sept. 10, 1971, Ser. No. 179,323
Int. Cl. A22c *9/00*
U.S. Cl. 17—25 **16 Claims**

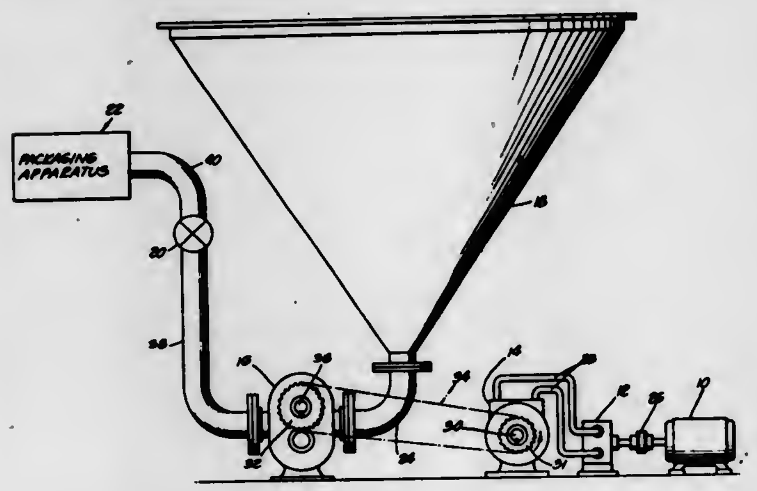
The machine is equipped with means defining a head which is reciprocable in a vertical plane and has a series of knives thereon that are conjointly reciprocable with the head between upper and lower limits in the plane thereof. It is also equipped with means including a pair of relatively upper and lower feed surfaces which are spaced apart from one another on one side of the plane, and continuously movable in the direction thereof to feed a piece of meat across the plane in a substantially continuously advancing course of travel between the reciprocable limits of the knives. In addition, there are means operable to reciprocate the head in unison with the motion of the surfaces, so that the piece of meat is pierced by the knives in the travel thereof. There are also stripper means operable to maintain the piece of meat in the course thereof when the knives are retracted from the meat, the knives being arranged in substantially a single row extending parallel to the plane, so that they pierce progressively rearwardly advanced segments of the piece of meat as they are reciprocated in relation thereto.



3,727,268

METHOD AND APPARATUS FOR SUPPLYING PRESSURIZED MEAT MATERIALS FOR FILLING A CASING

Ronald O. Wiley, 2086 Middlebrook Road, Torrance, Calif., and Edward A. Urman, 6727 Garth, Los Angeles, Calif.
Filed March 3, 1971, Ser. No. 120,557
Int. Cl. A22c *11/02*
U.S. Cl. 17—35 5 Claims



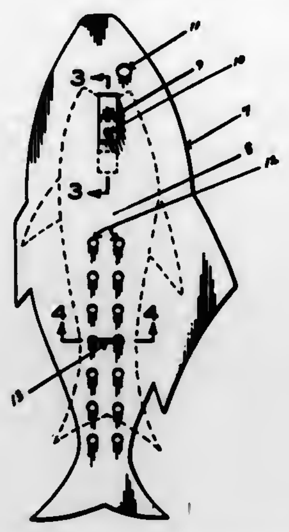
Positive displacement pump for delivering pressurized meat materials to casing filling apparatus is powered by a stallable drive means, such that on changing the casing neither recycling of the pumped materials nor affirmative disconnection of driving power is required.

3,727,269

FISH HOLDER

Zudora B. Snead, 736 N. E. 19th Street, Oklahoma City, Okla.
Filed Aug. 24, 1971, Ser. No. 174,409
Int. Cl. A22c *25/06*
U.S. Cl. 17—70 1 Claim

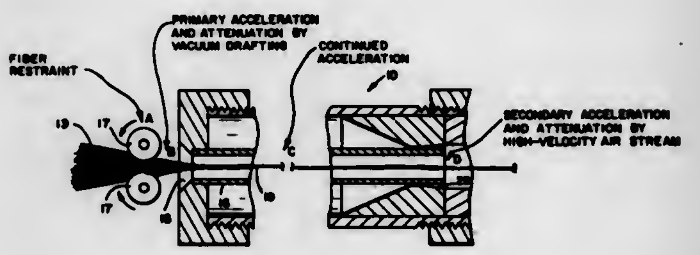
A fish-shaped mounting base of board or moulded plastic. Near the head of the fish-shaped base, a metal or plastic hook is attached loosely with a metal screw. The hook rotates on the screw to alternate positions. A large hole extends through the mounting base in the eye position of fish and serves as means for storing by hanging and means for anchorage while in use, when a spike or other holding device (ice pick, for instance) is placed through the hole into a stabilizing surface. A series of small holes are arranged in pairs and placed at regular intervals along the central axis of the mounting base. A four prong holding member is placed in the small holes with sharp points upward and exposed for holding the tail of a fish. A standard ruler stamped on reverse side of mounting base furnishes a convenient method of measure.



3,727,270

VACUUM DRAFTING OF FIBROUS STRANDS

Preston F. Marshall, Walpole, Mass., assignor to The Kendall Company, Boston, Mass.
Filed July 20, 1971, Ser. No. 164,255
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 4 Claims


FIBER RESTRAINT
PRIMARY ACCELERATION AND ATTENUATION BY VACUUM DRAFTING
CONTINUED ACCELERATION
SECONDARY ACCELERATION AND ATTENUATION BY HIGH-VELOCITY AIR STREAM
13
17
A
C
D
10

A strand of textile-length fibers is drafted and attenuated by the effect of a vacuum applied at the entrance end of an aspirator nozzle, said strand being accelerated through the body of the aspirator and being further accelerated and attenuated by the action of a high velocity air stream concentric with said tube. The resultant high velocity fibrous stream may be decelerated and diffused in a plenum chamber and removed therefrom as a fibrous web.

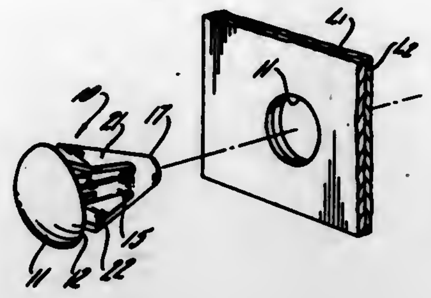
3,727,271

FASTENER

Henry Zasmirowski, Columbia, Md., assignor to Eastern Products Corporation, Columbia, Md.
Filed April 12, 1971, Ser. No. 133,217
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 P 4 Claims

A fastener for fastening together two thin structural layers having registering holes which includes a head, shank, and retention legs integrally molded of resilient plastic, the legs being of V-shape and sprung outwardly in V-configuration to facilitate insertion and each presenting an obtusely angled tip

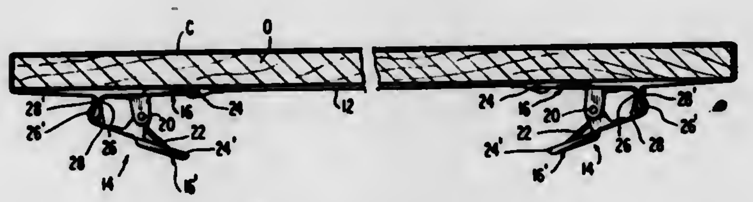
which is adjacent the head and spaced with respect to the head so that the presented angled edges of the legs symmetrically engage the edges of the hole in the adjacent layer to clamp the layers together while keeping the fastener captive.



3,727,272

FLEXIBLE MATERIAL HOLDING DEVICE

Patrick Dey Rhodes, 3258 Richard Avenue N.E., Roanoke, Va.
Filed Oct. 15, 1970, Ser. No. 80,868
Int. Cl. A44b *21/00*
U.S. Cl. 24—81 T 9 Claims



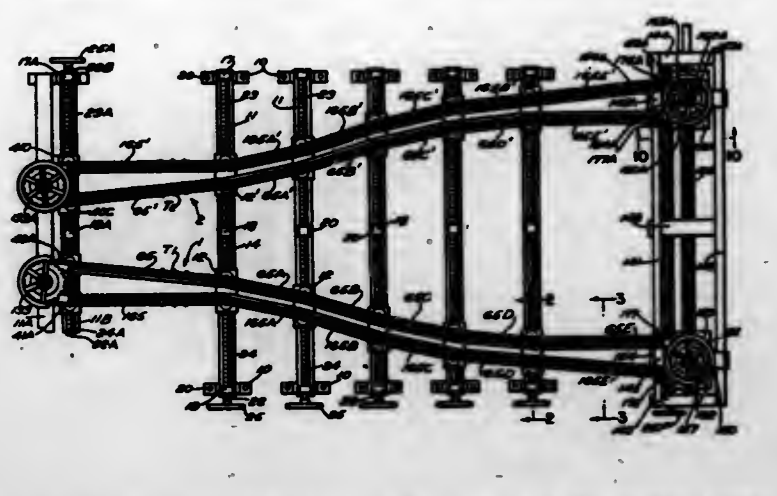
A flexible material holding device comprising: an elastic band and a pair of clips secured to the ends of the band and adapted to engage and removably retain the ends of a flexible material cover for the purpose of removably retaining it in place on an object or objects on which it is mounted. Each of the clips comprises a pair of pivotably connected arms having gripping portions that are biased into engagement by a spring member. The gripping portion of each arm comprises a concave section which merges with a convex end section. The end of the gripping portion of one clip overlaps the end of the gripping portion of the other clip. The concave and convex sections of the one clip are adapted to engage the convex and concave sections, respectively, of the other clip so that flexible material inserted between the gripping portions of the clip arms is gripped in two places by each of the clips. The reverse curvature of the clip arms facilitates the insertion of the flexible material between the gripping portions thereof, prevents tearing of the flexible material retained therebetween, and increases the gripping ability of the clips.

3,727,273

TENTER FRAME

Frederick Hyatt, Providence, and Frederick Earl Arruda, Coventry, both of R.I., assignors to Bevis Industries, Inc., Providence, R.I.
Filed Aug. 17, 1970, Ser. No. 64,303
Int. Cl. D06c *3/02*
U.S. Cl. 26—57 R 5 Claims

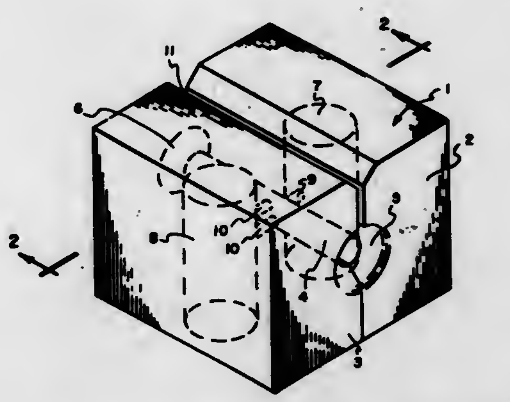
The specification discloses a tenter frame of the type which laterally stretches webs of material. The new construction provides for two separate parallel rails, one rail providing a pull track, and the other rail providing a return track wherein the tenter chain is located outside of the oven. In this manner, the tenter chain is exposed to ambient temperatures and cooling during the non-working return cycle. New structures are provided at the entering end and delivery end of the tenter frame to accommodate the dual rail structures.



3,727,274

MULTIFILAMENT YARN INTERLACING DEVICE

Ronald E. White, Salisbury, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.
Filed April 1, 1971, Ser. No. 130,138
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 10 Claims

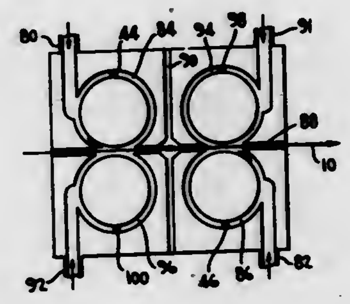


Apparatus and process for efficiently intermingling multifilament yarn by subjecting a yarn bundle to the simultaneous action of two parallel tangential fluid jets and one opposing radial fluid jet, all of the jets being in a common plane which substantially intersects the longitudinal axis of the yarn at right angles.

3,727,275

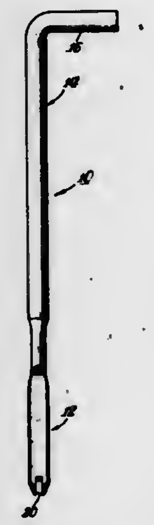
PROCESS AND APPARATUS FOR INTERLACING STRANDS

Gabriel Ohayon, Lyons, France, assignor to Societe Rhodiaceta, Paris, France
Filed June 17, 1971, Ser. No. 154,136
Claims priority, application France, June 18, 1970, 7022405
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 7 Claims



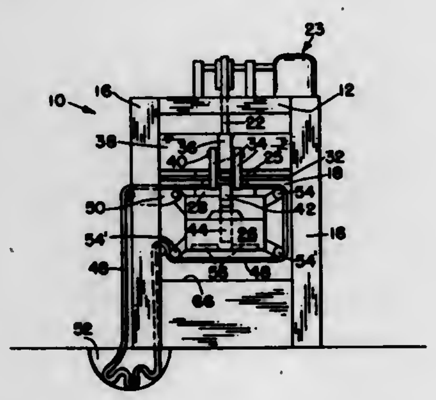
A process for the production of a multistrand yarn having a coherent structure by interlacing the strands thereof comprising subjecting the strands, while substantially parallel, to the action of a rapidly moving fluid delivered from at least two jets in a zone substantially parallel to the passage of the yarn, the two jets being in substantially parallel planes, but delivering the rapidly moving fluid in substantially opposite directions. The apparatus for the production of such multistrand yarn includes two plates or blocks having abutting surfaces, at least one of the abutting surfaces having recesses therein defining at least two straight or curved conduits for passage of a rapidly moving fluid in opposite directions, impinging a yarn traveling in a plane substantially parallel to the rapidly moving fluid.

3,727,276
FELTING NEEDLE
Edson P. Foster, 409 South 29th Street, P.O. Box 527, Manitowoc, Wis.
Filed April 6, 1971, Ser. No. 131,702
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 N **9 Claims**



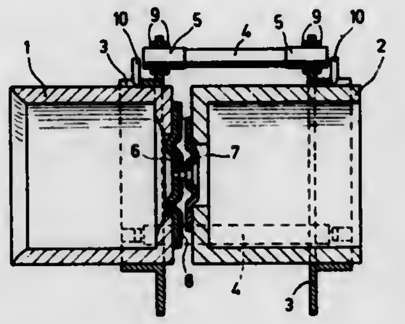
A felting needle having an elongated body portion of a quadrangular cross-sectional configuration defined by major and minor axes extending at right angles with respect to each other and having a fiber receiving recess formed on the center line of the minor axis at the lowermost end of the elongated body portion.

3,727,277
NEEDLE PUNCHING MACHINE FOR ENDLESS WEB AND METHOD OF REMOVING WEB
Edgar C. Rust, Jr., Williamstown, Mass., assignor to Crompton & Knowles Corporation, Worcester, Mass.
Filed March 25, 1971, Ser. No. 127,976
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 R **12 Claims**



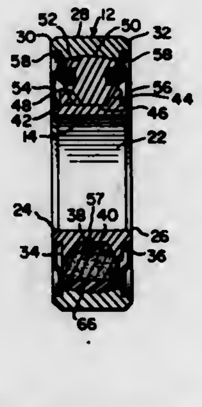
A needle punching machine for manufacturing endless webs wherein a bed beam is releasably mounted on the framework and one end of the framework has an opening large enough for the beam to pass through; and a method of removing the web from the machine which includes the steps of separating the web from the bed beam, supporting the bed beam on bearing means preferably of the "air film" type, releasing the bed beam from the frame and shifting the bed endwise of the frame for easy removal of the web.

3,727,278
METHOD OF ADJUSTING TWO ELECTRODE SURFACES IN AN ELECTRIC DISCHARGE TUBE AT A GIVEN DISTANCE FROM EACH OTHER
Johannes van Esdonk, and Johannes Hendrikus Theodorus van Roosmalen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed May 24, 1971, Ser. No. 146,108
Claims priority, application Netherlands, June 25, 1970, 7009324
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.16 **4 Claims**



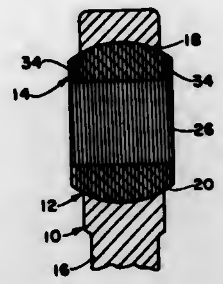
A method of adjusting two metallic electrodes surfaces in an electric discharge tube at a given distance from each other in which an intermediate layer of non-metallic material, e.g. carbon or a metal oxide, is provided between the surfaces of the electrodes which are placed in abutting relationship. The electrodes are then heated to a temperature of about 780°C to connect them with supporting members and cooled. Due to different coefficients of expansion of the electrodes and supporting members, the electrodes separate and the intermediate layer is then removed.

3,727,279
METHOD OF MAKING A PACKAGE SLEEVE BEARING
Martin L. Abel, 25235 Canterbury, Franklin, Mich.
Division of Ser. No. 7,032, Jan. 30, 1970, Pat. No. 3,655,249. This application Oct. 4, 1971, Ser. No. 186,470
Int. Cl. B21d *53/10*
U.S. Cl. 29—149.5 R **1 Claim**



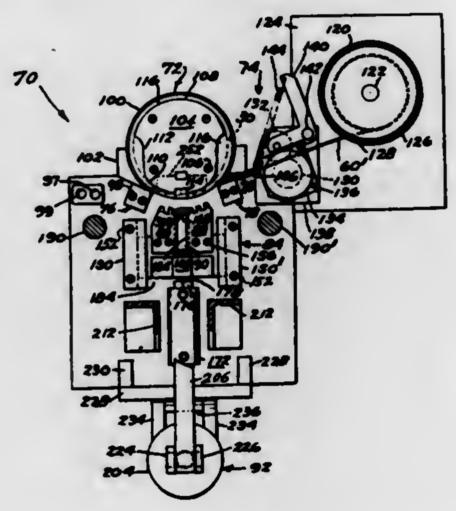
A method of making a package sleeve bearing that includes the steps of providing inner and outer bearing races, cutting a length of rod into a plurality of pieces of predetermined lengths, forming the pieces under pressure into arcuate bearing elements, and assembling the bearing elements between the inner and outer races in a manner to rotatably journal the outer race on the inner race.

3,727,280
METHOD OF FABRICATING A SPHERICAL BEARING
James R. Campbell, 31301 Camel Point Drive, South Laguna, Calif.
Continuation-in-part of Ser. No. 39,579, May 22, 1970, Pat. No. 3,680,930. This application Dec. 29, 1971, Ser. No. 213,487
Int. Cl. B21d *53/10;* **B23p** *11/00*
U.S. Cl. 29—149.5 B **12 Claims**



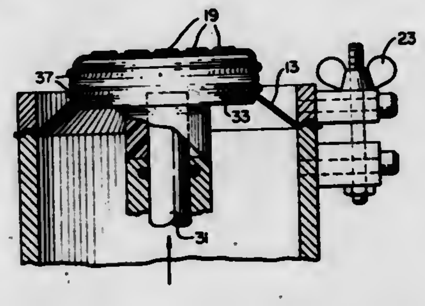
The method of fabricating a rod-end bearing comprising a socket member or "banjo" defining an internal annular race of spherically concave curvature, open on both sides, and a spherical bearing member or ball in the socket, in which the socket member is formed in one integral piece with the openings smaller than the diameter of the ball, and the ball is formed as a helix comprising convolutions that are free to deflect and that have outer edges defining a spherically generated surface sized to fit closely within the socket, the ball being inserted by placing one end portion of the helix against one of the openings and relatively rotating the ball and the socket member to thread the ball into the socket. The helix is wound from strip material, by conventional spring-winding techniques, in a cylindrical form which then is spherically machined, or alternatively, is formed by machining a spiral groove around a cylindrical blank, stripping the helix from the flank, and machining a spherical surface thereon. The convolutions are secured together, after the ball is in the socket, by placing a bushing through a bore in a ball and clamping the ball between the ends of the bushing.

3,727,281
METHOD AND MACHINE FOR MAKING A SLIP LATCH IN A PISTON RING EXPANDER
Donald P. Erickson, and Roy E. Overway, both of Muskegon, Mich., assignors to Sealed Power Corporation, Muskegon, Mich.
Filed July 6, 1971, Ser. No. 160,040
Int. Cl. B23p *19/00, 19/04*
U.S. Cl. 29—200 B **22 Claims**



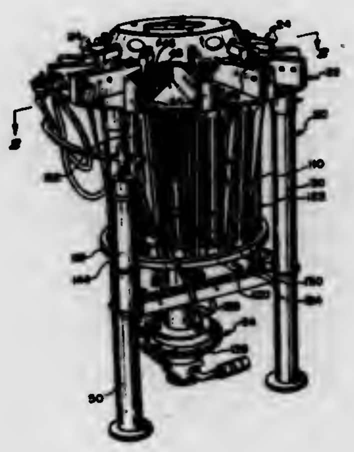
A method of making a slip latch in a parted corrugated piston ring expander with normally abutting ends and apertured legs in which guides are inserted into selected corrugations to provide a guideway through which the free end of a curved filament is pushed. A machine for performing the method has a locator to hold the expander and a plurality of inner and outer guides extending into the expander to guide the curved filament through the apertures in some of the legs. A feed mechanism pushes a free end of the filament through the expander in cooperation with the guides and into circumferentially spaced left and right hand dies which shear the filament to form a rod of the latch and coin stops on the opposite ends of the rod. The stops retain the latch within the expander and limit the extent to which the opposed ends of the expander can be separated.

3,727,282
SEMICONDUCTOR HANDLING APPARATUS
Charles A. Neary, Martinsville, N.J., assignor to Burroughs Corporation, Detroit, Mich.
Filed Feb. 5, 1970, Ser. No. 8,851
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 D **6 Claims**



A method and apparatus for handling semiconductor crystals. The method includes securing a large semiconductor wafer to a deformable plastic carrier, scribing and breaking the wafer into a plurality of small crystals, and stretching the carrier to separate the individual crystals while maintaining their orientation. The apparatus includes a hollow cylinder, a piston and a plug seated on the piston; the carrier having the wafer thereon is clamped to the cylinder and the piston and plug are moved vertically to stretch the carrier. Then the carrier may be secured to the plug for further utilization.

3,727,283
DEVICE FOR USE IN REBUILDING CLUTCHES
James N. Wognum, 9309 South Pleasant Avenue, Chicago, Ill.
Filed June 1, 1971, Ser. No. 148,323
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 J **18 Claims**



A device for use in rebuilding clutches which includes a table. The table has a plurality of radially positioned slots, and a plurality of clamping arms is pivotedly connected to the table. Each clamping arm is movably positioned in a respective slot. An arm spring is connected to each of the clamping arms, constantly urging the arms toward the center of the table. An arm positioner is connected to each of the clamping arms for determining the initial or rest position of each of the arms. Each of the arms is connected to an arm actuator, which simultaneously moves all of the arms. A reciprocal spindle is mounted in the center of the table and is surrounded by the clamping arms. A hydraulic spindle cylinder is connected to the spindle for reciprocating the spindle, and a hydraulic actuator cylinder is part of the arm actuator to operate the arms. A positive displacement pump is connected to the hydraulic spindle cylinder and to the hydraulic actuator cylinder. Valving is provided for selectively operating each of the cylinders. A hydraulic circuit is connected between the hydraulic pump and the hydraulic spindle cylinder in parallel with the valving for the spindle cylinder to allow the reciprocation of the positive displacement pump to be transmitted to the spindle through the hydraulic spindle cylinder.

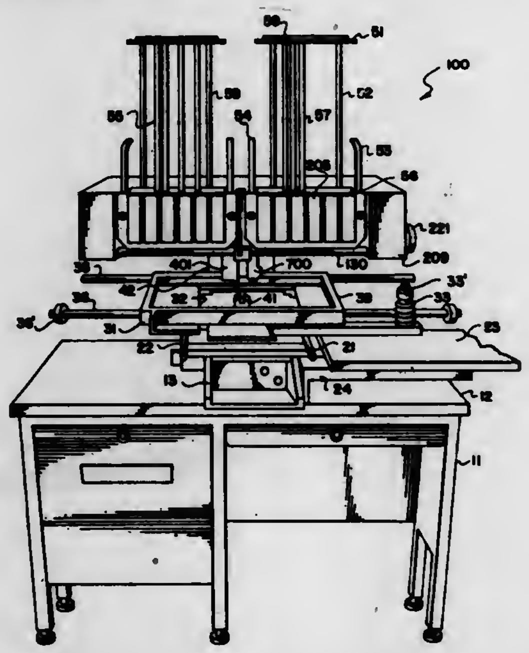
3,727,284
APPARATUS FOR SELECTING AND INSERTING DUAL IN-LINE COMPONENTS

Phillip A. Ragard; Albert W. Zemek; Welbley J. Dean, and Robert H. Holmes, all of Binghamton, N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,268

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 B **27 Claims**



An apparatus for individually selecting a number of dual in-line components and sequentially inserting them into a printed circuit board. The apparatus has a basic mode of operation comprising a group of feed magazines that are adapted to feed a single shuttle block which takes the components by a predetermined sequence and carries them to a transfer mechanism which bends the leads on either side of the component outwardly, transfers the prepared component to an insertion mechanism which forces the component downwardly while simultaneously biasing, but not bending, the leads inwardly. Another portion of the insertion mechanism forces the component with its biased leads into the printed circuit board. The printed circuit board is mounted on a pantograph mechanism whose position is controlled by either a tape reader or a computer which also determines the automatic sequencing of the shuttle block.

3,727,285
LUGGING MACHINE

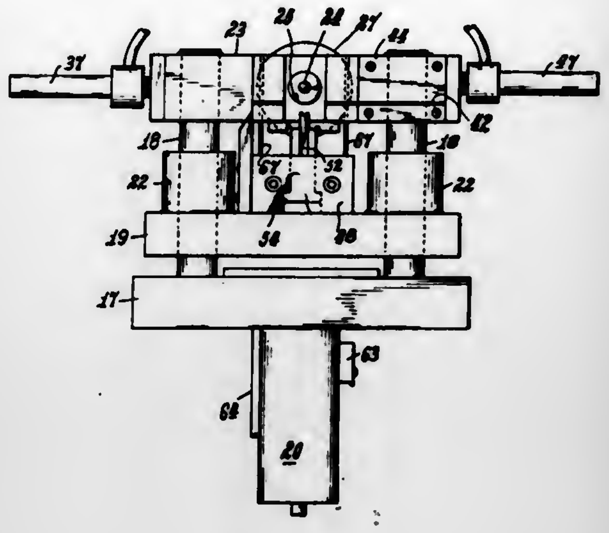
Richard H. McFarlane, Geneva, Ill., assignor to Coilform Company, Geneva, Ill.

Filed April 8, 1971, Ser. No. 132,322

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 D **8 Claims**

A machine for mounting terminal lugs on the flanged base of a tubular core including automatic feed means for a chain-form of lugs and means to sever said lugs from the chain of lugs one at a time and secure them to the flange. The machine also includes means to index the flange to facilitate selective placement of a predetermined number of lugs on said flange.



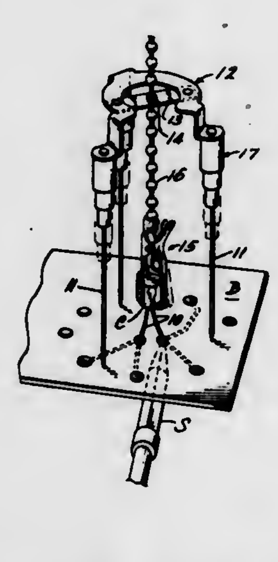
3,727,286
ELECTRICAL SERVICING TOOL

James P. Kimmett, 703 Pierce St., Delphos, Ohio

Filed Oct. 7, 1971, Ser. No. 187,367

Int. Cl. H01r *43/00*; **B25b** *27/02*

U.S. Cl. 29—203 H **10 Claims**



A device for securely gripping small electrical components mounted on a circuit board to facilitate removal thereof. The device includes a thin wall annular portion having an interior opening shaped to snugly receive the cross-section of the component by sliding it downwardly over the component toward the board and a releasable locking detent which slips under the component to prevent removal therefrom.

3,727,287
CELL INSERTING MACHINE

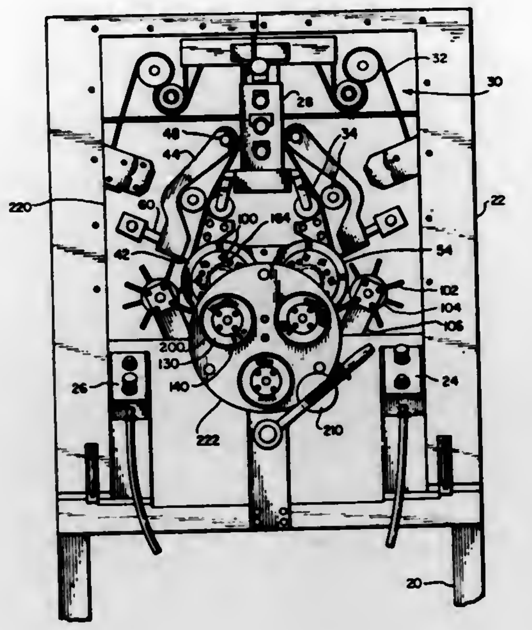
Fred R. Davis, Lima, Ohio, assignor to Gasdorf Tool & Machine Company, Inc., Lima, Ohio

Filed July 2, 1971, Ser. No. 159,338

Int. Cl. H02k *15/00*

U.S. Cl. 29—205 E **7 Claims**

Strip feeding apparatus, a cutting mechanism, an insertion mechanism, a rotatable receiving drum having slots for receiving the cut strips, a rotatable transfer drum, and a push rod arrangement for inserting shaped strips from the slots of the transfer drum into the core slots of a motor.



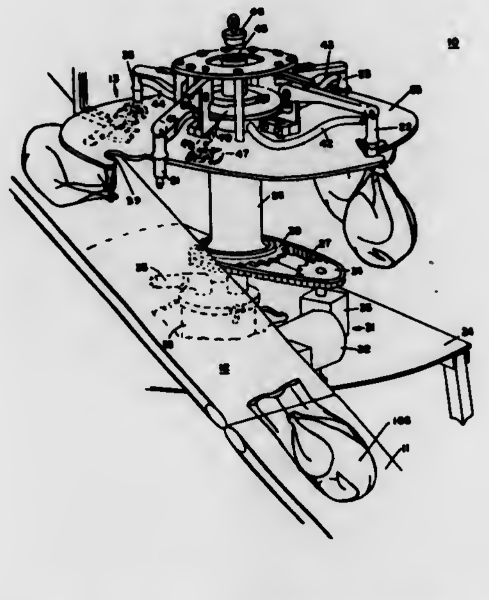
3,727,288
CLIPPING SYSTEM

John T. Roberts, Simpsonville, and Philip L. Reid, Greenville, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 9,868, Feb. 9, 1970, Pat. No. 3,648,430. This application Dec. 15, 1971, Ser. No. 208,502

Int. Cl. B23q *7/10*; **B23p** *11/00*

U.S. Cl. 29—211 D **3 Claims**



A device for applying a U-shaped metal clip to a bag wherein two cooperating pivoted closing members having anvil surfaces are caused to receive the clip encircling the neck of the bag by means of camming sockets in a reciprocal plate which also includes provision for the crimping ram.

3,727,289
DEVICE FOR CLAMPING AND MOVING TOGETHER THERMOPLASTIC PIPES FOR FLUSH-WELDING

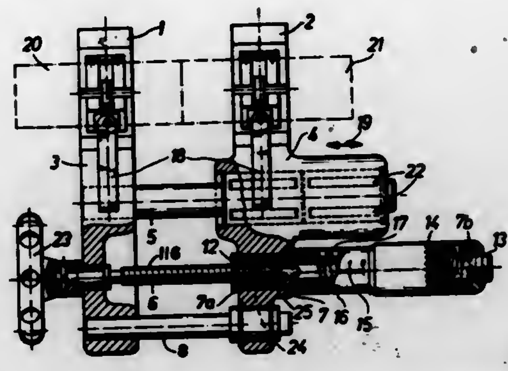
Karl Bemelmann, Bad Soden/TS., and Hubert Koch, Okarben, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Sept. 3, 1970, Ser. No. 69,357

Claims priority, application Germany, Sept. 18, 1969, P 19 47 285.6

Int. Cl. B23p *19/04*; **B29c** *27/00*; **F16l** *13/02*

U.S. Cl. 29—237 **4 Claims**



A device for heating pipes which are to be flush welded includes two hinged clamps each of which is connected to a supporting piece. One of the supporting pieces is attached to a guide pin with the other supporting piece movably mounted thereon.

3,727,290
METHOD FOR PROCESSING HOT-ROLLED METAL BODIES AND THE LIKE

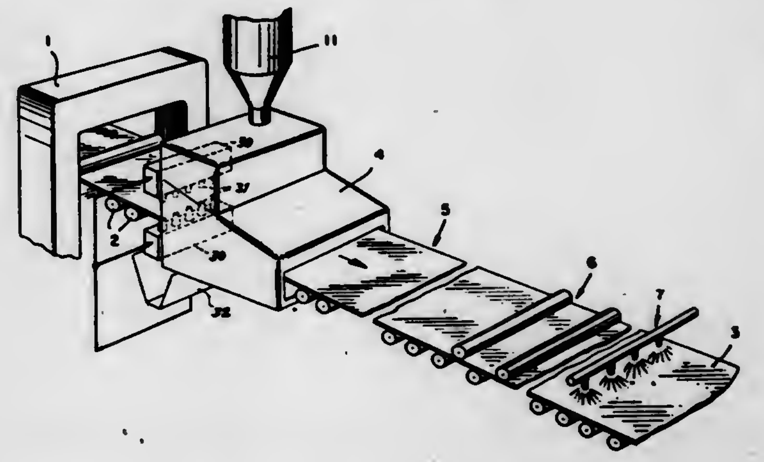
Georges Schaumburg, 1 bis rue de Londres, Montigny-Les-Metz, France

Continuation-in-part of Ser. No. 835,359, June 23, 1969, Pat. No. 3,648,349. This application March 2, 1971, Ser. No. 120,084

Claims priority, application Germany, Nov. 14, 1970, P 20 56 135.7

Int. Cl. B23q *17/00*

U.S. Cl. 29—407 **11 Claims**

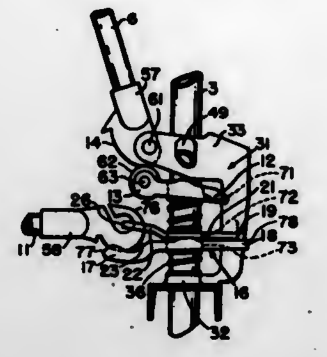


A hot-rolled metal body, e.g. a bar, rod, billet, bloom, rail or wire, emerges from between the last rolls of the rolling-mill train in a hot condition and is subjected to a high-pressure water jet to remove all traces of scale and prepare the surface of the body for receiving an enamel coating without substantial cooling of the body. The workpiece is then coated with a powder fusing at a temperature at or below the temperature of the body to form a liquid layer or film which solidifies upon cooling to provide the enamel coating. Since the enamel coating ruptures, cracks, "stars" or otherwise breaks in the region of surface flaws of the body, the coating serves to indicate the presence of such flaws while protecting the body against oxidation or scaling as the body cools.

3,727,291
UNIVERSAL PRESS

Randall K. Babb, Newark, Calif., assignor to Anthony J. Randazzo and Randall K. Babb, part interest to each

Filed March 24, 1971, Ser. No. 127,711
Int. Cl. B23p *19/02*
U.S. Cl. 29—251 3 Claims



A press consisting of a frame, an anvil mounted on the frame, a plunger mounted on the frame for movement to and from the anvil, and means mounted on the frame for movement of the plunger to and from the anvil. The means for moving the plunger frictionally grips the plunger and is provided with one handle which positively moves the plunger toward the anvil and another handle which positively moves the plunger away from the anvil.

3,727,292
METHOD OF FABRICATING A NON-WOVEN SHEET FROM EXTRUDED METAL FILAMENTS

Doyle C. Nicely, Durham, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 9, 1969, Ser. No. 883,540
Int. Cl. B23p *17/00*
U.S. Cl. 29—419 10 Claims

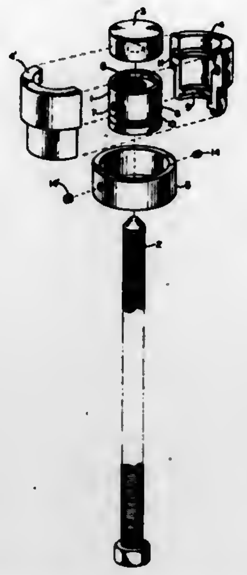
A non-woven unitary metallic sheet is fabricated by extruding a molten stream from a metallic melt into an atmosphere which reacts to form a film about the periphery of the stream. The film serves to stabilize the stream against surface tension-induced disruptions pending solidification. The stream is collected as a non-woven fibrous mass, compressed into sheet like form and given physical integrity by binding substantially all or selected adjacent fibers together.

3,727,293
REVERSIBLE PUSHING-TYPE SEPARATION TOOL FOR USE PARTICULARLY WITH AN ICE-MAKING VENDING MACHINE

Ernest L. Phillips, Sr., 107 West Cumberland, Poplarville, Miss.

Filed June 9, 1972, Ser. No. 261,357
Int. Cl. B23p *19/02*
U.S. Cl. 29—427 4 Claims

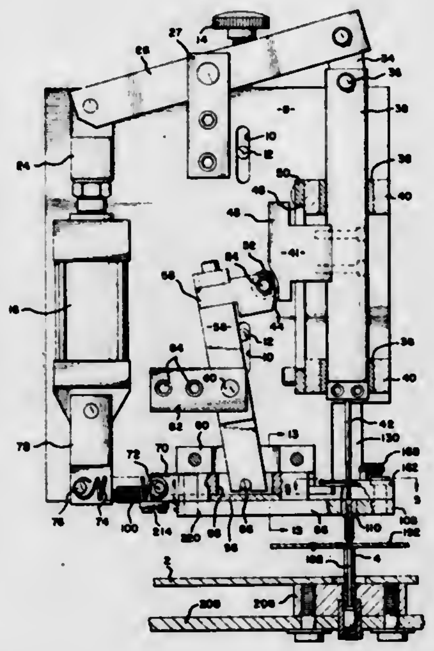
A reversible, pushing-type separation tool for use, for example, in an ice-making vending machine for removing the internal auger from the refrigerator cylinder of the ice-making mechanism. The tool comprises a pushing ram shaft threaded through a short, solid cylindrical anchor block which is easily attached to one end of the refrigerator cylinder by means of a three piece split, flange clamp locking sleeve and, alternately, to the other end with bolts for reversability. The threaded ram shaft is screwed through the solid anchor block attached to the refrigerator cylinder, either directly or through a solid ram block, against the end of the auger, thereby providing mechanical means that will enable a repairman to easily and quickly remove the auger and/or the bearing system from the refrigerated cylinder; as opposed to the hammer and chisel or sledge hammer, brute force technique of the prior art.



3,727,294
METHOD AND MACHINE FOR FORMING AND INSERTING WORKPIECES IN AN APERTURED WORKPIECE HOLDER

James Ray Coller, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 90,593, Nov. 18, 1970, abandoned. This application March 20, 1972, Ser. No. 236,515
Int. Cl. B23p *19/00*; H01r *43/00*; H05k *13/04*
U.S. Cl. 29—429 10 Claims

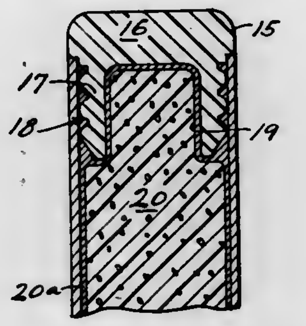


A method and machine is provided to serially supply a plurality of workpieces to a work station where each workpiece is individually subjected to a forming operation that conditions the workpiece for an interference fit when inserted within an aperture of a workpiece holder such as a card or printed circuit board. Each workpiece is individually and sequentially subjected to the forming operation, then segregated from the remaining workpieces and precisely positioned for automatic insertion into the apertured card or board by a transfering mechanism. The occurence of a malfunction in the automatic insertion operation will automatically shut off the machine enabling correction of the malfunction.

3,727,295
METHOD OF MANUFACTURING FOAM FILLED METAL BAT

A. Donald Gildemeister, Toledo, Ohio, assignor to N L Industries, Inc., New York, N.Y.

Filed Sept. 15, 1971, Ser. No. 180,555
Int. Cl. B21d *39/00*; B23p *19/04*
U.S. Cl. 29—455 1 Claim

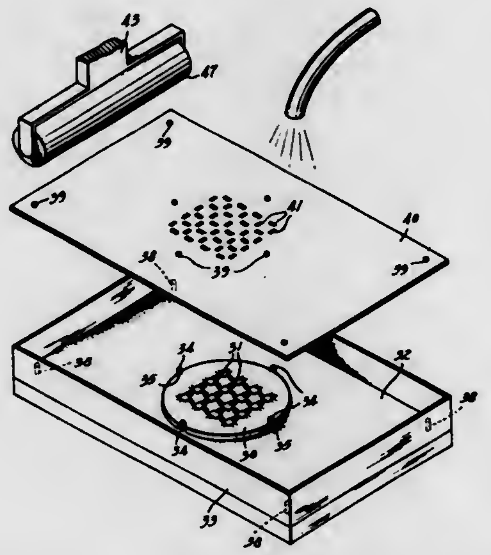


A foam filled metal bat and method for making same are disclosed. The bat comprises a die cast, ball-bat shaped hollow tube of substantially uniform wall thickness having an integrally cast knob over an end of a handle portion. The end of a club portion of the tube is open. A rigid urethane foam extends within the tube from the knob end up to and contiguous with a cap inserted in the open club end. The rigid foam forms a bond with the tube walls and the cap portion which may be a semi-rigid urethane foam or a rubber plug. The method comprises the steps of casting the tube, inserting the cap portion and placing the rigid urethane foam within the tube to form a rigid, lightweight unitary structure. A method and means are also disclosed for locating the center of percussion of the bat in which foams of different densities are placed in the bat.

3,727,296
EXPLOSIVE BONDING OF WORKPIECES

Benjamin Howell Cranston, 67 Kuser Road, Trenton, N.J.

Continuation-in-part of Ser. No. 6,829, Jan. 29, 1970, abandoned. This application Aug. 31, 1970, Ser. No. 68,431
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 9 Claims

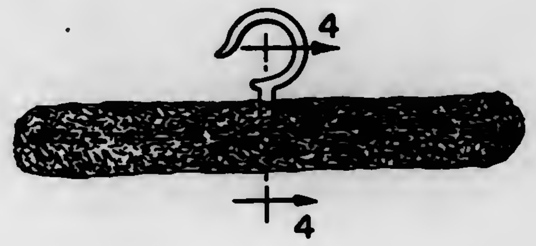


First workpieces, for example, beam-leaded integrated circuits, and the like, are bonded to second workpieces, for example, metallized ceramic substrates by first depositing a quantity of primary explosive, such as lead azide, onto each beam lead and then detonating the explosive to explosively bond the integrated circuits to the substrate. In another embodiment of the invention, the explosive bonding force is applied through a buffer sheet of plastic or metallic material which protects the surface of the substrate from contamination and which, in addition, dampens the shock of the explosion. In yet another embodiment of the invention, metal conductive paths are explosively bonded directly to a ceramic or glass substrate to form a "printed circuit pattern." The same techniques are used to manufacture resistors, capacitors, inductors, etc.

3,727,297
METHOD FOR MAKING A GARMENT HANGER

Fred A. Wesemann, Pompano Beach, Fla., assignor to Consolidated Productions Incorporated, Fort Lauderdale, Fla.

Filed June 2, 1970, Ser. No. 42,704
Int. Cl. B23k *31/02*
U.S. Cl. 29—480 1 Claim

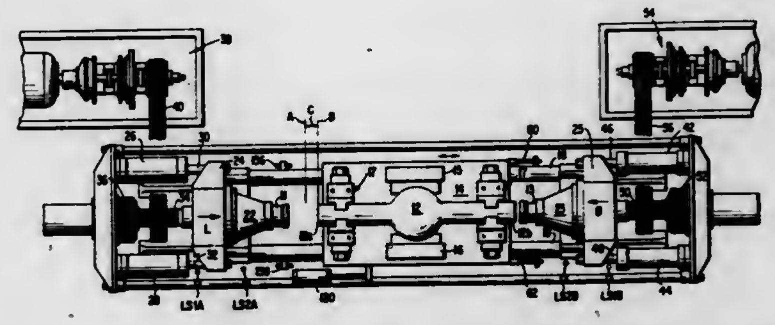


A method for manufacturing plastic articles which consists of twisting a relatively flat strip of plastic so that it is helical in shape, winding the plastic in layers on a holder, sealing the layers together in a narrow longitudinal area while the twisted plastic remains on the holder, adding stiffening means to the plastic while it remains on the holder and passing a cutting element through the plastic in a direction longitudinally along the holder thereby permitting the cut unsealed layers of plastic to flare outwardly so that the stiffening element and heat sealed longitudinal portion constitutes an axis. The elongated articles produced are then folded double and given a twist to produce a clothes hanger when provided with a hook or a brush when provided with a handle.

3,727,298
FRICTION WELDING METHOD

Arthur F. Gage, Warren, and Alex F. Stamm, Rochester, both of Mich., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed June 10, 1971, Ser. No. 151,767
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 4 Claims



Method for friction welding two rotating end workpieces to a non-rotatable central workpiece wherein one end workpiece is held axially stationary while the other end workpiece is moved axially into engagement with the central workpiece and then axially displaces the central workpiece into engatement with the one end workpiece. The central workpiece is mounted on a floating table which is axially displaceable to accomplish the described welding cycle.

3,727,299

METHOD FOR MAKING A DENTAL APPLIANCE

Alfred Hoffmann, Erkrath, and Erich Surbach, Essen, both of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed May 26, 1971, Ser. No. 147,222

Int. Cl. B23k *31/02*

U.S. Cl. 29—472.7 **3 Claims**

An alloy consisting essentially of 8 to 16 weight-percent chromium, 5 to 15 weight-percent nickel, 1 to 10 weight-percent titanium, remainder cobalt, as a material that can be bonded to ceramic masses by burning, whereby an integrally assembled alloy-porcelain dental applicance is formed for making non-removable dental prostheses.

3,727,300

METHOD OF JOINING CONSUMABLE ELECTRODE IN ELECTROSLAG MELTING

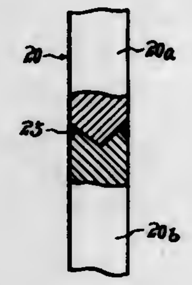
Osamu Madono, Yono, Japan, assignor to Riken Piston Ring Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1970, Ser. No. 88,881

Claims priority, application Japan, Nov. 20, 1969, 44/92506

Int. Cl. B23k *1/20, 31/02*

U.S. Cl. 29—483 **1 Claim**



In the ingot moulding by the electroslag melting method of electrodes, preliminarily is formed convex or male screw at the lower end of the upper electrode and concave or female screw at the upper end of the lower electrode, and the electrodes are joined by being connected their ends.

3,727,301

TOOL RESERVING MAGAZINE FOR MACHINE TOOL

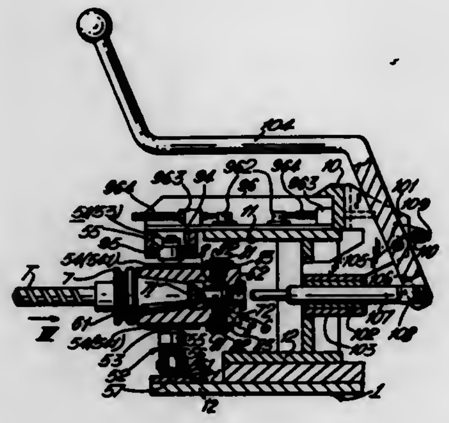
Sadaaki Tsuzuki, and Yuzo Honda, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Oct. 22, 1971, Ser. No. 191,685

Claims priority, application Japan, Oct. 23, 1970, 45/105823

Int. Cl. B23q *3/157*

U.S. Cl. 29—568 **5 Claims**



Disclosed herein is a tool take-out apparatus for a tool reserving magazine including a plurality of tool receiver sockets mounted on endless chains stretched over a drive sprocket and guiding pulleys and displaceable tension pulleys for offsetting chain loosening produced in the course of operation time. The tool take-out apparatus comprises guiding track means for regulating moving directions of the endless chains, a supporting member adjustably mounted on the magazine and supporting the track means, adjusting means for properly positioning the supporting member, holding means mounted on the supporting member, a push rod reciprocatably mounted on the holding means with the axial line thereof kept coinciding with that of each of the sockets indexed to the tool take-out position, and operational means for reciprocating the push rod along its axial line.

3,727,302

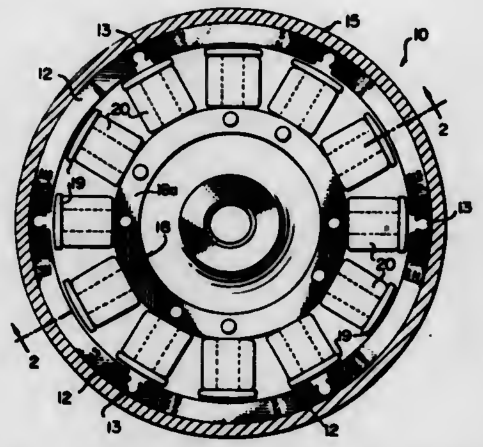
METHOD OF MAKING AN ANNULAR ASSEMBLY OF MAGNETS FOR USE AS THE FIELD OF A DYNAMOELECTRIC MACHINE

Russell E. Phelon, Rio Piedras, P.R., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Division of Ser. No. 60,296, Aug. 3, 1970, Pat. No. 3,663,050. This application Jan. 6, 1972, Ser. No. 215,828

Int. Cl. H02k *15/00, 15/14, 15/16*

U.S. Cl. 29—596 **11 Claims**



A method of assembling a plurality of arcuate magnets inside an annular member wherein said magnets are biased towards each other by a resilient member.

A plurality of arcuate ceramic magnets are arranged in a generally end face to end face, spaced relationship to form an annular ring, and a compressible resilient spacer or spring member is placed between two magnets to hold them in assembly with a temporary shipping band or with the rotor part in which they are finally installed. In making the assembly, a deformable insert may also be placed between two adjacent magnets and then deformed to enlarge the gap in which it is received, thereby compressing the spring member. If the magnets are first formed into a preassembly with a shipping band for later assembly with a rotor part, and if a deformable insert is used to control the compression of the spring member, the deformable insert in forming the preassembly is preferably deformed only to a degree sufficient to hold the preassembly in assembly with only a degree of tightness sufficient to withstand normal handling, and after the magnets are inserted in the final rotor part and the shipping band removed, the deformable insert is deformed to a further extent to hold the magnets in assembly with the rotor part with a greater degree of tightness.

3,727,303

METHOD OF FORMING GAPS FOR SMALL MAGNETIC HEADS

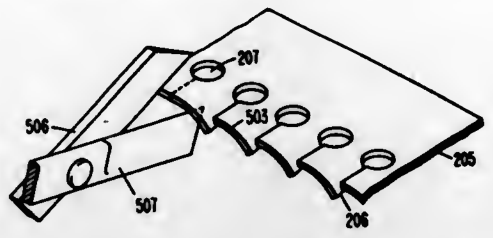
George W. Brock, and Raymond Stephens, both of Boulder, Colo., assignors to International Business Machine Corporation, Armonk, N.J.

Filed June 4, 1971, Ser. No. 149,973

Int. Cl. G11b *5/42*; **H01f** *7/06*

U.S. Cl. 29—603 **15 Claims**

A small multi-element magnetic recording head reads and writes information on magnetic medium information tracks corresponding to head gaps. The head is a single magnetic strip having a plurality of gaps extending from one edge of the strip to apertures aligned along that edge. Conductors are associated with the apertures. One embodiment of the head is formed by coating the strip with an acid-resistant mask, punching the apertures, shearing the gap, etching the strip, and annealing the strip. Another embodiment of the head is constructed by wrapping a composite wire around a mandrel and then plating, drilling, and cutting a cross-section of the wrapped wire.



3,727,304

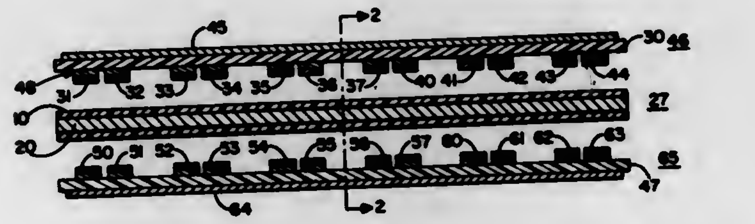
PLATED WIRE MEMORY FABRICATION

Jack L. Granato, and Richard F. Moore, both of Pinellas, Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 688,782, Dec. 7, 1967, abandoned. This application Sept. 28, 1970, Ser. No. 76,004

Int. Cl. H01f *7/06*

U.S. Cl. 29—604 **2 Claims**



A plated wire thin film memory assembly and fabrication method is shown and described wherein the plated wire is contained in a "tunnel structure" sandwiched between layers of a multi-layer printed circuit assembly.

3,727,305

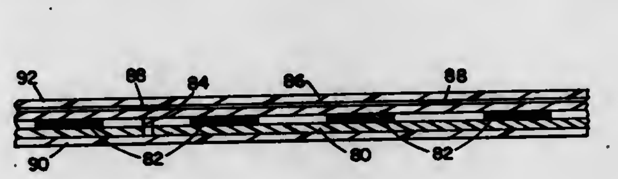
METHOD FOR MANUFACTURING A CONTROL ARTICLE

Irving B. Cooper, Jr., Atkinson, N.H., assignor to Notifier Company, Lincoln, Nebr.

Continuation of Ser. No. 859,602, July 7, 1969, abandoned, which is a division of Ser. No. 776,746, Nov. 18, 1968, Pat. No. 3,564,214, which is a continuation of Ser. No. 481,687, Aug. 23, 1965, Pat. No. 3,508,031. This application Sept. 14, 1971, Ser. No. 180,435

Int. Cl. B41m *3/08*; **H05k** *3/00*

U.S. Cl. 29—625 **4 Claims**



A process of making a coded circuit card is disclosed wherein a foil sheet is selectively apertured and then overlayed with another such sheet and selective through apertures are formed in the composite. Then the composite is encased in opaque insulative material.

3,727,306

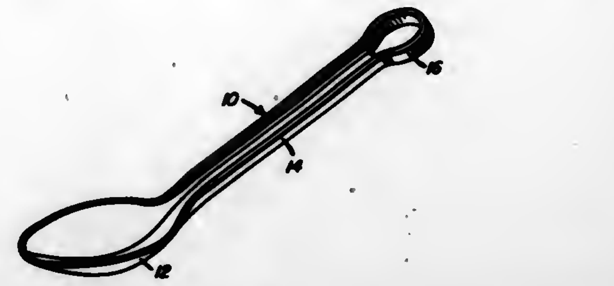
SPOON CONSTRUCTION

Robert M. Patik, 511 Southwest Avenue, Greensburg, Pa.

Filed Dec. 17, 1971, Ser. No. 209,296

Int. Cl. A47j *43/28*

U.S. Cl. 30—149 **12 Claims**



A multi-purpose, one-piece spoon construction of molded plastic including integral bowl and handle portions with a centrally disposed break line extending therealong, and a hinge portion at the end of the handle portion to permit flexing of the spoon halves when separated along the break line to provide a bifurcated configuration for tong-like manipulation.

3,727,307

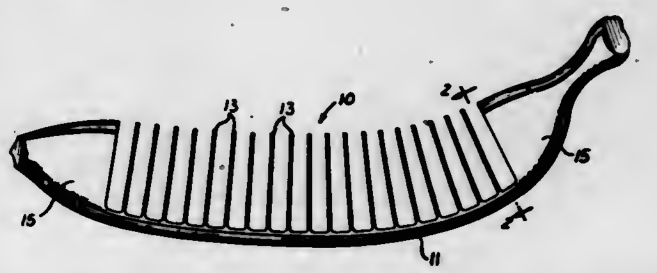
COMESTIBLE SLICING DEVICE

Sol J. Berger, 1116 Kent Avenue, Highland Park, Ill.

Filed Dec. 8, 1971, Ser. No. 205,952

Int. Cl. B26b *3/04*

U.S. Cl. 30—304 **6 Claims**



A slicing device for simultaneously slicing an elongated comestible into a plurality of disks. The slicing device includes a lengthwise flexible supporting strip having a plurality of lengthwise spaced knife blades projecting therefrom.

3,727,308

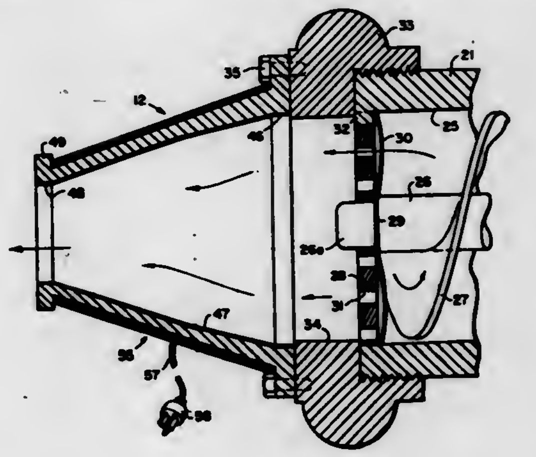
APPARATUS FOR PROCESSING CHEESE

Joseph H. Ross, Hayward, Calif., assignor to Lucky Stores, Inc., San Leandro, Calif.

Filed Feb. 26, 1970, Ser. No. 14,556

Int. Cl. A01j *25/00*

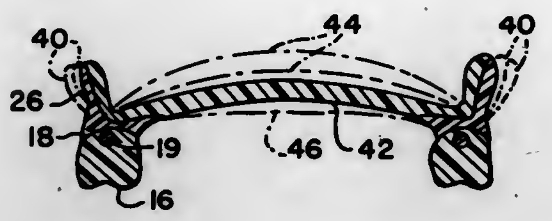
U.S. Cl. 31—89 **5 Claims**



The invention relates to apparatus for processing cuttings and trimmings of cheese to reconsolidate it.

3,727,309
DENTURE AND METHOD

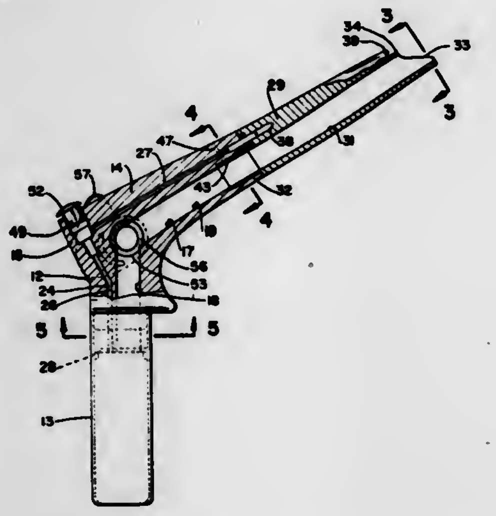
Elbert P. Huey, Scottsdale, Ariz., assignor to Comfo-Dent Corporation of America, Scottsdale, Ariz.
Continuation-in-part of Ser. No. 59,922, July 31, 1970, Pat. No. 3,667,123. This application June 6, 1972, Ser. No. 259,623
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 **12 Claims**



A prosthetic denture and method of manufacture comprising a set of artificial teeth which are reinforced at their base portions by a U-shaped frame. The set of artificial teeth are bonded to a fairly rigid continuous thermoplastic or thermoset material. As a second stratum another less rigid thermoplastic or thermoset layer is included. The latter layer is deformable to intimately fit the gum area and/or the palatal area of the mouth. The denture is used by placing it in a person's oral cavity and deflecting the less rigid portion into a set to accurately conform with the edentulus ridge in the cavity. The denture may also have a liner directly in abutment with the gum area and/or the palatal area. The liner may be only partially cured plastic material which may be further cured, preferably in place, or it may be a relatively soft thermoplastic material.

3,727,310
FOUR-WAY DENTAL SYRINGE

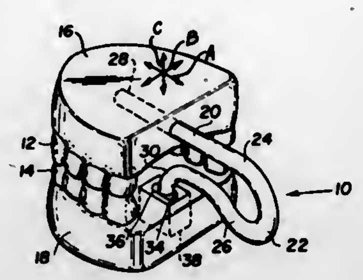
Gary Baker, Castro Valley, Calif., assignor to Don A. Patton & James S. Brauer, San Leandro, Calif., part interest
Filed April 21, 1971, Ser. No. 136,143
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 **3 Claims**



A dental syringe arranged for convenient selective discharge of water, air or water-air mixture from a nozzle thereof as well as for convenient selective drawing of vacuum from a vacuum passage of the nozzle to thereby provide a four-way action. The syringe is characterized by a convenient pistol-grip construction which facilitates expiditious thumb manipulation of valves controlling the flows of water, air and vacuum through the nozzle during use of the syringe in normal dental procedures. The nozzle is removable for autoclaving or other sterilizing techniques and the water discharge opening is centered in an annular air discharge opening, the vacuum opening being separate therefrom and positioned below the air-water arrangement.

3,727,311
DENTAL ARTICULATOR

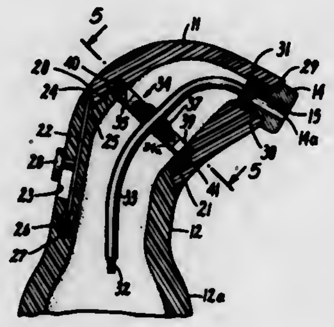
Andre T. Schoonebeek, 88 Anderson Avenue, North Babylon, N.Y.
Filed April 27, 1972, Ser. No. 248,232
Int. Cl. A61c *11/00*
U.S. Cl. 32—32 **10 Claims**



An inexpensive articulator for dental casts and the like utilized in the manufacture of bridges, crowns, inlays, jackets and similar restorations in which the articulator supports the models in a position corresponding to their actual position in the jaws and for movement of the supported models relative to each other and for separation from each other to facilitate the unobstructed accurate shaping and sculpturing of the parts of the restoration.

3,727,312
DENTAL HAND INSTRUMENT

Joseph L. Durante, 651 Main Street, N. Hackensack, N.J.
Filed March 15, 1971, Ser. No. 124,210
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **7 Claims**

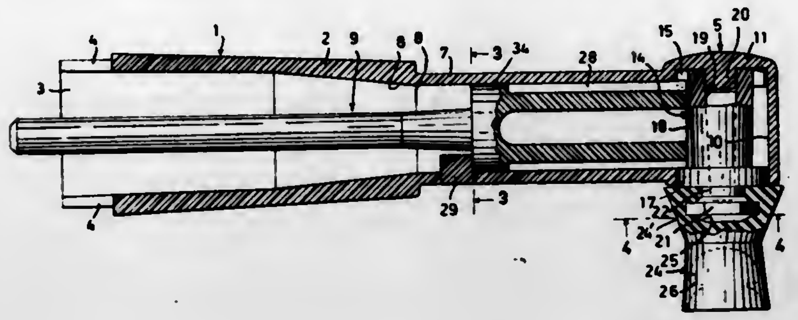


An improved dental hand instrument is provided having means whereby the head of the instrument can be rotated relative to the body thereof so that a dental work piece projecting from the head can be displaced through an arc and positioned at various angles with respect to the body. In a preferred embodiment, the dental hand instrument is provided with an improved and simplified drive means whereby the number of working parts required to drive a dental work piece secured thereto is significantly reduced.

3,727,313
DENTAL PROPHYLAXIS RIGHT ANGLE HAND PIECE

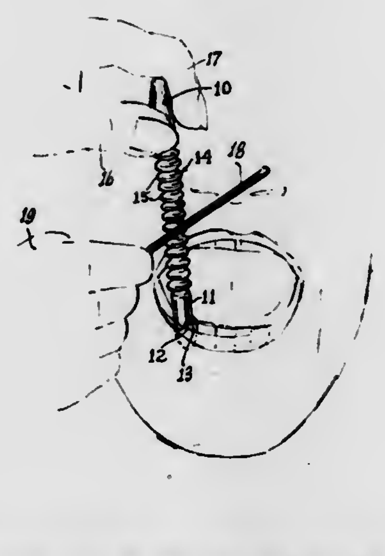
Raymond C. Graham, Mountain View, Calif., assignor to The Denticator Co., Inc., San Francisco, Calif.
Filed Sept. 22, 1971, Ser. No. 182,672
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **10 Claims**

A disposable dental hand piece having a one-piece elongated tubular shank provided with a right angle hollow head at one end integral therewith, which head is formed with an opening directed at a right angle to the shank for insertion of a gear into the head which gear has a dental tool holder integral therewith, the tool holder projecting outwardly of the opening when the gear is within the head. An elongated spindle extends through the tubular shank from the end opposite the head and has radially projecting axially extending ribs on the outer end portion adjacent to said gear the terminal outer end of the spindle holding the gear and tool holder against withdrawal from the head with the terminal end portions of the ribs providing teeth in mesh with the teeth of the gear for driving the latter. A latch integral with the shank is movable to a non-returnable position holding the spindle against retraction out of the shank where the teeth on the spindle and on the gear are in driving relation.



3,727,314
DENTAL TOOL

Robert Marion De Angeles, 818 Broadway, Melrose Park, Ill., and Dennis Zbylut, 5141 North East River Road, Chicago, Ill.
Filed Dec. 27, 1971, Ser. No. 211,951
Int. Cl. A61c *3/00*
U.S. Cl. 32—41 **6 Claims**

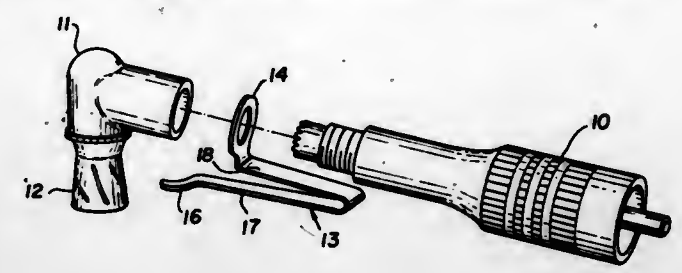


A crown-setting tool having one end notched or concave to conform generally to the configuration of a crown which is being cemented on a tooth, to firmly hold the crown while a vibratory rod is rubbed across the face of corrugations provided in the tool, with the resulting vibrations created through the rubbing action effective to set the crown and force out excess cement without undue distress to the patient or adverse effects upon the crown or the tooth.

3,727,315
DENTAL PROPHYLAXIS APPARATUS

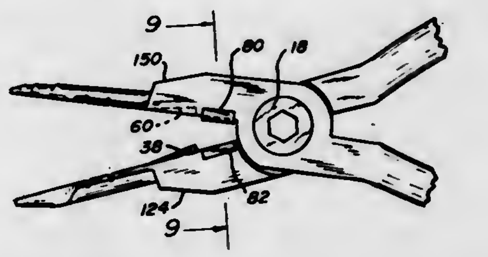
Ronald P. Spinello, 372 Post Avenue, Westbury, N.Y.
Filed Nov. 8, 1971, Ser. No. 196,364The portion of the term of this patent subsequent to Nov. 23, 1988, has been disclaimed.
Int. Cl. A61c *3/06*
U.S. Cl. 32—59 **9 Claims**

A dental prophylaxis device including a rotary pliable cup-shaped tooth-engaging member formed with paste-impelling patterns on its outside walls which urge the paste toward the tooth under the effects of rotation, and a resilient wiper finger attached to the handpiece which drives the pliable cup adapted to wipe against the side wall of the cup above the tooth surface and capable of yielding with distortion of the cup under pressure against the tooth, thus preventing migration of paste backward toward the driving mechanism and further precluding buildup of paste and saliva on the outside walls preventing splattering.



3,727,316
PLIER-TYPE TOOL FOR ORTHODONTISTS

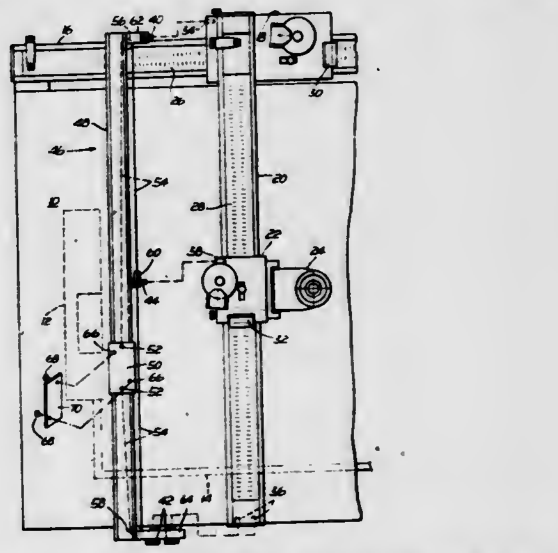
Louis Goldberg, 68 Lincoln Terrace, Harrington Park, N.J.
Filed April 24, 1972, Ser. No. 246,931
Int. Cl. A61c *7/00*
U.S. Cl. 32—66 **8 Claims**



An orthodontic plier-type tool is disclosed in which jaws are formed to bend a wire into the desired open or closed loop sizes as determined for the particular arch wire to be used in the mouth of the patient. The jaws of this plier include a mating conically shaped male and female wire bending or straightening means. In one embodiment is shown wire cutting means carried by the jaws, thus requiring only one tool to be used to cut and form an arch wire as used by the orthodontist in his task of straightening children's teeth.

3,727,317
DRAFTING APPARATUS

Kurt Gornowitz, Lahr, Black Forest, Germany, assignor to Albert Nestler GmbH, Lahr/Schwarzwalb, Germany
Filed June 9, 1971, Ser. No. 151,426
Claims priority, application Germany, June 11, 1970, G 70 21 861.0
Int. Cl. B43l *13/02*
U.S. Cl. 33—76 R **2 Claims**



A device for attachment to a drafting board which is movable between horizontal and upright positions. The device includes an X-bar and a Y-bar carrying respective carriages to facilitate plotting points on the board with reference to a zero co-ordinate. When the board is tilted a removable balance weight is added to compensate for the weight of the moving parts.

3,727,318
MICROMETER APPARATUS

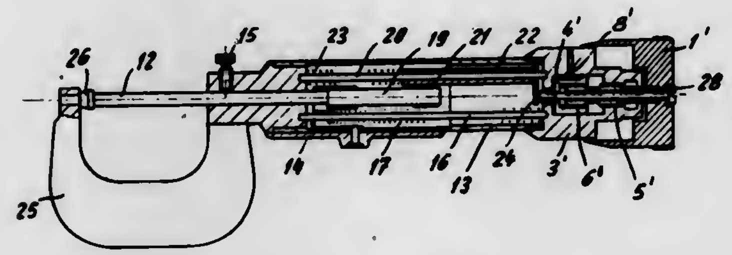
Johann Meier, Casa Clarissa CH - 6645 Brione Sopra, Minusio, Switzerland

Filed Oct. 26, 1970, Ser. No. 83,841

Claims priority, application Switzerland, Oct. 27, 1969, 160 78/69

Int. Cl. G01b *5/00*

U.S. Cl. 33—170 **4 Claims**



Micrometer apparatus for accurately measuring and indicating distance, including a vernier casing rotatably mounted concentrically about a cylindrical micrometer head, a follower member arranged for coaxial reciprocatory movement relative to said micrometer head, and actuator means connected with said vernier casing for effecting longitudinal displacement of said follower member relative to said micrometer body. The invention is characterized in that the actuator means includes first and second screw thread means of different pitch and thread direction for connecting the vernier casing with the micrometer body and with the follower, respectively.

In accordance with a modification of the invention, the micrometer head is connected with a housing that supports a gauge pin mounted for axial sliding movement in a direction parallel with the actuator axis, a scale plate being carried by said gauge pin. The follower member is operable to displace a reader marker relative to said scale plate to afford a vernier reading of the position of the qauge pin relative to the housing.

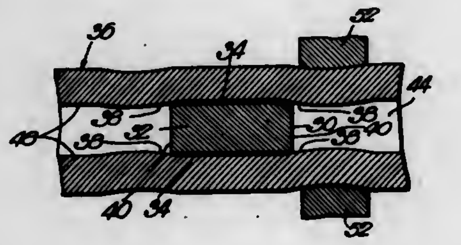
3,727,319
VENTILATED SIGHT RIB MOUNT ON A SHOTGUN BARREL

George R. Snyder, Woodbridge, Conn., assignor to The Marlin Firearms Company, North Haven, Conn.

Filed April 5, 1971, Ser. No. 130,887

Int. Cl. F41g *1/42, 1/00;* **F41c** *21/00*

U.S. Cl. 33—233 **2 Claims**



A metal sight rib has in its bottom a dovetail groove received with a slide fit on dovetail projections on spaced and aligned upright posts on a shotgun barrel, with the groove having wedge formations bearing against the opposite ends of the dovetail projections on selected posts for locking the sight rib to the latter, and a method of thus mounting the sight rib, involving sliding the same into fit with the dovetail projections on the posts, and crimping the sight rib inwardly at the opposite ends of the dovetail projections on selected posts for wedging the sight rib to the ends of these projections.

3,727,320
APPARATUS FOR DRYING LENGTHS OF DYED FABRICS

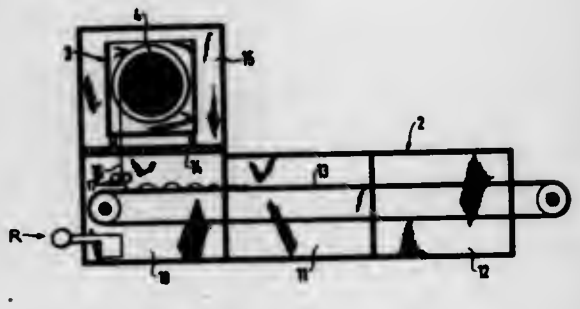
Manfred Schuierer, 6122 Erbach/Odenwald, Germany, assignor to Bruckner-Apparatebau GmbH, Werner-Von Siemens-Strasse, Germany

Filed Oct. 18, 1971, Ser. No. 189,979

Claims priority, application Germany, Oct. 21, 1970, P 20 51 635.2

Int. Cl. F26b *19/00*

U.S. Cl. 34—70 **6 Claims**



Apparatus for drying lengths of dyed fabrics wound on a beam comprises a carriage for supporting the beam in a dryer housing having a drying chamber located beneath the housing and into which the fabric is unwound. Within the chamber and in a position to receive the descending fabric is a conveyor which carries the fabric in a spread condition through successive other drying chambers.

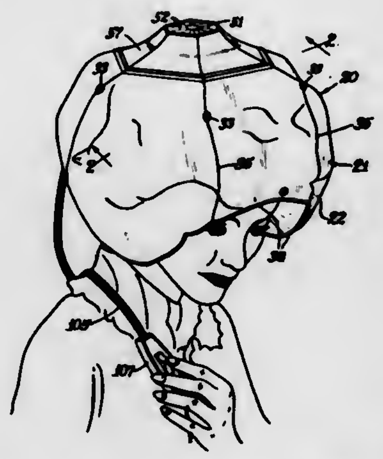
3,727,321
PORTABLE HAIR DRYER

Robert S. Waters, Oak Brook, Ill., and Ronald R. Liedtke, Redondo Beach, Calif., assignors to Sunbeam Corporation, Chicago, Ill.

Filed March 24, 1971, Ser. No. 127,666

Int. Cl. A45d *20/24*

U.S. Cl. 34—99 **18 Claims**



An appliance for drying hair including a flexible hat or bonnet which provides a manifold for circulating air which is heated and propelled by means of a motor driven fan supported in the center of the crown portion of the hat. The motor driven blower being mounted with a portion thereof positioned within the hat and a portion extending outwardly therefrom. The blower unit being secured to the flexible hat by means of a semiflexible frame, heat sealed to the cap and adapted to be snapped into engagement with the peripheral portions of the motor driven blower housing.

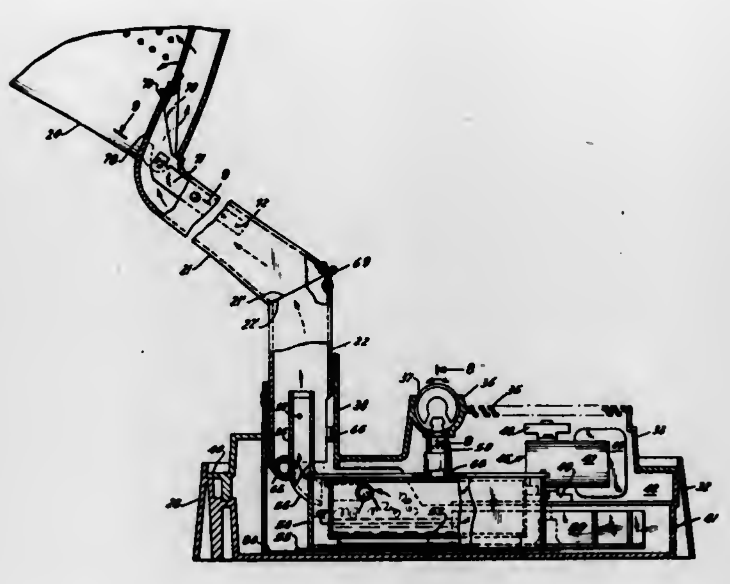
3,727,322
HAIR SETTING-DRYING DEVICE

Henry J. Walter, Wilton, Conn.; Edward J. Doyle, Hatboro, and Robert R. Ream, Ephrata, both of Pa., assignors to Schick Incorporated, Lancaster, Pa.

Continuation of Ser. No. 649,209, June 27, 1967, abandoned. This application Oct. 2, 1970, Ser. No. 77,604

Int. Cl. A45d *20/00*

U.S. Cl. 34—99 **19 Claims**



A hair drying device in which provision is made for the generation and injection of steam into the duct system during a predetermined portion of the cycle of operation.

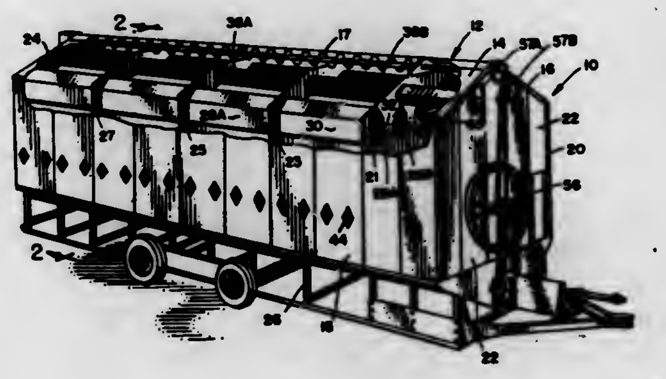
3,727,323
COUNTERFLOW PREHEATING MEANS FOR A CONCURRENT COUNTERCURRENT GRAIN DRYER

Elmo R. Meiners, Anchor, and John O. Bradford, Gibson City, both of Ill., assignors to said Meiners, by said Bradford

Filed April 12, 1971, Ser. No. 133,253

Int. Cl. F26b *17/12*

U.S. Cl. 34—170 **5 Claims**



A concurrent-countercurrent flow column grain dryer of the type having an enclosed bin with a wet grain inlet at the top and a dry grain outlet at the bottom includes means for introducing hot air as a drying medium for the grain in a flow concurrent with the grain. Means are also provided at the bottom of the bin to introduce cool air which flows countercurrent to the grain flow. A first exhaust is provided intermediate the points where hot and cool air are introduced. A second exhaust positioned above the hot fluid inlet ducts also exhausts hot air flowing upwardly from the hot fluid inlet ducts in a countercurrent direction to the downward flowing grain and preheats the wet grain immediately after the wet grain enters the enclosed bin.

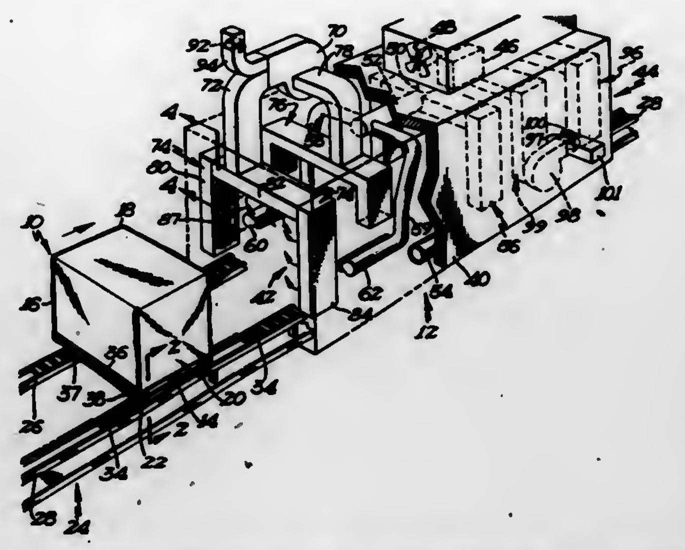
3,727,324
SHRINK TUNNEL FOR PALLETIZED LOADS

Hans L. Melgaard, Mound, Minn., assignor to Despatch Industries, Inc., Minneapolis, Minn.

Filed Sept. 18, 1970, Ser. No. 73,393

Int. Cl. F26b *19/00*

U.S. Cl. 34—216 **9 Claims**



A shrink tunnel for shrinking a covering of plastic material onto a palletized load including apparatus for generating a curtain of air at entrance and exit of the tunnel to isolate a shrink zone within the tunnel from an ambient environment and to provide preheating and cooling of the plastic cover at entrance and exit, respectively, as the load moves through the tunnel. The shrink zone has a pair of stationary nozzles near the entrance of the tunnel for directing heated air at the skirt of the plastic covering adjacent the base of the palletized load to shrink the skirt to the pallet. The remainder of the covering is thereafter shrunk onto the load thereby protecting the load from the elements during shipment or storage and binding it to the pallet for convenient shipment.

3,727,325
PROCESS AND APPARATUS FOR THE TREATMENT OF TEXTILES MATERIALS

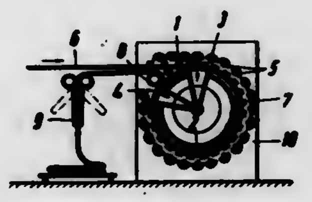
Heinz Fleissner, Egelsbach; Erich Feess, Lorsbach, and Wilhelm Gahlert, Hofheim, all of Germany, assignors to Vepa AG, Basel, Switzerland and Farbwerke Hoechst Aktiengesellschaft normals Meister Lucius of Bruning, Frankfurt/Main, Germany

Filed Feb. 3, 1969, Ser. No. 795,993

Claims priority, application Germany, Feb. 3, 1968, P 17 10 509.8

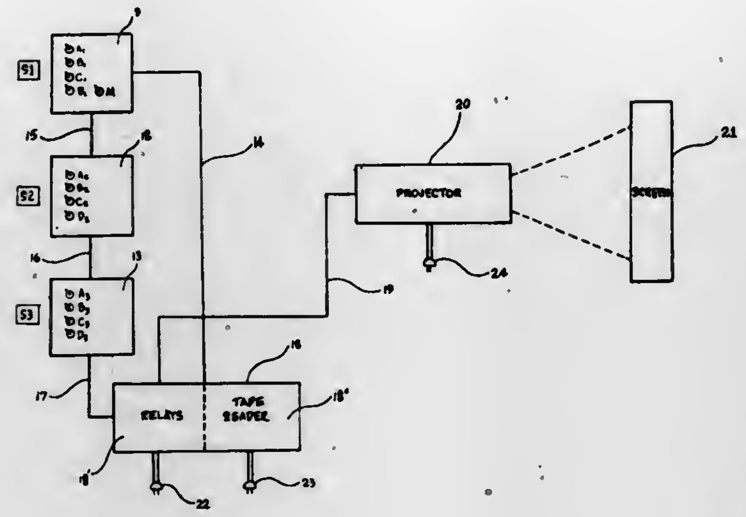
Int. Cl. F26b *11/02*

U.S. Cl. 34—115 **21 Claims**



The present disclosure is directed to a process and apparatus for the heat-treatment of textile materials, particularly those materials which are only slightly or not permeable to air when in a wet condition. More particularly, the present disclosure is directed to a process and apparatus for producing a steam cushion at the surface of the material being treated, said material being conveyed on the surface of sieve drum means.

3,727,326
PROGRAMMED LEARNING DEVICE
James D. J. Holmes, Dogwood Lane, Laurinburg, N.C.
Filed July 24, 1970, Ser. No. 58,096
Int. Cl. G09b *7/08*
U.S. Cl. 35—9 A **10 Claims**



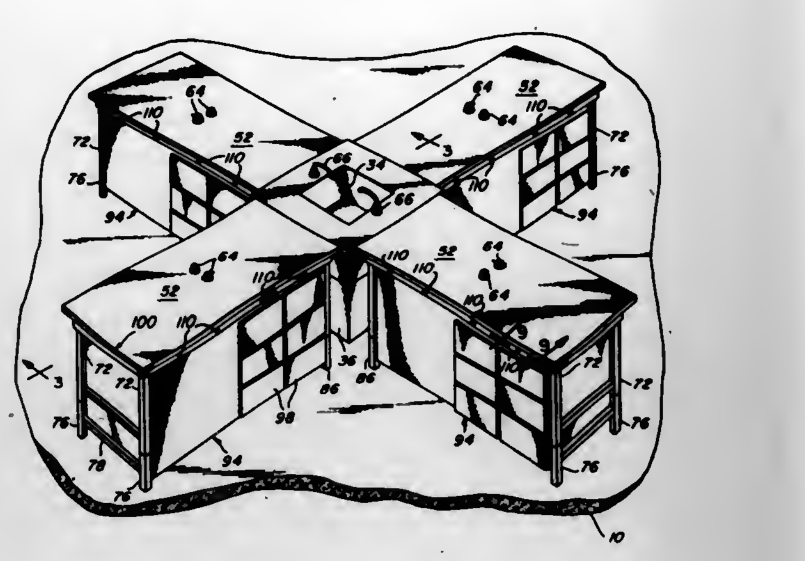
In abstract, a preferred embodiment of this invention is a programmed learning device wherein one or more students, small groups working together, are taught by the non-linear method of programmed learning. Specifically, after the text material is reviewed by the group, a question relative thereto is presented. Feedback relative to wrong answers will then be first displayed prior to the giving of feedback relative to the correct answer. No unchosen wrong answer feedback, however, is displayed.

3,727,327
CODED FILING AND RETRIEVAL SYSTEM
Thomas C. Ekeland, 45 John Street, Brooklyn, N.Y.
Continuation-in-part of Ser. No. 65,310, Aug. 19, 1970, abandoned. This application June 19, 1972, Ser. No. 264,294
Int. Cl. G09b *19/00*
U.S. Cl. 35—24 R **3 Claims**

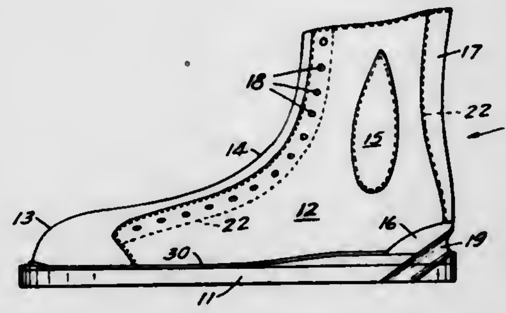
A filing and retrieval system whereby alphabetic name and titles are interpreted by numeric code. This can be done by following a set of rules manually. The encoding of words including names is characterized in the dividing of the word into phonic sounds, irrespective of the actual spelling of the word, and the assignment of a numeric code to each phonic sound excepting the first sound, followed by the filing of items bearing the numeric code in serial order, without regard to the spelling of the word, thereby permitting the retrieval of a filed item even if the exact spelling is not known.

3,727,328
EDUCATIONAL FACILITY
Rafael L. Valenzuela, 9237 N. 18th Dr., Phoenix, Ariz.
Continuation-in-part of Ser. No. 847,261, Aug. 4, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,488
Int. Cl. A47k *3/16*
U.S. Cl. 35—60 **9 Claims**

An educational facility for the teaching of subjects, such as science, including chemistry, biology, and other related subjects, said facility comprising a floor having recessed plumbing facilities spaced apart or in modular arrangement, and wherein teachiing sinks are disposed over the recesses and each serving a plurality of radiating tables; the tables and sink being provided with vertically variable supports, and quick disconnect coupling means in said recesses for connecting various fluid supply means, a sink drain, and electrical equipment so as to accommodate the teaching of various subjects and to provide flexibility in the disposition and arrangement of groups of such facilities in modular spaced relation to each other with respect to said floor area.



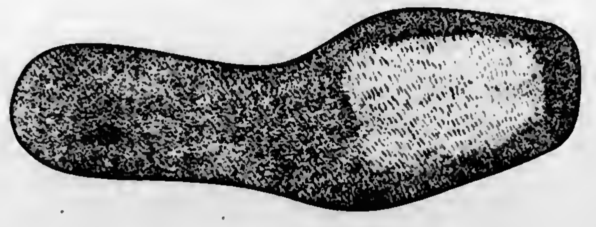
3,727,329
SKI BOOT
Roy L. Peterson, 73 Wildwood Road, Mahtomedi, Minn.
Filed Aug. 23, 1971, Ser. No. 174,059
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL **2 Claims**



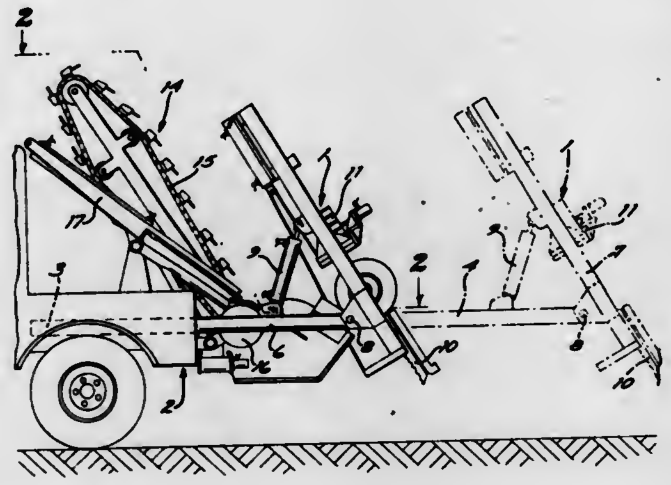
A ski boot incorporating a continuous metallic reinforcing member along the sole and up the back of the boot.

3,727,330
MULTI-COLOR SHOE SOLE BLANKS
Walter Hoche, Weinheim, Bergstrahe, Germany, assignor to Carl Freudenberg, Weinheim, Germany
Filed April 9, 1971, Ser. No. 132,848
Claims priority, application Germany, May 27, 1970, G 70 19 747.6
Int. Cl. A43b *13/06*
U.S. Cl. 36—32 R **6 Claims**

A shoe sole blank of synthetic material is produced by applying a brown color layer to a sheet of synthetic material, applying another coat of black color layer over the brown, the black being of limited abrasion-resistance, stamping shoe sole blanks out of the sheet, and selectively abrading away the black layer from the central portion of the blank corresponding to the ball of the foot. Skeletal traces of the black color layer may remain even in said central portion. The resulting blank has a pleasing two-tone appearance and even simulates the grainy texture of leather in said central portion.



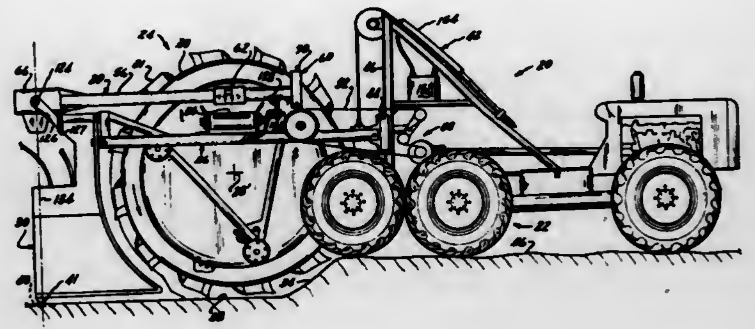
3,727,331
OSCILLATING PLOW AND TRENCHER COMBINATION
Robert O. Hansen, 4549 W. Rosecrans, Hawthorne, Calif.
Filed Oct. 20, 1971, Ser. No. 190,974
Int. Cl. E02f *5/06, 5/18*
U.S. Cl. 37—86 **6 Claims**



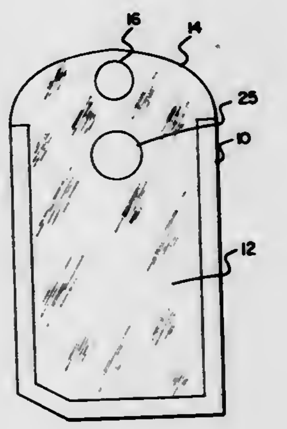
When a trench is to be dig for the purpose of laying pipe, cable, or tubing, the cutting mechanism includes a blade which is vibrated vertically by a suitable driving means, and which can also be adjusted horizontally to provide space through which the trenching mechanism may be moved so that it is possible to use either the trenching machine alone or the plow mechanism alone, or the use of both mechanisms simultaneously if required.

3,727,332
LASER GUIDANCE SYSTEM FOR GRADE CONTROL
Walter George A. Zimmer, 11 Jeffrey St., Chatham, Ontario, Canada
Filed Nov. 22, 1971, Ser. No. 200,893
Int. Cl. E02f *5/08*
U.S. Cl. 37—97 **28 Claims**

A vehicular machine, such as a trencher, having working means, such as a digging wheel, carried thereon for working material to a desired grade as the machine moves along a given path. Vertical adjustment of the working means is automatically controlled by a laser guidance system mounted on the machine for movement therewith. The guidance apparatus includes a reference means, such as a shoe of a trencher, movable with the machine and which engages the surface of the material already worked to the desired grade by the machine. The guidance apparatus also includes a detector apparatus comprising a laser beam generator mounted on a stabilizing platform and a beam sensor remote therefrom but enclosed within the same housing, the housing being carried by the framwwork of the working implement of the machine. The stabilized laser is preferably located in close proximity to the reference means with the beam aimed generally in the plane of motion of the working implement relative to the machine. Deviations of the working means from the desired grade are sensed by relative motion between the beam and sensor to develop a control signal utilized by a hydraulically actuated hoisting mechanism to raise or lower the working means to thus correct for such deviations and thereby maintain the material being worked at the desired grade as the machine moves along said path.



3,727,333
DATA PROCESSING CARD RETAINER
Samuel W. Ward, 91 North Malcolm St., Ossining, N.Y., and Richard J. Hilosky, Tappan Hills Apts., Briarcliff Manor, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,171
Int. Cl. G09f *3/18*
U.S. Cl. 40—10 R **2 Claims**



A retaining pouch or holder for a data processing card or computer information or control card which is constructed to provide peripheral protection for the card against creasing, tearing and other mutilation, a safe storage for the card which is lockable to prevent accidental loss, a means of attachment to the article particularly referred to in the information on the card and convenient access to the card for extracting the card from the holder.

3,727,334
FILING FRAME OF FILM MOUNTS

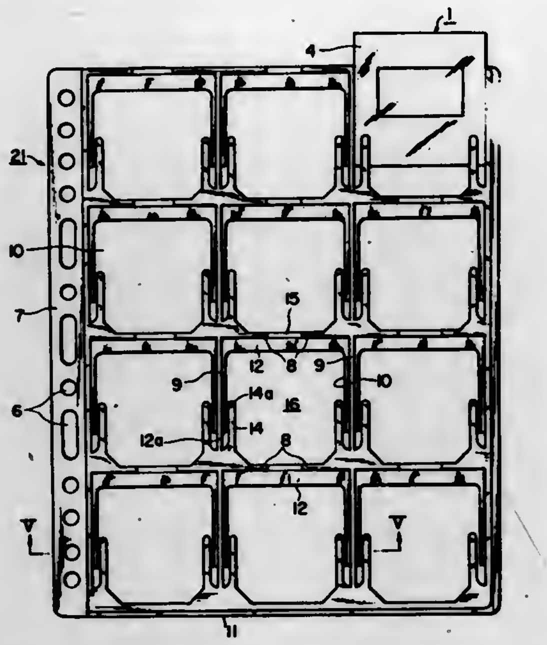
Yoshichika Sakamoto, No. 15, 2-chome, Senkawa-cho, Toshima-ku, Tokyo, Japan

Filed Nov. 13, 1970, Ser. No. 89,162

Claims priority, application Japan, Nov. 17, 1969, 44/108285; Dec. 26, 1969, 44/123204

Int. Cl. G09z *23/10*

U.S. Cl. 40—104.18 **3 Claims**



A filing frame for holding a plurality of film mounts in a lattice disposition while allowing inspection and projection of the films as held by the frame. Each film storing space of the filing frame has a pair of notches formed at lower ends of its seating ledges, so as to allow the film mount to swing about the border edge between the notch and a non-notched portion of the seating ledge.

3,727,335
QUICK-CLAMPING PASSE PARTOUT

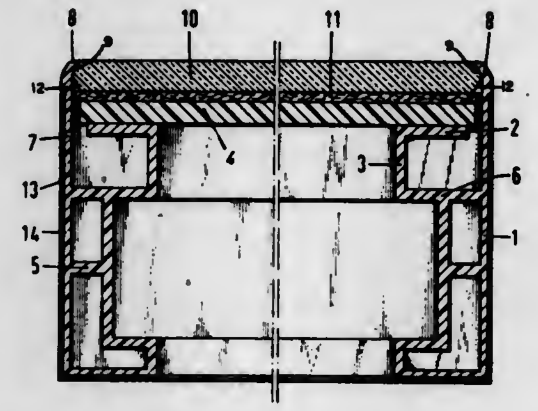
Gunter Karl Rudolf Rochelt, Schulinstrasse 7, Ulm, Germany

Filed Dec. 28, 1970, Ser. No. 101,828

Claims priority, application Germany, June 8, 1970, P 20 28 107.6

Int. Cl. G09f *1/12*

U.S. Cl. 40—156 **10 Claims**



A glass plate is adapted to be clamped against the front side of a rear wall. Strip members embrace the edge of the glass plate and hold it in engagement against the rear wall and consist of spring legs, which are connected at least on two opposite sides to the rear wall by a spring bight and are provided at their free forward ends with detent projections, which yield to rearward pressure applied by the glass plate until the latter snaps into position behind said projections. The detent projection consists of an end portion of the spring leg. This end portion is angled toward the interior of the passe partout and in resilient engagement with the beveled forward surface of the glass plate, which is beveled at its ends on both sides like a roof, so that the end portion of the spring leg holds the glass plate in position and the or forward end of the spring leg is substantially flush with the top or forward surface of the glass plate.

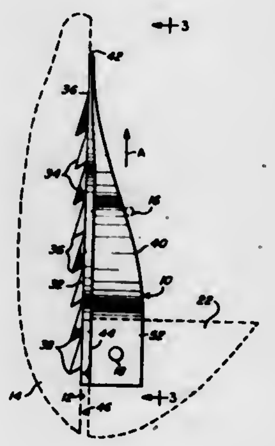
3,727,336
COTTON BALE TAG HOLDER

Joseph L. Mitchell, 234 North Fraser Drive, Mesa, Ariz.

Filed May 5, 1971, Ser. No. 140,387

Int. Cl. G09f *3/08*

U.S. Cl. 40—305 **1 Claim**



A tag holder for cotton bales adapted to be placed in a substantially vertical direction between a cotton bale and its binding means; said tag holder having teeth on the sides thereof adapted to engage the cotton bale for retaining the tag holder in place thereon.

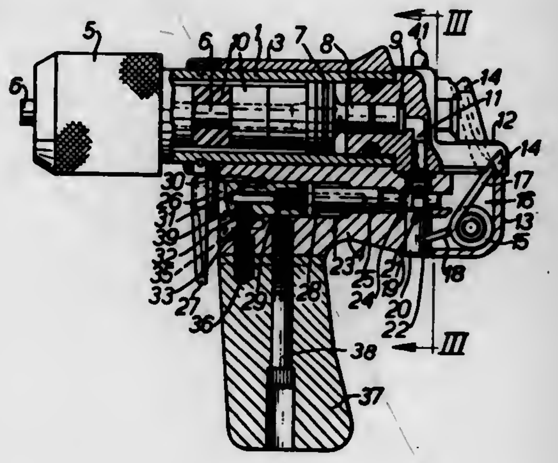
3,727,337
CAPTIVE BOLT PISTOL FOR ANIMAL STUNNING

Roger John Hancox, Burntwood, England, assignor to Accles & Shelvoke Limited, Aston, Birmingham, England

Filed Sept. 16, 1971, Ser. No. 181,029

Int. Cl. A22b *3/02*; F41c *11/00*

U.S. Cl. 42—1 M **10 Claims**



In a captive bolt pistol, the barrel and the breech block are incorporated in a unit which is rotatable about the barrel axis between a firing position and a spent cartridge extracting position, and the unit is provided with a cam adapted to cock the firing mechanism of the pistol as the unit is tapered from the former to the latter of the said positions.

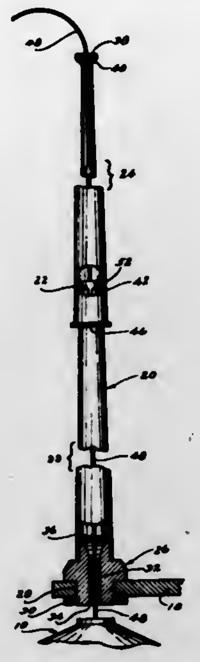
3,727,338
TUBULAR CASTING ROD HAVING AN AXIALLY-ENCLOSED LINE

Donald K. Pedersen, 924 Hoyes Avenue, Racine, Wis.

Filed Sept. 7, 1971, Ser. No. 178,040

Int. Cl. A01k *87/00*

U.S. Cl. 43—18 R **3 Claims**



A casting rod for use in fishing, comprising a tubular rod. The fishing line is entirely enclosed within the bore of the rod and passes from a casting reel axially through the rod and the eyelet at the tip, thus avoiding tangling, snagging and other injuries to the line. The rod is made in similarly tapered, telescoping sections to permit it to be collapsed without disturbing the line. The larger end of the first section is mounted on a rod handle frame. The interior dimensions of the second telescoping section are substantially equal to the exterior dimensions of the first section at respective points along their lengths. The second section collapses exteriorly over the length of the first section in the direction of the frame. Tapered sleeve means are provided to position the larger end of the second section on the smaller end of the first section.

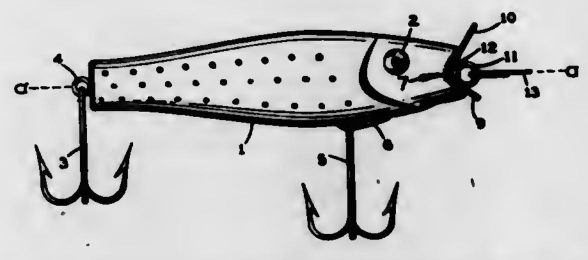
3,727,339
ADJUSTABLE FISHING LURE

Harold A. Le Master, 701 N. Greenwood Ave., Clearwater, Fla.

Filed June 9, 1971, Ser. No. 151,315

Int. Cl. A01k *85/00*

U.S. Cl. 43—42.22 **1 Claim**



An adjustable fishing lure of the floater type, of small fish appearance, having an activating member attached thereto comprising two arcuate shaped planar deflecting vanes of different size joined in a common junction with a predetermined angle therebetween. The vanes are transversely positioned in a V-shaped mouth of the lure facing forward with the larger vane uppermost and the smaller vane lowermost for activating the lure on and near the surface of the water when motivated by a line. The inversion of the vane will cause the lure to produce wobbly swimming motion underwater when motivated.

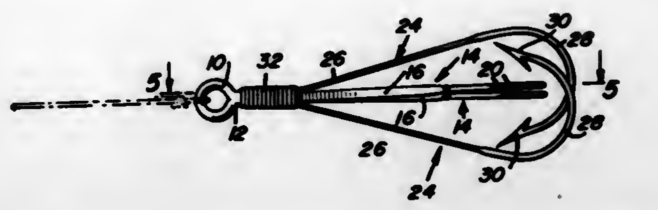
3,727,340
SNAGLESS FISHING HOOK

Raymond Harris, 1030 Fourth Street, Saraland, Ala.

Filed May 18, 1970, Ser. No. 38,079

Int. Cl. A01k *83/00*

U.S. Cl. 43—43.2 **1 Claim**



A snagless fishhook construction having four hooks, namely, a first pair of duplicate short hooks and a second pair of relatively long complemental hooks. These paired hooks are equidistant and circumferentially spaced and the yieldable free ends cross each other, are yieldingly cocked and normally weedless but are adapted to spring out when the sensitively pliant shanks are grasped by the fish. The shanks of the respective hooks are thin and flat and are readily moved toward each other when squeezed, whereupon the barbed hooks (one pair or both pairs) spring out and snare the fish.

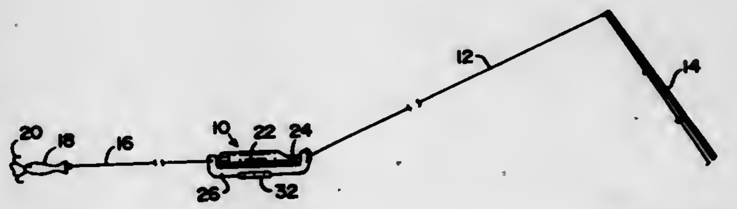
3,727,341
DEPTH CONTROL DEVICE

Norman H. Nye, 1348 Highbridge Road, Cuyahoga Falls, Ohio

Filed Jan. 18, 1972, Ser. No. 218,713

Int. Cl. A01k *85/00*

U.S. Cl. 43—43.13 **14 Claims**



A device which is attached to a fishing line to bring the lure to the desired temperature level. The device has an elongated body with a slanted front end and angled fins at the rear end. The body is mounted to a keel so that the body can rotate about its longitudinal axis. A latch member which is controlled by a bimetallic element holds the body in non-rotating relation with the keel until a sufficient change in water temperature is encountered. At this time the latch shifts to its opposite position permitting 180° rotation of the body so that the slanted forward end thereof will cause the device to move upwardly or downwardly toward the desired temperature zone. A line connects the forward end of the keel to the fishing rod and a second line connects the rear end of the keel to the lure.

3,727,342
ICE FISHING TIP-UP APPARATUS

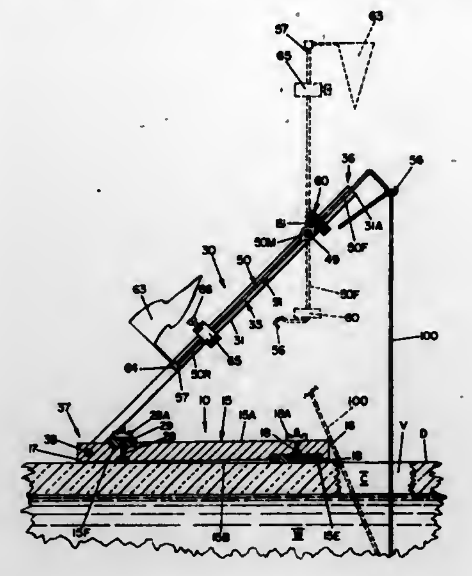
John L. Lindsey, Jr., 1804 Evans Street, Omaha, Nebr.

Filed June 30, 1971, Ser. No. 158,275

Int. Cl. A01k *97/12*

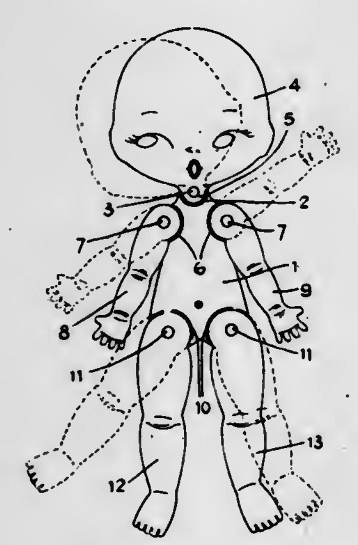
U.S. Cl. 43—17 **4 Claims**

An ice fishing tip-up apparatus wherein a fishing line is suspendable from a forward position of an elongate pivotal lever, the lever at its fulcrum medial portion being pivotably attached at a fixed location to an upright member. The lever forward-arm is provided with a loosely surrounded slidable weight having a rearward limit of travel at which the lever is caused to assume a first-stable or "ready" condition, the slidable weight being forwardly incrementally urged along the lever forward-arm during downward tugs on the fishing line whereupon the lever is thereby caused to assume a second-stable or "tipped" condition, which can be readily returned by the operator to the first-stable condition. The apparatus can be made to be of variable sensitivity and can be structurally made to an exceedingly compact form for interim storage purposes.



3,727,343
JOINTED FIGURE TOY

Gervasio Chiari, Antonelli 2, Cologne (Brescia), Italy
Filed Dec. 8, 1971, Ser. No. 206,029
Claims priority, application Italy, Sept. 1, 1971, 5196–A/71
Int. Cl. A63h *3/10*
U.S. Cl. 46—161 **3 Claims**

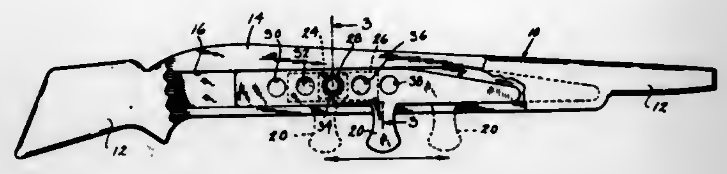


The toy of the invention, preferably representing a doll, is substantially flat-surfaced and has a centrally positioned member body to which are pivotably connected a plurality of members such as head and limbs. The head and limbs are capable of being detached from the body, of assuming different positions upon rotating about the pivoting means which secure them to the body, and of being foldably superimposable upon the body for easy and compact storage. On the upper portion of the body there is suitably provided behind the head a ring with corresponding string.

3,727,344
TOY GUN

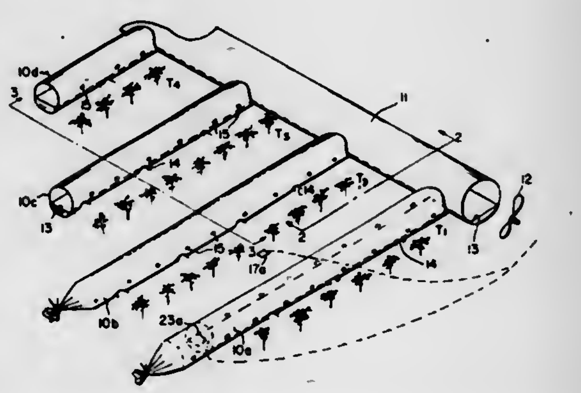
Ernest F. Dill, 866 N. 14th St., Manitowoc, Wis.
Filed Aug. 25, 1971, Ser. No. 174,879
Int. Cl. A63h *5/00*
U.S. Cl. 46—175 **6 Claims**

An elongated slot is formed in the interior of a toy gun body and a relatively flat slide is movable within the slot. A recess is formed in one side of the slot, with yielding means such as an elastic band over the recess, and a marble positioned on top of the elastic band over the recess. A row of marble-engaging openings is formed in the flat slide, with each of the openings being smaller in diameter than the marble but large enough in diameter to permit a portion of the marble to project through the flat slide. A handle is attached to the flat slide and projects outside of the body in such a way that it can be grasped and pulled to move the marble-engaging openings over the marble. This causes the marble to snap into and out of the marble-engaging openings and produce a sequence of explosive sounds and vibrations simulating those of an automatic rifle or other weapon.



3,727,345
METHOD OF PROTECTING PLANTS AND STIMULATING THEIR GROWTH

Norman J. Smith, 33 Chestnut Drive, Apt. 113, Vineland, N.J.
Filed Oct. 28, 1970, Ser. No. 84,645
Int. Cl. A01g *13/06, 13/02*
U.S. Cl. 47—2 **9 Claims**



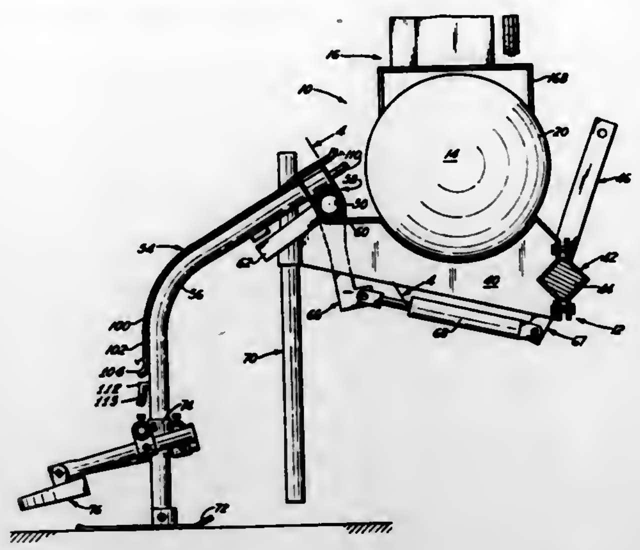
There is disclosed a structure for stimulating the growth of plants in the outdoors and particularly for protecting the plants from frost or excessive heat. Plastic film tubes with apertured side walls are disposed between crop rows, water-ballasted, and continuously filled with air which is vented from the sides onto the plants. The vented air is tempered by the thermal mass of the ballast water which can be made to absorb heat from the sun for distribution to the plants during periods of low temperature.

3,727,346
OIL-FIRED FLAME CULTIVATOR

W. Edward Kramer, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Oct. 1, 1970, Ser. No. 77,123
Int. Cl. A01m *15/00*
U.S. Cl. 47—1.44 **7 Claims**

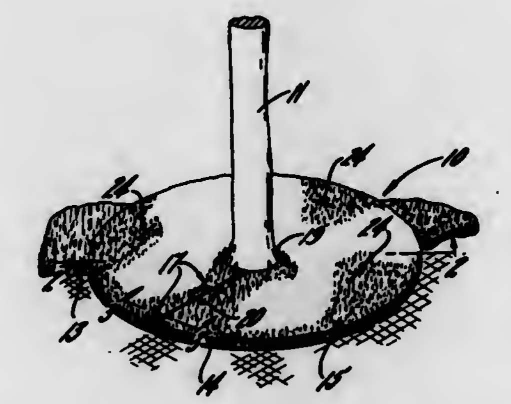
A flame cultivator for row crops as opposed to field crops. The improvements of the invention comprise modification of commercial flame weeding equipment so as to render the structural burner supporting legs into air sumps, to thereby

eliminate the need for surge tanks, large manifolds, and the like. A second improvement is a modified burner housing to facilitate the drawing in of secondary air and to protect the nozzles and electrodes from stones, tall weeds and the like which may be encountered during operation.



3,727,347
GROUND COVER

Richard D. Barnes, Loves Park, Ill., assignor to Southern Imperial, Inc., Tupelo, Miss.
Filed Sept. 7, 1971, Ser. No. 178,300
Int. Cl. A01g *9/00, 1/08*
U.S. Cl. 47—32 **1 Claim**

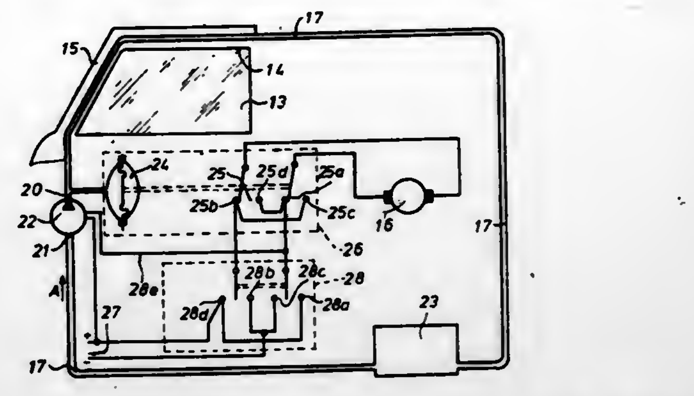


An artificial grass-like covering for the ground around a tree includes a grass-like mat with ends held together in abutting edge-to-edge engagement by a staple which also serves to anchor the mat to the ground thus forming an unbroken ring of artificial grass completely around the base of the tree.

3,727,348
SAFETY ARRANGEMENT FOR POWERED VEHICLE WINDOWS, SUN-ROOFS AND THE LIKE

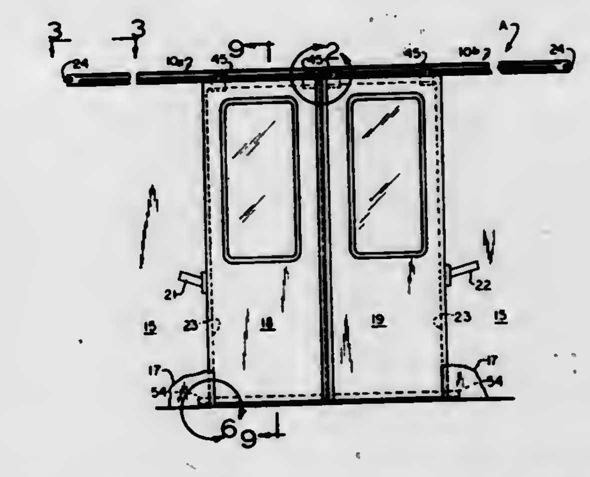
Helmut Steinmann, Baden-Baden, and Karl Heinz Burger, Buhl, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed April 10, 1972, Ser. No. 242,486
Claims priority, application Germany, June 2, 1971, P 21 27 207.1
Int. Cl. E05g *11/38*
U.S. Cl. 49—28 **16 Claims**

In a vehicle, a safety arrangement for powered windows, sun-roofs, and the like. A squeezable fluid conduit at least in part bounds an opening. A window or the like is movable by a motor in a direction closing the opening. A pump is connected with the fluid conduit and establishes a flow of fluid therethrough. The pump produces a pressure change in the conduit when the conduit is squeezed. A pressure-responsive control arrangement controls operation of the motor as a function of pressure changes in the conduit resulting from squeezing of the conduit due to the presence of an object caught between the conduit and the window when the latter is moving in closing direction.



3,727,349
SUSPENSION MECHANISM FOR SLIDING DOORS

Cecil Bainbridge, La Mesa, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.
Filed Sept. 21, 1970, Ser. No. 74,045
Int. Cl. E05d *13/02*
U.S. Cl. 49—411 **11 Claims**

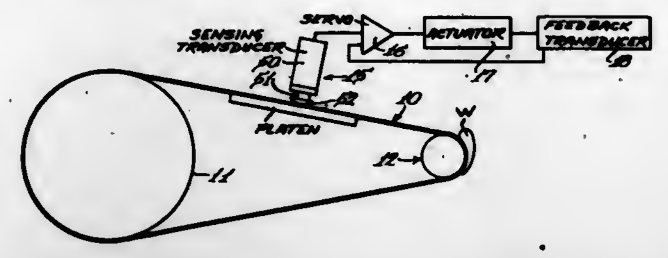


A sliding door for a rapid transit type railway car is suspended from a track anchored only at its ends to the car body above a door opening. The track has a ridged base portion with a round bar seated in a groove in the apex of the ridge and secured to the base. A pair of sliding doors, each of a size to cover half the door opening, are each suspended from one of the tracks by a pair of open type, linear motion ball bearing hangers which are mounted one at each end of the top of each door and ride along the bar portion of their respective tracks. The bottoms of the doors clear the lower end of the door opening, and a downwardly open channel provided in the lower edge of each door receives roller guides mounted on the sill structure to firmly guide the door and restrain it against inward and outward displacement by lateral forces acting on the doors.

3,727,350
CONTOUR GRINDER

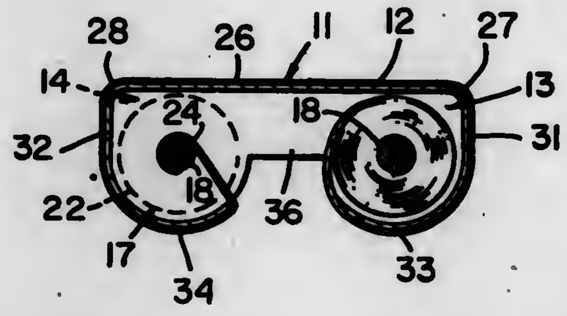
Robert L. Schaller, Camillus, N.Y., assignor to Sundstrand-Engelberg, Inc.
Filed Nov. 16, 1971, Ser. No. 199,257
Int. Cl. B24b *2/12*
U.S. Cl. 51—141 **17 Claims**

A contour grinding apparatus including an endless belt grinding member trained about a drive roller and an expansible cylindrical guide, the latter of which directs the grinding member past a work station, together with a device for sensing the thickness of the grinding member to detect wear, and a device responsive to the sensing device for expanding the guide to compensate for wear of the grinding member and thereby maintain a constant radius of the work contacting surface of the grinding member at the grinding station. In one form of the invention, the guide is a rotatable contact roller, and in another form the guide is a stationary cylindrical platen.



3,727,351
KNIFE SHARPENER

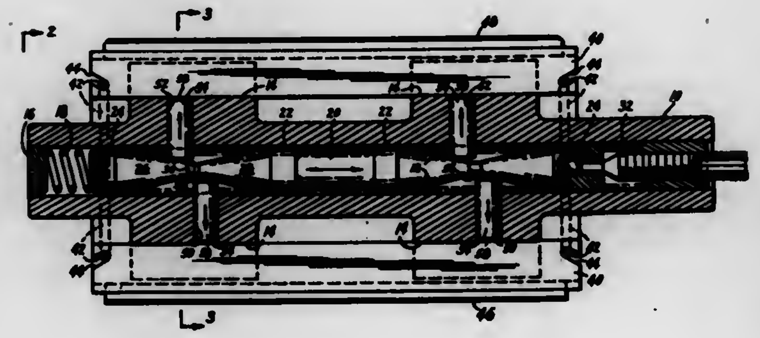
Austin L. Hughes, 193 Charter Oak, San Francisco, Calif.
Filed May 19, 1971, Ser. No. 144,923
Int. Cl. B24d *17/00*
U.S. Cl. 51—361 **6 Claims**



A sharpening or abrasive device comprising a frame with supply and take-up assemblies for containing a replacement supply of abrasive sheet material and holding an exposed portion of the abrasive sheet which wraps around the frame, portions of the frame engaging the exposed abrasive sheet providing a variety of configurations for conforming the abrasive surface with different cutting edges or surfaces to be sharpened or abraded and for providing an abrasive surface on which the device rests.

3,727,352
HONING HEAD

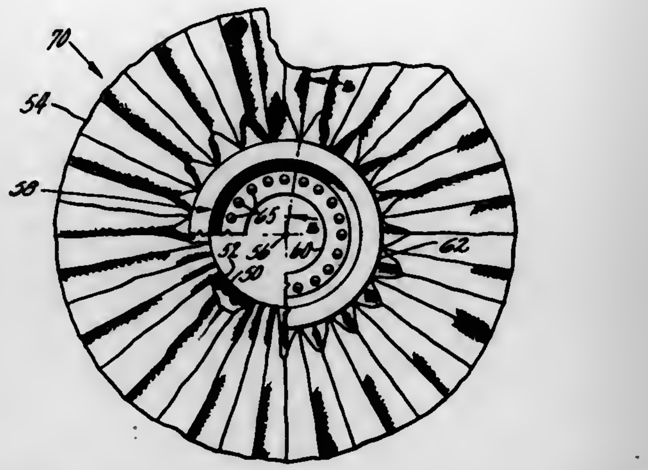
Carlos Alberto Palazzi, Rua Luiz 1,400, Campinas, Brazil
Filed May 17, 1971, Ser. No. 143,750
Int. Cl. B24b *9/02*
U.S. Cl. 51—338 **3 Claims**



A multi-tapered piston mounted in a push-pull arrangement for actuating a plurality of multi-finished hones.

3,727,353
BUFFING WHEEL AND METHOD OF MAKING SAME

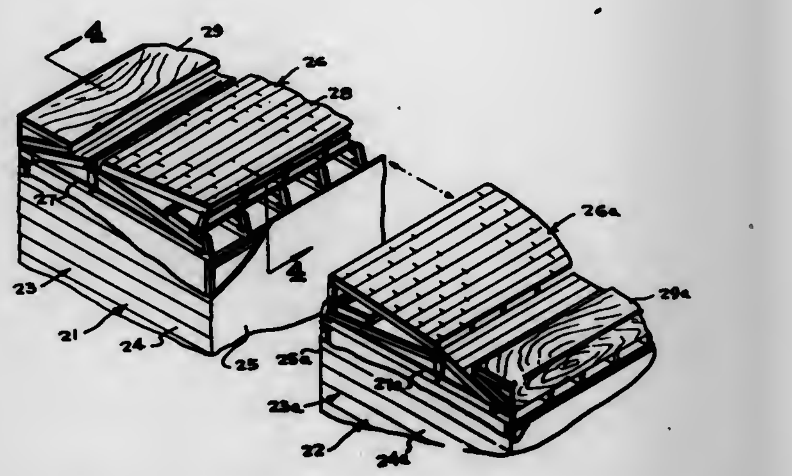
Robert C. Pixley, Huntington, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 18, 1972, Ser. No. 218,769
Int. Cl. B24d *17/00, 11/00*
U.S. Cl. 51—376 **23 Claims**



A buffing wheel is made from abrasive sheet material by folding at least one sheet of the abrasive sheet material over a retaining wire, then corrugating the retaining wire and the abrasive sheet at the fold so as to impart corrugations to the abrasive sheet material, then forming the corrugated sheet material and retaining wire into circular form and retaining the circular form abrasive sheet material for rotation concentrically about an axis with the corrugated retaining wire being retained between the faces of a central split disc.

3,727,354
PREFABRICATED BUILDING STRUCTURE

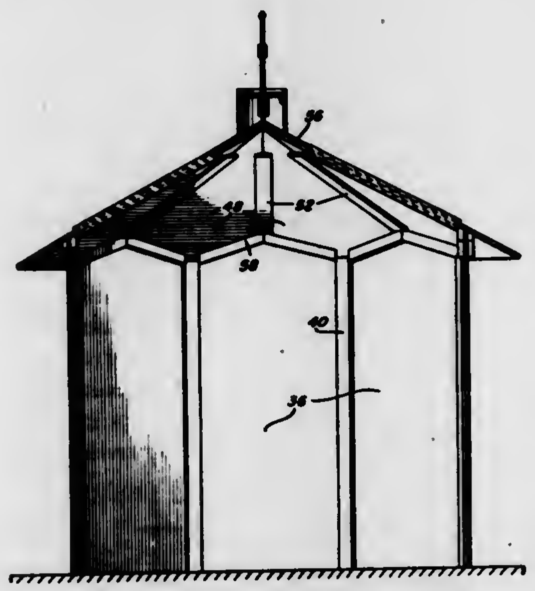
John Dillard Powell, Ridgeway, Va., assignor to Continental Homes Incorporated, Boones Mill, Va.
Filed Jan. 26, 1971, Ser. No. 109,835
Int. Cl. E04b *1/32, 7/16*
U.S. Cl. 52—71 **52 Claims**



A prefabricated building structure generally consisting of at least two modular units having complementary roof systems secured together to provide an integral building structure, each of the complementary roof systems including a longitudinally disposed stationary roof section and a longitudinally disposed movable roof section hingedly connected along a longitudinal axis to the stationary roof section, the stationary roof section having upwardly projecting seating means, the movable roof section having rigidly connected, depending support means and an extension leg hingedly connected to the depending support means whereby the extension leg may be moved away from the seating means and the depending support means may be seated on the seating means to support the movable roof section in a downwardly disposed, inoperative position, and the extension leg may be moved between the depending support means and the seating means and seated on the seating means to support the movable roof section in an upwardly disposed, operative position, means rigidly interconnecting the opposed free ends of the movable roof sections of the complementary roof systems when the movable roof sections are upwardly disposed in their operative position, and means for covering the roof systems when the movable roof section are disposed in their operative positions.

3,727,355
INTERLOCKING PANEL SHELTER

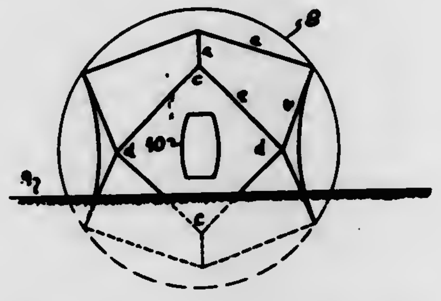
Reginald I. Vachon, 116 Miller Street, Auburn, Ala.
Filed Jan. 4, 1971, Ser. No. 103,651
Int. Cl. E04b *7/00*
U.S. Cl. 52—82 **4 Claims**



A wall unit and a roof unit each comprising a plurality of edge interconnected panels joined by removable joining strips or hinges. Each roof panel overlies and is engaged with portions of two subjacent wall panels, and each wall panel underlies and is engaged with portions of two overlying roof panels whereby an interlocked structure is provided utilizing, if so desired, no screws, bolts, nails or the like. A floor unit comprising floor panels offset relative to and underlying the wall panels can also be provided.

3,727,356
PREFABRICATED STRUCTURES

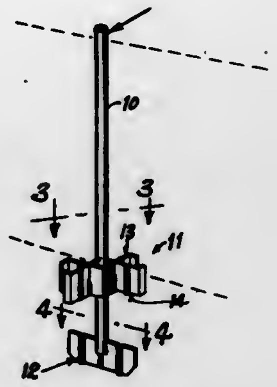
Ernest Uri Appenzeller, 15 Maharal St., Tel Aviv, Israel
Filed Sept. 17, 1968, Ser. No. 760,188
Int. Cl. E04b *1/32*
U.S. Cl. 52—81 **2 Claims**



A prefabricated structure constituting at least the major portion of a body formed of 12 hyperbolic paraboloidal panels respectively secured together at their edges, each panel having four equal edges enclosing substantial right angles and having a diagonal whose length is substantially equal to four-thirds the length of the panel edge, the ratio of the elevation of the panel to the edge length thereof being substantially equal to 0.44.

3,727,357
ANCHOR MEANS FOR TUBULAR POST

Harold W. Stillman, Jr., Western Springs, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed June 7, 1971, Ser. No. 150,359
Int. Cl. E04h *17/22*
U.S. Cl. 52—154 **8 Claims**

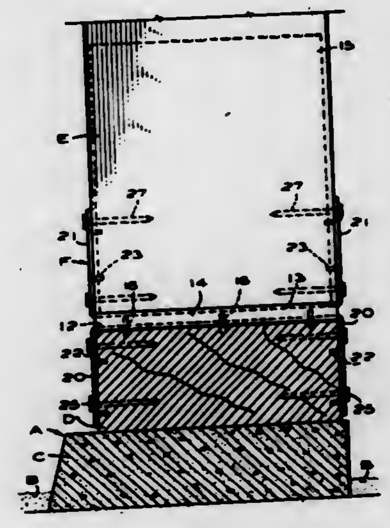


Anchor means for tubular posts intended to be driven into the ground comprising upper and lower anchor members. The upper anchor member comprises two interlocked components which embrace the post below the ground level and prevent it from tipping or leaning by functioning as a cantilever plate and distributing lateral stresses applied to the post over a substantially large earth area.

The lower anchor member comprises a sheet metal plate having slots to receive the lower open end of the post and functions to improve the cantilever stability provided by the upper anchor member.

3,727,358
BUILDING CONSTRUCTION WITH SLOPING FOUNDATION SILL AND VERTICAL UNDERPINNING

Venice T. Howell, 1421 Cabrielo Avenue, Burlingame, Calif.
Continuation-in-part of Ser. No. 43,750, June 5, 1970, abandoned. This application Aug. 4, 1971, Ser. No. 168,822
Int. Cl. E02d *27/00;* **E04b** *1/38*
U.S. Cl. 52—169 **10 Claims**



A building construction wherein a foundation has a sloping top surface corresponding generally to the slope of the ground in which the foundation is disposed, vertical underpinning extending upwardly relative to the foundation, and a framing anchor securing the lower end of the underpinning to the foundation.

3,727,359

CRANES

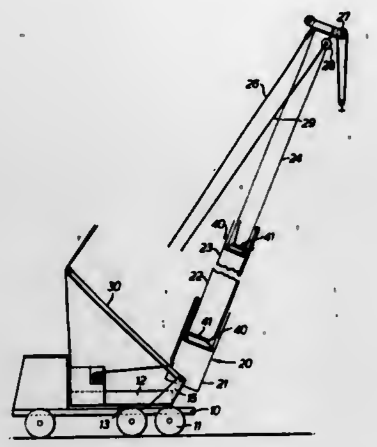
Willem Frederik Vonck, 5 Coombe Park, Kingston-on-Thames, England

Continuation of Ser. No. 10,957, Feb. 12, 1970, abandoned. This application Jan. 12, 1972, Ser. No. 217,265

Claims priority, application Great Britain, Feb. 12, 1969, 7,645/69

Int. Cl. E04h *12/34*

U.S. Cl. 52—121 **3 Claims**



The invention disclosed concerns a telescoping crane having a number of sections which nest one within the other in a contracted condition. Two sets of latch mechanism are disclosed one to hold the telescoped sections in their extended condition and the other to hold them in their contracted condition. The latter mechanism ensure that the tension in the cable used to telescope the sections outwards raises the uppermost section last.

3,727,360

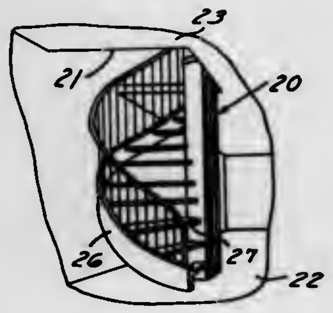
SPIRAL STAIRCASE

Melvin L. Ollman, Detroit, Mich., assignor to C-O, Inc., Detroit, Mich.

Filed March 22, 1971, Ser. No. 126,575

Int. Cl. E04f *11/02*

U.S. Cl. 52—187 **29 Claims**



A spiral staircase comprising a hollow column having a semi-circular cross section wherein the wall of said column is under tension. A stringer extends in helical fashion in spaced relation to the outer wall of the column and steps or treads extend between the stringer and the column.

3,727,361

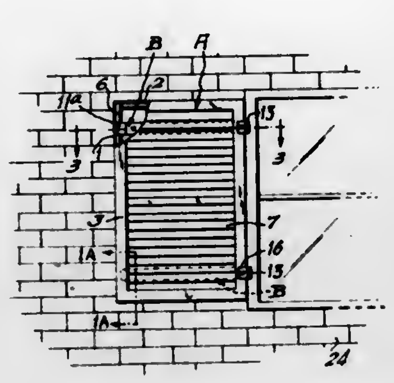
MOUNTING DECORATIVE SHUTTERS OR PANELS ON BUILDING WALLS

Samuel Greene, 18 Underwood Drive, West Orange, N.J.

Filed July 26, 1971, Ser. No. 166,069

Int. Cl. E04c *2/38*; **E06b** *7/08*

U.S. Cl. 52—473 **6 Claims**



The invention contemplates a combination including a simulation of a window shutter or a panel, a mounting bracket to be secured on a wall, and a locking member yieldingly separably coactive with a portion of the bracket, whereby the shutter can be tilted and attached to one end of the bracket, then pressed against the bracket and releasably held on the bracket by separable engagement of the locking member with said portion of the bracket, in partially overlying relation to the face of the shutter.

3,727,362

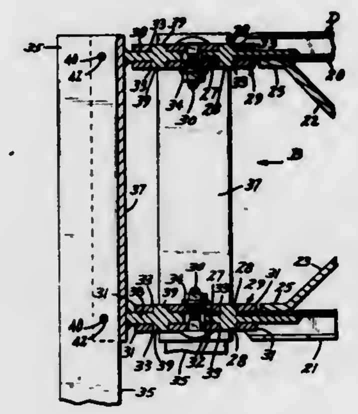
BUILDING LOAD STI ˇJCTURE

Paul E. Ellison, Bloomington, and Richard R. Koehn, St. Louis Park, both of Minn., assignors to Dunham Associates, Inc., South Minneapolis, Minn.

Filed Feb. 1, 1972, Ser. No. 222,543

Int. Cl. E04h *12/00*

U.S. Cl. 52—648 **15 Claims**



A plurality of each including each including spaced upper and lower chords and horizontal chords interconnecting truss chords, interconnecting the chords, at least one supported at one the 5y a being supported at connections at the end by of said one supporting column, beams for rigidly connecting said other other end of said one another horizontally beams beam, the rigidly connecting pairs of plate like connector end to an end of another horizontally extending beam, the connections including pairs of plate-like connector elements.

3,727,363

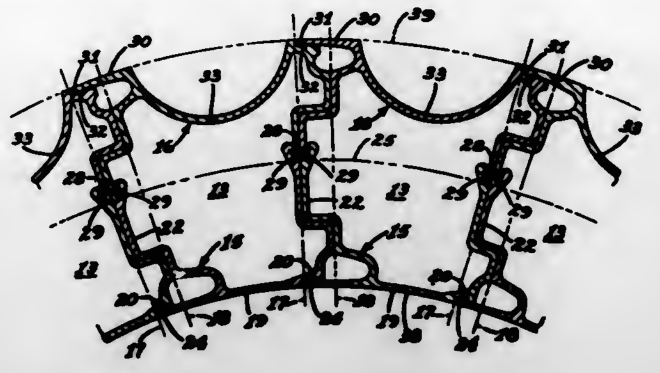
PREFABRICATED TAPERED COLUMNS

Lewis R. Kinsey, 108 So. 25th Street, Phoenix, Ariz.

Filed Dec. 2, 1971, Ser. No. 204,130

Int. Cl. E04c *3/30, 1/10, 1/16*

U.S. Cl. 52—731 **10 Claims**



An ornamental, tapered column which is prefabricated from a plurality of identical sections of extruded material to form the angular segments of a circle which, when assembled in a circular relation, form a tapered ~ylindrical column.

3,727,364

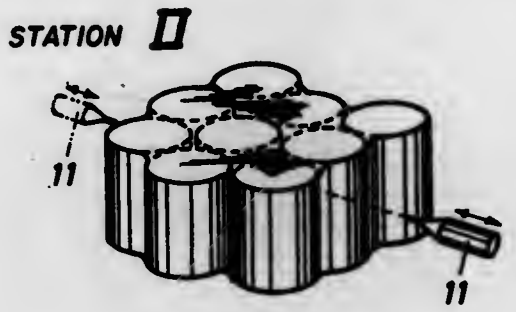
METHOD FOR OPENING PLASTICS-FOIL WRAPPED PACKAGES

Lars Wiking, Taubeyatan 5, Goteborg, Sweden

Filed Aug. 17, 1971, Ser. No. 172,423

Int. Cl. B65b *69/00*

U.S. Cl. 53—3 **5 Claims**



Uniform articles, such as glass bottles and jars, are often for transportation formed into packages which are wrapped in a thermo-shrinking plastic foil. Such foil is very strong and the opening of such packages have proven to be a very tedious operation. When large quantities of such packages are to be handled the opening must be performed automatically in a machine and to that end the packages must be of uniform size and shape. Even if the foil is very strong it often happens during the shrinking operation, or later during transportation, that the basically parallel-epiped package is deformed, which means that the individual articles are interlocked still harder and the removal of the wrapper made more difficult. The invention proposes the injection of a suitable lubricant in finely divided state into the package prior to the removal of the wrapper. It will then be remarkably easy to rearrange the articles within the package and to peel off the wrapper therefrom.

3,727,365

METHOD AND APPARATUS FOR WRAPPING ARTICLES

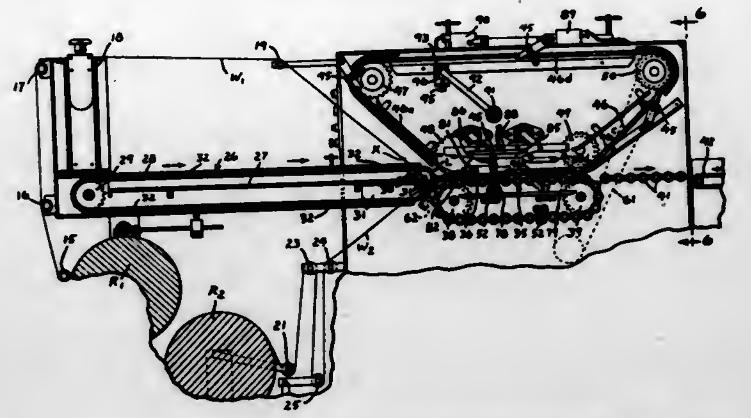
Roger H. Stohlquist, Rockford, Ill., assignor to Anderson Bros. MFG. Co., Rockford, Ill.

Filed April 29, 1971, Ser. No. 138,525

Int. Cl. B65b *11/10, 53/02*

U.S. Cl. 53—33 **15 Claims**

Upper and lower webs of heat sealable material are joined to form a curtain of material extending across the article path and articles are advanced in succession into one side of the curtain while pairs of jaws at the other side of the curtain are moved laterally of the article path into position between the trailing side of one article and the lead side of a succeeding article and the jaws are thereafter moved forwardly along the article path to advance an article by pushing engagement therewith through the curtain while severing overlapping portions of the web between adjacent articles and sealing overlapping portions at opposite sides of the line of severance. The upper and lower webs of material are pressed against the upper and lower sides of the article to hold the webs in frictional contact with the article and inhibit stressing of the joint between the upper and lower webs at the lead side of the article during wrapping of the same.



3,727,366

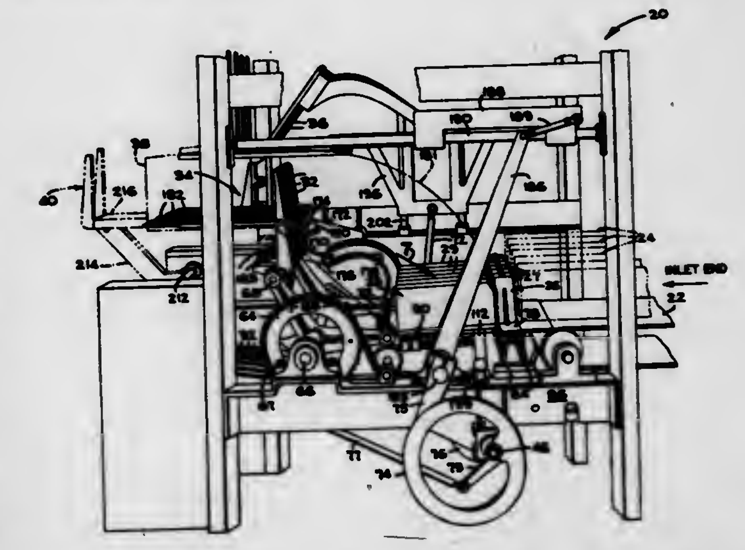
CASING MACHINE

David F. Schlueter, Hoopeston, Vermilion, Ill., and Myron C. Noble, St. Joseph, Ind., assignors to FMC Corporation, San Jose, Calif.

Division of Ser. No. 757,876, Sept. 6, 1968. This application Oct. 19, 1970, Ser. No. 82,042

Int. Cl. B65b *57/10, 35/40*

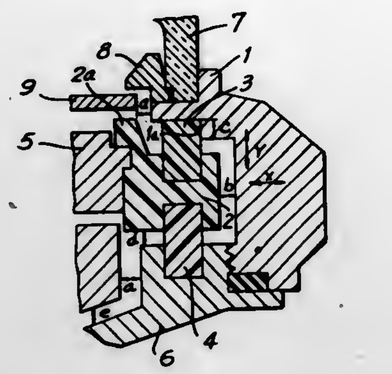
U.S. Cl. 53—61 **7 Claims**



Upright containers are fed into the casing machine from a multiple lane supply line, assembled into one tier, and the tier is transferred and reoriented by tiering fingers which deposit the containers in a tiering chamber. The open end of an empty case is manually positioned adjacent the tiering chamber, and pusher feet insert the tier in the case. A feature of the casing machine is a rocking differential which smoothly accelerates and decelerates the tiering fingers to prevent damage to the containers. Other features include a timing pin and chain mechanism which can be manually adjusted to control the number of tiers loaded into a case, rapid change structure in the zone where the tiers are assembled so that the machine is readily adaptable to handle a range of container sizes, and a lowerator mechanism under positive mechanical control for gently lowering the loaded cases to a discharge position.

3,727,367
SHOCK PROOF WATCHCASE

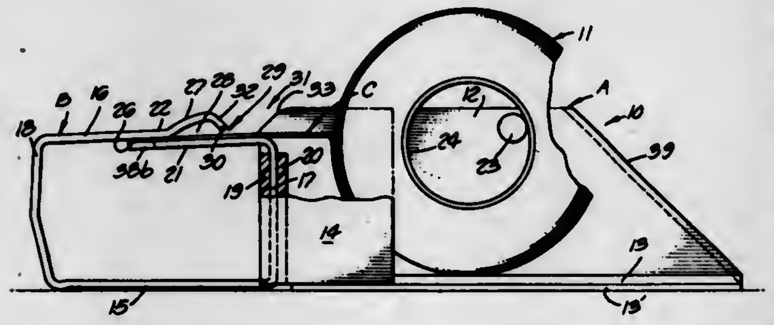
Yoshiaki Fujimori, 3091-1, Konami, and Ikuo Tokunaga, 3-5, 3-chome, both of Suwa, Japan
Filed Oct. 7, 1971, Ser. No. 187,261
Claims priority, application Japan, Oct. 8, 1970, 45/87857
Int. Cl. G04b *37/04*
U.S. Cl. 58—88 C **8 Claims**



A shock-proof watchcase having a shock-absorbing member supported between the case body and back cover. The watch movement is mounted on said shock-absorbing member. The shock-absorbing member is adapted to absorb shocks both in the axial and transverse directions of the watch.

3,727,368
ARTICLE PACKAGING MECHANISM UTILIZING AN ADHESIVE TAPE

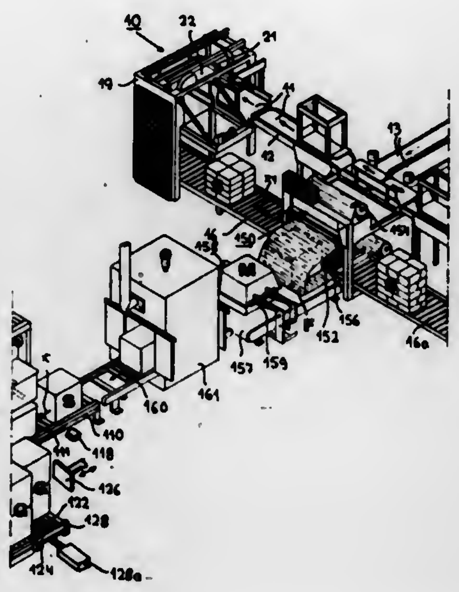
William S. West, 120 S. Sierra Madre, Apt. 202, Pasadena, Calif.
Filed March 18, 1971, Ser. No. 125,533
Int. Cl. B65b *51/06, 51/08*
U.S. Cl. 53—135 **4 Claims**



An article packaging mechanism utilizing an adhesive tape having an adhesive coating on one side only, the tape being fed from a supply reel or roll in a feed direction to an article receiving station in which a non-adhesive side of the tape is slidable over an outwardly projecting first finger member, the adhesive side being exposed. Beyond the article receiving station, the leading end of the tape is positioned between the end portion of the first finger and an overlapping end portion of an inwardly projecting finger, these end portions being resiliently pressed toward each other so that the leading end of the tape will adhere to the end portion of the second finger member. The received article adheres to the tape, and when moved together with it to a position beyond the receiving station between the overlapping finger portions, the tape will be reversely looped within a loop-forming space formed by one of the fingers, and carried around the article to provide an adhesively secured band therearound with outwardly projecting adhered end portions which can be severed at a predetermined length by translatory lateral movement against an adjacent cutting edge at the end terminus of the first finger member.

3,727,369
FULLY AUTOMATIC APPARATUS FOR LOADING CONTAINERS WITH SINGLE PIECES ASSEMBLED IN SHEET-WRAPPED STACKS, SUCH AS SACKS OR THE LIKE

Harry Lassig, 2000 Hamburg-Schenefeld, Muhlendamm, Germany
Filed July 23, 1971, Ser. No. 165,676
Claims priority, application Germany, July 25, 1970, P 20 37 004.1
Int. Cl. B65b *35/52*
U.S. Cl. 53—159 **3 Claims**

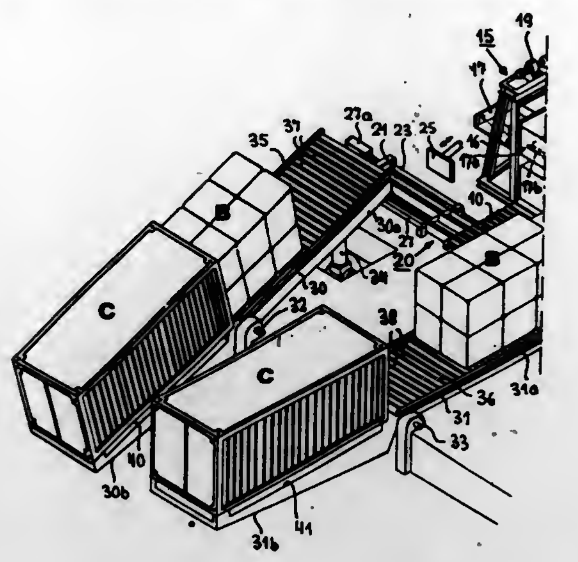


An apparatus for fully automatically assembling single pieces in stacks by means of a pair of stacking devices in which several single pieces are arranged side by side in the form of a layer and several layers are formed one on top of another, then wrapping and sealing such stacks in synthetic sheet by means of a sheet packing device, then stacking such stacks one on top of another stack or stacking several stacks on top of each other to form compound stacks by means of one or several stacking devices, then assembling such compound stacks into blocks of sizes corresponding substantially to the dimensions of the interior cargo space of a container by means of a transfer and storage conveyor, and finally sliding such blocks into the containers. In one embodiment, the stacks are wrapped in plastic sheet prior to compound stacking. Two containers may be loaded alternately. The apparatus comprises various conveyors and transfer devices for feeding the single pieces, the stacks, the compound stacks and the assembled blocks through the apparatus to tilting frames on which the containers may be mounted. The drive means of the various devices and conveyors may be coupled through control means to a common program controller.

3,727,370
APPARATUS FOR LOADING CONTAINERS

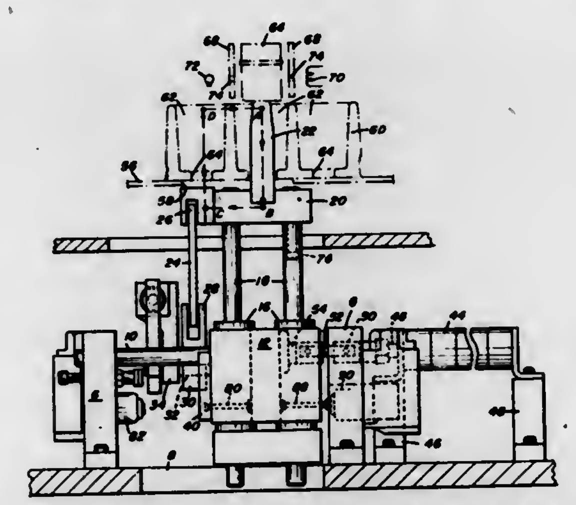
Harry Lassig, 2000 Hamburg-Schenefeld, Muhlendamm, Germany
Filed July 23, 1971, Ser. No. 165,677
Claims priority, application Germany, July 25, 1970, P 20 37 003.0
Int. Cl. B65b *35/52*
U.S. Cl. 53—159 **7 Claims**

There is disclosed a method and an apparatus for loading containers with single pieces by which a plurality of single pieces are stacked on top of each other and subsequently several stacks are assembled into a block having a size substantially corresponding to the dimensions of the freight space of the container. In one embodiment, the pieces are enveloped in plastic sheet prior to stacking. Two containers may be loaded alternately. The apparatus comprises one or several stacking devices for stacking the single pieces, a packing device if desired and various conveyors and transfer devices for feeding the stacks to a tilting frame on which the container may be mounted. Loading of the assembled blocks of single pieces into the container is effected by tilting the tilting frame. The drive means of the various devices may be coupled through control means to a common program controller.



3,727,371
TRAY LOADING AND INDEXING MECHANISM

Raymond Lorenzini; Thomas L. Vieira, and Robert G. Wallace, all of Rochester, N.Y., assignors to Eastman Kodak, Rochester, N.Y.
Filed Nov. 12, 1971, Ser. No. 198,358
Int. Cl. B65b *5/06, 35/30*
U.S. Cl. 53—246 **8 Claims**

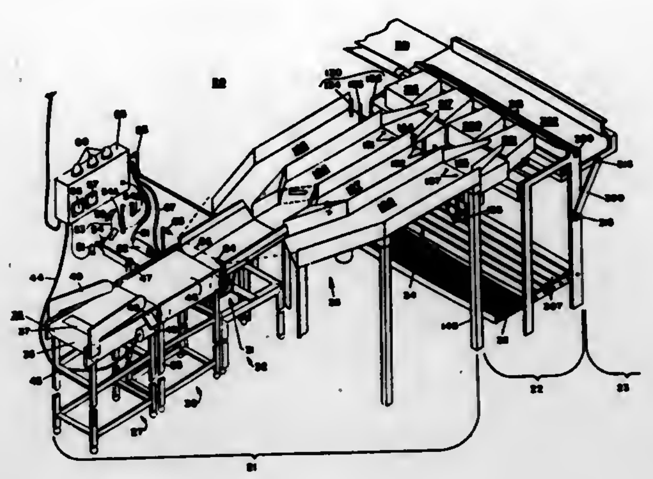


A tray loading and indexing mechanism for successively loading one or more articles into each compartment of a tray having a plurality of adjacent compartments. The loading and indexing mechanism has an elevator bar that is movable in a substantially rectangular path, and during such movement loads one or more articles into one compartment at a loading station, and then indexes the tray one compartment space to position the adjacent empty compartment at the loading station.

3,727,372
BAG PACKAGING SYSTEM

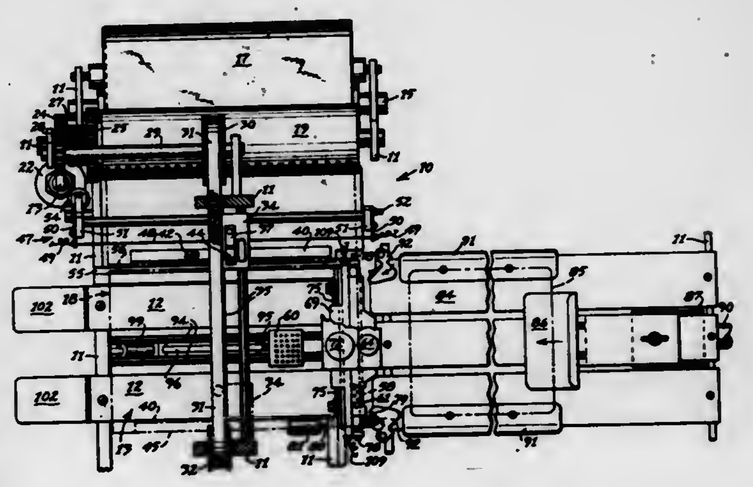
John T. Roberts, Simpsonville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Division of Ser. No. 9,869, Feb. 9, 1970. This application Sept. 20, 1971, Ser. No. 182,161
Int. Cl. B65b *57/00*
U.S. Cl. 53—59 W **1 Claim**

Apparatus and method for classifying products to be packaged, distributing the classified products to index positions corresponding to their classifications and holding the classified products for packaging, indexing bags into product loading positions corresponding to the index positions by conveying imbricated taped bags into loading positions keyed to the classifications, inflating the taped bags, inserting the indexed items into the bags and removing the loaded bags from the loading position, conveying the loaded bags to an evacuating and closing position, evacuating and closing the bags and subsequently shrinking the bags.



3,727,373
BAG FORMING FILLING AND SEALING APPARATUS

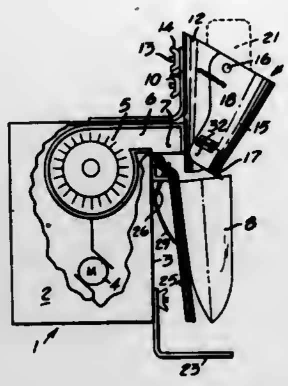
Norman M. MacLeod, P. O. Box 4175, Chattanooga, Tenn.
Filed Jan. 20, 1972, Ser. No. 219,338
Int. Cl. B65b *5/02, 43/04, 43/30*
U.S. Cl. 53—183 **16 Claims**



An apparatus for forming, filling and sealing a bag at a single station. A continuous strip of U-folded sheet material is fed transversely across the station intermittently in increments equal to the width of the completed bag. A single severing and sealing mechanism is positioned on the side of the station from which the material is fed to sever the sheet material and simultaneously seal both severed edges of the material between each feeding cycle. Suction means are provided for separating the free edges of the open end of the bag. Ram means may be provided for inserting an article into the open end of the bag. Closing means are provided for sealing the free edges of the bag after it is filled, and ejection means may be provided for removing the filled bag from the station.

3,727,374
BAG FILLING DEVICE

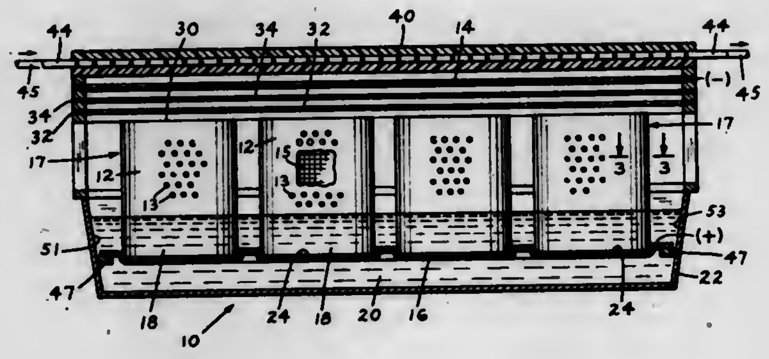
Donald S. Williams, 1705 Notre Dame, Belmont, Calif.
Continuation-in-part of Ser. No. 869,431, Sept. 11, 1969. This application Nov. 10, 1971, Ser. No. 197,214
Int. Cl. B65b *43/36*
U.S. Cl. 53—189 9 Claims



The flaps of a stack of plastic bags are clamped by a releasable clamp below the exhaust nozzle of the blower of a packing device, in such position that the airflow blows the top of the outermost bag open away from the stack; above the bag is a feed chute or guide adjustably mounted on the top of the blower, having a pivoted half on a transverse pivot so that it may swing outwardly away from the blower; skirt flanges extending from the lower edge of this pivoted half project into the opened bag so as to keep it open when the pivoted half is swung outwardly by the package or item to be packed; on each side of the pivoted half is a hinged flap swingable outwardly to hold the sides of the bag open when a wider package or article is dropped through the feeding guide; the pivoted half is sufficiently wide to extend substantially beyond the sides of the stationary half of the guide.

3,727,375
CONTINUOUS ELECTROMIGRATION PROCESS FOR REMOVAL OF GASEOUS CONTAMINANTS FROM THE ATMOSPHERE AND APPARATUS

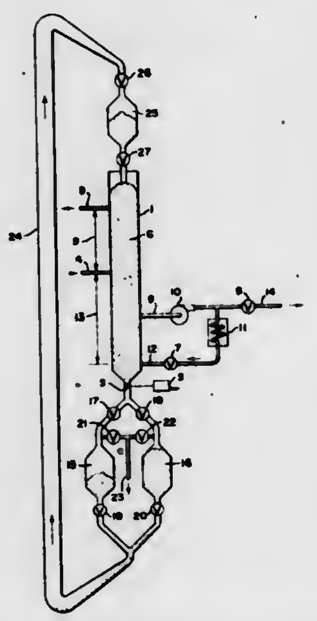
Richard A. Wallace, 43 Kingscote Gardens, Stanford, Calif.
Continuation-in-part of Ser. No. 23,733, March 30, 1970. This application Aug. 12, 1971, Ser. No. 171,121
Int. Cl. B03c *9/02*
U.S. Cl. 55—2 9 Claims



A continuous process for removal of gaseous contaminants, particularly carbon dioxide, from an atmosphere containing the same, which comprises subjecting the gaseous contaminant laden atmosphere to contact with strongly basic ionic polymer sheet under the influence of an applied electrical field. The apparatus for accomplishing this comprises at least one and preferably a plurality of cylindrically shaped perforated reinforced sheets, in strip form, of strongly basic ionic polymeric material partially suspended at the lower end thereof into a circulating stream of sea water, the polymeric cylindrically shaped sheets being interspersed between a source of an appiable electric field, e.g., a cathode and an anode, and a cation-exchange membrane and an anion-exchange membrane being in turn interspersed between the cathode and the upper exposed ends of the polymeric sheets.

3,727,376
PROCESS FOR THE SEPARATION OF A GASEOUS MIXTURE

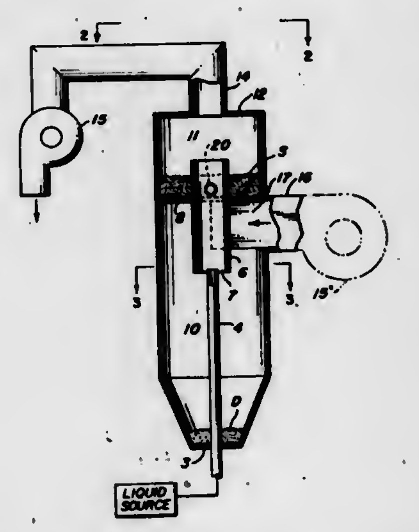
Leslie V. Szirmay, Youngstown, Ohio, assignor to Edwin W. Oldham and Vern L. Oldham, Akron, Ohio, part interest to each
Filed Oct. 20, 1971, Ser. No. 190,730
Int. Cl. B01d *53/04*
U.S. Cl. 55—60 9 Claims



This process relates to the separation of a gaseous mixture on a continuously moving solid adsorbent bed and applies particularly to the separation of a gaseous mixture characterized by linear, or quasilinear, adsorption isotherms and applies most particularly to the separation of ethane from ethylene on activated carbon.

3,727,377
APPARATUS AND METHOD FOR CLEANING GASEOUS FLUIDS

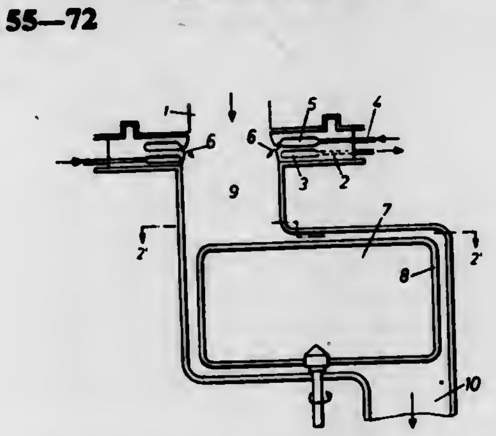
Harlow M. Chapman, 1821 Homestead Avenue, Bethlehem, Pa.
Filed Nov. 15, 1968, Ser. No. 776,139
Int. Cl. B01d *50/00*
U.S. Cl. 55—89 6 Claims



The invention resides in dust collecting apparatus combining the principles of so-called "dry-cyclone" and "wet-cyclone" dust collectors, subjecting dust-laden air or gas successively to centrifugal action first in a "dry-phase" vortex during which relatively large entrained particles, particularly together with some of the smaller ones are ejected from the air or gas stream which then enters a "wet-phase" vortex coaxial with the "dry-phase" one into which a liquid is introduced and broken into a spray or mist to dampen and coagulate the smaller dust particles and effect their centrifugal separation in a sludge or slurry whereby substantially all solid particles are extracted from the air or gas before its discharge from the apparatus.

3,727,378
PROCESS FOR COOLING HOT GAS/SOLIDS SUSPENSIONS

Hans Zirngibl, Duisburg; Klemens Jaschinski, Krefeld-Uerdingen; Karl Brandle, Krefeld, and Walter Weidmann, Duisburg-Muendelheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 15, 1971, Ser. No. 106,758
Claims priority, application Germany, Feb. 4, 1970, P 20 05 011.7
Int. Cl. B01d *57/00*
U.S. Cl. 55—72 9 Claims



A hot gas/solids suspension, of the kind formed during the reaction between gaseous metal halides and gases containing oxygen, is cooled by introduction of cold gas either radially or annularly. The suspension, flowing through a pipe at about 10 to 100 meters per minute, passes into a cylindrical chamber where its direction of flow is changed abruptly to produce turbulence and its flow rate is reduced to less than one-half its previous level. The direction of flow of the suspension is then abruptly changed again, the chamber discharging into a pipe so that the flow rate is increased. Means are provided to scrape away any solids which may deposit in the chamber.

In this manner the cooling is controlled which, in turn, controls the form of the solids.

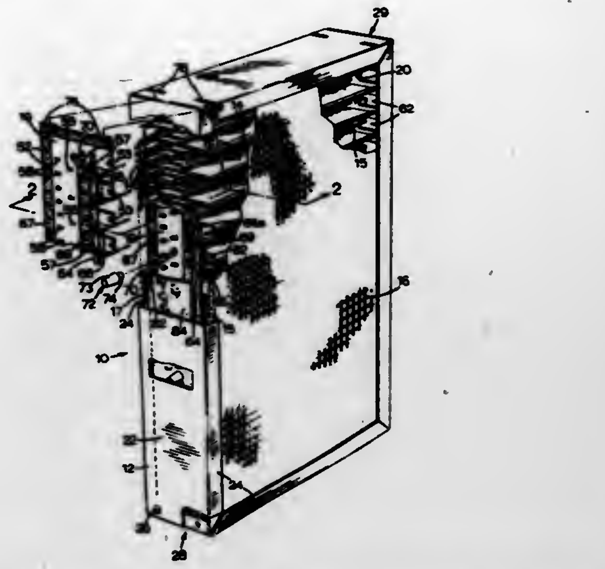
3,727,379
PROCESS FOR THE PURIFICATION OF GASES AND VAPORS

Eduard Bijleveld, Soest, and Jan Cleij, Baarn, both of Netherlands, assignors to N. V. Octrooien Maalschappij Activit, Amsterdam, Netherlands
Continuation-in-part of Ser. No. 42,486, June 1, 1970, abandoned. This application April 17, 1972, Ser. No. 244,884
Claims priority, application Netherlands, June 4, 1969, 6908458
Int. Cl. B01d *53/02*
U.S. Cl. 55—73 9 Claims

Impurities are removed from gases or vapors, for example, from air polluted with the impurities to be removed, by contacting the gas or vapor with a macroporous insoluble cross-linked copolymer of styrene and divinylbenzene in the form of beads or granules having a specific surface area of at least 10 m^2/g and containing polar and polarizable non-dissociable active groups selected from the class consisting of halogen and nitro- and acetyl-groups.

3,727,380
ELECTROSTATIC PRECIPITATOR

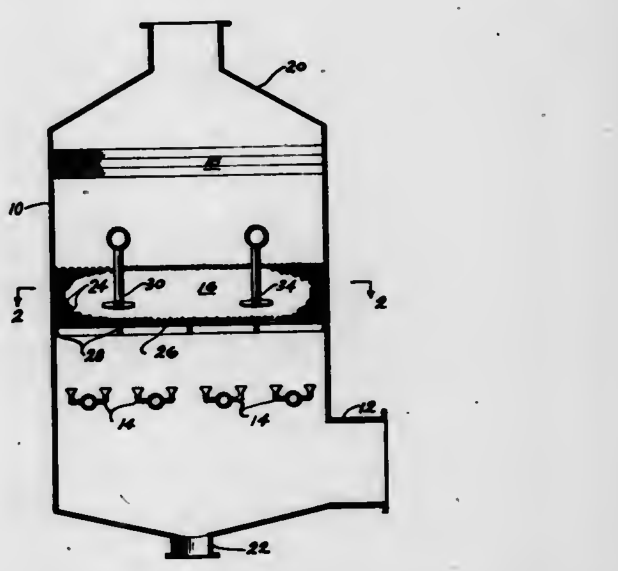
Cassius D. Remick, Waterloo, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada
Filed Oct. 18, 1971, Ser. No. 190,211
Int. Cl. B03c *3/08, 3/41, 3/47*
U.S. Cl. 55—138 7 Claims



An electrostatic precipitator is disclosed in which identical printed-circuit boards are used at either end of a plurality of collector plates both to provide electrical connections and to space the plates. The plates each have at either end a support tab and a contact tab, both of which register in slots in the respective printed circuit board. The boards have printed bus bars connecting the contact tabs of the plates with the same potential, and these bus bars are coated first with a conductive resilient coating and then with a resilient non-conductive coating.

3,727,381
AGITATOR FOR MARBLE BED GAS SCRUBBER

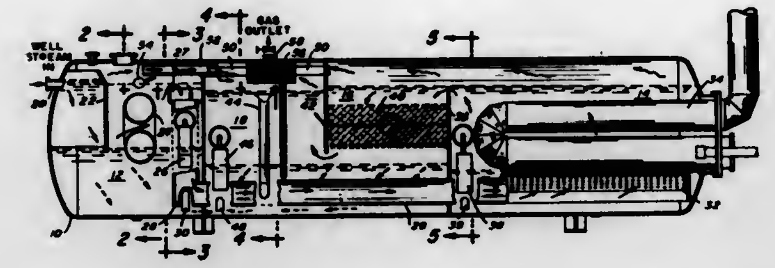
Herbert H. Kreimann, Bloomfield, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.
Filed March 26, 1971, Ser. No. 128,321
Int. Cl. B01d *46/38*
U.S. Cl. 55—233 1 Claim



An agitator for a marble bed wet gas scrubber having an upright housing in which the bed of marbles forms a plurality of diverse, tortuous flow paths for the gases. A plurality of horizontally extending nozzles positioned adjacent a perforate support means for the marbles directs jets of high velocity fluid into the bed, thereby preventing plugging of the diverse and tortuous paths.

3,727,382
DOWNFLOW COALESCING FOR EMULSION TREATER

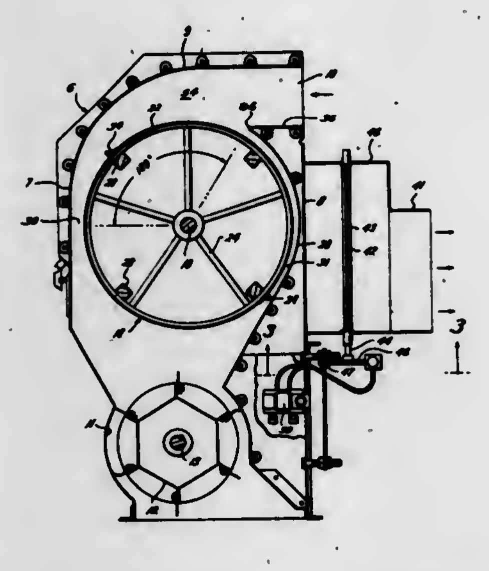
Morden A. Jackson, Barcelona, Spain, assignor to Maloney-Crawford Tank Corporation, Tulsa, Okla.
Filed March 10, 1971, Ser. No. 122,741
Int. Cl. B01d *19/00*
U.S. Cl. 55—160 **2 Claims**



Mixed or emulsified fluids, especially oil-water emulsions, are caused to pass across a substantially horizontal coalescing medium vertically from the top of the medium there across to the bottom for more efficient separation of the phases and self maintenance of the coalescing section.

3,727,383
AIR AND FIBER SEPARATOR

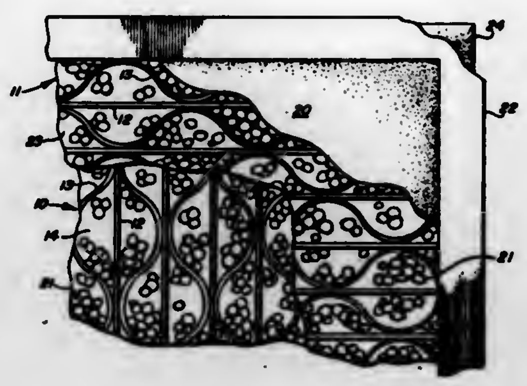
Joseph C. Neitzel, Denton, Tex., assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Oct. 30, 1970, Ser. No. 85,564
Int. Cl. B01d *50/00*
U.S. Cl. 55—337 **7 Claims**



A separator for textile fibers and a pneumatic stream of carrier air therefor comprising a housing having an inlet for directing the stream of carrier air substantially tangentially of and at substantially the same speed as a cylindrical drum surface rotatively mounted in the housing. The cylindrical drum wall closely approaches opposed housing walls for restricting the tendency of the carrier air to pass around the drum. The cylindrical wall of the drum has relatively fine perforations, but the total area of perforations in any portion of the cylinder wall which spans the casing interior between the inlet and the first of said opposed housing walls substantially greater than the cross sectional area of the inlet. The resulting reduction in velocity of the carrier air together with movement of the drum surface substantially at the speed of and in the same direction as the transported fibers results in continuation of the fibers around the drum due to inertia, while the carrier air tends to pass into the drum.

3,727,384
CONTACT ELEMENT

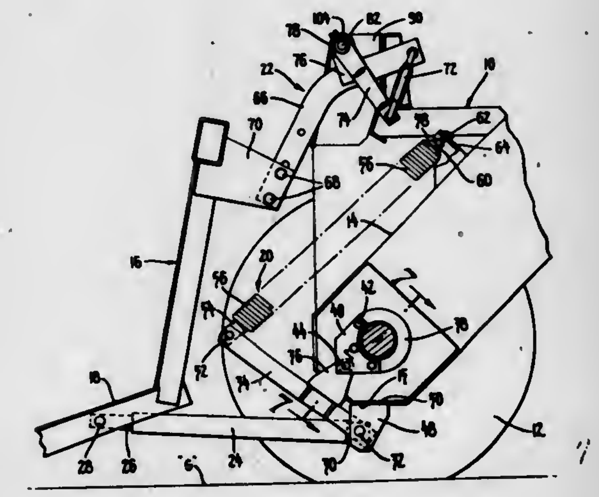
Elliot I. Feldman, 2850 E. Second Street, Tucson, Ariz.
Filed April 24, 1972, Ser. No. 246,947
Int. Cl. B01d *50/00*
U.S. Cl. 55—484 **1 Claim**



A reactant element for contacting a stream of fluid such as air or other gas or liquid with a particulate reactant. The particulate reaction is retained in a core structure specially constructed to resist deflection by fluid moving through the element. The core structure consists of two sets of parallel stiffening strips transversely disposed across a moving fluid stream. One of the sets of parallel strips is rotationally displaced from the other such that the strips of one set lie in planes angularly displaced from the planes of the first set of strips. Corrugated spacer sheets are disposed between the strips of each set and are joined at the tops and bottoms of the corrugations to the next-adjacent strips. A particulate reactant material is disposed in the fluid channels formed by the spacer sheets and the stiffening strips. A frame encloses the periphery of the core structure, forming a unitary cartridge-like element.

3,727,385
AGRICULTURAL VEHICLE

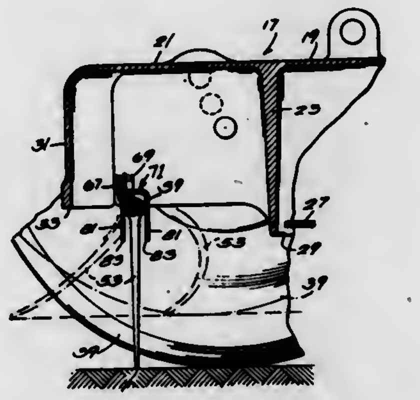
William H. Twidale, Islington, Ontario, and Mark K. Byrnes, Mississauga, Ontario, both of Canada, assignors to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Nov. 26, 1971, Ser. No. 202,214
Int. Cl. A01d *67/00*
U.S. Cl. 56—208 **12 Claims**



A ground vehicle having an implement attached at one end of the vehicle for pivotal movement relative to the ground. The implement may be a swather table or the like which is equipped with a pair of power activated lift cylinders for selective raising or lowering of the swather table. The lift cylinders are interconnected between the swather table and one end of a rocker arm which is pivoted to the frame of the vehicle. A pair of counterbalancing springs are co-operatively positioned relative to the lift cylinders and have one end attached to the frame of the vehicle and the other end of the pivotal rocker arm. The upper end of the swather table is supported for pivotal fore and aft movement on a transverse crossbar which is rotatable in the frame of the vehicle. The outer ends of the table-supporting crossbar are each connected to an interconnected lift arm and lever assembly for rotation of the crossbar within the frame upon respective pivotal movement of the swather table. The transverse cross bar defines a torsion rod adapted to maintain the table in level position, and one of the lift arm and lever assemblies is provided with adjusting means for adjustment of the torque characteristic of the torsion spring.

3,727,386
FLEXIBLE REAR SHIELD FOR ROTARY LAWN MOWER

Herbert A. Jespersen, and Earl H. Kidd, both of Galesburg, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed June 6, 1972, Ser. No. 260,128
Int. Cl. A01d *67/00, 35/12*
U.S. Cl. 56—320.1 **7 Claims**

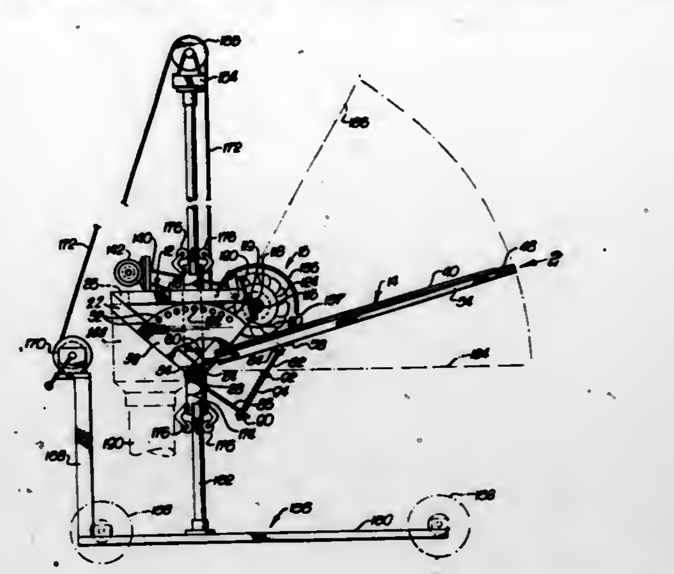


Disclosed herein is a rotary lawn mower comprising a blade housing including a top deck, a generally annular wall depending from the top deck and substantially enclosing a cutter blade, and a rear wall depending from the top deck, extending generally transversely of the direction of intended travel, and spaced rearwardly from the annular wall. Also disclosed is pivot means supported by the blade housing and having a transversely extending axis adjacent to the rear wall, and a flexible shield carried by the pivot means for pivotal movement about said axis, extending across substantially the entire distance between the rear wheels supporting the blade housing, and extending in closely adjacent relation to the ground, not withstanding variation in the vertical distance of the blade housing above the ground. Also disclosed is spring means extending forwardly and rearwardly of the shield for yieldably limiting movement of an upper portion of the shield from a position adapted to locate a lower portion of the shield in closely adjacent relation to the ground.

3,727,387
FRUIT HARVESTER

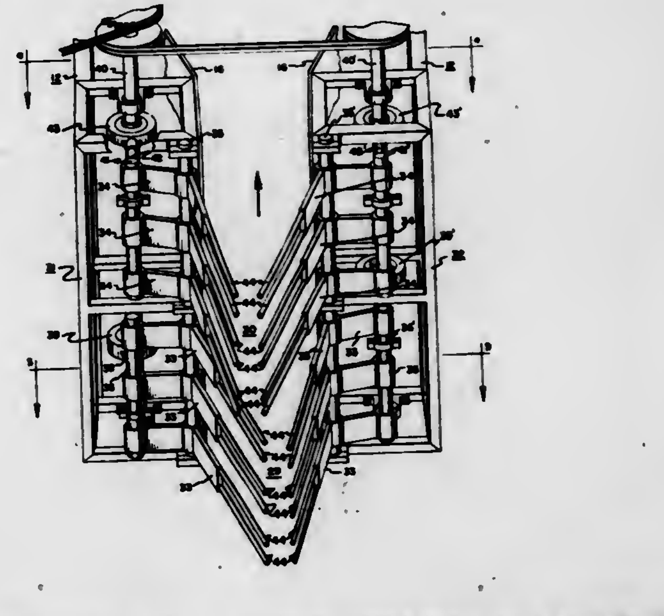
Francis G. Sorensen, 6333 South Friends Avenue, Whittier, Calif.
Filed March 20, 1969, Ser. No. 808,799
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 R **15 Claims**

A fruit harvester of the tree-combing type in which the tines are movable relative to one another to clear obstructions in the tree. A rotatable helix, positioned over the rear portion of the tines, cooperates with branch-holding devices carried by the tines to gently separate the fruit from the branches. The tines are tapered along their lengths to present small frontal cross-sections and thereby facilitate insertion into the tree crown.



3,727,388
GRAPE HARVESTER

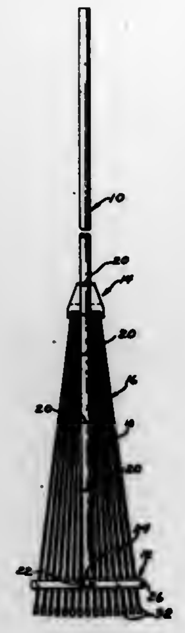
Leslie V. Smith, 112 North 22nd Avenue, Yakima, Wash.
Filed Aug. 16, 1971, Ser. No. 171,830
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **2 Claims**



The harvester of this invention comprises a substantially U-shaped inverted framework carried by a pair of wheels mounted on axles disposed at the opposite terminal sides of the framework; an entranceway including a pair of opposing substantially V-shaped guide walls, inwardly projecting with respect to the direction of travel, depending from the framework and being disposed in the entranceway of the harvester; a pair of rectilinearly extending opposing flexible collector floor portions being coextensive in length with the framework, each collector issuing upwardly at an angle toward the centermost portion of the harvester and being engageable with vines planted in rows; and a multiplicity of vine engaging shaker panel assemblies disposed vertically with respect to the ground, one panel being mounted above another panel, each of the panels including a plurality of opposing pairs of shaker rods carried in brackets operable to oscillate transversely in unison to move a portion of the vine being harvested in one direction while the next succeeding shaker panel moves the portion of the vine in a direction opposite.

3,727,389
COLLAPSIBLE RAKE

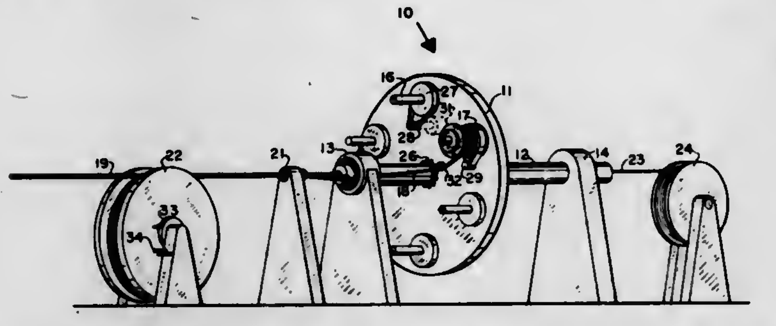
Fred J. Huspen, 705 Lincoln St., Glenview, Ill.
Filed June 16, 1972, Ser. No. 263,633
Int. Cl. A01d *7/00*
U.S. Cl. 56—400.18 **6 Claims**



An adjustable rake including an elongated handle having a transverse prong guide secured thereto at one end thereof. Mounted on the handle for slidable movement is a prong carrier and it in turn pivotally mounts respective ends of a plurality of prongs which extend therefrom through the prong guide. By changing the position of the carrier on the handle, the width of swath of the rake can be regulated. Means are provided for securing the prong carrier to the handle at any of several desired positions of adjustment.

3,727,390
STRANDING MACHINE

Olek Schwarz, Plainfield, N.J., assignor to Anaconda Wire and Cable Company
Filed Oct. 4, 1971, Ser. No. 185,982
Int. Cl. H01b *13/02, 13/08*
U.S. Cl. 57—13 **3 Claims**

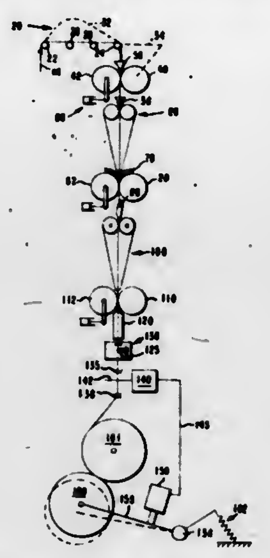


In a stranding machine the reels of wire mounted on the machine are braked by hysteresis brakes and the current through these brakes is reduced by the switching of resistors into the brake circuit as preselected numbers are reached in pulse counters for pulses generated by the strand take-up capstan.

3,727,391
APPARATUS FOR DRAFTING AND TWISTING FIBERS

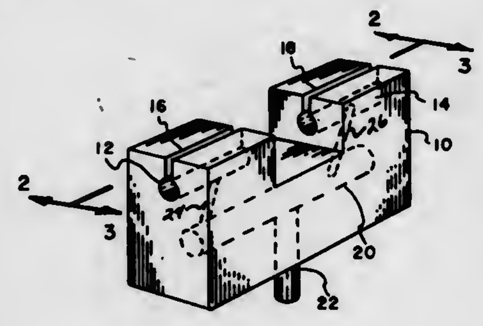
Franklin Raymond Hiserman, Jr., Waynesboro, and Keith Harold Turley, Staunton, both of Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 4, 1971, Ser. No. 195,573
Int. Cl. D01h *5/26, 5/52, 5/72*
U.S. Cl. 57—36 **5 Claims**

In a machine for drafting staple fibers into yarn including a plurality of vertically spaced sets of drafting rolls, each set including at least two driven drafting rolls, each set including at least two driven drafting rolls and associated cot rolls in a nip forming relationship, and removable double apron assemblies positioned between adjacent sets of drafting rolls all mounted to the machine frame, a jet twister for consolidating the fibers and a windup for the yarn, an apparatus for improving the handling of fibers during drafting. The apparatus comprises a forked arm mounting a pair of cot rolls for rotation, a multipoint linkage connecting the forked arm to the frame, providing for spacial movement of said cot rolls with respect to the axis of their companion rolls, a pneumatic cylinder with a regulated, pressurized source of fluid connected between the frame and the linkage for regulating the force exerted by the cot roll on the draft roll, and an elongated slotted guide freely riding the nip and adjacent areas of the draft and cot rolls, said guide being contoured to fit said areas and having a fibrous surface adjacent the roll surfaces for cleaning the roll surfaces. An enclosure around the jet is provided with a coanda surface below the jet to direct fluid exiting the jet away from the yarn path.



3,727,392
FIBRILLATION JET

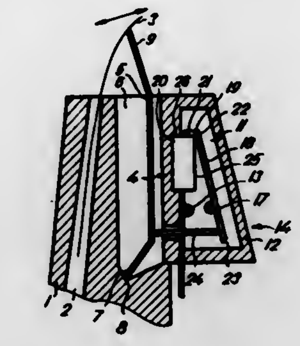
John D. Gibbon, Charlotte, N.C., assignor to Fiber Industries, Inc.
Continuation-in-part of Ser. No. 70,713, Sept. 9, 1970. This application March 31, 1971, Ser. No. 129,738
Int. Cl. D02g *3/00*
U.S. Cl. 57—77.3 **8 Claims**



There is provided an improved forwarding jet especially useful where a fibrillatable tape is to be subjected to the action of at least four fluid twisting means. This apparatus is comprised of a housing having a tubular passageway therethrough for the passage of a fibrillatable tape and a fluid manifold for the delivery of pressurized fluid to said tubular passageway. Said tubular passageway is comprised of at least two spaced apart bores of common axis, each of said bores having a fluid passageway tangentially intersecting it at an angle of from about 15° to about 70° with respect to the common axis of said bores. The tangential intersection of the bores is of opposite incidence so that the direction of twist imparted to the tape is reversed between adjacent bores.

3,727,393
THREAD BREAKAGE DETECTOR

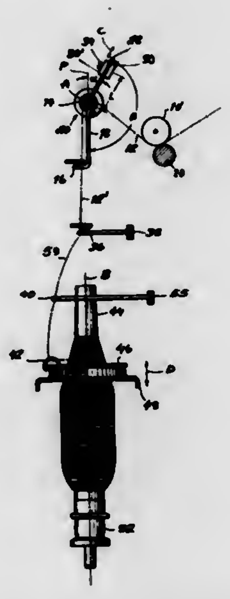
Karel Mikulecky, Chocen; Jiri Elias, Brandys Nad Orlici, and Frantisek Filip, Usti Nad Orlici, all of Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti Nad Orlici, Czechoslovakia
Filed Oct. 26, 1971, Ser. No. 192,497
Claims priority, application Czechoslovakia, Nov. 6, 1970, 7459/70
Int. Cl. D01h *13/16;* **B65h** *63/02*
U.S. Cl. 57—81 **14 Claims**



A magnet is mounted in a housing of a thread breakage detector and has an edge bounding a surface. An arm composed at least in part of magnetizable material is fulcrumed on this edge for pivotal movement and has a portion which is displaceable by magnetic attraction from a position remote to a position proximal to the surface of the magnet. An electrical circuit is provided, having at least two contacts at least one of which is carried by the portion of the arm so as to engage the other contact when the portion is proximal to the surface of the magnet, and tension-detecting means in form of a separate rockable lever, or a portion of the arm itself, is provided which cooperates with a tensioned thread and maintains the portion of the arm in its position remote from the surface of the magnet while the thread exerts a predetermined tension.

3,727,394
APPARATUS FOR PREVENTING THE CURLING AND LOOPING OF THE YARN IN A TRAVELER-RING TWISTING MACHINE

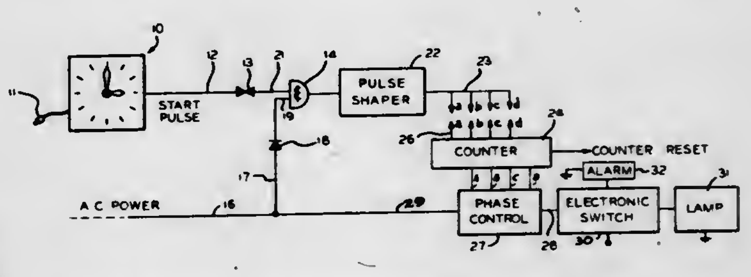
Aloys Greive, Munster, Westphalia, Germany, assignor to Hamel GmbH Zwirnmaschinen, Munster/Westf., Germany
Filed Dec. 2, 1970, Ser. No. 94,485
Claims priority, application Germany, April 12, 1969, P 19 60 970.2
Int. Cl. D01h *13/12*
U.S. Cl. 57—106 **10 Claims**



A thread-twisting apparatus comprises a supply device for feeding a thread to a thread-twisting assembly including a spindle and a traveler ring orbiting the spindle. A thread sensor engages the thread between the traveler ring and the supply device and is effective to tighten the thread only upon loosening and reduction of tension in the thread on standstill of the spindle. The device comprises a weighted bent wire lever whose arms form an obtuse angle. One arm is provided with an eye aligned in normal operating position with a guide eye above the spindle.

3,727,395
CLOCK ACTUATED AWAKENING DEVICE

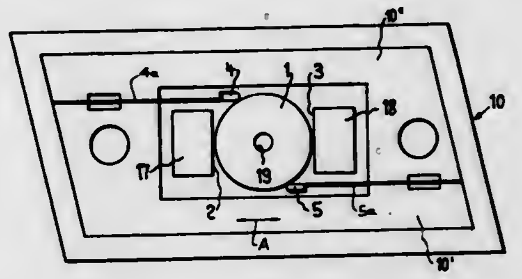
Richard A. Baylor, 1011 S. Mattis, Unit 56, Champaign, Ill.
Filed May 19, 1972, Ser. No. 255,098
Int. Cl. G04c *21/16*
U.S. Cl. 58—19 C **11 Claims**



A clock actuated awakening device that gently rouses a sleeper by increasing the power to a lamp as a function of time, thereby increasing the intensity of the light to simulate the sunrise. The intensity of the light is increased either mechanically or electronically.

3,727,396
OSCILLATING MOTOR

Max Hetzel, Bienne, Switzerland, assignor to OMEGA Louis Brandt & Freres SA, Bienne, Canton of Berne, Switzerland
Filed April 12, 1972, Ser. No. 243,392
Claims priority, application Switzerland, April 27, 1971, 6155/71
Int. Cl. G04c *3/02*
U.S. Cl. 58—23 D **9 Claims**

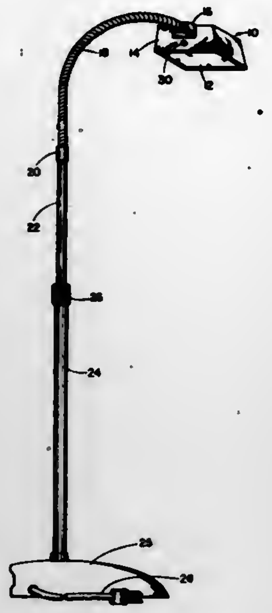


An oscillating motor for a watch comprises a driven tuning fork or mechanical resonator driving a ratchet wheel. The fork carries a hermetically sealed housing on one of its tines, the housing enclosing a ratchet wheel fixed with a magnetized disc which constitutes part of a magnetic coupling. The ratchet wheel floats on a liquid film in the housing and is driven by pawls when the fork vibrates. The rotation of the ratchet is conveyed to the watch mechanism by the other half of the magnetic coupling, which is pivotally mounted outside the housing.

3,727,397
CLOCK MOUNTINGS

Eugene L. Ethier, 216 West Simmons Avenue, Anaheim, Calif.
Filed Dec. 16, 1971, Ser. No. 208,724
Int. Cl. G04b *37/14*
U.S. Cl. 58—56 **5 Claims**

To make the time and the shut-off controls of an alarm clock easily available to a sleeper, the invention combines a mounting structure which is to be fixed to a wall, headboard of a bed, or simply placed on the floor, with an elongate and flexible arm or conduit which extends from the mounting structure to a holder for an alarm clock. The holder may have the form of a clamp capable of holding a clock in desired position, but in preferred form that holder comprises the case of the clock.



3,727,398
CHRONOGRAPH

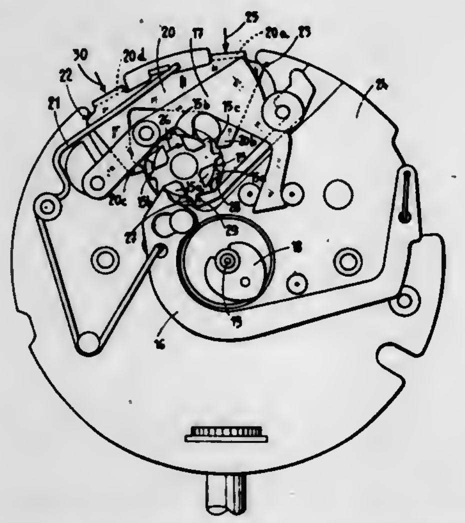
Donald Rochat, Les Bioux, Switzerland, assignor to Valjoux S.A., Les Bioux, Canton of Vaud, Switzerland

Filed May 24, 1972, Ser. No. 256,292

Claims priority, application Switzerland, Nov. 15, 1971, 16574/71

Int. Cl. G04f *7/04*

U.S. Cl. 58—74 **3 Claims**



A timepiece such as a timecounter or a chronograph comprising a column wheel, a control member permitting the column wheel to be driven step by step unidirectionally so that the successive operations of the control member produce successively starting, stopping and setting to zero of the hand of the counter or of the chronograph, and which comprises a second control member permitting the column wheel to be driven reversely one step, so that the operation of the second control member, when the counter or chronograph is stopped, effects its restarting.

ERRATUM

For Class 58—88 see:
Patent No. 3,727,367

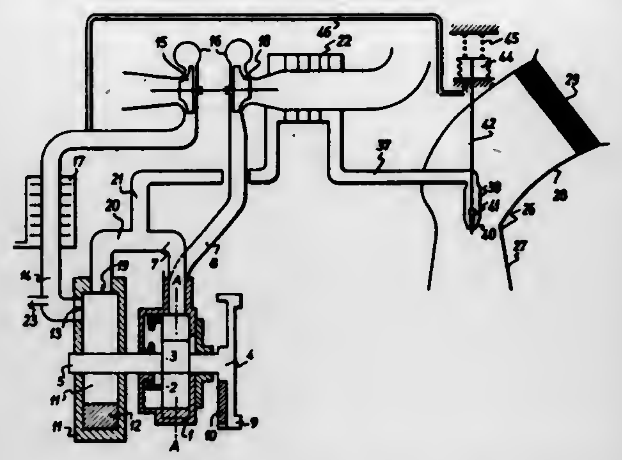
3,727,399
ROTARY-PISTON DIESEL ENGINE SUPERCHARGERS

Maurice Brille, and Yves Baguelin, both of Suresnes, France, assignors to Societe Anonyme de Vehicules Industriels et D'Equipments Mecaniques Saviem, Suresnes, Hauts de Seine, France

Filed March 8, 1971, Ser. No. 121,751

Int. Cl. F02b *37/04*

U.S. Cl. 60—13 **13 Claims**



In a supercharging system for Diesel rotary-piston engines comprising a turbosupercharger and a volumetric supercharger, means are provided for drawing air downstream of the volumetric supercharger and utilizing this tapped air in an air pump also receiving the air having passed through the engine radiator, a needle valve responsive to the supercharging pressure controlling the delivery of drawn air into the neck of a convergent divergent section of said pump, this drawn air being also adapted to be injected into the exhaust pipe of the turbine of said turbosupercharger which receives the exhaust gas from the engine, said exhaust pipe being connected in turn to the interior of another pump mounted in the radiator cooling air duct, a needle valve being inserted in the pipe delivering the air derived downstream of said volumetric supercharger, in order to improve the efficiency of the system by reducing the counter-pressure upstream of the exhaust turbine while improving the drawn air output and therefore the airpump throughput and the engine radiator cooling air output, said needle valve being responsive to this end to a spring-loaded bellows responsive in turn to the supercharging pressure.

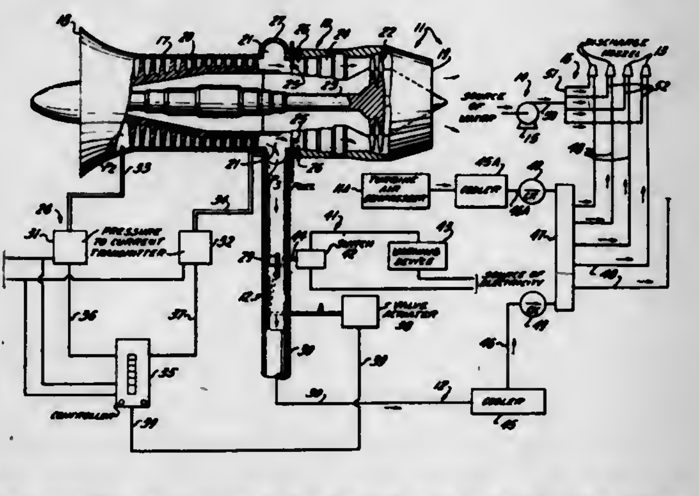
3,727,400
GAS TURBINE AIR COMPRESSOR AND CONTROL THEREFOR

Emmett S. Harrison, Corona, N.Y., and August H. Zoll, Cedar Grove, N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Division of Ser. No. 41,509, May 28, 1970. This application June 10, 1971, Ser. No. 151,794

Int. Cl. F02c *9/14*

U.S. Cl. 60—39.29 **2 Claims**



A gas turbine air compressor which has an air by-pass connected to a place of use or storage is provided with an overload prevention system to avoid excessive by-pass of compressed air and the consequent overheating and failure of the combustor and turbine components of the gas turbine compressor.

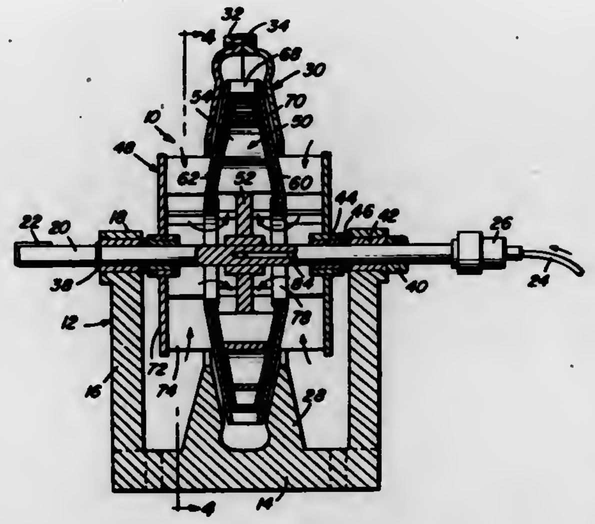
3,727,401
ROTARY TURBINE ENGINE

Julian D. Fincher, P. O. Box 294, Pensacola, Fla.

Filed March 19, 1971, Ser. No. 125,931

Int. Cl. F02c *3/16*

U.S. Cl. 60—39.35 **6 Claims**



Intake air undergoes two stage compression within a pair of co-axially mounted, counter-rotating rotors of a radial turbine engine and is tangentially discharged into a turbine mounted by one of the rotors. The air is heated and accelerated by discharge of combustion products from fuel burners mounted on the second stage compressor vanes in the other of the rotors to produce reaction thrust. Extensions of some of the second stage compressor vanes form discharge passages for the mixture of air and combustion products.

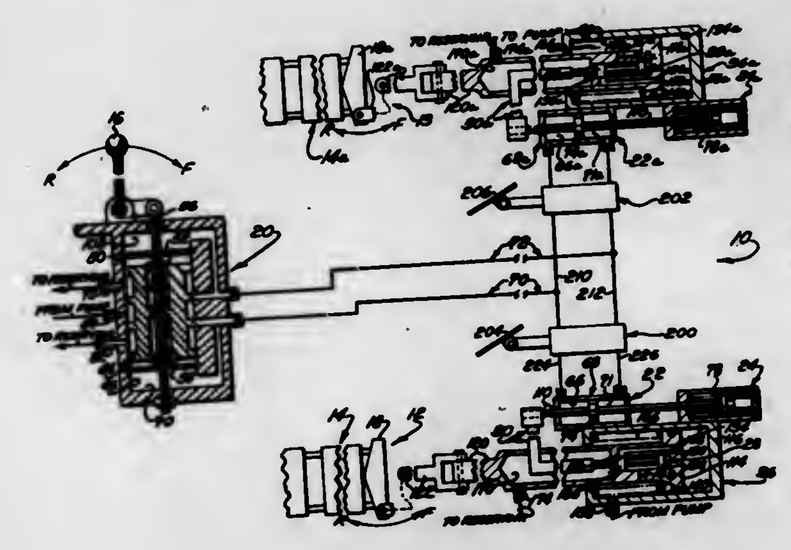
3,727,402
HYDROSTATIC TRANSMISSION SPEED AND STEERING CONTROL SYSTEM

Errol W. Keith, Marshall; Jack Watson, Tekonsha, and Edward J. Bojas, Marshall, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed June 30, 1971, Ser. No. 158,455

Int. Cl. F15b *13/06*

U.S. Cl. 60—444 **22 Claims**



An improved apparatus for controlling the operation of a plurality of hydrostatic transmissions includes a plurality of fluid motors which are connected with the hydrostatic transmissions and are operable to vary the speed and direction of operation of the hydrostatic transmissions. A speed control and reversing valve is operable to effect contemporaneous operation of each of the fluid motors to increase or decrease the operating speeds of the hydrostatic transmissions by the same amount. Steering control valves are connected between the speed control valve and the fluid motors. These steering control valves are operable to effect a change in the speed of a selected one or both of the hydrostatic transmissions to thereby change the direction of movement of an associated vehicle. Upon operation of one of the steering valves, opposite sides of a piston in the associated fluid motor are connected in fluid communication to effect operation of the fluid motor and a variation in the swash angle of the associated hydrostatic transmission.

3,727,403
CONTROL DEVICE FOR CONTROLLING PREFERABLY SEVERAL FLUID PRESSURE OPERATED OBJECTS

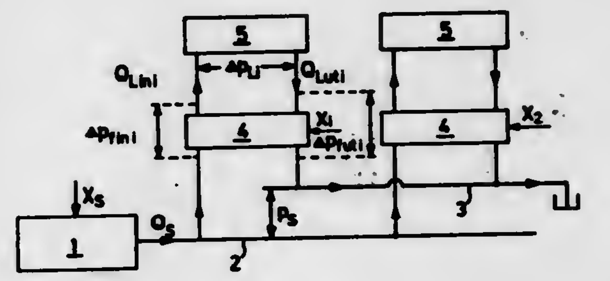
Anders Andersson; Roger Lagerqvist, and Stig Stenlund, all of Boras, Sweden, assignors to Monsun-Tison AB, Boras, Sweden

Filed April 21, 1971, Ser. No. 136,155

Claims priority, application Sweden, April 21, 1970, 5509/70

Int. Cl. F15b *13/06*

U.S.Cl.60—427 **3 Claims**



A control device is provided for controlling fluid pressure operated objects by individual valves connected in parallel to a common fluid pressure source and to a sump, and for unloading said fluid pressure source and to a sump, and for unloading said fluid pressure source when no object is operated. Said valves are of the type imparting to said objects, respectively, a direction of motion and speed of motion depending solely upon an individual input signal, and the fluid pressure source is provided with a regulating means adapted, partly, to maintain in a supply pipe to said valves the flow rate sufficiently high for supplying any operated object with a flow rate that cannot be diminished below the flow rate corresponding to the input signal to the corresponding valve by more than a limited quantity and, partly, to prevent the system pressure from exceeding the highest pressure demand of the objects operated at any moment, and, in case of controlling an energy delivering object or in case of no load operation, from exceeding the pressure level of the system sump by more than a value acceptable with respect to the efficiency.

3,727,404
HIGH PRESSURE STEERING SYSTEM

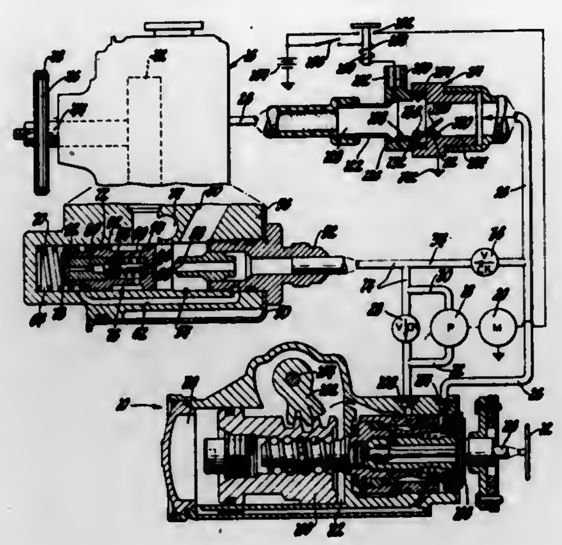
Lee M. Brewer, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 8, 1971, Ser. No. 205,848

Int. Cl. F15b *15/18*

U.S.Cl.60—430 **5 Claims**

A flow-valve-controlled fluid motor for operating the steering linkage of an engine-powered vehicle is connected with an engine-driven primary pump by a delivery passage and a return passage. An electric-motor-driven auxiliary pump and a first check valve are connected in parallel in the delivery passage so that the check valve normally permits flow only in a direction from the primary pump to the fluid motor when the primary but not the auxiliary pump operates and conditions the auxiliary pump to boost the pressure of the fluid from the primary motor when both pumps operate. A flow switch connected in the return passage includes a normally-closed switch that is connected in series with a vehicle battery and ignitior switch and is operative to actuate the electric motor driving the auxiliary pump until opened by a flow at rates above a predetermined flow rate. A bypass passage connected between the return and delivery passages provides fluid to the auxiliary pump from the return passage and includes a second check valve that permits flow of this fluid only in a direction from the return passage to the delivery passage.



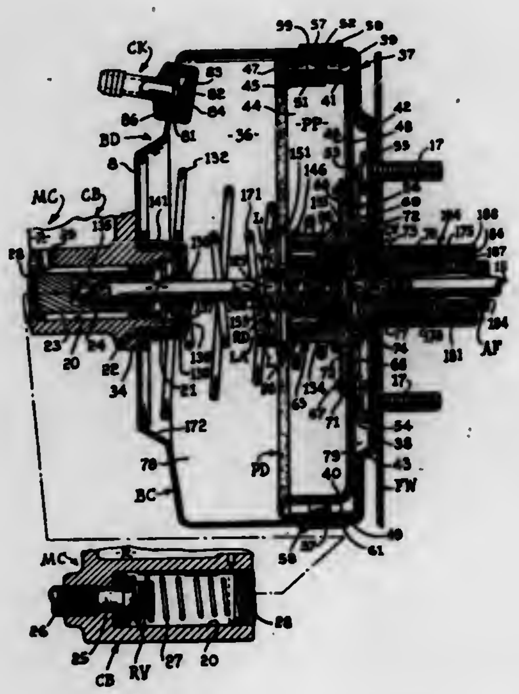
3,727,405
VACUUM-POWER BRAKE BOOSTER

Glenn T. Randol, Mountain Lake Park, P. O. Box 275, Loch Lynn Heights, Md.

Filed Oct. 13, 1970, Ser. No. 80,267

Int. Cl. F15b *7/00*

U.S. Cl. 60—54.5 P 29 Claims



A vacuum-power booster incorporating a master brake cylinder for producing the major portion of the actuating force for the latter under an improved manual follow-up control valve of the poppet-type operably related with a multi-lever force and reaction-transmitting mechanism normally ineffective to transmit reaction from master cylinder pressures during manual slack take-up operation and including selective fulcrum blocks carried by the booster output element and replaceable at will to "custom-fit" pedal pressure to the sensitivity the driver desires; a provision for spring resistance to initial pedal depression supplemented by said reaction mechanism, to produce a two-stage transferral of reaction to the brake-pedal for predictable braking control; a provision for detachably connecting three cup-shaped members (metallic shells) to produce the booster power-cylinder and to anchor the outer margin of the diaphragm portion of the power-member airtight therein; a provision for a sleeve-like flexible member adapted to slidably support and seal that portion of said control valve projecting to the exterior of said power-cylinder; and a safety provision bypassing said control valve enabling driver-operation of the master cylinder as a safeguard against any power inadequacy or malfunction otherwise.

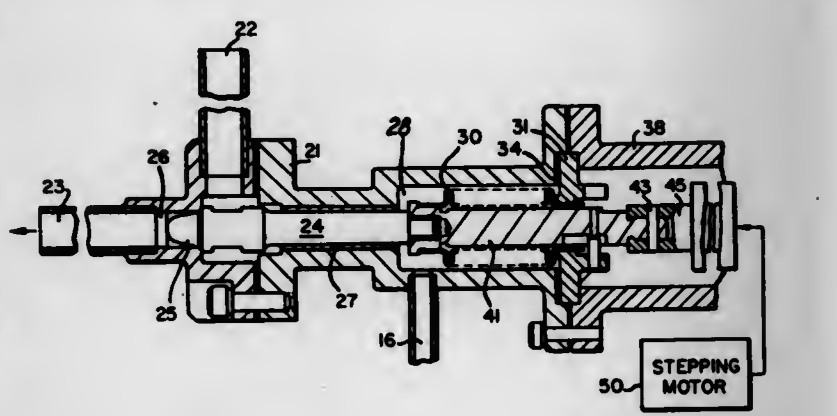
3,727,406
THROTTLE VALVE

Thomas LeFeuvre, Ottawa, Ontario, Canada, assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Jan. 6, 1972, Ser. No. 215,837

Int. Cl. F16k *21/00*; F01d *17/00, 25/00*

U.S. Cl. 60—108 5 Claims



A throttle valve for use in a closed fluid cycle engine where the fluid is passed through the valve at high temperature and pressure and where the engine includes portions of the fluid cycle having the fluid at low pressure. The valve stem is hermetically sealed to the housing by means of a bellows seal enclosed in a chamber which is vented to the low pressure portion of the engine. A seal such as a laminar seal or a labyrinth seal encloses the valve stem between the high pressure gas inlet and outlet and the bellows chamber. This stem seal produces a pressure drop protecting the bellows from the effects of high pressure and limits the fluid flow from the valve inlet and outlet to the bellows chamber to less than 5 percent of the total fluid flow through the valve.

3,727,407
METHOD OF HYBRID PROPULSION WHICH INCREASES THE EFFECT OF PRESSURE ON BURNING

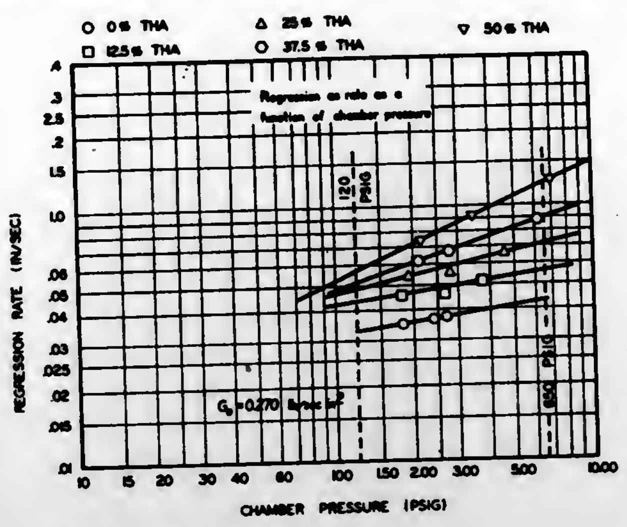
William A. Rains, and Peter L. Stang, both of San Jose, Calif., assignors to United Aircraft Corporation, Hartford, Conn.

Filed Nov. 20, 1964, Ser. No. 414,053

Int. Cl. C06d *5/06, 5/10*

U.S. Cl. 60—220 13 Claims

The present invention relates to solid propellant compositions and more particularly to a composition for the solid



phase of a hybrid motor.

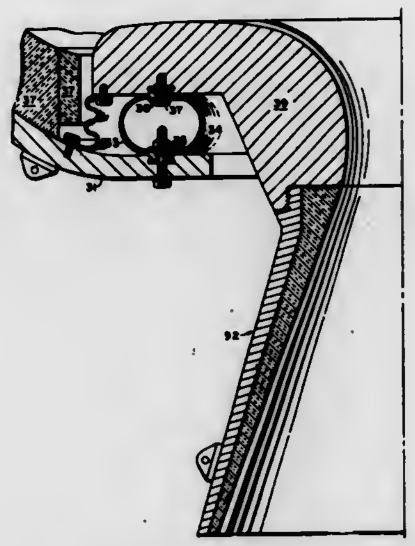
3,727,408
UNIVERSAL JOINT EMPLOYING A FLUID BEARING

Stephen A. Martin, Sunnyvale, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed June 22, 1970, Ser. No. 48,356

Int. Cl. F02k *1/24*

U.S. Cl. 60—232 21 Claims



A universal joint permitting the relative axial angular deflection of two axially spaced apart members comprising a body of fluid disposed between said first and second members and confined therebetween by a deformable membrane maintained in tension by the fluid. The use of such a seal as the load bearing seal in a movable exhaust nozzle assembly is disclosed.

3,727,409
HYPERSONIC AIRCRAFT ENGINE AND FUEL INJECTION SYSTEM THEREFOR

Archibald P. Kelley, Leslie W. Norman, and Walter H. Thompson, Jr., all of Scottsdale, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed March 30, 1961, Ser. No. 99,431

Int. Cl. F02k *7/08*

U.S. Cl. 60—270 7 Claims

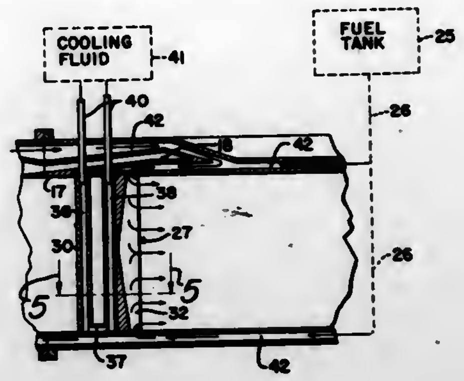
1. A detonation combustion engine adapted to produce hypersonic aircraft speeds above Mach 5, comprising:

a. an elongated aerothermodynamic duct for receiving and directing an air stream therethrough and having an inlet, a mixing section, a combustion zone, and an exhaust;

b. means in said duct for establishing and maintaining a series of shock waves in said duct between said inlet and said combustion zone with an attendant increase in static pressure and static temperature sufficient to create and support detonation combustion in said combustion zone;

c. means for removing boundary layers from the air stream passing through said duct so as to maintain supersonic laminar flow as the stream passes from the inlet to the combustion zone; and

d. means immediately downstream said boundary layer removing means for injecting fuel into said air stream at the upstream end of said mixing section without interfering with said series of shock waves and said supersonic laminar flow, such fuel injection means having a sharp edge on the upstream side thereof, an elongated slot in its downstream edge, and extending between the inner surfaces of the top and bottom of the aerothermodynamic duct.



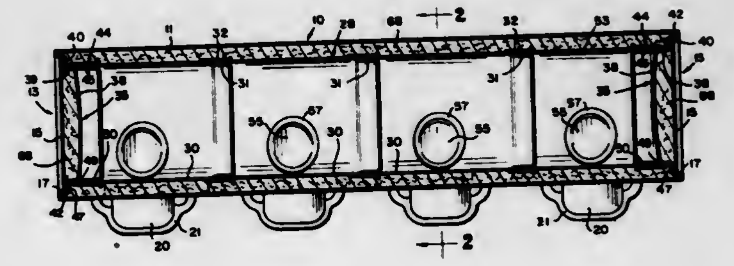
3,727,410
EXHAUST GAS MANIFOLD

George E. Scheitlin, Columbus, Ind., and David R. Bentley, Toledp, Ohio, assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Dec. 3, 1971, Ser. No. 204,498

Int. Cl. F01n *7/10*

U.S. Cl. 60—322 8 Claims



An exhaust gas manifold for an internal combustion engine in which there is provided an outer shell including an outer sleeve having a pair of end caps closing the ends thereof. An inner shell is carried within the outer shell and is formed by a plurality of slidably interfit inner sleeves which are supported in spaced relation to the outer sleeve on mounting members mounted on a second pair of end caps closing the ends of said inner shell and connected to said first pair of end caps. A plurality of inlet conduits and an outlet conduit are connected to said outer shell, and a plurality of inlet conduits and an outlet conduit are also connected to said inner shell with the conduits on said inner shell being carried in, and movable with respect to, the conduits on said outer shell.

3,727,411

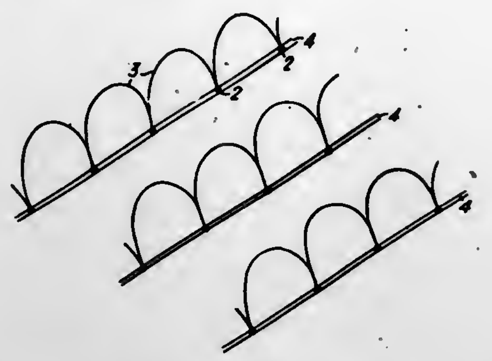
INFLUENCING SEDIMENTATION

Paul Cephas Rhodes, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 6, 1970, Ser. No. 87,420

Int. Cl. E02b *3/04*

U.S. Cl. 61—3 **7 Claims**



Means for influencing the sedimentation and movement of solid particles of material in seas, lakes and other bodies of water comprising an array of threads, tapes or filaments attached in loops to anchoring means.

3,727,412

PROCESS FOR THE IN SITU SEALING OF SOIL SURROUNDING UNDERGROUND CONDUIT BREAKS

John W. Marx, and Jr. Bowman, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 16, 1971, Ser. No. 172,279

Int. Cl. E02d *3/12*

U.S. Cl. 61—36 R **14 Claims**

A process for sealing soil adjacent to underground conduit breaks through the use of surfactant-stabilized latex emulsion wherein the sealing phenomena can be made to occur at varying penetration depths therein forming a seal against fluid flow.

3,727,413

TRENCH SHORING, SHUTTERING AND SHEETING SYSTEM

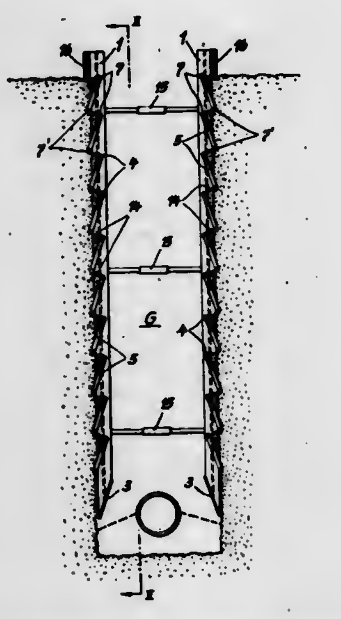
Paul Christen, Chamerstrasse 18, Zug, Switzerland

Filed Aug. 10, 1971, Ser. No. 170,553

Claims priority, application Switzerland, Aug. 13, 1970, 12305/70

Int. Cl. E21d *5/12*

U.S. Cl. 61—41 A **6 Claims**



Trench shuttering system with a pair of upright posts spaced apart along opposite sides of a trench, and horizontally extending wall elements received between the posts and the trench wall. Each of the wall elements comprises a pair of parallel and relatively slidable members overlapping one another and releasably secured together by manually operable clamping means at the overlapping junction.

3,727,414

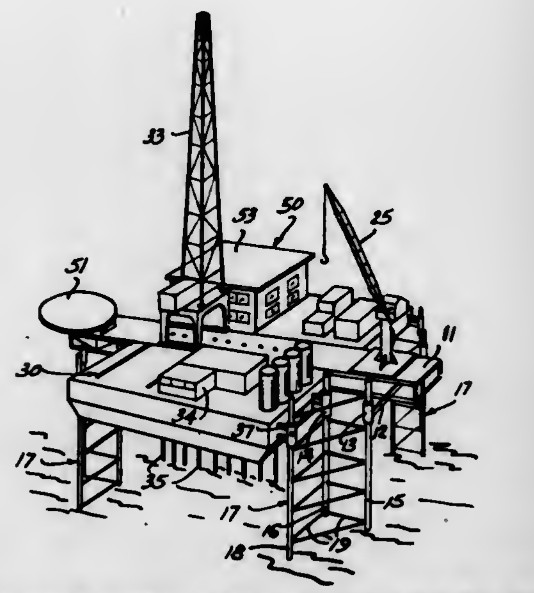
OFF SHORE DRILLING PLATFORM CONSTRUCTION

Philip Davies, Calgary, Alberta, Canada, assignor to Peter Bowden Drilling Services Ltd., Calgary, Alberta, Canada

Filed June 28, 1971, Ser. No. 157,545

Int. Cl. E02b *17/00*; B63b *35/44*

U.S. Cl. 61—46.5 **7 Claims**



Four legs or spuds engaging the sea bed support an elevated, alongated platform above the water to form an I configuration defining a pair of barge-receiving slots into which different barges can be moved and raised to the platform level by jacking mechanisms. The arrangement permits "unit chassis" type operation by which first a drilling barge with a derrick can be introduced and then, after drilling, this barge can be removed and the slot occupied by a production barge, leaving a servicing slot vacant for future work.

3,727,415

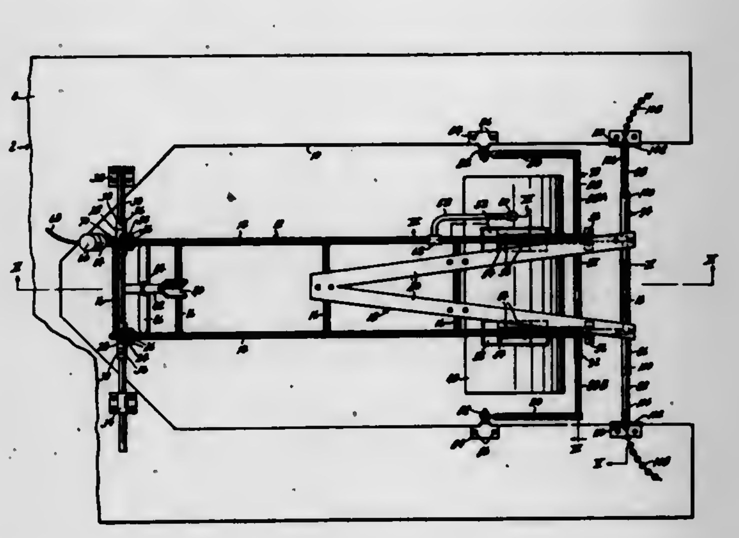
BOAT DRY DOCKING DEVICE

Barney V. Williams, Route No. 1, Grove, Okla.

Filed Sept. 16, 1971, Ser. No. 180,976

Int. Cl. B63c *1/00*

U.S. Cl. 61—65 **7 Claims**



A boat dry docking device for small craft consisting of an elongated boat supporting frame adapted to be disposed longitudinally in the boat well of a floating dock and to be pivoted to said dock at the closed end of said well for vertical movement, whereby the end thereof at the open end of the well may be dropped below water level, to receive a boat thereon, or raised to elevate said boat above water level, a flotation tank open at its bottom secured to the frame remotely from its pivot, mechanism operable to deliver air to or exhaust it from the tank whereby to raise or lower the frame, and reinforcing devices for preventing lateral tilting and lateral sidesway of the free end of the frame.

3,727,416

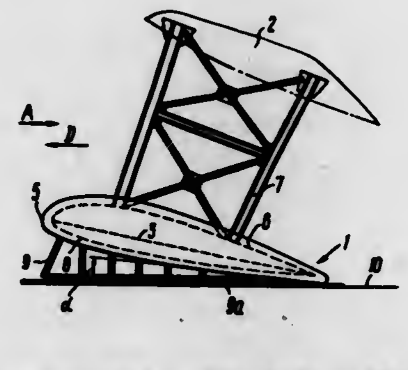
DEVICE FOR LAUNCHING SHIP FROM A SLIP

Arseny Alexandrovich Gaisenok, ulitsa Varshavskaya, 47, kv. 69; Yury Pavolovich Belyavin, Mytninskaya naberezhnaya, 7/5, kv. 40; Moisei Kalmanovich Glozman, Kanal Gribodedova, 124, kv. 33; Beris Vasilievich Mirokhim, 8 Sovetskaya ulitsa, 9/13, kv. 22; Emmanuil Albertovich Rakovsky, Krasnaya ulitsa, 20, kv. 116; Gennady Mikhailovich Chikov, 7, Sovetskaya ulitsa, 18/21, kv. 25; Valery Georgievich Maslovsky, prospekt Narodnogo Opolchenia, 159, kv. 112; Eugeny Natanovich Lushkov, ulitsa Frunze, 6, kv. 197, and Rix Rixovich Velsman, Degtyarny pereulok, 6, kv, 44, all of Leningrad, U.S.S.R.

Filed Aug. 25, 1971, Ser. No. 174,770

Int. Cl. B63c *3/00*

U.S. Cl. 61—67 **4 Claims**



A device for launching a ship from a slip comprising a hydrofoil mounted on a launching slide under the stern part of the ship and rigidly connected thereto through a system of rods.

The hydrofoil is mounted in such a way that its chord is parallel to the diametral plane of the ship while its nose is arranged in the direction of movement of the ship during its launching.

This hydrofoil develops a hydrodynamical lifting force which supports the stern part of the ship during the launching, thus reducing the reaction forces at the threshold of the slip.

3,727,417

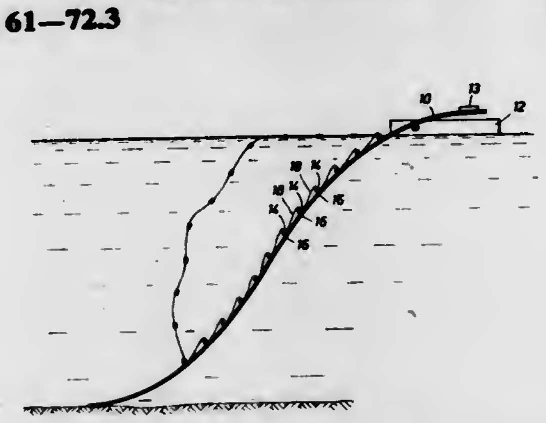
SUBMARINE PIPELINE LAYING APPARATUS

Clarence W. Shaw, Metairie, La., assignor to J. Ray McDermott & Co., Inc., New Orleans, La.

Filed July 23, 1971, Ser. No. 165,054

Int. Cl. F16l *1/00, 3/00*

U.S. Cl. 61—72.3 **41 Claims**



A system for laying a submarine pipeline using releasable floats at spaced points along the pipeline. Three recovery systems for the released floats are disclosed. According to a first system, the adjacent pairs of floats are linked together in a chain by cables so that, after recovery of the first released float, the remaining floats may be collected simply by pulling the cables. According to a second system, after release from the pipeline, each float is moored to the pipeline by an extensible cable that pays out under tension until the float reaches the surface; afterwards, a suitably equipped recovery vessel can pick up the floats which are disposed at the surface in a generally uniform pattern. According to a third system, each float is connected by a cable to a separate reel on a turntable on the lay vessel; after release of a float, a power chuck engages that floats associated reel and reels the float in on the cable. In the first system, the floats are collapsible bags, and a one-way valve is used to exhaust the air in the bag without admitting water. Two different means are disclosed for actuating release of the floats, one upon contact with the marine bottom and the other in response to a cable passing through releasable latches and connected to the ship.

3,727,418

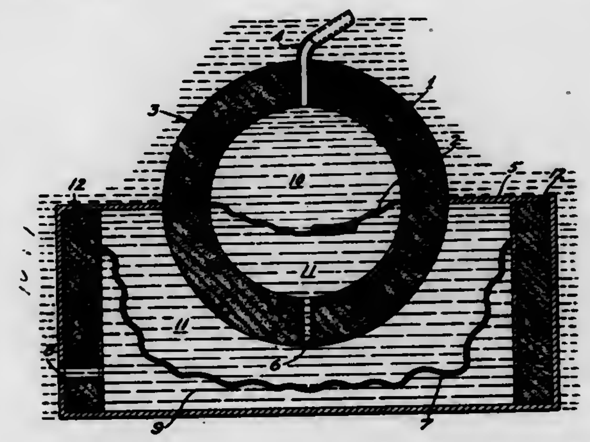
SUB-AQUEOUS STORAGE OF LIQUEFIED GASES

Frederick P. Glazier, Thornton, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed July 22, 1971, Ser. No. 165,234

Int. Cl. F17c *1/00*

U.S. Cl. 62—45 **11 Claims**



Liquefied natural gas is stored under water in a submerged, jacketed container the interior of which is coupled to a balancing fluid in another container, the balancing fluid being in turn coupled to the water surrounding both containers. The containers are fastened together, and the assembly is ballasted as appropriate, or required.

3,727,419

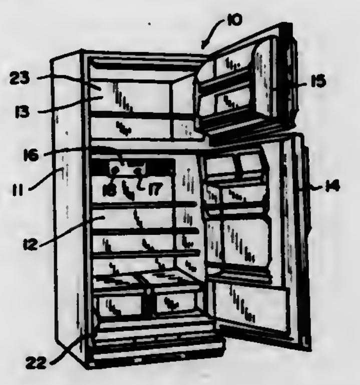
REFRIGERATOR CONTROL CIRCUIT

Ben W. Brightman, and Clarence C. Clarke, both of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed June 16, 1971, Ser. No. 153,562

Int. Cl. F25d *21/06*

U.S. Cl. 62—155 **11 Claims**

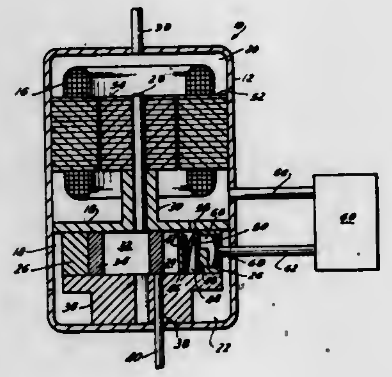


A refrigerator having a control thermostat disposed in the refrigerated chamber. The refrigerator control includes a motor driven defrost timer. The motor of the timer is disposed in heat transfer association with the temperature responsive means of the thermostat. The thermostat and timer may be disposed in a space defined by a wall means forming a control console.

3,727,420

AUTOMATIC TEMPERATURE CONTROL FOR REFRIGERATION COMPRESSOR MOTOR

Milton M. Kosfeld, North Brunswick, N.J., assignor to Fedders Corporation, Edison, N.J.
Filed Oct. 4, 1971, Ser. No. 177,187
Int. Cl. F25b *41/00*
U.S. Cl. 62—196 8 Claims

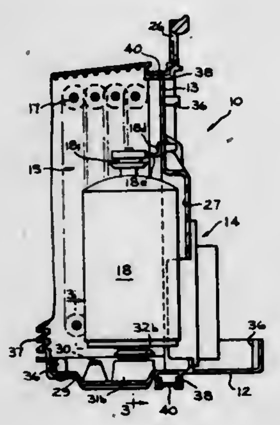


A sealed motor-compressor unit having a compressor discharge outlet connected to the interior of a motor casing by way of two parallel paths. A first path leads from the compressor discharge outlet directly to the interior of the motor casing, and a second path flows through a desuperheater. A bimetallic valve is placed adjacent the compressor discharge outlet, said valve being disposed to vary the opening to the path through the desuperheater in accordance with the temperature of the gas discharged from the compressor so as to vary the amount of desuperheated gas delivered to the motor casing and to provide automatic temperature control for the compressor motor.

3,727,421

ROOM AIR-CONDITIONER ONE-PIECE CHASSIS

David R. Berg, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Sept. 3, 1971, Ser. No. 177,676
Int. Cl. F25d *23/12*
U.S. Cl. 62—262 1 Claim

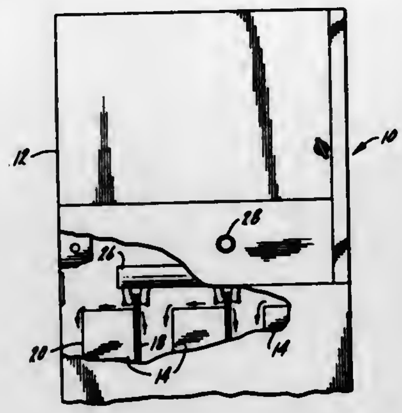


This invention provides a one-piece chassis for a room air-conditioner. Basically, this one-piece chassis comprises an inverted generally T-shaped member which includes a base portion and a barrier portion that is integrally formed with and extends geherally upwardly from the base portion and divides the member into an indoor section and an outdoor section.

3,727,422

MEANS FOR WATER DEFROSTING OF REFRIGERATION PLATES

Joseph P. Apple, Jr., Arlington Heights, Ill., assignor to Dole Refrigerating Company, Chicago, Ill.
Filed Sept. 13, 1971, Ser. No. 179,937
Int. Cl. F25d *21/10*
U.S. Cl. 62—282 6 Claims

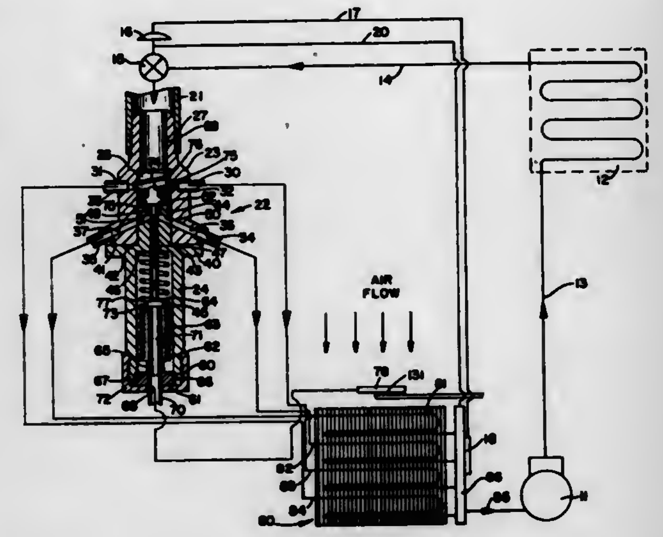


A water defrosting means for a plurality of refrigeration plates which is simply constructed, reliably operable and easily removed for cleaning. The defrosting means for each plate is made up of a pair of tubular elements positioned on opposite sides of the plate upper edge of flange. A header connects all of the tubular elements for a simultaneous supply of water thereto. Each header has a series of generally uniformly spaced water flow apertures which are directed toward the plate upper edge so as to provide, over the entire surface of the plate, a flow of water which is sufficient to defrost the plate sides.

3,727,423

TEMPERATURE RESPONSIVE CAPACITY CONTROL DEVICE

Gary E. Nielson, Florissant, Mo., assignor to Jackes-Evans Manufacturing Company, St. Louis, Mo.
Division of Ser. No. 888,359, Dec. 29, 1969, Pat. No. 3,633,379. This application June 7, 1971, Ser. No. 150,416
Int. Cl. F25b *41/04*
U.S. Cl. 62—205 3 Claims

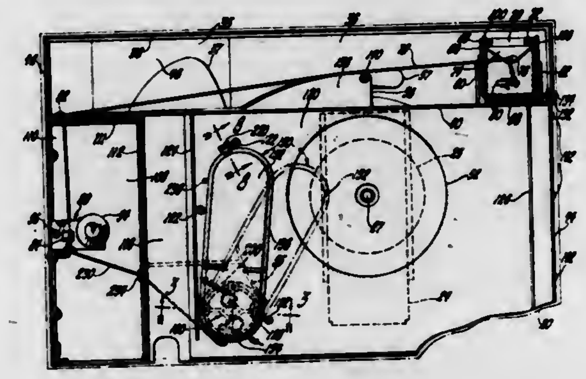


A capacity control arrangement adapted for use in air conditioning systems and the like to modulate the capacity of the system for greater uniformity in temperature and humidity. The system includes a novel capacity control valve located between the expansion means and the evaporator in an air conditioning system which controls the flow of refrigerant through the evaporator, operating in response to changes in temperature. As the temperature of the air approaches the set point, part of the passes through the evaporator are closed and, as a consequence, the remaining passes run colder for greater dehumidification. An artificial control means is provided whereby the capacity control valve may be remotely controlled independently of the actual temperature of the air flowing over the evaporator.

3,727,424

ROOM AIR CONDITIONER FRESH AIR INTAKE DUCT

William G. Edens; John H. Loos, both of Dayton, and Emerson L. Wark, Vandalia, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed March 31, 9172, Ser. No. 239,954
Int. Cl. F25d *23/12*
U.S. Cl. 62—262 8 Claims

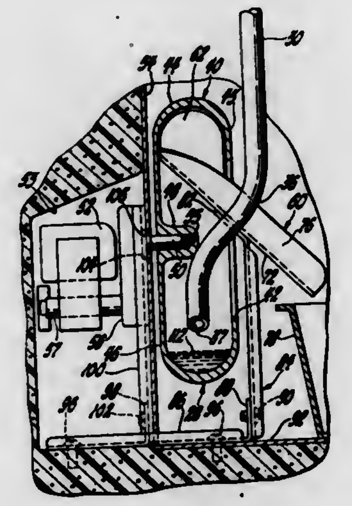


An elongated semi-cylindrical conduit damper rotatably supported about one end on the partition shround wall of a room air conditioner adjacent the evaporator centrifugal fan orifice with a fresh air opening in the wall aligned on one side of its axis of rotation. The conduit is biased to a first selected closed position in which a peripheral flange defining its elongated mouth is in continuous flush contact with the partition wall preventing passage of outside air through the wall opening. The conduit damper being rotatable to a second selected open position with its semi-spherical free end disposed in the path of the evaporator fan orifice so as to communicate a portion of its mouth therewith whereby the conduit provides an air flow passage connecting the suction side of the evaporator fan to the fresh air opening causing fresh air to be drawn through the conduit and the fan orifice for distribution to the room being conditioned.

3,727,425

ICE FLAKING MACHINE FOR DOMESTIC REFRIGERATORS

Keith K. Kesling, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 28, 1971, Ser. No. 193,367
Int. Cl. F25c *1/14*
U.S. Cl. 62—346 3 Claims

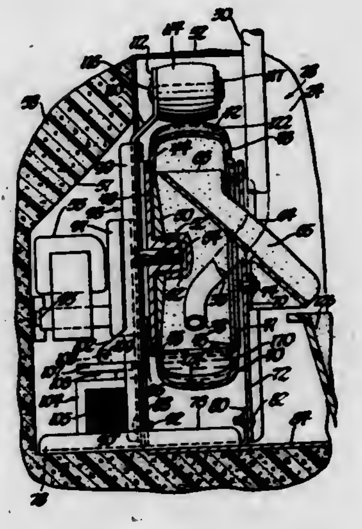


An automatic ice flaking machine for making fine ice or the like comprising a rotable drum which is rotated on a horizontal axis in the freezer compartment of a domestic refrigerator. Water is fed into the drum chamber during its rotation while freezing air is circulated over the drum to freeze the water in thin clear layers. An ice flake collecting trough extends through the drum side opening with the upper portion of the trough having an ice scraper located in close proximity to the inside surface of the drum chamber to scrape off ice from its inner periphery as the drum rotates delivering the flaked ice by gravity into a suitable ice storage container.

3,727,426

ICE MAKING DEVICE

Keith K. Kesling, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 28, 1971, Ser. No. 193,392
Int. Cl. F25c *1/10*
U.S. Cl. 62—346 6 Claims



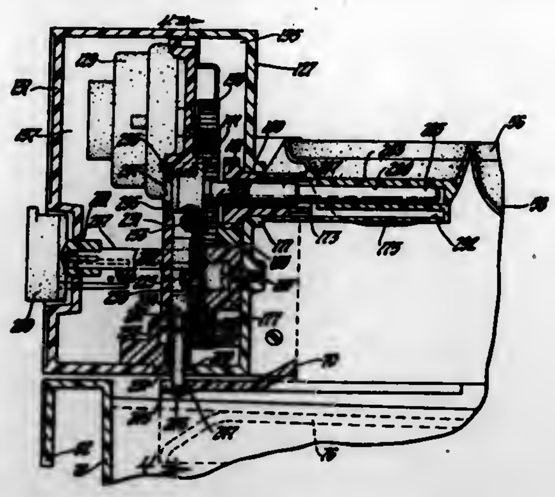
An automatic ice piece making machine for use in the freezer compartment of a domestic refrigerator having an elastomer drum which is rotated on a horizontal axis while water is supplied to the drum chamber such that clear ice will form upon the inner periphery of the rotating drum. The drum is formed with inwardly directed transverse partitions such that its outer periphery and side wall regions form ice piece cavities allowing the ice pieces to be molded by the circulation of freezing air over successive films of water in the cavities. The ice pieces are automatically ejected from the drum by subjecting it to a load on its outer peripheral surface directed radially inwardly during the rotation of the drum causing the sides to be splayed laterally outwardly whereby the ice pieces fall by gravity onto a collecting chute and thence to a storage bin.

3,727,427

AUTOMATIC FREEZER

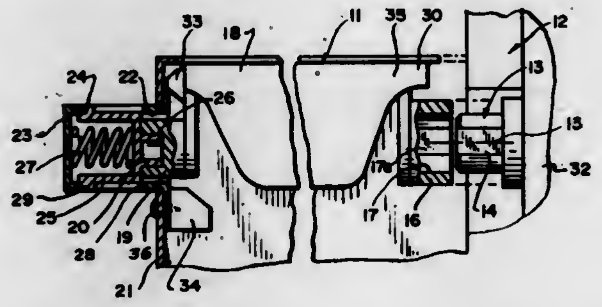
Charles W. Eyman, Jr.; Floyd O. Moody, both of Dayton, and Harold M. Snyder, Springfield, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 6,467, Jan. 28, 1970, which is a division of Ser. No. 774,786, Nov. 12, 1968, Pat. No. 3,540,227. This application Feb. 22, 1971, Ser. No. 117,650
Int. Cl. 74 *50*; F25c *1/10*
U.S. Cl. 62—353 1 Claim

In a preferred form an electric motor drives a large gear which operates a Scotch yoke type cam having an interrupted rack connected to it for turning an interrupted pinion which is operably connected to one end of a flexible mold for inverting and twisting the mold about the axis of a double throw hydraulic thermostat switch. A commutator is provided on the large gear. Cooperating with this commutator and thermostat are spring contacts controlling the filling, freezing and ejection periods. One of these commutator contacts is pivoted into and out of contact with a wedge shaped contact by the movable bin carrier under the control of a weak and stronger spring arrangement to stop the operation whenever the bin is removed or when it is filled to a measured amount. A manual adjustment moves this wedge shaped contact relative to this pivoted contact to vary the mass of frozen pellets or ice cubes which may be deposited in the bin before the operation is stopped.



3,727,428
TWIST TRAY ICE MAKER WITH REMOVABLE TRAY

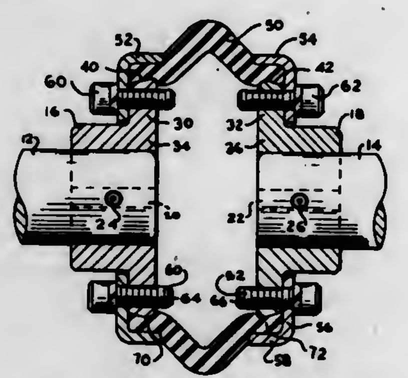
William J. Linstromberg, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Aug. 12, 1971, Ser. No. 171,188
Int. Cl. F25c ***1/10***
U.S. Cl. 62—300 **10 Claims**



An ice maker in which ice bodies are formed in a tray from which the formed ice bodies are harvested by a twisting action. Means are provided for releasably mounting the tray in the apparatus for facilitated disconnection without the use of tools such as for maintenance of the tray.

3,727,429
SHAFT COUPLING

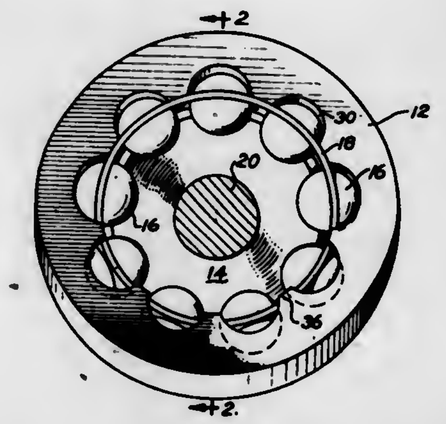
Holmes Downey, Bremen, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.
Continuation-in-part of Ser. No. 40,751, May 27, 1970, abandoned. This application June 10, 1971, Ser. No. 151,848
Int. Cl. F16d ***3/58***
U.S. Cl. 64—11 R **14 Claims**



A shaft coupling in which two spaced flanges are mounted on shafts positioned in end to end relation and a torsional element of elastomeric material and of a generally V-shaped cross sectional configuration with axially extending margins is secured to said flanges. The flanges are provided with an annular peripheral surface tapered with an increasing diameter towards the inner side of the flange, and clamping rings secured to the flanges by a plurality of screws and having an axially extending annular portion clamping the margins of the torsional element onto the tapered surfaces.

3,727,430
CONSTANT VELOCITY UNIVERSAL JOINT

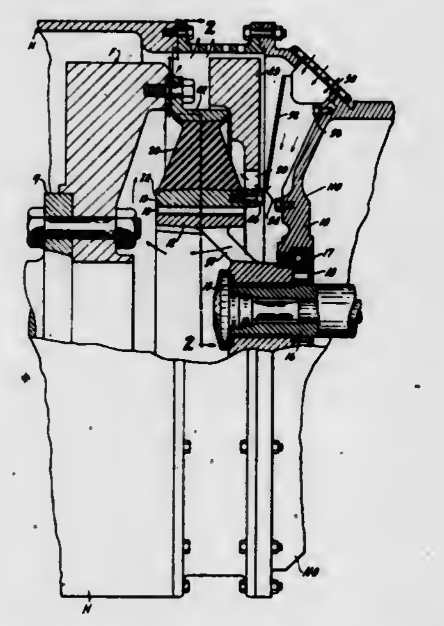
Robert T. Eddy, South Bend, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.
Filed May 24, 1971, Ser. No. 146,071
Int. Cl. F16d ***3/30***
U.S. Cl. 64—21 **9 Claims**



A constant velocity, axially adjustable, universal joint having an outer race with straight, axially parallel grooves on its inner surface, and an inner race with straight, axially parallel grooves on its outer surface, balls seated in said grooves forming driving elements between the two races, and a retainer spaced from said inner race for retaining said balls in their respective grooves. The joint is designed primarily for use in a multiple cylinder pump or motor or hydrostatic transmission in which the outer race or the supporting structure therefor forms a wobble plate for driving pistons in the cylinders.

3,727,431
FLEXIBLE TORSIONAL COUPLING

Edward C. Yokel, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.
Filed Oct. 12, 1971, Ser. No. 188,200
Int. Cl. B16d ***3/10***
U.S. Cl. 64—27 NM **16 Claims**

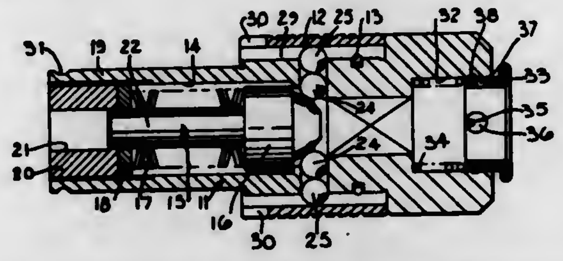


A coupling for transmitting power in a transmission or the like, and having an inner and outer member concentrically

located together and furthermore having a flexible material such as rubber bonded between and connecting the inner and outer members. The flexible material forms a torsional connecting member which can act in shear to absorb torsional fluctuations between the two members and transmit normal driving torque between the members. In addition to the flexible material connecting the two members, interengagable means are provided between the two members which can form a mechanical drive in the event that the torque between the members exceeds a predetermined amount. Normally, the mechanical connection is not engaged but comes into play only when the rubber material deflects in shear beyond a predetermined amount due to excessive torque between the members.

3,727,432
TORQUE-LIMITING CLUTCHES

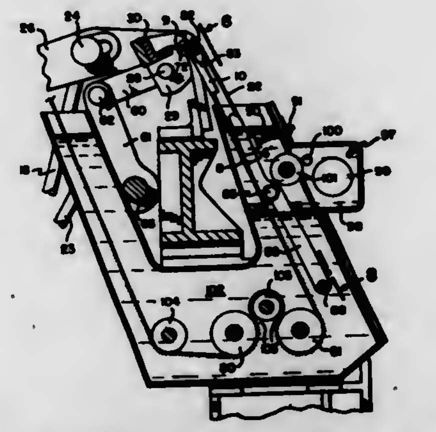
Dennis Robert Eaves, and Horst Bergemann, both of Christchurch, England, assignors to Bishop Eaves & Sons Limited, Parkstone, Poole, England
Filed Sept. 28, 1971, Ser. No. 184,410
Claims priority, application Great Britain, Sept. 30, 1970, 46,451/70
Int. Cl. F16d ***7/06***
U.S. Cl. 64—29 **7 Claims**



A torque-limiting clutch includes an inner member formed with four radial passages each containing a pair of balls. The radially outermost ball of each pair normally seats in a groove in an outer member surrounding the inner member and the radially innermost ball of each pair engages a generally conical surface of the head of a spindle contained in a bore in the inner member and acted on by a spring so as to urge the balls radially outwardly. Under torque overload conditions the balls move radially inwardly to move the spindle against the action of its spring.

3,727,433
METHOD AND APPARATUS FOR WARP KNITTING HOOK AND LOOP FASTENERS

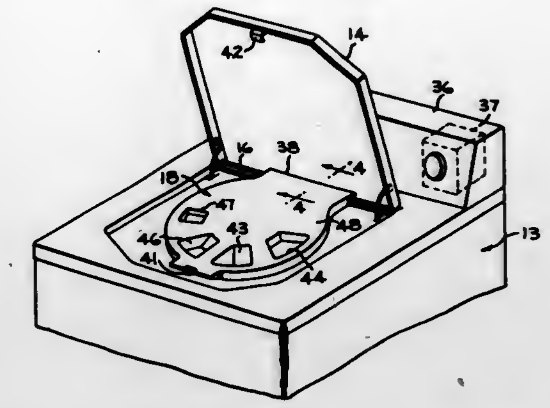
Hisashi Hamano, Soka, Japan, assignor to International Knitlok Corporation, New York, N.Y.
Filed Nov. 17, 1970, Ser. No. 90,415
Int. Cl. D04b ***23/06***
U.S. Cl. 66—84 **12 Claims**



Novel warp knitting apparatus is disclosed for producing a knitted pile fabric suitable for use in a hook and loop fastener. In conjunction therewith, means are disclosed for heat setting the pile and for cutting pile loops to form hooks.

3,727,434
ADDITIVE DISPENSING SYSTEM

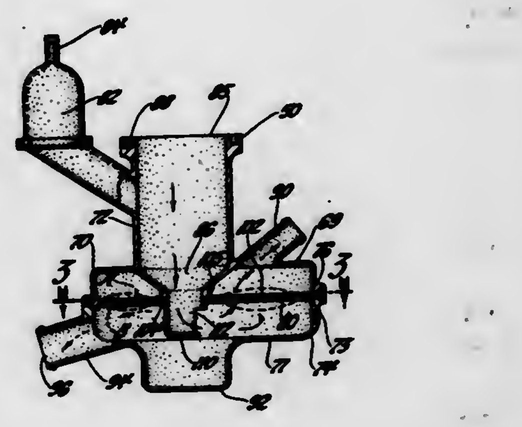
John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Aug. 10, 1971, Ser. No. 170,601
Int. Cl. D06f ***39/02***
U.S. Cl. 68—17 R **4 Claims**



A system for sequentially dispensing a plurality of treating agents into the wash tub of an automatic fabric washing machine at predetermined times during the washing cycle. The dispenser is hingedly mounted above the wash tub and so located that in its operative position a liquid supply means is in cooperative relationship with a plurality of liquid inlets in the dispenser. Additives to be dispensed are placed selectively by the housewife into appropriate compartments in the dispenser and are flushed therefrom by sequentially controlling the liquid supply means to direct liquid into preselected ones of the liquid inlets and appropriate compartments at predetermined times in the washing cycle of the automatic washing machine.

3,727,435
SELF-CLEANING LINT FILTER FOR A RECIRCULATING CLOTHES WASHER

Melvin A. Menk, Dayton, Ohio, assignor to General Motor Corporation, Detroit, Mich.
Filed Dec. 27, 1971, Ser. No. 211,973
Int. Cl. D06f ***39/10;*** **B01d** ***35/22***
U.S. Cl. 68—18 F **5 Claims**



A self-cleaning lint filter for a domestic clothes washer is connected between a water container and a pair of reversible pumps. The lint filter includes a circular filter screen with an off-center hole therein. A nozzle receiving water from the water container projects through the hole. When one pump operates, lint is entrapped on one side of the screen. When the other pump operates, the nozzle due to its off-center location effects a swirling turbulence adjacent the same side of the screen to flush the entrapped lint therefrom. The filter screen is loosely fit to flex back and forth as an aid in dislodging entrapped lint.

3,727,436

DEVICE FOR THE WET TREATMENT OF PACKED AND SIMILAR TEXTILE MATERIALS

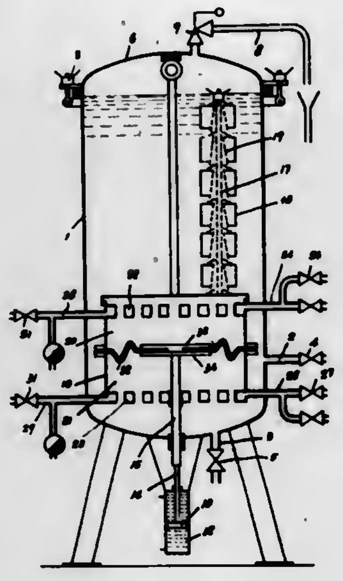
Maria Teresa Clermont Vinas, Paseo Can Feu, 68/80, Sabadell, Spain

Filed June 17, 1971, Ser. No. 153,945

Claims priority, application Switzerland, June 24, 1970, 9552/70

Int. Cl. B05c *8/02*

U.S. Cl. 68—189 **11 Claims**



Device for the wet treatment of packed and similar textile materials, comprising a hermetically locked enclosure, containing the treatment bath for the material, and the interior of which is divided into two chambers. One of these chambers communicates with the interior of the perforated cores which carry the packed material to be treated and their perforated tubular supports and the other chamber communicates with the outside of these cores. Both these chambers are separated by a volumetric alternating treatment bath impelling mechanism, this mechanism is of a type made up of a piston, a membrane pump or rotating pump. Said alternating treatment bath impelling mechanism impels, during every one of its to and fro strokes a part of the treatment bath and compels it to pass through the textile material or, respectively, from the inside of same towards the outside and from the outside towards the inside. The treatment bath volume which each time flows through the textile matter from the outside towards the inside of same is being kept enclosed in said chamber which communicates with the inside of the perforated tubular supports which support the textile material, and is at same time kept separated from the remainder of the total treatment bath volume which has not passed through the textile matter.

3,727,437

METHOD AND APPARATUS FOR IRONING LEATHER

Jiri Dokoupil, 637 Oberursel/Taunus, Germany, assignor to USM Corporation, Boston, Mass.

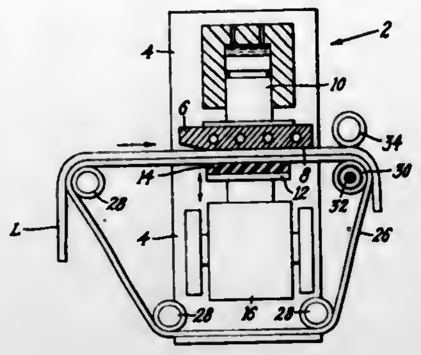
Filed June 14, 1971, Ser. No. 152,663

Claims priority, application Germany, June 15, 1970, P 20 29 405.7

Int. Cl. C14b *1/30*

U.S. Cl. 69—48 **10 Claims**

A throughfeed ironing machine and the method of ironing leather sheets therein. The ironing apparatus includes a heated ironing plate disposed on one side of a pass line extending through the machine, along which an ironed leather sheet travels. An oscillatable pressure plate is disposed opposite the ironing plate on the other side of the pass line, and an endless belt is disposed between said plates and aligned with the pass line in the plate area to transport the leather to be ironed through said machine. In the practice of the method, leather sheets are fed through the machine between the plates, being heated and cyclically pressed therebetween, and advanced during the intervals of pressure rise and falls between the plates. In the method, the pressure plate is oscillated at a frequency of from 5 to 50 cycles per second, with the ironed leather being advanced on the rise and fall thereof, thereby giving the quality of a hand ironed finish to the leather.



3,727,438

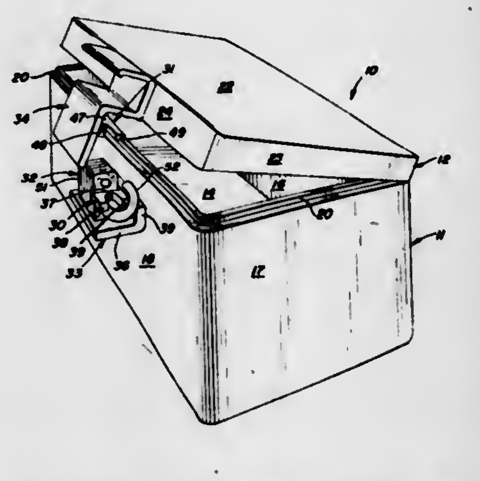
PADLOCK PROTECTION SYSTEM

Howard L. Knaack, McHenry, Ill., assignor to Knaack Manufacturing Company, Crystal Lake, Ill.

Filed June 1, 1971, Ser. No. 148,454

Int. Cl. B65d *55/14*

U.S. Cl. 70—63 **7 Claims**



A tool box adapted to be locked shut by a padlock, including a main box portion, a retractable closure, a first lock bracket on the front wall of the main box portion, a second lock bracket on the closure, said lock brackets being of similar U shapes disposed in overlying relation when the box is closed so that the base of the U shapes is adapted to abut a padlock body and the bight between the legs of the U's receives the lock shackle to prevent insertion of a prying tool when the lock is latched, a first lock cover on the main box portion extending outwardly below the lock brackets, and a second lock cover on the closure extending outwardly above the lock brackets and downwardly along the outside of the lock brackets to enclose the lock except at the ends.

3,727,439

MODULAR KEY LOCK HAVING LEVER TUMBLERS WITH BENDABLE PORTIONS

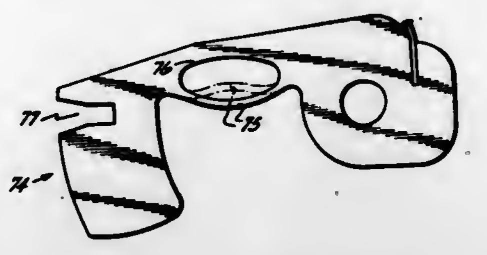
Joseph J. Parrock, Milford, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio

Filed Jan. 31, 1972, Ser. No. 222,153

Int. Cl. E05b *25/00*

U.S. Cl. 70—355 **15 Claims**

A key lock which can be produced in modular form with standardized tumblers. The tumblers are levers which have bendable or deformable portions, and are fitted to a particular cut key by inserting the key into the lock and turning it while the tumblers are held against turning in predetermined position. This displaces the bendable portions of the tumblers to new positions corresponding to the respective lift heights of the key which is used to carry out the bending.



3,727,440

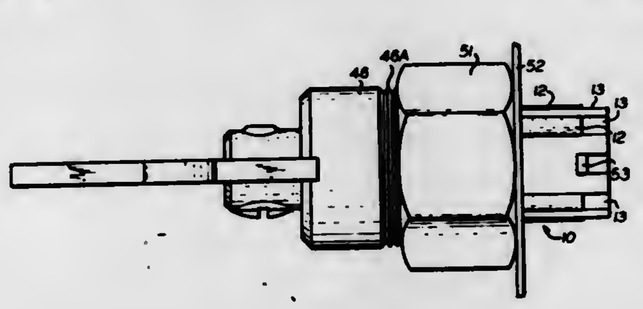
TUMBLER LOCK CODE PIN AND KEY CODING SET AND METHOD OF CODING A LOCK AND COMPLEMENTARY KEY

Henry Greenwald, Whitestone, and Christos Lambiris, Bronx, both of N.Y., assignors to Walter Kidde & Company, Inc., Clifton, N.J.

Filed June 14, 1971, Ser. No. 152,671

Int. Cl. E05b *19/18*

U.S. Cl. 70—411 **6 Claims**



This disclosure is directed to a method of coding a tumbler lock and key adapted therefor, and to a tumbler lock code pin the key coding set. The coding set comprises a support for holding a tumbler lock to permit ready access to the code pins. Identifying indicia are located on the support to identify the respective positions of each lock code pin. A key adapted to fit the keyway of the lock is formed with a series of complementary flutes, each being adapted to receive a similarly constructed key blade. An identifying member is removably positioned on the key to identify the complementary, corresponding key flutes adapted to receive the respective code pins of the lock. A gage is provided to effect the adjustment of the "set-back" distance of the respective key blades within their respective key flutes. The gage includes a series of selective gaging edges to effect displacement or adjustment of the respective key blades in the "set-back" position a distance equal to the displacement of the complementary code pin necessary to effect the operation of the lock. A locking collar located in the key is then tightened to maintain the key blades in their respective "set" or coded position

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3,727,441

THICKNESS CONTROL APPARATUS FOR ROLLING MILL

Yasuo Morooka; Masaya Tanuma, and Mikihiko Onari, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

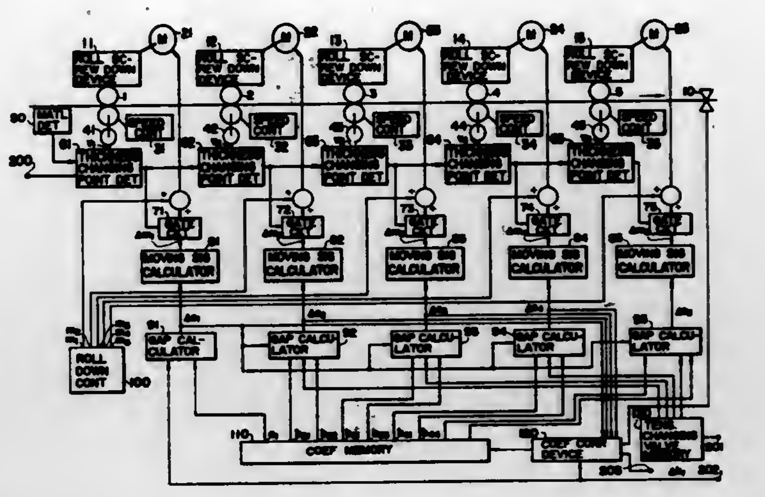
Filed March 16, 1971, Ser. No. 124,846

Claims priority, application Japan, March 16, 1970, 45/21512

Int. Cl. B21b *37/14*

U.S. Cl. 72—6 **19 Claims**

A thickness control apparatus for a rolling mill in which the output thickness of a moving web or strip is changed by changing the set value of the thickness of the rolling material from a specific point, and said thickness control apparatus is characterized in that the thickness of the rolling material is changed at the first stand, and the tension of the web or strip is controlled in the rest of the stands.



3,727,442

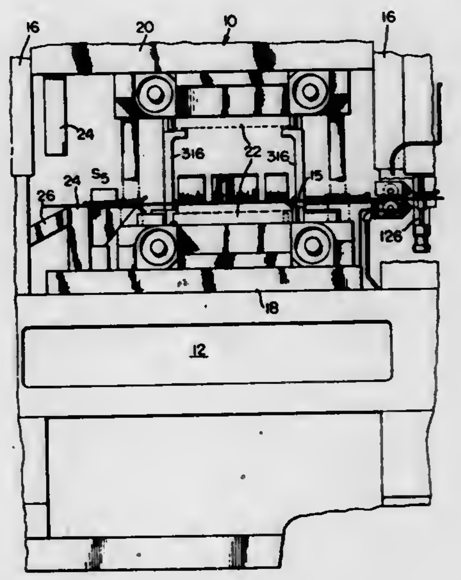
AUTOMATIC STAMPING PRESS ARRANGEMENT AND METHOD OF OPERATION

Merrill L. Ridgway, Minster; Robert M. Carabbio; Robert D. Jordan, both of St. Marys; Donald N. Seyfried, New Bremen, and Philip V. Monnin, Minster, all of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Sept. 21, 1970, Ser. No. 73,702

Int. Cl. B21j *9/10*

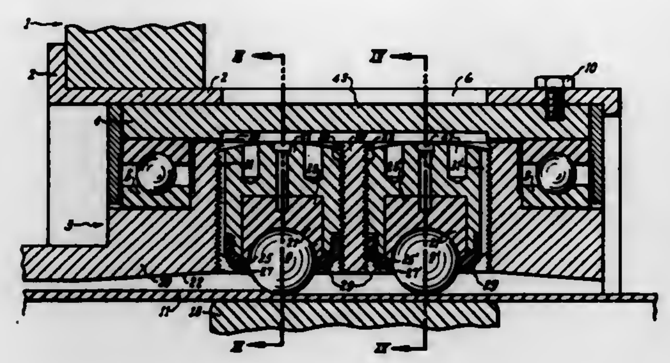
U.S. Cl. 72—7 **38 Claims**



The specification discloses an automated stamping press arrangement in which die sets are carried in a first storage unit from which unit the die sets can be selectively inserted into and removed from the stamping press. A second storage and handling unit carrying supplies of strip stock is provided adjacent the press and selectively presents a coil of strip stock to serve as the raw material from which stamped parts are manufactured. The feeding of the strip stock is controlled in conformity with the amount required on each stroke of the press for the respective die set in the press, and the number of press cycles is controlled to provide for a desired number of workpieces from a respective die set. A control system is provided utilizing, for example, a punched card which programs the operation of the press with respect to die selection, stock selection, press adjustments and feeding of the stock.

3,727,443
BALL SWAGE FOR REDUCING TUBES

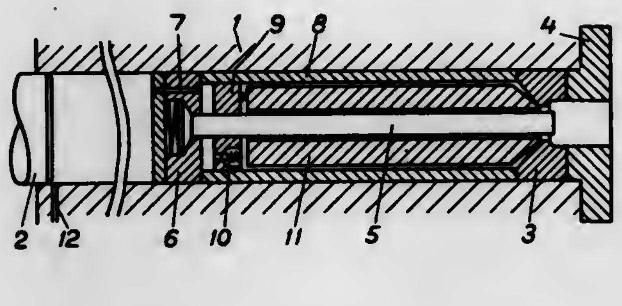
Frank B. Quinlan, 1947 Hetrik Avenue, Richland, Wash.
Filed April 23, 1971, Ser. No. 136,791
Int. Cl. B21c *3/08*
U.S. Cl. 72—35 **9 Claims**



A device for reducing tubes. Two annular sets of balls are axially spaced in a revolving drawing head and successively engage a tube as it is drawn through the head. The number of balls in one ring is different from that in the other, thereby smoothing out any helical grooves and ridges formed by the first set. The balls are individually mounted in sockets in threaded slugs carrying micrometer markings.

3,727,444
PRESS FOR HYDROSTATIC EXTRUSION OF TUBING

Jan Nilsson, Robertsford, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed March 1, 1972, Ser. No. 230,726
Claims priority, application Sweden, March 15, 1971, 3280/71
Int. Cl. B21c *23/08*
U.S. Cl. 72—60 **2 Claims**

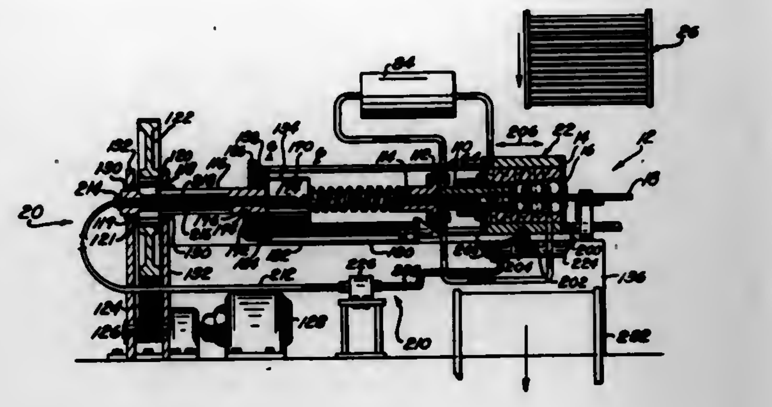


In the hydrostatic extrusion of tubing, a hollow billet is pressed forward into the conical die opening of the press by a following piston until the material of the billet is pressed inwardly against the mandrel and is shaped to the conical surface of the die, after which pressure fluid is admitted around the billet for hydrostatic extrusion.

3,727,445
METHOD AND APPATATUS FOR FORMING A BLANK

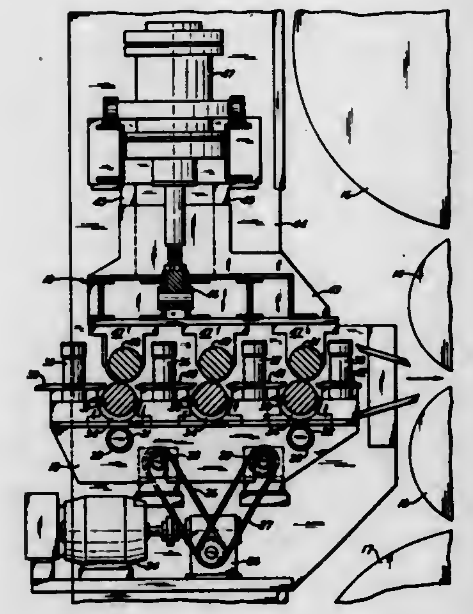
Martin Robert Baginski, Ashtabula, Ohio, assignor to Ashtabula Bow Socket Company, Ashtabula, Ohio
Filed Aug. 24, 1970, Ser. No. 66,229
Int. Cl. B21c *37/18*
U.S. Cl. 72—75 **2 Claims**

In a method and apparatus for forming a blank into an article, the blank is supported by suitable means. A blank deforming means is rotatable about the longitudinal axis of the blank and is movable axially relative thereto. A contour means cooperates with the deforming means as the deforming means moves along the longitudinal axis of the blank and controls the deforming means. The contour means comprises a cam surface along which the deforming means moves and which controls the position of the deforming means relative to the blank and thus controls the shape of the article formed by the deforming means.



3,727,446
ENTRY GUIDE FOR ROLLING MILLS

Charles Storer Shumaker, Glenshaw, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed Nov. 12, 1970, Ser. No. 88,789
Claims priority, application Great Britain, Jan. 12, 1970, 1,435/70
Int. Cl. B21b *39/16*
U.S. Cl. 72—161 **3 Claims**



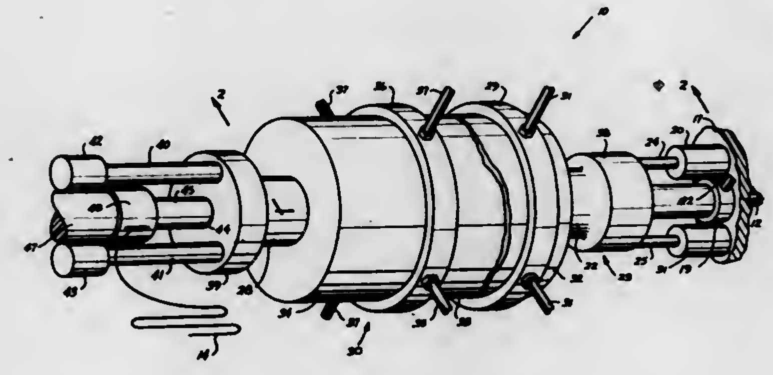
The present disclosure relates to an entry guide for a rolling mill and, more particularly, to such guides used in connection with a tandem cold strip reduction mill. The disclosed guide comprises a pair of spaced-apart lower frames carried by parallel guide rods wherein the frames are movable transversely along the rods towards and away from the edges of the strip. The frame rotatably carries a lower set of spaced-apart transversely extending horizontal parallel rollers which are so mounted that the frames are allowed to move relative to the horizontal rollers. The frames also carry vertically arranged opposed strip side guiding rolls which are interspaced between the horizontal rollers. These rolls are mounted so as to move with the frames. An upper frame is provided for rotatably supporting an upper set of spaced-apart horizontal rollers, one for each roller of the lower set, which are adapted to be brought into a working relationship with the lower horizontal rollers in a manner that one roller of each cooperative pair assumes an offset relationship with the other roller of the same cooperative pair.

It is customary in operating tandem cold rolling mills for ferrous and non-ferrous metals to provide various forms of entry guides or stickers that assist in entering the leading end of the strip into the bite of the mill. The entry guides also guide the strip during feeding thereof in addition to serving to flatten the strip as it enters into the mill. The guide for the first stand of a tandem cold mill, since it receives the strip as immediately unwound from a coil, is usually maintained in contact with the strip during the entire length of the coil due to the non-flatness of the strip; whereas the guides for the other succeeding stands are usually opened up after the leading end is fed into the stand.

Accordingly, it has been the practice to provide a strip entry guide and particularly for the first stand of a tandem cold strip mill comprising spaced-apart sets of upper and lower horizontal, non-driven rollers wherein the rollers of each set are arranged in the same vertical plane. Between the horizontal set there is usually provided vertical non-driven guide rollers for restraining and guiding the opposite edges of the strip passing to the mill. The horizontal rollers are brought into engagement with the strip, usually after the leading end had entered the mill, for the purpose of flattening the strip by a pinching action. It was found, however, that not only was this arrangement ineffective to properly flatten the strip, but that the pinching action may create a marking on the strip which was highly objectionable. As noted previously, it is customary to maintain the rollers in engagement with the strip during the uncoiling of the entire coil so that the entire length of the strip may be marked.

3,727,447
APPARATUS FOR CLAMPING A WORKPIECE

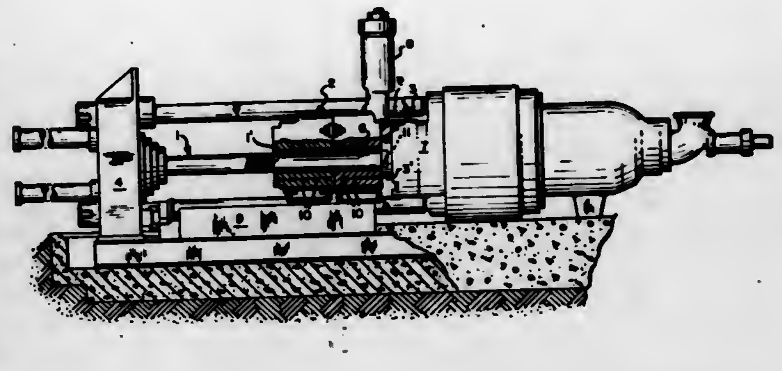
Francis Joseph Fuchs, Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 862,673, Oct. 1, 1969, Pat. No. 3,696,652. This application May 3, 1971, Ser. No. 139,974
Int. Cl. B21d *23/08*
U.S. Cl. 72—270 **4 Claims**



An apparatus wherein a workpiece of indefinite length, e.g., a metal rod, is continuously deformed by a deforming agency to produce a product of indefinite length, e.g., wire. The continuity of the deformation is achieved by intermittently advancing the workpiece into the deforming agency, e.g., a controlled flow of pressurized fluid or a conventional extrusion die, intermittently advancing the deforming agency over the workpiece, and controlling the intermittent advances of the workpiece and the deforming agency to maintain a desired relative velocity between the workpiece and the deforming agency. Also disclosed is a novel workpiece clamping apparatus wherein a segmented cylinder is used as a clamping device for gripping a workpiece.

3,727,448
INDIRECT EXTRUSION

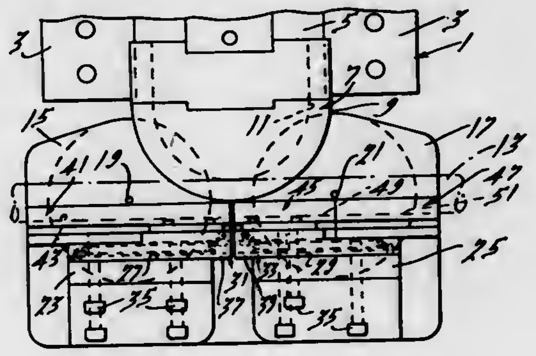
Alfred W. Mann, Rockwall, Tex., assignor to Texas Aluminum Company, Inc., Rockwall, Tex.
Filed Jan. 20, 1971, Ser. No. 108,132
Int. Cl. B21c *23/00*
U.S. Cl. 72—255 **15 Claims**



An improved gag member for an indirect extrusion apparatus wherein a billet material is held within an open ended container with a die at one end of the container and the gag member at the other end; the gag member being used to move the container over the die and the billet material through the die. The improved gag member has a front face engaging the end of the container; and a cavity is formed in the front face in alignment with the bore of the container. In an extrusion operation, billet material is held in the cavity of the gag member and the entire amount of material held in the container is extruded through the die member.

3,727,449
SLIDING WING DIES

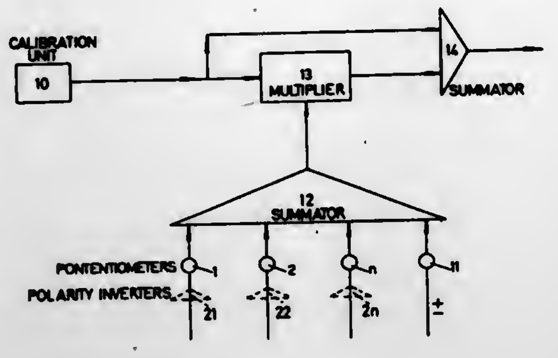
James H. Johnston, Jackson, Mich., assignor to Tenneco Inc., Racine, Wis.
Filed Nov. 18, 1970, Ser. No. 90,497
Int. Cl. B21d *7/00*
U.S. Cl. 72—389 **4 Claims**



A vertical press tube bender has wing dies which are mounted on wing die supports for relative movement with respect to the supports so that the wing die position is controlled by movement of the tube during bending.

3,727,450
GAS COMPOSITION ANALYSIS

John Luckers, Liege, Belgium, assignor to Centre National de Recherches Metallurgiques, Brussels, Belgium
Filed Jan. 28, 1971, Ser. No. 110,633
Claims priority, application Belgium, Jan. 28, 1970, 745109
Int. Cl. G01n *21/00*; **G01d** *3/02*
U.S. Cl. 73—23 **12 Claims**



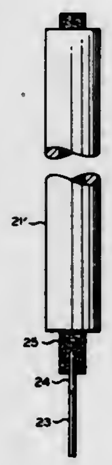
Gas analysis apparatus comprising gas analyzers and calibration units, each having a variable characteristic, is adjusted by two steps. Firstly, the characteristics of the calibration units are modified to correct the analyzer output signals so as to compensate for drift in the analyzers. The modification of each unit is by independent zero and gain corrections. Secondly, the output signal of each unit is corrected according to the relation:

$$C_x - C'_x = f(C_1, C_2, \ldots C_n, C_x),$$

where C_x is the true concentration of the gas detected by the x^{th} analyzer, C'_x is the concentration represented by the calibration unit output, $C_1 \ldots : C_n$ are the true concentrations of the other gases, and f is a mathematical function.

3,727,451
METHODS OF MAKING AND USING A CHROMATOGRAPHIC COLUMN COMPRISING A FLEXIBLE YARN AS THE SOLID SUPPORT

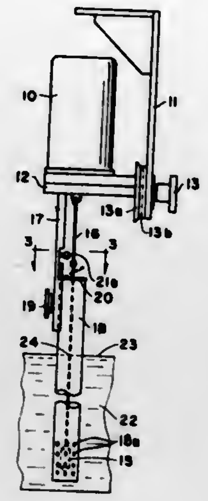
Arthur B. Broerman, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Feb. 12, 1968, Ser. No. 704,702
Int. Cl. G01n *31/08*; **B01d** *15/08*
U.S. Cl. 73—23.1 **2 Claims**



A chromatographic column is manufactured by passing a guide member such as a needle or wire through a tubing of small diameter. The end of the guide member is secured to a continuous yarn, and the guide member is withdrawn to pull the yarn into the tubing. The yarm can be coated with a partitioning liquid. Various types of yarns, synthetic or natural, can be employed.

3,727,452
VAPOR GUARD VISCOMETER

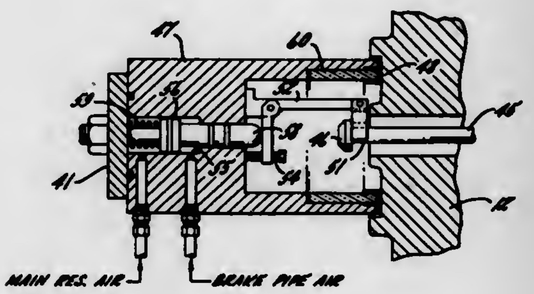
Nazar P. Kenyon, Birmingham, Mich., assignor to Parke, Davis & Company, Detroit, Mich.
Filed Aug. 5, 1971, Ser. No. 169,309
Int. Cl. G01n *11/14*
U.S. Cl. 73—59 **6 Claims**



Viscometer means are provided for monitoring, over extended periods, the viscosity of pharmaceutical capsule dipping solutions and the like, particularly solutions being mixed under exposure to air. The apparatus includes a rotational viscometer and viscometer spindle having guard means affording non-turbulent exposure to the moving liquid and protection for critical shear surfaees.

3,727,453
APPARATUS FOR TESTING AIR BRAKE CONTROL VALVES

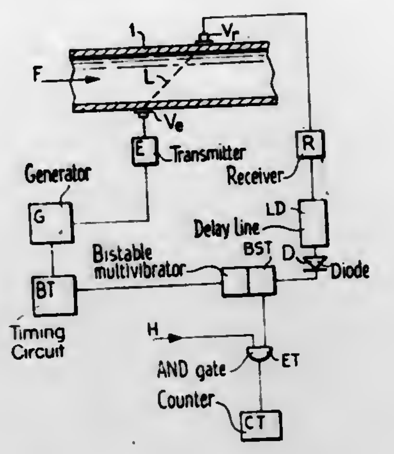
James G. Rees, Hammond, Ind., assignor to Chicago Pneumatic Tool Company, New York, N.Y.
Continuation-in-part of Ser. No. 821,801, May 5, 1969, Pat. No. 3,596,500. This application Aug. 3, 1971, Ser. No. 168,547
Int. Cl. G01m *3/26*
U.S. Cl. 73—39 **4 Claims**



Apparatus is provided for testing air brake valve portions. The apparatus features a fluid operated brake clamp to confine the air brake control valve portion by applying sealing pressure to the air brake portion from a pivotable C-clamp which is free to move longitudinally with respect to the air brake portion. In addition, the apparatus includes a device for confining and locating the air brake control via a controlable piston stop contained within a sealed chamber. Several air control valves in the test apparatus are activated automatically, and substantially the entire test program is conducted on automatic control.

3,727,454
ULTRASONIC SYSTEMS FOR CARRYING OUT FLOW MEASUREMENTS IN FLUIDS

Albert Courty, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Feb. 19, 1971, Ser. No. 116,880
Claims priority, application France, Feb. 27, 1970, 7007189
Int. Cl. G01f *1/00*; **G01p** *5/00*
U.S. Cl. 73—194 A **5 Claims**



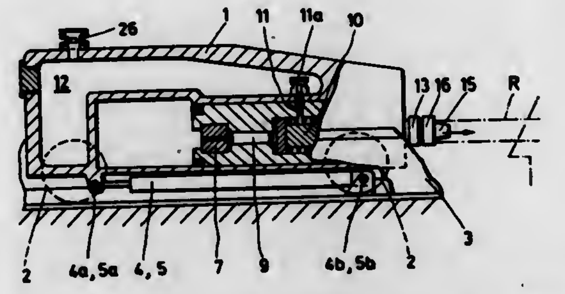
An ultrasonic system for carrying out flowrate measurement in fluids comprises a generator transmitting a frequency modulated wave signal. This signal is converted into an ultrasonic signal by a first transducer. A second transducer, after propagation across the fluid receives this signal, and converts this into a delayed electric wave train.

This wave train delivered to a dispersive delay line is transformed therein into a train of very short duration.

This latter signal after detection, allows accurate determination of the propagation time across the fluid.

3,727,455
IMPULSE TRANSMITTER FOR DYNAMIC DEVICES FOR TESTING PIECES OF ORDNANCE

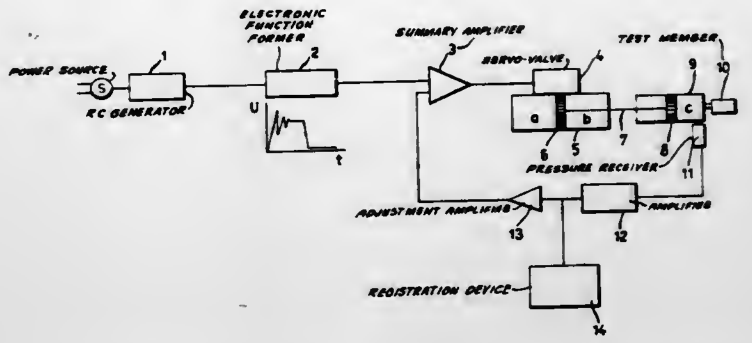
Dieter Boder, Dusseldorf-Oberkassel, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany
Filed Nov. 3, 1971, Ser. No. 195,302
Claims priority, application Germany, Dec. 5, 1970, P 20 59 956.8
Int. Cl. G01m *7/00*; **F41f** *25/00*
U.S. Cl. 73—167 **22 Claims**



An impulse transmitter for dynamic devices for testing pieces of ordnance to simulate the recoil of the piece without actual firing. The impulse transmitter includes a housing having a cylinder receiving a propellent charge and the rear portion of a piston, the forward portion of the piston extending from the housing for abutment against the barrel of the piece of ordnance. The cylinder is provided with apertures which open into a chamber formed in the housing which has a volume greater than the volume of the cylinder through which the piston moves during the working stroke. The chamber is provided with a venting valve for venting the chamber to the atmosphere such that when the propellent charge is ignited, the gases formed thereby cause forward movement of the piston against the barrel with the firing report being intensively damped such that the gases flow from the cylinder into the atmosphere with only a hissing sound.

3,727,456
APPARATUS FOR THE STRENGTH-AND LIFE-TEST OF HYDRAULIC STRUCTURAL ELEMENTS

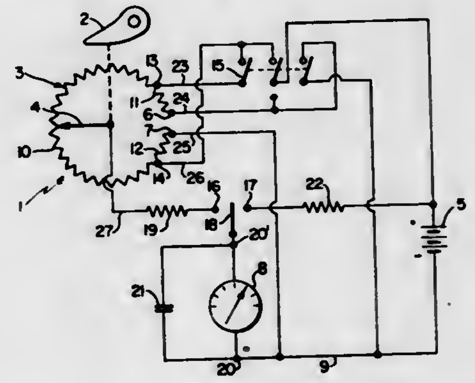
Helmut Gruneberg, Bremen, Germany, assignor to Aviatest GmbH, Dusseldorf, Germany
Filed Feb. 2, 1971, Ser. No. 111,878
Claims priority, application Germany, Feb. 11, 1970, P 20 06 092.8
Int. Cl. G01m *19/00*
U.S. Cl. 73—168 **4 Claims**



An apparatus for the strength- and life-test of hydraulic structural elements which comprises a pulse generator which produces periodically a pressure-time curve. An electro-hydraulic servo-valve is provided. A pressure device follows the servo-valve. A nominal-actual-value-comparison circuit is arranged and the pulse generator operates the pressure device, whereby the latter is adapted to transmit the produced pressure to a testing member, and to readjust the same simultaneously by means of the nominal-actual-value-comparison circuit automatically. A function generator is provided which comprises a rectangle wave signal generator producing a low electric voltage with low frequency and a function transformer following the generator. The function transformer produces an impulse corresponding with a dampening sinus function by feeding an inpulse from the rectangle wave signal generator. The impulse produced by the function transformer is fed as nominal value to the servo-valve. A pressure device follows the servo-valve and affects a member to be tested, and a pressure receiver receives equal pressure from the pressure device, whereby the pressure measured on the pressure receiver is transformed into an electric impulse and is returned as actual value into the servo-valve.

3,727,457
APPARENT WIND INDICATOR

Nicholas Gregory, 40 Haggetts Pond Road, Andover, Mass.
Filed Jan. 21, 1969, Ser. No. 792,246
Int. Cl. G01w *1/00*
U.S. Cl. 73—188 **11 Claims**



An apparent wind indicator for indicating the wind direction relative to a moving sailboat. The indicator shows relative wind direction for both downwind and tacking maneuvers of the boat. The readout unit of the indicator provides one-for-one correspondence between incremental changes of direction for downwind travel and a much greater incremental change in readout for a given change in wind direction during tacking. The indicator employs a circular-track potentiometer disposed at the top of the mast of the boat and the readout unit is at deck level. In one embodiment the change in incremental readout as a function of wind direction changes for tacking is effected by shorting out a major portion of the track leaving two minor portions which are tied together to allow both starboard and port tacks to be read over a large part of the readout scale (i.e., the order of 330°). In another embodiment a plurality of differential amplifiers is used to effect the same result. The apparatus is adapted to be combined with other boat devices such as, for example, velocity recording apparatus, to give combined indications.

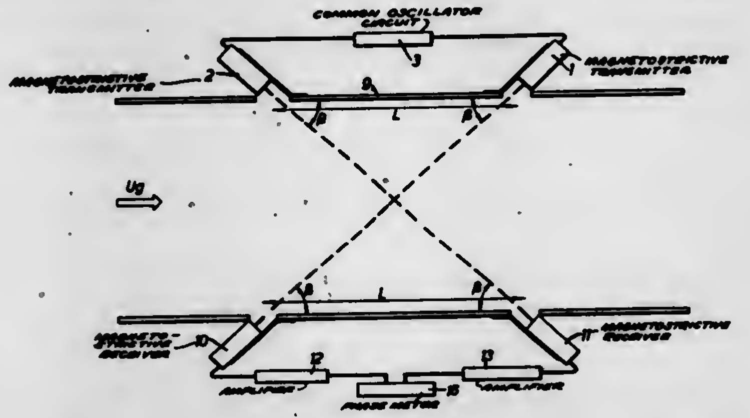
3,727,458
MEASUREMENT OF RATES OF FLOW OF GASES

Michael John Parkinson, Leatherhead, England, assignor to The British Coal Utilisation Research Association Limited, Leatherhead, Surrey, England

Filed Dec. 12, 1969, Ser. No. 884,487

Int. Cl. G01f *1/00*; G01p *5/00*

U.S. Cl. 73—194 A **29 Claims**


COMMON OSCILLATOR CIRCUIT
MAGNETOSTRICTIVE TRANSMITTER
MAGNETOSTRICTIVE TRANSMITTER
MAGNETOSTRICTIVE RECEIVER
MAGNETOSTRICTIVE RECEIVER
AMPLIFIER
AMPLIFIER
PHASE METER
L
β
1
2
3
9
10
11
12
13
15

A method and apparatus are described which enable the rate of flow of gas in a tube to be measured accurately. The invention uses two sources of acoustic signals to propagate upstream and downstream respectively across the gas flow. The signals are picked up by receivers and the phase difference measured to give an indication of velocity of the gas. A correction factor is added by measuring a third signal propagated perpendicular to the gas flow over varying distances across the tube. The correction factor takes account of changes in the gas composition affecting the molecular weight of the gas.

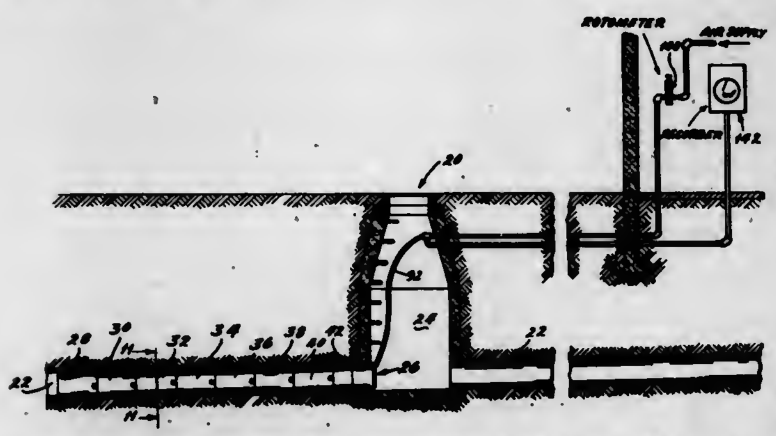
3,727,459
MEANS FOR ACCURATELY MEASURING AND MONITORING LIQUID FLOWS

Carl F. Buettner, 9501 Pine Spray Court, Crestwood, Mo.

Filed Jan. 12, 1972, Ser. No. 217,376

Int. Cl. G01f *1/00*

U.S. Cl. 73—205 R **12 Claims**



Apparatus for measuring and monitoring liquid flows including particularly waste water flows by a novel multi-sectioned flow tube which is constructed and adapted to be installed in existing conduits or channels such as in a sewer main or the like, which apparatus provides means for obtaining continuous data from which the quantity of flow can be accurately and inexpensively determined for some purpose.

3,727,460
AUTOMATIC DEVICE FOR MEASURING THE TEMPERATURE OF A MEDIUM FLOWING FROM A CONTAINER

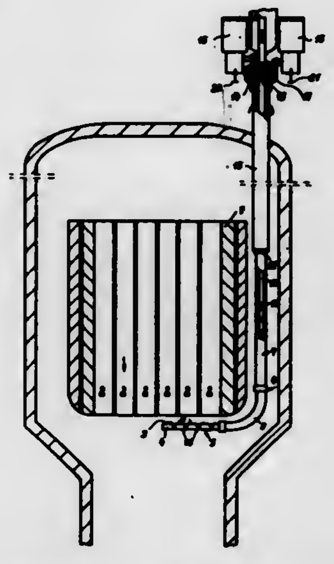
Willi Francioni, Lauffohr, Switzerland, assignor to Gesellschaft Zur Forderung der Forschung an der Eidg Techn. Hochschule, Zurich, Switzerland

Filed May 15, 1970, Ser. No. 37,804

Claims priority, application Switzerland, May 20, 1969, 7651/69

Int. Cl. G01k *1/14*; G21c *17/00*

U.S. Cl. 73—343 R **10 Claims**



An automatic temperature measuring device for measuring the temperature of a medium which flows out from a plurality of separate inner chambers through the end thereof, which inner chambers extend in a container axially parallel to its longitudinal axis. A temperature feeler is movable outside the container in a plane perpendicular to the container axis and can be positioned in front of each end opening of each inner chamber. The temperature feeler is arranged on a link chain which can be bent in only one direction from the extended position, the members of which link chain due to gravity support one another to form a straight arm positioned in the mentioned plane of movement. A guide extends laterally of the container and axially parallel to same and is bent to point into the plane of movement. The guide is rotatable about its axis and the chain can be driven in and out of the guide whereby the temperature feeler is movable in the plane in any circular arc or radius.

3,727,461
DISPOSABLE PLASTIC THERMOMETER

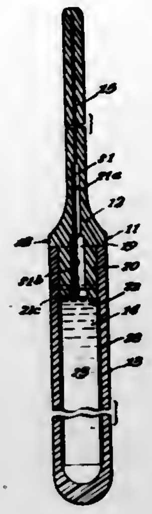
Josef F. Klingler, Wilmette, Ill., assignor to Thermex, Inc., Chicago, Ill.

Continuation of Ser. No. 872,855, Oct. 31, 1969, abandoned. This application Dec. 2, 1971, Ser. No. 204,335

Int. Cl. G01k *5/08*, *1/16*

U.S. Cl. 73—371 **23 Claims**

A low cost clinical thermometer formed primarily of molded plastic permitting one-time use thereof. The thermometer includes a tubular capillary portion and a bulb portion sealingly secured to the capillary portion. A metal sleeve is provided within the bulb portion for maintaining dimensional stability thereof and for maintaining the temperature of the liquid during readout of the thermometer. The capillary portion is defined by a capillary bore having an improved stepped end opening to the reservoir chamber of the bulb portion.



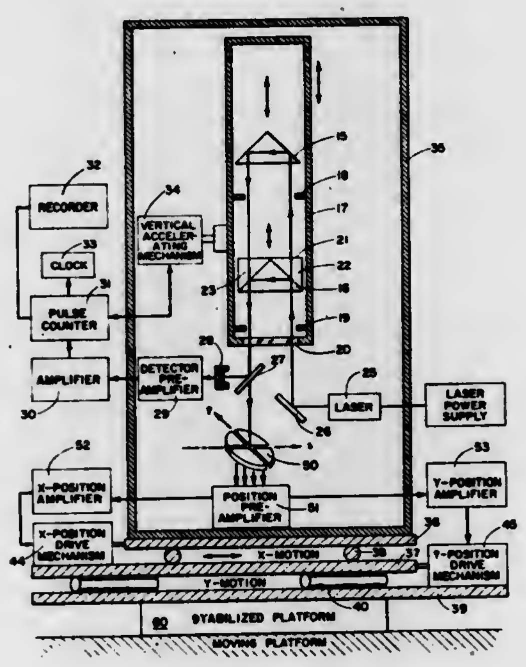
3,727,462
MOTION STABILIZED GRAVITY GRADIOMETER

Richard S. Stone, Lexington; Donald L. Sullivan, Concord, and Peter C. Von Thuna, Lexington, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Aug. 7, 1970, Ser. No. 62,110

Int. Cl. G01v *7/14*

U.S. Cl. 73—382 **9 Claims**



Method and apparatus for measuring gravity gradients directly. Two retroreflectors are caused to experience free flight, and the radiation reflected by these retroreflectors during free flight is directed to a radiation receiver which senses and measures the temporal variations of intensity of the interfering reflected radiation beams. The time rate of change of the frequency of the output signal of the receiver is directly related to the vertical gradient of gravity. The instrument of this invention has means to determine, and if desired correct for, deviations of the optical axis of the instrument from the local vertical, rotational motion of the instrument which will cause undesirable Coriolis accelerations and means to compensate for undesirable horizontal motion. This gravity gradiometer is particularly suitable for use aboard moving platforms such as ships, planes and helicopters.

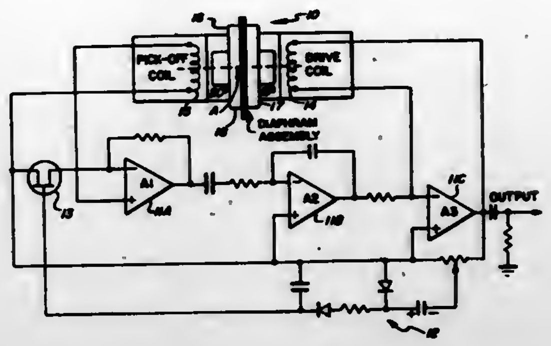
3,727,463
SHORTED TURN AXIAL DRIVER-SENSOR

Julius Intraub, Plainview, N.Y., assignor to Kollsman Instrument Corporation, Syosset, N.Y.

Filed March 18, 1971, Ser. No. 125,577

Int. Cl. G01l *9/10*, *7/08*

U.S. Cl. 73—398 R **12 Claims**



A pressure measuring system utilizes an aneroid capsule as the frequency determining mechanical feedback element of an electrical oscillator, the capsule having closely spaced diaphragm walls, each carrying a separate electromagnetic element cooperating with a separate magnetic yoke assembly. Each electromagnetic element is a copper sleeve defining a shorted turn at its free end that is axially movable in an annular gap defined by the magnetic yoke. Each yoke assembly includes a soft iron core section projecting through a cylindrical pole face to define a radial flux field in the annular gap for coupling with the shorted turn.

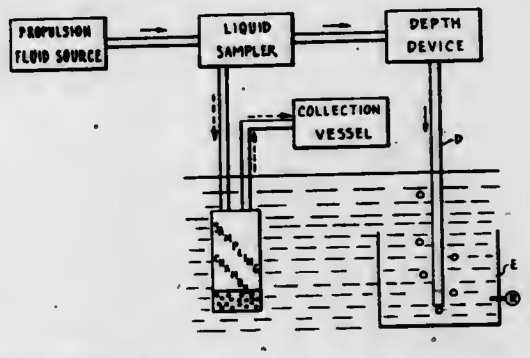
3,727,464
LIQUID SAMPLING

Michael D. Rutkowski, Phoenixville, and Robert K. Stanley, Media, both of Pa., assignors to Pro-Tech, Inc., Malvern, Pa.

Filed April 14, 1972, Ser. No. 244,105

Int. Cl. G01n *1/14*

U.S. Cl. 73—421 B **17 Claims**



Repetitive sampling of liquid from a body thereof is controlled in frequency, dependent upon the depth of the liquid being sampled, so as to accord with the volume of the body thereof. Such depth-proportioning is accomplished, in a system using pressurized gas as a propulsion fluid and determining sampling frequency by gradual release thereof from a source to accumulate to a switching pressure at a given location, through bleeding off part of the accumulating gas against the back pressure of the depth of liquid. Principal uses are in stream monitoring for pollution control, in sewage treatment facilities, and in industrial waste reduction programs.

3,727,465
ACCELEROMETER

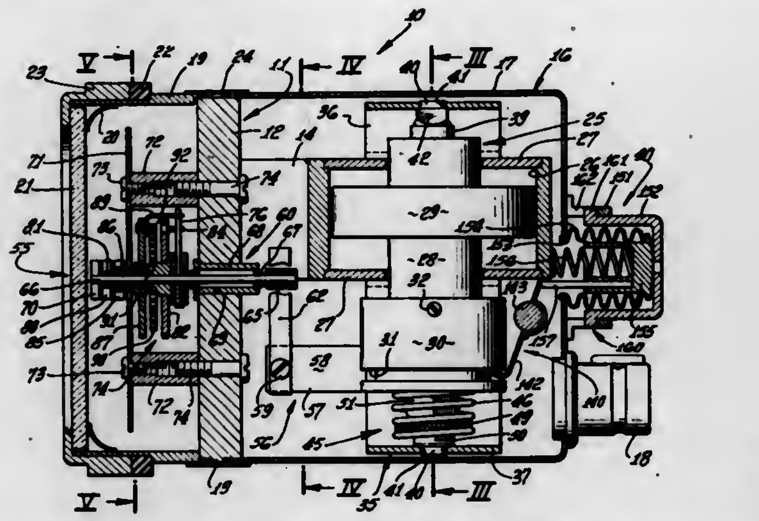
Ezra Dale Hartley, 2700 Jalmia Drive, Los Angeles, Calif.

Filed Aug. 6, 1970, Ser. No. 61,747

Int. Cl. G01p *15/04*

U.S. Cl. 73—492 **14 Claims**

An accelerometer having an axially movable inertial body restrained by a coaxial coil spring rotated onto the external thread of an externally and internally threaded rotatable collar on a threaded post protruding from a frame with rotation of the coaxial and/or the spring selectively changing the neutral position of the body and/or the effective length of the spring for calibration. A flat flexure member connects the body to the rack of a pointer operating drive train to reflect the displacement of the body independently of limited rotation of the body. Oppositely spring biased ratched wheels are connected to a pair of maximum memory pointers rotatable by the operating pointer. Flexible reed pawls mounted on a forwardly biased slidable block with a V-notch are positioned for engagement with the ratchet wheels to maintain the memory pointers at their positions of maximum rotation. The pawl block is slidable rearwardly to free the ratchet wheels, and reset the memory pointers, by a push-button operated rod extending through an opening in an hermetically sealed container surrounding the frame, with sealing maintained by a flexible bellows which pivots with the rod. The body is locked for shipment by a hook that is pivoted to the frame and spring biased into the body with a push-button being provided through the container and sealed by a bellows, for pivoting and holding the hook against the biasing force and away from the body.



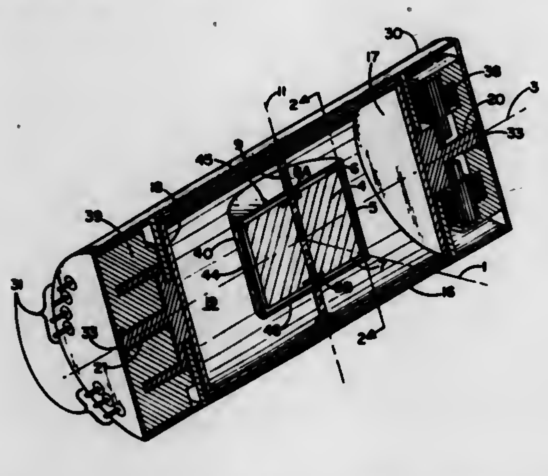
3,727,466
GYRO NOISE REDUCTION

Gerald M. Kraus, Marine on Saint Croix, and John G. Rupert, St. Paul, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed July 23, 1970, Ser. No. 57,558

Int. Cl. G01c *19/04*

U.S. Cl. 74—5 R **6 Claims**



A method and apparatus for reducing output noise from a gyro having a spinning inertial element surrounded by gas. The mass of gas spinning with the rotor is minimized by shrouding the rotor. Particular shrouding reduces the Reynolds number of the gas proximate the rotor thereby producing a steady laminar gas flow within the gyro gimbal; the elimination of unsteady turbulent flow within the gimbal is accompanied by considerable noise reduction.

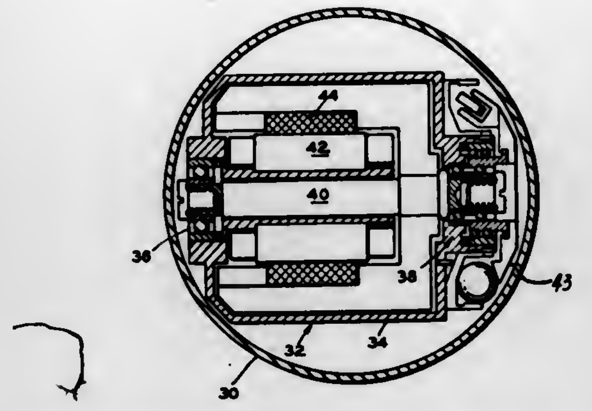
3,727,467
SPEED REDUCING BEARING ARRANGEMENT FOR A MECHANICALLY ERECTED VERTICAL GYRO

Charles E. Hurlburt, River Edge, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed June 10, 1971, Ser. No. 151,655

Int. Cl. G01c *19/30*

U.S. Cl. 74—5.41 **3 Claims**



A speed reducing bearing arrangement of the type including a dual bearing having a common race and separate complementing races and balls so selected that the contact angle of one complement of inner and outer race is different than the contact angle of the other complement of inner and outer race is used for coupling an erection mechanism for a mechanically erected vertical gyro to the gyro rotor for rotating the erection mechanism in the same direction as the rotor but at a greatly reduced speed.

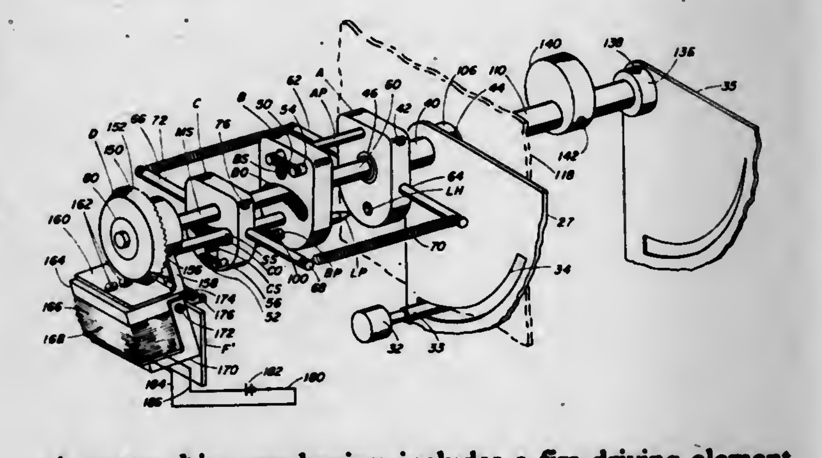
3,727,468
ROTARY MOTION TRANSMITTING DEVICES

Robert O. Ganser, Norwalk, and Igor E. Dolgen, Monroe, both of Conn., assignors to The-Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 10, 1971, Ser. No. 114,202

Int. Cl. F16h *21/02*

U.S. Cl. 74—63 **7 Claims**



A rotary drive mechanism includes a firs driving element rotatable about a first main axis, carrying a driving pin which connects it to a second intermediary element, which is usually constrained to rotate about a second axis, more remote than the first axis from the driving pin connection. The intermediary element carries a second driving pin connected to a third finally driven element which is constrained to rotate about the same first axis, the second driving connection being closer to the second axis than the first axis. In this manner, the third element is driven at a compound reduction angular rate equal to the product of the reduction rates caused by each of the two connections between the elements. Means are also provided for optionally both freeing the shaft defining the second axis so as to release this constraint on the intermediary element, and for connecting the third finally driven element directly to the first driving element, thereby producing a direct or 1:1 angular rotation rate therebetween.

3,727,469
TAP-CARRIER

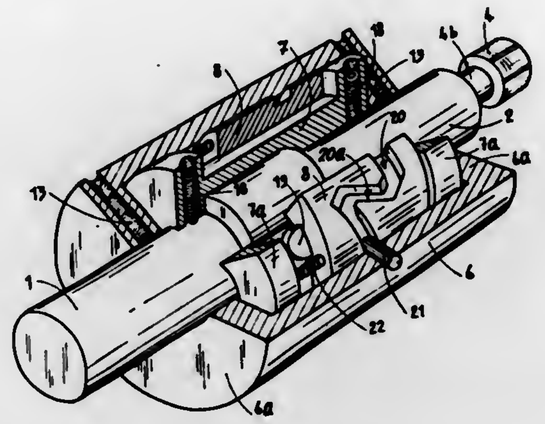
Maurice L. Matthey, Versoix, Switzerland, assignor to Manutar S.A., Fribourg, Switzerland

Filed June 2, 1971, Ser. No. 149,232

Claims priority, application Switzerland, June 4, 1970, 8437/70

Int. Cl. F16h *27/02*

U.S. Cl. 74—89 **2 Claims**



A tap carrier designed to impart to a tap a certain amount of angular play, of limited amplitude resulting in a dead motion, starting at the moment when rotation is reversed and having a determined angular value, all compensating for any lack of synchronization between the rotational and forward displacements which temporarily occur after reversal.

3,727,470
VIBRATORY APPARATUS

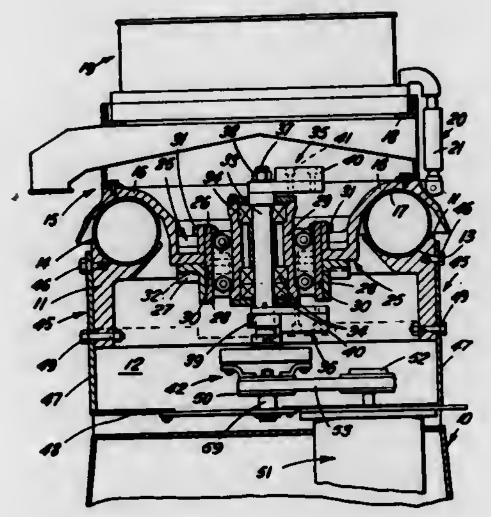
Marcel Henry Choules, Woking, England, assignor to Russell Finex Limited, London, England

Filed July 12, 1971, Ser. No. 161,550

Claims priority, application Great Britain, Nov. 4, 1970, 52,923/70

Int. Cl. B06b *1/16*

U.S. Cl. 74—87 **9 Claims**



A vibratory apparatus comprising a vibratory frame resiliently mounted on a base. An out-of-balance weight assembly is mounted on the frame, the assembly being adjustable about a horizontal axis passing through the frame. Power drive means for the out-of-balance weight assembly is mounted on a frame which is mounted on the base and adjustable about substantially the same axis. A resilient coupling may connect the power drive means to the out-of-balance weight assembly and an inflatable ring may be arranged to support resiliently the vibratory frame on the base.

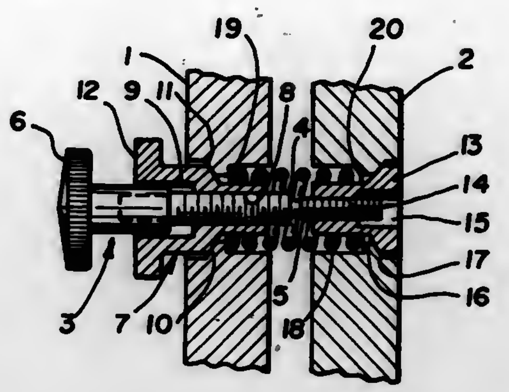
3,727,471
COARSE AND FINE ADJUSTMENT AND POSITIONING MECHANISMS

Stephen J. Botos, 112 Tent St., Pittsburgh, Pa.

Filed Sept. 20, 1971, Ser. No. 181,675

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **8 Claims**



A mechanism for effecting both coarse and fine adjustment or positioning of an element includes a fine resolution positioner comprising a longitudinally extending shaft having two threaded sections of different pitch. Threadably received on one of the threaded sections is a coarse range selector which is mounted for free rotative motion on a seat in a support plate. An adjusting member is threadably received on the other threaded section of the fine resolution positioner. Coarse adjustment or positioning is accomplished by turning the coarse range selector, resulting in longitudinal movement of either the selector or the adjusting member along the fine resolution positioner. Fine adjustment or positioning is accomplished by turning the fine resolution positioner which results in its turning in both the coarse range selector and adjusting member to effect displacement of both along the fine resolution positioner. The relative displacement between the two is a function of the difference in the pitches of the two threaded sections of the fine resolution positioner on which they are respectively received.

3,727,472
MOTOR-DRIVEN ACTUATOR

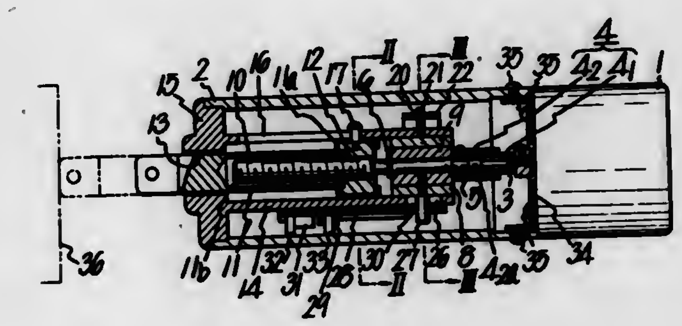
Mitugi Maekawa, 45-53 Midorgaoka-1, Choufu-shi, Tokyo, Japan

Filed June 2, 1971, Ser. No. 149,214

Claims priority, application Japan, June 22, 1970, 45/53877

Int. Cl. F16h *27/02*

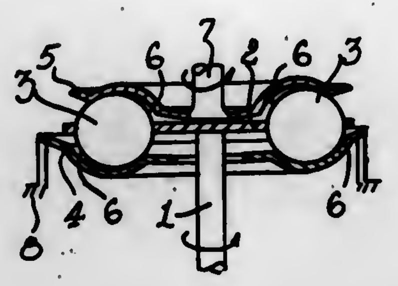
U.S. Cl. 74—89.15 **2 Claims**



A motor-driven actuator comprises a reversible motor, a first shaft with a male screw formed at the front portion thereof, a second shaft, and a coupling for slidably and rotatably coupling the first shaft and the rotary shaft of the reversible motor. In this case, the second shaft has female threads engaged with the male screw of the first shaft and the first shaft is rotatably supported by a bearing which is slidably supported by a support, whereby the second shaft is moved in its axial direction.

3,727,473
VARIABLE SPEED DRIVE MECHANISMS

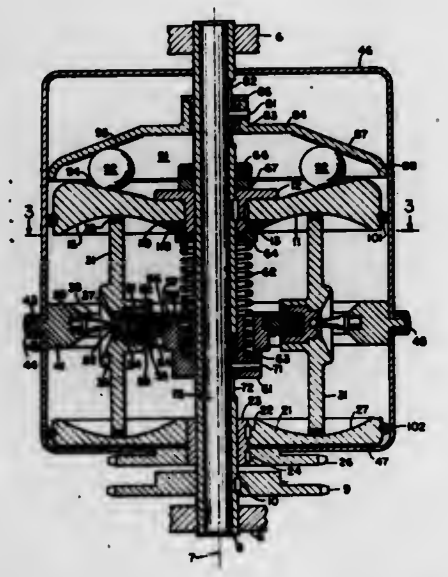
Edward Bernard Bayer, 27, Melrose Gardens, North St., Illovo, Johannesburg, Republic of South Africa
Filed April 14, 1971, Ser. No. 133,797
Int. Cl. F16h *15/08*
U.S. Cl. 74—198 15 Claims



A variable speed drive mechanism is disclosed wherein a rotatable drive member imparts movement to a driven member through a cage containing a series of rotary elements sandwiched between the two members, at least one of which is resiliently flexible. The elements engage a circular track comprising grooves of concave cross-sectional configuration disposed on the members. The grooves are of slightly larger diameter than the elements so that on flexing one of the members the effective radius of contact between the elements and the groove walls may be varied and the rotational speed imparted to the other member varied accordingly. A single directional variable speed unit is thus provided. In another unit two sets of rotary elements of the aforesaid kind are linked in back to back relationship with their cages interconnected to provide a variable speed unit with a greater speed range which passes through zero and is reversible. These units not only require fewer components than the conventional comparable unit, but the components are also relatively simple and cheap to manufacture.

3,727,474
AUTOMOTIVE TRANSMISSION

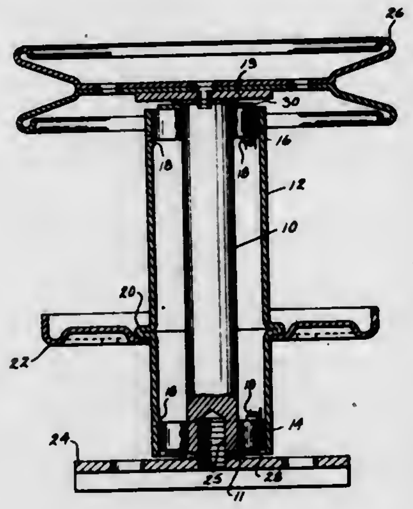
Robert L. Fullerton, South Lake Tahoe, Calif., assignor to Fullerton Transmission Company, Sacramento, Calif.
Filed Oct. 4, 1971, Ser. No. 186,273
Int. Cl. F16h *15/08, 37/12*
U.S. Cl. 74—200 14 Claims



An automotive transmission has a drive tube rotatably mounted on a frame and carrying a drive disc having a first half-toroidal friction surface and a free-running neutral disc having a friction surface continuing the first friction surface. A driven tube is also rotatably mounted on the frame and carries a driven disc having a second half-toroidal friction surface facing the first friction surface. Tiltably and rotatably mounted between the discs are transmission discs frictionally engageable with the friction surfaces. The transmission discs are tiltable to afford various speed ratios and a neutral position. The tilting device is either manual or centrifugal. The output is either direct or through a planetary reversing gear.

3,727,475
PULLEY-AND-SHAFT ASSEMBLY FOR ROTARY LAWN MOWERS AND METHOD OF MANUFACTURING THE SAME

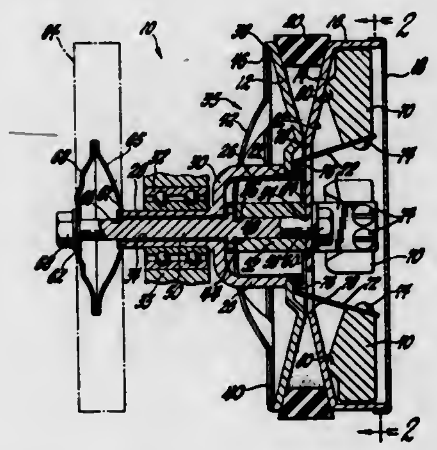
William W. Stell, Wauwatosa, Wis., assignor to Production Stamping Corporation, Milwaukee, Wis.
Filed Aug. 23, 1971, Ser. No. 173,982
Int. Cl. F16h *55/34, 55/36*
U.S. Cl. 74—230.3 9 Claims



An outer sleeve supports upper and lower bearing assemblies in which a drive shaft for a lower blade is journalled. The lower end of the shaft is friction-welded to a blade saddle and the upper end is friction-welded to the lower face of a drive pulley. The sleeve is prepared with an annular bulge intermediate its length and a support ring which fits around the sleeve is friction-welded to the lower face of the annular bulge.

3,727,476
PULLEY ARRANGEMENT

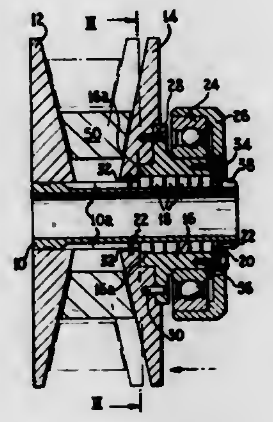
John H. Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 13, 1971, Ser. No. 171,643
Int. Cl. F16h *9/00*
U.S. Cl. 74—230.17 E 6 Claims



The adjustable pulley or speed changer assembly illustrated includes a fixed and movable wall, with the fixed wall being connected at its outer edge to normally bowed resilient spoke members secured to the reciprocally movable shaft to which the movable pulley wall is also secured. As the belt is loaded up, it moves radially inwardly, forcing the movable wall away from the fixed wall, and thereby axially moving the shaft and straightening the normally bowed resilient spoke members, without any sliding fits being involved. As the load on the belt is relieved, the distorted spoke members cause the movable wall to return toward the fixed wall, progressively forcing the belt radially outwardly between the pulley walls. Centrifugal weights secured by flexible arms to the fixed wall abutment, in contact with the movable wall, serve to limit the separating movement of the latter at a predetermined speed.

3,727,477
POWER TRANSMISSION

Michael Murphy, 29 Cartwright Street, Hyde, England
Continuation-in-part of Ser. No. 816,571, April 16, 1969, abandoned. This application May 4, 1971, Ser. No. 140,292
Int. Cl. F16h *11/06*
U.S. Cl. 74—230.17 A 9 Claims

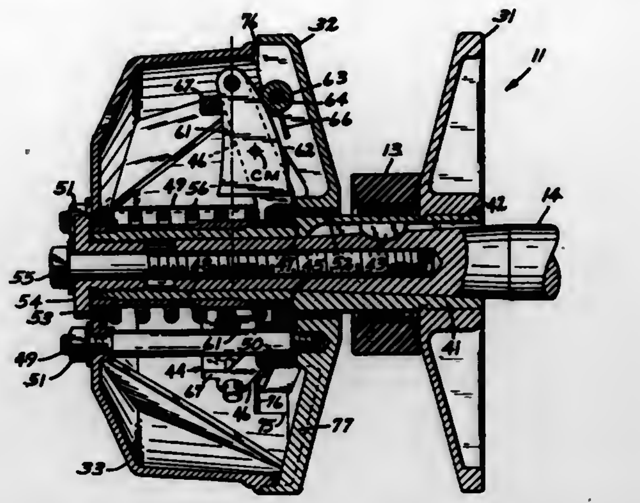


The invention concerns power transmission involving rotation of a member by means of a driven shaft on which the member is mounted and where axial movement of the whole or part of the member relative to the shaft is required, and deals with the problem of fretting corrosion in such transmissions. The invention involves the provision of a shaft, a member specially a V-pulley having a fixed flange, and an axially adjustable flange mounted thereon and a plurality of roller bearings disposed in complementary arcuate grooves, between the shaft and the member. The roller bearings are adapted to support the member on the shaft in axially slidable relationship therewith and with a clearance maintained therebetween, and at the same time provide a rotary driving connection between the shaft and the member, and continually to adjust themselves by rotation in one direction only, during rotation of the shaft and the member, in response to imposed stresses, whereby the incidence of fretting corrosion is substantially precluded.

3,727,478
SPEED CONTROLLED BELT TRANSMISSION

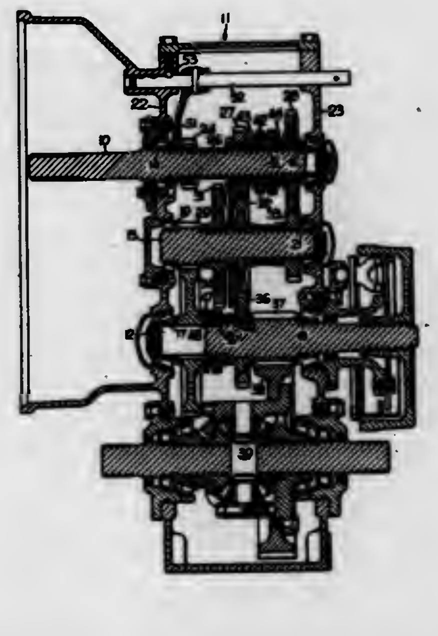
Albin Erickson; William R. Richards, and Clement F. Deschene, all of Roseau, Minn., assignors to Textron Inc., Providence, R.I.
Continuation of Ser. No. 869,166, Oct. 24, 1969, abandoned. This application Aug. 23, 1971, Ser. No. 174,148
Int. Cl. F16d *43/06*; F16h *55/52*
U.S. Cl. 74—230.17 E 12 Claims

The disclosure is directed to an improved centrifugal clutch the structure of which permits its use with engines having different performance characteristics, and enables simple modification resulting in a desired performance relationship with the selected engine. One feature centers on a plurality of flyweights, each having an engageable cam surface that relates engine revolutions-per-minute to the input/output revolution ratio to effect a simulated gear shifting transmission characteristic. Other features are directed to laminated flyweights made of different materials to obtain the proper centrifugal action, and the mounting of flyweights having predetermined centers of mass to obtain the greatest mechanical advantage at the optimum time.



3,727,479
COMBINED TRANSMISSION

Ronald E. Wilson, Lee's Summit, Mo., assignor to Allis-Chalmers Corporatn, Milwaukee, Wis.
Filed June 25, 1971, Ser. No. 156,873
Int. Cl. F16h *3/08*
U.S. Cl. 74—333 7 Claims

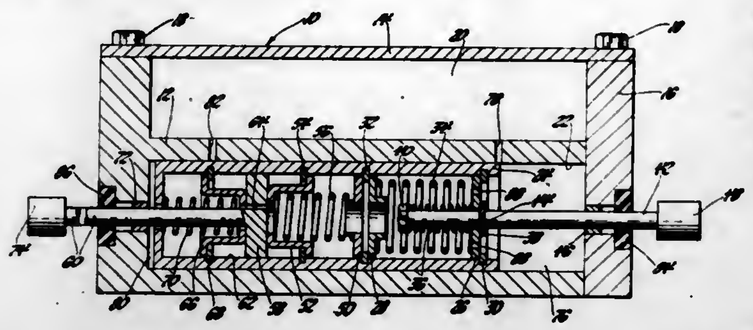


This disclosure is concerned with a transmission particularly adapted for use in a combine harvester and it provides multiple forward and reverse speeds while utilizing a minimum of shafts, bearings and gears.

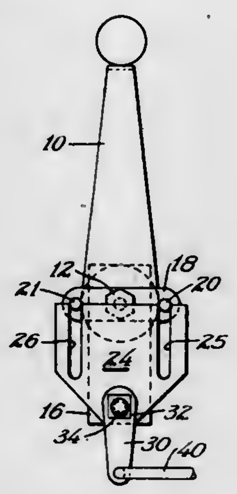
3,727,480
TIMED INPUT-OUTPUT MOTION TRANSMITTING DEVICE

Lester E. Need, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 8, 1971, Ser. No. 205,845
Int. Cl. G05g *1/00*
U.S. Cl. 74—470 3 Claims

A motion transmitting mechanism having a predetermined delay between input and output motion. Movement of the input is transmitted through a lost motion device, such as a spring, to an input piston. Movement of the input piston causes the displacement of a fluid medium which flows at a controlled rate through a restriction. Movement of the input piston is transmitted to an output piston through a lost motion device. Movement of the output piston causes the displacement of the fluid medium at a controlled rate through the restriction. The output moves simultaneously with the output piston.

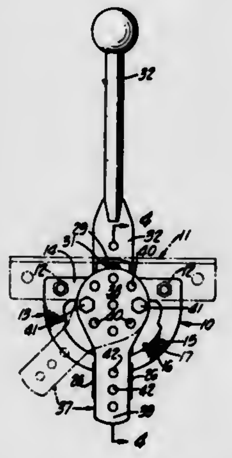


3,727,481
VARIABLE RATIO CONTROL LEVER
John A. Nicholson, 1650 Carrol Avenue, St. Paul, Minn.
Filed April 8, 1971, Ser. No. 132,411
Int. Cl. G05g *1/04*
U.S. Cl. 74—491 4 Claims



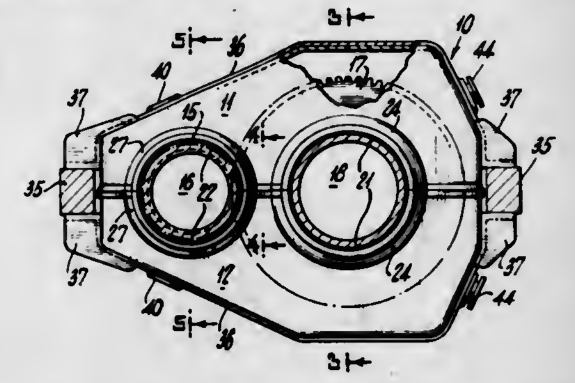
Two camming pins are mounted on a pivoting control lever so as to slide into slots in a pivotable actuating member upon rotation of the lever, the sliding action operable to rotate the actuating member only slightly at first but more so as the throw of the control lever is increased.

3,727,482
AUTOMATIC LOCKING CONTROL DEVICE
Larry A. Geer, Upland, Calif., assignor to Adams Rite Manufacturing Company, Glendale, Calif.
Filed June 15, 1971, Ser. No. 153,176
Int. Cl. G05g *5/16*
U.S. Cl. 74—531 15 Claims



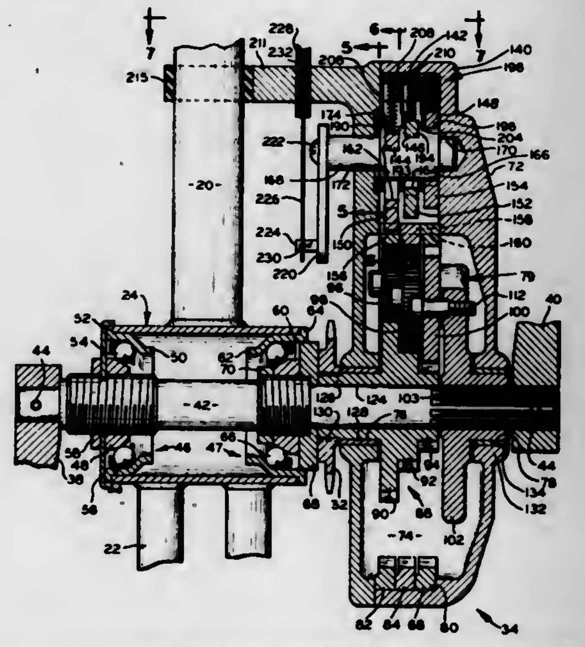
An irreversible control device in which an input member is connected with an output member through a locking element which is fulcrumed on a fixed locking bar for swinging movements to locked and unlocked positions respectively with the locking bar, and is normally spring-urged into an unlocked position which permits the output member to be moved freely to different positions of adjustment in response to selective movements of the input member, but in an adjusted position will be fulcrumed to a locked position on the bar in response to an attempted movement of the output member away from its adjusted position by reverse operation by means of the output member.

3,727,483
GEAR CASING
Melvin A. Hanson, Downers Grove, and Alexander Zunich, Glenview, both of Ill., assignors to NL Industries, Inc., New York, N.Y.
Filed Sept. 27, 1971, Ser. No. 184,018
Int. Cl. F16p *1/02*
U.S. Cl. 74—609 14 Claims



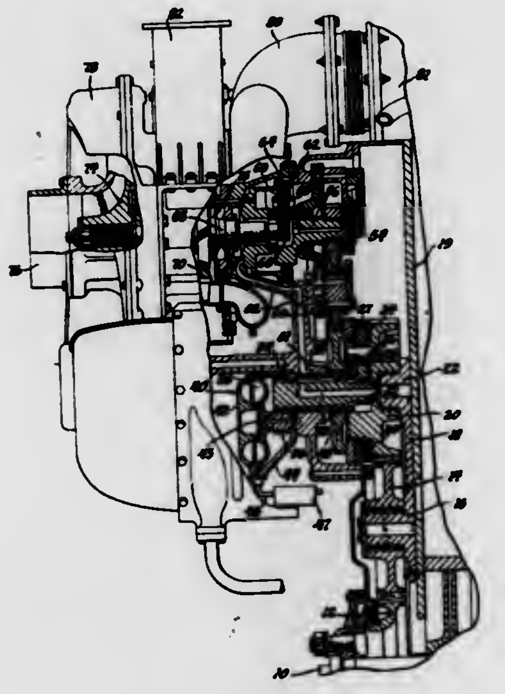
An improved two-piece gear casing for housing a gear train associated with the traction motor supporting-frame of a locomotive or other vehicle comprises two integrated substantially identical half-casings molded of reinforced plastic material in combination with load-bearing metal straps adapted to embrace the half-casings in a manner to secure them together on the supporting frame of a traction motor and to lock each half-casing from lateral displacement relative to its load-bearing strap.

3,727,484
SPEED CHANGING TRANSMISSION
Dennis W. Shea, Toledo, Ohio, and William C. Stoneman, Temperance, Mich., assignors to Dana Corporation, Toledo, Ohio
Filed May 3, 1971, Ser. No. 139,486
Int. Cl. F16h *57/10, 3/44*
U.S. Cl. 74—768 16 Claims



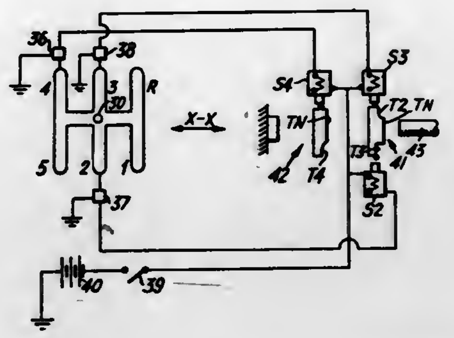
A 3-speed transmission of the planetary type having three sets of planet gears, three sun gears and three ring gears. All planet gears are mounted on and driven by one common carrier which is connected to the input shaft. The sun gears are carried by an output shaft which is rotatably mounted on the input shaft and which extends from the transmission housing to carry a driving sprocket. A shifting mechanism, including a plurality of spring loaded pawls engageable with the ring gears and operable by a slotted shifting shaft, is selectable to maintain a desired one of the ring gears stationary relative to the housing to provide the desired speed ratio between the input and output shafts. The transmission is shown adapted for use as a bicycle drive and mounted such that the transmission housing is fixed against rotation relative to the bicycle frame; the pedal crank being the input shaft to the transmission and extending completely through the same and being rotatably mounted in the bicycle housing with the sun gear driven output shaft rotatably mounted on the input shaft.

3,727,485
POWER TRANSMISSION
Bruno A. Duerr, La Grange Park, Ill., assignor to General Motors Corporation, Detroit, Mich.
Filed July 2, 1971, Ser. No. 159,210
Int. Cl. F16h *3/00*
U.S. Cl. 74—782 6 Claims



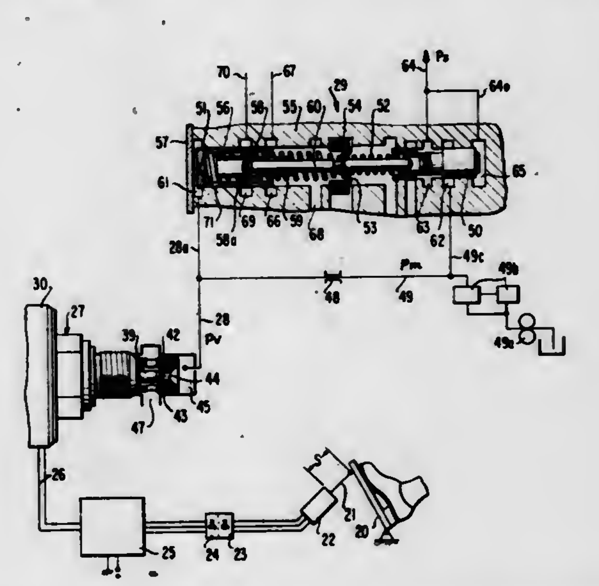
Turbocharger drive having planetary gear units in a gear train between an engine crankshaft and a compressor rotor, which rotates to supply air to an engine for combustion. The reaction member of a planetary unit of the gear train is connected to the pump of a hydrodynamic unit while the turbine member is grounded so that the stall torque of the unit retards rotation of the reaction member to permit the engine crankshaft to drive the rotor through the gear train. The hydrodynamic unit having an infinite number of spring rates provides an infinitely flexible device for reducing transmission of engine torsionals and shock loads through the gear train. The mechanical drive is assisted by a gas drive from the engine exhaust which progressively increases as the engine approaches full load and the rotor becomes fully driven by the engine exhaust gases. When the gas drive speed and load equals the rotor needs, the mechanical system reaches a no-load condition.

3,727,486
ENGINE HAVING IMPROVED PERFORMANCE CHARACTERISTICS
Nicholas Martin Felix Vulliamy, Peterborough, England, assignor to Perkins Engines Limited, London, England
Filed Feb. 11, 1971, Ser. No. 114,652
Claims priority, application Great Britain, Feb. 13, 1970, 7,011/70
Int. Cl. B60k *21/00*
U.S. Cl. 74—860 10 Claims



A pressure charged engine and gearbox assembly providing a number of drive ratios and including means which, on selection of certain of the gears below the top gear, conditions the fuelling apparatus of the engine to provide more fuel at the same engine speed than it does in top gear. The presence of pressure charged air enables the fuel to be burnt efficiently and extra power is made available by virtue of the higher brake means effective pressure so produced.

3,727,487
PRESSURE CONTROL INSTALLATION FOR HYDRAULICALLY SHIFTED AUTOMATIC TRANSMISSIONS, ESPECIALLY FOR MOTOR VEHICLES
Hans-Joachim M. Forster, Stuttgart-Riedenberg; Arwed Von Koch, Stuttgart-Sonnenberg, and Hermann Gaus, Stuttgart-Sillenbuch, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertrkheim, Germany
Filed April 2, 1970, Ser. No. 25,121
Claims priority, application Germany, April 3, 1969, P 19 17 291.9
Int. Cl. B60k *21/02*; F16k *31/02*
U.S. Cl. 74—865 11 Claims



A pressure control installation for hydraulically shifted automatic transmissions, particularly for motor vehicles, which controls the pressure of a hydraulic medium that effects the shifting operations in dependence on an operating magnitude, whereby the regulation of the pressure is achieved electrically, preferably by the use of a solenoid valve controlling a pilot pressure.

3,727,488

SYSTEM FOR SHIFTING GEAR POSITIONS OF AUTOMATIC TRANSMISSIONS FOR AUTOMOTIVE VEHICLES AT PREDETERMINED SHIFT POINTS

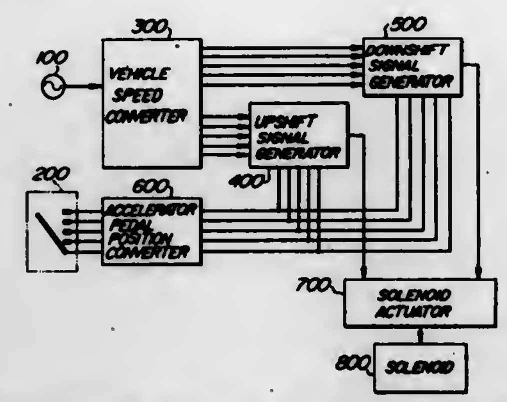
Hisato Wakamatsu; Hiroshi Fujinami, both of Kariya, and Tokuhiro Kurebayashi, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed July 20, 1971, Ser. No. 164,316

Claims priority, application Japan, July 21, 1970, 45/63855

Int. Cl. B60k *21/00*; F16h *3/74*

U.S. Cl. 74—866 1 Claim



A system for shifting the gear positions of an automatic transmission for a vehicle at a plurality of predetermined shift points in which an r.p.m. detecting a.c. generator is connected to the wheel driving system and the output from the AC generator is converted into a pulse signal. The number of pulses appearing within unit time is counted and the count is classified to obtain a plurality of digital vehicle speed signals corresponding to a plurality of vehicle speed settings. The accelerator pedal is connected to a movable contact of a multi-contact switch having a plurality of stationary contacts so as to obtain a plurality of digital throttle position signals representative of various positions of the accelerator pedal. The digital vehicle speed signal and digital throttle position signal are applied to a logic circuit to obtain a shift signal.

3,727,489

DIE-MAKING PROCESS

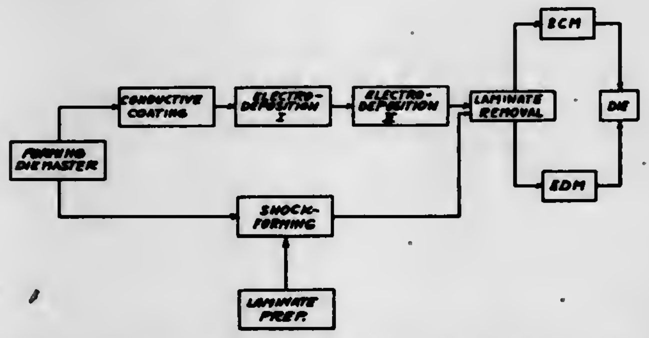
Kiyoshi Inoue, Tokyo, Japan, assignor to IJR (Inoue-Japax Research Inc.), Midoriku, Yokohama, Japan

Continuation-in-part of Ser. No. 723,799, April 24, 1968, Pat. No. 3,591,760. This application March 17, 1971, Ser. No. 125,192

Claims priority, application Japan, June 28, 1967, 42/41494; Sept. 2, 1967, 42/56310; March 17, 1970, 45/22543; March 30, 1970, 45/26715

Int. Cl. B21k *5/20*

U.S. Cl. 76—107 R 15 Claims



A die-making process using electrical-machining techniques, i.e., EDM and/or ECM, whereby a die master is first prepared having a surface configuration closely complementary to that of a desired die-surface pattern and a contour corresponding to that of the article to be produced. Upon the die-master surface and in intimate contact therewith, an electrically conductive die-facing layer is formed by electrodeposition or by a high-energy-rate-forming (shockwave-forming) system. This layer is then used as an electrical-machining electrode for machining a conductive block of backing material to impart thereto a configuration complementary to the surface of the machining electrode or the layer thereby preparing a backing body for the latter. The machined body and the layer are matingly engaged and bonded together, the surface of the layer originally in contact with the die master surface forming a desired die surface for use. The layer is, preferably, two laminated layers, formed of materials adapted for die use and for use as an electrode in the electrical-machining step.

3,727,490

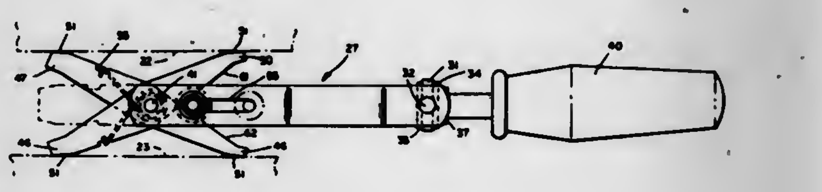
DISC BRAKE PAD SPREADER

Walter L. Diffenderfer, and Frederick R. McFarland, both of Lancaster, Pa., assignors to K-D Manufacturing Company, Lancaster, Pa.

Filed Aug. 5, 1971, Ser. No. 169,187

Int. Cl. B25b *27/00*

U.S. Cl. 81—3 K 11 Claims



A spreading tool is provided, particularly adapted for use with disc brakes, as for example of automobiles, trucks and the like, wherein the spreader is a hand-actuable tool for insertion between the brake shoes or pads mounted in a caliper, for spreading the same, for allowing placement of the shoes over a rotor, or removal of the same from a rotor. The tool uses one or more X-shaped linkages, commonly pivotal about a shaft or axis, upon rotation of the tool handle, which actuates a drive screw, that in turn, cams linkage legs apart.

3,727,491

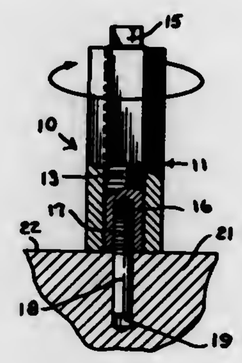
STUD BOLT PULLER AND INSERTER

Sanford L. Buckwalter, 406 Shelton Beach Road, Mobile, Ala.

Filed Nov. 26, 1971, Ser. No. 202,139

Int. Cl. B25b *13/50*

U.S. Cl. 81—53.2 4 Claims



This stud bolt puller can be readily secured to the threaded portion of a stud bolt and upon turning one of its parts relative to the other part lift stud bolt from a stud block and out of the top surface thereof. The central member has a threaded bore for receiving the threaded portion of the stud bolt. The central spindle member has a square head for receiving a wrench and the other member is of hexagonal outer section for similarly receiving a wrench. The threads of the inner and outer member extend the full extent thereof so that the inner member can be worked through the outer member. With the stud inserted into the central member the puller can be struck with a hammer upon the head portion of the central member to force the full portion of a stud bolt into a undersized hole in the stud block.

3,727,492

MACHINE FOR CUTTING AND STRIPPING BACK ELECTRIC WIRES AND CABLES

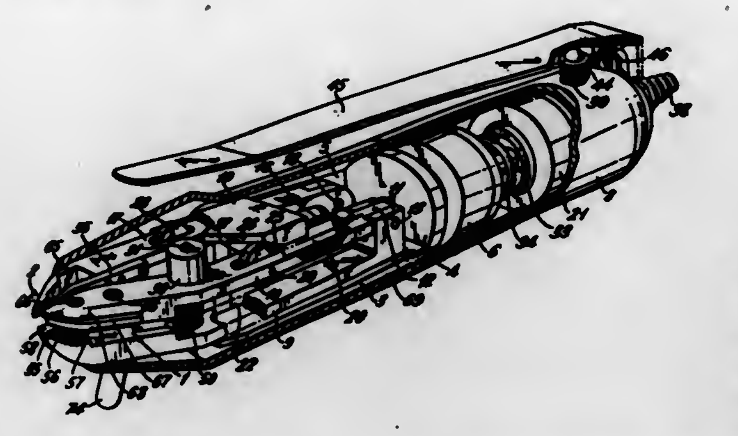
Vincenzo Zanni, Ivrea, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Ivrea, Italy

Filed March 18, 1971, Ser. No. 125,782

Claims priority, application Italy, March 21, 1970, 67962 A/70

Int. Cl. H02g *1/12*

U.S. Cl. 81—9.5 A 13 Claims



A hand-held device is disclosed for cutting electrical wires and cables while stripping the sheath from a short section thereof. Two pairs of jaws are provided, the first pair clamping a section of the wire, while the second pair, which is pivotally movable relative to the first pair in the direction of the wire axis, notches and strips the wires sheath, and cuts the wire. The device is powered by compressed air actuated piston.

3,727,493

METHOD AND APPARATUS FOR SETTING A TOOL OF A MACHINE TOOL

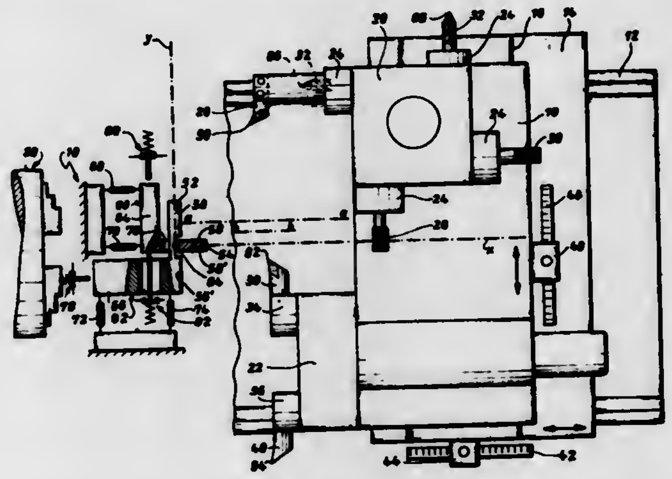
Heinrich Lehn, Esslingen, N.-Sirnau, Germany, assignor to Index-Werke KG Hahn & Tessky, Esslingen/Neckar, Germany

Filed Sept. 1, 1970, Ser. No. 68,653

Claims priority, application Germany, Sept. 5, 1969, P 19 45 017.0

Int. Cl. B23b *1/00*, *7/00*

U.S. Cl. 82—1 C 20 Claims



A program controlled tool of a machine tool is moved in a setting operation in two perpendicular directions to a reference position in which a cutting point thereof is located in the line of intersection of two perpendicular planes which are perpendicular to two directions, respectively in which the cutting point is moved. Data representing the setting movements of the tool are stored in program controlled means, and when the cutting point is located in the reference line, a signal is transmitted by sensing means to the program control means so that consequent working movements of the tool can be program controlled with reference to the line of intersection.

3,727,494

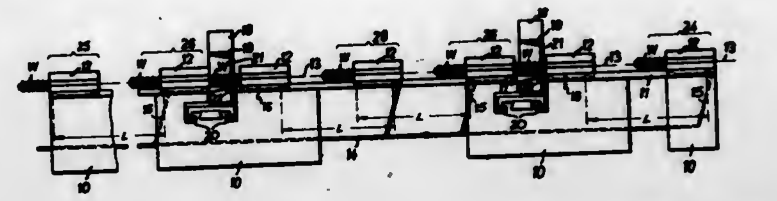
INSTALLATION FOR MACHINING CRANKSHAFTS, CAMSHAFTS OR LIKE WORKPIECES

Hans Gunther Rohs, 9 Richard-Wagner-Strasse, Rechberghausen, Germany

Continuation-in-part of Ser. No. 14,485, Feb. 26, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,380

Int. Cl. B23b *15/00*

U.S. Cl. 82—2.5 5 Claims



The subject matter of the present invention is an installation for machining crankshafts, camshafts or like workpieces. Each of the workpiece is mounted in non-rotary condition in a workpiece holder. A plurality of such workpiece holders is guided on a straight path with their workpieces in co-axial relationship to each other and to said path. A plurality of tool units is distributed in spaced relationship along the path. Each unit includes an annular rotary tool having internal cutting edges. This tool surrounds an internal clearance space which is larger than the cross-section of the workpiece holders. Therefore, each tool affords passage of said workpiece holders through the clearance space. Each of the tool units further comprises means for moving the annular rotary tool into a position in which its internal clearance space is in registry with the path of the workholders. Conveyor means are provided for intermittently transporting said workpiece holders with the workpieces on a guideway along the path through the clearance spaces of the tool units and for temporarily stopping each workpiece holder in a position in which its workpiece is surrounded by said annular rotary tool and in a position to be machined by the cutting edges thereof. The conveyor means may comprise drag members which are distributed along the path and are adapted to engage the workpiece holders. These drag members are reciprocated parallel to said path in synchronism with each other and thereby feed each of the workpiece holders step by step along the path consecutively through the annular rotary tools.

3,727,495

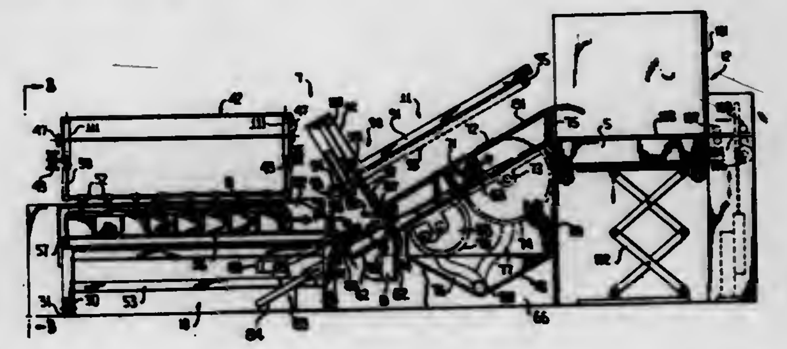
AUTOMATIC PARTITION CUTTING MACHINE

Roy E. Vermes, Wilbraham, Mass.; Robert L. Nebeling, Wayne, N.J., and John E. Knecht, Riverdale, Conn., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,323

Int. Cl. B26d *7/06*

U.S. Cl. 83—35 20 Claims



This disclosure relates to a machine for automatically cutting partitions and stacking the same. The partitions are formed by first slitting a stack of sheets into a bundle of strips, then serially moving the bundles of strips onto on edge positions with the rotated bundles then being serially moved to become part of a large group of on edge strips which are then moved through appropriate saws to divide the strips into predetermined length partitions and to notch or slit the same. In the movement of the on edge strips, after they move past the saws, the cut and slit strips (partitions) are moved into stacked relation.

3,727,496

METHOD OF AND APPARATUS FOR CUTTING UP SEMI-PLASTIC LIGHT WEIGHT CONCRETE BODIES

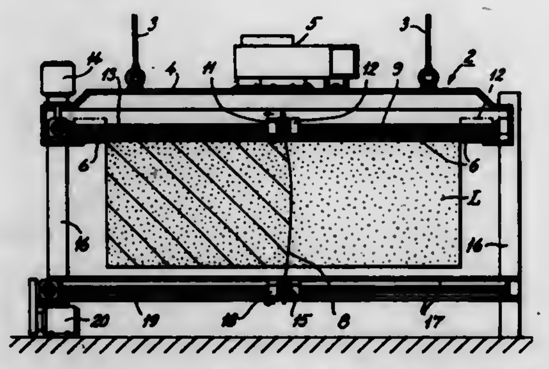
Rolf Erik Goransson, Alvsjo, Sweden, assignor to Internationella Siporex Aktiebolaget, Stockholm, Sweden

Filed July 6, 1970, Ser. No. 52,372

Claims priority, application Sweden, July 10, 1969, 9790/69

Int. Cl. B26d *7/00*

U.S. Cl. 83—56 **7 Claims**



Cutting up of a semi-plastic cellular light weight concrete body by passing string-like cutting members having, when operative, a substantially vertical extension in a horizontal direction therethrough is effected while the body to be cut is kept freely suspended from a perforated bottom of a hood-like suspension device, in which a sufficient vacuum is created to maintain adhesion by suction between the top of the body and said perforated bottom. The cutting members pass through and are moved along in slots formed in the bottom of the suspension device, their upper ends being actuated for movement above said bottom and their lower ends being separately actuated by driving means mounted in a stand separate from the suspension device but engaging therewith in a guiding manner, when cutting is effected.

3,727,497

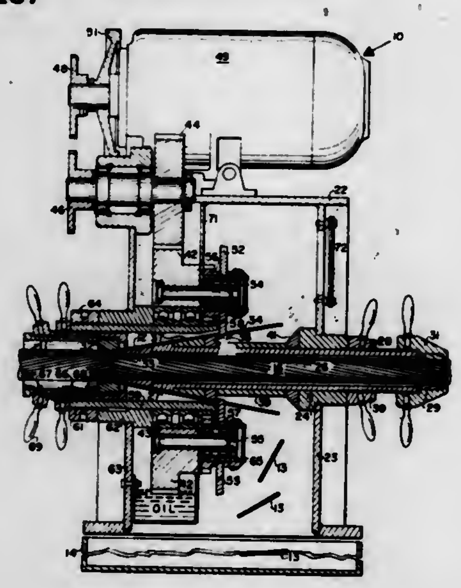
APPARATUS FOR SEPARATING AND SHEARING A CABLE STRAND

Charles H. Davis, Shrewsbury, N.J., and Lech Stanislaw Borczyk, Long Island City, N.Y., assignors to Anaconda Wire and Cable Company, New York, N.Y.

Filed April 14, 1971, Ser. No. 133,936

Int. Cl. B26d *7/00*

U.S. Cl. 83—167 **12 Claims**



An apparatus for cutting an outer layer of helical wires from a cable core comprises an annular shear blade through which the core is advanced and planetary circular shear blades that cut the wires as they pass over the annular blade.

3,727,498

ROTARY SHEAR

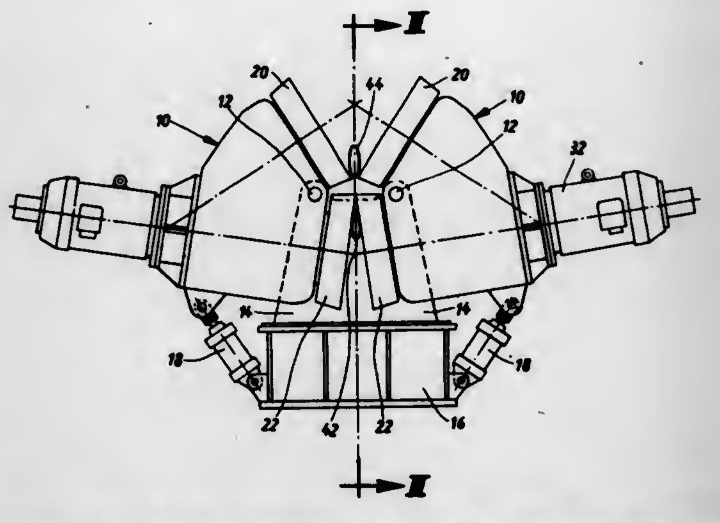
Michael Poran, New York, N.Y., assignor to Danieli and C.S.P.A., Buttrio (Udine), Italy

Filed Sept. 10, 1971, Ser. No. 179,472

Claims priority, application Germany, June 28, 1971, P 21 32 125.5

Int. Cl. B23d *19/04*; B26d *7/06*

U.S. Cl. 83—106 **6 Claims**



Two pairs of discs mounted on mutually inclined shafts each have concentric cutting edges on opposed faces, one pair of discs being mounted generally edge-to-edge in relation to the other pair. The discs are movable, so that the cutting edges of one pair form a cutting zone at one peripheral location while those of the other pair are spaced to form a gap, and vice versa. Stock to be cut is fed tangentially into the general area of these zones, its path of travel being moved radially outwardly of the discs forming a cutting zone and through the gap in the other pair of discs, this direction of movement then being reversed, after the disc positions have been reversed, and so on, thus enabling a series of cuts to be made.

3,727,499

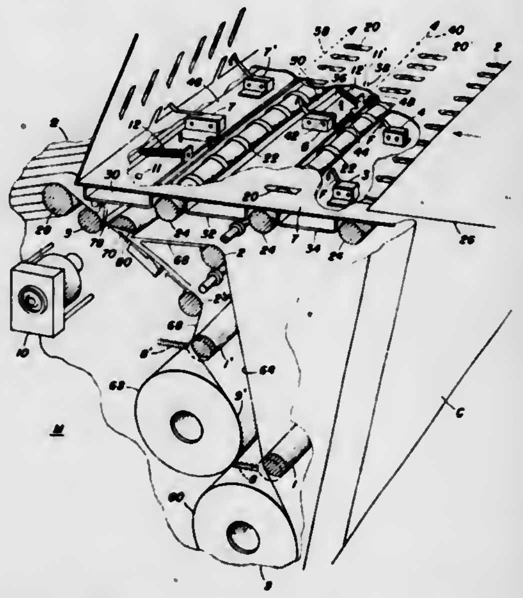
AUTOMATIC ROLL-SUPPLIED COPY MATERIAL-FEEDING AND CUTTING MECHANISM

Robert L. Boston, Vestal, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed March 19, 1971, Ser. No. 126,233

Int. Cl. B26d *5/28*

U.S. Cl. 83—205 **2 Claims**



As an original sheet, such as a tracing, to be copied on a sensitized sheet in an automatic copying machine moves longitudinally in the flat on a horizontal surface, the front and rear edges of the origianl sheet actuate sensor switch which energize control circuits to cause a web to be drawn from a selected one of two supply rolls of copy paper in which lightly tensioned slack is provided to improve the start of the web feed, and a loop is initially formed in the web at the exit of a web cutting station to provide for subsequent cutting of the web which the part being cut is stationary and the part in front continues to feed for perfect length-matching of the original and copy sheets, in conjunction with a speed control having a man-adjustable dial that is mechanically connected to shiftable switch mounts for synchronizing the operation of the mechanism.

3,727,500

RELATING TO CLAMPING MEANS

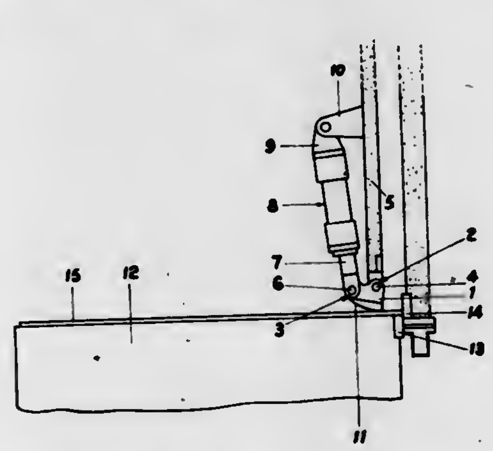
Emile Breetvelt, Johannesburg, Republic of South Africa, assignor to Intermenua (Proprietary) Ltd., Johannesburg, Transvaal, Republic of South Africa

Filed Feb. 17, 1971, Ser. No. 116,025

Claims priority, application South Africa, Feb. 25, 1970, 70/1251

Int. Cl. B26d *5/42*

U.S. Cl. 83—375 **5 Claims**



The invention relates to a shearing machine for the cutting of metal sheet and other sections and in particular to an hydraulic system of clamps used to locate the sheet being cut and in which the loads applied to the clamps is transferred from the hydraulic system to a mechanical linkage better able to resist these forces.

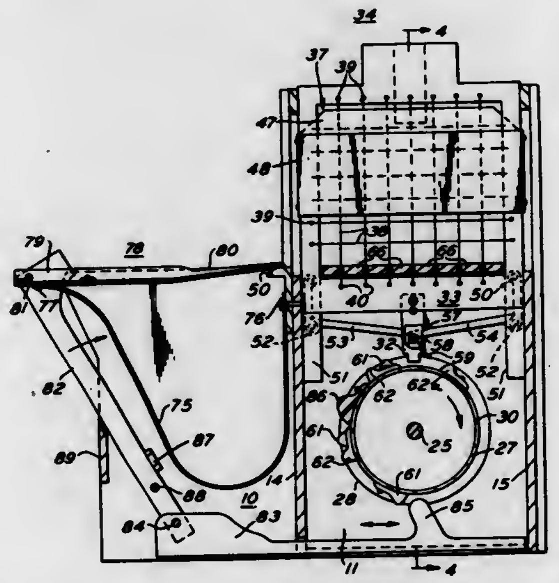
3,727,501

POTATO DICING MACHINE

Harrison M. Von Duyke, 709 Sh[illegible]y St., 2nd Floor, Wilmington, Del.

Filed Sept. 27, 1971, Ser. No. 183,878

U.S. Cl. 83—438 **10 Claims**



Apparatus for dicing cooked potatoes which includes a base, support members for supporting the potatoes, longitudinally extending rods on the base carrying a pair of opposed cutting frames, which frames have metallic cutting wires thereon, and a rotary drive connecting the frames to provide horizontal motion to the frames to cut the potatoes into strips and providing timed motion to vertically movable blades carried by the frames to further dice the potatoes which can then be moved off the base and which apparatus includes an automatic potato feed also connected to the drive to place potatoes in position on the base between the frames for dicing.

3,727,502

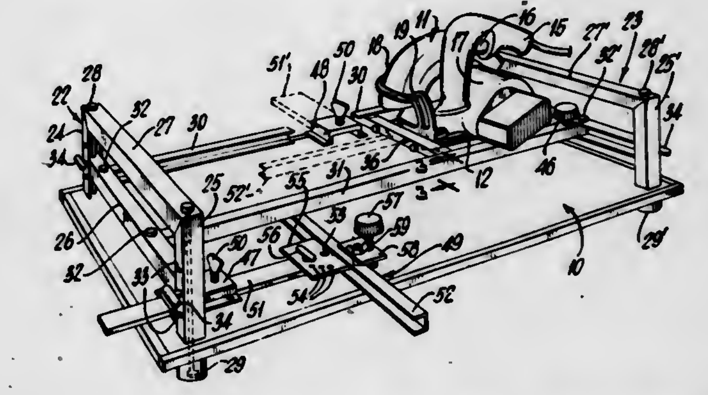
SAW-TABLE CONSTRUCTION

Abraham Steinman, 125 Croyden Court, Long Island, N.Y.

Filed May 6, 1971, Ser. No. 140,805

Int. Cl. B27b *5/20, 27/08*

U.S.Cl.83—471.3 **25 Claims**



The invention contemplates a saw-table construction with frame and slide features so devised as to accommodate a portable motorized saw or the like tool and to enable selective rip, cross-cut, mitering and other standard operations without requiring any remount of the tool, even if the tool is a circular saw. Provision is made for accommodating a variety of positioning adjustments of the tool with respect to the work, without having to change the basic mounting of the tool.

3,727,503

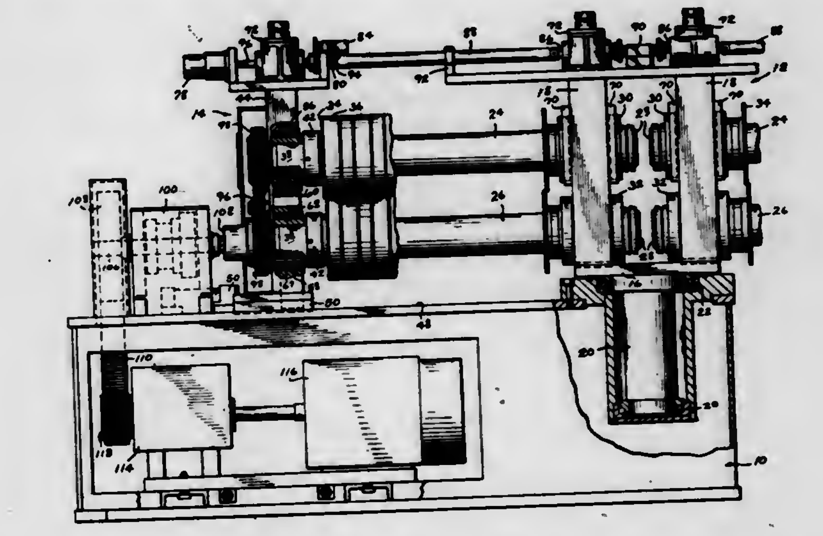
SLITTER HAVING PIVOTAL MULTIPLE SPACED PAIRS OF ARBORS

Harold R. Braner, Chicago; William C. Jasinski, Arlington Heights; Douglas S. Matsunaga, and Agapito Valencia, both of Chicago, all of Ill., assignors to Braner Engineering, Inc., Chicago, Ill.

Filed Nov. 26, 1971, Ser. No. 202,237

Int. Cl. B26d *1/24*; B23d *19/04*

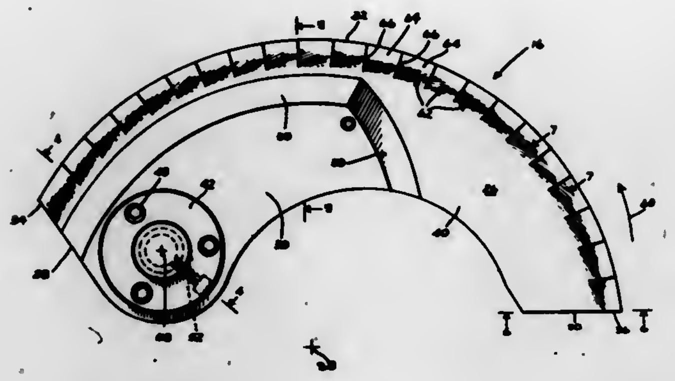
U.S. Cl. 83—479 **6 Claims**



A slitter having multiple spaced pairs of arbors pivotally mounted to the slitter frame. Each pair of arbors is adapted to carry cutter assemblies which can be pivoted into operating position at the selection of the user of the slitter.

3,727,504
MEAT SLICING KNIFE

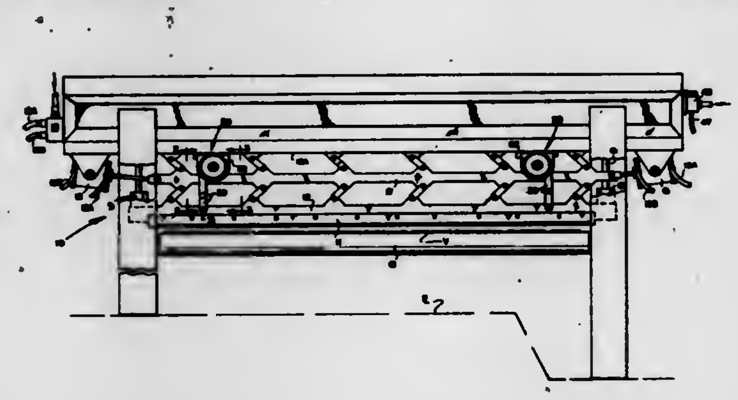
Anthony H. Osterholt, 4608 Euclid Avenue, Fort Wayne, Ind.
Filed Aug. 5, 1971, Ser. No. 169,213
Int. Cl. B26d *4/48*
U.S. Cl. 83—483 **8 Claims**



A rotary meat slicing knife for use in a machine for slicing steaks, chops and the like from larger pieces of meat. The knife comprises a blade having a convexly curved, uninterrupted, sharpened cutting edge extending continuously between opposite extremities, the blade being mounted for eccentric rotation in a given direction. One side of the blade has a plurality of circumferentially contiguous segments formed thereon adjacent the cutting edge and extending between its extremities, each of the segments comprising a surface which smoothly tapers away from the cutting edge and which also smoothly tapers in the direction of rotation toward the other side of the blade to the adjacent segment thereby forming a compound wedge configuration pointing toward the cutting edge and in the direction of rotation for separating a slice of meat from a larger piece upon one revolution of the blade.

3,727,505
BRAKE MECHANISM FOR A RECIPROCATING BLADE

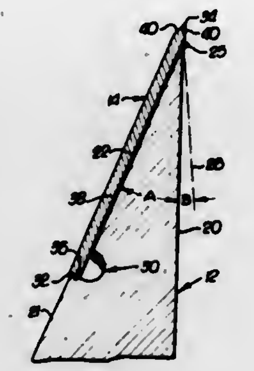
Ernest P. Shaughnessy, Portland, Oreg., assignor to E. V. Prentice Co., Portland, Oreg.
Filed March 6, 1972, Ser. No. 231,991
Int. Cl. B26d *5/18*
U.S. Cl. 83—526 **15 Claims**



A brake mechanism including a housing for attachment to a clipping machine with the housing serving to support both brake and clutch means with the latter coupled to the machines reciprocating blade by interconnecting arms. Rotational movement is imparted to a driving clutch member by said arms with the clutch being of the uni-directional type permitting unrestricted downward movement of the blade while in an opposite direction engaging a cooperating driven clutch member to ultimately initiate brake operation to accomplish a non-rebounding type return of the blade to its rest position.

3,727,506
MICROTOME BLADE HOLDER

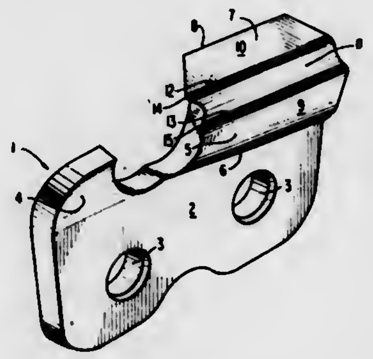
Dermot B. Taylor, 3914 Sierks Way, Malibu, Calif., and Daniel C. Pease, 13011 Sunset Boulevard, Los Angeles, Calif.
Filed May 6, 1971, Ser. No. 140,678
Int. Cl. B26d *1/00*
U.S. Cl. 83—698 **3 Claims**



A holder for rigidly mounting a conventional razor blade on a microtome, the blade being adhesively secured to the holder on a precisely ground mounting face defined downwardly by an upwardly directed shoulder and an undercut groove. Assembly of a blade on the holder is accomplished by first coating one face of the blade and the mounting face of the holder with a flowable adhesive such as cyano acrylate polymerizing cement, then pressing the coated face of the blade against the upper edge of the holder, then pivoting the blade about that line into full contact with the mounting face, thus squeezing excess adhesive downwardly into the undercut groove, and finally sliding the blade downwardly so that its base bottoms against the shoulder. The shoulder must be sufficiently shallow to insure that no portion of the shoulder is exposed when the blade is mounted thereon, so that no obstruction impedes the downward sliding movement of a tissue section. Removal of a used blade is accomplished by inserting a pointed tool into the groove and prying the blade away from the holder.

3,727,507
SEMI-CHISEL CUTTER LINK FOR SAW CHAIN

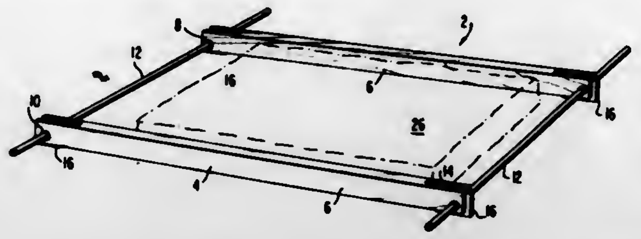
Werner Weiss, Burlington, Ontario, Canada, assignor to Sabre Saw-Chain, Ltd., Burlington, Ontario, Canada
Filed Nov. 8, 1971, Ser. No. 196,527
Int. Cl. B27b *33/14*
U.S. Cl. 83—831 **14 Claims**



A cutter link for a saw chain having a continuous cutting edge with a leading first cutting point and a second cutting point disposed rearwardly of the first cutting point. The shank and toe portions of the cutter link are connected at their outside juncture by a concave chamfer.

3,727,508
CUTTING GUAGE FOR CAKES

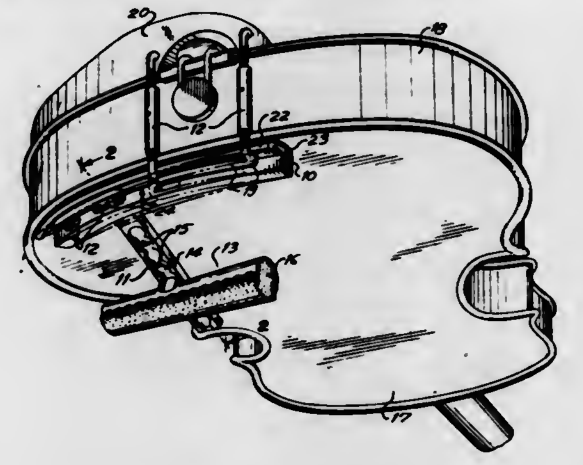
Ray Haapala, Route 3, Box 76, Dassel, Minn.
Filed Dec. 10, 1971, Ser. No. 206,723
Int. Cl. A47j *43/00*
U.S. Cl. 83—859 **4 Claims**



A knock-down rectangular frame has two opposite sides with straight edges which serve as knife guides. Adjustable distance pieces at the ends of the frame sides predetermine the heights of the straight edges.

3,727,509
VIOLIN SHOULDER REST

Theodore Henkle, 5415 Reynolds Street, Savannah, Ga.
Filed July 22, 1971, Ser. No. 165,105
Int. Cl. G10d *1/02*
U.S. Cl. 84—278 **6 Claims**

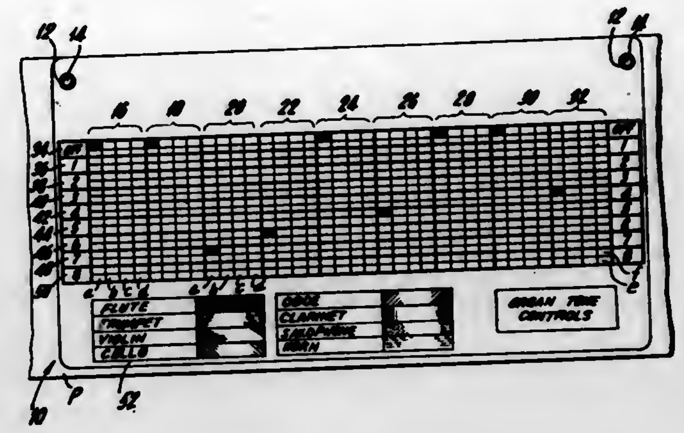


A shoulder rest for violins, violas or the like, which is secured to the instrument by a clamp plate of a conventional chin rest. The shoulder rest includes a mounting plate received in secured relation between the clamp plate and the back of the instrument, an arm, a resilient shoulder rest element removably secured to the arm and formed of a semi-cylindrical sheet of material filled with a solid pad of cushion material, and means detachably connecting the arm to the mounting plate.

3,727,510
ORGAN TONE CONTROL

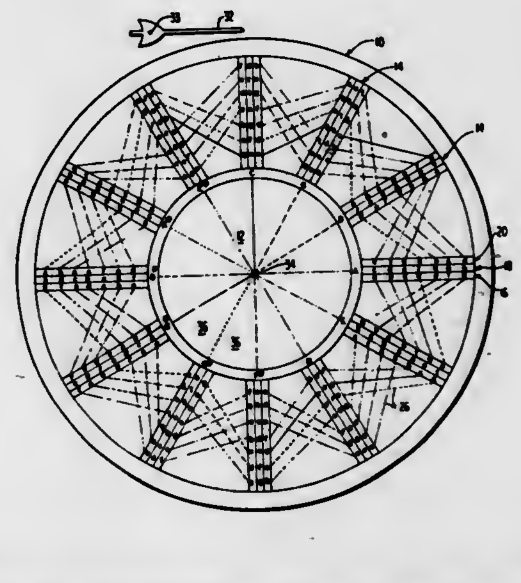
Lucine H. Cook, Sr., 10 Annette Drive, Port Washington, N.Y.
Filed April 30, 1971, Ser. No. 139,028
Int. Cl. G10b *3/10;* **G09b** *15/02*
U.S. Cl. 84—453 **22 Claims**

Various forms of template are provided for use in conjunction with an electronic organ, for permitting the rapid positioning of the draw bars without the need for the organist to memorize a nine-digit combination of numbers for each tonal quality. Several different embodiments of the basic concept will be described and illustrated. In one embodiment, the template having indicator thereon determines the outward position of each of the draw bars. Another embodiment of this invention provides a template having a plurality of different draw bar position combinations thereon, each of the draw bar combinations being in a distinctively different color, corresponding to the tonal quality desired by the organist. A further embodiment of the present invention provides selectively viewable light means for defining the outward position of each of the draw bars while a final embodiment of the present invention provides a notched template that limits the outward movement of the several draw bars.



3,727,511
METHOD AND APPARATUS FOR TEACHING MUSIC CHORDS

Valeria C. Piper, 4315 Blagden Avenue N.W., Washington, D.C.
Filed Dec. 4, 1970, Ser. No. 95,075
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **3 Claims**



Apparatus for teaching music chords for educational or for use in a game, including a game board having a center area and a plurality of groups of elongated areas or channels radiating outwardly from the center area at angularly spaced locations. Each group corresponds to a different musical scale the first note of which is represented by indicia at points on the circumference of the center area adjacent the inner boundary of the group of elongated areas respectively. The number of elongated areas in each group corresponds to the number of notes in a musical chord; in the case of piano this number being three. Spaced along the elongated areas in each group are indicia corresponding to the sequential notes in each scale. A plurality of studs which may be pins or pegs are located permanently on opposite sides of each of the groups at stations corresponding to each chord. A plurality of connecting members such as rubber bands are provided for interconnecting the studs associated with adjacent groups so that the position of each of the chords may be traced throughout the different scales. Additionally, a plurality of removable studs such as pins or pegs are provided for insertion into the board in the elongated areas adjacent a note which is a sharp or a flat note in a particular chord.

3,727,512

PROCESS FOR THE SURFACE TREATMENT OF NON METALLIC CASES SUCH AS CARTRIDGES, AND THE SO TREATED CASES

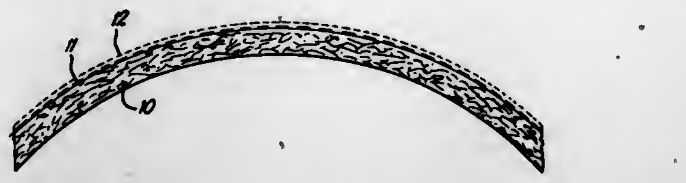
Curt Berger, Sackingen, Germany, assignor to Les Forges De Zeebrugge S.A., Herstal-Les-Liege, Belgium

Filed March 4, 1970, Ser. No. 16,366

Claims priority, application Germany, March 13, 1969, P 19 12 727.6

Int. Cl. F42b *5/18*

U.S. Cl. 86—20 **5 Claims**



The invention relates to a process for surface treating porous combustible cartridge cases, said process consisting in applying a first barrier layer on the outer surface of the case, and, on this layer a water impervious layer so that the case is rendered moisture- and waterproof without modification of its porous structure.

3,727,513

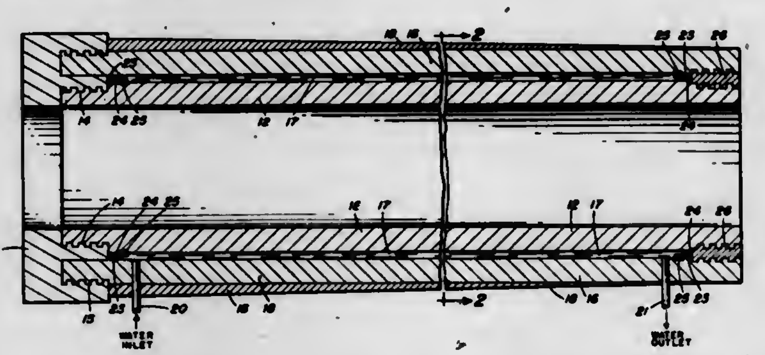
FLUID PRESTRESS AND COOLING TECHNIQUE FOR GUN BARREL DESIGN

Lawrence E. Wicks, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 19, 1971, Ser. No. 163,641

Int. Cl. F41f *17/14*

U.S. Cl. 89—14 A **1 Claim**



A gun barrel having a fluid layer between the barrel liner and case. The fluid is kept under a high pressure to prestress the liner. Between shots the fluid is replaced to remove the heat conducted by the liner.

3,727,514

MEANS FOR CONTROLLING THE FIRING OF A GUN AGAINST A MOVABLE TARGET

Jacques Maxime, and Rene Larribaut, both of Tarbes, France, assignors to French State, represented by the Minister of Armed Forces, Ministerial Delegation for Weapons, Technical Direction of Land Weapons Manufacturing Workshop, Tarbes, Paris, France

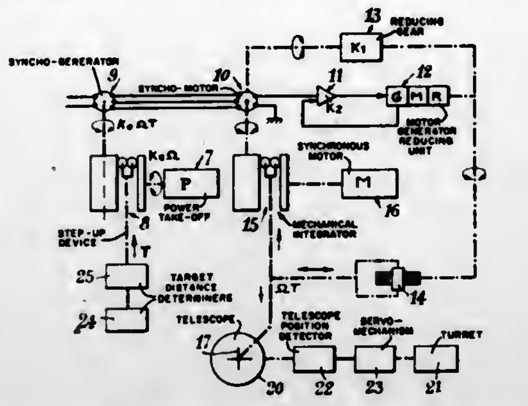
Filed April 17, 1969, Ser. No. 817,624

Claims priority, application France, April 25, 1968, 68149397

Int. Cl. F41g *3/06*

U.S. Cl. 89—41 E **3 Claims**

This invention provides a method of and a device for controlling the firing of a gun equipped with a sighting telescope which, by taking due consideration for the chief parameters, permit of introducing the correction required for firing against a moving target. This correction is obtained by moving the cross-hairs of the sighting telescope which is responsive to servo-means and adapted to travel through an angular distance equal to ΩT in the direction opposite to the pursuit direction. This value ΩT is mainly subordinate to the distance and to the speed Ω of the target which determine the gun pursuit speed and also to the time T of the shell or projectile course. The correction may be introduced according to two different methods: in the first method, the position of the cross-hairs of the sighting telescope is acted upon continuously, and in the second method requiring the use of a fixed pair of cross-hairs and of a movable pair of cross-hairs the correction is introduced only at the last moment on the firer's will, when the pursuit is stabilized.



3,727,515

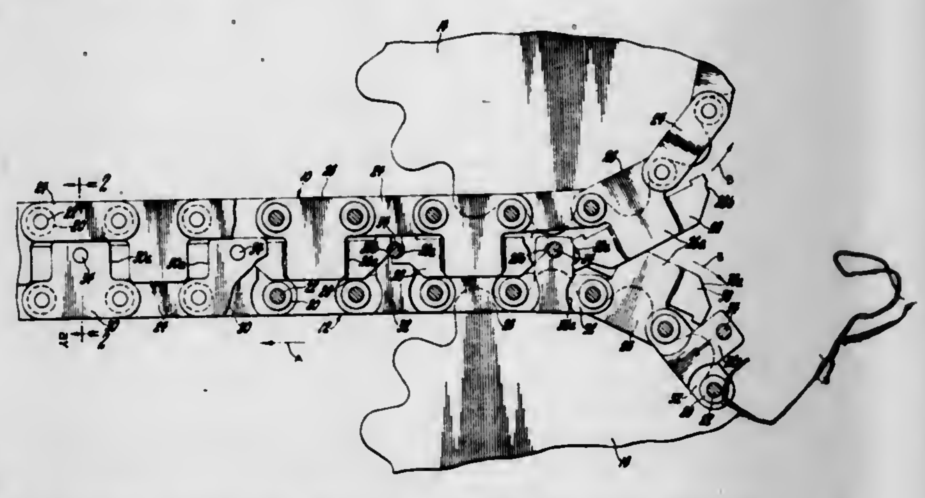
PARALLEL CHAIN DRIVE DEVICE

Harry N. Nelson, and Donald E. Peck, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1971, Ser. No. 193,105

Int. Cl. F41f *17/16*

U.S. Cl. 89—47 **4 Claims**



A parallel chain drive device for use as a stowable ammunition rammer rod includes two stiff-backed sprocket roller chains that will flex readily when the chains are separated from each other during movement around a pair of chain drive sprockets in one direction and which interlock with each other to resist bending when moved in another direction into parallel paths of travel with respect to each other as driven and guided by the sprockets.

3,727,516

CUSHIONED VALVE PLUNGER

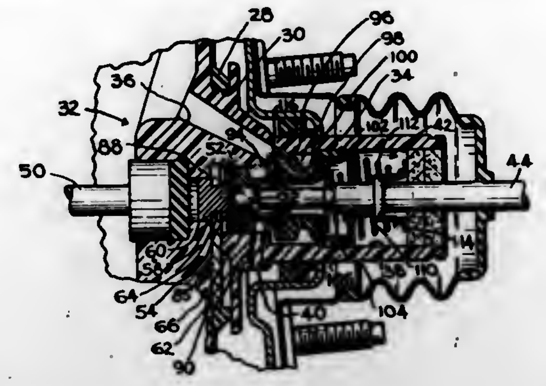
Lawrence R. Myers, and John J. Lakovits, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed June 7, 1971, Ser. No. 150,326

Int. Cl. F15b *9/10*

U.S. Cl. 91—376 **2 Claims**

A plunger member slidably retained along an axial line in a central bore of a hub member by guiding surfaces for controlling the flow of an operational fluid. In response to an operator supplied input, the plunger member moves on the guiding surfaces in the central bore. An annular stop on the plunger member limits the movement of the plunger member in one direction by engaging a portion of the housing of the hub member. A resilient member positively retained in the plunger member adjacent the annular stop provides a cushioning surface in which noise between the plunger member and the hub member is absorbed.



3,727,517

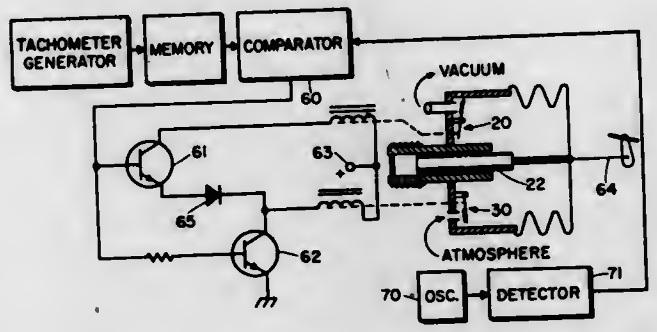
AUTOMATIC SPEED CONTROL

Michael Slavin, Baltimore; Raymen Forrest Emery, Lutherville; Ralph Wolf Carp, and Leoncio Tan Ang, both of Baltimore, all of Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed March 3, 1971, Ser. No. 120,422

Int. Cl. F15b *9/03, 9/09*

U.S. Cl. 91—361 **6 Claims**



An automobile speed control system of the vacuum actuated type having a unitized housing embodying actuator, modulator, electronic components and inductive position feedback means. Electrical connections into the hermetically sealed expansible actuator, and noise caused by feedback potentiometer wear are eliminated. Valve means within the actuator are operated by magnetic forces generated externally to the actuator, thus eliminating electrical connections. The feedback means comprise a metallic body sealed in the actuator and movable therewith and an inductor external to the housing arranged so that its inductance will vary according to the position of the metallic body.

3,727,518

CHOKE-CHECK VALVE

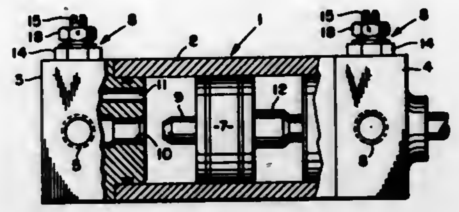
Harley L. Gooding, Jr., Palatine, Ill., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

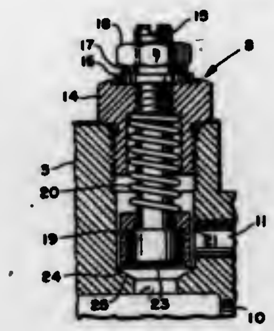
Filed Dec. 8, 1970, Ser. No. 96,014

Int. Cl. F15b *15/22*

U.S. Cl. 91—396 **11 Claims**

A choke-check valve for use as with a fluid motor to cushion the piston thereof as it approaches the end of its stroke characterized in that the valve has several modes of operation namely, one in which a choke adjusting member is operative to move a spring biased check valve member away from its seat to vary the flow capacity of the cushioning orifice through which fluid passes from the motor as the piston nears the end of its stroke without affecting the full flow characteristics of the check valve through which fluid passes into the motor to move the piston in the opposite direction; another in which the adjusting member moves toward the check valve seat while the check valve member is in seated position thus to define another adjustable cushioning orifice, again without affecting the pressure drop across the check valve when fluid flows into the motor; and yet another in which the adjusting member may be additionally moved toward the check valve seat to restrict fluid flow in both directions through the valve, even to the extent that fluid flow through the valve is stopped whereby the valve further constitutes a shut-off valve. The valve herein is further characterized in that the size or flow capacity of the cushioning orifice may be automatically varied as the piston decelerates during the cushioning portion of its stroke.





3,727,519

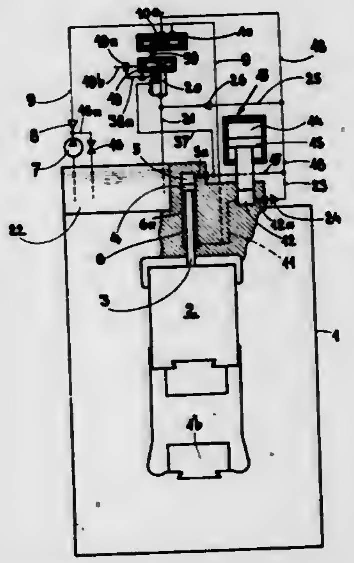
HAMMER WITH A RAM CONTROL DEVICE

Harald Hassel, Coburg, Germany, assignor to Langenstein & Schemann Aktiengesellschaft, Coburg, Bavaria, Germany

Filed Sept. 17, 1970, Ser. No. 73,064

Int. Cl. F15b *15/17, 11/08*

U.S. Cl. 91—417 R **6 Claims**

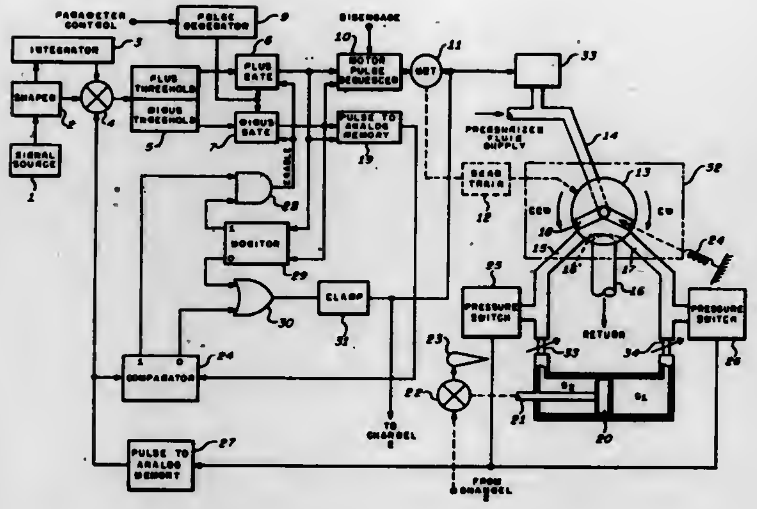


The invention relates to a hammer comprising a hydraulically operated ram and a control device for stopping the ram, comprising a piston and cylinder combination, one end of which is permanently in communication with a hydraulic fluid cavity, and the other end being in communication with said cavity through a main switching device, a pump draws liquid from a reservoir and pressurizes the cavity, as well as supplying fluid to the upper end of the cylinder through a non-return valve from the cavity, the main switching device communicating with the reservoir through a passage in which is provided an escape valve and a throttle in said passage, and a further throttle in a branch passage communicating with said first mentioned passage in front of the throttle, a switch piston occupying a cylinder behind the further throttle to control the escape valve through an actuator operated by the switch piston.

3,727,520
DIGITAL ELECTROHYDRAULIC SERVO SYSTEM

Gary C. McKown; Gerald F. Simons, and Frederick W. Lynch, all of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 6, 1970, Ser. No. 87,552
Int. Cl. F15b *11/08, 13/044*
U.S. Cl. 91—433 5 Claims

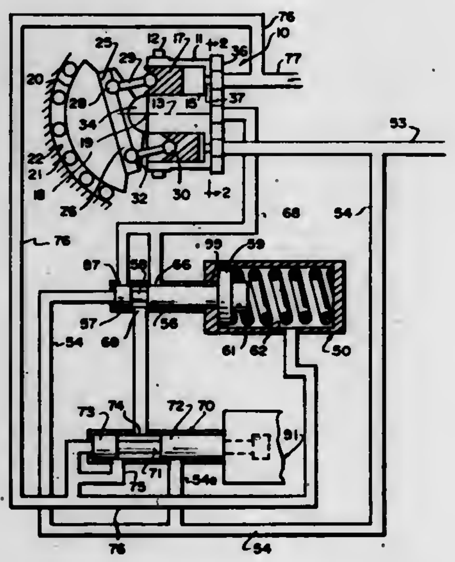


The invention comprises a single stage hydraulic control valve system having a plurality of discretely located monitoring pressure and position sensors and controlled by a digital control system through an interfacing stepper motor. The control valve system positions a controlled element in accordance with a command signal. The plurality of pressure and position sensors provide an operation check means for establishing a confidence level of the system operation.

3,727,521
ROTARY PUMP WITH DISPLACEMENT CONTROL

Richard W. Reynolds, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed April 12, 1971, Ser. No. 133,278
Int. Cl. F01b *1/00, 3/00;* F04b *1/26*
U.S. Cl. 91—475 13 Claims

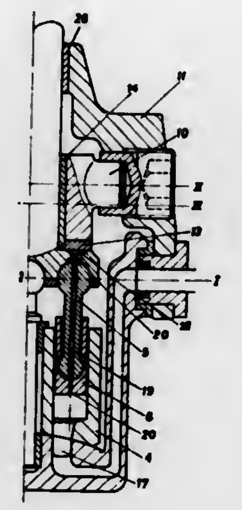


An axial piston pump including a rotary cylinder block with reciprocable pistons controlled by an adjustable swashplate for varying displacement as the cylinder block rotates against a valve plate, together with a control port in the valve plate for supplying fluid under pressure to the pumping pistons for controlling the position of the swashplate and therefore the displacement through the medium of the pumping pistons rather than separate control means.

3,727,522
HYDRAULIC MACHINES

Dieter Weigle, Ulm/Danube, Germany, assignor to Constantin Rauch, Ulm/Danube, Germany

Filed Oct. 16, 1970, Ser. No. 81,457
Claims priority, application Germany, Oct. 17, 1969, P 19 52 472.2
Int. Cl. F01b *13/06*
U.S. Cl. 91—505 9 Claims

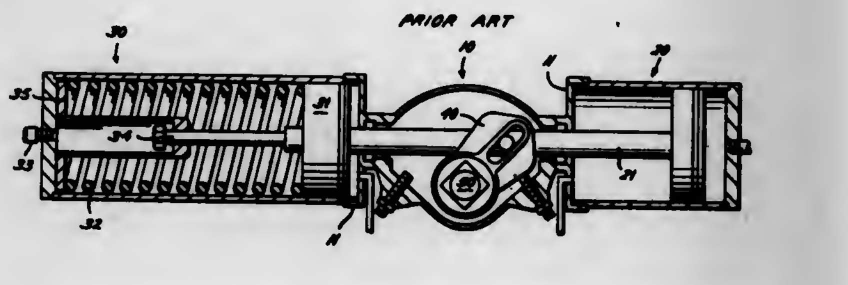


A hydraulic machine constructed and arranged to be driven and transmit fluid from a source of supply through a series of perforated pistons to a pressurized chamber provided adjacent to bearing means supporting a driving shaft.

3,727,523
SPRING RETURN CARTRIDGE

Ronald A. Gulick, Sugarland, Tex., assignor to Research Engineering Company, Houston, Tex.

Filed May 7, 1971, Ser. No. 141,217
Int. Cl. F01b *31/00*
U.S. Cl. 92—130 3 Claims



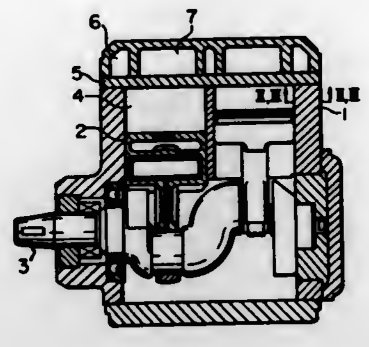
An actuator of the type having a spring return portion, wherein the cylinder containing the spring forms a cartridge interchangeable on the housing with other cartridges, and the cartridge is so constructed as to negate the need for venting to atmosphere.

3,727,524
GAS COMPRESSOR

Keizo Nishiyama, Handa; Hikaru Takaoka, and Shozo Nakayama, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Japan

Filed Aug. 4, 1971, Ser. No. 168,982
Claims priority, application Japan, Aug. 8, 1970, 45/69387
Int. Cl. F01b *11/02*
U.S. Cl. 92—169 3 Claims

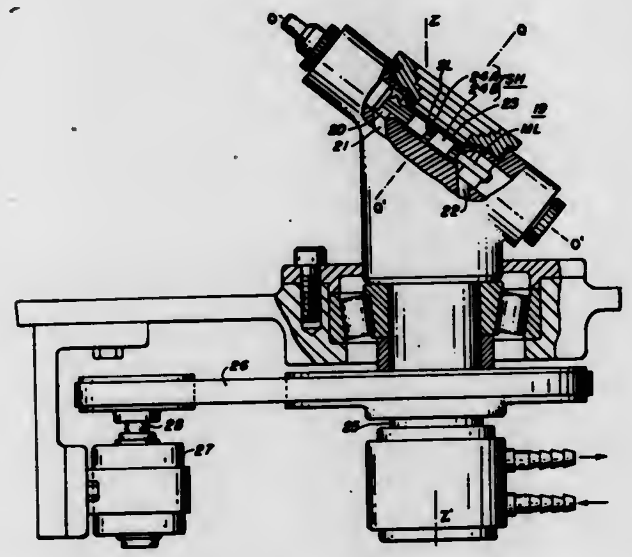
A gas compressor of high wear-resistance comprising at least one set of a piston and a cylinder, preferably a ringless piston and a sleeveless cylinder, which are composed of an Al-Si alloy mainly containing eutectic crystals, preferably the piston being composed of a hyper eutectic crystals of an Al-Si alloy, the inside wall surface of the cylinder being formed of a chill structure layer.



3,727,525
DEVICE FOR MAKING PHOSPHOR SCREEN FOR COLOR PICTURE TUBES

Jiro Degawa, 6-301 Makuhari-cho, Chiba, and Osamu Takeuchi, 14-8 Tama-daira 2, Tokyo, both of Japan

Continuation-in-part of Ser. No. 836,871, June 26, 1969, Pat. No. 3,593,056. This application April 8, 1971, Ser. No. 132,331
Claims priority, application Japan, June 29, 1968, 43/45376
Int. Cl. G03
U.S. Cl. 95—1 R 11 Claims



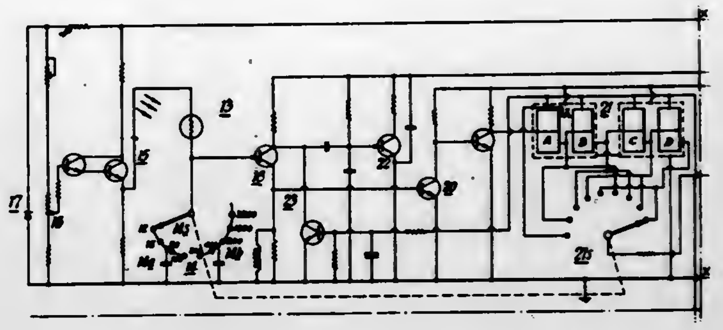
A novel mercury-arc lamp which is partly shielded so as to provide a point source of light for use with a make for producing color phosphor screens of color television picture tubes is disclosed. Various embodiments disclose different means for shielding the ends of the mercury-arc lamp. In addition, an apparatus for cooling the mercury-arc lamp is disclosed.

3,727,526
PHOTOGRAPHIC EXPOSURE CONTROL ARRANGEMENT

David Hinds, Yorkshire, England, assignor to Vickers Limited, London, England

Filed Feb. 11, 1970, Ser. No. 10,394
Claims priority, application Great Britain, Feb. 11, 1969, 7,440/69
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT 13 Claims

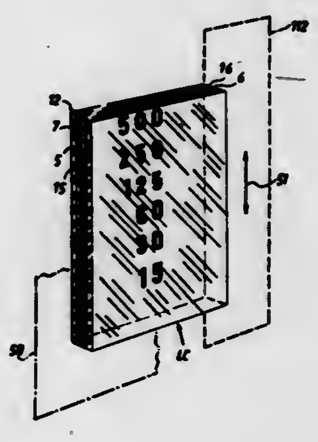
A photographic exposure control arrangement in which pulses are produced by the repeated charge and discharge of a capacitor in dependence upon the light intensity and an electromagnetic shutter is held open for the duration of a predetermined number of pulses which are counted by a binary counter.



3,727,527
PHOTOGRAPHIC APPARATUS WITH LIQUID CRYSTAL VOLTAGE INDICATOR

Kurt Borowski, Munich, and Alfred Kubitzek, Munich Solln, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

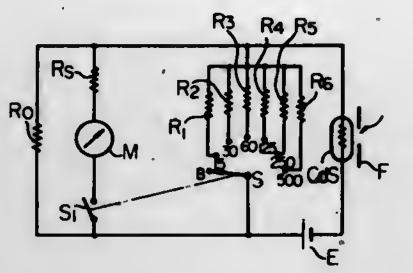
Filed June 8, 1972, Ser. No. 261,038
Claims priority, application Germany, June 11, 1971, P 21 28 992.9
Int. Cl. G01j *1/42*
U.S. Cl. 95—10 R 10 Claims



A still camera or motion picture camera wherein the exposure control circuit has an output at which the voltage is indicative of the prevailing scene brightness, of the selected aperture size, the selected exposure time and/or the sensitivity of film with which the camera is loaded. The output is connected with one electrode of a liquid crystal cell which is associated with a suitable scale to indicate the voltage at the output. If the voltage at the output is indicative of the aperture size, film speed and/or scene brightness, a reading of the scale (which is preferably observable by looking into the view finder) enables the user of the camera to properly select the exposure time. If the voltage at the output is indicative of the selected exposure time, film speed and/or scene brightness, the user can read the scale to properly adjust the aperture size. One of the two transparent electrodes in the liquid crystal cell may be of sinusoidal shape to further facilitate the determination of boundary between the transparent and non-transparent or differently colored portions of the liquid layer between the electrodes; such boundary travels in dependency on changes of voltage at the output.

3,727,528
PHOTOGRAPHIC CAMERA HAVING AUTOMATIC EXPOSURE CONTROL

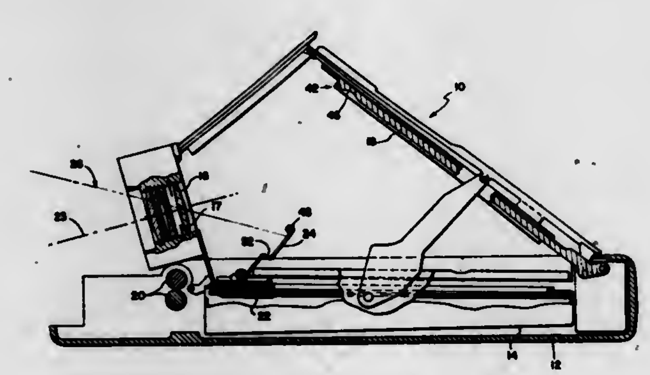
Masanobu Sato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Oct. 20, 1970, Ser. No. 82,307
Claims priority, application Japan, Oct. 22, 1969, 44/100548
Int. Cl. G01j *1/42*
U.S. Cl. 95—10 C **3 Claims**



Photographic camera having automatic exposure control of the type in which the shutter speed is selected by the operator, the operation of the shutter release being prevented when the scene brightness is excessive or insufficient for proper exposure at the selected shutter speed. The electric circuit of the camera consists of a photoelectric element, a galvanometer and a plurality of resistors each having a resistance corresponding to a shutter speed and selectively connected to the circuit in coupled relationship to the setting of the shutter speed to compensate for the indication of the galvanometer for proper exposure in accordance with the set shutter speed. The galvanometer is short-circuited or deenergized upon the setting of the shutter to the "bull" position or B-speed at which the shutter blades are kept opened upon actuation of the shutter release until the shutter is released thereby permitting the galvanometer to indicate the condition as if the intensity of light were insufficient for the proper exposure so that false exposure is positively prevented.

3,727,529
COMBINATION FLARE BAFFLE AND LIGHT SEAL FOR A REFLEX CAMERA

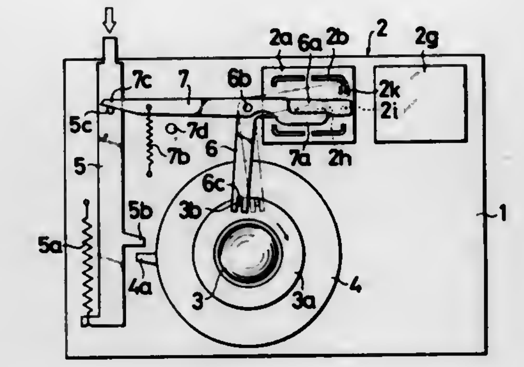
Charles De Jesus, Watertown; William P. Lane, Taunton, and Richard R. Wareham, Marblehead, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed June 7, 1971, Ser. No. 150,675
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **19 Claims**



A movable baffle inside a relfex camera protects a film unit therein from stray light during a photographic exposure and helps prevent fogging of film units stored within the camera during focusing or storage by forming a labyrinth seal with a capping plate. The capping plate is movable so as to cover the film unit during focusing and storage, and includes guide means on its underside to control the movement of the baffle to its labyrinth seal position. The invention is especially suited for use in a folding single lens reflex camera.

3,727,530
DEVICE FOR SETTING FOCUSING DISTANCE IN CAMERA

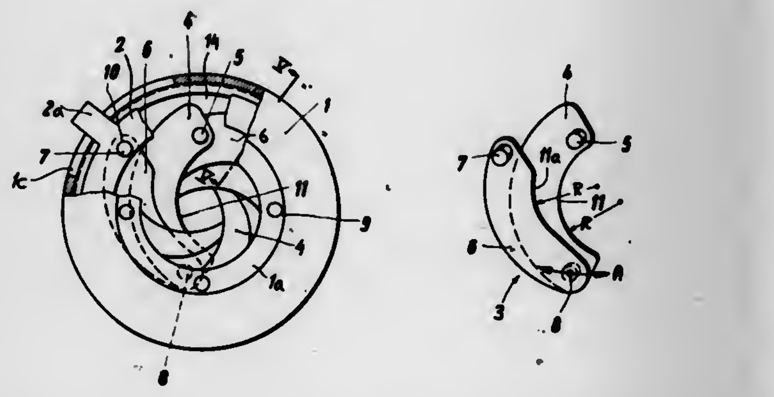
Koichi Aoki, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 4, 1971, Ser. No. 140,076
Claims priority, application Japan, May 9, 1970, 45/45411
Int. Cl. G03b *13/18*
U.S. Cl. 95—44 R **9 Claims**



A slit is formed in a viewfinder frame plate and an optical system projects approximately at the center of the finder field a an image of the slit having a definite length. By the coincidence of the slit image with the image in the finder field of a subject having a foreknown size, the camera can be set for the focusing distance. The optical system for producing the slit image includes a masking member movable across the slit image light path to permit the slit image to appear or disappear in operative relation with the focusing movement of the lens.

3,727,531
IRIS DIAPHRAGM WITH LINEAR APERTURE SCALE

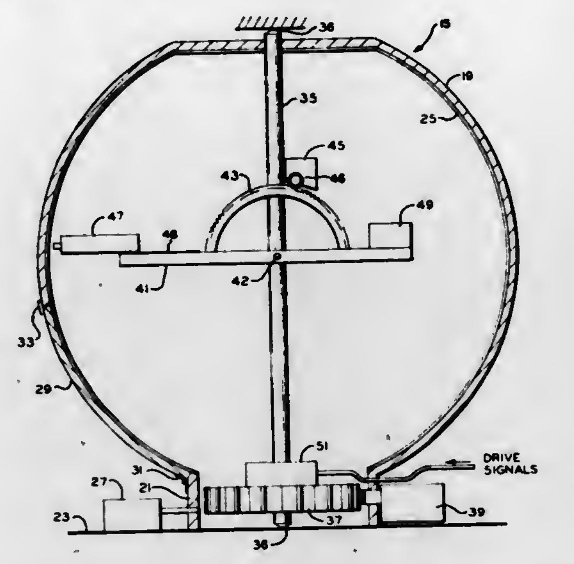
Albert Baab, Bad Kreuznach, Germany, assignor to Jos. Schneider & Co. Optische Werke, Bad Kreuznach, Germany
Filed June 21, 1972, Ser. No. 264,770
Claims priority, application Germany, July 21, 1971, P 21 36 343.9
Int. Cl. G03b *9/06*
U.S. Cl. 95—64 R **10 Claims**



An iris diaphragm provided with a fixed mounting ring and a rotatable setting ring coplanar therewith has a multiplicity of angularly equispaced iris-leaf pairs each including a main leaf and an ancillary leaf articulated to each other at one end, the free opposite ends of the two leaves being respectively fulcrumed on the mounting ring and on the setting ring confronting the same side of the leaves. The generally crescent-shaped ancillary leaf has an arcuate inner edge with a radius of curvature substantially corresponding to the maximum radius of the diaphragm aperture; the main leaf may be of similar configuration of may have a generally elbow-shaped contour.

3,727,532
SPHERICAL CAMERA MODEL SYSTEM

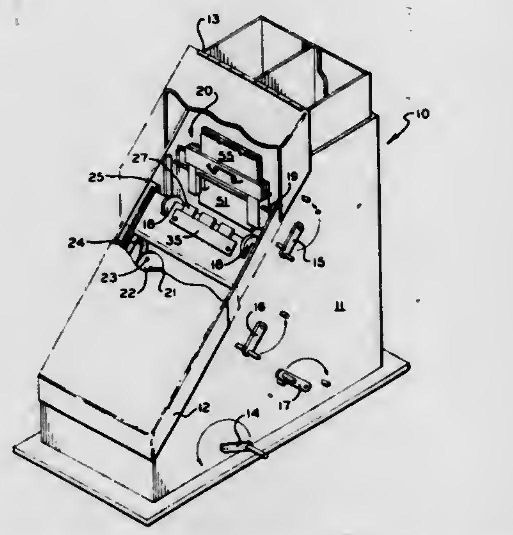
Gerald A. Gregory, Binghamton, N.Y., assignor to Singer Company, New York, N.Y.
Filed May 10, 1971, Ser. No. 141,871
Int. Cl. G03b *17/56*
U.S. Cl. 95—86 **8 Claims**



A TV camera mounted on a support structure within a spherical shell to provide video signals for display. The support structure is rotatable and the camera is movably mounted thereon. Air can be applied to the interior of the shell to press a sheet of flexible material including display data against the surface of the shell.

3,727,533
LIGHTPROOFED DENTAL RADIOGRAPHIC FILM DEVELOPER

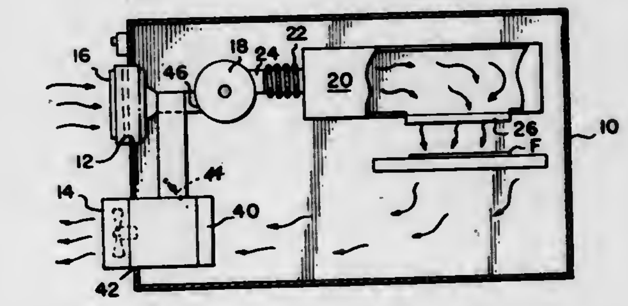
Theodore Perl, 58 Ely Drive, Fayetteville, N.Y.
Filed July 20, 1971, Ser. No. 164,270
Int. Cl. G03d *3/10*
U.S. Cl. 95—89 R **5 Claims**



A small X-ray film developer has a lightproof housing having a door through which a plurality of exposed films in their lightproof wrappers may be introduced by sliding the wrapper flaps over the thin edge of a plate adapted to slide toward and away from an identification card holder which is adapted to be rotated and to be raised and lowered. After the card and films have been introduced the door is closed and a rod under the flaps is rotated about 135° around the plate to open the wrapper flaps exposing a small portion of each film so that each may be contacted by gummy portions on the card when it is turned. The plate is then slid away from the card thus withdrawing the films and the card is turned and lowered dipping the films into a developing tank. Valves controlling sources of developer, fixer and water are then operated to supply the tank successively therewith. The card is then raised and a fan is turned on to dry the developed films. The door is then opened and the card with attached developed films is removed. A film cover with appropriate windows for the films is then attached to the card leaving its identifying inscriptions and the films readable.

3,727,534
APPARATUS FOR THERMALLY FIXING A NON-SILVER FREE RADICAL PHOTOSENSITIVE COMPOSITION

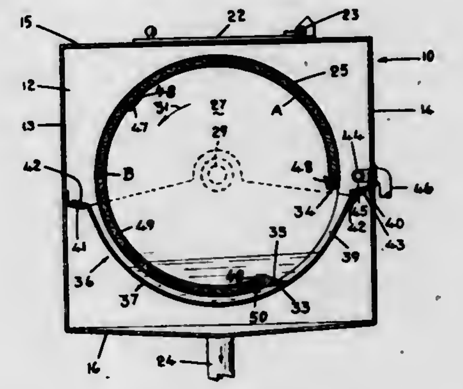
William H. Low, Jr., Shaker Heights, and David R. Schaller, Chagrin Falls, both of Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio
Filed Oct. 20, 1971, Ser. No. 190,720
Int. Cl. G03d
U.S. Cl. 95—89 R **2 Claims**



The heat fixing of non-silver free radical films is effected by blowing heated air directly at the film so that the air strikes the film approximately perpendicular to the film surface and a turbulence is created in the air adjacent to the film and the apparatus for effecting the same.

3,727,535
PHOTOGRAPHIC PROCESSING APPARATUS

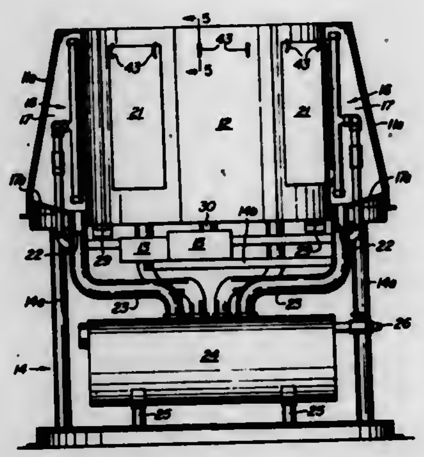
Robert G. H. Streeter, 124 8th St., Toronto 14, Ontario, Canada
Filed Sept. 25, 1970, Ser. No. 75,605
Int. Cl. G03d *3/06*
U.S. Cl. 95—93 **13 Claims**



Apparatus for processing photographic materials such as film or paper prints. The apparatus comprises: an elongated horizontal housing having a top wall provided with an access opening sealed by a lid, a horizontal cylindrical drum mounted in the housing for rotation on its longitudinal axis, a solution tray pivotally mounted in the housing below and drum for movement between an operative position and a dumping position for discharging spent solution, and a distribution pipe for supplying treatment solution to the tray. The drum is provided with an opening in its periphery having two parallel rims extending along the longitudinal axis of the drum and a scooping lip mounted on one of the said rims. The sheets of photographic material are placed in the drum through the opening and the sheets are secured inside the drum by adjustable bars detachably fixed on the inside periphery of the drum. The drum is then continuously rotated about its horizontal axis and a predetermined amount of treatment solution fed into the tray. As the drum rotates the scooping lip scoops up the solution into the drum so that the photographic sheets are continuously brought into contact with the solution. The tray is then tilted to discharge the solution and a succession of treatment solutions are fed into the tray in the foregoing manner until the photographic sheets are processed.

3,727,536
EXPOSED PRINTING PLATE WASHER

Richard D. Bunker, Salt Lake City, Utah, assignor to Dyna-Flex Corporation, Salt Lake City, Utah
Filed Jan. 3, 1973, Ser. No. 214,736
Int. Cl. G03d *3/10*
U.S. Cl. 95—98 **5 Claims**

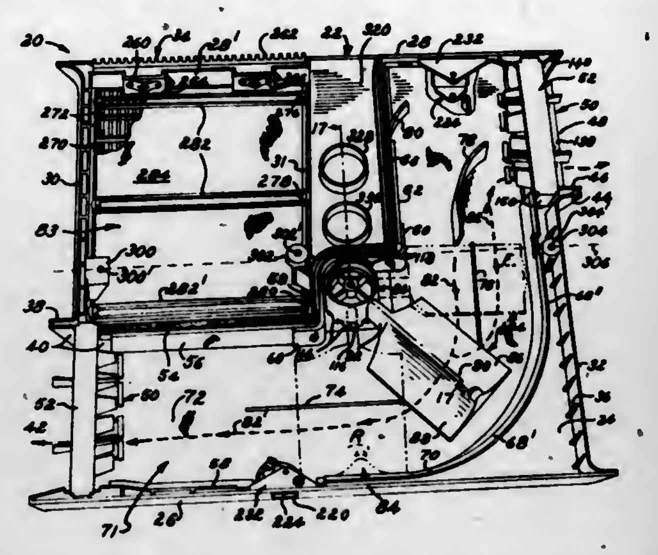


An apparatus for washing away water soluble areas of a plastic emulsion covering a plate used in printing operations. Portions of the normally water soluble plastic emulsion become insoluble in water when exposed to ultra violet light through a light dark master. The apparatus consists of a housing wherein circulating heated water is sprayed uniformly over the printing plate by an arrangement of nozzles to remove the portions of the plastic emulsion remaining water soluble. The nozzles uniformly wash all areas of the emulsion coating, developing thereon, in plastic relief, a representation of the light dark master. The housing of the apparatus also contains air jets and heat lamps arranged for drying the developed plate. Exposed printing plates are carried within the apparatus housing by a continuously slowly revolving drum to which an operator releasably mounts each printing plate by spring clamps through an access opening in the housing.

3,727,537
AIR DISTRIBUTION UNIT

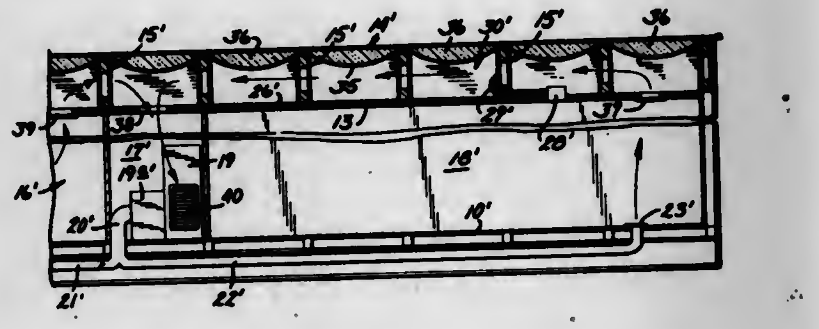
Millard Fillmore Harty, Jr., Bloomfield Hills, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.
Filed Aug. 25, 1971, Ser. No. 174,619
Int. Cl. F24f *13/00*
U.S. Cl. 98—32 **26 Claims**

An air distribution unit for use with an air conditioner for a motor or mobile home, travel trailer or the like wherein the air conditioner is mounted exteriorly on the roof and warm air is drawn from the space to be cooled through the ceiling into the air conditioner and then returned via a cool air supply duct to cool the space. The unit comprises a shroud having front, rear and side walls and an open upper end adapted for flush mounting against the ceiling. An S-shaped cool air distribution passageway extends within the shroud which registers with the outlet of the cool air supply duct leading from the air conditioner. An air deflector is movably disposed in said air distribution passageway to variably apportion the cool air between front and rear cooled air discharge outlets which in turn are controlled by multiple vane louver means adjustable about two axes. Lateral distribution of cool air is obtained through adjustable vane side outlets. The shroud includes a warm air return passageway which is isolated by internal partitions from the distribution passageway. The warm air intake is covered by a perforate, hinged grill which is readily removable for cleaning. The shroud also provides recessed mounting for the controls of the roof-mounted air conditioner unit, and is adapted to conform to various curvatures of the ceiling mounting surface through a center-line mounting arrangement.



3,727,538
HEATING AND VENTILATING SYSTEM FOR MOBILE HOMES

Dean Jacobson, Jr., 420 East Vernon, Fergus Falls, Minn.
Filed Sept. 15, 1971, Ser. No. 180,691
Int. Cl. F24f *13/00*
U.S. Cl. 98—33 **4 Claims**



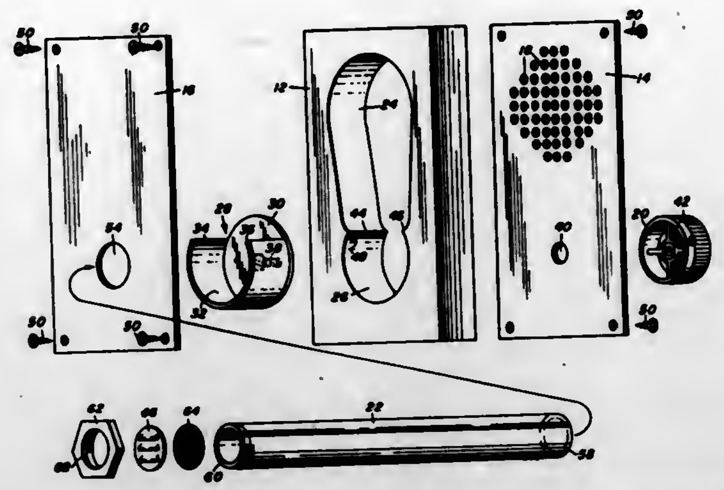
A mobile home construction is shown in which a forced ventilation cavity is provided between the ceiling and an insulated roof. A furnace circulates air through the rooms. Openings in the ceiling provide a return air path through the cavity to the furnace to thereby eliminate temperature and moisture control problems in the cavity.

3,727,539
FRESH AIR VENT

Fran Wilmes, 1524 14th Avenue South, St. Cloud, Minn.
Filed July 2, 1971, Ser. No. 159,271
Int. Cl. F24f *13/08*
U.S. Cl. 98—41 **6 Claims**

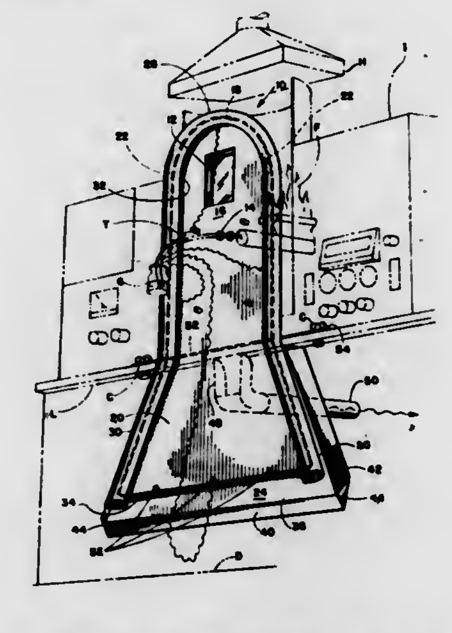
A fresh air vent designed to allow fresh air to flow into a house at a controlled rate is disclosed. The vent consists of a rectangular box which can be inserted in or mounted on the interior surface of the wall of a room of the house, with the front panel of the vent being provided with an opening, which may be in the form of a plurality of small vent holes, which allows air to flow from the interior of the device into the room. On the back surface of the box there is located an opening which is adapted to receive the end of an air inlet tube, the tube extending through the exterior wall of the building to admit air into the vent box. A control valve is located within the box between the inlet and outlet openings, the valve being

adjustable to regulate the flow of air through the box. This control valve is in the form of a slidable gate which may be moved across the opening to permit exact regulation of the air flow through the box.



3,727,540
FUME BARRIER

Vincent Galluzzo, 120 Gibbons Boulevard, Cockeysville, Md.
Filed Aug. 6, 1971, Ser. No. 169,621
Int. Cl. F23j *11/12*
U.S. Cl. 98—115 LH **9 Claims**



Two parallel-spaced sheets having complementarily flanged peripheral portions forming edge intake structure and an air pump for exhausting the space between the sheets comprise an open-air fume barrier for disposition broadside between two points to isolate the points ventilatively to the extent necessary, as in preventing gasoline fumes from reaching an open flame but at the same time avoiding as much as possible any disturbance of the air at either of the points; both a specially shaped upright laboratory embodiment and a circularly symmetrical gasoline dispenser model are disclosed.

3,727,541
HOT WATER SUPPLY SYSTEM FOR BREWER

Harvey R. Krueger, Carpentersville, Ill., assignor to Reynolds Products, Inc., Schaumburg, Ill.
Filed June 7, 1971, Ser. No. 150,282
Int. Cl. A47j *31/00*
U.S. Cl. 99—307 **6 Claims**

A system for supplying hot water to the brewing chamber of a coffee brewer or the like in which a charge of cold water approximating the amount of beverage to be brewed is introduced into a hot water tank adapted normally to contain hot water to a predetermined level through the top of a vertically extending pipe in the tank having a diametral enlargement in the region of said level to discharge the cold water adjacent to a heater in the lower portion of the tank thus to displace a corresponding amount of hot water upwardly above said level to cause hot water to flow outwardly to the brewing chamber by means of a fitting in the wall of the tank through a downwardly opening inlet adjacent the level and through a screen in the fitting above the level.

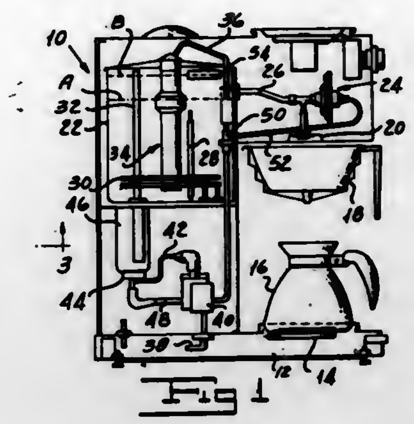
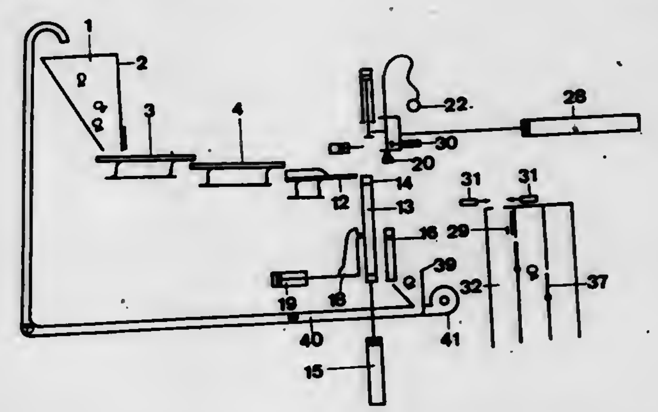


Fig 1

3,727,542
INSTALLATION FOR TRIMMING MUSHROOMS AND OTHER VEGETABLES

Maurice Blanchaud, and Edgard Bournier, both of (Maine et Loire) Chace, France
Filed Oct. 15, 1970, Ser. No. 80,837
Claims priority, application France, Oct. 20, 1969, 6935893; May 5, 1970, 7019635; June 16, 1969, 7022169; Sept. 28, 1969, 035041
Int. Cl. A23n *15/04*; **B26d** *3/00*
U.S. Cl. 99—637 **9 Claims**

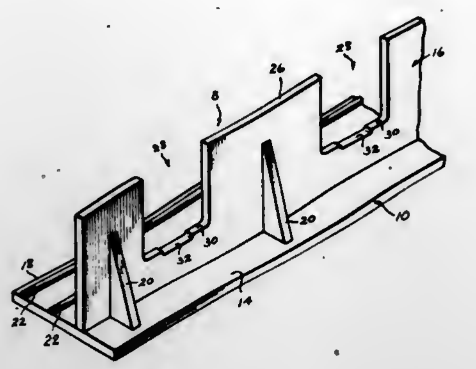


This invention relates to a machine for cutting up mushrooms, first the roots and then the stem, this machine comprising a feed funnel, a vibrating table bringing the mushrooms in lines, feet first, to gripping components, the latter taking the mushrooms and bringing them above the cutting components, the different mushroom pieces being distributed separately into recuperation ducts.

3,727,543
RAIL FOR USE IN STRAPPING LOADS OF MULTIPLE PARTS

Jack H. Morrow, and James A. McCarthy, both of South Bend, Ind., assignors to Rowland L. Sylvester, South Bend, Ind., by said James A. McCarthy
Filed Dec. 30, 1971, Ser. No. 213,893
Int. Cl. B65b *13/00, 13/18*
U.S. Cl. 100—1 **7 Claims**

A rail for use in strapping together multiple parts assembled upon skids to produce a packaged unit. The rail is a rigid member having an elongated base and a single side wall projecting upwardly from the base and spaced from one longitudinal edge of the base. The base and side wall each define grooves or cut-outs which receive the skids and straps by which the load is packaged into a unit.



3,727,544
METHOD AND MEANS FOR SECURING SHELVES AND THE LIKE SUPPORTS BETWEEN TWO WALLS

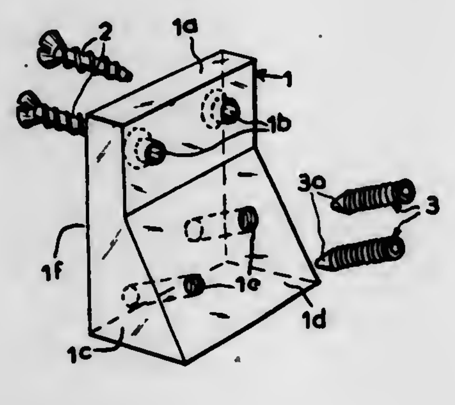
Pierre Devillard, 19 rue Saint Joseph, Saint-Etienne, France

Filed March 9, 1971, Ser. No. 122,447

Claims priority, application France, March 10, 1970, 7008612

Int. Cl. A47b *23/04*

U.S. Cl. 108—42 **5 Claims**



A method and means for securing shelves, racks and the like supports between two walls by means of cleats, each cleat including two sections rigid with each other, the upper, preferably flat section being screwed to the edge of the corresponding end of the shelf while the lower section is screwed to the cooperating wall. Said lower section has advantageously a downwardly flaring surface facing the location of the shelf and the screws securing it to the wall engage the latter in a preferably downwardly sloping direction so as to transmit to the wall the components of the load carried by the shelf.

3,727,545
PRESS WITH SEMI-AUTOMATIC CYCLE

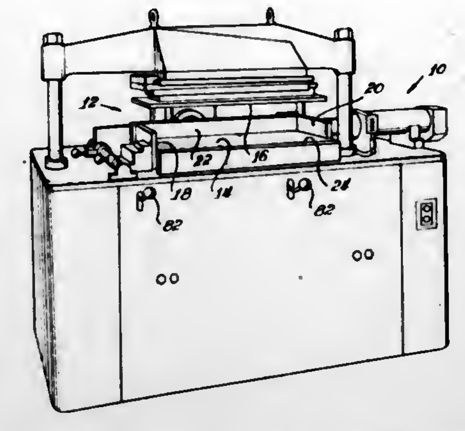
Ditlev P. Madsen, Palos Park, and Norman Rybicki, Chicago, both of Ill., assignors to Chemetron Corporation, Chicago, Ill.

Filed July 26, 1971, Ser. No. 166,087

Int. Cl. B30b *15/14*

U.S. Cl. 100—53 **6 Claims**

In a press of the type comprising a plurality of platens arranged for relative movement in orthogonal directions, an improvement whereby the press remains in operation, once operation of the press has been initiated by a starting switch and once a predetermined point in the operating cycle has been reached, after the starting switch has been opened.



3,727,546
GARBAGE COMPACTOR

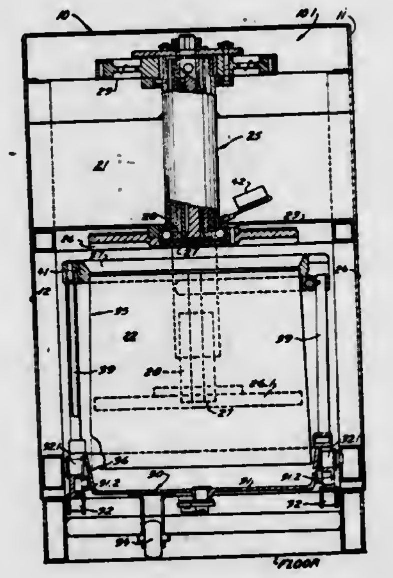
John J. McKinney, South Burnaby, British Columbia, Canada, assignor to MCW Holdings Ltd., Vancouver, British Columbia, Canada

Filed Feb. 25, 1971, Ser. No. 118,918

Claims priority, application Great Britain, Oct. 7, 1970, 47,603/70

Int. Cl. B30b *15/06*

U.S. Cl. 100—229 A **3 Claims**



A garbage compactor having an upwardly tapered stainless steel garbage receiving sleeve on which a garbage bag can be slidably fitted and a pressure plate movable axially of the sleeve for compressing garbage against the garbage bag bottom which is supported by a platform located below the sleeve. The sleeve protects sides of the bag from damage which, otherwise, might rip in compacting sharp cornered objects.

3,727,547
SELF-ADJUSTING CODING APPARATUS

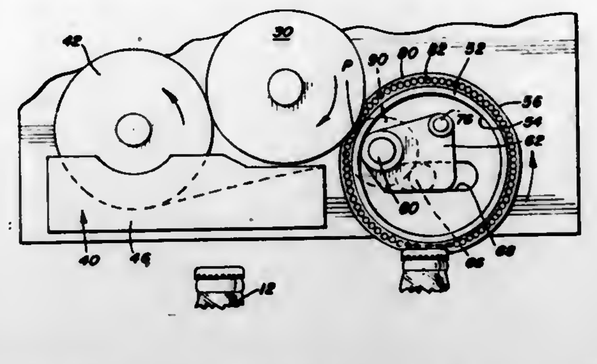
Sheldon L. Wilde, Crawfordsville, Ind., assignor to H-C Industries, Incorporated, Crawfordsville, Ind.

Filed June 17, 1971, Ser. No. 154,083

Int. Cl. B41f *17/16*

U.S. Cl. 101—35 **10 Claims**

Marking apparatus for applying indicia to capped bottles or other containers of varying heights. The device consists of a rim having a print ring on the outer perpheral surface held in frictional engagement with a drive wheel that also performs a function of supplying ink to the print ring and is maintained in frictional engagement through a smaller diameter wheel engaging the inner surface of the rim. A substantial point contact between the inner surface of the rim and the outer surface of the support wheel allows the rim to move vertically to compensate for bottles of varying heights passing under the rim.



While not necessary to the practice of the invention, an idler roller may engage the inner surface of the rim at the location spaced from the contact with the second wheel to provide additional support for the rim during its normal rotational movement.

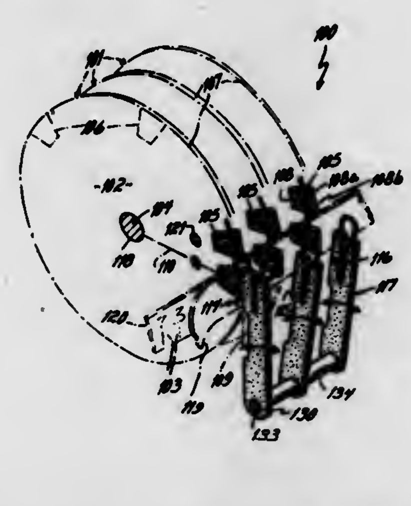
3,727,548
PRINT HAMMER WITH INTEGRAL PIVOTAL PRINT ANVIL

Vernon T. Kleimeyer, and Thomas J. Schinner, both of Cincinnati, Ohio, assignors to The Cincinnati Time Recorder Company, Inc., Cincinnati, Ohio

Division of Ser. No. 805,284, March 7, 1969, abandoned. This application Jan. 13, 1971, Ser. No. 106,227

Int. Cl. B41j *9/02*

U.S. Cl. 101—93 C **1 Claim**



The printer includes a plurality of print wheels coaxially mounted for rotation about a common shaft and each including a metal disc provided with circumferentially spaced, embossed character bearing print members located at the disc periphery, and a plurality of pivotally mounted print hammers each having an anvil with a hammer surface which is selectively urgeable against its associated embossed character to produce at a print station, a character imprint on a record medium interposed along with a carbon ribbon between the hammer and the print wheel. One form of hammer includes an anvil which is pivotally mounted to the hammer body for the purpose of automatically compensating, every imprinting cycle, for nonparallelism between the hammer surface of the anvil and the plane of the embossed character at the point where they engage in imprinting relationship. Another form of hammer includes an anvil whose orientation can be selectively and permanently adjusted to eliminate nonparallelism between the hammer surface and a given character plane. Adjustment is accomplished by plastically deforming a wire which controls the orientation of the anvil relative to the hammer body. A method of fabricating the print wheels is disclosed which includes a placing holes at the center of the disc as well as at index points associated with the print member receiving positions whereat the print members are formed; mounted the disc in a molding device having a center post, an index post and a print member forming, or molding, cavity with the center and index posts engaging the center hole and an index hole, respectively, and with the print member receiving position of the disc positioned within the molding cavity; and introducing molten molding material into the cavity to form the print member at the print member receiving position inserting within the cavity.

3,727,549
MANUALLY OPERABLE ROLLER TYPE PRINTING DEVICE

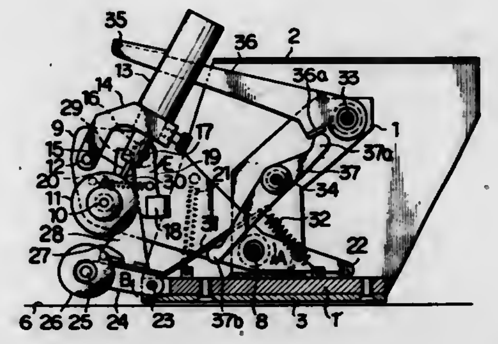
Toshimi Kumakura, and Takashi Hosoyama, both of Tokyo, Japan, assignors to Kabushiki Kaisha Itoya, Tokyo, Japan

Filed March 15, 1972, Ser. No. 234,784

Claims priority, application Japan, July 29, 1971, 46/57086; Dec. 9, 1971, 46/99763

Int. Cl. B41f *31/30, 17/26*

U.S. Cl. 101—330 **5 Claims**



The manually operable roller type printing device has a body frame adapted to be slidably moved on the surface to be printed, and the body frame mounts therein a rotatable printing roller movable toward and away from the surface to be printed and urged normally away from the surface to be printed, a rotatable ink applying roller rotatably contacting with the printing roller for supplying ink to the printing roller, an ink distributing pad contacting with the ink applying roller for uniformly distributing ink on the peripheral surface of the ink applying roller as it rotates, and a manually operable pressing lever operably coupled with the printing roller so as to move the printing roller toward the surface to be printed by the actuation of the pressing lever. The printing device is provided with a coupling member operably coupling the movement of the printing roller with each of the ink applying roller and the ink distributing pad, so that the ink applying roller is moved apart from the printing roller and the ink distributing pad is moved apart from the ink applying roller when the printing roller is moved away from the surface to be printed.

3,727,550
ADJUSTING ARRANGEMENT FOR INK FOUNTAIN IN PRINTING PRESS

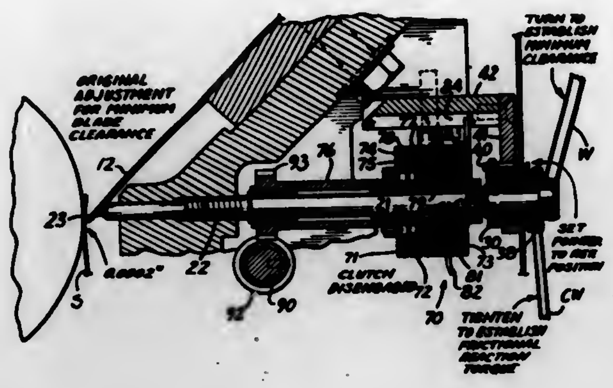
Robert D. Easoz, Woodridge, and Nelson M. Robinson, Lombard, both of Ill., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1971, Ser. No. 180,021

Int. Cl. B41f *31/04*

U.S. Cl. 101—365 **5 Claims**

An arrangement for adjusting the blade in an ink fountain which includes a set of rotatable keys, each of the keys carrying a frictionally engaged radial stop cooperating with a fixed stop to limit the angle of the adjusting movement of the key. A tool fitting is provided at the outer end of each key for manually rotating the key, with the stops in engagement, to adjust minimum blade clearance. A frictionally engaged pointer coupled to the key, is settable in accordance with the position of the radial stop to provide constant visual indication of the key adjustment. Each key has an electric friction type clutch for coupling the key to a rotatable shaft to provide running adjustment of running film thickness. The friction connection between the radial stop and the key is set to permit

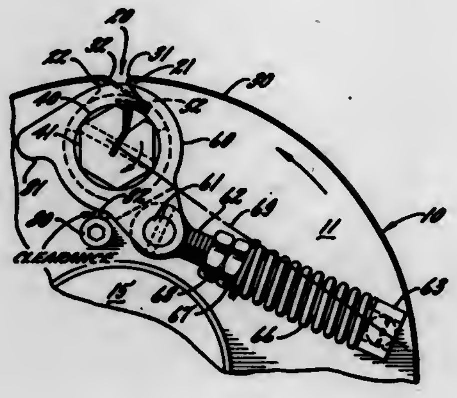

ORIGINAL ADJUSTMENT FOR MINIMUM BLADE CLEARANCE
TURN TO ESTABLISH MINIMUM CLEARANCE
CLUTCH DISENGAGED
TIGHTEN TO ESTABLISH FRICTIONAL REACTION TORQUE
12
23
22
42
93
90
92
70
72
82
W
CW

manual overpowering of the connection, and hence a change in the phasing of the radial stop, by a tool fitting on the outer end of the key in order to take up for blade wear and reestablish minimum clearance.

3,727,551
REVERSIBLE LOCKUP FOR FLEXIBLE PRINTING PLATE

Evans Kostas, Hinsdale, and Robert E. Schwarz, Rockford, both of Ill., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed July 22, 1971, Ser. No. 165,068
Int. Cl. B41f *27/12*
U.S. Cl. 101—415.1 4 Claims

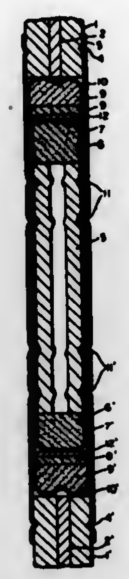


A lockup for securing a flexible printing plate to a reversibly driven plate cylinder in which the leading end of the plate may be held in a reference position and in which the trailing end of the plate may be kept under constant tension regardless of the direction of cylinder rotation. A longitudinal groove is formed in the cylinder having undercut edges with a rockable shaft being mounted in the groove having a gripper extending longitudinally of the shaft and presenting gripping edges facing in opposite directions. An overcenter spring toggle detents the shaft in two positions in which the gripper lies on one side or the other of the center of the groove, manual throw-over means being provided for throwing the shaft between its detented positions so that, when a first end of the plate is hooked over one of the undercut edges and the second end of the plate is placed in the path of movement of the gripper, manual throw-over causes the gripper to swing into gripping engagement with the second end of the plate to keep the plate under constant tension on the cylinder. In the preferred embodiment the gripper is in the form of a leaf spring partially recessed in the shaft and symmetrical stops are provided for limiting rocking movement of the shaft in both directions.

3,727,552
BIDIRECTIONAL DELAY CONNECTOR

Howard Zakheim, New York, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 4, 1971, Ser. No. 150,092
Int. Cl. F42b *3/16*
U.S. Cl. 102—27 R 9 Claims

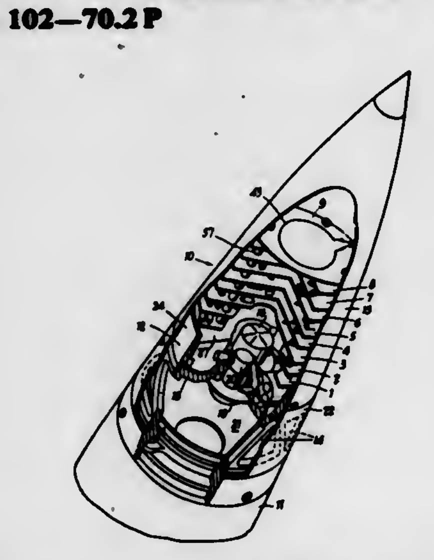


Bidirectional delay connectors for detonating fuse having a shell containing two detonating explosive charges, each end of the shell adjacent the detonating charges adapted to receive detonating fuse, heat-sensitive charges adjacent each detonating charge and in close proximity to exothermic charges in opposite ends of a metal relay capsule. A heat conductive metallic delay element is positioned between each heat-sensitive charge and said relay capsule containing exothermic charges.

3,727,553
FUZE DEVICE WITH TARGET DETECTING MEANS

Peter Brian Godfrey, Luton, England, assignor to Hawker Siddeley Dynamics Limited, Hatfield, Hertfordshire, England

Filed Dec. 6, 1966, Ser. No. 600,005
Claims priority, application Great Britain, Dec. 6, 1965, 51,717/65
Int. Cl. F42b *5/08*
U.S. Cl. 102—70.2 P 2 Claims

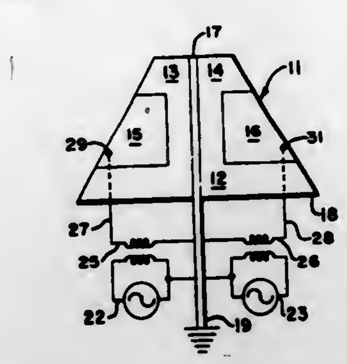


A fuse device capable of producing a signal in proximity to a target in response to changes in infra-red radiation due to the presence of the target, the device having a single field of view, a device responsive to radiation in said field of view to produce corresponding electrical signals, optical means interposed between said device and said field of view and operable to discriminate against radiation outside a selected range of wavelengths and electronic means supplied with said electrical signals and having a frequency band-pass selected to reject signals having a frequency below a selected value corresponding to a selected minimum rise-time of the signals.

3,727,554
SPLIT ANTENNA FOR DUAL CHANNEL FUZE

Alden Packard, Little Rock, Ark., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 15, 1956, Ser. No. 622,509
Int. Cl. F42l *13/00*
U.S. Cl. 102—70.2 P 4 Claims

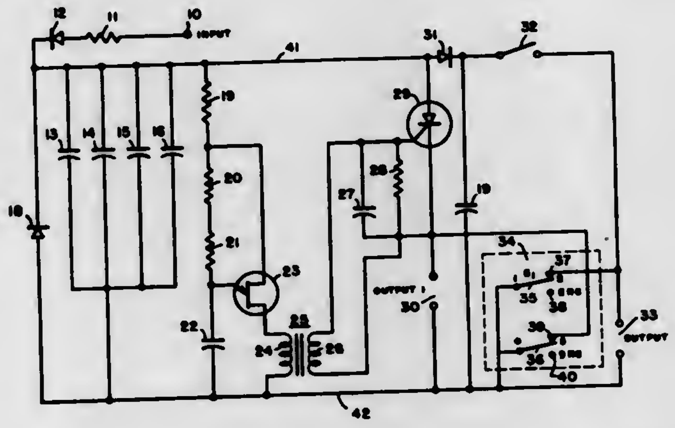


An antenna cap for a dual channel transceiver mounted in a proximity fuze comprising a segmented frusto-conical member composed of insulating material, a pair of electromagnetic excitable elements separately secured on the conical surface of said member, a point of common potential in said fuze, a conducting shield plate inserted within said material between said electromagnetic elements and electrically connected to said point of common potential, two separate transceivers operating on different frequencies and independently of each other, each of said transceivers electrically connected to a respective one of said electromagnetic elements and to said point of common potential, whereby the signal transmitted from one of the channels is isolated from the signal transmitted from the other channel.

3,727,555
ELECTRONIC INTERVAL TIMER

Paul J. Rainsberger, and Irwin Koff, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed April 28, 1969, Ser. No. 823,237
Int. Cl. F42c *11/06*
U.S. Cl. 102—70.2 R 1 Claim



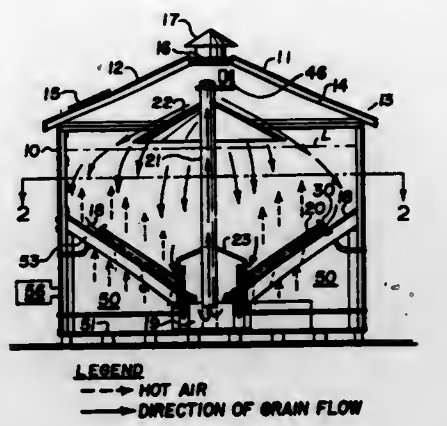
An electronic interval timer for delaying ignition of the rocket motor after ejection of a weapon from an aircraft for providing a safe interval for weapon separation.

3,727,556
GRAIN DRYER

Arnold L. Adams, 1944 Saint George Avenue, Saskatoon, Saskatchewan, Canada

Filed April 21, 1971, Ser. No. 136,117
Claims priority, application Canada, Aug. 7, 1970, 090213
Int. Cl. F26b *25/00*
U.S. Cl. 34—102 12 Claims

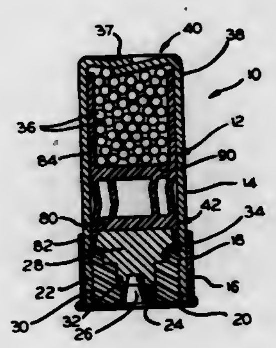
The grain dryer disclosed herein is designed to eliminate the tendency of certain portions of the grain, particularly damp portions, to become lodged within the dryer thereby to give every kernel of grain an equal opportunity to come into contact with the drying regions of the dryer. For this purpose the dryer is provided with specially designed return channels and ports which act to regulate and ensure a continuous flow of grain entering the dryer mixing chamber where all the grain has an opportunity to be mixed together and thereafter elevated by means of an elevator which extends upwardly from the mixing chamber. The grain, after being elevated, is discharged adjacent the upper end of the elevator and allowed to spill outwardly over the grain. The return channels cause the grain to continually take a different course each time it passes over or through the drying regions of the dryer. Provision is made for heated air to pass through the dryer return channels thus assisting in effecting rapid drying of the grain.



3,727,557
WAD FOR SHOTGUN SHELLS

Samuel Starcevich, 306 Mills Road, Joliet, Ill.

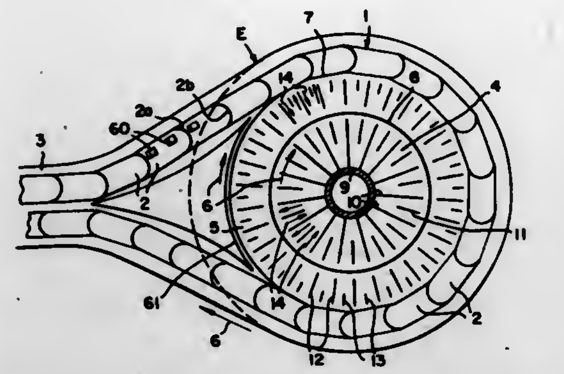
Filed Oct. 21, 1971, Ser. No. 191,382
Int. Cl. F42b *7/08*
U.S. Cl. 102—95 3 Claims



A shotgun shell wad in the form of a one piece structure formed from polyethylene or the like including an obturating disc or cup and a shot cup or protector in spaced apart relation axially of the shell in which the side wall of the cup is segmented petal fashion; a shock absorbing filler connects the disc and cup in the form of pairs of angled struts on either side of the axis of the shell, with the struts of each pair being respectively parallelly angled inwardly of the shell axis to define folding apexes therein, and with such folding axes being spaced apart axially of the shell, whereby on firing of the shell in which the wad is placed, such struts fold free of interference with each other in cushioning the accelerating forces acting on the shot and recoil acting on the gun. The connection of the struts to the cup is such that the folding action of the struts arcs the floor of the cup to fling wide open the cup petals when the wad leaves the gun muzzle, making for quick drop away of the wad from flight.

3,727,558
TRANSPORT SYSTEM WITH MOVING-PLATFORM TERMINAL

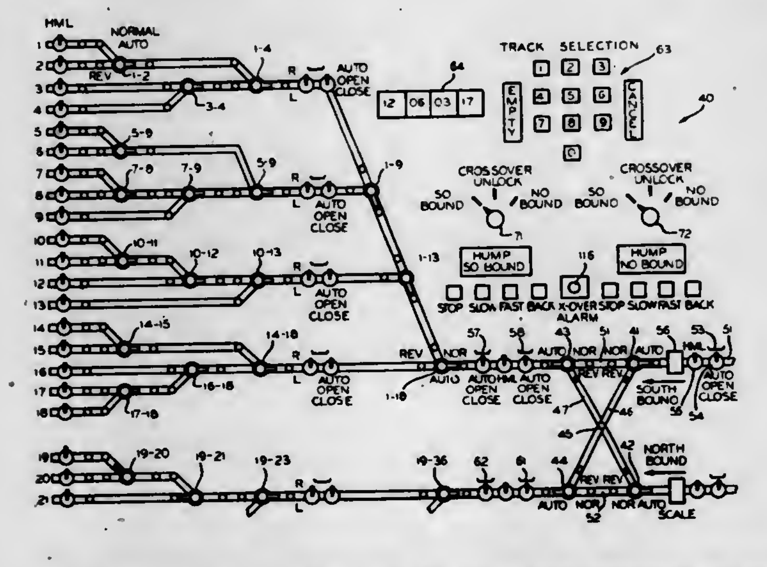
Gunther Winkle, Munich, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed Oct. 5, 1970, Ser. No. 77,897
Claims priority, application Germany, Oct. 4, 1969, P 19 50 109.8
Int. Cl. B61k *1/00*
U.S. Cl. 104—21 **13 Claims**



A transport system of the continuously-operable, endless type has a succession of interconnected transport vehicles in an endless chain extending to one or more terminals. The or each terminal includes an intermediate rotating platform surrounded over at least a portion of its periphery by the conveyance and surrounding, in turn, an inner rotatable platform, with the platforms and the conveyance operating at identical angular velocities so that at the transitions between the conveyance and the intermediate platform and between the intermediate platform and the inner platform there is no relative movement. The inner platform is shiftable vertically to carry the passengers to another level and, possibly, discharge the passengers at this level whereby the vertically shiftable platform can be stopped or slowed angularly to permit such discharge without difficulty.

3,727,559
CROSS-OVER CONTROL FOR CLASSIFICATION YARD HAVING TWO HUMP TRACKS

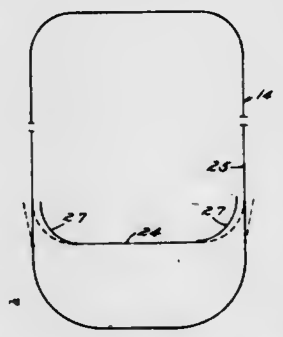
Robert B. McCune, Allendale, and Edward J. Koment, Ramsey, both of N.J., assignors to Abex Corporation, New York, N.Y.
Filed March 1, 1971, Ser. No. 122,629
Int. Cl. B61b *1/00*
U.S. Cl. 104—26 R **8 Claims**



An automated control system for the track switches on the hump tracks of a two-section classification yard having two inlet hump tracks interconnected by a cross-over, allowing manually controlled or automated routing of cars from each hump track to any destination track in either section of the yard. The control system, actuated primarily by two selector switches, affords three distinct operating conditions: (1) automated route switching from the first hump track to any classification track in either section of the yard; (2) automated route switching from the second hump track to any classification track in either section of the yard; and (3) cross-over switching from either hump track to the other under manual control. The system automatically inhibits other operating conditions to preclude erroneous operation.

3,727,560
VEHICLE PROPULSION AND GUIDE TRUCK SYSTEM

Marvin S. Blemly, Harbor Springs, and Raymond Becker, Oden, both of Mich., assignors to Jervis B. Webb Company, Detroit, Mich.
Filed Dec. 9, 1970, Ser. No. 96,476
Int. Cl. B61c *11/00;* **B61d** *15/12;* **B61f** *9/00*
U.S. Cl. 104—147 R **16 Claims**



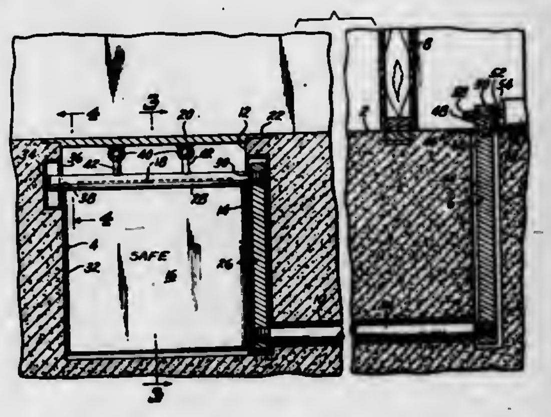
A transportation system in which wheeled carriers are guided by and driven along a plate-like rail member, mounted on edge on a supporting surface for the wheels of the carriers. Each carrier has a pair of pinch rolls engaging opposite vertical sides of the rail, one of the rolls being driven by a motor obtaining power from a conductor bar or bars secured to the sides of the rail above the normal elevation of the pinch rolls to prevent the carrier from jumping the rail. An improved pivotal mounting of the motor and pinch rolls aids in maintaining driving engagement of the pinch rolls with the rail on horizontal and vertical curves.

ERRATUM

For Class 108—42 see:
Patent No. 3,727,544

3,727,561
ARRANGEMENT FOR SAFEGUARDING A SECURITY SAFE

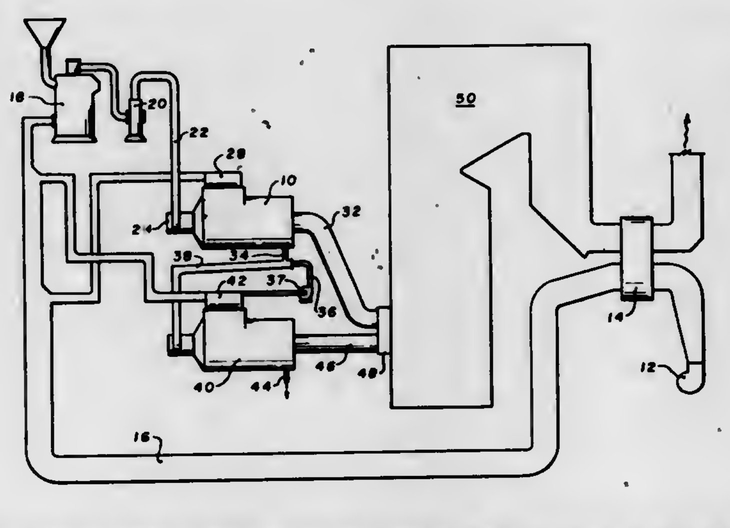
Louis Rey, 8056 Carpenter Drive, El Paso, Tex.
Filed March 21, 1972, Ser. No. 236,657
Int. Cl. E05g *3/00*
U.S. Cl. 109—44 **8 Claims**



The floor of a strucuure has a pair of spaced pits therein, within the first of which a security safe is disposed, said pit having a removable cover. A concealed shaft extends between the pits, and has latch and lock arms secured to the opposite ends thereof, the arms being simultaneously movable between first and second pivotal positions, and the lock arm being disposed in the second pit. The latch arm is disposed in the first pit and carries latch means engageable with mating latch means on the cover when the arms are in their first pivotal position. A releasable lock is used to secure the lock arm in its first pivotal position, and an alarm system is arranged to give an alarm upon unauthorized movement of said arms from their first pivotal position.

3,727,562
THREE-STAGE COMBUSTION

William Valentine Bauer, New York, N.Y., assignor to The Lummus Company, Bloomfield, N.J.
Filed Dec. 13, 1971, Ser. No. 207,353
Int. Cl. F23b *1/00*
U.S. Cl. 110—1 P **5 Claims**

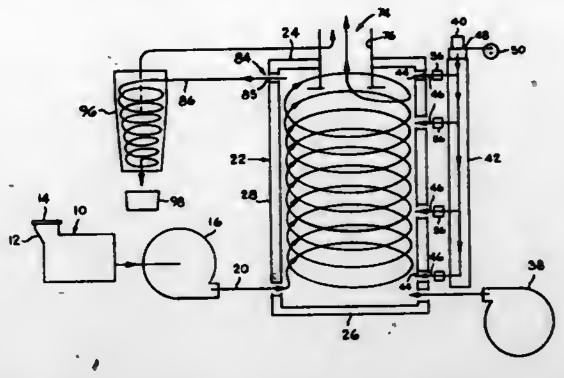


A three-stage combustion process is disclosed in which solid carbonaceous fuel is burned with a deficiency of air in a first zone leaving unburned fuel and producing a flue gas rich in CO. The unburned fuel is separated from the first zone flue gas and burned in a second zone with an excess of air to produce a flue gas containing excess oxygen. The flue gases from the first and second zones are then burned in a third zone to complete the combustion process with the total amount of air used in the first and second zones being approximately the stoichiometric amount required for complete combustion.

3,727,563
INCINERATOR

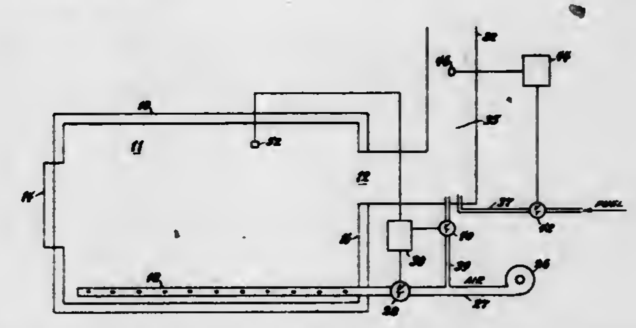
Robert Joel Hasselbring, Shelbyville, and Robert L. Shields, Rushville, both of Ind., assignors to General Electric Company, New York, N.Y.
Filed July 2, 1971, Ser. No. 159,251
Int. Cl. F23g *5/06*
U.S. Cl. 110—8 R **28 Claims**

An incinerator for burning waste material includes a horizontally extending combustion chamber having spaced end walls and a side wall through which a mixture of waste material and air is introduced under pressure tangentially for establishing a vortical movement of the waste material toward one of the end walls. The waste material is ignited during its vortical movement and the chamber includes a discharge flue port near the one end wall which is concentric with the longitudinal axis of the chamber and which has an open end in the chamber spaced axially of the one end wall. A second discharge port extends tangentially through the chamber side wall adjacent the bottom of the chamber at one side thereof for discharging from the chamber non-combustible material entrained in the outer region of the vortex. The discharged material is conveyed through a conduit to a separator which separates the discharged gases and solid material. A baffle is mounted on the flue adjacent its open end for deflecting outwardly toward the side wall solid material which moves from adjacent the one end wall toward the open end of the flue. Means are provided for introducing secondary air into the chamber tangentially to the chamber side wall at a plurality of spaced regions which are aligned horizontally and which are located adjacent the bottom of the chamber at the other side thereof such that one of said regions is substantially opposite the second discharge port. Control means including dampers are provided for independently adjustably controlling the amount of secondary air flowing into the chamber at each spaced region. Also, automatic control means are provided for controlling generally the secondary air in accordance with variations of temperature within the chamber.



3,727,564
MODULATED FUEL

William M. Anderson; Han Liu, both of Wellsville, and Richard F. Stockman, Friendship, all of N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed Sept. 9, 1971, Ser. No. 181,142
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **3 Claims**

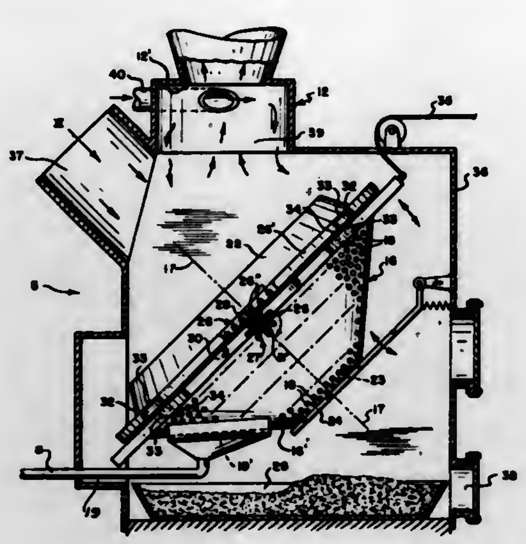


An incinerator system is disclosed including a primary combustion chamber for the pyrolysis of combustible material and a serially connected secondary combustion chamber for complete combustion of the gas produced by pyrolysis in the primary combustion chamber. An independent fuel supply is provided and its flow to the secondary combustion chamber is continuously modulated to supplement the gas being supplied thereto by pyrolysis of combustible material in the primary chamber to provide a substantially constant flow of fuel to the secondary combustion chamber that burns at a uniform rate and temperature.

3,727,565
APPARATUS FOR THE BURNING OF SOLIDS

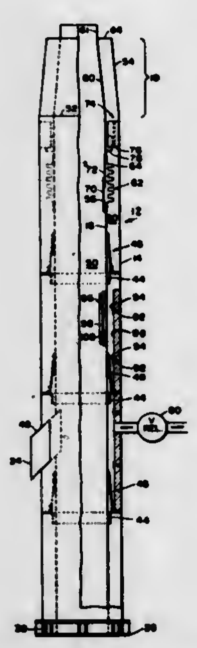
Fritz Schoppe, Munich, and Georg M. Meyer, Hamburg, both of Germany, assignors to Fritz Schoppe, Munich, Germany
Continuation of Ser. No. 739,977, May 27, 1968, abandoned, which is a continuation of Ser. No. 544,107, May 31, 1966, abandoned, which is a division of Ser. No. 285,983, June 6, 1963, abandoned. This application April 27, 1970, Ser. No. 29,757
Int. Cl. F23g *5/06*
U.S. Cl. 110—14 **34 Claims**

A system to burn waste materials with essentially complete combustion including a vertical preheating chamber with upper waste inlet and lower outlet, the outlet conducting preheated material into a furnace having a rotating frusto-conical grate with a vertex angle of between 90° and 120° arranged somewhat horizontal so a lowermost surface line is slightly inclined down toward the large inlet end of the grate relative to a horizontal reference. The furnace has an air inlet system which directs a controlled amount of combustion air to a specific limited zone of the grate. The grate, its disposition and the air supply provide a waste material movement and burning to maximize effective use of combustion heat. The system also has apparatus for removing waste solids and gases from the furnace, with components to cool, wash and separate small solids from the waste gas and to utilize controlled quantities of the waste gas for introduction back into the inlet end of the preheating chamber.



3,727,566
SMOKESTACK WITH VIBRATION DAMPER

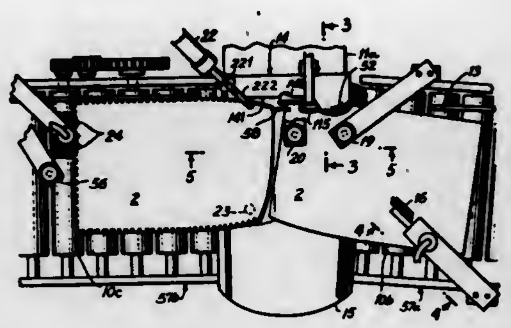
John R. Roy, P.O. Box J, Newton, Mass.
Filed Dec. 10, 1971, Ser. No. 206,849
Int. Cl. F23j *11/00*
U.S. Cl. 110—184 **16 Claims**



A free-standing chimney stack having a pair of spaced integral tubular metal shells and means to support the shells on a base. The shells have mutual frictional engagement through spring stabilizer guides located near the top of the stack. The stabilizer guides are preloaded by adjustment of the springs to produce predetermined frictional bearing pressures, thereby to increase the internal damping of the structure so that for a critical wind speed the resulting vibration is held to a minimum.

3,727,567
AUTOMATIC SEWING APPARATUS

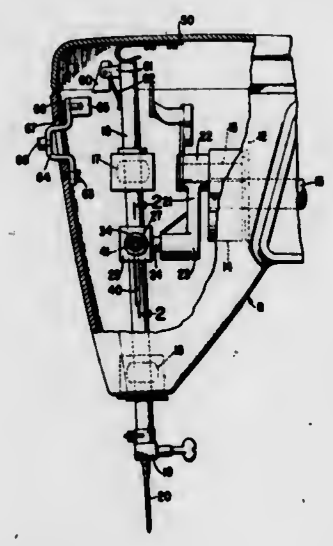
Aubrey G. Beazley, El Paso, Tex., assignor to Farah Manufacturing Company, El Paso, Tex.
Continuation-in-part of Ser. No. 851,303, Aug. 19, 1969, Pat. No. 3,589,320. This application March 12, 1971, Ser. No. 123,534
Int. Cl. D05b *27/00*
U.S. Cl. 112—121.11 **13 Claims**



An automatic sewing apparatus is provided which sequentially controls the positioning and sewing of workpieces. Position of a workpiece is sensed by two photoelectric cells which activate portions of an electrical control circuit to control the various apparatus functions. Workpiece orientation is maintained by several guide means which interact with the sewing machine. An extendable rod turns the workpiece about the sewing machine needle thereby permitting several lines of stitching on a single workpiece.

3,727,568
SKIP STITCH MECHANISM FOR SEWING MACHINES

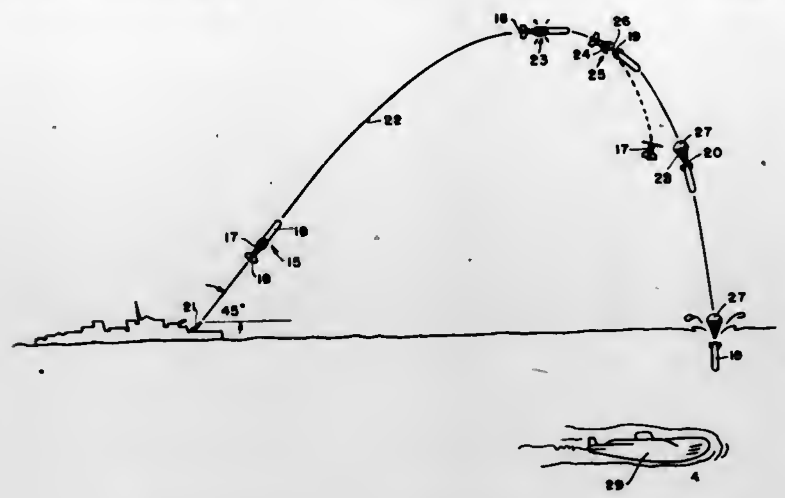
Thomas G. Graham, Point Pleasant Beach, N.J., assignor to The Singer Company, New York, N.Y.
Filed Feb. 22, 1972, Ser. No. 228,026
Int. Cl. D05b *69/36*
U.S. Cl. 112—221 **1 Claim**



A sewing machine needle reciprocating mechanism is disclosed including clutch mechanism for releasing the endwise reciprocatory drive for the needle bar intentionally to provide for skipped stitches as for basting or the like, and also to provide for an automatic release of the needle bar drive to prevent needle breakage in case the needle should strike an impenetrable object such as a button or the like.

3,727,569
MISSILE

Harold G. Johnson, Trenton, N.J., and Harry Silk, Washington, D.C., assignors to United States of America as represented by the Secretary of the Navy
Filed Feb. 3, 1959, Ser. No. 790,976
Int. Cl. F42b *19/12, 19/00*
U.S. Cl. 114—20 R **9 Claims**



1. A weapon for use against a target submarine, said weapon comprising, in combination: an ordnance apparatus effective to operate against a submerged target submarine when delivered to a suspect water area; an airframe severably secured to said ordnance apparatus, said airframe including reaction propulsion means to project said weapon from a launcher and into a ballistic trajectory directed toward said suspect water area; means including a presettable timing device for severing, separating and jettisoning the airframe from said ordnance apparatus at a preselected instant during airflight; deceleration means secured to said ordnance apparatus and operatively associated with said airframe to become effective upon airframe separation and in response to airframe separation; and means for jettisoning said deceleration means upon water entry of said ordnance apparatus.

3,727,570
DRAG REDUCTION METHOD

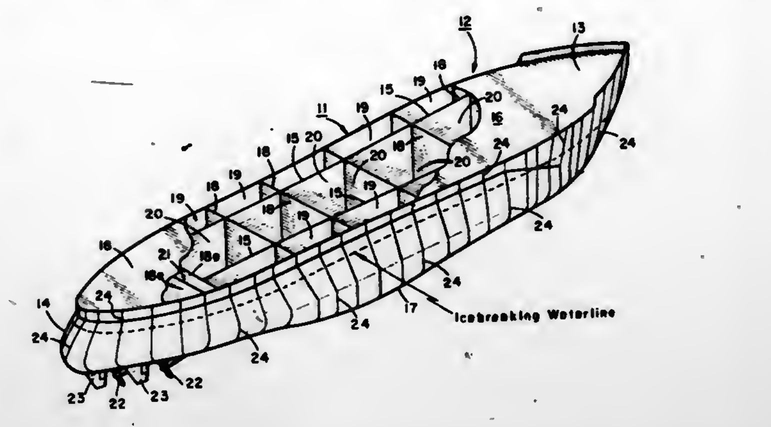
John Molinski, Somerset, Mass., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 20, 1970, Ser. No. 12,520
Int. Cl. F42b *19/00*
U.S. Cl. 114—20 R **3 Claims**

A method for reducing drag on a moving aquatic vehicle is disclosed in which long chain high molecular weight polymers are suspended in a liquid fluorocarbon carrier prior to injection of the suspension into the aqueous boundary layer surrounding the vehicle.

3,727,571
ICEBREAKING CARGO VESSEL

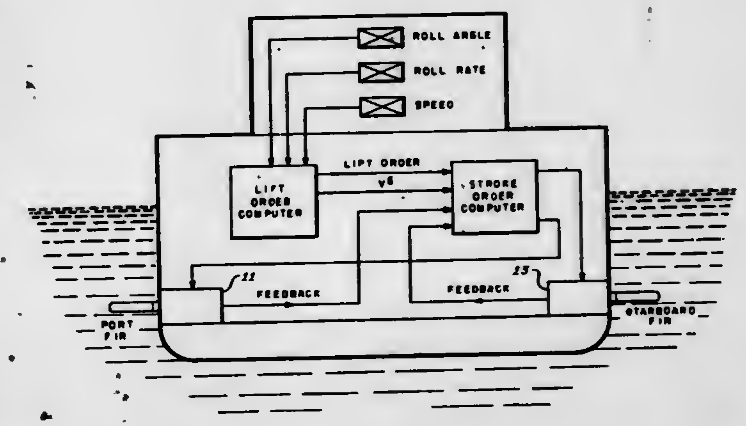
Walter B. Devine, Houston, Tex., assignor to Esso Research and Engineering Company, Linden, N.J.
Filed July 7, 1971, Ser. No. 160,385
Int. Cl. B63b *35/08*
U.S. Cl. 114—41 **7 Claims**

A hull shape for an icebreaking cargo vessel, such as a tank ship, is provided which provides for lower ice breaking resistance, greater displacement in ice, and greater rudder and screw protection against ice when proceeding astern in ice laden or ice covered waters than conventional icebreaking vessels. The hull shape is such that a down breaking bow and a maximum ice-water line beam is provided forward of the midpoint of the hull while aft of the midpoint the ice-water line beam is smaller than that forward, the hull beam below the maximum ice-water line beam being greater than the ice-water line beam in the aft part of the hull. Vertical sections through the hull forward of the mid point slope downwardly and inwardly while aft the vertical sections slope downwardly and outwardly.



3,727,572
MARINE FIN STABILIZER CONTROL CIRCUIT

Louis W. Nelson, Upper Marlboro, and Charles R. Wesner, Crozet, both of Va., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Oct. 22, 1971, Ser. No. 191,676
Int. Cl. B63b *39/06*
U.S. Cl. 114—126 **8 Claims**

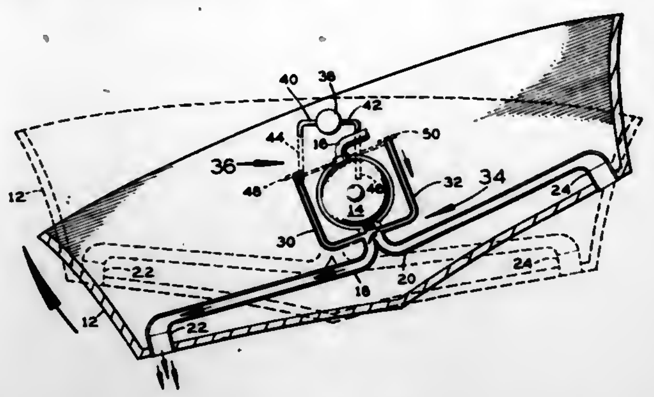


A fin stabilizer control circuit accepts signals from a roll angle sensor, a roll rate sensor and a ship's speed sensor. The signals are first processed in a lift order computer which includes an automatic gain control circuit in which the port and starboard lift orders are compared with the square of the ship's speed so as to vary the sensitivity of the control circuits with changes in ship speed and ship residual roll motion. The output signals from the lift order computer are applied to a stroke order computer along with feedback signals representing fin angle and lift. Either feedback signal may be selected for summing with the signal from the lift order computer to produce a stroke order signal that determines the rate of deflection of the stabilizing fins. Limiting circuits in the stroke order computer restrict the stroke order signal in accordance with the larger of the two feedback signals.

3,727,573
STABILIZING SYSTEM

Peter J. H. Prohaska, 700 N.E. 20th Avenue, Fort Lauderdale, Fla.
Filed June 24, 1971, Ser. No. 156,343
Int. Cl. B63b *39/08*
U.S. Cl. 114—122 **7 Claims**

A stabilizing system for a boat or the like in which water is pumped through a control to two thrusting outlets on different sides of the hull for directing water jets downwardly from the



hull. The control allocates the output of the pump between the first and second outlets in response to the roll of the boat. The control is actuated by a sensing device responsive to the degree of roll of the boat.

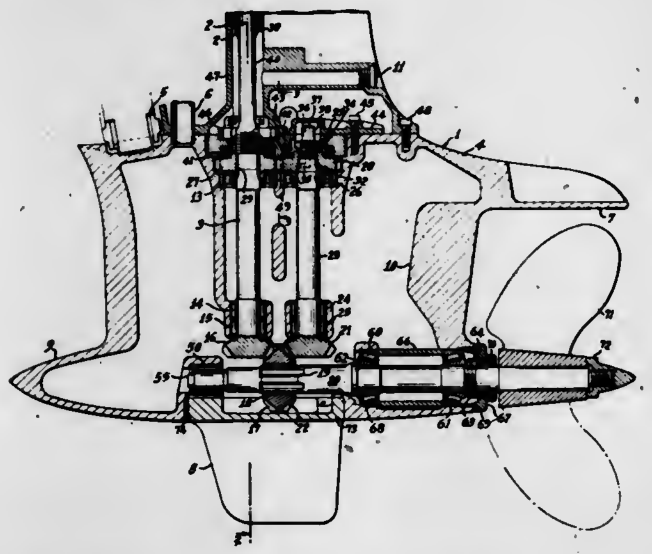
3,727,574
OUTBOARD DRIVE FOR A BOAT

Nils Olof Bagge, Goteborg, Sweden, assignor to AB Volvo Penta, Goteborg, Sweden

Filed Aug. 30, 1971, Ser. No. 175,841

Int. Cl. B63h *5/00*

U.S. Cl. 115—34 R **8 Claims**



An outboard drive for a boat having a generally horizontal propeller shaft driven through gearing from two generally vertical rigid drive shafts between which the torque is shared. The drive shafts are gear connected in the upper part of the unit by transmission gears arranged to pump oil within the unit housing and the two shafts are driven by a single shaft from a power source. The transmission gears are so adjusted on their respective shafts as to cause the torque to be equally divided between the two drive shafts.

3,727,575
BIDIRECTIONAL SENSOR

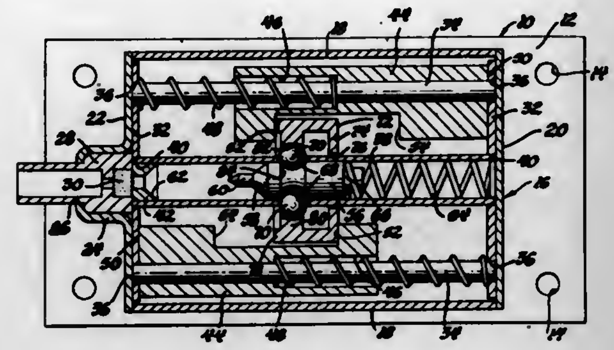
Otakar P. Prachar, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 11, 1971, Ser. No. 197,736

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 AH **4 Claims**

A bidirectional sensor includes a rectangular housing mounted on a base plate. A hollow cylindrical guide tube extends between opposite end walls of the housing and slidably receives an operator therewithin. A coil spring seating between one end wall and the operator biases the operator toward the other end wall to actuated position wherein the operator engages a primer or closes an electrical circuit. Three equally spaced radial openings in the wall of the tube receive respective balls which seat in a circumferential arcuate groove of the operator to detent the operator against movement under the spring bias. The balls are constrained against movement outward of the openings by a cylindrical detent member which surrounds the operator and has a first cylindrical shoulder thereof seating the balls in the operator groove and a second cylindrical shoulder slidable along the guide tube. A pair of rods extend parallel to the guide tube axis and slidably mount rectangularly shaped seismic masses, each having spaced shoulders provided by a cutout in the mass. Respective springs bias the masses opposite each other and into engagement with a respective end wall of the housing. One shoulder of each mass engages the detent member, generally diametrically and axially opposite of the other shoulder, to locate the detent member in detent position. Should either mass move against its bias under an acceleration pulse of predetermined amplitude and time, the other shoulder will engage the detent member to move the detent member out of engagement with the one shoulder of the other mass and move the first shoulder of the detent member out of engagement with the balls to release the operator.



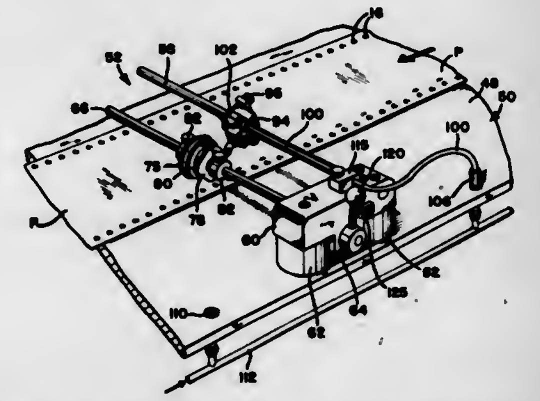
3,727,576
PORTABLE GLUE APPLICATOR FOR COLLATING MACHINE

Louis Schriber, Dayton, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Sept. 20, 1971, Ser. No. 181,931

Int. Cl. D05c *1/16*

U.S. Cl. 118—211 **10 Claims**



A housing containing one or more magnets provides a cantilever support for a pair of spaced and parallel rods which extend outwardly over one or more web sets moving therebelow over a table section of a collator. The leading rod supports a wheel frictionally driven by the upper web and also a spotting disk linked to the wheel and having a plurality of spaced, arcuate applicator surfaces circumferentially aligned with the periphery of the wheel. A glue dispensing nozzle is mounted on the trailing rod and is rotatable between a raised position with the nozzle applying glue to the arcuate surfaces of the spotting disk which in turn apply the glue to the web in spot form, and a lowered position with the nozzle positioned for applying glue directly onto the moving web in strip form. The leading rod is adjustable in height to accommodate varying widths of webs or webs sets passing over the table. A manifold supplies glue to a plurality of outlets along the table, and the applicator includes a quickdisconnect fitting so that it may be moved to any position along the table and quickly connected to any one of the outlets.

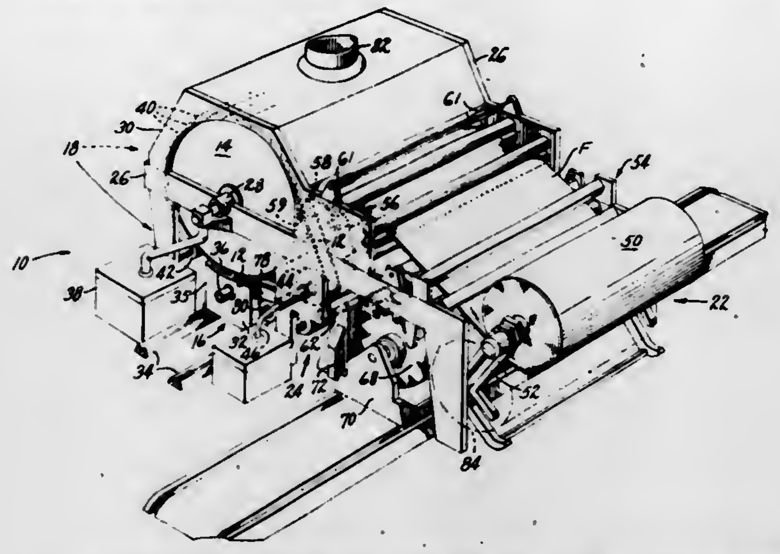
3,727,577
MACHINES FOR COATING SHEET MATERIAL

John Joseph McGarr, and Bruce Ward Vorhauer, both of Beverly, Mass., assignors to USM Corporation, Boston, Mass.

Filed May 27, 1971, Ser. No. 148,250

Int. Cl. B05b *5/02*; G03g *13/06*

U.S. Cl. 118—630 **5 Claims**



A continuously operative coating machine electrostatically deposits heat activatable powdered polymers, for example polyurethane, on a release carrier which progressively passes through a heating zone. The powder is applied from an electrostatic fluidized bed employing a microporous wire cloth as both bed and charging grid. Deposited powder is transformed to a film which is brought into adhering relation to flexible sheet material such as a fabric to be coated. The carrier and the sheet material then pass over a cooling means where the film is solidified and bonded to the material and the unloaded carrier is returned for receiving further powder deposits. The powder bed may include compartments for successive application of different types of powder particles. An ionized zone preferably insures that the recirculated carrier is free from any residual positive or negative charge which might affect the charged powder particles to be deposited by the electrostatic fluidized bed. An alternative arrangement employs a reuseable release paper backed by a metallic flexible strip for transfer of the film to the sheet material. When either arrangement is operated without supplying sheet material, it may with slight modification be used to produce plastic sheeting per se.

3,727,578
ELECTROPHOTOGRAPHIC DEVELOPING DEVICE USING LIQUID

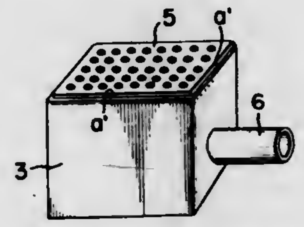
Takashi Saito, and Shusei Tsukada, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 30, 1970, Ser. No. 76,729

Claims priority, application Japan, Oct. 11, 1969, 44/81378

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **7 Claims**



Various structures are disclosed for producing a layer of liquid developer to cover the visible portion of an edge mounted section of an electrophotographic recording medium without wetting the mount beyond the edges bordering said visible portion. During application of the developer to said visible portion there is no relative movement of the developer device across the surface of the visible portion.

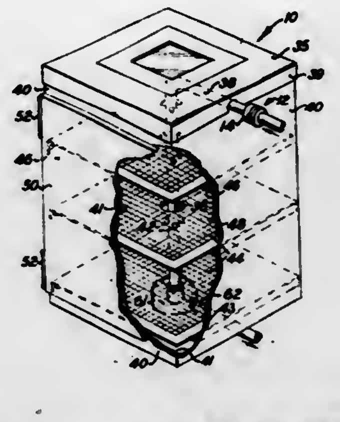
3,727,579
LOBSTER PRESERVATION SYSTEM

James O. Lee, Old Saybrook, Conn., assignor to Olaf M. Olsen, Old Saybrook and John L. McCarthy, Old Lyme, Conn.

Filed Dec. 21, 1970, Ser. No. 100,195

Int. Cl. A01k *61/00*

U.S. Cl. 119—2 **11 Claims**



Fresh-caught lobsters are mounted in quick-connect containers for connection into or removal from a system, and transfer to at least one other similar system. The system provides temperature-conditioned aerated salt water which is continuously sprayed upon the lobster in the container from the time it is caught until it is finally sold. The lobsters are disposed in the container on foraminous trays having large, unobstructed, open mesh screen surfaces through which spray water and lobster waste continuously drain. Each tray is sprayed, and the spray water passes immediately through the open mesh surfaces of the trays so as not to accumulate thereon.

3,727,580
APPARATUS FOR REARING SILKWORMS

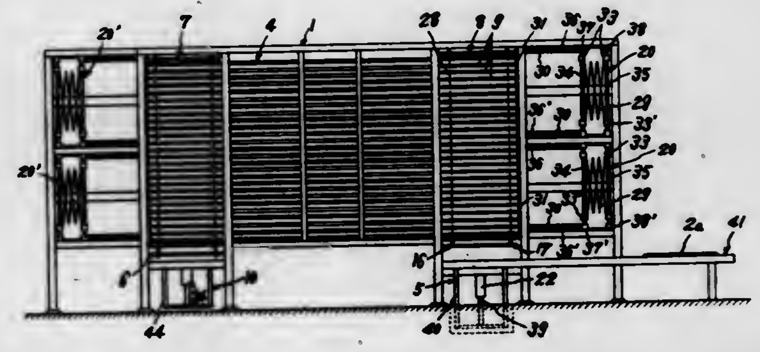
Seisuke Yumiyama, Ibaraki; Yoshitsugu Kinoshita, Kobe; Tadashi Kusunoki, Nishinomiya; Toshihiko Okada, and Susumu Shimizu, both of Ayabe, all of Japan, assignors to Gunze Limited and Takeda Chemical Industries, Ltd.

Filed Oct. 7, 1971, Ser. No. 187,452

Claims priority, application Japan, Oct. 13, 1970, 45/90248

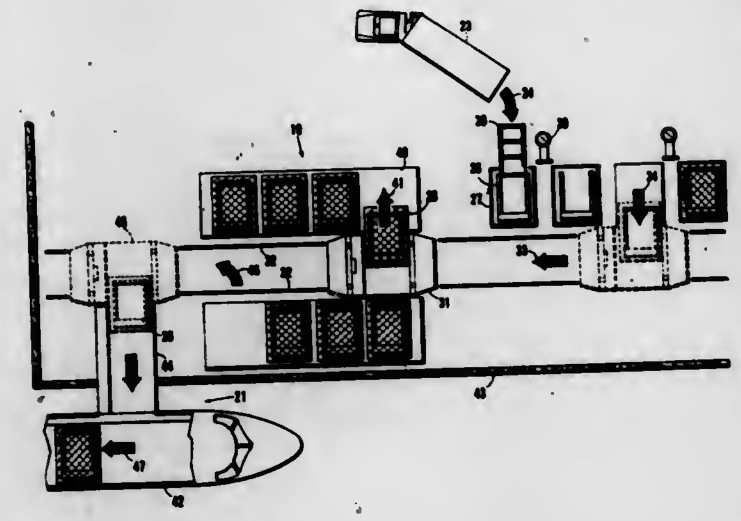
Int. Cl. A01k *67/04*

U.S. Cl. 119—6 **8 Claims**



An apparatus for rearing silkworms comprising, a first elevator conveyor having a multiplicity of supports for carrying rearing units in such manner that the rearing units can be pushed out from one side of the conveyor toward the other side, each of the rearing units being composed of a feeding tray and a net superposed on the feeding tray, a rearing frame having a multiplicity of shelves each having one end to be connected to the discharge end of each of the shelves on the conveyor, a second elevator conveyor having a multiplicity of shelves each having one end to be connected to the other end of each of the shelves on the rearing frame, a rearing unit loader provided for the first elevator conveyor, a rearing unit pusher provided for the first elevator conveyor, a rearing unit unloader provided for the second elevator conveyor, a conveyor connected to the rearing unit loader for supplying fresh feeding trays, a conveyor connected to the rearing unit unloader for discharging old feeding trays, and a carriage connecting the first elevator conveyor to the second elevator conveyor for receiving the net separated from the feeding tray, permitting the feeding tray to be delivered onto the discharge conveyor, and returning the net alone to the first elevator conveyor.

3,727,581
LIVE ANIMAL AIRCRAFT TRANSPORT SYSTEM
William Donald Brent, Toronto, Ontario, Canada, assignor to W. D. Brent Manufacturing Ltd., Malton, Ontario, Canada
Filed June 16, 1971, Ser. No. 153,523
Int. Cl. A01k *29/00*
U.S. Cl. 119—17 **7 Claims**

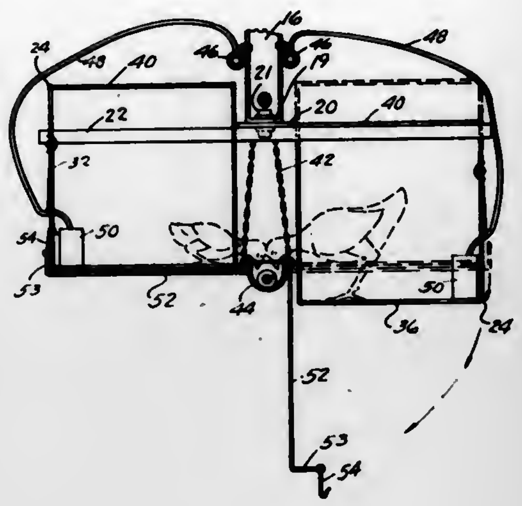


The following specification discloses a system and apparatus organising the loading, transport and delivery of live animals over great distances within a period of time during which feeding is rendered unnecessary and permitting health inspection prior to loading thus to achieve immediate delivery to the premises of the buyer without deterioration of the condition of the animals and sets forth a container structure and assembly adapted to be loaded, weighed, stored and transferred to an aircraft and locked thereon and at its destination to be unloaded and shipped directly to the purchaser in the combination of elements of apparatus and system described.

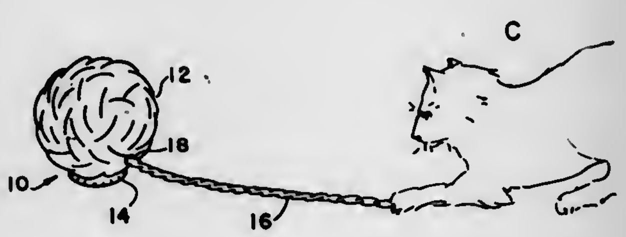
3,727,582
METHOD AND MEANS FOR GROWING AND SHIPPING PULLETS OR BROILERS
Hilarius L. Heying, and Josephine M. Heying, both of 115 Jefferson Street, West Union, Iowa
Continuation-in-part of Ser. No. 664,173, Aug. 29, 1967, abandoned. This application Feb. 12, 1971, Ser. No. 114,774
Int. Cl. A01k *31/06*
U.S. Cl. 119—18 **5 Claims**

A method of growing and shipping pullets or broilers comprising: hatching a flock of baby chicks; dividing the flock into groups of from about four to about twenty or more; placing each group in a separate cage; raising the birds in the cages to the age of 20 to 22 weeks and shipping to buyers in the cages in which they were raised.

Means for growing and shipping chicks comprising a cage sized to accommodate from about four to about twenty or more birds of laying age; feed and watering means adjustable to accommodate growth; support means to suspend the cages from brackets; bird access means on each cage; means to detach the cages from the support means for shipping the cages.



3,727,583
TOY FOR AMUSEMENT OF CATS
Robert J. Muraro, 3008 E. Pratt St., Baltimore, Md.
Filed March 9, 1971, Ser. No. 122,469
Int. Cl. A01k *15/00*
U.S. Cl. 119—29 **7 Claims**

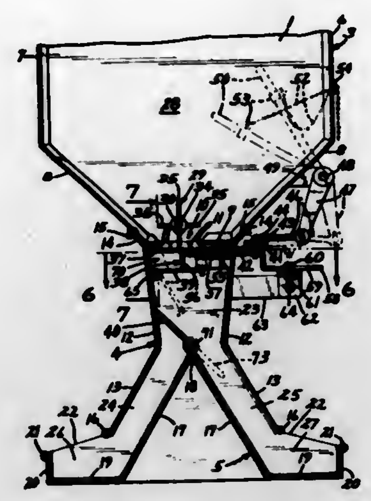


An amusement device for cats comprising a discontinuous yarn retracting and storing mechanism enclosed in a housing and adapted to pay out yarn retractably when the yarn is pulled by a cat being amused. The mechanism retracts the yarn silently and with an intermittent motion; a lure may be attached to the free end of the yarn, and the housing may be shaped like a ball of yarn. Means are provided to support the device on floors.

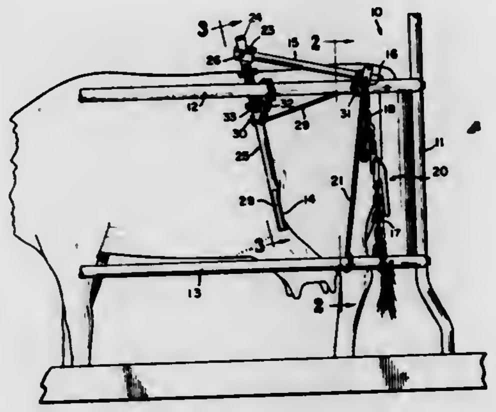
3,727,584
ANIMAL FOOD SUPPLEMENT DISPENSER AND FEEDER
Arthur C. Permann, Delmont, S. Dak.
Filed Sept. 16, 1971, Ser. No. 181,075
Int. Cl. A01k *05/00*
U.S. Cl. 119—56 R **5 Claims**

An elongated supply hopper having a plurality of longitudinally spaced discharge apertures, individual feeder valves for each of the discharge apertures, and delivery conduits individual to each discharge aperture for delivery of food to individual feed trough means. Discharge valves in each of the delivery conduits cooperate with respective feeder valves and metering valve elements individual to each delivery conduit to define measuring chambers. Feeder valve operating means

and discharge valve operating means control feeding of material from the hopper to each measuring chamber and discharge of measured quantities of the material to the feed trough means.



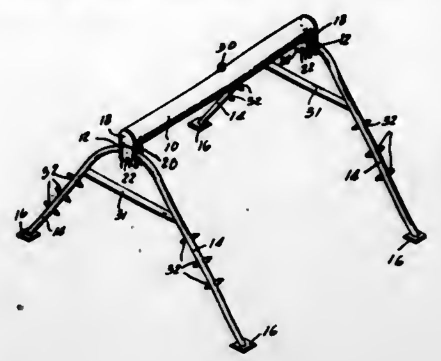
3,727,585
COW PARLOR SAFETY ADJUSTMENT
Don Rex Hart, Worthington, Ind., assignor to Harpad Company, Worthington, Ind.
Filed March 1, 1972, Ser. No. 230,742
Int. Cl. A01j *7/00*
U.S. Cl. 119—96 **2 Claims**



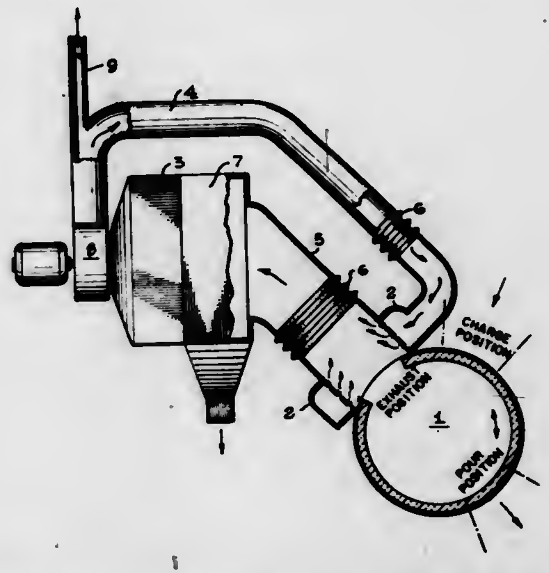
A device for restraining a stalled cow from kicking, being an improvement upon the disclosure of U.S. Pat. No. 3,451,377 and consisting primarily in the provision on the swing bar of a bracket adjustable longitudinally on the swing bar and formed with a plurality of longitudinally-spaced sets adapted selectively to receive a rail of the stall to hold the swing bar against longitudinal movement relative to the rail.

3,727,586
LIVESTOCK OILER
Donald H. Brewster, 405 South Main Street, Sheridan, Wyo.
Filed March 3, 1971, Ser. No. 120,395
Int. Cl. A01k *29/00;* **A61d** *11/00*
U.S. Cl. 119—157 **4 Claims**

A livestock oiler built in the shape of a saw-horse can be assembled from ordinary metal pipe, bars and plate. Dual plunger valves mounted in the legs of the oiler open when rubbed against by livestock, allowing insecticide or other mendicament to flow by gravity from a receptacle mounted at the top of the oiler into the hollow pipe legs and out through the valves. The oiler is simple and economical to construct. Pairs of these outwardly, spring-biased valves are mounted in opposite ends of sleeves which pass completely through the pipe legs. The valves have an elongated slot passing transversely therethrough, and the sleeves have transverse openings in each end to receive a pin. The pin cooperates with the associated plunger valve slot to limit the outward movement of the plunger valve.



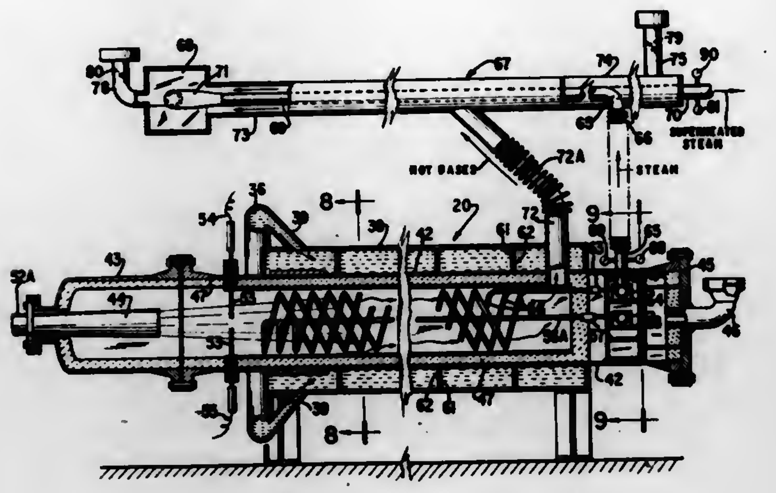
3,727,587
SYSTEM FOR RECOVERING WASTE HEAT FROM COPPER CONVERTERS
William Nebgen, Woodside, N.Y., assignor to Treadwell Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 44,673, June 9, 1970, abandoned. This application Nov. 17, 1971, Ser. No. 199,738
Int. Cl. F22b *1/18*
U.S. Cl. 122—7 A **6 Claims**



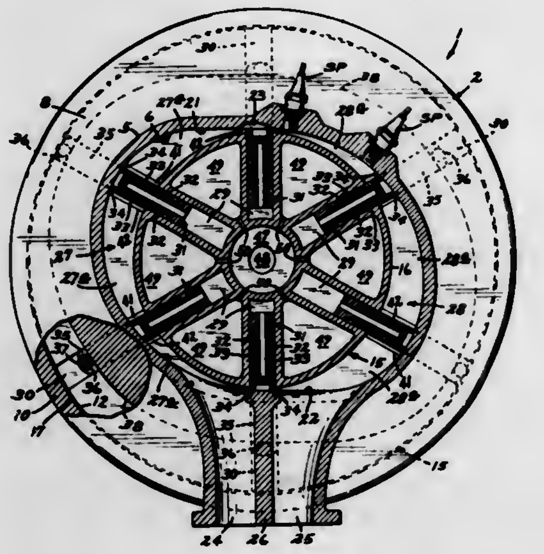
A copper converter in which copper sulfide is burned to sulfur dioxide is operated with a tight air hood. The gaseous products from the converter contain dust, which melts or is sticky at the temperature at which the gases leave the converter. The gaseous products are mixed with a large amount of cool gases of substantially the same sulfur dioxide content to a temperature at which the dust is no longer sticky, and, if desired, a major portion of the dry dust is removed. The mixed gases are passed through a waste heat boiler which cools them down further. A major portion of the cooled mixed gases is used for the recycling with the hot gases from the converter and a small amount corresponding to the air used in the converter is vented to a plant, such as an acid plant, in which the sulfur dioxide is utilized.

3,727,588
THERMAL ENERGY GENERATION
Sigmund Lance Ross, New York, N.Y., assignor to Oscar Shuffman, Scarsdale, N.Y.
Filed Nov. 26, 1971, Ser. No. 202,215
Int. Cl. F22g *5/12*
U.S. Cl. 122—487 **17 Claims**

Impure water is continuously sprayed into an elongated conduit having an inlet for the water adjacent one end and an open outlet remote from the inlet while maintaining the inner surface of the conduit at a temperature such that the water not only is flashed into steam but also is substantially immediately converted into superheated steam under the confinement imposed by the inner surface of the conduit with concomitant pressure build-up which propels the steam and superheated steam toward the outlet with a velocity at which the conduit is self-scavenging in that there is no deposit on or attack on the inner surface of said conduit and said inner surfaces remain clean notwithstanding indefinitely long periods of continuous operation.

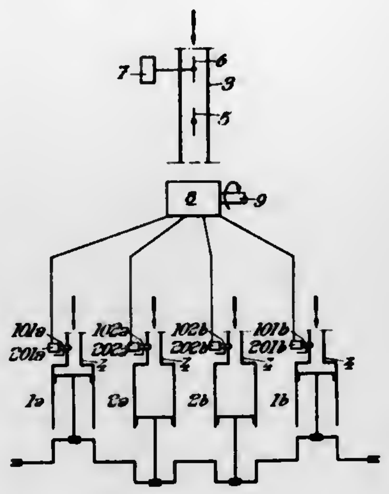


3,727,589
ROTARY INTERNAL COMBUSTION ENGINE
Wilbert Milo Scott, 808 13th Avenue West, Williston, N. Dak.
Filed Aug. 12, 1971, Ser. No. 171,261
Int. Cl. F01c *1/00*; F02b *53/00*
U.S. Cl. 123—8.45 **3 Claims**



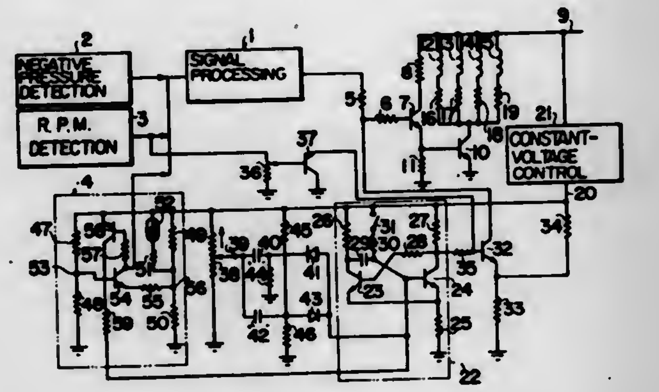
A rotary internal combustion engine including a housing having a generally oval inner peripheral wall surface slidingly engaged by vanes radially slidably carried by a cylindrical rotor. The rotor includes a main rotor body and circumferential end flanges projecting radially from opposite ends of the body, the end flanges having radial grooves supporting the opposite ends of the vanes. The vanes operatively engage cam tracks in the housing to keep the vanes substantially in engagement with the generally oval inner wall surface during rotation of the rotor. The rotor cooperates with the housing to define a plurality of chambers, the number of chambers and the number of power impulses of the engine per revolution of the rotor equaling the number of vanes on the rotor.

3,727,590
FUEL SUPPLY SYSTEMS FOR FOURSTROKE INTERNAL COMBUSTION ENGINES
Andre Louis Mennesson, 92 Neuilly sur Seine, France, assignor to Societe Industrielle de Brevets et D'Etudes S.I.B.E., Neuilly-sur-Seine, France
Filed July 28, 1970, Ser. No. 58,852
Claims priority, application France, July 31, 1969, 6926308
Int. Cl. F02d *5/00*
U.S. Cl. 123—32 G **2 Claims**



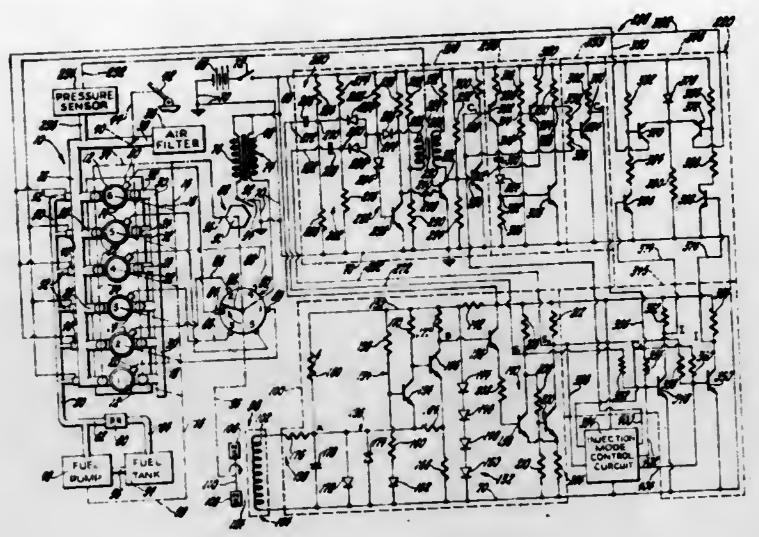
The system enables the supply of fuel to a four-stroke internal combustion engine comprising two pairs of cylinders in each pair of which the cycles of the two cylinders are separated by 360° of rotation of the engine shaft. It includes four injection valves actuated by electromagnets controlled by an actuating device driven by a shaft at half the speed of the engine shaft. It is arranged so that each cylinder of each pair receives on each cycle two doses of fuel for periods of equal duration separated by 360° of rotation of the engine shaft.

3,727,591
FUEL SUPPLY CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Seiji Suda, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 20, 1970, Ser. No. 82,275
Claims priority, application Japan, Oct. 24, 1969, 44/84718
Int. Cl. F02b *3/00*; F02d *31/00*
U.S. Cl. 123—32 EA **5 Claims**



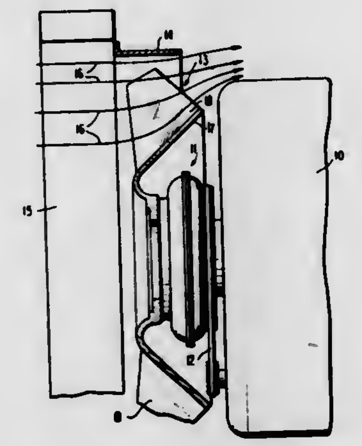
A fuel supply control system for internal combustion engines for controlling the fuel supply controlling electromagnetic valves on the basis of processing electric signals representing respective engine operating parameters such as engine intake manifold negative pressure and engine r.p.m., wherein the electromagnetic valves are rendered inoperative to cut the fuel supply if the engine r.p.m. is above a predetermined value and if the angular speed of the motion of the engine throttle in the direction of closing the engine throttle valve exceeds a predetermined value.

3,727,592
ELECTRONIC FUEL INJECTION SYSTEM
Lester Wilkinson, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 15, 1971, Ser. No. 198,652
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **3 Claims**



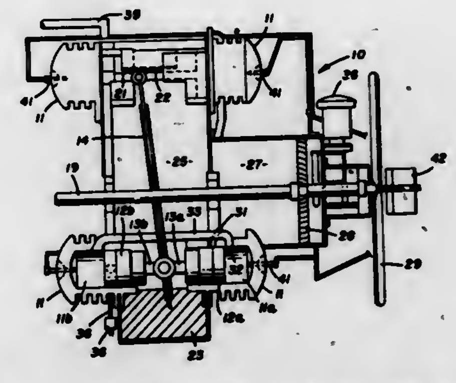
In an internal combustion engine, the operation of at least a pair of fuel injectors is switched from independent energization per engine cycle to simultaneous energization when the amplitude of a speed signal is below the amplitude of a reference signal at the initiation of a timing pulse. The amplitude of the speed signal increases over the duration of a first portion of each engine cycle so that the amplitude of the speed signal is inversely related to the speed of the engine. The timing pulse is initiated at the expiration of a second portion of each engine cycle terminating within the first portion. The amplitude of the reference signal is substantially constant at a voltage level corresponding to an engine speed at which the maximum time period available for independent energization of each of the fuel injectors per engine cycle approaches the desired energization time period for each of the fue injectors per engine cycle.

3,727,593
INSTALLATION FOR COOLING INTERNAL COMBUSTION ENGINES
Kurt Enke, Kirchheim, Teck, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Dec. 17, 1971, Ser. No. 209,310
Claims priority, application Germany, Dec. 19, 1970, P 20 62 765.0
Int. Cl. F01p *7/02*, *5/06*
U.S. Cl. 123—41.12 **15 Claims**



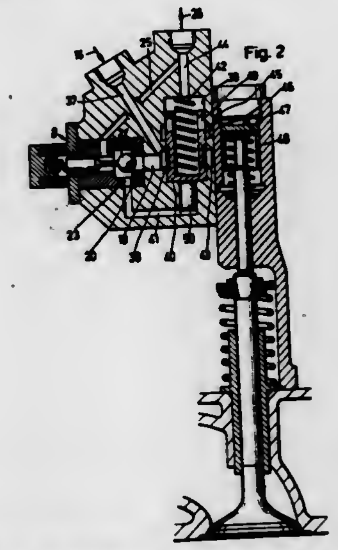
An installation for cooling internal combustion engines for motor vehicles by means of a fan driven by the internal combustion engine, possibly by way of an engageable and disengageable coupling controlled, for example, as a function of temperature; the cooling installation is arranged between the radiator and the internal combustion engine and utilizes a so-called semi-axial fan with a hub that increases conically in the direction toward the engine and possesses substantially straight blades that rotate within an outer casing ring secured at the radiator or radiator mounting.

3,727,594
LOW EMISSION TWO CYCLE AXIALLY RECIPROCATING ENGINE
William N. Schultz, 1610 First National Tower, Akron, Ohio
Continuation-in-part of Ser. No. 5,226, Jan. 23, 1970, abandoned. This application Dec. 14, 1971, Ser. No. 207,760
Int. Cl. F02b *41/02*, *75/26*
U.S. Cl. 123—58 BB **10 Claims**



An internal combustion engine of the two cycle type includes a plurality of cylinders arranged in pairs, each pair of cylinders forming opposed first and second combustion chambers therein which house opposed pistons. A conventional fuel-air mixture is received by and ignited within the first combustion chamber of each cylinder pair and is thereafter exhausted into the second chamber or the opposed cylinder along with an amount of fresh air for a second ignition before being exhausted from the engine. The reciprocating action of the pistons created thereby rotates a conventional crank wheel to turn a standard power shaft.

3,727,595
CONTROL DEVICE FOR HYDRAULICALLY OPERATED TAPPET VALVES OF INTERNAL COMBUSTION ENGINES
Heinz Links, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Aug. 31, 1970, Ser. No. 68,362
Claims priority, application Germany, Aug. 30, 1969, P 19 44 177.1; Dec. 16, 1969, P 19 62 916.4; Feb. 12, 1970, P 20 06 304.1; Feb. 14, 1970, P 20 06 844.4; Feb. 25, 1970, P 20 08 668.4; March 5, 1970, P 20 10 291.4
Int. Cl. F01l *9/02*
U.S. Cl. 123—90.12 **1 Claim**



In an internal combustion engine, each intake and exhaust valve is operated by an actuating piston, which, in turn, is reciprocated by hydraulic liquid admitted under pressure to, and withdrawn from said piston intermittently by means of a solenoid valve.

3,727,596

IGNITION DEVICES FOR INTERNAL COMBUSTION ENGINES AND ENGINES INCLUDING SUCH DEVICES

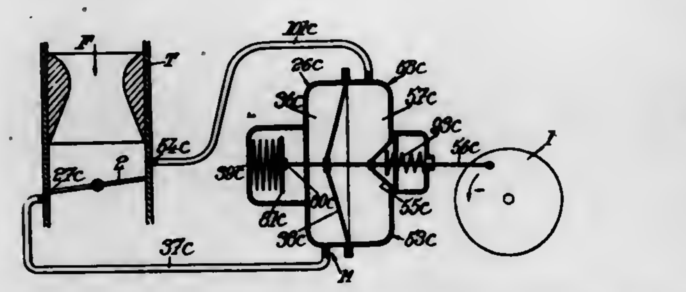
Jean Panhard, Paris, France, assignor to Societe de Constructions Mecaniques Panhard & Levassor, Paris, France

Filed Feb. 27, 1970, Ser. No. 15,099

Claims priority, application France, Feb. 28, 1969, 6905579

Int. Cl. F02p *5/04*

U.S. Cl. 123—117 A 9 Claims



The device is for use particularly with rotary piston engines in which the combustion chamber is periodically connected with the intake pipe before being isolated from the exhaust. It has means sensitive to the position of the throttle valve and to the rotary speed of the engine. These means move a plate in the direction of ignition retard when the degree of opening of the throttle valve is less than a certain limit P_L and the rotary speed is greater than a certain limit N_L. The means may be constituted by an electrical contact and a centrifugal contact, which when both are closed actuate the ignition retard. The means may also be two suction capsules connected to selected points in the intake pipe, working in opposition and connected to the same stem. The capsules are calibrated to operate beyond certain predetermined suction thresholds.

3,727,597

DEVICE FOR PRECIPITATING FUEL FROM THE VAPOR DISCHARGING FROM THE FUEL SUPPLY SYSTEM OF AN INTERNAL COMBUSTION ENGINE

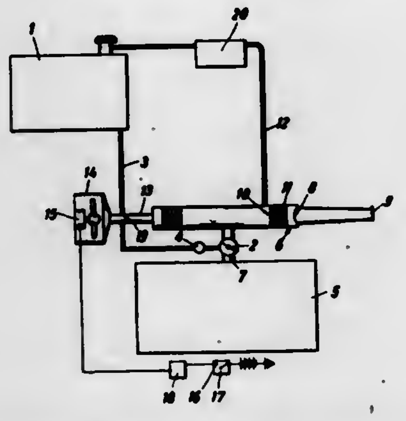
Paul Hensler, Stuttgart-Stammheim, Germany, assignor to Firma Dr. Ing. F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed May 8, 1970, Ser. No. 35,666

Claims priority, application Germany, May 28, 1969, 19 27 046.3

Int. Cl. B01d *50/00*; F02m *59/00*

U.S. Cl. 123—136 13 Claims



A device for precipitating ruel from the vapor discharging from the fuel supply system of an internal combustion engine in which the fuel tank and the mixture-forming system, especially the carburetor float chamber, is connected through pipe lines to a chamber sealed to the atmosphere and defined by the volume of the intake air filter. A filter insert is placed ahead of the air intake and has a layer of activated carbon which absorbs the fuel particles from the vapor passing through the filter. The intake air filter is also provided with an exhaust-connecting piece which is connected to the suction side of a blower exhausting into the atmosphere. The blower is driven by an electric motor which is supplied with power through a contact provided in the starting-ignition switch and a time-control element which automatically interrupts the current supply to the blower motor after a predetermined time period.

3,727,598

TEMPERATURE-RESPONSIVE SYSTEM FOR REGULATING THE FUEL MIXTURE IN AIR-COOLED INTERNAL COMBUSTION ENGINES

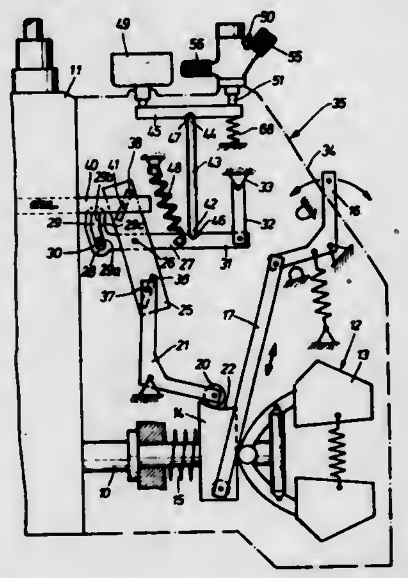
Heinrich Knapp, Hummelbergweg 24, Leonberg-Silberberg, Germany

Filed Sept. 28, 1970, Ser. No. 76,036

Claims priority, application Germany, Jan. 29, 1970, P 20 03 927.4

Int. Cl. F02d *1/04*; F02m *17/00*

U.S. Cl. 123—140 MC 3 Claims



In the cooling circuit of an air-cooled internal combustion engine there is disposed a temperature responsive member which moves a lever connected to a fuel quantity control member of a fuel injection pump. The transmission of motion from said lever to said control member is affected by a contoured control edge or cam track provided in the former.

3,727,599

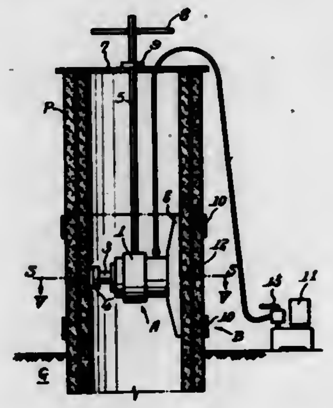
METHOD OF AND APPARATUS FOR CUTTING HOLLOW PRECAST CONCRETE PILES OR THE LIKE

Rokuro Sugiki, Ohta-ku, Tokyo; Takemitsu Mori, Kokubunji-shi, Tokyo, and Tomoyuki Hayakawa, Kawasaki-shi, all of Japan, assignors to Nippon Concrete Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 27, 1971, Ser. No. 166,391

Int. Cl. B28d *1/00*; B26f *3/00*

U.S. Cl. 125—23 R 5 Claims



Hollow precast concrete piles can now be cut in their state driven into the ground to remove their top portion extending above the ground with efficiency and without causing any substantial noise or any damage to the lower major pile portion set in the ground principally by mechanically applying a shearing force to the pile substantially radially in a transverse cross section thereof at the level where the pile is to be cut.

3,727,600

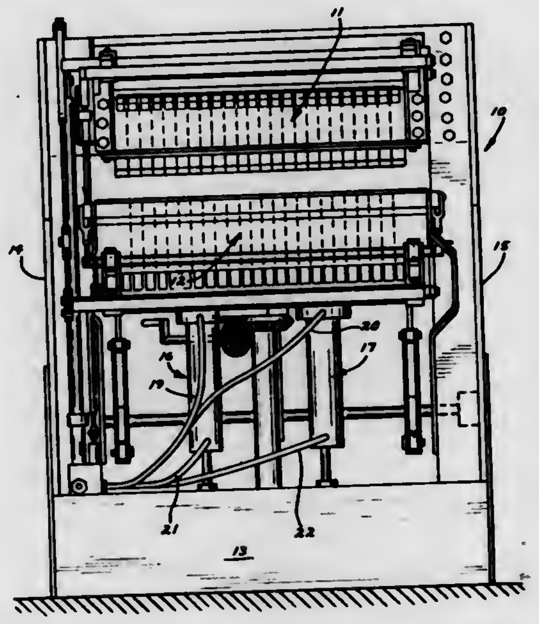
HYDRAULIC STONE SPLITTER WITH SHOCK ABSORBER MEANS

Thomas L. Schlough, St. Cloud, Minn., assignor to Park Tool Company, Division of The Gran-A-Stone Co., St. Cloud, Minn.

Filed Oct. 12, 1971, Ser. No. 188,159

Int. Cl. B28d *1/32*

U.S. Cl. 125—23 C 5 Claims



A shock absorber system for power rams employing a cylinder having a piston with a force-applying shaft coupled thereto, the piston being arranged for reciprocatory motion within the cylinder, and with the piston separating a high pressure chamber segment from a lower pressure chamber segment, the shock absorbing system including conduit means coupling the low pressure chamber segment to orifice means for permitting restricted flow of fluid from the low pressure chamber to the reservoir, and with a pressure relief valve coupled to the low pressure chamber segment, and being disposed in parallel relationship with the orifice to permit fluid flow therethrough when pressure within the low pressure chamber exceeds a certain predetermined level. Flow control valves in the form of pilot-actuated check valves are arranged to maintain the system in flooded relationship during idle periods, with the check valves being functional to isolate flow channels during operational portions of the working cycle. The shock abosrber system of the present invention is particularly adaptable for use in conjunction with hydraulically actuated rams utilized to apply extremely high forces to the jaws of stone splitting equipment, with this system reducing the rate of transfer of shock from the hydraulic system to the remainder of the structure upon splitting of the stone, with this shock energy being dissipated in the low pressure side of the hydraulically actuated main rams.

3,727,601

BAKING AND ROASTING OVEN

Johann Klement, Traunreut, Germany, assignor to Siemens-Electrogerate GmbH, Berlin and Munich, Germany

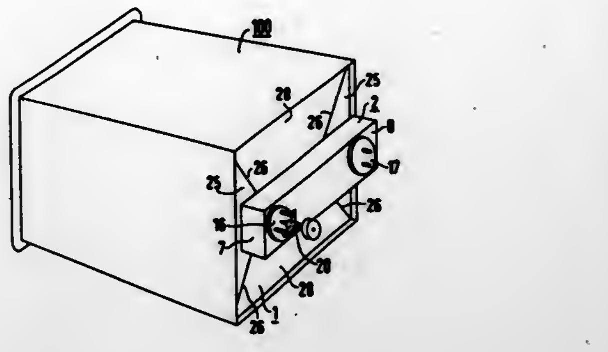
Filed Feb. 9, 1972, Ser. No. 224,693

Claims priority, application Germany, Feb. 12, 1971, P 21 06 775.4

Int. Cl. A21b *1/26*

U.S. Cl. 126—21 A 21 Claims

Baking and roasting oven which includes a muffle chamber having a top wall, a bottom wall and a lateral wall extending between the top and bottom walls, also has a heating means including a circulating blower for hot air, a blower channel for the hot air circulated by the blower, the blower channel inter-



connecting respective hot air exhaust and hot air injection openings and injection openings being at an elevation of at least one-fourth the height of the muffle chamber from the bottom wall thereof.

3,727,602

INSTRUMENT FOR TAKING SAMPLES FROM INTERNAL ORGANS

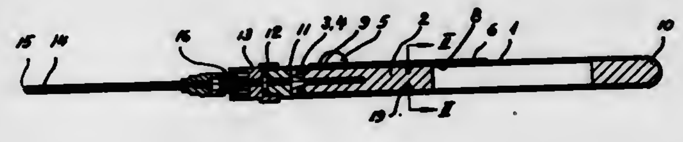
Victor Holger Hyden, and Sune Torsten Larsson, both of Goteborg, Sweden, assignors to said Hyden and Victor, by said Larsson

Filed Jan. 28, 1971, Ser. No. 110,445

Claims priority, application Sweden, June 15, 1970, 8251/70

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 B 3 Claims



An instrument for taking samples from internal organs of humans and animals in which a cannula for insertion into the organ is detachably connected to a handle portion provided with a plunger pump for drawing the sample into the cannula and a needle of homogeneous material is secured in the pump plunger for axial movement within the cannula and serves to prevent undesired fragments of connective tissues entering the cannula when the cannula passes through the tissues surrounding the internal organ being sampled.

3,727,603

DOUBLE CONTAINER CONSTRUCTION FOR HOSPITAL USE

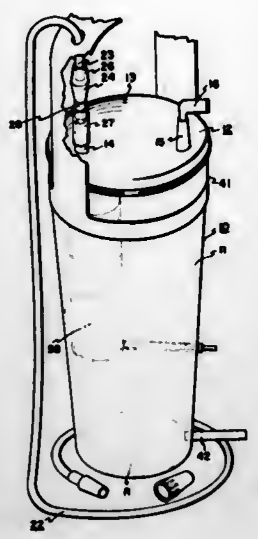
Le Grand K. Holbrook, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah

Filed Aug. 25, 1971, Ser. No. 174,669

Int. Cl. A61b *19/00*

U.S. Cl. 128—2 F 8 Claims

A double-liquid-container construction and accessories usable in urinary tract drainage systems, by way of example, for permitting measurements of successive volumes of drained liquid during pre-selected time spans. An interior container is disposed within an exterior container, the first being graduated and provided with valved outlet means for drainage of the subject liquid into the second container. Improved strap facilitates drainage tube erection and over-all bottle support

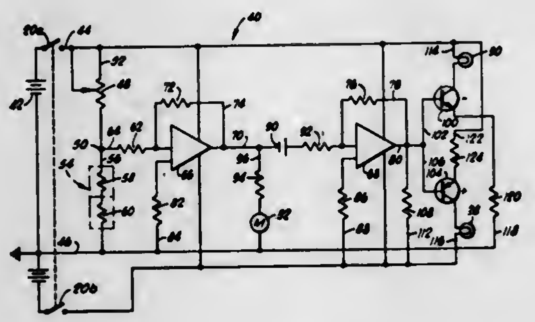


from an overhead bracket, or the like. Single and double bacterial traps are included within the structure.

3,727,604
EMOTIONAL LEVEL INDICATOR

Toney W. Sidwell, 2413 N.W. 113th Place, and George F. Reese, 2855 Taft Avenue Southwest, both of Oklahoma City, Okla.

Filed Oct. 26, 1971, Ser. No. 192,515
Int. Cl. A61f *5/05*; A61b *5/05*
U.S. Cl. 128—2.1 Z **12 Claims**

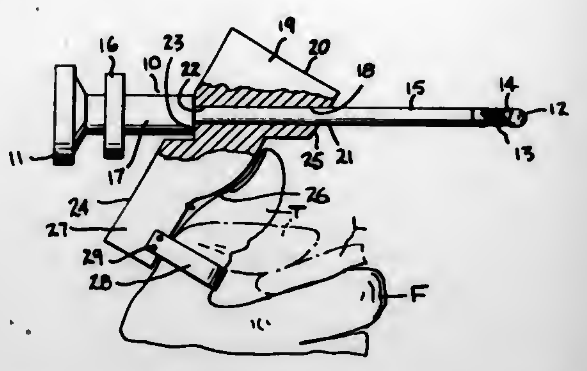


An improved emotional level indicator constructed to provide immediate, visual feedback information relative to the changes in an individual's emotional level (changes in the activity of an individual's sympathetic system) which includes an emotional transducer for measuring changes in the individual's emotional level (skin resistance) and providing an output signal responsive to such changes. The output signal of the emotional transducer is amplified and connected to a meter such that the position of the meter is indicative of a particular, relative emotional level, and such that movement of the meter indicator is indicative of whether the individual's emotional level is increasing or decreasing. The amplified output signal of the emotional transducer is further connected to a positive rate transistor amplifier and to a negative rate transistor amplifier, the rate transistor amplifiers being connected such that the positive rate transistor amplifier conducts when the individual's emotional level is increasing, and such that the negative rate transistor amplifier conducts when the individual's emotional level is decreasing. The emotional level indicator further includes a light indicator connected to the positive rate transistor amplifier and a light indicator connected to the negative rate transistor amplifier such that the light indicators provide immediate, visual feedback information indicative of whether the individual's emotional level is increasing or decreasing relative to an initial or predetermined emotional level setting.

3,727,605
LARYNGOSCOPE

Harold C. Klein, 2957 South Park Boulevard, Shaker Heights, Ohio

Filed Dec. 10, 1970, Ser. No. 96,862
Int. Cl. A61b *1/26*
U.S. Cl. 128—11 **7 Claims**

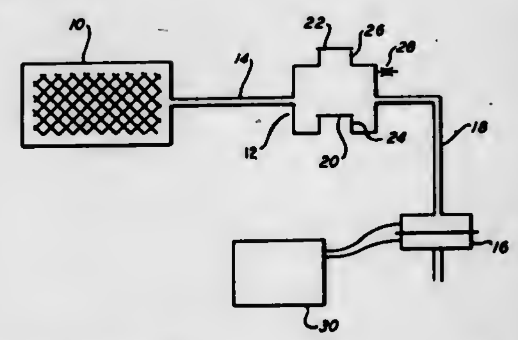


An optical viewing tube slidably mounted in a steady rest which is contoured to fit a portion of the hand of the examiner and be mounted thereon in a manner to permit the fingers of the hand to grasp the tongue of the subject being examined while the larynx is viewed through the viewing tube.

3,727,606
APNEA DETECTION DEVICE

Ulrich Sielaff, McFarland, Wis., assignor to Airco, Inc., New Providence, N.J.

Filed June 12, 1970, Ser. No. 45,688
Int. Cl. A61b *5/02, 5/10*
U.S. Cl. 128—2 S **6 Claims**

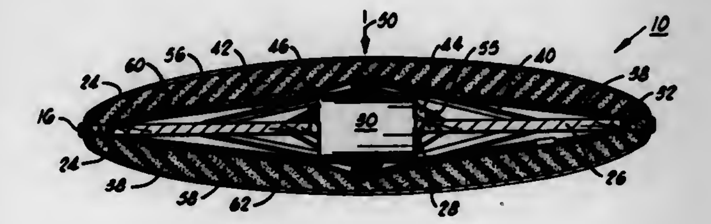


A device for providing continuous monitoring of a human breathing and heart rate wherein a fluid-tight mattress is located in contact with the human and produces pressure signals in response to the breathing and heart rate. A pressure transducer is provided for interpreting the pressure signals for application to an electronic circuit for visual or audible recognition of the signals.

3,727,607
VIBRATORY MASSAGING DEVICE

Onnie R. Dill, P.O. Box 14218, Oklahoma City, Okla.

Filed July 1, 1971, Ser. No. 158,936
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 **6 Claims**

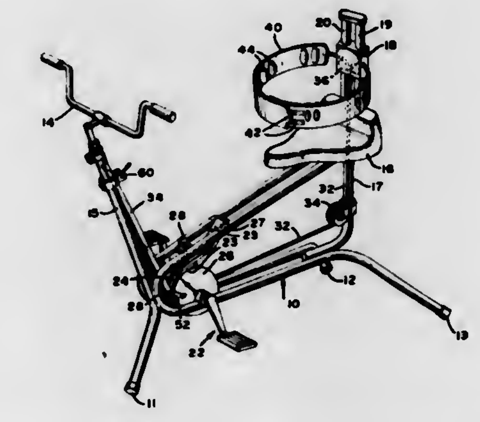


Massaging apparatus of compact character which is capable of imparting distributed vibratory motion to a subject or specimen, the apparatus consisting of a main frame which is resiliently affixed to a vibratory element, there being resilient suspension relative to the main frame in all dimensions without secure affixure, and the massaging apparatus including a resilient padding overlaying the main frame structure for purposes of providing a decorative outer cover which is soothing to the touch and comforting in support of a subject or specimen.

3,727,608
MASSAGING DEVICE DRIVEN BY EXERCISE APPARATUS

Luther G. Simsian, 7 Laurel Lane, Greenwich, Conn.

Filed Oct. 14, 1971, Ser. No. 189,354
Int. Cl. A61h *7/00*
U.S. Cl. 128—63 **16 Claims**

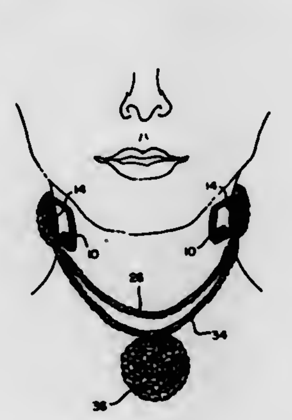


A massaging device comprises a belt which is coupled to an exercise apparatus operated by muscle power. The belt when fastened around a body portion is cyclically tightened and slackened responsive to the motion imparted to the apparatus. The belt may include bulb-like resilient massaging elements which inflate and deflate responsive to applied pressure. Alternatively, the belt comprises stretchable material.

3,727,609
FACE LIFTING DEVICE

Edith A. Hale, 310 E. 44th Street, New York, N.Y.

Filed July 13, 1971, Ser. No. 162,194
Int. Cl. A61f *5/08*
U.S. Cl. 128—76 B **2 Claims**

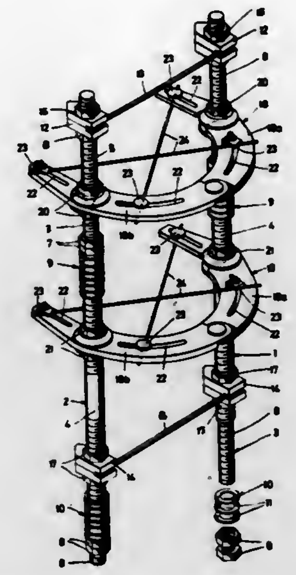


The application discloses a face lifting device which serves, in addition, as a decorative or ornamental piece of jewelry having the appearance of a necklace. A plurality of elasticised, beaded strands disposed about the back of the neck and connected to an ornamental base located under each ear lobe and attachable to a skin adhering patch provides the principal source of lift. The lift is exerted rearwardly so as to remove wrinkles and excess fat formed about the neck and under the chin. Where the problem of fat and excess skin is especially acute a front necklace may be provided which is weighted to provide additional skin lift.

3,727,610
FIXATOR FOR DIAPHYSES FRACTURES

Paolo Riniker, Via Valle Maggia, Locarno, Switzerland

Filed Feb. 17, 1972, Ser. No. 227,132
Claims priority, application Switzerland, March 16, 19 3814/71
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 A **5 Claims**

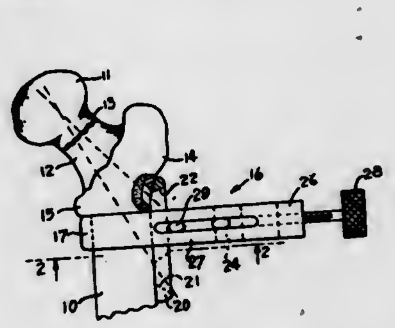


A fixator for diaphyses fractures comprising two fixation nails held between two parallel connection members. Each connection member possesses two parts detachably connected with one another through the agency of at least one spring or resilient element. At the corresponding parts of both connection members there are adjustably and detachably secured, on the one hand, one of the fixing nails and, on the other hand, a support disposed in a plane which is substantially perpendicular to a plane taken through the fixation nails, such support having a respective pair of crosswise arranged fixing wires.

3,727,611
ALIGNMENT MEANS FOR INSERTING GUIDE WIRE PRIOR TO INSERTING HIP NAIL FOR A FRACTURED HIP

Robert Jordan Schultz, 64 Little Brook Road, Wilton, Conn.

Filed July 1, 1971, Ser. No. 158,808
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 EB **11 Claims**



The alignment means includes three novel structures for correctly placing a hip nail in the rounded head of the femur for fracture of the hip. In the use of these structures, a new method of inserting a guide wire in a bone is disclosed. One of the aids is a specially prepared side plate attached to the movable arm of a modified Lowman clamp which is used to designate the correct position for drilling an entrance hole in the lateral cortex of the femur to accommodate the nail and guide wire. Another aid is a wire guide which directs the exploratory wire across the fractured area. The guide wire is used to direct the nail to its best supporting position, and the third is the use of the lesser trochanter as the reference point for the attachment or contact of the instrument, so that the instrument may be used and the procedure performed.

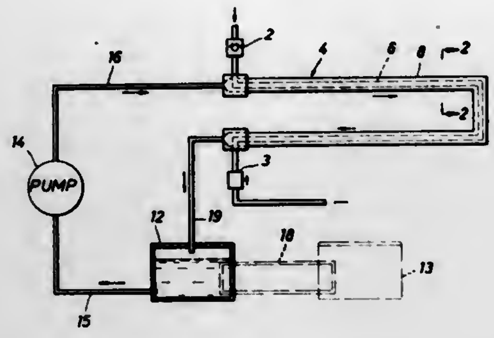
3,727,612
DIALYSIS METHOD AND APPARATUS

Robert S. Sayers, 18710 Prince Williams Lane, Houston, Tex., and Joseph G. Bohorfoush, 293 Youngblood Circle, Milledgeville, Ga.

Filed Jan. 18, 1971, Ser. No. 107,107

Int. Cl. B01d *13/00*

U.S. Cl. 128—214 R 3 Claims



A method of dialytic conditioning of blood in which the blood is continuously circulated through a dialytic exchange member comprising an elongated tubular chamber having at least one semipermeable tubing member longitudinally disposed therein. In a preferred embodiment a plurality of semipermeable tubes are concentrically disposed in the tubular chamber, allowing circulation of blood and one, two or more dialysis fluids simultaneously.

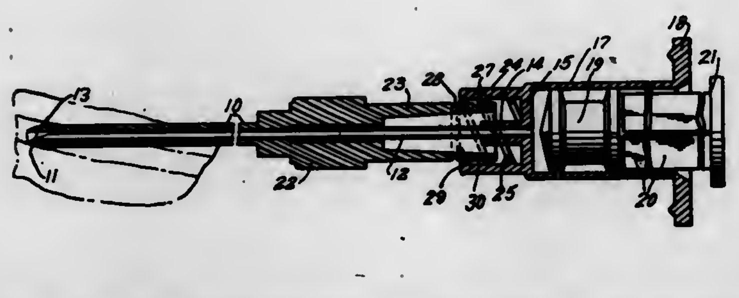
3,727,613
SAFETY CATHETER PLACEMENT ASSEMBLY

James L. Sorenson; Karl A. Pannier, Jr., and Gordon S. Reynolds, all of Salt Lake City, Utah, assignors to Le Voy's Inc., Salt Lake City, Utah

Filed Oct. 9, 1970, Ser. No. 79,403

Int. Cl. A61m *05/00*

U.S. Cl. 128—214.4 14 Claims



Safe placement of a flexible catheter is enabled by (a) novel positive connection of the separable parts and (b) by unique indicating means. A syringe has a functionally integral needle and provides a convenient handle to which the catheter sheathing the needle is releaseably attached by a smoothly operating twist lock against inadvertent separation during venipuncture and catheter placement manipulation. After venipuncture catheter placement free from danger of damaging a blood vessel lumen wall is effected by advancement of the catheter tip into sheathed relation to the leading end of the needle serving as a stiffener to facilitate advance of the catheter within the lumen. Cooperating means respective associated with the catheter and with the needle and remaining exposed after the catheter and sheathed needle have entered the lumen provide indication of the relative longitudinal position of the catheter end and needle tip, and may also helpfully indicate whether the catheter and needle are safely interconnected against unintentional longitudinal displacement as well as a condition of relative freedom for separation when it is desired to withdraw the needle from the catheter.

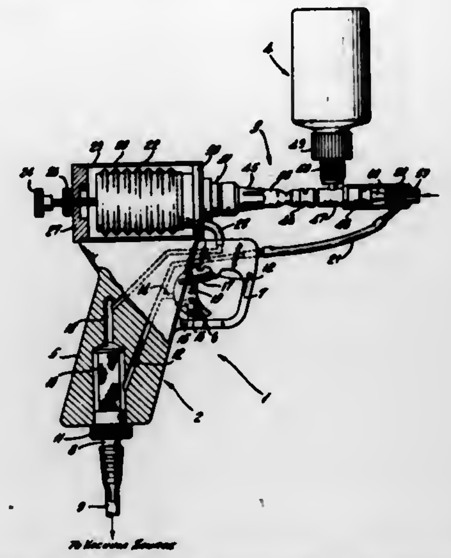
3,727,614
MULTIPLE DOSAGE INOCULATOR

Michael Kniazuk, Mountainside, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 13, 1971, Ser. No. 142,957

Int. Cl. A61m *5/18, 1/00*

U.S. Cl. 128—218 A 4 Claims



An inoculator having a muzzle surrounding the needle and a vacuum source to urge a piston forward and to draw the skin of the patient into the muzzle thereby impaling the skin of the patient upon the needle, automatically effecting the inoculation.

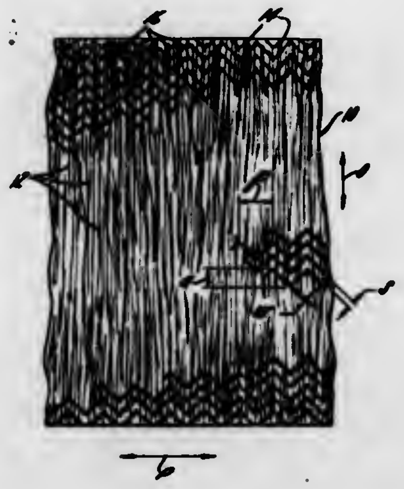
3,727,615
SOFT, DRAPABLE NONWOVEN MATERIAL

David V. Duchane, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 26, 1971, Ser. No. 202,183

Int. Cl. A61f *13/16*

U.S. Cl. 128—290 W 17 Claims



A soft drapable nonwoven material having good bidirectional strength-stretch characteristics which is especially suitable for a sanitary napkin wrapper is described. The material comprises a web of staple length fibers such as a carded web having a predominant direction of fiber orientation and a pattern of adhesive lines serving to unite the fibers together into a coherent nonwoven material. The adhesive lines are uniformly spaced in the direction of fiber orientation and extend continuously across the web generally perpendicular to the direction of predominant fiber orientation. The adhesive lines are also disposed uniformly over the web in a regularly repeating oscillating pattern with the crests pointed in the direction of fiber orientation. The pattern period, line amplitude, and line spacing are carefully selected to insure that as the web is strained in the direction perpendicular to that of original fiber orientation web rupture is avoided over elongations of at least about 25 percent.

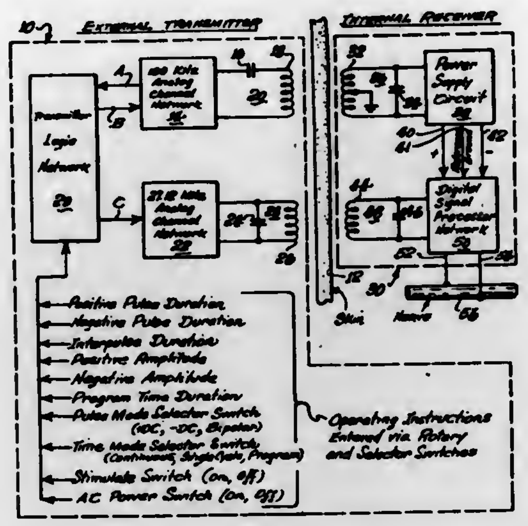
3,727,616
ELECTRONIC SYSTEM FOR THE STIMULATION OF BIOLOGICAL SYSTEMS

Herbert H. Leazkes, Pomona, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed June 15, 1971, Ser. No. 153,316

Int. Cl. A61n *1/36*

U.S. Cl. 128—422 9 Claims


External Transmitter
Internal Receiver
Power Supply Circuit
Pulse Mode Selector Switch (+DC, -DC, Bipolar)
Time Mode Selector Switch (Continuous, Single Cycle, Program)
Stimulate Switch (on, off)
AC Power Switch (on, off)
Operating Instructions Entered via Rotary and Selector Switches

A receiver totally implanted within a living body is inductively coupled by two associated receiving coils to a physically unattached external transmitter which transmits two signals of different frequencies to the receiver via two associated transmitting coils. One of the signals from the transmitter provides the implanted receiver with precise control or stimulating signals which are demodulated and processed in a signal processor network in the receiver and then used by the body for stimulation of a nerve, for example, while the other signal provides the receiver with a continuous wave power signal which is rectified in the receiver to provide a source of electrical operating power for the receiver circuitry without need for an implanted battery.

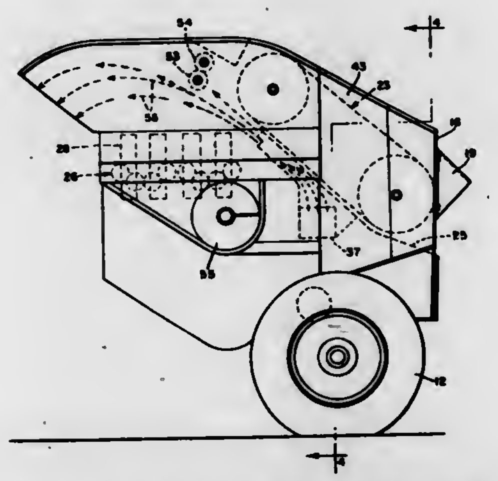
3,727,617
CORN HARVESTER

Howard C. Hadley, Dallas Center, and Glenn Dale Head, Des Moines, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 25, 1971, Ser. No. 146,714

Int. Cl. A01f *11/06*

U.S. Cl. 130—5 B 6 Claims



A corn husker of the pull-type composed of a transverse housing structure with the husking bed disposed transversely within the housing, an inlet elevator on one side of the housing that drops the ears of corn onto the upper end of the husking bed and a discharge elevator on the opposite side of the housing that receives the treated corn from the husking bed. A blower is provided as a suitable duct work extending to a pair of outlets, one of which is on the inlet elevator side of the housing and which directs a stream of air through the corn leaving the elevator and gravitating to the husking bed, and the second discharge outlet that is on the opposite side of the housing structure and is directed transversely to pass over the corn laying on the husking bed.

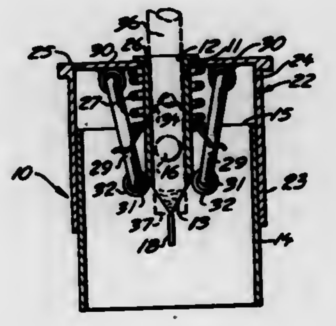
3,727,618
CIGARETTE EXTINGUISHER

Reginald Simpson, 1004 Cloverly Street, North Vancouver, British Columbia, Canada

Filed April 21, 1972, Ser. No. 246,242

Int. Cl. A24f *13/18*

U.S. Cl. 131—256 5 Claims



A cigarette extinguisher having a tube adapted to receive a cigarette, lit end first, and having a notched V-shaped end from which the lit end of the cigarette projects and rollers moveable with respect to and over the V-shaped tube end for squeezing and extinguishing the lit end of the cigarette. Bow springs bias the rollers against the exterior of the tube and a coil spring is used to bias the tube with respect to a support and also with respect to the rollers to place the rollers on the tube and beyond the notch, at rest. A stop is provided to limit the insertion of the cigarette and to place the same so as to be engageable by the rollers to extinguish the same.

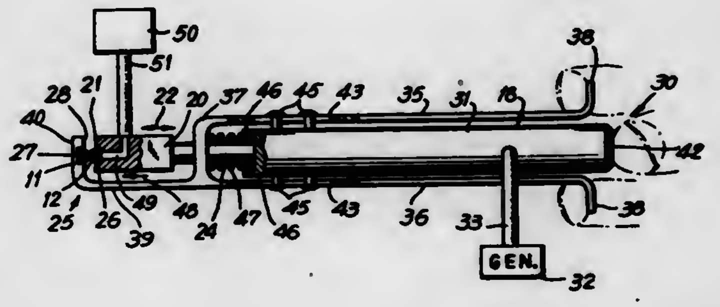
3,727,619
ULTRASONIC APPARATUS FOR HAIR JOINING

Arthur Kuris, Riverdale, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Division of Ser. No. 885,830, Dec. 17, 1969, Pat. No. 3,642,010. This application Sept. 14, 1971, Ser. No. 180,423

Int. Cl. B29c *27/08*

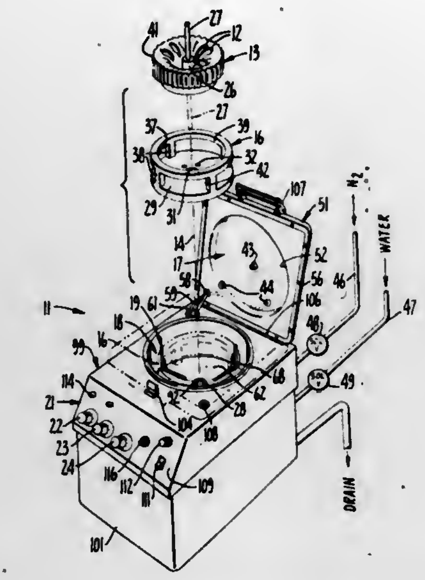
U.S. Cl. 132—56 11 Claims



The method and apparatus for joining hair together utilizing ultrasonic vibrational energy in which the overlapping portions of the commercial hair and the live hair are maintained in fixed position to each other when the energy is introduced therein. The hair may be coated internally or externally with a thermoplastic material which acts as the bonding agent.

3,727,620
RINSING AND DRYING DEVICE

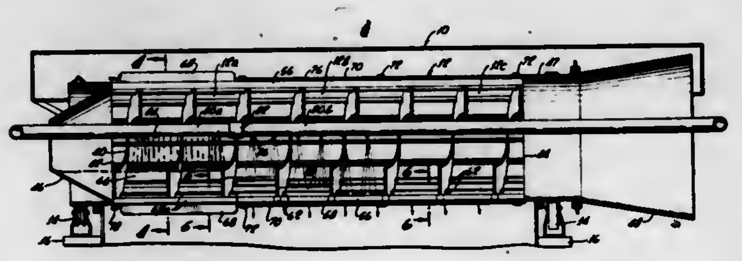
Robert F. Orr, Livermore, Calif., assignor to Fluoroware of California, Inc., Fremont, Calif.
Filed March 18, 1970, Ser. No. 20,667
Int. Cl. B08b *3/02*
U.S. Cl. 134—95 **9 Claims**



An automatic rinsing and drying device for batch processing of thin wafers such as those used as microelectronic substrates and the like. The wafers are supported in a carrier basket on a rotating member during a programmed cycle of a sprayed rinsing with deionized water and a high speed spin drying sequence during a continuous dry nitrogen purge. The duration of the rinse and drying sequences are independently timed and the speed of revolution during the drying sequence is independently adjustable to suit each batch. The rotating member is encircled by a double walled tub and a hinged lid during the processing cycle. Spray nozzles are positioned over the wafers to apply the rinsing fluid over the faces of the wafers as they rotate thereunder. The tub is Teflon lined and has multiple drain outlets to remove the spent rinse fluid from the cleansed wafer surfaces. Provision is also made for substitution of different sized rotary members to accommodate various basket sizes and wafer loads.

3,727,621
ROTARY WASHER

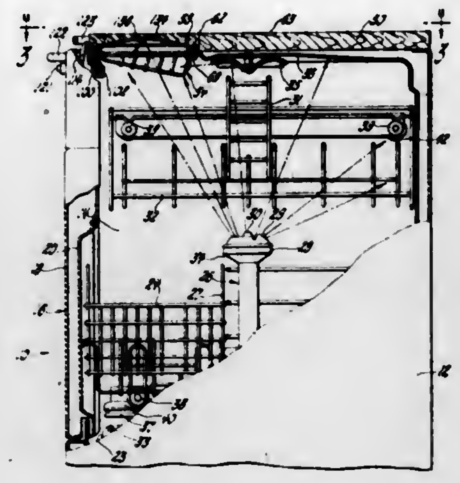
Robert L. Morton, Santa Ana, Calif., assignor to Pacific Scientific Company, Commerce, Calif.
Filed Feb. 19, 1971, Ser. No. 116,978
Int. Cl. B08b *3/02, 3/06, 17/00*
U.S. Cl. 134—104 **13 Claims**



A rotating washer drum is formed with a spiral conveyor on its inner wall for moving small metal parts through the drum while water is sprayed onto the parts. The dirty water drains from the drum through axially extending slots. Eccentrically weighted rods positioned in the slots are oscillated by gravity as the drum rotates, to thereby prevent the slots from becoming clogged with material cleaned from the parts.

3,727,622
DISHWASHER WITH TOP LOADING UTENSIL COMPARTMENT

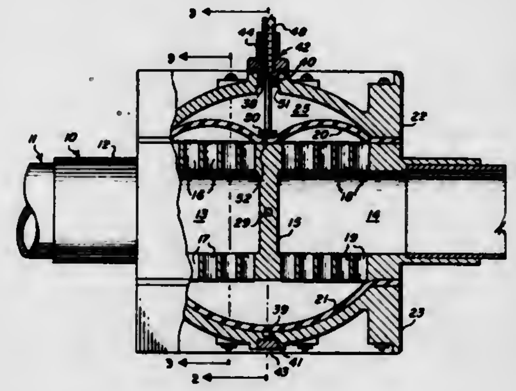
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 12, 1971, Ser. No. 198,135
Int. Cl. B08b *3/02*
U.S. Cl. 134—183 **4 Claims**



A cutlery basket being mounted in the washing chamber of a dishwasher for easy access through an auxiliary top opening door hinged to the dishwasher worktop whereby the auxiliary door may be raised without opening the main front door for storing and washing silverware or the like. The top auxiliary door structure provides for cooperative locking and sealing with the main door such that either door may be opened and closed independently of the remaining door.

3,727,623
DIAPHRAGM VALVE

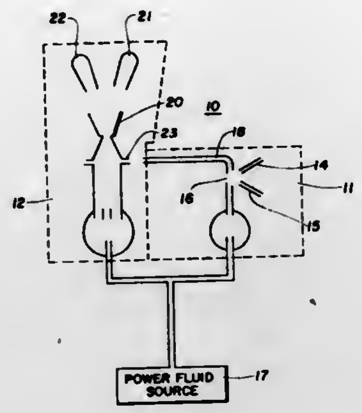
James F. Robbins, Westford, Mass., assignor to Sybron Corporation, Rochester, N.Y.
Filed Nov. 27, 1970, Ser. No. 93,137
Int. Cl. F16k *31/145*
U.S. Cl. 137—1 **14 Claims**



A diaphragm valve is provided with an improved sealing surface and a mechanical flow regulator for precise flow control. The valve has a body with an inlet chamber and an outlet chamber. Passages extend from both chambers to at least one side of the body. The passages are covered by a diaphragm which in turn is covered by a cap. The cap and diaphragm define a control cavity which may be pressurized to force the diaphragm against the side of the body, thereby closing the valve. The openings from the passages are surrounded with ridges, which reduce the effective sealing area against which the diaphragm presses. The cap also supports a mechanical flow regulator which presses the diaphragm towards the body of the valve between the passages from the inlet chamber and the passages to the outlet chamber.

3,727,624
FLUIDIC CIRCUIT COUPLING ARRANGEMENT

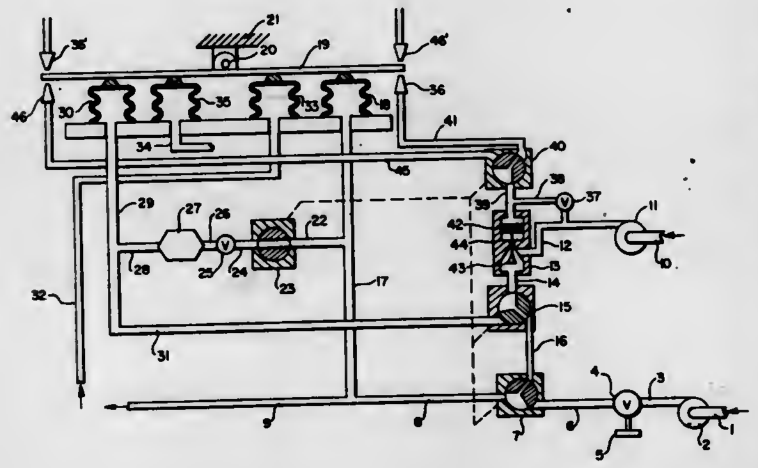
Gunther Schubert; Siegfried Muller, both of Dresden; Wolfgang Gobel, Moritzburg, and Christian Hahn, Dresden, all of Germany, assignors to Veb Kombinat Mess-und Regelungstechnik Dessau, Dessau, Germany
Filed May 19, 1971, Ser. No. 144,942
Int. Cl. F15c *1/12, 1/18*
U.S. Cl. 137—81.5 **3 Claims**



A fluidic circuit in which a turbulence amplifier has a plurality of inputs, and the output of the turbulence amplifier is coupled either directly or by way of suitable adapters to the control input of a fluidic logic device of the type having a wall diffuser.

3,727,625
PNEUMATIC ADJUSTOR

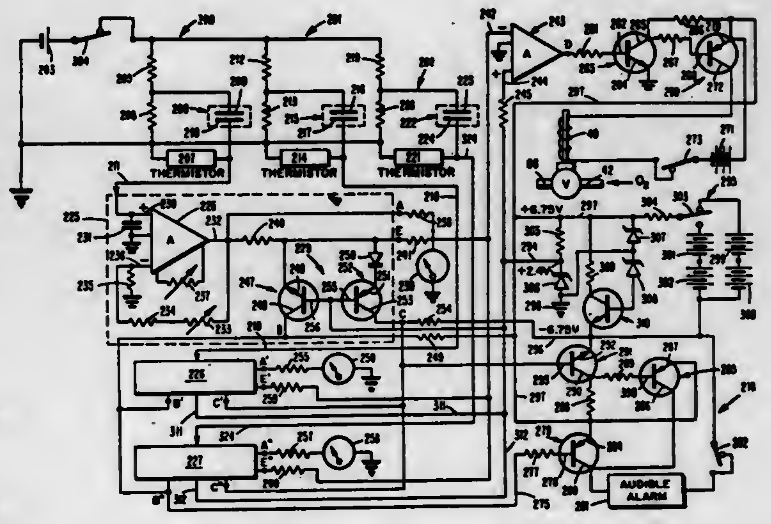
Ryoichi Nagumo, and Noriaki Kitamura, both of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 15, 1971, Ser. No. 198,738
Claims priority, application Japan, Dec. 4, 1970, 45/106806
Int. Cl. F15b *5/00*
U.S. Cl. 137—86 **9 Claims**



A selective manual and automatic pressure control for feeding desired fluid pressure to a device having a measured fluid pressure feedback line; wherein the automatic operation will equalize or otherwise correlate the feedback pressure and a standard pressure value in steady scate automatic operation, with the improvement being that operation may be switched from manual to automatic without any instantaneous change in the feeding fluid pressure at the moment of switching even though the feedback fluid pressure during manual operation differs from the standard fluid pressure valve. Force or distance outputs of fluid fed transducers are automatically compared by oppositely acting flapper nozzles, with the feeding fluid pressure, feedback fluid pressure, standard fluid pressure, and a selected fluid pressure being fed to respective ones of four transducers. During automatic operation, the selected transducer fluid pressure will be that of the feeding fluid pressure with the interposition of a delay and the output of one flapper nozzle will be amplified to provide the feeding fluid pressure, and during manual operation, the selected transducer fluid pressure will be the amplified output of the other flapper nozzle and the feeding fluid pressure will be manually controlled.

3,727,626
APPARATUS FOR CONTROLLING ENVIRONMENTAL CONDITIONS, ESPECIALLY SUITABLE FOR USE UNDERWATER

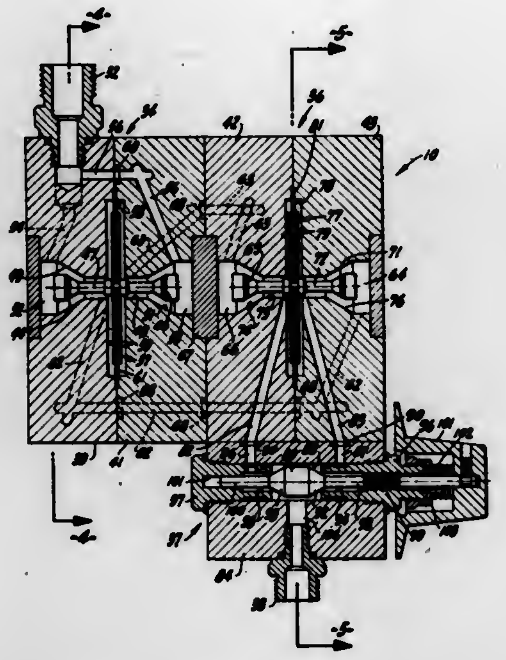
John W. Kanwisher, P.O. Box 53, Woods Hole, Mass., and Walter A. Starck, P.O. Box 592, Big Pine Key, Fla.
Division of Ser. No. 780,961, Dec. 4, 1968, Pat. No. 3,556,098.
This application Nov. 4, 1970, Ser. No. 86,991
Int. Cl. A62b *7/02*
U.S. Cl. 137—88 **24 Claims**



The disclosure illustrates a self-contained closed circuit type underwater breathing apparatus for diver use. A plurality of three or more oxygen sensor cells, each thermistor temperature compensated, are exposed to the gas stream in the system, each providing a current resulting in voltage drop across the thermistor, directly related to oxygen concentration, which voltages then are electronically processed to operate oxygen supply means, whereby oxygen partial pressure is maintained within a predetermined range. In the processing, amplified signal voltages are electronically mathematically averaged and processed to deliver a single control signal to an oxygen solenoid valve. The system is adjusted at atmospheric pressure to provide one half atmosphere oxygen partial pressure at a selected voltage level, e.g., about 2.4 volts average amplified cell voltage. As the quantity of oxygen thereafter varies in use by the diver, the average voltage varies linearly and the solenoid acts responsively thereto. Each amplified cell output is also connected into separate alarm and visual indicator circuitry so that should any cell provide a voltage corresponding to oxygen partial pressure below or above a predetermined safe oxygen range, an audible alarm is sounded and the diver may observe the individual indicators provided for each of the sensor cells and, thereupon, determine emergency remedial steps. Normally, the diver will presume any two similar partial pressure indicators to be correct. The design of the system is such that the electronic circuitry responds to limit, or stabilize, the effect of a spurious voltage input upon the average voltage via transistor clipping circuitry and an associated regulated voltage source. Thereupon a nonvarying voltage, which is not outside the selected saft range constantly appears in the average voltage. Accordingly, the new effective average voltage continues effectively to maintain a suitable oxygen partial pressure as long as the signals from the remaining cells themselves are a correct measure of the oxygen partial pressure actually in the system.

3,727,627
APPARATUS FOR MIXING GASES

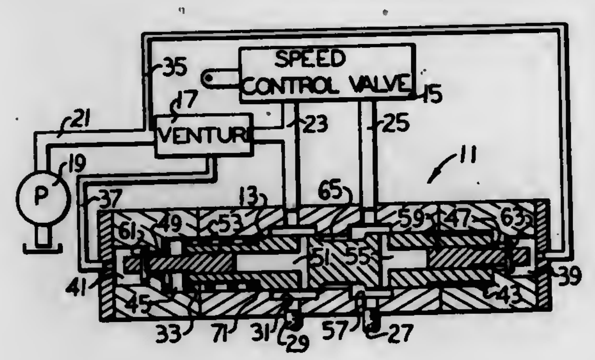
Forrest Morton Bird, and Henry Louis Pohndorf, both of P.O. Box 817, Sandpoint, Idaho
Filed July 15, 1970, Ser. No. 54,934
Int. Cl. G05d *11/02*
U.S. Cl. 137—100 **10 Claims**



A method and apparatus for mixing gases from separate pressurized gas circuits for use in applications such as medical respirators. The pressures of the gases in the two circuits are accurately balanced to provide an equal pressure drop across a differential mixing valve for precise control of the ratio of flow rates of the gases being mixed. In one embodiment, a double state pressure balancing mechanism is provided for increased accuracy of pressure balance.

3,727,628
UNDERSPEED VALVE HYDROSTATIC CONTROL SYSTEM

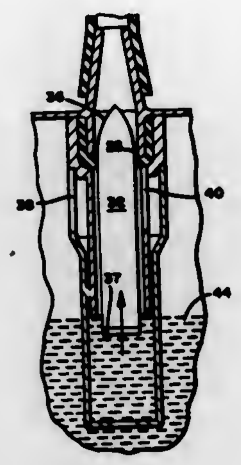
Cyril W. Habiger; Donald L. Hopkins, both of Joliet; Gordon W. Johnson, Peoria; William B. Norick, Joliet; Rollin P. Van Zandt, Peoria, and Frank H. Winters, Keller Heights, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 31, 1970, Ser. No. 68,317
Int. Cl. G05d *11/00*
U.S. Cl. 137—101 **6 Claims**



A hydrostatic control system including an underspeed valve which may be used to control the displacement of hydraulic pumps and motors by differential pressure generating means. The underspeed valve has a valve spool which is actuated by a pressure proportional to engine speed, a pressure responsive to a demand speed, and a preset spring biasing pressure.

3,727,629
VACUUM CHECK VALVE

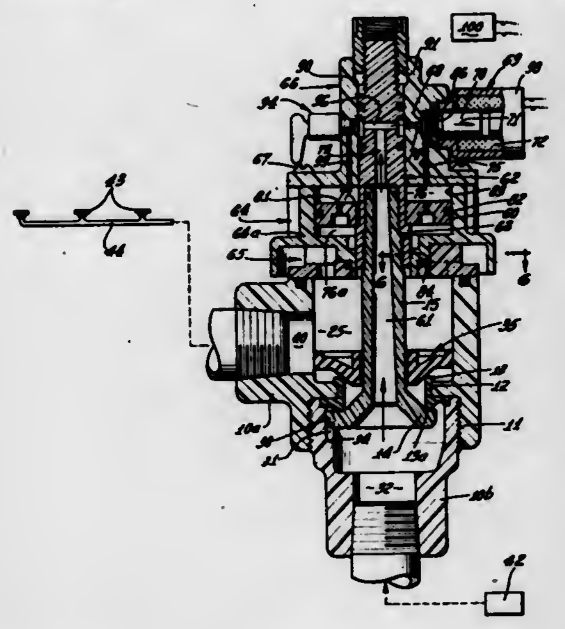
Robert T. Gifford, Yellow Springs, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio
Filed Dec. 27, 1971, Ser. No. 212,409
Int. Cl. F16k *31/22*
U.S. Cl. 137—205 **14 Claims**



A check valve particularly adapted for use in conjunction with surgical drainage or suction apparatus for operative and postoperative drainage of body cavities. The valve includes a sleeve in which a bouyant float valve having a generally conically shaped upper end is positioned. A thin, flexible diaphragm is mounted in the upper end of the sleeve and has a suction opening through its center. When the level of drained fluid in the collecting vessel rises sufficiently the float valve is lifted upwardly and its generally conically shaped upper end is received in the suction opening through the diaphragm to prevent liquid from entering the suction line. The conical shape of the valve upper end enhances the creation of a low pressure area adjacent the suction opening as the valve moves into proximity to the diaphragm which causes the valve to snap into position during the last portion of its travel. Because of the thin resilient nature of the diaphragm, it is distorted when the valve snaps home, positively gripping and retaining the valve in sealing engagement even after termination of suction.

3,727,630
NON-LEAK VALVE OF PLASTIC CONSTRUCTION

Andrew M. McInnis, 3601 Rancho Del Monico, Covina, Calif.
Filed June 14, 1971, Ser. No. 152,892
Int. Cl. F16k *45/00*
U.S. Cl. 137—218 **10 Claims**

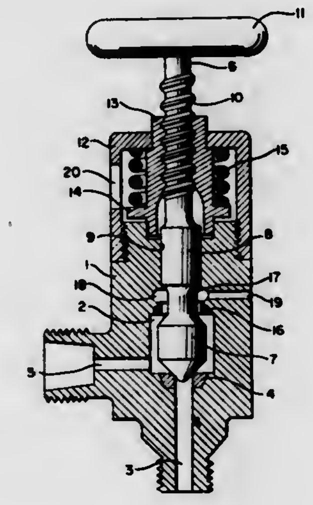


A valve of plastic construction, adapted for manual or automatic operation comprises, in combination,

a. a molded plastic chamber including a body and a cap removably carried thereby, there being an annular main seat in the body and a chamber outlet from the body,
b. a stem projecting generally coaxially through the seat with clearance therefrom, and toward the cap at one side of the seat,
c. a stopper carried by the stem to engage and disengage the seat at the opposite side thereof in response to axial bodily displacement of the stem,
d. structure carried by the cap and carrying the stem to effect said displacement thereof, and
e. the chamber having a liquid pressure inlet to communicate said pressure to the stopper for transmitting pressure loading to the seat when the stem is displaced with consequent engagement of the stopper against the seat,whereby the stopper will remain closed against the seat irrespective of liquid pressure or temperature change induced expansion or contraction of the housing.

3,727,631
VALVE FOR PRESSURE INDICATORS

Tadaaki Suezawa, 1-1, Tama 3-chome, Tamano, and Tohru Suzuki, 25, Susanodori 1-chome, Hyogoku, Kobe, both of Japan
Filed Sept. 20, 1971, Ser. No. 181,927
Int. Cl. F16k *11/04*
U.S. Cl. 137—243.2 **3 Claims**

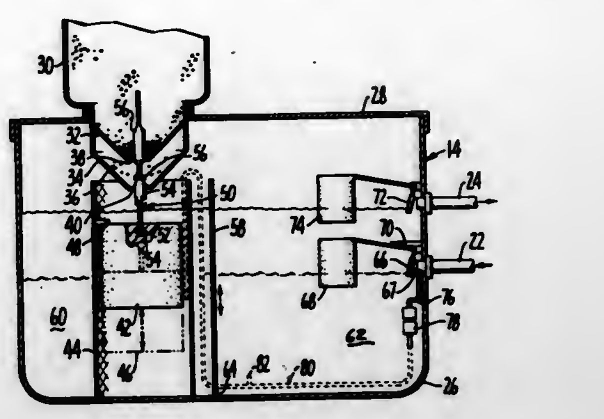


A valve, of which valve disk can be pressed and rotated extra firmly against a main valve seat, against leakage and obstructive combustion residues thereat, by resilient force of a compression type coil spring mounted between a value bonnet and a spindle guide holding the spindle with screwed inner surface and can move axially for a range, also having a draught chamber which co-ordinates with an upper valve seat in letting out residual pressure inside a pressure indicator, and further having a ventilation opening on the side of the bonnet against corrosion of the coil spring.

3,727,632
AUTOMATIC CHLORINATOR, PLUNGER SELECTOR TYPE

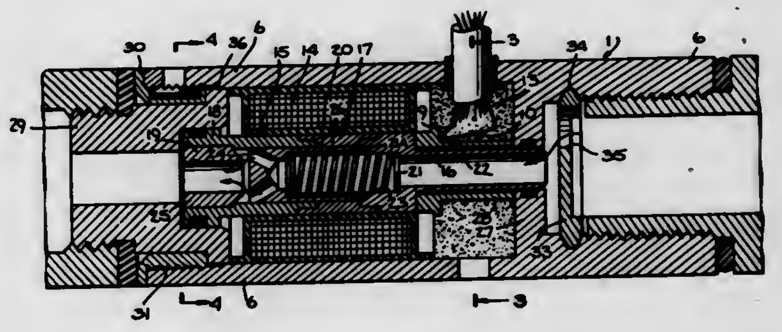
Andrew L. Pansini, 180 Los Cerros Dr., San Rafael, Calif.
Filed Jan. 18, 1971, Ser. No. 107,141
Int. Cl. E03b *11/00;* E03c *1/046;* F17d *1/00*
U.S. Cl. 137—268 **6 Claims**

This invention is a non-pressurized granular feeder operable due to a change of water levels within the chlorinator. When the filtering system of a swimming pool shuts off the suction power within the above ground piping draws water from the chlorinator back through the pressure line of the system. The pressure or incoming line is located below the suction or normal outgoing line to the chlorinator. This is the only chlorinator of this type, to my knowledge, that allows the chlorine solution to be placed back into the circulation system downstream of the pump and filter. This could be accomplished by setting the timer to go off again for a few minutes shortly after the filtering cycle has started.



3,727,633
TAMPER-PROOF SOLENOID OPERATED VALVE

Allan U. Stone, Port Washington, and Francis J. Martin, Huntington, both of N.Y., assignors to Safetech, Inc., Fairfield, N.J.
Filed July 22, 1971, Ser. No. 165,264
Int. Cl. F16k *35/08*
U.S. Cl. 137—382 **3 Claims**

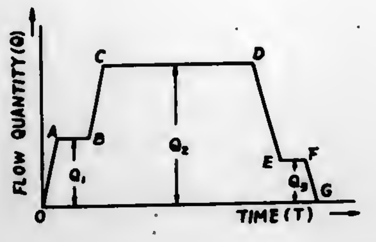


The invention is a solenoid operated valve for use in a vehicle fuel line or any other conduit where it is desired that the valve may be operated only by electric input signals and may not be removed from the line by unauthorized persons or otherwise tampered with. The valve stem is a plunger operated by a surrounding solenoid. The solenoid is adapted for being coupled to a source of power by a tamper-proof cable including terminals concealed in a flowed-in packing material. The valve has a metal protective outer casing which freely rotates on the controlled conduit thereby preventing it from being removed. Removal of the valve from the conduit may be performed by a predetermined arrangement of adjustable portions of the coupling thread which connects the outer metal protective casing to the remainder of the valve. These separate adjustable portions of the thread include a key-receiving means and indexing numbers so that a predetermined code may be used to align the threads to permit the removal of the protective casing.

3,727,634
FLOW QUANTITY CONTROLLING APPARATUS

Mitsunori Nishizawa, Kawasaki, and Mahiko Kato, Tokyo, both of Japan, assignors to Tokico Ltd., Kawasaki-City, Kanagawa-ken, Japan
Continuation-in-part of Ser. No. 864,420, Oct. 7, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,522
Int. Cl. G05d *7/03*
U.S. Cl. 137—486 **5 Claims**

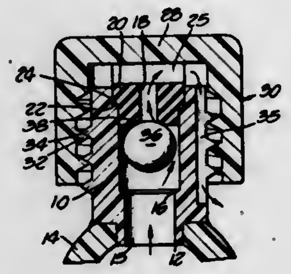
A flow quantity controlling apparatus comprising means for producing air jet pressure in connection with the flow quantity of a liquid flowing in a conduit, means for receiving said air jet



pressure, and means for controlling quantitatively the amount of flow corresponding to the air pressure.

3,727,635
PRESSURE COMPENSATING TRICKLE RATE FLUID OUTLET

Theodore J. Todd, 1039 East Grand Boulevard, Corona, Calif.
Filed July 12, 1971, Ser. No. 161,838
Int. Cl. F16k *15/04*
U.S. Cl. 137—513.5 **10 Claims**

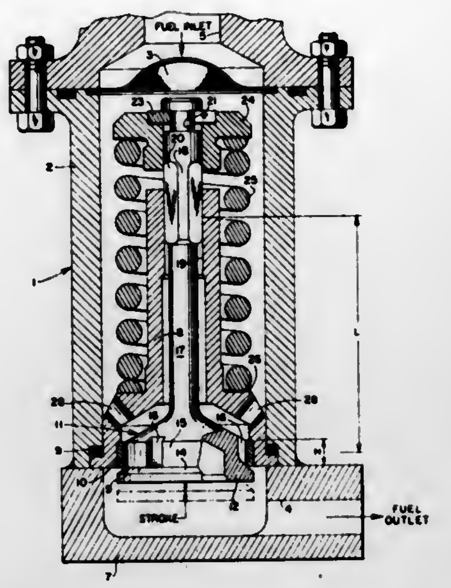


A valve cage extending upward from a pressurized fluid source has a lower inlet valve seat and an upper outlet valve seat. Initiation of flow through the cage lifts a ball from the lower seat to close the upper seat with an initial flushing action and thereafter, with the ball held against the upper valve seat by fluid pressure, the outlet flow is limited to a minute recess in the upper valve seat as long as the valve cage remains in communication with the pressurized source. The valve seat is made of a resiliently deformable elastomer for restriction of the minute recess by a rise in fluid pressure against the ball to compensate for the rise in fluid pressure.

3,727,636
FLOW CONTROL VALVE FOR FUEL INJECTION NOZZLE

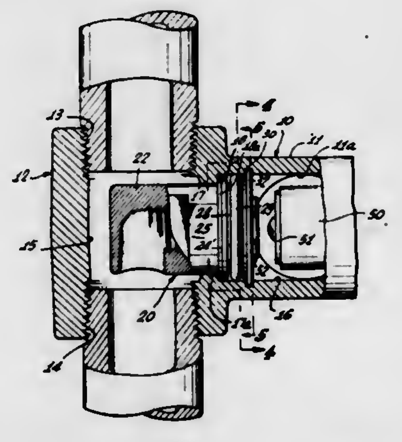
Harold C. Simmons, Richmond Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Jan. 25, 1971, Ser. No. 109,389
Int. Cl. F16k *17/04*
U.S. Cl. 137—541 **5 Claims**

A flow control (or metering) valve characterized in the provision of a combined pintle-spool type valve member in which the pintle valve portion cooperates with a large diameter seat in the housing so as to require large operating forces which, in turn, minimize the effects of friction and hysteresis losses and in which the adjacent spool valve portion is a close sliding fit in the housing bore and has one or more metering slots formed in its periphery to cooperate with the aforesaid seat to meter the flow through the valve with low gain owing to the metering area being independent of the spool size. The valve herein is further characterized in that the spool metering portion is of relatively short axial length and in that the valve member has an elongated small diameter guide portion which is guided in the housing at a zone spaced a substantial distance from the metering portion and seating portion so as to prevent cocking and sticking of the valve member despite the very close fit between the spool portion and housing bore and a relatively looser fit between the spaced guide portion of the valve member.



3,727,637
REPLACEABLE COMBINATION VALVE SEAT AND FLOW DIVERTER

Richard C. Barkelew, Post Office Box 1415, Carmel, Calif.
Filed Jan. 3, 1972, Ser. No. 214,774
Int. Cl. A47k *4/00*
U.S. Cl. 137—561 **10 Claims**

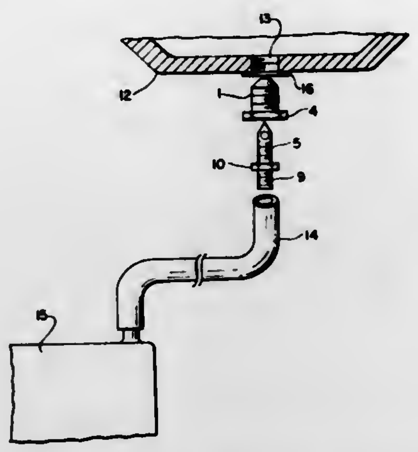


A valve has a valve seating shoulder with an easily replaceable seat held in position adjacent thereto by a special non-circular snap ring, portions of which engage in an annular groove around the liquid passage, and portions of which protrude out of said groove, and over a groove in the rear face of the seat, enabling the snap ring to be easily pried free by use of a suitable tool engaged in the last mentioned groove and forced against the overlapping portion of the ring.

The seat has integral therewith a barrel which passes liquid into a liquid passage and directs it at right angles toward a preselected one of two outlets. The barrel has a non-circular cross section, and is removably but non-rotatably receivable in either of two positions in a mating non-circular aperture in a flange which also provides the aforesaid valve seat shoulder. In one position, the barrel directs water toward one of the outlets, and in the second position, toward the other. The barrel and seat may be readily removed from this aperture, either to inspect or repair the seat, or to reinstall it in the alternative position with the barrel directing the water toward the other outlet.

3,727,638
DRAIN PLUG ASSEMBLY

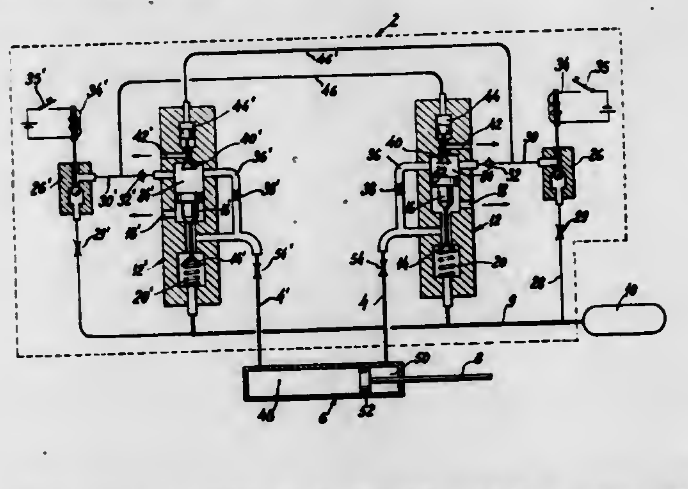
John P. Zaremba, Jr., Pittsfield; Peter D. Cooney, Lenox; Craig W. Hadden, Pittsfield, all of Mass., and David E. Shupp, Downers Grove, Ill., assignors to Progressive Products, Inc., Pittsfield, Mass.
Filed April 26, 1971, Ser. No. 137,218
Int. Cl. F16n *1/00*
U.S. Cl. 137—572 **5 Claims**



A liquid reservoir drain plug assembly is provided which is particularly suitable for automobile oil pans. The assembly is composed of a pair of plug members, one adapted to receive the other. The first member is tubular with a tapered top portion and adapted to be received by a drainage outlet in the reservoir. The second member is also tubular and adapted to be tightly received by said first member in the tapered portion thereof. The second member has a top and bottom portion, the top portion terminating in a cone and having openings in its sides. Upon loosening the second member, liquid is allowed to flow from the reservoir through the tapered portion of the first member and through the second member via the openings in the top portion. Conveniently, the second member is adapted to receive drain means, such as a hose, and a cover member to prevent foreign matter from entering when it is tightly secured in the first member.

3,727,639
CONTROL DEVICE

Jean Louis Gratzmuller, 66, Boulevard Maurice Barres, Neuilly-sur-Seine, France
Filed Dec. 3, 1971, Ser. No. 204,556
Claims priority, application France, Dec. 10, 1970, 7044461
Int. Cl. F16k *11/00*
U.S. Cl. 137—596.16 **18 Claims**



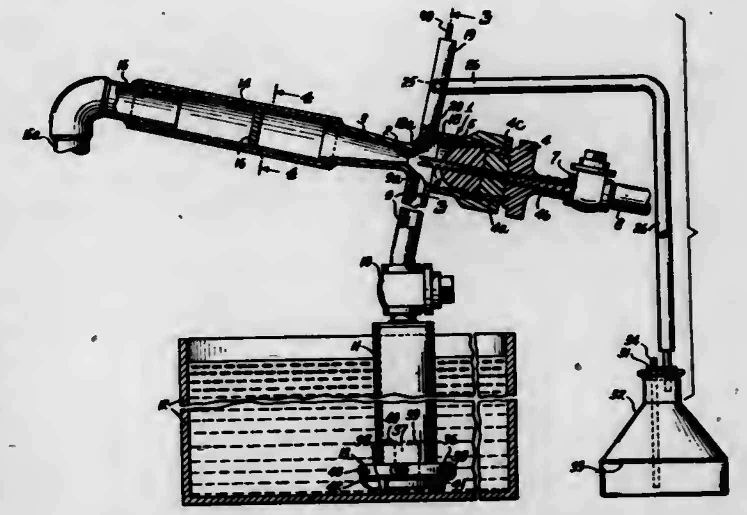
This invention relates to a two-line hydraulic drive, especially for the control of driving member such as a double-acting hydraulic jack.

A valve adapted both to feed and to drain is mounted on each of the two lines, the valve being hydraulically controlled. One of two control electro-valves, in response to a transient electrical impulse, puts one feed/drainage valve in the feed position and the other feed/drainage valve in the drainage position. The other of the two control electro-valves puts said other feed/drainage valve in the feed position and the first-mentioned feed/drainage valve in the drainage position.

The two-line hydraulic control is applicable to the hydraulic control of electrical circuit breakers.

3,727,640
APPARATUS FOR PREPARING AND DISPENSING DRINKS

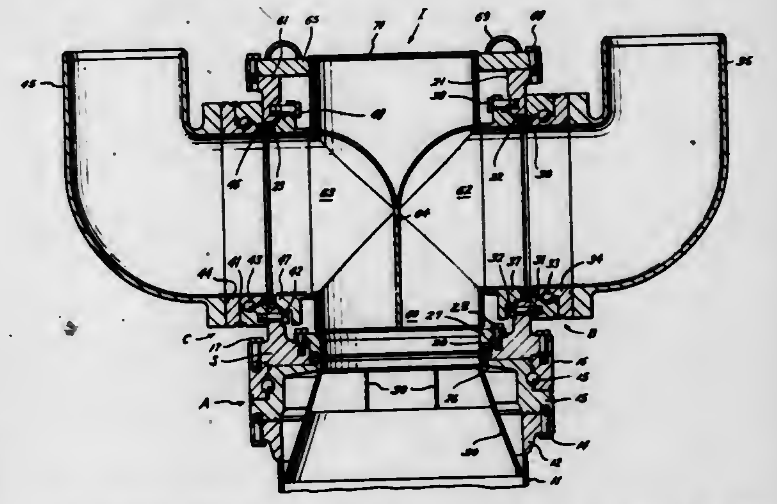
Ralph G. Sargeant, 408 W. Windsor St., Lakeland, Fla.
Continuation-in-part of Ser. No. 856,064, Sept. 8, 1969, abandoned. This application Sept. 28, 1970, Ser. No. 76,040
Int. Cl. A23l *1/00;* **B05b** *7/30;* **F17d** *1/12*
U.S. Cl. 137—604 **5 Claims**



Apparatus for preparing and dispensing drinks, in which a diluting liquid is combined with a liquid beverage concentrate, consisting of a flow confining zone and a final mixing zone. In the flow confining zone, a high velocity stream of one of the liquids is propelled through a discharge tube having a tip located adjacent to the restricted throat of a Venturi causing the other liquid ingredient to be drawn through a suction port into this zone. The preliminary mixture is then forcibly impinged on a baffle surface located in the final mixing zone. Air can be drawn through a second suction port located in the flow confining zone.

3,727,641
LOADING ARM

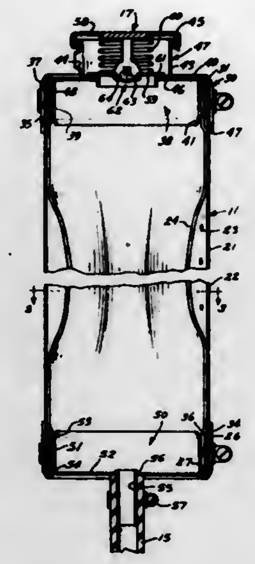
Albert A. Ashton, Dallas, Tex., assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio
Filed April 16, 1971, Ser. No. 134,671
Int. Cl. B67d *5/06*
U.S. Cl. 137—615 **10 Claims**



This patent discloses a loading arm in which packing in the swivel joints at the upper end of the riser pipe and at the innermost ends of the inner arms may be readily changed or serviced without disassembly of any of the swivel joints.

3,727,642
VACUUM COMPENSATING DEVICE FOR ENGINE COOLING SYSTEM AND METHOD OF INSTALLING SAME

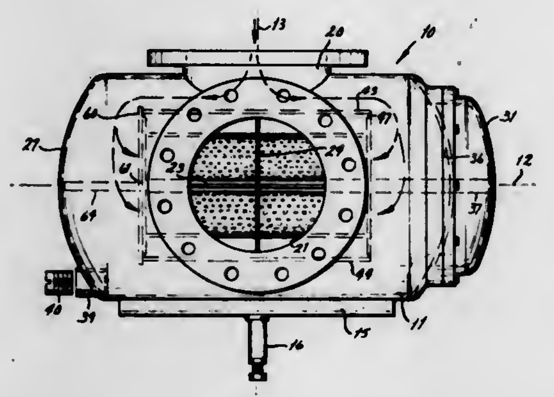
Allie B. Holmes, Corpus Christi, Tex., assignor to Opti-Cap Inc., Corpus Christi, Tex.
Division of Ser. No. 762,254, Sept. 16, 1968, Pat. No. 3,521,702. This application March 9, 1970, Ser. No. 17;620
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **4 Claims**



An engine cooling system including a vacuum compensating device in fluid communication with the system. The compensating device maintains the cooling system full at all times and reduces stress on the system. A viewing device is substituted for the usual cap on the radiator filling neck to allow visual determination of the coolant level, and the viewing device seals the radiator. The invention also includes a unique vacuum compensating device including a flexible liner, a method of installing a fitting on the radiator to connect the compensating device to the radiator, and unique brackets to mount the compensating device on the wall of the engine compartment adjacent the radiator.

3,727,643
LIQUID FLOW DIFFUSION AND STRAIGHTENING APPARATUS

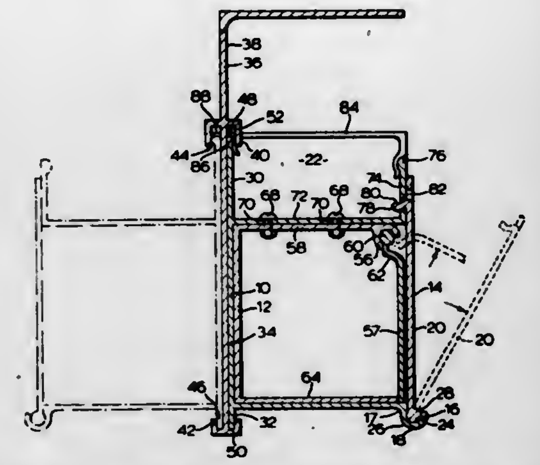
Joseph J. Blackmore, R.R. No. 1, Edwardsville, Ill., and Perry G. Glunt, 91 Wildwood Lane, Kirkwood, Mo.
Filed Nov. 17, 1971, Ser. No. 199,416
Int. Cl. F16l ; F15d
U.S. Cl. 138—41 **8 Claims**



Liquid flow diffusion and straightening apparatus, especially useful to provide an even velocity profile for water entering the pump of a circulation system. A cylindrical housing has a cross-sectional plane of symmetry on which the flow inlet and outlet are located, there being an interior chamber leading to the outlet. The inflowing water is divided into halves which flow away from the plane of symmetry and are slowed within the housing ends. The flows then enter the interior chamber through the ends of cylindrical diffusion screens, pass therethrough, and are rejoined inwardly of the flow outlet.

3,727,644
LAY-IN CABLE DUCTING ASSEMBLIES

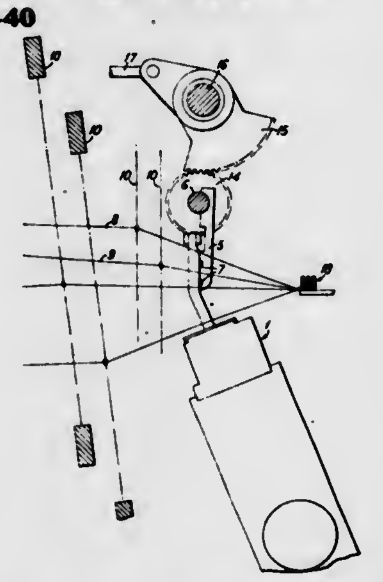
David Kagan, 14 Wenndley Road, Toronto, Ontario, Canada
Filed Dec. 20, 1971, Ser. No. 209,570
Int. Cl. F16l *9/18*
U.S. Cl. 138—155 **8 Claims**



A lay-in cable channel section has a gate as one of its lateral walls which is hinged along the bottom edge, the novel hinge providing the gate with enough strength to act as a supporting platform for materials alongside the cableway. The hinge is also designed so as to permit the gate to stay vertically closed when raised. The cable channel sections are united by coupling sections of similar cross-section but these have suspended gates so seal off any static gap. Above the interior cableway is an open cableway. Novel hangers permit the channel sections to be suspended in side-by-side pairs. A section can be simply lifted out of the hanger and by a reverse movement returned to be positively held by way of upper and lower flanges.

3,727,645
WILTON CARPET LOOMS

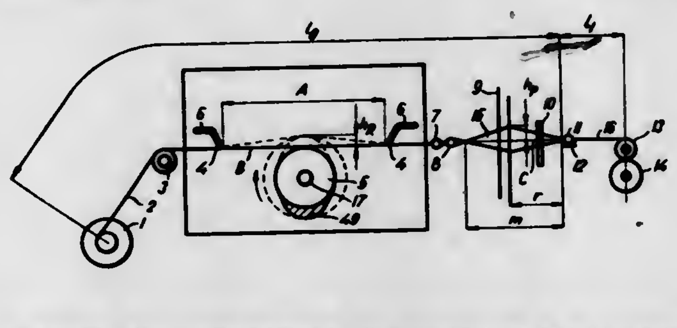
John Bernard Jowett, Cookley, near Kidderminster, England, assignor to Brintons Limited, Kidderminster, England
Filed June 21, 1971, Ser. No. 155,039
Claims priority, application Great Britain, June 25, 1970, 30,937/70
Int. Cl. D03d *39/12*
U.S. Cl. 139—40 **2 Claims**



A Wilton carpet loom is fitted with a movable guide which cooperates with the sley to define a passage across the width of the loom for the insertion of each successive pile wire. Mechanism is provided for moving the guide out of the path of the inserted wire during the beat-up movement of the sley and for returning it to its operative position in relation to the sley prior to the insertion of the next wire. The guide is preferably constituted by spaced fingers each formed with a guide slot and extending downwardly from a cross-member mounted to rotate so as to swing the fingers into and out of their operative position in relation to the sley.

3,727,646
APPARATUS FOR COMPENSATING THE DEVIATIONS OF WARP TENSION IN WEAVING LOOMS

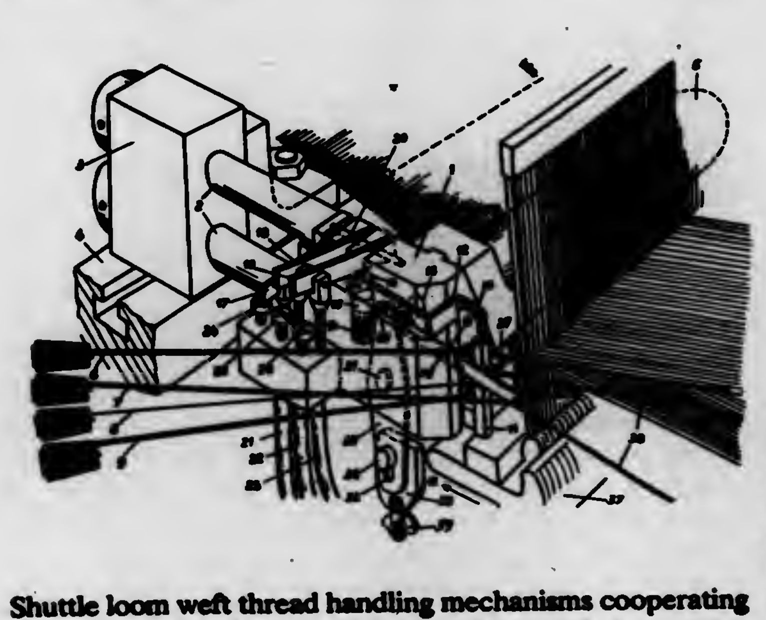
Milos Mares; Stanislav Nosek; Lumir Martinek, and Vaclan Rohlena, all of Usti Nad Orlici, Czechoslovakia, assignors to Vyskumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia
Filed April 23, 1971, Ser. No. 136,746
Claims priority, application Czechoslovakia, April 28, 1970, 2944/70
Int. Cl. D03d *49/14, 47/26*
U.S. Cl. 139—97 **13 Claims**



Apparatus for compensating the deviations of warp tension in weaving looms, especially weaving looms with simultaneous picking of weft threads into warp. Two parallel guiding support bars, spaced longitudinally of the warp, are arranged across the plane of the warp on one side thereof, said bars being provided with support edges. On the other side of the warp, opposite the portion of the warp limited by the support edges of the support bars, a warp deflecting member is arranged, said member working in counter phase with the device creating the shed.

3,727,647
WEFT THREAD SELECTING AND HANDLING MEANS FOR GRIPPER SHUTTLE LOOM

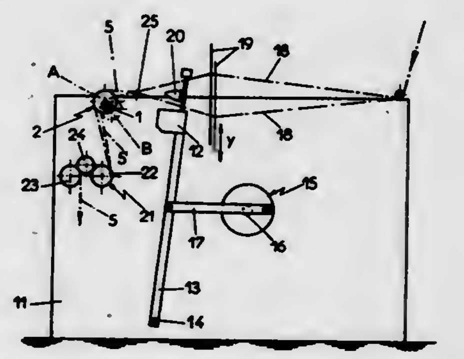
Claude Laval, Castres, France, assignor to Lebocey Industrie, Societe Anonyme, Troyes (Aube), France
Filed July 2, 1971, Ser. No. 159,140
Claims priority, application France, Feb. 12, 1971, 7105849
Int. Cl. D03d *47/38*
U.S. Cl. 139—122 W **9 Claims**



Shuttle loom weft thread handling mechanisms cooperating to cut, hold and facilitate shuttle pickup of the proper sequence of weft threads. A plurality of external thread spools supplies different weft threads at each side of the fabric to the shuttle which sequentially and reciprocally carries them through the shed between the fabric edges. At the conclusion of each shuttle pass, the leading end of the weft thread is dislodged from the shuttle pincer hook. Simultaneously, a weft feed means selects the next weft thread to be inserted and presents it to the cut and hold assembly which cuts it and grips the spooleattached end in position to be snagged by the shuttle pincer hook on the shuttle's next pass.

3,727,648
WEAVING OF RIBBONS

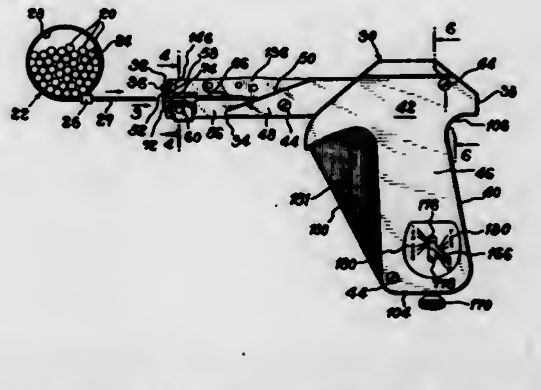
Erich Essig, Frick, Switzerland, assignor to Jakob Muller, Frick, Switzerland
Filed July 30, 1971, Ser. No. 162,118
Claims priority, application Germany, Aug. 4, 1970, P 20 38 601.1
Int. Cl. D03d *49/22*
U.S. Cl. 139—291 R **9 Claims**



Ribbons are woven and then withdrawn tautly in a specific path. When, in response to the occurrence of a weaving fault, the ribbons undergo displacement in the general plane temporarily so that slack will temporarily occur in the respective ribbon permitting the latter to return or be returned to its original position in the path.

3,727,649
HAND TOOL FOR TENSIONING AND CUTTING WIRE TIE STRAPS

Edward A. Obuch, Linden, and William T. Waddington, Fanwood, both of N.J., assignors to Buchanan Electrical Products Corporation, Union, N.J.
Filed July 6, 1971, Ser. No. 159,621
Int. Cl. B21f *9/02*
U.S. Cl. 140—93.2 **21 Claims**



A hand tool for tensioning and cutting the strap of a wire tie, the tool having a draw bar for drawing the strap to a predetermined tension and a toggel-like linkage system for actuating a strap cutting means when the strap is drawn to a predetermined tension. Means are provided for selectively adjusting the predetermined tension in finite fixed increments and for providing a vernier or fine adjustment of the predetermined tension with reference to each finite fixed increment. An operating lever adapted to actuate the toggle-like linkage system is pivotally attached to the tool's handgrip near the remote bottom portion thereof so that the pivot point of the actuating lever is generally located below the operator's hand when the tool is in operation.

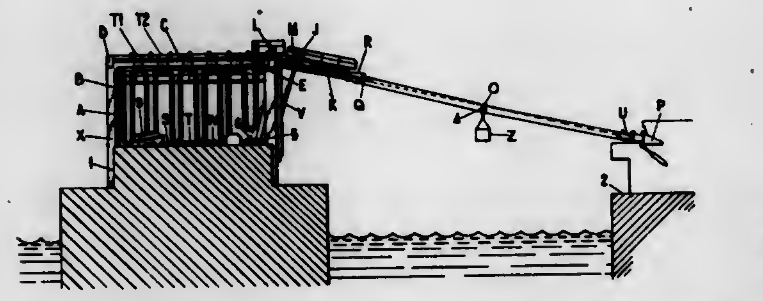
3,727,650
TRANSFER ARRANGEMENTS

David John Ingram, and Keith James Mitchell, both of Kent, England, assignors to The General Electric Company Limited, London, England

Filed Feb. 22, 1971, Ser. No. 117,482

Int. Cl. B65b *3/04*

U.S. Cl. 141—98 **12 Claims**



A transfer arrangement for transferring articles between two relatively moving stations such as ships under way in which a support cable extending between the stationsprovides a support for an article carrier, in which one of the stations carries a plurality of trolleys each supporting spaced regions of a flexible hose, and means are provided for feeding the trolleys on to the support cable until the leading trolley reaches the other station to permit the transfer of fluids between the stations, the movement of the intermediate trolleys being thereafter controlled in dependence upon variations in the distance between the stations to maintain a substantially uniform spacing between them.

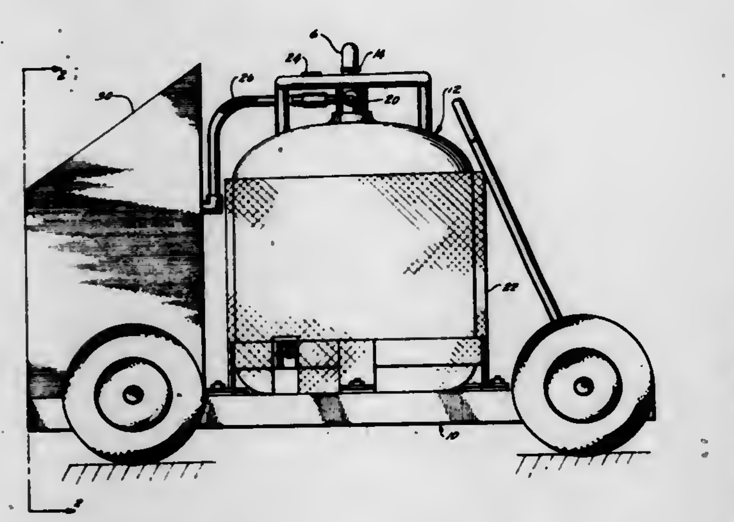
3,727,651
PORTABLE HIGH VOLUME GAS SUPPLY SYSTEM

Robert E. Biever, 3247 East Charlinda, West Covina, Calif.

Filed March 17, 1971, Ser. No. 125,250

Int. Cl. B65b *3/04*

U.S. Cl. 141—231 **10 Claims**



There is provided a mobile system for dispensing a gas generated as a consequence of vaporization of a cryogenic fluid at high volumetric flow rates and at temperatures approaching ambient. The system consists of a cart-mounted container for a cryogenic fluid and a gas dispensing system having, as a part thereof, a contained and protected primary heat transfer coil secured to a secondary heat transfer surface which is a part of the cart.

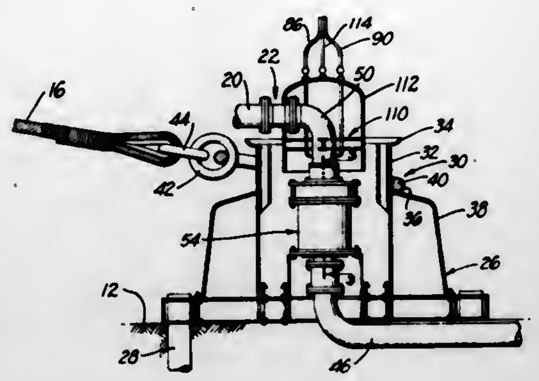
3,727,652
SUBMERGED TANKER MOORING AND CARGO TRANSFERRING SYSTEM

David G. Reynolds, 13952 Dunton Drive, Whittier, Calif.

Filed Dec. 2, 1970, Ser. No. 94,394

Int. Cl. B65b *1/04, 3/04*

U.S. Cl. 141—387 **5 Claims**



A submerged tanker mooring and cargo transferring system including a base anchored to the sea floor, swiveling mooring means for mooring a tanker to the base, a stationary conduit connected to the base, movable conduit swingable about a vertical axis and connectible to the tanker and aligned with the stationary conduit, swivel means interconnecting the movable and stationary conduits, a sealed chamber at least partially enclosing the swivel means, means for pressurizing the sealed chamber with a gas and for draining liquid therefrom into one of the conduits, a bell movable with the movable conduit above the swivel means, and means extending from the bell to the surface for sampling the liquid in the bell to detect leakage of fluid from the swivel means.

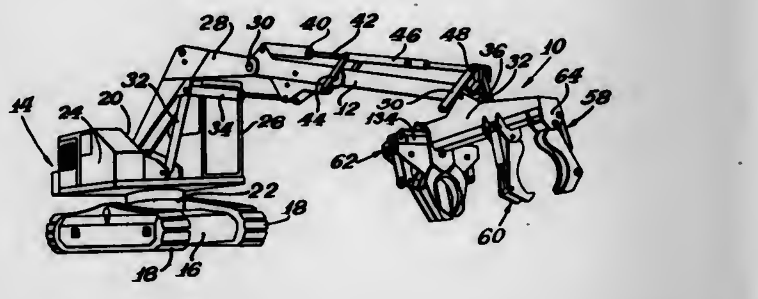
3,727,653
TREE CUTTING APPARATUS

Frank J. Tucek, Wausau, Wis., assignor to Drott Manufacturing Corporation

Division of Ser. No. 781,899, Dec. 6, 1968, Pat. No. 3,575,222. This application March 15, 1971, Ser. No. 124,244

Int. Cl. A01g *23/08*

U.S. Cl. 144—34 E **5 Claims**



Apparatus for cutting trees. The apparatus includes a support frame. A first arm is pivotally connected to the upper portion of the frame for engaging one side of a tree. A tree engaging member is fixedly secured to the lower portion of the support frame and includes first and second outwardly extending tree engaging portions. Means are provided for moving the first arm into spaced alignment with the first tree engaging portion. Tree cutting means are connected to the lower portion of the support frame. A second arm is pivotally connected to the support frame intermediate the first arm and the tree engaging member for engaging the other side of the tree. Means are provided for driving the second arm against the other side of the tree and for applying constant pressure thereto before, during, and after cutting the tree so as to maintain the tree under control of the tree cutting apparatus at all times.

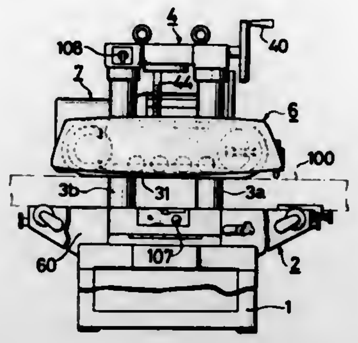
3,727,654
PLANER MACHINE

Nakataro Mochizuki, Shizuoka, Japan, assignor to Marunaka Tekkosho Inc., Shizuoka-shi, Japan

Filed April 21, 1971, Ser. No. 136,079

Int. Cl. B27c *1/12*

U.S. Cl. 144—120 **4 Claims**



A carpenter planer, having a lower stationary assembly mounting a stationary, yet adjustable cutter, and an upper movable assembly including a drive motor, an endless belt driven therefrom and a plurality of stock-feed parallel rollers are provided, said upper assembly being kept in suspended position through a rotatable vertical shaft and a spring attached thereto.

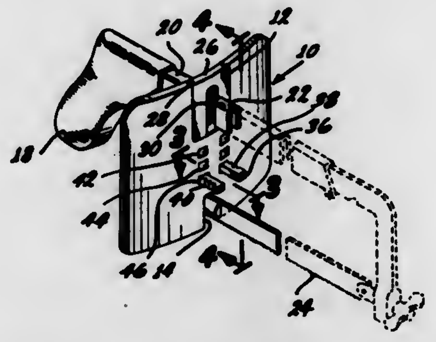
3,727,655
GUARD SHIELD FOR SAWS

Harlan J. Garcher, 15618 Cobalt Street, Sylmar, Calif.

Filed Dec. 17, 1971, Ser. No. 209,203

Int. Cl. B27b *21/00*

U.S. Cl. 145—35 R **6 Claims**



A guard shield removably attachable to saws such as for example hack saws. The guard shield is removably attachable to the vertical frame member which is forward of the saw grip. It is a curved plastic shield with spaced openings to variably receive the legs of a U-clamp or clip that attaches the shield to the frame member. At the top of the shield is an opening for the top frame member of the saw to pass through. The opening is large enough to adapt the shield universally to a wide variety of saw designs. A dove tailed piece fits into the opening in either a normal or inverted position and this piece has a slot in it through which the top frame member of the slot can pass in either the normal or inverted position of the removable piece.

3,727,656
GRAIN STORAGE

David John Luders, 81 Sampson Street, Orange, Australia

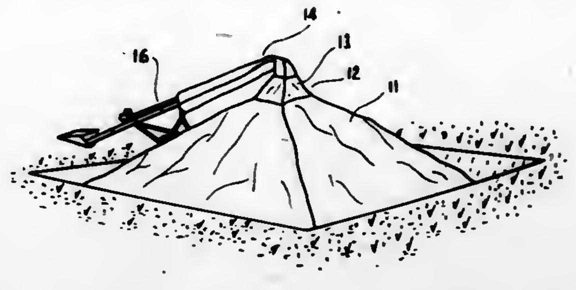
Filed Sept. 15, 1970, Ser. No. 68,369

Claims priority, application Australia, Sept. 19, 1969, 61083/69

Int. Cl. B65d *1/00*

U.S. Cl. 150—1 **6 Claims**

A grain or other discrete form material storage device formed from a foldable (flexible) synthetic plastics sheet material. The storage device has a base which would normally rest upon the ground and a peripheral side wall which tapers upwardly to an access opening at the apex of the wall. The wall is disposed at an angle to the base, when the device is charged with stored material, which is approximately equal to the normal angle of repose of the stored material.



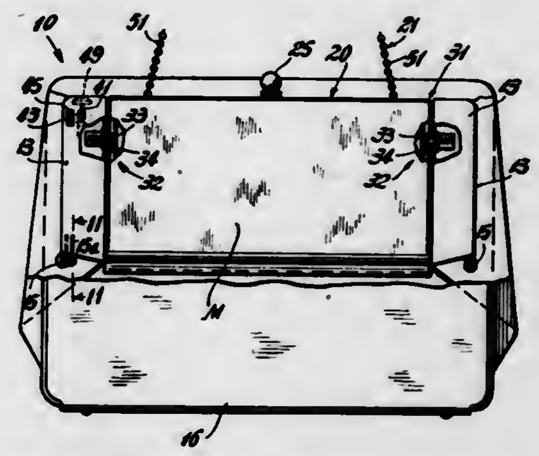
3,727,657
HANDBAG WITH BREAK-AWAY PURSE

Earle H. Landis, 940 President Ave., Toms River, N.J.

Filed April 6, 1971, Ser. No. 131,644

Int. Cl. A45c *1/00*

U.S. Cl. 150—35 **4 Claims**



A handbag having a break-away purse therein which is normally secured in the handbag by releasable means and has carrying strap means projecting therefrom for supporting said purse and connected handbag, said releasable means providing for separation of said purse and handbag in the event of an abnormal pull on the handbag while supported by said carrying strap means.

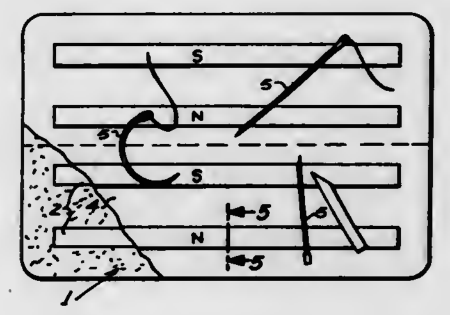
3,727,658
RECEIVER FOR SURGICAL IMPLEMENTS

John D. Eldridge, Jr., Anaheim, Calif., assignor to Instranetics, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 868,317, Oct. 22, 1969, abandoned. This application Sept. 22, 1971, Ser. No. 182,731

Int. Cl. A61b *19/00*

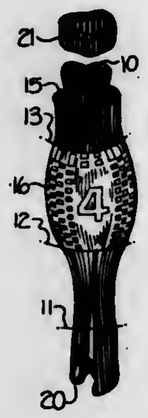
U.S. Cl. 150—52 R **9 Claims**



A receiver for surgical implements which includes a backing sheet of a foamed elastomer, the back side of which is exposed to provide frictional contact with an underlying surface. A plurality of magnetic bars are disposed on the upper surface of the pad backing sheet to receive and retain surgical implements. An impervious plastic cover sheet, coextensive with the backing sheet, conforms to the magnetic bars and adheres to the upper surface of the backing sheet between the magnetic bars. The receiver is capable of being folded to entrap discarded surgical implements between the folded portions of the receiver. The receiver may also be rolled to entrap discarded surgical instruments, or the implements may first be removed to permit the rolled receiver to be sterilized for reuse.

3,727,659
KNIT GOLF CLUB COVER

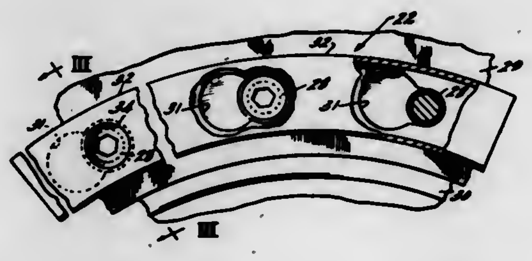
Archie W. Shuford, P. O. Box 427, Hickory, N.C.
Filed Dec. 27, 1971, Ser. No. 212,194
Int. Cl. B65d *65/02*
U.S. Cl. 150—52 G **5 Claims**



The golf club cover is formed of an elongate knit seamless sleeve which is open at one end and includes inner and outer plies. A draw string is knit into the end portion of the inner ply and the inner ply is rolled outwardly and downwardly over the outer ply and drawn inwardly to close one end of the sleeve and form an enlarged knob-like roll closure on the closed end of the golf club cover.

3,727,660
BOLT RETAINER AND COMPRESSOR EMPLOYING SAME

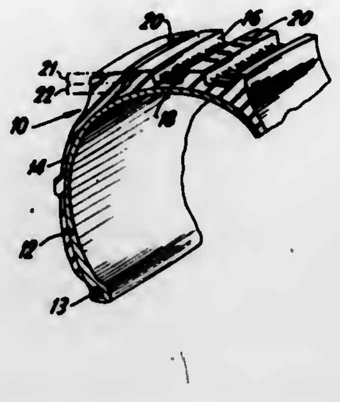
Joseph C. Burge, Cincinnati, Ohio, assignor to General Electric Company, Lynn, Mass.
Filed Feb. 16, 1971, Ser. No. 115,273
Int. Cl. F16b *41/00*
U.S. Cl. 151—69 **6 Claims**



The disclosure shows a sealing member secured to the inner end of a compressor stator vane row by bolts and nuts. One form of bolt retainer prevents a loosened bolt from entering the flow field. The retainer is of hollow, box-like cross section with keyhole slots in its inner wall for assembly and access holes in its outer wall for insertion of an allen wrench to torque the bolts. Another form of bolt retainer provides access to the outer portion of the bolt heads so that they may be tightened and loosened. A third form of retainer may be assembled laterally and comprises a plate and retainer lugs for the bolts.

3,727,661
TIRE TREAD

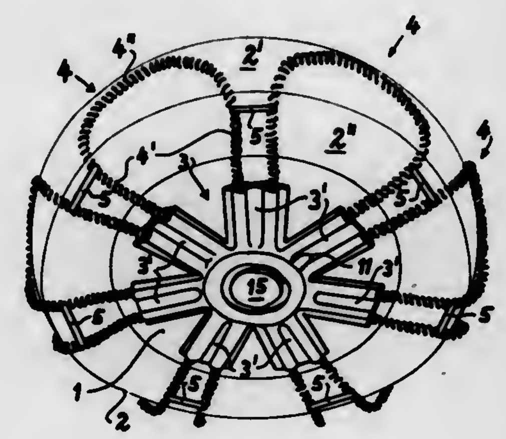
Gilbert J. Hoke, Kenmore, N.Y., assignor to Dunlok Tire and Rubber Corporation, Buffalo, N.Y.
Continuation-in-part of Ser. No. 750,387, June 27, 1968, abandoned. This application Feb. 18, 1971, Ser. No. 116,328
Int. Cl. B60c *11/10*
U.S. Cl. 152—209 **17 Claims**



A pneumatic tire is provided with a tread having a traction pattern consisting of grooves. The tread pattern inhibits stone penetration within the tread by suspending or cradling the stone spatially from the bottom of the groove. The grooves are provided with transverse crossbars or buttresses having a configuration and dimension relative to the groove to support or cradle a stone above the bottom of the groove.

3,727,662
VEHICLE ANTI-SKID DEVICE

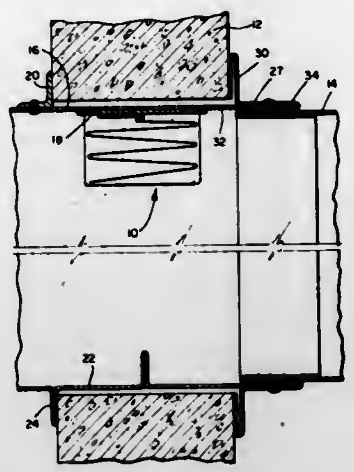
Fritz Muller, Gruneggstrasse 38b, 6000 Luzern, Switzerland
Filed Feb. 12, 1971, Ser. No. 114,806
Claims priority, application Switzerland, March 9, 1970, 3402/70
Int. Cl. B60c *27/02*
U.S. Cl. 152—222 **6 Claims**



An anti-skid device for vehicles which comprises a support which can be attached to a part of the vehicle, typically the wheel, the hub or to the wheel axle, and at which support there are attached both ends of a number of anti-skid elements, in the form of helical spring brackets or straps which extend in substantially star-like configuration from the support and are flexed over the tread of the tire. According to an important aspect of the instant development at the region of the side wall of the tire and near the tread thereof, there is provided a respective connection element which extends in the peripheral direction of the tire between each two neighboring resilient arms of the helical spring brackets or straps, but between resilient arms which do not belong to the same helical spring bracket or strap.

3,727,663
DEVICE FOR MOUNTING FIRE DAMPER

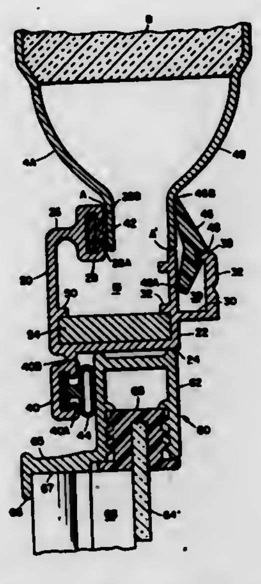
Francis J. McCabe, Regency Woods H-16, Doylestown, Pa.
Filed Jan. 25, 1971, Ser. No. 109,460
Int. Cl. E06b *3/94*
U.S. Cl. 160—84 R **5 Claims**



An adapter means is provided for mounting a fire damper in a wall, for positioning the fire damper in its mounted condition, and for connecting it to duct work. The device comprises one or more sheet metal members coextensive with a portion of the fire damper which has been bent to engage the wall and the duct work.

3,727,664
DOOR ASSEMBLY

Anthony R. Mennuto, 769 Pascack Road, Paramus, N.J.
Filed March 2, 1972, Ser. No. 231,136
Int. Cl. E06b *3/32*
U.S. Cl. 160—90 **10 Claims**

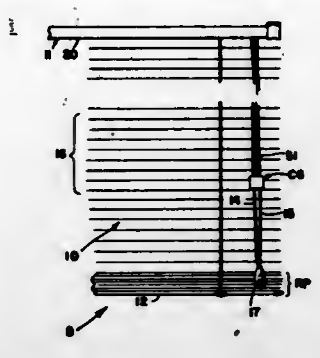


A door assembly includes a core sandwiched between a pair of one-piece panels. Portions of the panels surround an opening and a frame retains the panel portions to define the opening and supports an insert therein.

3,727,665
BLIND HAVING LIFT CORDS AND A CORD LOCK

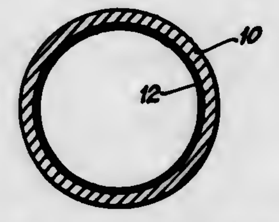
Victor Debs, Staten Island, N.Y., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.
Filed May 5, 1871, Ser. No. 140,376
Int. Cl. E06b *9/26*
U.S. Cl. 160—178 C **15 Claims**

A blind has lift cords which pass through a cord lock and hang down to be pulled downwardly and eased upwardly to raise and lower the blind. The down-hanging lift-cords are guided by a pendant cord-guide which is attached to and carried by an actuating cord that is connected to the locking dog of the cord lock. When the actuating cord is pulled it moves the locking dog into locking engagement with the lift cords, causing the cord lock to lock the cords.



3,727,666
METHOD OF CASTING USING A MOLD HAVING A REFRACTORY COATING THEREON

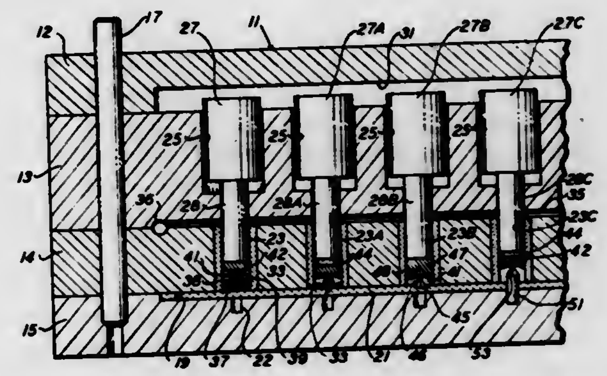
Jay Lee Vander Sluis, Grand Haven, Mich., assignor to Howmet Corporation, Greenwich, Conn.
Filed Aug. 16, 1971, Ser. No. 171,982
Int. Cl. B22c *3/00*
U.S. Cl. 164—72 **8 Claims**



A metal ingot mold having a thin bonded coating on the mold surface of a finely divided refractory material.

3,727,667
SINGLE SET-UP SEQUENTIAL HEAT PROCESS FOR MAKING DIAMOND HEAT SINKS

Graham H. Bell, 1311 Lucinda Way, Tustin, Calif.
Filed Nov. 30, 1971, Ser. No. 203,192
Int. Cl. B22d *23/06, 19/06*
U.S. Cl. 164—80 **12 Claims**



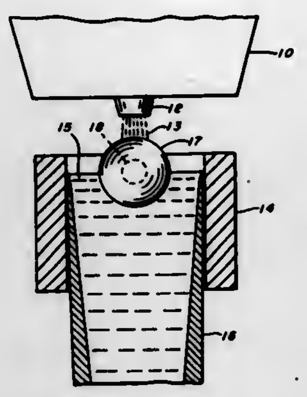
A multiple-cavity mold with vertical cavities receives a layered "stack" in each cavity. The stack or charge includes a diamond crystal, a brazing metal alloy and a casting metal slug all of which are impinged upon by a tungsten rod which may or may not become a part of the final stack assembly. The mold is evacuated and the contents heated in temperature stages or steps such that the brazing alloy melts before the casting slug. The temperature is then diminished at a rate to anneal the casting metal in the assembly. Preferably the brazing alloy is a combination of a transitional metal with a noble metal. The casting metal is of a superior heat-conducting material, such as copper or silver, and may be alloyed.

3,727,668

METHOD AND APPARATUS FOR POURING LIQUID METAL INTO A CONTINUOUS-CASTING MOLD

David K. Griffiths, Penn Hills Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed June 29, 1971, Ser. No. 158,028
Int. Cl. B22d *11/10*
U.S. Cl. 164—82 **5 Claims**



A method and apparatus for pouring a stream of liquid metal into a continuous-casting mold. A body which has a convexly curved surface (for example a sphere) and is of essentially inert material floats in the pool of liquid metal in the mold. As a stream of liquid metal is poured into the mold, it impinges on the surface of the floating body and thus enters the pool in a quiescent state. The body remains centered under the stream through the action of natural forces.

3,727,669

PROCESS FOR CONTINUOUS CASTING OF STEEL FOR MAKING GRAIN-ORIENTED ELECTRICAL SHEET IN STRIP OR SHEETS

Paolo Arbitrio; Sandro Basevi; Alfredo Fornari, and Antonio Senni, all of Terni, Italy, assignors to Centro Sperimentale Metallurgico S.p.A., and Terni Societa'Per L'Industria E L'Elettricita S.p.A., both of Rome, Italy

Filed Dec. 28, 1970, Ser. No. 102,038
Claims priority, application Italy, May 19, 1970, 50.811 A/70
Int. Cl. B22d *11/12*
U.S. Cl. 164—89 **6 Claims**

A process for the continuous casting of steel for the manufacture of grain-oriented electrical sheet, in strip or in sheets, wherein a primary cooling water and a secondary cooling water is used, characterized in that the primary cooling water is maintained at the minimum value compatible with not damaging the mould and with the attainment of a sufficient mechanical strength in the outer shell of the output slab.

3,727,670

LEACHABLE CERAMIC CORES

Joseph T. Bailey, Chattanooga, Tenn., assignor to American Lava Corporation, Chattanooga, Tenn.

Division of Ser. No. 739,156, June 24, 1968. This application May 27, 1971, Ser. No. 147,504
Int. Cl. B22d *29/00*
U.S. Cl. 164—132 **3 Claims**

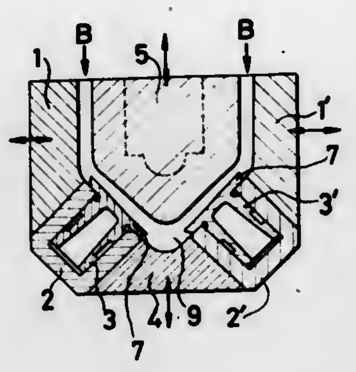
Ceramic cores having at least sufficient zinc oxide to provide essential continuity throughout the structure are provided. Such cores are included in metal castings from which they are leached under acidic or alkaline conditions to provide cavities within the castings.

3,727,671

PATTERN ASSEMBLY FOR A FOUNDRY CORE UNIT FOR CASTING A CYLINDER BLOCK OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Kiyomitsu Kawai, Osaka, Japan, assignor to Kabushiki Kaisha Toyoda Jidushokki Seisakusho, Kirayashi, Japan

Filed Sept. 7, 1971, Ser. No. 177,936
Claims priority, application Japan, Sept. 7, 1970, 45/78321
Int. Cl. B22c *7/06, 13/12*
U.S. Cl. 164—230 **1 Claim**



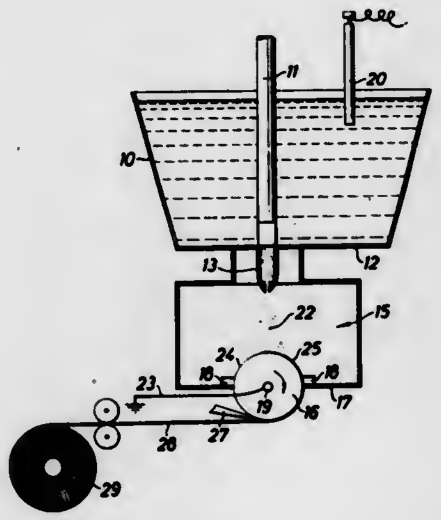
The core-making pattern assembly is comprised of two side pattern members having a plurality of recesses corresponding to the number of cylinders in a V-type internal combustion engine. A movable member is mounted in each recess and carries a core section for shaping an engine cylinder bore.

3,727,672

FORMATION OF STEEL STRIP

Hugh Willmott Grenfell, Swansea, Glamorgan, Wales, assignor to The Steel Company of Wales Limited, Glamorgan, Wales

Division of Ser. No. 818,299, April 22, 1969, Pat. No. 3,576,207. This application Dec. 4, 1970, Ser. No. 95,339
Int. Cl. B22d *11/10*
U.S. Cl. 164—281 **4 Claims**



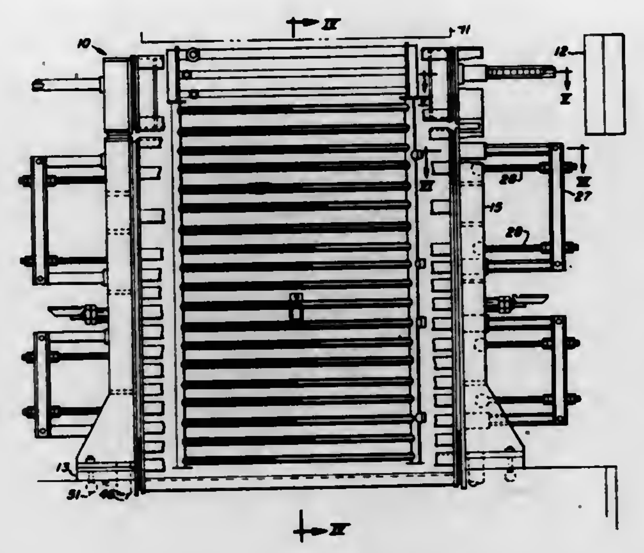
The present invention relates to a process for the continuous casting of metal strip, which process comprises imparting an electrostatic charge of at least 80,000 volts to a stream of molten metal, passing the stream of metal through a nozzle into an inert atmosphere and allowing the stream leaving the nozzle to atomise to a fine spray, collecting the spray droplets on a cool receiving surface to form a layer of metal on said surface and continuously stripping the layer of metal from said surface.

3,727,673

ROLLER CAGE FOR CONFINING CONTINUOUS CASTING AS IT EMERGES FROM MOLD

Francis Gallucci, Irwin, Pa., assignor to United States Steel Corporation

Continuation-in-part of Ser. No. 1,485, Jan. 8, 1970, abandoned, which is a division of Ser. No. 708,660, Feb. 27, 1968, Pat. No. 3,538,980. This application May 21, 1971, Ser. No. 145,943
Int. Cl. B22d *11/12*
U.S. Cl. 164—282 **2 Claims**



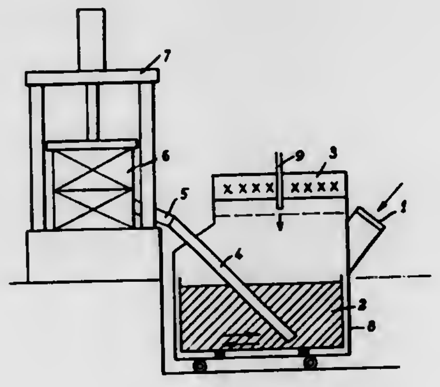
A cage for confining a slab casting descending from a tubular flow-through mold is constituted by spaced opposed banks of rollers engaging both the broad faces and the edges of the slab. The rollers are journaled in side and end frames bolted together forming an enclosure open at the top and bottom. Cooling-spray nozzles extend between adjacent rollers of all banks. The cage stands on a fixed support and keys and keyways on the contacting surfaces thereof effect exact relative positioning. These surfaces also have self-sealing joints in pipe lines supplying water to manifolds on which the nozzles are mounted.

3,727,674

LOW-PRESSURE CHILL-CASTING DEVICES

Pierre Rene Chatourel, and Jean Henri Lefebvre, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine), France

Filed June 22, 1970, Ser. No. 47,978
Claims priority, application France, Aug. 6, 1969, 6927058
Int. Cl. B22d *17/06*
U.S. Cl. 164—306 **6 Claims**



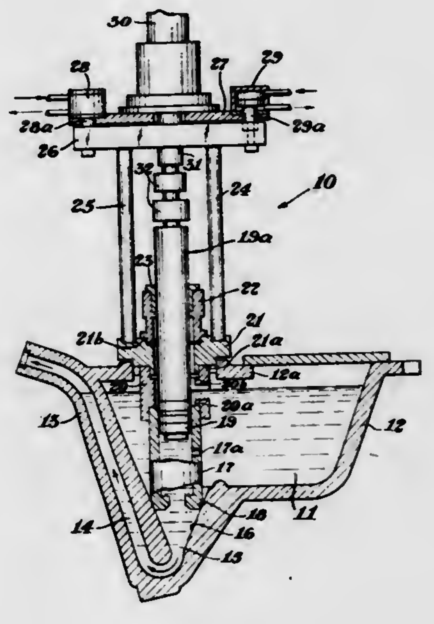
A device for chill-moulding light alloy castings under low-pressure conditions, which comprises a fluid-tight enclosure, a crucible disposed within said enclosure and adapted to be filled with molten metal, a mould made of several sections assembled either to the upper plate or to the lower plate of a press, a casting tube and its joint means providing a fluid connection between said crucible and said mould, said device operating in response to the development of the air pressure within said enclosure so as to force the molten metal from said crucible into said mould through said casting tube, means for developing the air pressure within said enclosure, characterized in that said fluid-tight enclosure and said moulding device consist of two separate sections movable in relation to each other and interconnected through a casting duct and its connecting tube both easy to remove and heat.

3,727,675

APPARATUS FOR ALIGNING AND SEATING THE SHOT CYLINDER IN A METAL DIE CASTING MACHINE

Foster C. Bennett, Columbus, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

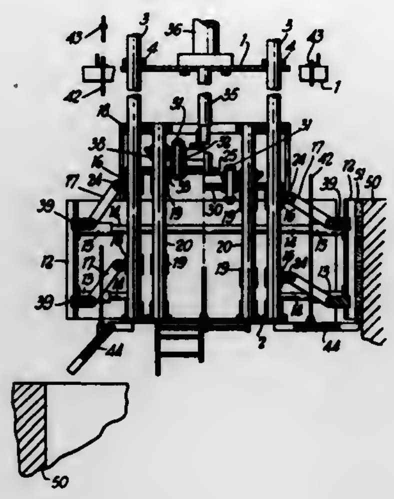
Continuation-in-part of Ser. No. 116,915, Feb. 19, 1971, abandoned. This application June 28, 1972, Ser. No. 267,085
Int. Cl. B22d *17/04*
U.S. Cl. 164—316 **7 Claims**



A hot chamber metal die casting machine is disclosed in which the shot cylinder and gooseneck seat are constructed of dissimilar materials which have substantially different thermal characteristics. Means are provided which Vertically align the shot cylinder in the gooseneck seat and which hold the lower end of the cylinder in sealing contact with the gooseneck seat during the shot-making operation. Another means is provided for vertically aligning the shot piston in the shot cylinder. Additional means are provided for disengaging the shot cylinder from the gooseneck seat at the end of a production period before the gooseneck seat is allowed to cool down. The various alignment, hold-down and disengagement means automatically compensate for the differential in expansion which occurs between the shot cylinder and gooseneck seat and thereby greatly improve the casting operation.

3,727,676
APPARATUS FOR USE IN LINING CAVITIES

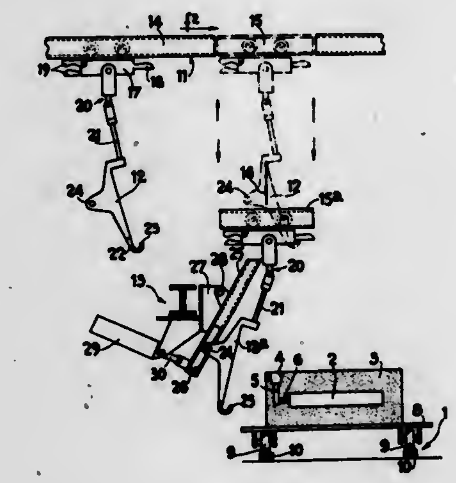
Kenneth Thomas Eccleston, Nechells, England, assignor to Foseco International Limited, Birmingham, England
Filed April 1, 1971, Ser. No. 130,429
Claims priority, application Great Britain, April 1, 1970, 15,467/70
Int. Cl. B22d *45/00*
U.S. Cl. 164—339 **5 Claims**



Cavities are lined by means of apparatus which is inserted in the cavity and expanded to apply lining material, placed between apparatus and cavity wall, onto the wall of the cavity.

3,727,677
APPARATUS FOR REMOVING PARTS CAST IN SAND MOULDS

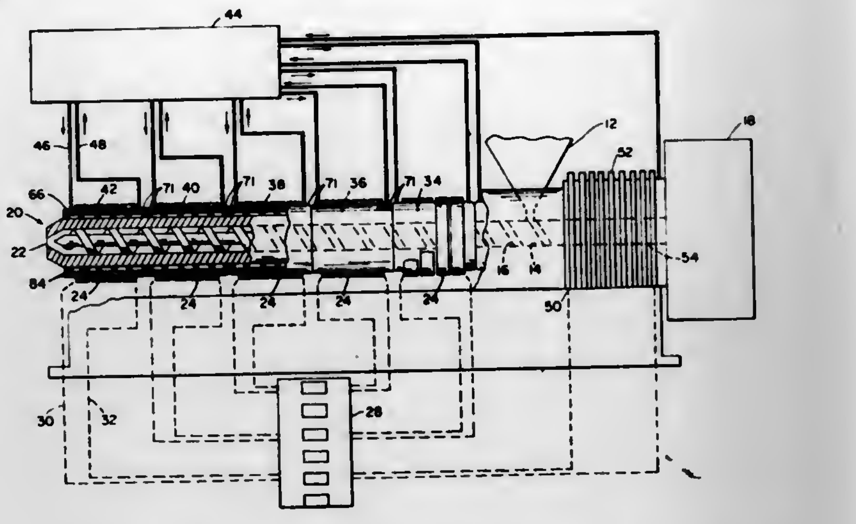
Pierre Robert Thomas, Pont-a-Mousson, France, assignor to Societe Des Fonderies de Pont-A-Mousson, Nancy, France
Filed Nov. 24, 1971, Ser. No. 201,705
Claims priority, application France, Dec. 3, 1970, 7043449
Int. Cl. B22d *29/04*
U.S. Cl. 164—344 **12 Claims**



An apparatus for removing castings from foundry moulds each of which is constituted by a mass of sand without a chassis and which travel one behind the other in a moulding line. The apparatus comprises an overhead conveyor having casting-suspending hooks each of which is guided by guide means in the direction of the corresponding mould as the hook descends so as to break up the sand and hook onto an appendix portion, such as a sprue, of the casting and remove the casting from the mould and discharge it.

3,727,678
HEAT TRANSFER DEVICE USEFUL FOR EXTRUDERS

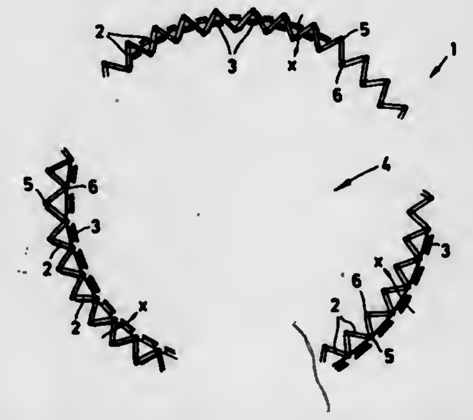
Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.
Filed Dec. 30, 1970, Ser. No. 102,627
Int. Cl. F25b *29/00*
U.S. Cl. 165—64 **6 Claims**



Heat transfer devices useful for extruders. Jacket sections defining inwardly directed ribs are heat shrunk about extruder barrels. By appropriate sizing, the stresses produced exceed the yield stresses causing metal to self-seal any nicks occurring and to expand adjacent base portions tighter against the inner member or barrel. Arelatively hard barrel concentrates the yielding to the metal of the jacket. Heat shrunk ribs provide good heat transfer paths to electric heaters secured about the exterior of the jackets, as well as defining fluid passages. Free flanges joined by narrow root sections enable joining of adjacent jacket sections by welds with immunity to disturbance in the presence of differential expansion of the assembly. Intercommunication of annular compartments is provided by interruption in the ribs or by covered grooves formed through the free side of the jacket wall.

3,727,679
MECHANICAL DRAFT COOLING OR CONDENSING PLANT

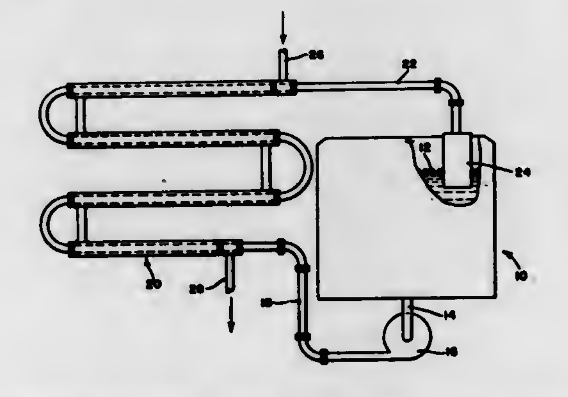
Hans-Henning Von Cleve, Bochum, Germany, assignor to Gea Luftkuhlergesellschaft Happel GmbH, Bochum, Germany
Filed July 23, 1971, Ser. No. 165,652
Claims priority, application Germany, Jan. 2, 1971, P 21 00 018.0
Int. Cl. F28f *13/00*
U.S. Cl. 165—111 **25 Claims**



A mechanical draft cooling or condensing plant for air cooling or condensing a medium conducted in a closed circuit, particularly a plant of major cooling capacity, in which mechanical draft cooling air enters the plant substantially in the horizontal direction through vertical walls in the plant and the medium to be cooled flows through plate-shaped cooling elements composed of a plurality of finned tubes, the cooling elements extending in vertical planes and, together with bearing and support means, form one or more of the substantially vertical walls which are zigzag-shaped in plan, and wherein, viewed in the direction of flow of the cooling air in front of and/or behind the walls a large number of extractor and blower fans are disposed in uniform distribution over the entire surface of the wall or walls in immediate proximity with the cooling elements, the fans being placed so that their blades revolve in vertical planes.

3,727,680
APPARATUS FOR FINISHING PATTERNS AND CORE BOXES

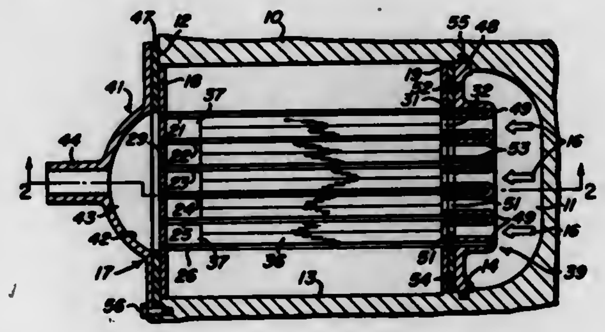
Russell Alger Henry, Jr., Albert Lea, Minn., assignor to Deere & Company, Moline, Ill.
Filed Oct. 4, 1971, Ser. No. 186,333
Int. Cl. F28f *19/00*
U.S. Cl. 165—119 **5 Claims**



An apparatus for finishing patterns and core boxes which are used under abrasive conditions and in production operations. The invention concerns the formation of an electroless nickel plating on at least the surface portions of the patterns and core bcxes which are subject to wear because of repeated contact with molding and core forming materials. The electroless nickel solution is contained in a holding tank comprising a large inert plastic structure supported by surrounding insulating walls. The plastic tank is removable so that a clean tank can be utilized at all times thereby increasing the efficiency and effectiveness of the nickel plating operation. A circulating system including a heat exchanger and filter means is employed to provide maximum efficiency with respect to the use of the plating solution.

3,727,681
CARTRIDGE TYPE TUBE AND FIN HEAT EXCHANGER

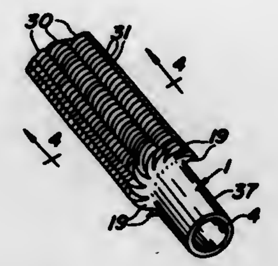
Joseph F. Fernandes, Centerville, Ohio, assignor to United Aircarft Productions, Inc., Dayton, Ohio
Filed June 17, 1971, Ser. No. 153,991
Int. Cl. F28b *9/02*
U.S. Cl. 165—158 **14 Claims**



A true counterflow heat exchanger of the tube and fin type having a cartridge design in accordance with which the heat exchanger unit may be removably installed in a housing cavity while retaining its counterflow principle of operation. A manifold member at an inner end of the unit is formed for free flow of a first fluid therethrough and for confined flow of a second fluid to receive such second fluid and return it to the opposite or outer end of the unit.

3,727,682
HEAT EXCHANGERS AND THE METHOD OF MAKING THE SAME

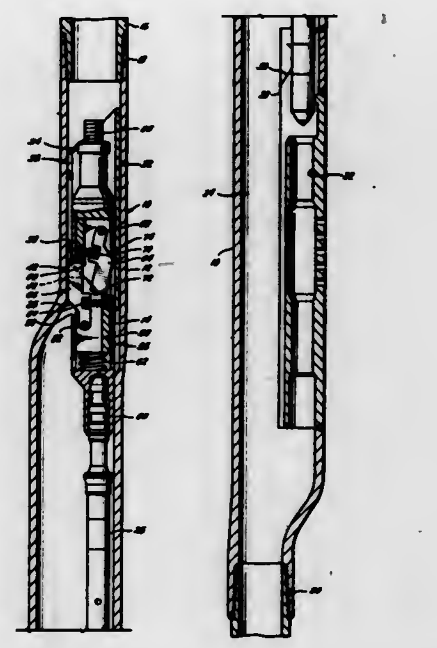
Stephen F. Pasternak, Park Ridge, Ill., assignor to Peerless of America, Incorporated, Chicago, Ill.
Filed Feb. 24, 1970, Ser. No. 13,297
Int. Cl. F28f *1/14*
U.S. Cl. 165—183 **7 Claims**



A tubular heat exchanger having spine-type fins formed integrally from the wall thereof and disposed therearound, with the fins cut from ribs extending longitudinally of the heat exchanger, and a method of manufacture which includes rotary movement between a tool and an elongated, ribbed tubular member relative to the longitudinal axis of the latter.

3,727,683
APPARATUS FOR INSTALLING OR REMOVING A FLOW CONTROL DEVICE FROM A WELL TUBING

Ben D. Terral, and William H. Dietz, both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.
Filed Dec. 16, 1971, Ser. No. 208,833
Int. Cl. E21b *7/06*
U.S. Cl. 166—117.5 **9 Claims**



An orienting mandrel having a pocket for receiving a flow control device and a coacting orienting tool for installing and removing a flow control device from the mandrel pocket. The mandrel having a connection at the top and bottom for attachment to a well tubing with the mandrel pocket positioned directly below the top tubing connection and the mandrel including a bore extending between the tubing connections but including a portion offset from the pocket with the tubing connection at the bottom of the mandrel being in alignment with the offset bore portion, and orienting means in the mandrel coacting with the orienting tool. On downward movement through the well tubing the orienting tool coacts with orientation means in the mandrel for moving the flow control device out of alignment with the pocket thereby allowing the tool to pass through the mandrel, but on upward movement the orienting tool moves into alignment with the pocket for allowing flow control devices to be installed or removed from the pocket.

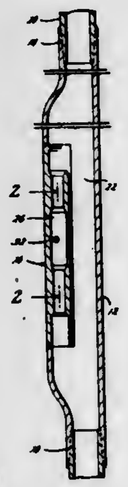
3,727,684
DUPLEX MANDREL FOR A CROSSOVER SYSTEM

Ben D. Terral, and J. Paul Hewitt, both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.

Filed Jan. 31, 1972, Ser. No. 221,990

Int. Cl. F04f *1/20;* **E21b** *17/00*

U.S. Cl. 166—242 **5 Claims**



A pair of mandrels providing a crossover system for use in a dual string of well tubing in which each of the mandrels are adapted to be connected in one of the well tubings and each of the mandrels includes an open bore therethrough and a pocket for receiving flow control devices in which the mandrels are connected together with a fluid conduit extending between the pockets. The mandrels are connected together with the open bores being positioned side by side and the pockets positioned side by side with the open bores.

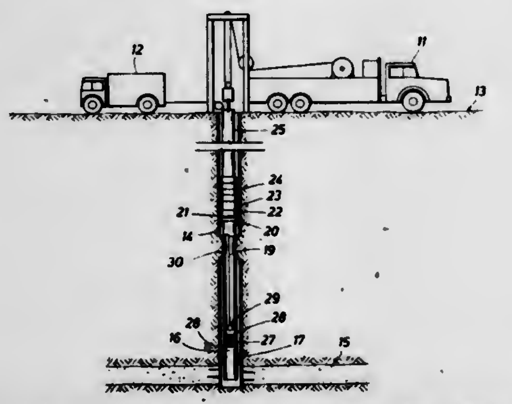
3,727,685
METHOD FOR THERMALLY CUTTING TUBING

Dwayne A. Chestnut, Littleton, Colo., and Clay A. Morris, Sugar Land, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 15, 1971, Ser. No. 198,886

Int. Cl. E21b *47/00, 29/02*

U.S. Cl. 166—255 **6 Claims**



A method for thermally cutting tubing, such as below an internal restriction in a tubing string located in a well bore, which comprises placing in the tubing at the desired location a mixture of finely granulated aluminum with an oxide of iron or other metal and igniting the mixture while applying a tensile load to the tubing string.

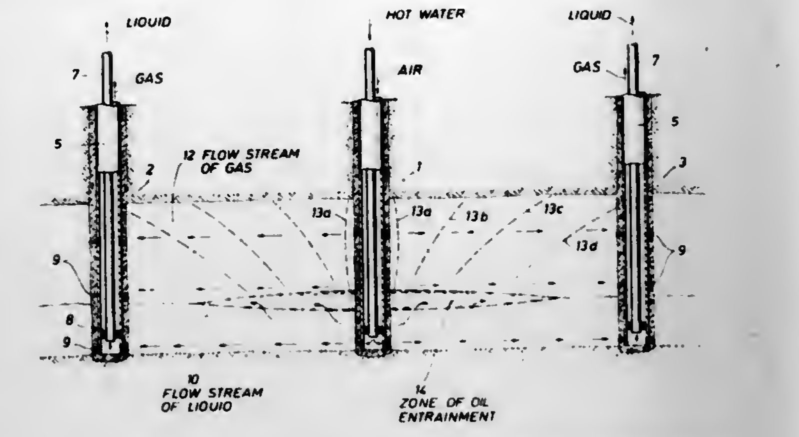
3,727,686
OIL RECOVERY BY OVERLYING COMBUSTION AND HOT WATER DRIVES

Michael Prates, Houston, Tex., and Willem F. Engelberts, deceased, late of The Hague, Netherlands (by Catharina H. Engelberts, personal representative), assignors to Shell Oil Company, New York, N.Y.

Filed March 15, 1971, Ser. No. 124,381

Int. Cl. E21b *43/24*

U.S. Cl. 166—261 **6 Claims**



In recovering a viscous oil from a reservoir in which the initial effective permeability to an injected fluid increases with increasing depth, a hot liquid is flowed between injection and production locations in the lower portion of the reservoir before or during the advancing of a combustion front between injection and production locations in the upper portion of the reservoir. Petroleum materials are recovered from the fluids produced from the upper and/or lower portions of the reservoir.

3,727,687
AQUEOUS GELS AND USES THEREOF

Richard L. Clampitt, and James E. Hessert, both of Bartlesville, Okla, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 1, 1971, Ser. No. 159,052

Int. Cl. E21b *43/16*

U.S. Cl. 166—274 **25 Claims**

Improvements in secondary recovery operations for the recovery of oil, and improvements in well drilling operations, are accomplished through the use of aqueous mediums comprising new aqueous gels prepared from water and cellulose ethers.

3,727,688
HYDRAULIC FRACTURING METHOD

Richard L. Clampitt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 9, 1972, Ser. No. 224,921

Int. Cl. E21b *43/26, 43/27*

U.S. Cl. 166—283 **25 Claims**

Improvements in hydraulic fracturing of underground porous formations penetrated by a well bore are accomplished by the use of fracturing fluids comprising a gelled solution of a cellulose ether, e.g., carboxymethyl cellulose.

3,727,689
HYDRAULIC FRACTURING

Richard L. Clampitt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 9, 1972, Ser. No. 224,946

Int. Cl. E21b *43/26, 43/27*

U.S. Cl. 166—283 **31 Claims**

Improvements in hydraulic fracturing of underground porous formations penetrated by a well bore are accomplished by the use of fracturing fluids comprising aqueous gels prepared from water or brines and certain polyacrylamides and related polymers.

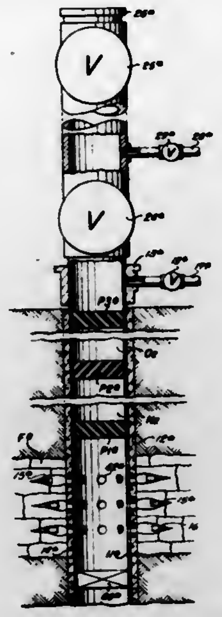
3,727,690
METHOD OF FRACTURING A NATURAL GAS BEARING EARTH FORMATION

David M. Munson, 5128 Brookview, Dallas, Tex.

Filed Oct. 18, 1971, Ser. No. 190,099

Int. Cl. E21b *43/26*

U.S. Cl. 166—297 **5 Claims**



A method of fracturing a natural gas bearing earth formation penetrated by a well bore by introducing a charge of oxygen into the well bore and into the producing formation in such volume as to produce an explosive mixture of natural gas-oxygen in a portion of the formation extending about and from the well bore and igniting the mixture to produce an explosion of the natural gas-oxygen mixture in such portion thereby causing fracturing of the formation. The method may also include the steps of filling the well bore with a liquid of low compressibility prior to the ignition of the natural gas-oxygen mixture present in the formation to limit or prevent damage to the well and to contain and control the explosion.

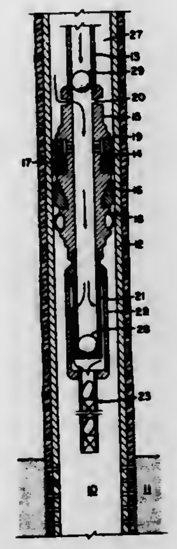
3,727,691
METHOD AND APPARATUS FOR TREATING SUBTERRANEAN FORMATIONS

Thomas W. Muecke, and Fred A. Brooks, Jr., both of Houston, Tex., assignors to Esso Production Company, Houston, Tex.

Filed Dec. 16, 1970, Ser. No. 98,781

Int. Cl. E21b *33/13, 43/27*

U.S. Cl. 166—295 **15 Claims**



Separate fluids are passed through separate conduits in a wellbore and commingled at a subsurface location to form a single stream which is then passed through a mechanical mixing device. The mechanical mixing device intermixes the two fluids in proportion to their respective volumetric flow rates producing a uniform treating composition which is then forced into contact with the formation to be treated.

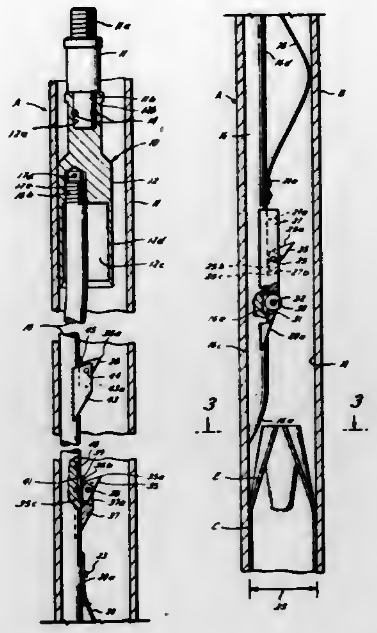
3,727,692
LINER REMOVAL APPARATUS

John C. Kinley, and Walter C. Jefferson, both of Houston, Tex., assignors to said Kinley, by said Jefferson

Filed Dec. 20, 1971, Ser. No. 210,020

Int. Cl. E21b *29/00*

U.S. Cl. 166—297 **19 Claims**



A method and apparatus for removing a metallic liner from the inside wall of production tubing downhole in an oil well which includes a longitudinal spear member eccentrically attached to a mandrel and a housing assembly which is adapted for connection to a wireline or other downhole tool. As the end of the spear member is moved between the liner and the tubing, it deforms the liner to produce a reverse bend therein throughout the length of the liner for reducing the diameter of the liner to thereby release same from the tubing for withdrawal from the tubing.

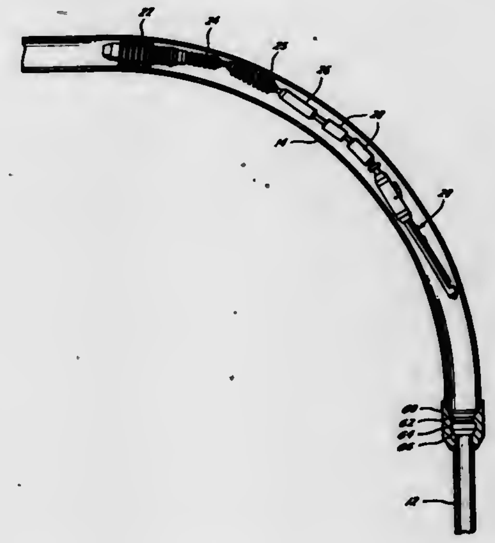
3,727,693
METHOD AND FLUID SYSTEM FOR MOVING SUBSURFACE WELL EQUIPMENT IN WELL TUBING

Gilbert H. Tausch, and Fred E. Watkins, both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.

Filed Dec. 15, 1971, Ser. No. 208,339

Int. Cl. E21b *23/00, 23/04, 43/10*

U.S. Cl. 166—315 **20 Claims**



A fluid system for running and retrieving subsurface well equipment in a well tubing by fluid flow through a curved entrance tubing without restricting the length of the well equipment. The curved entrance tubing having an inside diameter greater than the inside diameter of the well tubing for transporting a first larger locomotive which carries a second smaller locomotive for movement in the well tubing in response to fluid flow. Releasable engaging means between the larger and smaller locomotive whereby the larger locomotive may transport the smaller locomotive through the enlarged curved entrance tubing but allow the smaller locomotive to move alone in the smaller well tubing. A retaining nipple between the enlarged curved entrance tubing and the well tubing for retaining the larger locomotive while the smaller locomotive travels in the well tubing whereby the larger locomotive is in position to receive the smaller locomotive upon its return. A retrieving mechanism for retrieving the enlarged locomotive from the retaining nipple.

3,727,694

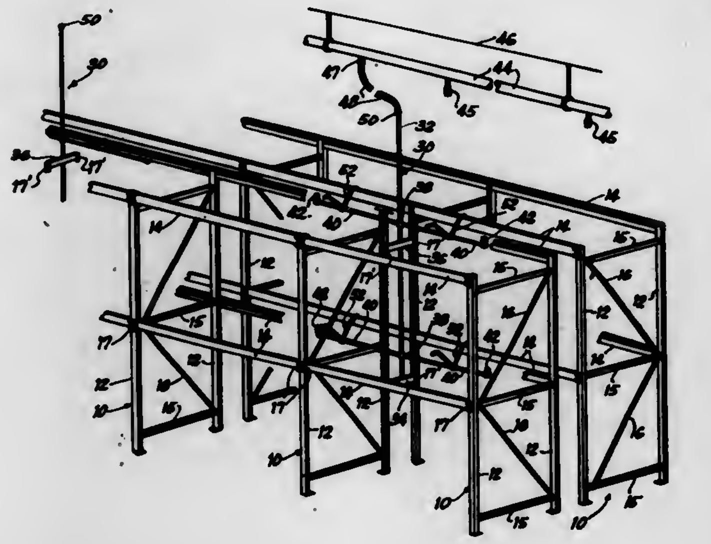
SPRINKLER ATTACHMENT FOR RACKS

Leonard J. Dudzik, Dolton, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Nov. 5, 1971, Ser. No. 196,113

Int. Cl. A62c *3/00*

U.S. Cl. 169—2 R **3 Claims**



A sprinkler attachment is provided for use with knockdown racks of the type having a plurality of slotted upright posts connected by horizontal cross members. The sprinkling apparatus includes a vertical sprinkler pipe fastened to a pair of connecting brace members which bridge and connect to at least two of the upright posts. The sprinkler pipe has a plurality of sprinkler heads extending therefrom, and carries inlet coupling means which are adapted for coupling fluid flow conduit to the sprinkler pipe.

3,727,695

SPRINKLER HEAD PROTECTIVE COVER

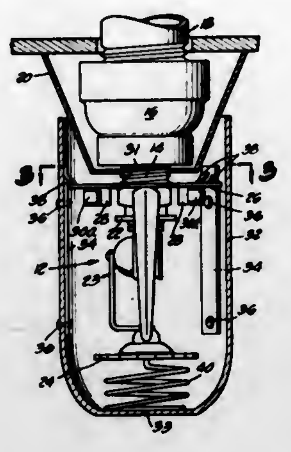
Bertram A. Danton, 315-½ East Arbor Vitae, Inglewood, Calif.

Filed April 26, 1971, Ser. No. 137,398

Int. Cl. A62c *37/12, 37/20*

U.S. Cl. 169—37 **8 Claims**

An apparatus for preventing tampering with automatic fire extinguisher sprinkler heads of the type which use a temperature-responsive element for activating the sprinkler head when a predetermined temperature is reached. The apparatus comprises a collar which is attached to the sprinkler head, a cover which cooperates with the collar to completely enclose the temperature-responsive element of the sprinkler head, and a plurality of struts which interconnect the cover and the collar. The struts are attached to the inner walls of the cover by fusible connectors which are adapted to fail at a predetermined temperature, thereby allowing the cover to separate from the collar. A spring member is interposed between the sprinkler head and the cover so that when the fusible connectors fail at a predetermined increase in temperature the cover will be ejected free of the sprinkler head.



3,727,696

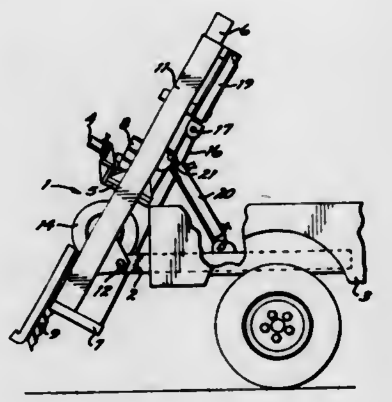
VIBRATING PLOW TO BURY CABLE AND THE LIKE

Robert O. Hansen, 4549 W. Rosecrans, Hawthorne, Calif.

Filed Jan. 4, 1971, Ser. No. 103,530

Int. Cl. E02f *5/18*

U.S. Cl. 172—40 **7 Claims**



When a trench is dug for the purpose of burying cable, pipe, or the like, the digging mechanism includes a blade which is vibrated vertically by means of a power mechanism. This vertical movement of the digging blade tends to impart a vibration to the machine which is towing the trench digger, which results in injury to certain parts of that machine. With this invention a structure is provided which materially reduces the transmitted vibration to the towing machine so that injury to the mechanisms of the towing machine is greatly reduced. Also the depth of the trench which is dug by the digging blade can be adjusted to suit different requirements.

3,727,697

EARTH WORKING IMPLEMENT WITH A PAIR OF MOBILE UNITS MOVABLE BETWEEN A SIDE-BY-SIDE WORKING POSITION AND A TRAILING POSITION

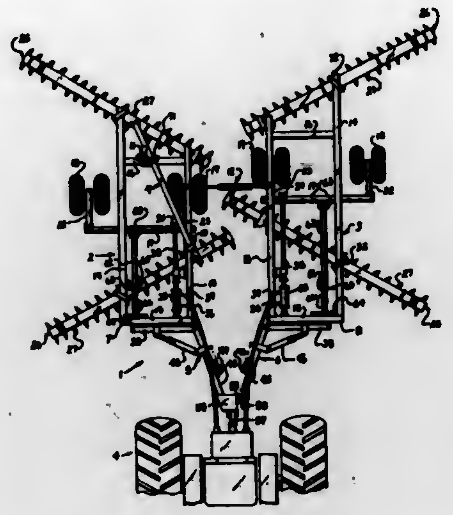
Robert A. Wilbeck, Reno, Kans., assignor to Wilbeck Machine and Manufacturing, Inc., South Hutchinson, Kans.

Filed Feb. 22, 1971, Ser. No. 117,344

Int. Cl. A01b *23/04*

U.S. Cl. 172—313 **5 Claims**

An earth working implement having a pair of mobile units movable between a side-by-side working position and a trailing position behind a prime mover is disclosed which includes an adjustable tongue structure on a forward end of each mobile unit for connection together and to the prime mover. A tow bar has one end thereof pivotally mounted on one of the mobile units and the other end engageable with the tongue structure of the other unit to permit same to be moved to a trailing position behind the one unit upon forward movement of the prime mover. A suitable member is mounted between the units and connected thereto for maintaining same in side-by-side working position until said units are to be moved to a trailing position for transporting the implement.



3,727,698

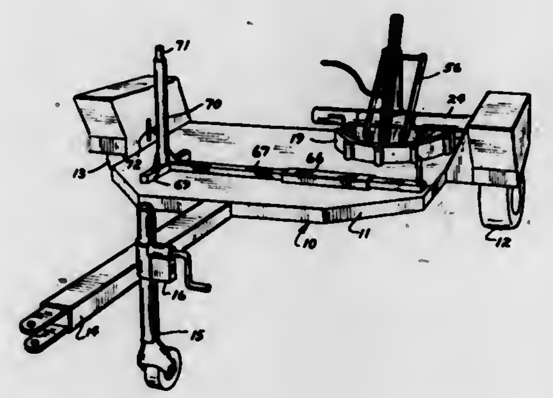
LIFT AND CARRIER TRAILER APPARATUS

Samuel H. Van Selus, Echo, Minn.

Filed Oct. 9, 1970, Ser. No. 79,564

Int. Cl. A01b *59/043*

U.S. Cl. 172—439 **22 Claims**



Trailer apparatus for hauling wide width implements, for example three-point hitch cultivators, having a trailer body, a turntable mounted on the rear left of the body to pivot about a vertical axis, arms adapted to be attached to the lower two hitch points of the implement mounted on the turntable for pivotal movement about a horizontal axis, a piston cylinder combination pivotal mounted on the turntable, linkage mechanism operated by the expansion of said combination for pivoting said arms and second linkage mechanism pivotally mounted on the frame and adapted to be attached to the upper third hitch point to pivot the implement to elevate its rear end portion relative its front end portion as the arms are pivoted to lift the front of the implement. A horizontally and vertically adjustable support member is provided for supporting a part of the weight of the implement when the turntable has been pivoted from its implement pickup to its implement road travel position.

3,727,699

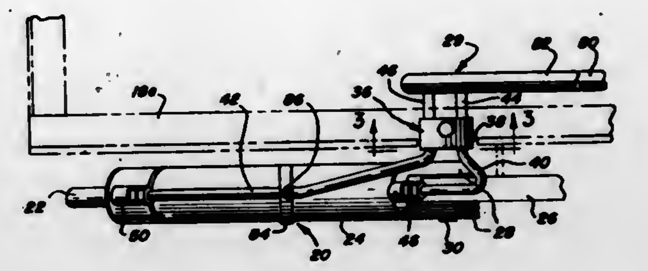
SUPPORT MEANS FOR CYLINDER CONDUITS

Donald C. Baker, Rosedale, and Krikor Yessayan, Brazil, both of Ind., assignors to J. I. Case Company, Racine, Wis.

Filed Aug. 13, 1971, Ser. No. 171,707

Int. Cl. E02f *3/76*

U.S. Cl. 172—809 **9 Claims**



Conduit support means for conduits that supply pressurized fluid to opposite ends of a cylinder that is pivoted about a fixed pivot axis. The support means consists of a member that is supported for rotation about the pivot axis of the cylinder with rigid conduits having one end fixed to the support member and the opposite ends fixed to the respective ends of the cylinder so that the cylinder, conduits and support member are pivoted as a unit about a common pivot axis.

3,727,700

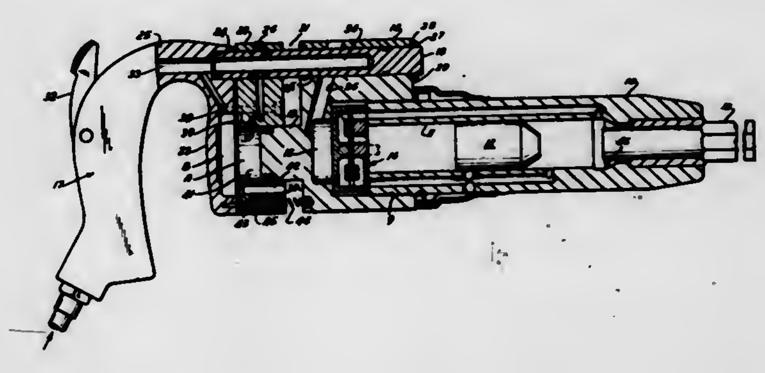
PNEUMATICALLY PERCUSSIVE TOOL HAVING A VIBRATION FREE HANDLE

Lester A. Amtsberg, Utica, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed April 19, 1971, Ser. No. 135,121

Int. Cl. B25d *17/04*

U.S. Cl. 173—18 **13 Claims**



A pneumatically percussive tool having a handle isolated from the body of the tool so that vibrations of a reciprocating hammer in the body are not transmitted to the handle. This is accomplished by arranging the handle in axial slidable relation to the body so as to permit the body to vibrate relative to the handle; and by maintaining a cushion of pressurized air in a chamber between the handle and the body which chamber is connected with a pressure air source and with a relief check valve. The pressure developing in the chamber is determined by a spring load on the check valve, which load varies automatically with the pressure exerted by the operator in holding the tool pressed against the work. The pressurized air cushion constantly counterbalances the opposing force exerted by the operator so that the body of the tool is maintained at all times in spaced relation to the handle as it vibrates. A pair of air feed ports to the hammer are adapted to be brought into or out of register with each other accordingly as the tool is pressed against or removed from the work.

3,727,701

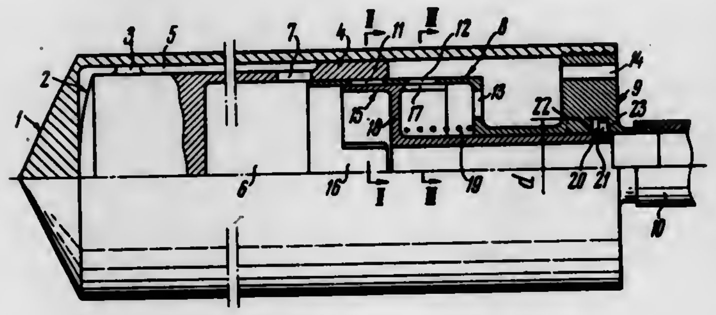
REVERSIBLE AIR-PUNCHING MECHANISM FOR MAKING HOLES IN SOIL BY COMPACTION

Boris Vasilievich Sudnishnikov, Alexandr Dmitrievich Kostylev, Konstantin Stepanovich Gurkov, Konstantin Konstantinovich Tupitsyn, Vladimir Dmitrievich Plavskikh, all of Novosibirsk; Viktor Eliseevich Solomko, and Alexandr Mironovich Reinsburg, both of Odessa, all of U.S.S.R., assignors to Institut Gornogo Dela Sibirskogo Otdelenia Akademii Nauk SSSR, USSR, Novosibirsk Krasny Prospekt

Filed Feb. 8, 1971, Ser. No. 113,291

Int. Cl. E21b *3/12*

U.S. Cl. 173—91 1 Claim



The invention relates to reversible air-punching mechanisms for making holes in soil by compaction.

According to the invention, the mechanism comprises a hollow housing in which a striker reciprocated by compressed air, strikes the housing and thus moves it through the ground.

The compressed air is delivered into the working chambers through an air-feed bushing which is provided with two rows of ports getting alternately in line with the corresponding rows of ports in the hollow slide valve accommodated in the bushing as said slide valve turns around its longitudinal axis. For turning the slide valve, it is connected with the bushing by a projection which moves along an enclosed shaped recess during the reciprocating motion of the slide valve when the mechanism is reversed by cutting off momentarily the supply of compressed air to the mechanism.

3,727,702

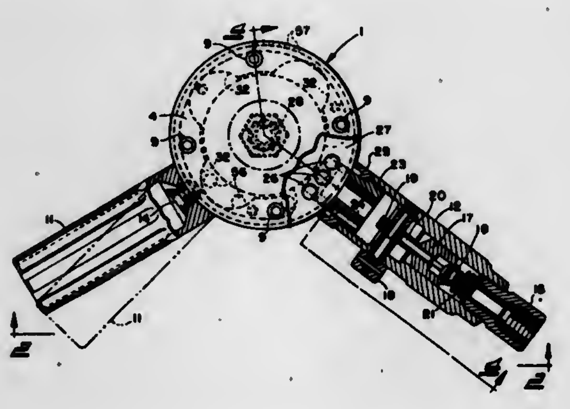
AIR OPERATED TOOL

Philip A. Snider, Hicksville, Ohio, assignor to Dotco, Inc., Hicksville, Ohio

Filed April 19, 1971, Ser. No. 135,137

Int. Cl. B23b *47/08*

U.S. Cl. 173—163 11 Claims



An air operated tool characterized in that it is of lightweight strong construction and in that the air motor and surrounding tool housing define therebetween a large size annular exhaust chamber through which air exhausted from the motor passes at low velocity to lateral exhaust passages in the housing thus to provide a tool which operates at low noise level. The tool herein is further characterized in that it has a simplified starting slot arrangement wherein an angularly disposed passage through one stator end plate communicates an inlet chamber of the motor with the starting slot. The tool herein is still further characterized in that the tool housing has two generally radially extending hollow handles by which it is held and manipulated, one handle being secured to the tool housing in either of two angular positions and the other handle containing a manually operated throttle valve and being rotatably adjustable on said housing to position the valve control member to suit the operator's convenience.

3,727,703

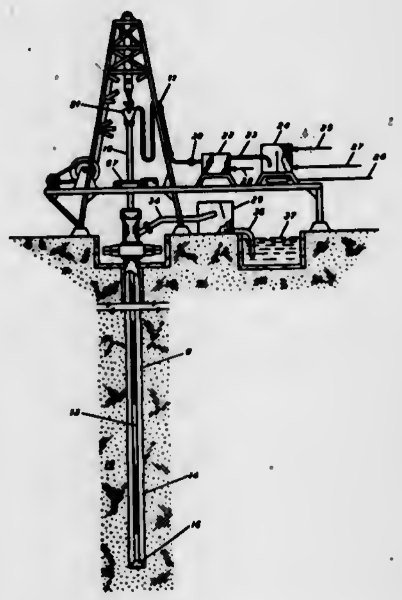
WELL CIRCULATION FLUID FOR USE IN PERMAFROST

Stanley O. Hutchison, Bakersfield, and Glen W. Anderson, Oildale, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 77,083, Sept. 30, 1970, abandoned, and a continuation-in-part of Ser. No. 130,511, April 1, 1971, abandoned. This application Oct. 22, 1971, Ser. No. 191,655

Int. Cl. E21b *21/04*

U.S. Cl. 175—69 11 Claims



Aqueous gas and liquid foams are generated using a gas and an aqueous foamable solution and are used as well circulation fluids in drilling and cleanout operations in holes in permafrost.

3,727,704

DIAMOND DRILL BIT

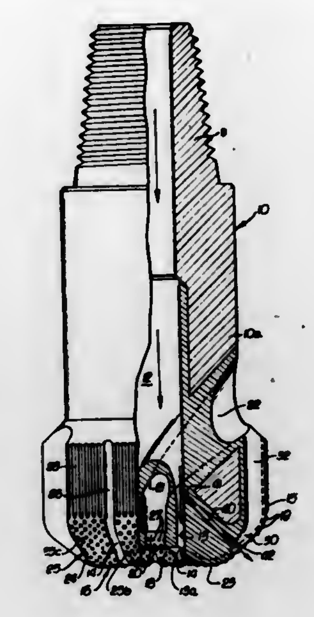
Thomas L. Abplanalp, Vernal, Utah, assignor to Christensen Diamond Products Company, Salt Lake City, Utah

Filed March 17, 1971, Ser. No. 125,138

Int. Cl. E21b *9/36*

U.S. Cl. 175—329 16 Claims

A rotary bit having diamond cutting elements in its drilling face for drilling a bore hole, drilling fluid being pumped from the bit and into primary feeder waterways in the drilling face extending to the outer gauge portion of the bit. Jet passages receive drilling fluid from the interior of the bit, discharging such fluid into secondary waterways in the drilling face in the direction of rotation of the bit and toward the outer gauge portion, to create low pressure regions in the secondary waterways and cause fluid to flow from the relatively high pressure feeder waterways across the intervening bit faces toward the secondary waterways, effecting a cleaning action of the cuttings from the bottom of the hole, the bit faces and the diamonds embedded therein, such cuttings being flushed upwardly around the bit toward the top of the bore hole.



3,727,705

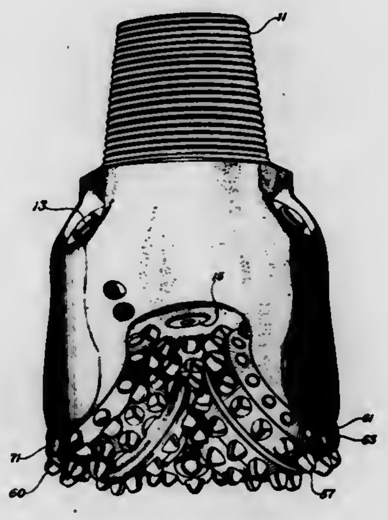
DRILL BIT WITH IMPROVED GAGE COMPACT ARRANGEMENT

Elmer F. Newman, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jan. 21, 1972, Ser. No. 219,669

Int. Cl. E21b *9/08*, *9/36*; E21c *13/01*

U.S. Cl. 175—374 4 Claims



A drill bit is disclosed as having a gage compact arrangement by which the resistance to gage wear is increased, gage wear is balanced and the tendency toward off-center wear decreased. The heel row compacts on each cone generally are equally spaced. However, the spacing between the heel row compacts differs from cone to cone to prevent tracking of the compacts in impressions previously made on the bore hole bottom. The cross-sectional dimension of the gage compacts that project from, and protect, the gage surface of each cone is different from cone to cone. As a consequence, the total exposed area of all the gage compacts of one cone approaches the total exposed area of all the gage compacts of each of the other cones.

3,727,706

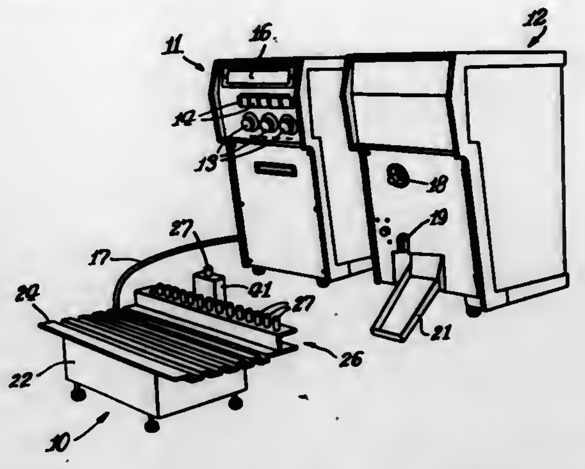
TARE SETTING APPARATUS AND METHOD

August L. Streater, and Donald A. Bonness, both of Bluffton, Ind., assignors to Franklin Electric Co., Inc., Bluffton, Ind.

Filed April 21, 1972, Ser. No. 246,162

Int. Cl. G01g *9/00*, *13/14*

U.S. Cl. 177—1 14 Claims



A tare setting arrangement and associated control circuitry for a scale system wherein the pan or platform of the system, on which the articles to be weighed are placed,includes means for supporting a plurality of tare weights. The weights have different values which are equivalent to the tare values expected to be encountered during operation of the scale. Before weighing an article, all of the tare weights are placed by an operator in the support means and the system output is set to indicate zero weight. Thereafter, before weighing an article having a known tare value, a tare weight equivalent to the tare value of the article is removed from the support means by the operator, and the article is then weighed. When operated properly, the system gives an accurate indication of the article weight less tare, or net weight, because the removed tare weight offsets or compensates for the tare of the article. To ensure that the operator places all of the weights in the support means when setting the system to zero, and also removes one of the weights before weighing an article, a holder for the removed tare weight is provided, and control circuitry is connected in the holder to sense the presence of a weight. The system is prevented from being set to indicate zero weight if a tare weight is in the holder, and the system is prevented from making normal weighing operations when a tare weight is not in the holder.

3,727,707

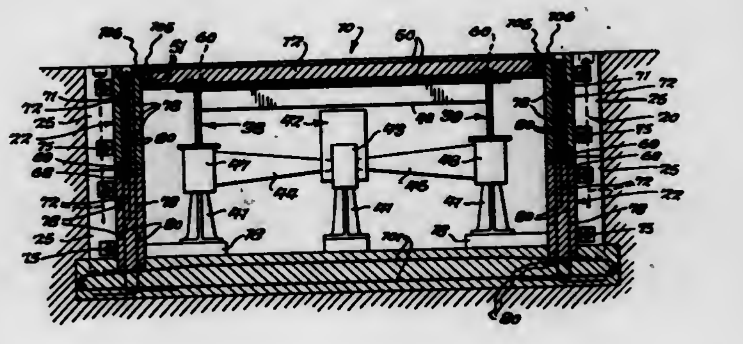
CONCRETE PIT AND DECK CONSTRUCTION FOR PLATFORM SCALES AND METHOD OF MAKING THE SAME

John M. Machala, 54 West Main Street, Corfu, N.Y.

Filed Aug. 9, 1971, Ser. No. 170,036

Int. Cl. G01g *19/02*

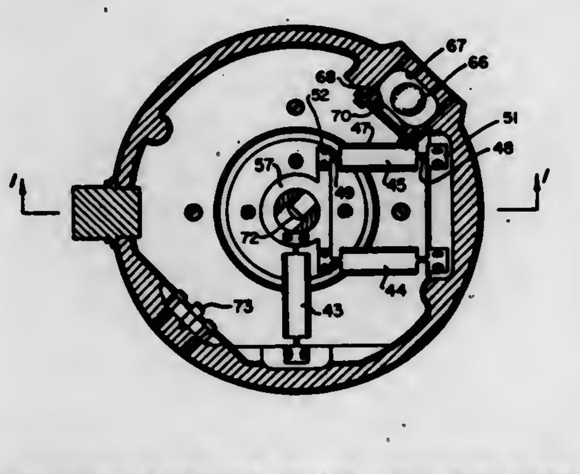
U.S. Cl. 177—134 7 Claims



A pit and deck construction for platform scales including a plurality of precast concrete panels joined end-to-end horizontally and secured to a supporting weighbridge to form the deck. The pit walls each comprise a plurality of precast concrete panels joined end-to-end, disposed vertically and supported by the pit floor, and the panels include flanges which when connected to adjacent flanges of adjoining panels form pilasters for supporting the walls. The walls are constructed by supporting a first row of panels a predetermined distance above the pit bottom and then pouring the concrete floor to a level above the bottom edge of the row of panels. A second row of panels then is placed on the first row, being supported thereby, and horizontally adjacent and vertically adjacent panels are connected together.

3,727,708
FORCE BALANCE WEIGH CELL
Alan J. Adler, Palo Alto, and William S. Kennedy, San Jose, both of Calif., assignors to Acurex Corporation, Sunnyvale, Calif.

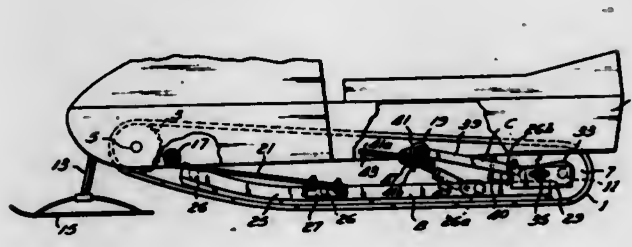
Filed Dec. 20, 1971, Ser. No. 209,689
Int. Cl. G01g *23/32*
U.S. Cl. 177—178 **8 Claims**



A force balance weigh cell having a movable weight structure supported by a flexure system which allows only vertical movement, a photocell position sensing system provides an electrical output signal which is indicative of displacement of the weight structure, the signal is employed to develop a current which is proportional to displacement and rate of displacement and an electromagnetic means receive the signal and apply a restoring force to the weight support structure. The signal is a measure of the weight or force applied to the structure.

3,727,709
SNOWMOBILE CONSTRUCTION
Neil A. Newman, Mansfield, Ohio, assignor to Rupp Industries, Inc., Mansfield, Ohio

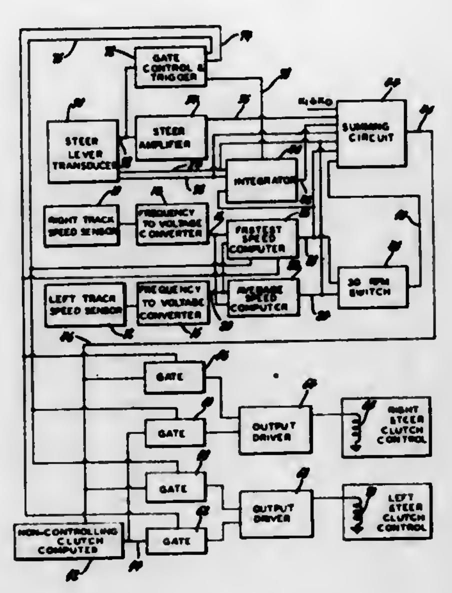
Filed Sept. 27, 1971, Ser. No. 183,777
Int. Cl. B62d *27/02*
U.S. Cl. 180—5 R **4 Claims**



A structure for resiliently supporting the body of a snowmobile including an endless track, slides engaging the track and connected to the frame for limited arcuate movement and spring means controlling such arcuate movement.

3,727,710
STEER CONTROL FOR A TRACK-LAYING VEHICLE
Robert K. Sanders, Whitestown; Jerry R. Marlow, Greenwood, and Kenneth A. Dornfeld, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

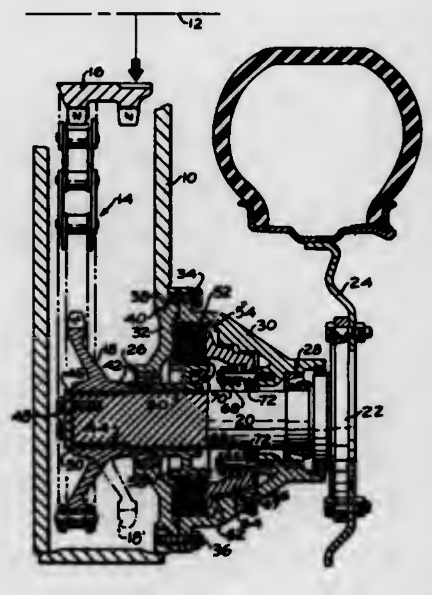
Filed May 13, 1971, Ser. No. 142,880
Int. Cl. B62d *11/08*
U.S. Cl. 180—6.7 **5 Claims**



An electronic control circuit combined with an electrohydraulic transducer regulates right and left steering clutches in a cross-drive transmission for a track-laying vehicle to effect steering by driving. The control inputs are steer lever position and track speeds so that a closed loop control is provided for controlling track speed differential as a function of actual relative track speeds.

3,727,711
TANDEM DISC BRAKE ASSEMBLY
James R. Sebern, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

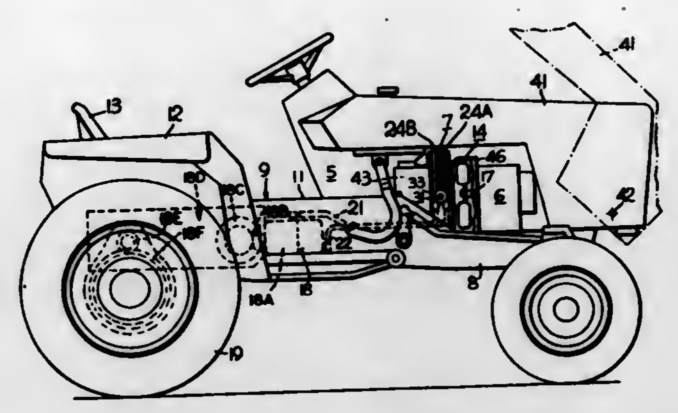
Filed April 23, 1971, Ser. No. 136,887
Int. Cl. B62d *61/00*
U.S. Cl. 180—24.05 **5 Claims**



There is disclosed a drive axle support assembly including a housing which independently carries a drive axle and a disc brake assembly such that the housing may be attached or detached from a support frame without disturbing the drive shaft bearing supports or the brake assembly within the housing.

3,727,712
COOLING ARRANGEMENT
Marcus J. Colloton, Cedarburg, Wis., assignor to Simplicity Manufacturing Company, Inc., Port Washington, Wis.

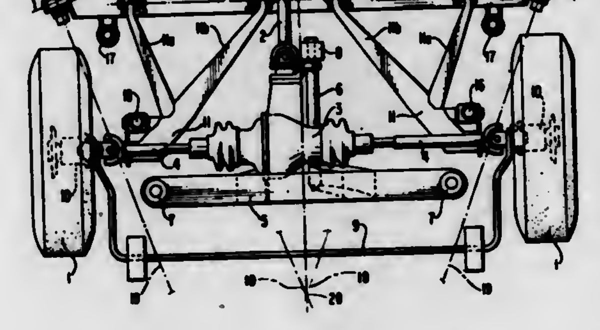
Filed Nov. 11, 1971, Ser. No. 197,693
Int. Cl. B60k *11/06, 19/14*
U.S. Cl. 180—66 R **4 Claims**



This invention is concerned with a cooling system for a tractor having an air-cooled engine and having a hydraulic fluid transmission. This system includes having a hydraulic fluid radiator through which cooling air is drawn before passing same over the engine for cooling same and wherein such radiator can be pivoted about the longitudinal axis of such tractor to provide ready access to mechanism underlying such radiator and also presenting such radiator to a position where it can be readily cleaned.

3,727,713
INDIVIDUAL WHEEL SUSPENSION AT INCLINED OR LONGITUDINAL GUIDE MEMBERS FOR MOTOR VEHICLES
Friedrich H. Van Winsen, Kirchheim/Teck, and Friedrich Hoffmann, Stuttgart-Bad, Cannstatt, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

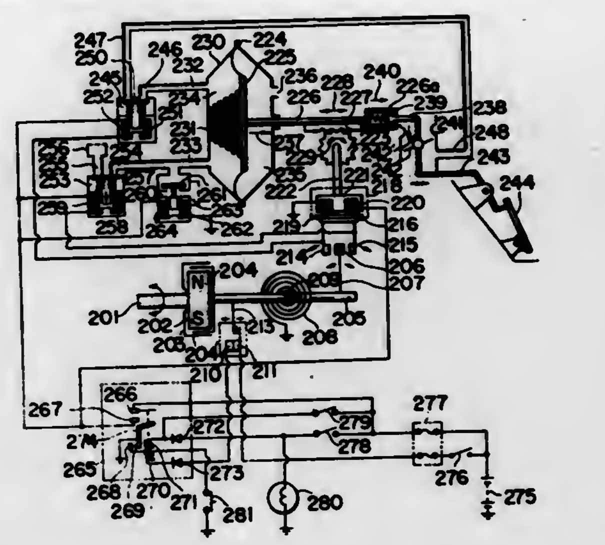
Filed Aug. 15, 1969, Ser. No. 850,559
Claims priority, application Germany, Aug. 16, 1968, P 17 80 209.4
Int. Cl. B60g *11/00*
U.S. Cl. 180—73 R **13 Claims**



An individual wheel suspension for the rear wheels of ttor vehicle in which the guide members, either inclined or longitudinal guide members, are pivotally connected at a common axle support which is connected wth the vehicle superstructure by way of elastic elements; the lines which extend through the elastic elements-disposed in front of the wheel axes-and which are perpendicular to the deflection directions of these elements, intersect in a point to the rear of the wheel axes that is disposed in a vertical plane containing the center longitudinal axis of the motor vehicle.

3,727,714
AUTOMATIC CONSTANT SPEED DRIVING SYSTEM FOR AUTOMOBILES
Toshio Ishikawa, Kariya, Japan, assignor to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

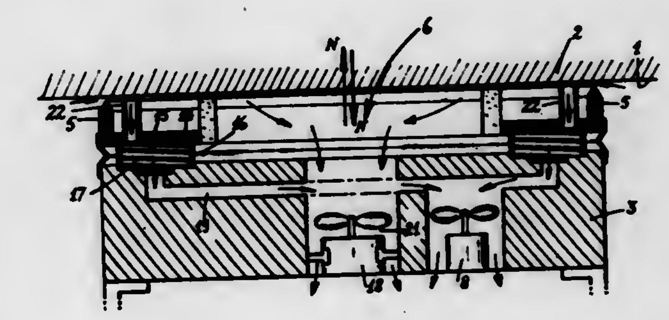
Filed Nov. 3, 1970, Ser. No. 86,400
Claims priority, application Japan, Nov. 25, 1969, 44/94822; Nov. 25, 1969, 44/94823; Dec. 1, 1969, 44/96425; Dec. 1, 1969, 44/96427
Int. Cl. B60k *31/00*
U.S. Cl. 180—108 **6 Claims**



An automatic constant speed driving system for automobiles comprising a speed detecting unit for generating a signal proportional to the car speed, means for actuating an engine throttle, and a speed setting magnetic clutch capable of connecting the speed detecting unit and the engine throttle actuating means with each other at any given car speed, whereby when the magnetic clutch is in the coupled position, the speed detecting unit is caused to store as a set speed the displacement of the throttle actuating means proportional to the car speed and this set speed is compared with the detected speed so that the throttle actuating means is operated so as to effect the constant speed driving of the vehicle.

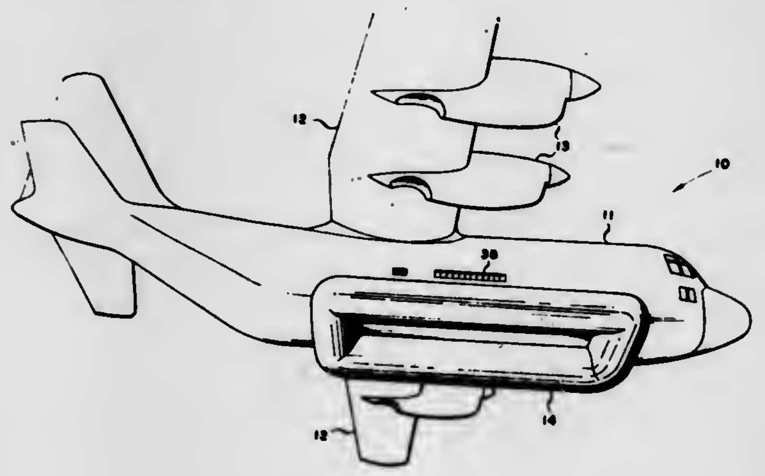
3,727,715
SYSTEM FOR ESTABLISHING A PNEUMATIC CONNECTION BETWEEN AN OBJECT AND A WALL
Maurice Barthalon, Allee des Sapins le Petit Vaupereux La Faret, Verrieres le Buisson, France

Filed March 25, 1971, Ser. No. 127,962
Claims priority, application France, April 1, 1970, 7011567; Sept. 22, 1970, 7034254
Int. Cl. B60v *1/04*
U.S. Cl. 180—118 **32 Claims**



A system for providing a pneumatic connection between an object and a wall which are capable of relative displacement, which comprises a guiding chamber which confines a gas layer at a pressure which is different from the ambient pressure, said chamber being delimited by skirts which are carried by the object and directed towards said wall. At least a part of the skirts is capable of moving with respect to the skirt-carrying object and is positionally controlled relative to this latter. At least one movable skirt is connected mechanically to the movable partition of a variable-pressure pneumatic balancing chamber which is mounted on the object and separate and distinct from the guiding chamber. Pneumatic control means are further provided for adjusting the position of said partition as a function of the distance from the lip of the movable skirt to the wall. Under these conditions, the lips of the skirts can be maintained at a practically constant distance from said wall. The object can be a vehicle and the wall a track provided for said vehicle.

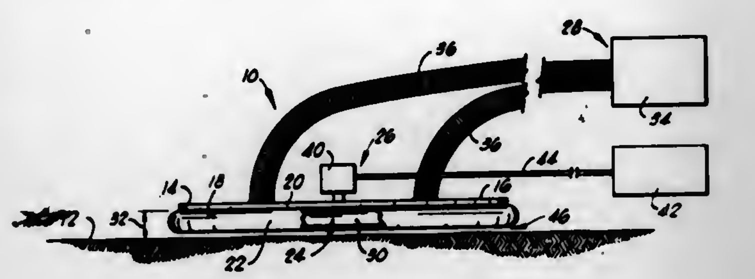
3,727,716
AIR CUSHION TRUNK FOR GROUND EFFECT MACHINES
Dave H. Jenkins, Marietta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed April 5, 1971, Ser. No. 131,274
Int. Cl. B60v *3/08*
U.S. Cl. 180—124 **10 Claims**



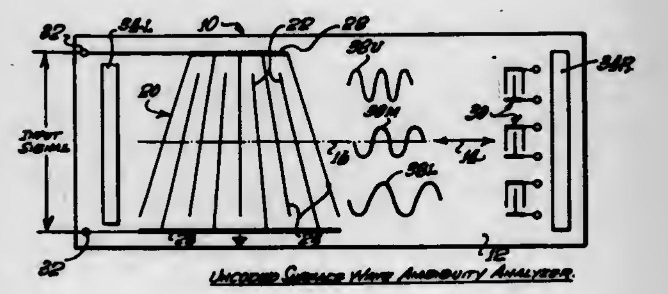
An air cushion trunk sealing system for ground effect machines is provided to prevent air leakage from the trunk during periods of operation and parking when the primary power of the machine or craft is turned off. This system is composed of an inner tube type liner (which may be, and preferably is, constructed of multiple cells) which is collapsed, doubled and attached to the underside of the craft and within the trunk. Before the trunk air is turned off, air of higher pressure than trunk pressure is routed into the collapsed inner tube to inflate it. As this inner tube inflates, it replaces the trunk air while the trunk air flow is still providing craft support. When the inner tube is fully inflated, the air to the trunk is fully diverted overboard and the inner tube now supports the craft. The inner tube valve is closed to contain the air and the trunk air may be turned off.

3,727,717
AIR COUPLED SEISMIC ENERGY GENERATOR
Dale E. Miller, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Aug. 24, 1971, Ser. No. 174,343
Int. Cl. G01v *1/02*
U.S. Cl. 181—0.5 VM **12 Claims**

An improved seicmic energy generator wherein pressurized air is supplied between a base plate and the earth's surface to form an air cushion therebetween, and the base plate is driven vertically upwardly and downwardly to generate and transmit a seismic force to the earth's surface via the air cushion.



3,727,718
SURFACE WAVE AMBIGUITY ANALYZER
Harper John Whitehouse, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Nov. 24, 1971, Ser. No. 201,693
Int. Cl. H03h *7/30;* **G01r** *23/00*
U.S. Cl. 181—.5 AP **9 Claims**

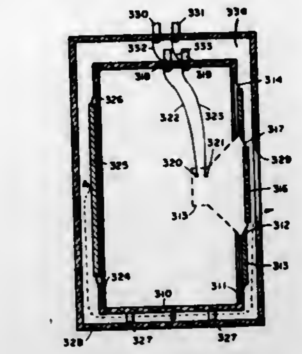


A surface-wave ambiguity analyzer comprising a substrate, capable of propagating an acoustic surface wave on its surface, and a transmitting electroacoustic transducer, disposed upon the substrate, having a perimeter substantially in the shape of a trapezoid whose base is parallel to the direction of surface wave propagation. The transmitting transducer comprises a pair of sets of interdigited electrodes, the configuration of the electrodes conforming in shape to the graphs of a set of regular functions which do not cross or otherwise touch each other, a top bus bar, parallel to the base of the trapezoid, to which one of the sets of electrodes is connected, and a bottom bus bar, forming the base of the trapezoid, to which the other set of electrodes of the pair of sets is connected, the top and bottom bus bars being connectable to an electrical signal source. Two absorbers, one on each end of the substrate, are disposed perpendicularly to the base of the trapezoid, for absorbing unwanted acoustic reflections. The ambiguity analyzer may further comprise at least one acousto-electric receiving transducer, disposed at one end of the substrate between the transmitting transducer and one of the absorbers, whose electrodes are disposed perpendicularly to the direction of propagation of the acoustic wave.

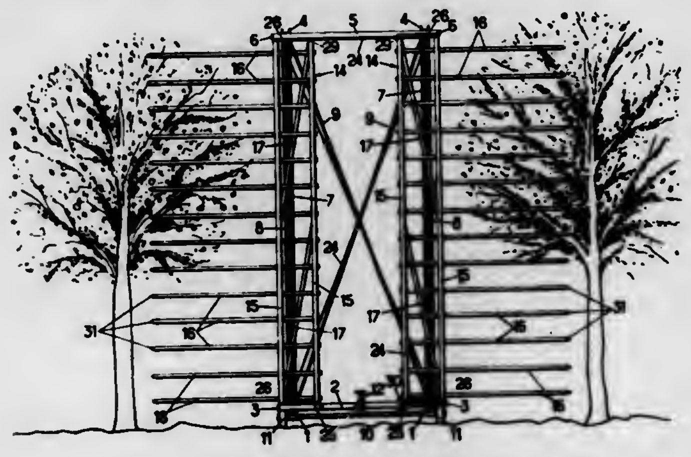
3,727,719
SOUND REPRODUCING SYSTEM
Stephen Yando, Huntington, N.Y.
Filed June 19, 1969, Ser. No. 840,117
Int. Cl. G10k *13/00;* **H04r** *1/28*
U.S. Cl. 181—31 B **10 Claims**

A dynamical system for the reproduction of sound. The system includes a relatively small enclosure with a driven loudspeaker cone and one or more free pistons suspended in

airtight fashion in openings in the enclosure. A rigid shell having an opening juxtapositioned to the driven cone, may surround the enclosure, for purposes of increasing the coupling among free pistons and between free pistons and the driven cone.

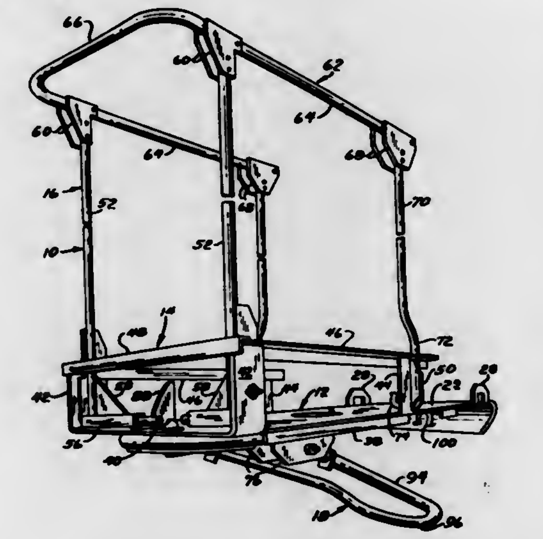


3,727,720
MOVABLE APPARATUS FOR USE IN PICKING FRUIT
Francois Duc, La Sabatiere, Bergerac, France
Filed April 12, 1972, Ser. No. 243,294
Int. Cl. E06c *5/02*
U.S. Cl. 182—38 **5 Claims**



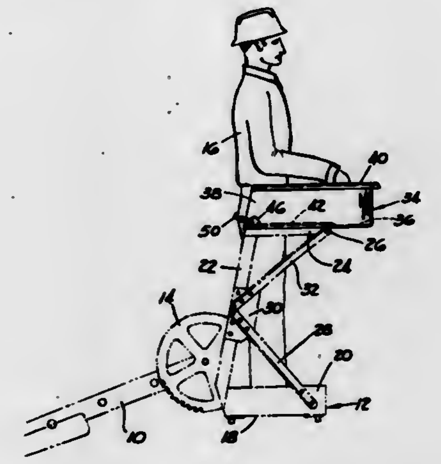
Ladders for use in picking fruit are mounted to slide laterally on a supporting vehicle. The steps of each ladder project laterally beyond one of its uprights.

3,727,721
COLLAPSIBLE WINDOW SCAFFOLD
Walter Kulesa, 2445 West Moffat, Chicago, Ill.
Filed March 3, 1972, Ser. No. 231,635
Int. Cl. A47l *3/02*
U.S. Cl. 182—62 **3 Claims**



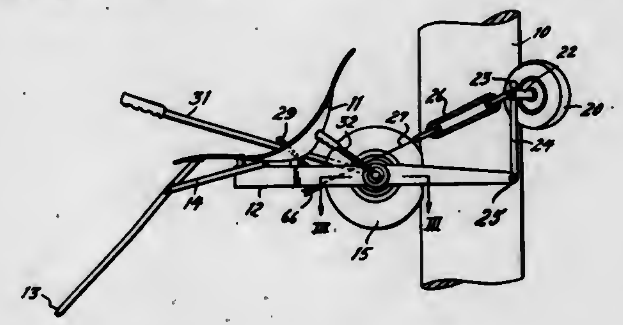
A scaffold which is positionable in a window opening to extend outward therefrom for supporting a workman and equipment exteriorally of a window mounted in the opening. The scaffold includes a platform having a flat surface, with a hook portion on one end of the platform and a pair of cross-bar holding ears adjacent to the hook. A cross-bar is removably mounted in the ears for engagement with the interior of a building wall. A safety rail is mounted on the platform adjacent to the end, extendable exteriorally of the window. A support brace is hingedly connected to the bottom of the platform and is engageable with the exterior of a building wall to support the platform. The support brace and the safety rail are interlocked when in an extended attitude, and both may be folded against the platform.

3,727,722
TOOL SHELF AND APRON FOR AERIAL CAGE
Melvin Ronald Hedges, Littlestown, and Cyril J. Rickrode, New Oxford, both of Pa., assignors to Cam Industries, Inc., Hanover, Pa.
Filed Dec. 6, 1971, Ser. No. 204,956
Int. Cl. E04g *5/00*
U.S. Cl. 182—129 **3 Claims**



A combination shelf and apron of U-shaped configuration molded from reinforced synthetic resin and having horizontal shelf areas with apron walls extending upwardly from the outer edges of said shelf areas to provide increased safety for a workman in an aerial platform or cage and also provide shelf areas to support tools. The shelf and apron unit is readily attachable to the upper rail of existing aerial platforms and cages and has attaching means to engage the same.

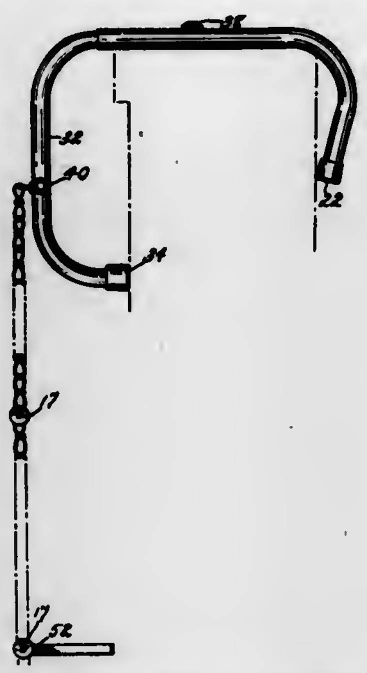
3,727,723
HEIGHT-ADJUSTABLE TREE SEAT
Laren Pitcairn, R.D. 1, Pipersville, and Haig Kurkjian, Malvern, both of Pa., assignors to said Pitcairn, by said Kurkjian
Filed Feb. 16, 1971, Ser. No. 115,492
Int. Cl. A63b *27/00*
U.S. Cl. 182—133 **10 Claims**



Apparatus for ascending and descending a tree, pole, or similar cylindrical vertical member is provided with a seat and with manually operable mechanism so that a person seated thereon can raise and lower himself along the vertical member. Height is determined by controlling rotation of a positioning wheel having a resilient peripheral surface in frictional engagement with the vertical member.

3,727,724
FIRE ESCAPE LADDER

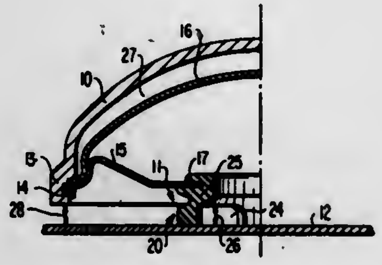
Joseph Gilbert, 210 Pond Crossing, Nassau, N.Y., and Simon Shafer, 196-12 Keno Avenue, Queens, N.Y.
Filed Nov. 1, 1971, Ser. No. 194,115
Int. Cl. E06c *1/56*
U.S. Cl. 182—198 2 Claims



An improved fire escape ladder of a type adapted to be engaged with a window sill by straddling a lower edge thereof. The straddling means includes provision for adjustment in relation to the thickness of the wall mounting the window sill. The stiles of the ladder consist of conventional wire chain links, and the rungs are of hollow metallic tubing. Means is provided for connecting the rungs to the stiles whereby assembly may be accomplished with a minimum of hand labor using components which are of relatively low cost of manufacture.

3,727,725
ARRANGEMENT OF THE SUCTION FUNNEL OF THE LUBRICATING OIL PUMP IN THE OIL SUMP OF AN INTERNAL COMBUSTION ENGINE

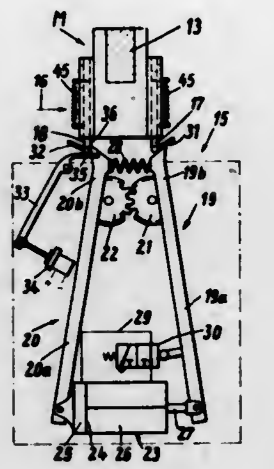
Wolfram Dahm, Raidwangen, Nurtingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed May 20, 1971, Ser. No. 145,439
Claims priority, application Germany, May 21, 1970, P 20 24 814.0
Int. Cl. F01m *1/12*
U.S. Cl. 184—6.24 15 Claims



An arrangement for the suction funnel of the lubricating oil pump within the oil pan of an internal combustion engine, in which the suction funnel is supported at the bottom of the oil pan by means of an elastic hollow spacer element whereby the suction opening of the suction funnel terminates in the interior space of the hollow spacer element while the spacer element is provided at its lower end with one or several level-determining openings for an air-free aspiration of the oil.

3,727,726
METHOD OF AND DEVICE FOR OPERATING APPLIANCES HAVING DRIVEN MASSES

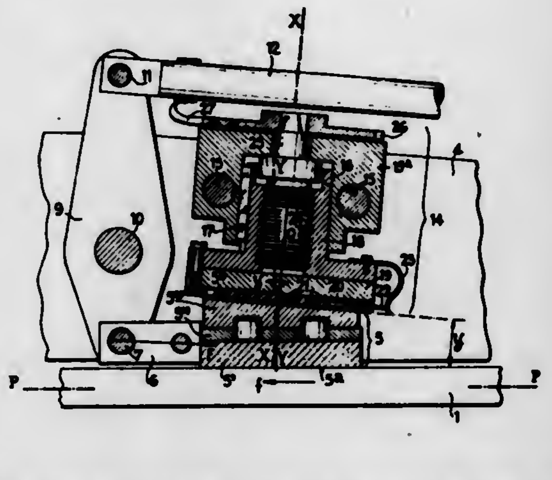
Karl-Heinz Nauen, Silberbergerstr. 20, Bremen, Germany
Filed Sept. 25, 1970, Ser. No. 75,512
Claims priority, application Germany, Sept. 26, 1969, P 19 48 683.3
Int. Cl. F03g *1/00*
U.S. Cl. 185—39 8 Claims



A device for the cyclic acceleration and deceleration or braking of a mass over a short period of time. A mechanical or pneumatic spring is used to store during deceleration or braking the kinetic energy of the mass as it is slowed down. The stored or potential energy in the spring is then applied to the mass during acceleration. Two two-armed levers are coupled to the springs for transmitting energy between the mass and the spring. Locks or swivel pawls are used to couple and decouple the mass to the levers such that the levers are moved in a manner to transfer the kinetic energy of the mass to the spring during the deceleration and to transfer the potential energy of the spring to the mass during acceleration.

3,727,727
BRAKE METHOD AND DEVICE

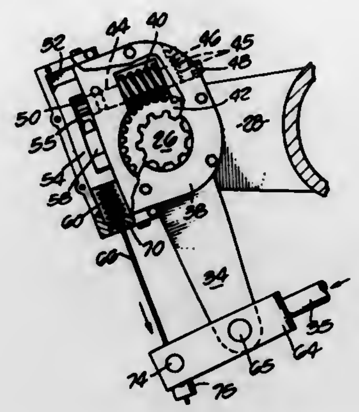
Jean-Marc Laurent Hauth, Pont-A-Mousson, France, assignor to Pont-A-Mousson S.A., Pont-A-Mousson, France
Filed July 31, 1970, Ser. No. 59,918
Claims priority, application France, Aug. 11, 1969, 6927515
Int. Cl. F16d *55/08, 55/16*
U.S. Cl. 188—72.9 1 Claim



Friction disc braking method and device in which the disc is braked by pad means inserted between the disc and a support face slightly oblique relative to the disc. The pad means have a bearing face opposed to the friction face thereof and parallel to the support face. The pad means are applied into braking engagement with the disc in a direction which is oblique relative to the disc and opposed to the movement of the disc by bearing against a fixed body in such manner that the reaction is exerted in a direction slightly oblique relative to the normal to the disc and toward the disc.

3,727,728
AUTOMATIC BRAKE SLACK ADJUSTOR

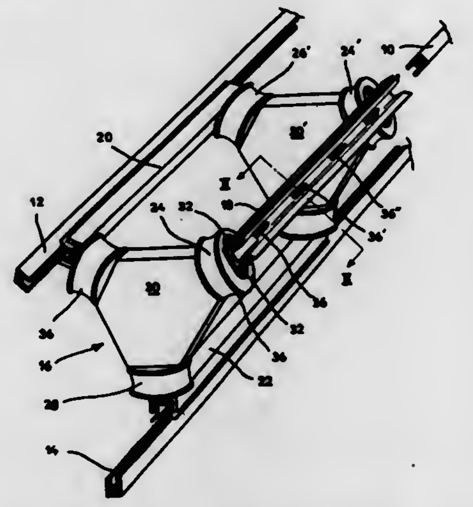
James L. Bostwick, 1501 Bluff Drive, Santa Barbara, Calif.
Filed Feb. 16, 1972, Ser. No. 226,695
Int. Cl. F16d *65/56*
U.S. Cl. 188—79.5 K 8 Claims



An operating rod is pivotally connected to a brake operating arm that rotates a conventional brakes-applying cam and the end of the operating rod extends beyond the pivotal connection to the brake operating arm. Slack adjustor mechanism in a housing on the brake operating arm includes a reciprocative member in a side compartment of the housing which member operates a pawl and ratchet means to take up slack in the brake. The side compartment is on the side of the housing that is away from the axle housing of the vehicle. The reciprocative member is connected to the extended end of the operating rod by a flexible tension member and is biased away from the extended end of the operating rod. Lost motion between the reciprocative member and the extended end of the operating rod determines the magnitude of the movement of the reciprocative member and thus determines the magnitude of the increments of slack adjustment.

3,727,729
MULTI-PHASE ELECTRICAL DISTRIBUTION AND CURRENT COLLECTING SYSTEM FOR HIGH SPEED VEHICLES

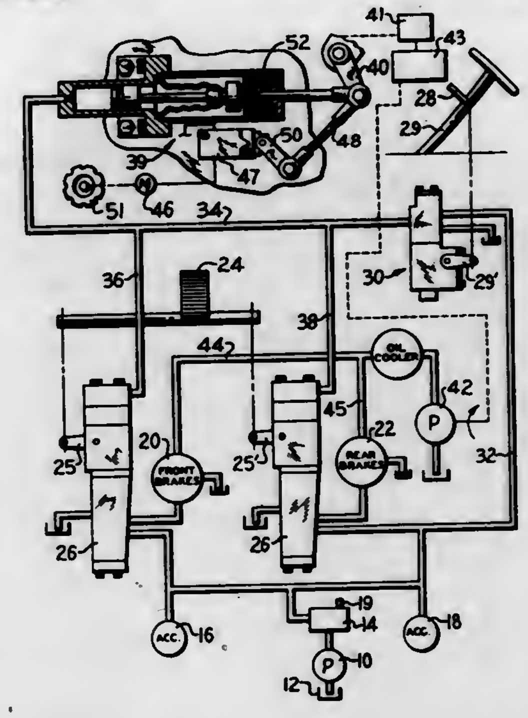
Jean-Pol Payen, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France
Filed Oct. 6, 1970, Ser. No. 78,547
Int. Cl. B60l *5/08*
U.S. Cl. 191—45 R 9 Claims



A collector head movable along a passageway defined by a plurality of parallel multi-phase energizable feed conductors comprises for each conductor a set of longitudinally spaced apart contact shoes supported by a longitudinal carrying structure for resilient engagement with the corresponding conductor. Resilient support means, such as pneumatic cushions, for the carrying structures improve guide response of the collector head.

3,727,730
VEHICLE POWER AND BRAKE COOLING CONTROL

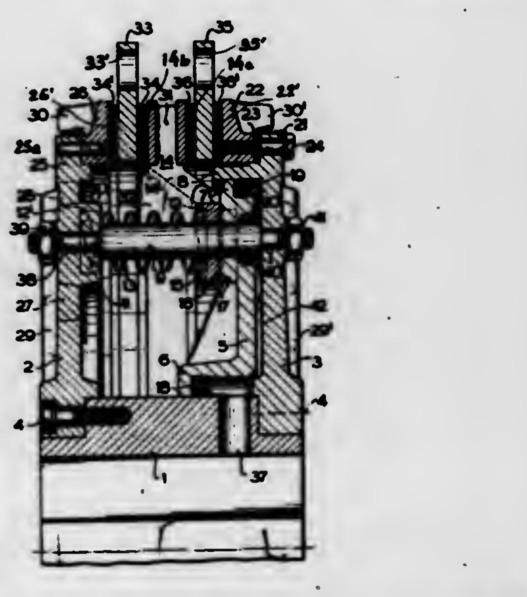
Donald L. Bianchetta, Coal City; Richard E. Guhl; Samuel L. Kershaw, both of Decatur, and John F. Szentes, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 16,864, March 5, 1970, abandoned.
This application Jan. 31, 1972, Ser. No. 222,407
Int. Cl. B60k *29/02*; F16d *65/84*
U.S. Cl. 192—3 R 8 Claims



A vehicle retarding system in which the heat of a retarding brake is absorbed by cooling medium supplied from a motive means driven by the vehicle engine, including means operable when the brake is used to effect retarding, to increase the speed of the engine and consequently the volume of the cooling medium directed to the brake, and also including means to disconnect the vehicle drive so that the increased engine speed is not transmitted to the vehicle wheels.

3,727,731
FLUID OPERATED CLUTCH AND SPRING OPERATED BRAKE

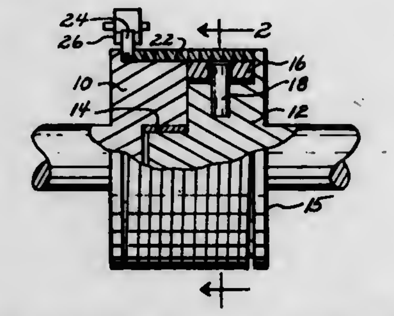
Hans Selig, Remscheid, Germany, assignor to Firma Gebruder Ortlinghaus Ohg., Wermelskirchen, Germany
Filed Jan. 31, 1971, Ser. No. 222,140
Claims priority, application Germany, Feb. 10, 1971, P 21 06 260.2
Int. Cl. F16d *67/04*
U.S. Cl. 192—18 A 10 Claims



In a combined clutch and brake apparatus, a pressure means is shifted by a piston and a spring between two positions for frictionally coupling a casing, whose hub portion is connected with a shaft, either with a rotary friction means or with a blocked friction means. Bolts connect the casing end wal's, and pass through the cylinder chamber, a piston in the cylinder chamber, and the pressure means which is biassed to abut the piston, and is shifted by pressure fluid in the cylinder chamber in one direction, and by a spring in the opposite direction. Due to the position of the bolts, the apparatus is compact, has a small outer diameter, and comparatively wide annular friction faces.

3,727,732
TORQUE LIMITING CLUTCH

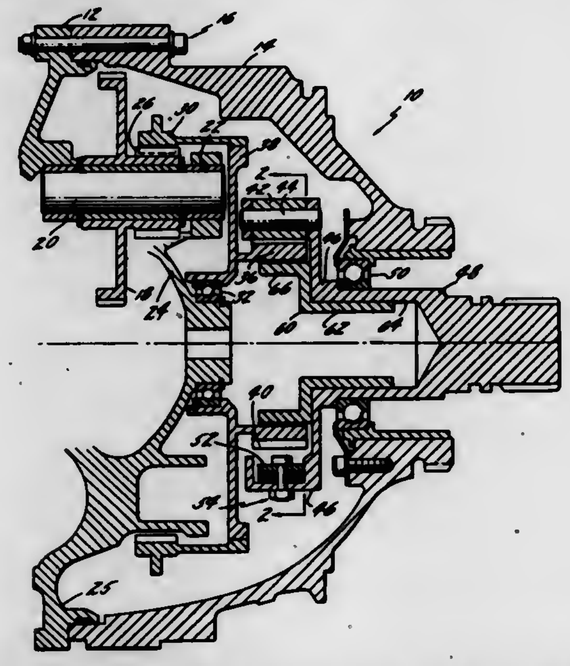
William H. Barr, 51 Liberty Pole Road, Hingham, Mass.
Filed April 5, 1971, Ser. No. 131,223
Int. Cl. F16d *43/21, 49/02, 41/20*
U.S. Cl. 192—26 10 Claims



A coil spring clutch is disclosed incorporating a resilient radially cylindrical member on which the coil spring bears. The torque transmitted by the spring urges the yieldable member to contract so that the clutch will slip at a constant predetermined value of the torque. The yieldable member contracts as a result of the major tensile stresses in the helical spring, making the slip torque substantially independent of large variations in the coefficient of friction of the clutch elements. Also disclosed are means for adjusting the clutch for varying the slip torque.

3,727,733
STARTER-PAWL RATCHET CLUTCH SNUBBER

James A. Mrazek, South Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed May 8, 1972, Ser. No. 251,488
Int. Cl. F16d *41/12*; F02n *15/02*
U.S. Cl. 192—42 7 Claims



A snubber disposed in proximity to and in cooperation with the ratchet of a pawl/ratchet clutch of a pneumatically driven starter serves to prevent breakage of the component parts of the starter in the event that less than the total number of pawls engage the ratchet when in the driving condition.

3,727,734
BIDIRECTIONAL LEVER ARM CLUTCH

Kent W. Hanson, c/o Univac Park, P.O. Box 3525, American Fork, Utah
Filed March 29, 1972, Ser. No. 239,084
Int. Cl. F16d *41/12*; G03b *1/12*
U.S. Cl. 192—48.92 6 Claims

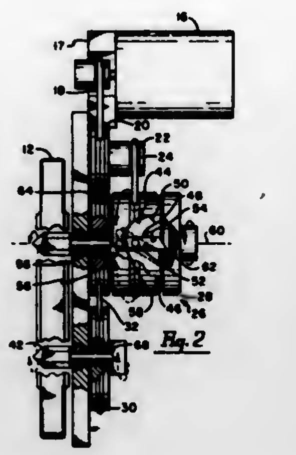
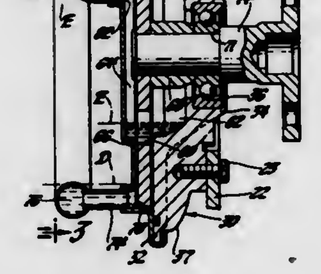


Fig. 2

A bidirectionally rotatable mechanism for separately driving two unidirectionally rotatably driven devices is disclosed. The mechanism includes a bidirectionally driving external rim that encompasses a bidirectionally driven internal device that supports two oppositely axially aligned lever arms. The external rim is pin coupled to slots in the ends of the lever arms such that rotation of the external rim in the clockwise or counterclockwise direction rotates one or the other of the lever arms into axial alignment and also rotates the internal device in the like clockwise or counterclockwise direction. The one axially aligned lever arm then engages an associated unidirectionally rotatably driven member.

3,727,735
VISCOUS FLUID CLUTCH

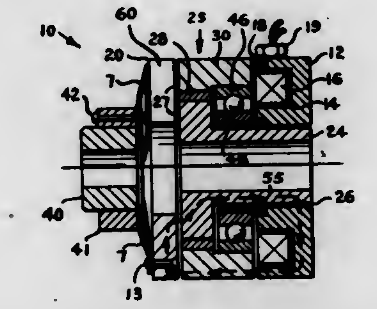
Frank E. La Flame, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 10, 1971, Ser. No. 151,872
Int. Cl. F16d *35/00*
U.S. Cl. 192—58 B 9 Claims



A viscous fluid clutch including relatively rotatable first and second drive members having fluid shear spaces therebetween which are cooperable with a predetermined volume of a fluid medium in the shear spaces to provide a resultant variable speed differential between the first and second members, and a separately located circular tubular reservoir member with at least one conduit communicating between the tubular reservoir chamber thereof and the outer peripheral portions of the fluid shear spaces. Expansion and contraction of the fluid medium, resulting from changes in ambient temperature around the circular tubular reservoir member, cause the annular level of the fluid medium in the shear spaces to vary, thus varying the speed of an associated cooling fan. To supplement the expansion and contraction characteristics of the usual silicone fluid, other fluids or materials, such as a refrigerant, a wax, or polypropylene, may be contained in the tubular reservoir chamber.

3,727,736
ARMATURE ASSEMBLY FOR AN ELECTROMAGNETIC CLUTCH

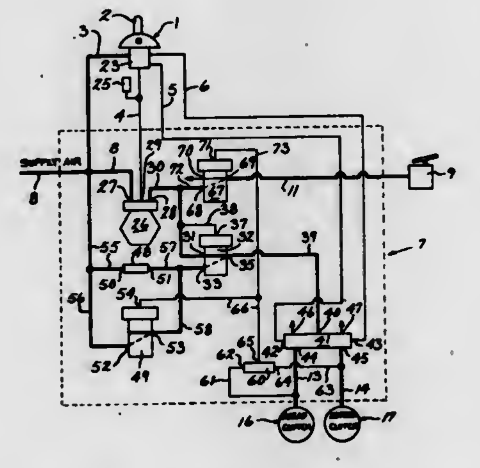
Donald L. Miller, Horseheads, and John F. Puro, Elmira, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.
Filed Sept. 29, 1971, Ser. No. 184,750
Int. Cl. F16d *27/10*
U.S. Cl. 192—84 C 4 Claims



An apparatus to substantially eliminate audible noise in electromagnetic shaft coupling devices having input and output torque transmitting members is disclosed which utilizes an armature assembly comprising an annular armature member having a slot extending fully through a radial segment thereof, and a flexible coupling rotatably mounted to the armature such that the armature is suspended thereby, which assembly permits the armature to twist and flex independently of both torque transmitting members thereby lowering the resonant frequency during torque transmission. The improved armature assembly conforms to magnet body pole face irregularities, eliminates backlash, and reduces the run-in time required to reach design torque.

3,727,737
PRESSURE MODULATING SYSTEM FOR REVERSING CLUTCHES AND THROTTLE CONTROL

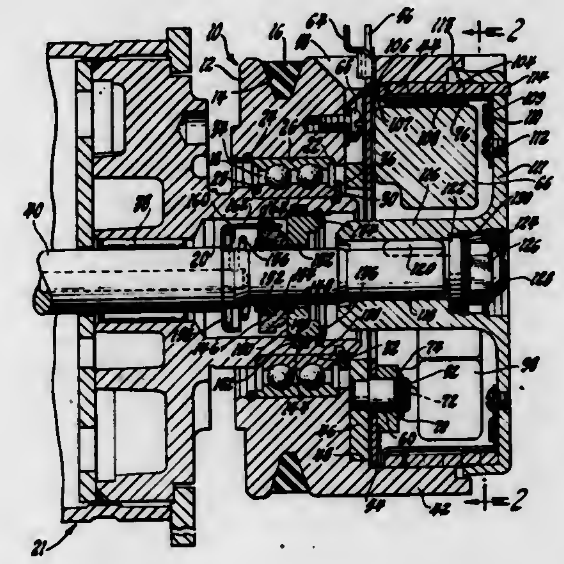
John M. Phinney, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.
Filed June 14, 1971, Ser. No. 152,938
Int. Cl. F16d *25/10*; B60k *21/00*
U.S. Cl. 192—.098 5 Claims



A pneumatic clutch control assembly for a ship's propulsion system which sequentially controls the inflation and exhaust of pneumatically operated clutches and also controls the throttle system of an associated prime mover. Upon actuation of a control valve, which may be located in the pilot house and at other locations, a series of valves are sequentially operated to inflate a selected ahead or astern clutch in one of two conditions: (1) a first condition in which the clutch is inflated to reduced pressures according to the variable pressure of the control valve to allow slippage of the clutch and permit operation at speeds below the idle speed of the prime mover, and (2) a second condition in which the clutch is inflated to full pressure under a programmed inflation rate. In the first condition, the prime mover remains at minimum speed and only part of the idle torque is transmitted as required for the desired propeller speed. In the second condition, the control assembly limits the prime mover control signal during periods of partial clutch inflation until full pressure is supplied to the clutch.

3,727,738
CENTRIFUGALLY ENGAGED COIL CLUTCH WITH WEIGHT LOCK

John R. Briar, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 9, 1972, Ser. No. 224,769
Int. Cl. F16d *43/14*
U.S. Cl. 192—105 CE 6 Claims

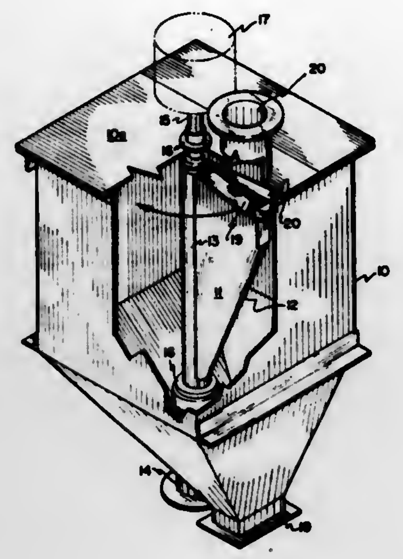


The centrifugally actuated spring clutch illustrated includes two pairs of alternately positioned centrifugal weight members, one pair of which, under the action of centrifugal force, frictionally engages an energizing cup attached to a coil-wound torque spring for effecting the driving of an output shaft. The second pair of weight members abuts respective adjacent actuating weight members to supplement the force thereof and to thus serve as torque-multipliers therefor, enabling heavy torque loads to be driven by a relatively compact clutch assembly. A lock plate may be manually moved to lock both pairs of weights in an inoperative position.

3,727,739
ROTARY ARCUAL SAMPLE FOR PARTICULATE MATERIALS

Fred R. Huntington, Salt Lake City, Utah, assignor to The Galigher Company, Salt Lake City, Utah
Filed Feb. 7, 1972, Ser. No. 224,171
Int. Cl. B65g *11/20*
U.S. Cl. 193—31 10 Claims

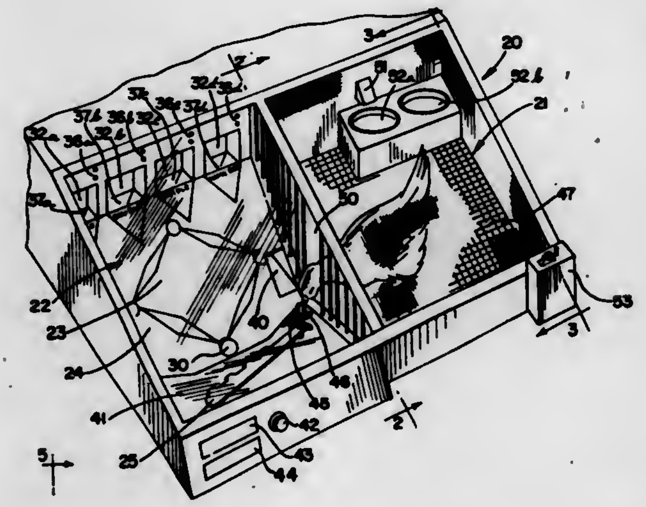
A rotary arcual sampler for sampling streams of particulate material having a housing with upper and lower openings vertically aligned intermediate of the housing wall and vertical central axis, an internal sample chute rotatable about the central axis having an upper opening and a lower opening through the vertical central axis, a pair of cutter lips disposed near op-



posite sides of the upper chute opening, said cutter lips extending radially from the vertical central axis and having a surface inclined slightly from the vertical.

3,727,740
COIN-OPERATED TRAINED ANIMAL AMUSEMENT APPARATUS

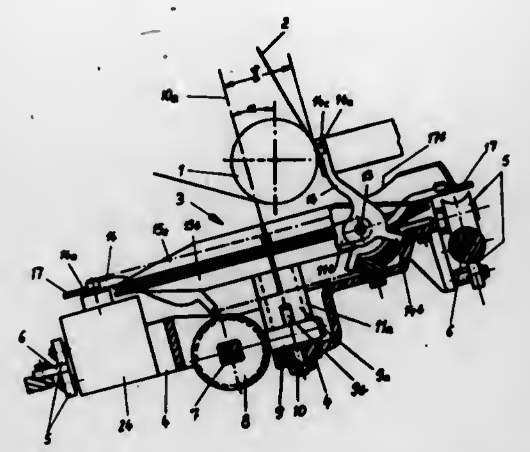
Grant Evans, Hot Springs National Park; Billy Joe Petty, Malvern, and Robert E. Bailey, Hot Springs National Park, all of Ark., assignors to Animal Behavior Enterprises, Inc., Hot Springs National Park, Ark.
Filed July 8, 1971, Ser. No. 160,862
Int. Cl. A01k *15/00*
U.S. Cl. 194—12 **16 Claims**



A trained animal amusement apparatus in which a trained chicken or other animal in a containing compartment engages a person in a game of skill which takes place in a playing compartment. Electric circuitry is provided to enable a trained animal and a person to participate in a sequential game. Provision is expressly made to prevent both players from operating at the same time. A solenoid controlled impeller is provided to direct a ball towards a target. Alternative switching provides for separate turns for the trained animal and person. Scoring may be registered when the ball goes through a target in one embodiment. The trained animal is rewarded for successful completion of its specified routine of performance or game task.

3,727,741
PRINTING MECHANISM HAVING A RIM OF ROTATING TYPELEVERS

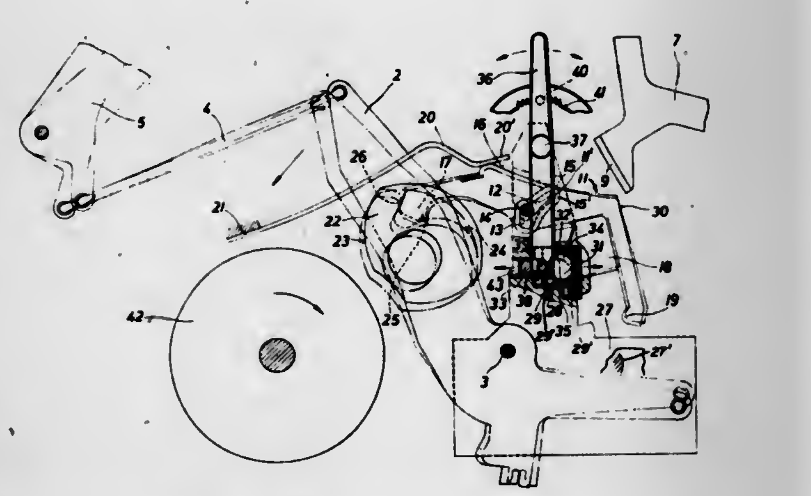
Folker Gelaske, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Aug. 22, 1968, Ser. No. 754,578
Claims priority, application Germany, Sept. 19, 1967, P 15 37 440.0
Int. Cl. B41j *23/38*
U.S. Cl. 197—18 **11 Claims**



a type bar assembly continuously rotating below a platen, with the printing point lying on or in the direct proximity of the extended center line of the axis of the assembly, it is provided that the printing plane is arranged in front of the center line of the axis when viewed in the printing direction, and that the distance therebetween is determined by the maximum admissible relative speed between the firmly arranged platen and the type bar movement, at the moment of printing.

3,727,742
ADJUSTABLE BLOCKING MEANS FOR TYPING AND PRINTING MECHANISMS

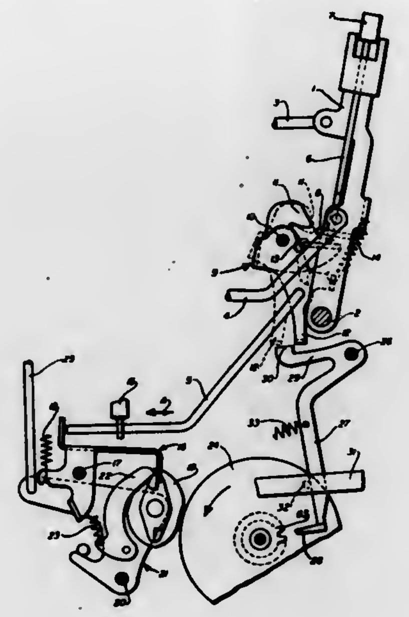
Albert Rix, Wilhelmshaven; Georg Werner, Heidmuehle, and Hans Fuchs, Wilhelmshaven, all of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany
Filed June 12, 1970, Ser. No. 45,771
Claims priority, application Germany, June 14, 1969, P 19 30 362.9
Int. Cl. B41j *5/22*
U.S. Cl. 197—107 **6 Claims**



For typewriters and similar machines in which a blocking means cooperates with the type actuating means for preventing the simultaneous printing of more than one type, the blocking means is a member such as a ball block mounted on a lever for pivoting movement to vary the position of the blocking member relative to the type actuating means during the normal operation of the machine. A ratchet is provided to fix the blocking member in the desired position.

3,727,743
CARBON RIBBON TRANSPORTING AND INSTALLATION FACILITIES

Hans-Georg Hengelhaupt, 8500 Nuernberg, and Friedrich Teichmann, 8501 Feucht, both of Germany, assignors to Triumph Werke Nuernberg A.G., Nuernberg, Germany
Filed Feb. 3, 1971, Ser. No. 112,334
Claims priority, application Germany, March 7, 1970, P 20 10 862.7
Int. Cl. B41j *35/10*
U.S. Cl. 197—159 **10 Claims**

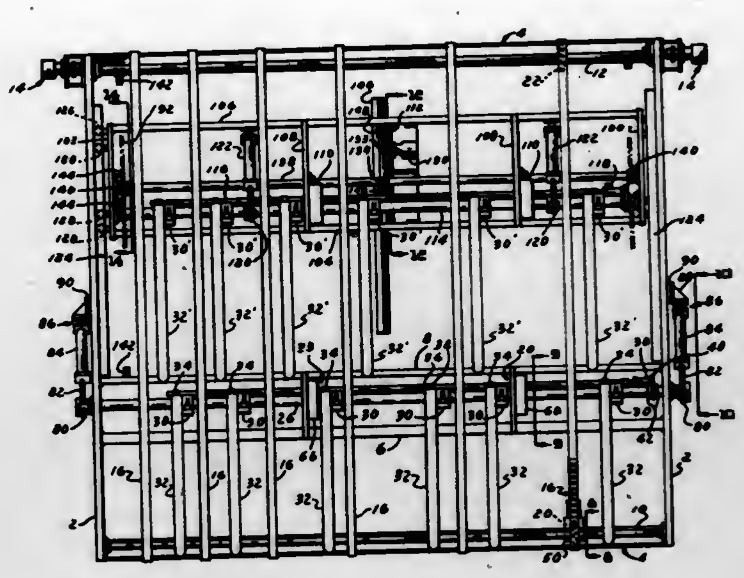


In a typewriter, a pair of transport rollers are effective incidental to typing operations to advance a carbon ribbon threaded through a vibrator to pay it off over a redirecting guide roll to be wound to a spool which is under constant impositive winding urge. A ribbon control member, when operated, separates the transport rollers and also lifts the vibrator to an accessible position. Incidental thereto, a correlation of the guide roller relative to the transport feed rollers and the vibrator is established which facilitates the presentation of carbon ribbon in a straight line condition extending from said vibrator between the transport rollers and behind the guide roller. A drive control member, when operated, causes power-step-movements of the transport rollers, but an interlocking means permits operation of only one of said control member at a time. The machine includes a member to set a fabric ribbon vibrator for elevation to desired extents and when set renders the drive control member inoperable. Conversely, if the drive control member is operated, the ribbon control member is incapable of being set.

3,727,744
APPARATUS FOR OVERTURNING STACKED SHEET MATERIAL

Edwin J. Willard, East Longmeadow, Mass., assignor to Longview Fibre Company, Longview, Wash.
Filed April 16, 1971, Ser. No. 134,635
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AD **5 Claims**

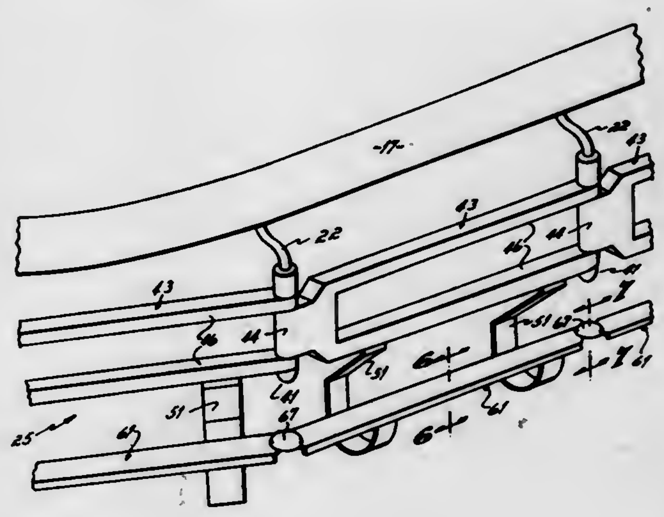
Load turning conveyor apparatus, for overturning stacks of paperboard sheets and the like, having laterally spaced horizontally supported conveyor belts, load turning supports in upstream and downstream spaced relation and means to adjust the spacing thereof commensurate with the height of a stack, each support having two sets of load engaging legs pivotally movable upwardly through the belts to a vertical position above the belts and downwardly to a horizontal position below the belts, said legs being releasably engageable in right angled load engaging relation on each support, means for separately pivoting each support through an arc of 90° for rotating the upstream support and lifting a stack of sheets on



edge and in position for the downstream support to rotate and lower said stack in overturned condition on the conveyor.

3,727,745
CONVEYOR RAIL

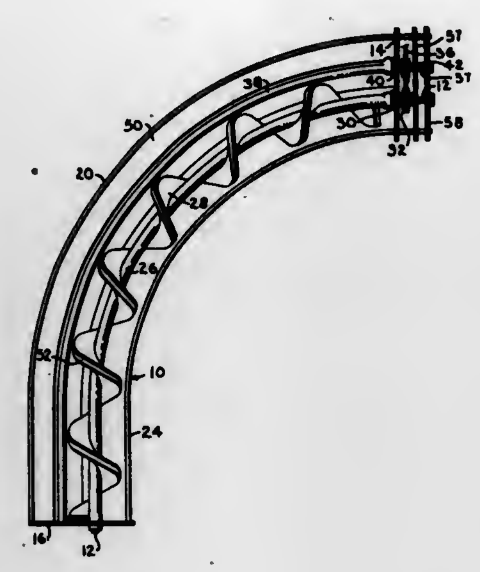
Frank H. Richterkessing, Louisville, Ky., assignor to W. M. Cissell Manufacturing Company, Louisville, Ky.
Filed Feb. 28, 1972, Ser. No. 229,997
Int. Cl. B65g *1/12;* **A47f** *3/08*
U.S. Cl. 198—181 **7 Claims**



A garment conveyor rack having an endless garment hanger receiving conveyor which is power driven to move around curves or corners to form a closed path, the conveyor having an uninterrupted rail to allow free sliding movement of the garment hangers in either direction. The rail is constructed of straight metal sections which are pivotally linked together at structural joints formed by a slippery pivot pin having a curved raised head which operates as a camming surface to lift a sliding hanger a slight distance out of contact with the metal rail sections before the hanger reaches the end of the rail section so that the hanger will pass over the joints smoothly to permit continuous movement of the hangers along the rail. The joints are symmetrically shaped so that hangers can be moved with equal freedom in either direction along the rail. One of the surfaces of either the rail sections or the links is preferably split on both sides of the other of the surfaces to aid in a smooth transfer of a sliding hanger from one of the surfaces to the other.

3,727,746
FLEXIBLE AUGER

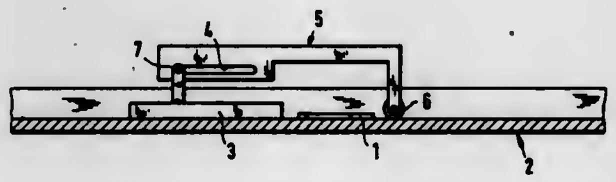
Emmet Garr Slusher, Lexington, Mo., assignor to Bank of Higginsville, Higginsville, Mo.
Filed Oct. 22, 1970, Ser. No. 82,895
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 **8 Claims**



An auger for a conveyor comprising an elongated shaft capable of extending along a curvilinear axis, a flexible, rotatable tube telescoped over the shaft and an elongated helical vane of flexible material extending outwardly from the tube. In a typical embodiment, the auger is used with a housing closed along one side with an upright wall and a wall extending downwardly at an angle into relatively close proximity to the auger. The bottom and the other side of the housing comprise spaced apart, elongated rods which support the assembly and permit gravitation of trash from the conveyor. An elongated, rotatable hose above the auger serves to deflect conveyed items toward the closed side of the conveyor for proper transfer by the auger and a shield maintains the conveyed items in proper location with respect to the auger.

3,727,747
METHOD AND APPARATUS FOR CONVEYING THE SUBSTRATE OF CIRCUIT SUPPORTS

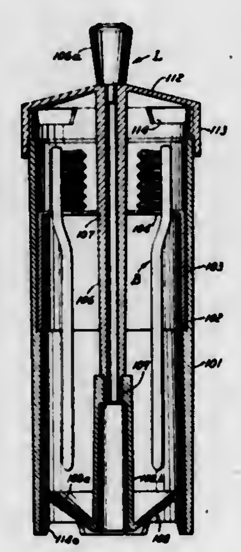
Hans Damm, Iffezheim, Germany, assignor to Schmall Automation und Elektronik, Baden, Germany
Filed Dec. 14, 1971, Ser. No. 207,925
Claims priority, application Germany, Dec. 14, 1970, P 20 61 466.8
Int. Cl. B65g *25/08*; **B65h** *5/04*
U.S. Cl. 198—221 **5 Claims**



A method and an apparatus of conveying the substrate of circuit supports, especially in shallow slide grooves or tracks open at the upper side thereof, by means of a slide, said slide first moving the substrate beneath a pressure roller movably positioned above said groove, thereafter jointly moving said substrate and said pressure roll resting on said substrate to the desired locaton within said slide groove, and, upon returning into the original position, moving said pressure roller away from said substrate and into its original position. Said apparatus comprising at least one shallow slide groove or track open at its upper side and serving to receive said substrate, a slide for advancing said substrate and movably positioned within said grooves, and a pressure roller for loading said sliding substrate and being mounted for movement together with said slide.

3,727,748
TOOTHBRUSH HOLDER

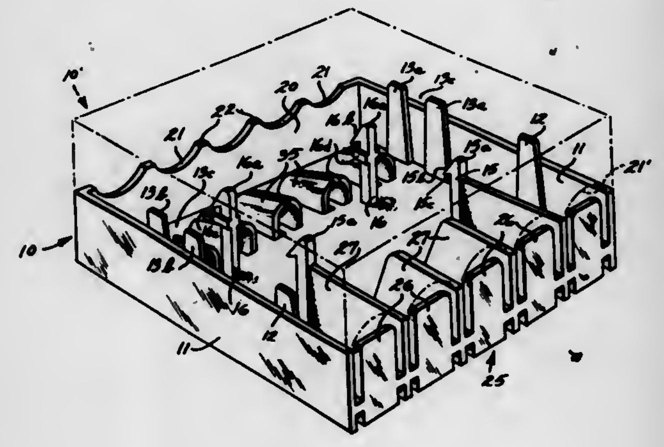
Robert D. Brown, 5255 N. Cangus Drive, Agoura, Calif.
Continuation-in-part of Ser. No. 865,658, Oct. 13, 1969, abandoned. This application Jan. 29, 1971, Ser. No. 111,009
Int. Cl. A45d *44/18*
U.S. Cl. 206—15.1 C **4 Claims**



A toothbrush holder in which a number of brushes are hung in an enclosure from a brush support, a lifter for the brushes having a stem slidably extending through the brush support, and having a lower lift plate engageable with the brush handles to lift the brushes, the stem also having a closure for the enclosure which is lifted from the top of the enclosure before the brushes are elevated.

3,727,749
TAMPER-PROOF CONTAINER

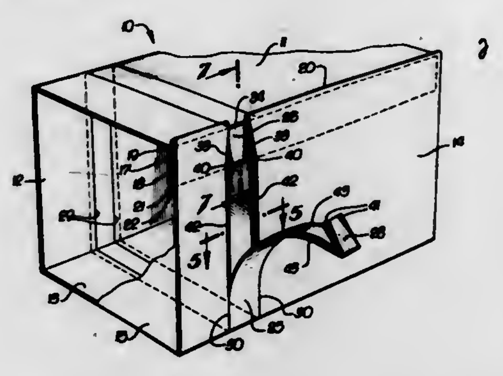
Harold B. Martin, Roselle, N.J., assignor to Graber-Rogg, Inc., Cranford, N.J.
Filed July 1, 1971, Ser. No. 158,776
Int. Cl. A45c *11/26*; **B65d** *17/16, 43/14*
U.S. Cl. 206—17.5 **10 Claims**



A tamper-proof container, such as the modular compartmental type for holding pencil-type articles such as hypodermic syringes, pencils, pens, etc. The container is formed of first and second similarly molded units having guide means and fastening means thereon for permanently orienting and locking the units together. A tab must be fractured for removal of any one article from the container, the remaining succeeding articles in the container being precluded from removal due to the construction of projecting members therein.

3,727,750
STERILE PACKAGE AND BLANK THEREFOR

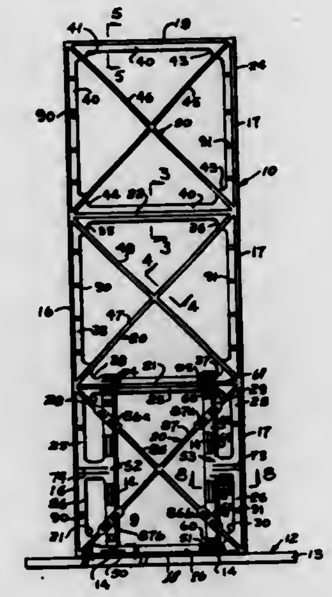
Noel A. Petter, Glendale, Calif., assignor to Standard Paper Box Corp., Los Angeles, Calif.
Filed Dec. 20, 1971, Ser. No. 210,051
Int. Cl. A61b *19/02*; **A61l** *15/00*; **B65d** *5/54*
U.S. Cl. 206—63.2 R **15 Claims**



A sterile package formed from a blank made of a delaminatable material, preferably paperboard, has a tear strip defined therein by scoring the blank to define a plane of cleavage along which the tear strip delaminates. An inwardly folded tab is formed on one end of the tear strip for bonding to the package to form a bacteria tight seal at the end of the tear strip. The tab is pulled to open the package by delaminating the tear strip along its plane of cleavage.

3,727,751
REEL AND DISPLAY STAND THEREFOR

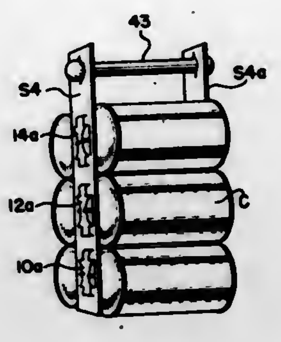
Elliott G. Bloch, and Eric M. Bloch, both of P.O. Box 1681, Wichita, Kans.
Continuation-in-part of Ser. No. 756,898, Sept. 3, 1968,. This application Sept. 5, 1969, Ser. No. 855,711
Int. Cl. B65d *85/67*; **B65h** *55/06, 75/02*
U.S. Cl. 206—50 **24 Claims**



This invention comprises a novel rigid lightweight reel adapted to have material, such as fabric cloth or the like, rolled thereon and means for displaying the reel of material on sale. The reel comprises a lightweight rigid rectangular frame means of a configuration especially suitable for die cast injection molding of plastic.

3,727,752
MULTIPACK CARRIER

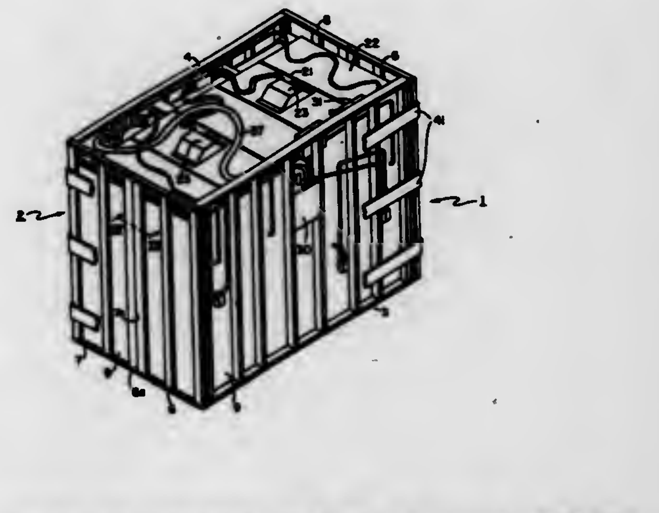
Ougljesa Jules Poupitch, Itasca, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Division of Ser. No. 767,387, Oct. 14, 1968, Pat. No. 3,628,823. This application July 7, 1970, Ser. No. 61,002
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 CT **2 Claims**



A multi-unit package of containers, such as cans, with outward end beads or rims and a carrier for the package in the form of a strip of suitable material, preferably plastic, carrying clips, either integral with the strip or separately attached thereto, and appropriately spaced to engage adjacent and abutting container rims in the package; and when the strip is assembled to one end of the package, the strip may be looped intermediate adjacent clips to provide finger gripping means for carrying the package or separate handle means may be provided; or when the strip is applied to opposite ends of the packaged containers, the strip may have included handle means for carrying the package with the containers in horizontal position.

3,727,753
BUILDING SUBSYSTEM AND PACKAGING ARRANGEMENT

Richard A. Starr, Allison Park, and Myron Swetlitz, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 26, 1971, Ser. No. 192,520
Int. Cl. B65d *9/00, 85/62, 71/00*
U.S. Cl. 206—65 R **10 Claims**



An essentially self-contained building subsystem, such as a kitchen, is factory constructed in one example of currently preferred form of the unitary assembly including a planar side wall upon which the appurtenances such as kitchen cabinets and appliances are cantilever mounted, the unitary assembly including opposite end walls of greater depth than the appurtenances. Facing wall means of an area essentially coextensive with the planar side wall is secured to abut the edges of the end walls to form a shipping package enclosed on the four vertically extending sides and preferably devoid of a floor, the securing means being of a character permitting relatively ready lateral separation of the unitary assembly from the facing wall means for properly placing the parts of the unit in the building in which the parts are to be installed. Electrical wiring connections and other functional connections, to the extent they are to extend between the opposite parts of the unit, are provided with sufficient slack length to accommodate the full lateral separation of the parts. In one common type of installation in which the opposite structural frames are essentially U-shaped and mirror images of each other, and the ceiling for the core unit is included in the shipping package, the movable central part of the ceiling is carried in overlapping relation to the fixed sides of the ceiling in the shipping package, and is dropped into place in the center when the core unit is expanded.

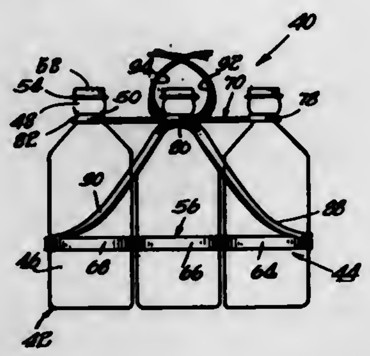
3,727,754
CONTAINER CARRIER

Ernest R. Cunningham, Libertyville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 850,869, Aug. 18, 1969, abandoned. This application June 16, 1971, Ser. No. 153,843

Int. Cl. B65d *71/00*

U.S. Cl. 206—65 E **5 Claims**



A carrier for a six pack of bottles stamped from a flat sheet or tubing of plastic so as to provide a first body section having socket means for receiving and gripping bodies of the bottles, a second body section having additional pockets or elements for engaging and retaining neck portions of the bottles, a plurality of strap elements integrally interconnecting the body sections, and integral handle menas.

3,727,755
PNEUMATIC SEPARATOR FOR A STREAM OF CUT TOBACCO

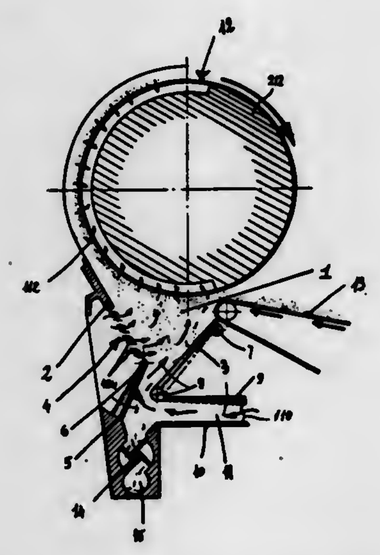
Athos Cristiani, Bologna, Italy, assignor to AMF-Incorporated, White Plains, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,312

Claims priority, application Italy, Feb. 23, 1970, 12491/70

Int. Cl. B07b *13/00*

U.S. Cl. 209—45 **9 Claims**



A stream of cut tobacco having undesired stems and heavy foreign matter is directed to move almost tangentially passed and beneath a drum having an air permeable surface. A source of suction is coupled to suck air through the air permeable surface and into the drum. The movement of air through the surface of the drum causes relatively light particles of tobacco from the stream to move upward and collect on the surface of the drum, the relatively heavy stem and foreign matter falling down into a collecting bin.

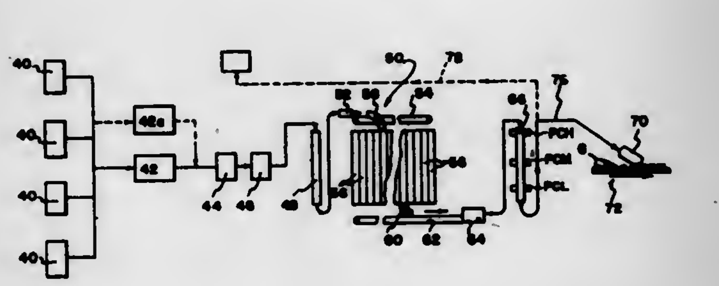
3,727,756
ARTICLE SUPPLY SYSTEM

Joseph S. Kolsch, Toledo, and Ralph E. Wittman, Maumee, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 27, 1971, Ser. No. 147,441

Int. Cl. B07c *5/38*

U.S. Cl. 209—73 **34 Claims**



An article supply system for supplying articles on demand to a production line at which the demand for the articles may be variable or irregular. The system is specifically designed for the production line assembly of composite articles in which two components of the article are continuously manufactured at independently variable rates and fed through separate lines which merge with each other at an assembly station. The system includes a bank of individual storage cells operable to receive, store and discharge in an oriented position like units constituting one component of the composite article. A supply accumulator cell is located upstream of the storage cells to continuously receive the units as they are manufactured and to intermittently transfer the units to selected ones of the storage cells. A demand accumulator is located between the storage cells and the assembly station to continuously supply units to the assembly station in accordance with the demand rate at which the second components of the article are fed to the assembly station. The demand accumulator is supplied with units from the storage cells to maintain an adequate supply of bases within the demand accumulator at all times. Selection of the individual storage cells to be loaded or unloaded is under the control of a computer which maintains an inventory of the status of the various cells at all times. An inspection system also operates through the computer to prevent substandard articles from being transferred to the assembly station.

3,727,757
DIP HANDLING APPARATUS

Claude M. Beisicat, 1010 Lois Avenue, Sunnydale, Calif.

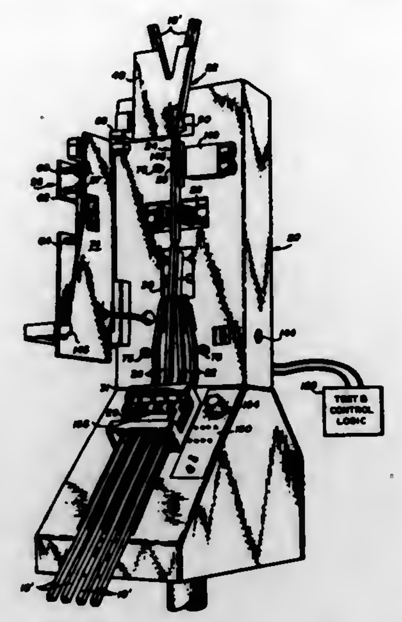
Filed June 12, 1972, Ser. No. 261,671

Int. Cl. B07c *1/02, 5/344*

U.S. Cl. 209—73 **19 Claims**

DIP handling apparatus including a pair of input magazines for containing DIPs to be tested and sorted; a track for serially receiving the DIPs at one end, transporting them in astraddle fashion and subsequently discharging them at the opposite end, an input magazine selecting mechanism for enabling a particular one of the input magazines to be unloaded onto the track; a test mechanism disposed along the track for engaging the electrical conductors of a DIP located along the track at a test position; an indexing mechanism disposed along the track for sequentially locating the DIPs at the test position; a plurality of output magazines for receiving the DIPs after they are tested; a sorting mechanism disposed between the opposite

end of the track and the output magazines for selectively transporting the tested DIP to a particular output magazine;



and logic circuitry for applying test signals to the DIPs as they are located in the test position, and for developing signals to control the various operative mechanisms of the apparatus.

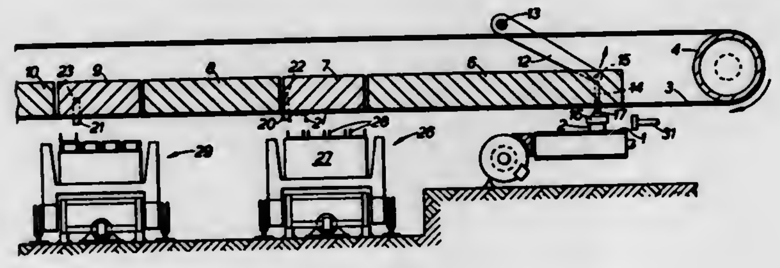
3,727,758
MAGNETIC SORTING AND PILING BANK

William Pettigrew Cleland, Motherwell, Scotland, assignor to British Steel Corporation, London, England

Filed Oct. 13, 1971, Ser. No. 188,742

Int. Cl. B07c *3/02*

U.S. Cl. 209—74 **17 Claims**



A device for sorting and stacking lengths of ferromagnetic material, such as rolled steel sections, includes a horizontal conveyor running below magnets. A handling mechanism which can be electromagnets or movable arms or a second conveyor running over a further magnet lifts the steel sections from a mill roller table to the underside of the horizontal conveyor where they are held magnetically. The sections are then carried under the conveyor to a selected position at which a stop is activated to hold the section while the conveyor continues to move. The magnet at that point is then deactivated and the section falls to a receiving surface which may be a partly formed stack of sections. Provision is made for inverting some sections before placing them under the horizontal conveyor where the stack requires the inclusion of inverted sections. The whole operation may be computer controlled.

3,727,759
GRAIN CLEANER FOR AUGER-EQUIPPED ELEVATORS

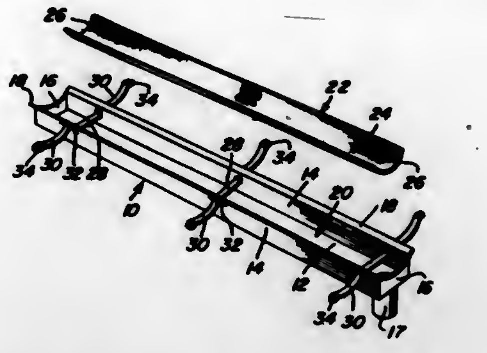
Roy Stevens, P.O. 1, Glenburn, N. Dak.

Filed Jan. 29, 1971, Ser. No. 111,023

Int. Cl. B07b *1/06*

U.S. Cl. 209—283 **2 Claims**

A ready-to-use attachment for a conventional-type small grain elevator. The tubular auger-equipped housing has an elongated slot cut in its bottom where desired. The attachment comprises an elongate box-like trough commensurate in size with the size and shape of the slot. The receptacle portion of this trough is capable of trapping weed seeds and extraneous matter. One end of the trough is provided with a depending



discharge spout. The side walls have outwardly flaring trough positioning flanges. An insertable and removable screen of suitable mesh is fitted and seated in the trough and hinged attaching straps embrace the housing and are detachably bolted in place.

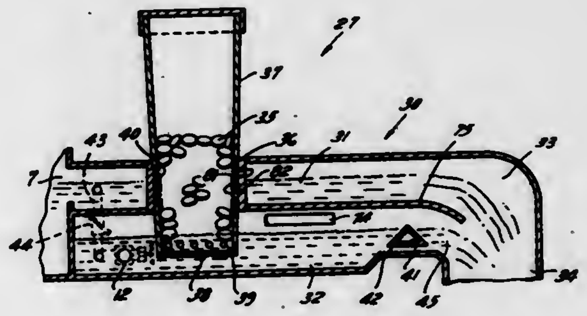
3,727,760
WATER DECOMPOSITION APPARATUS

Charles A. Soriano, Fairfield, Conn., and William E. Hanford, North Tarrytown, N.Y., assignors to World Water Resources, Inc., New York, N.Y.

Filed Feb. 12, 1971, Ser. No. 114,805

Int. Cl. B01d *35/02*

U.S. Cl. 210—101 **9 Claims**



An apparatus is provided between a contaminated water source and a potable water supply which renders effective chemical purification of the water while providing a means of controlling the water input to the apparatus in accordance with the demand for potable water. The controlling means is operated by a pressure chamber which is in turn regulated by a pressure relief means. A relatively small amount of water is chemically treated and subsequently mixed with a large quantity of untreated water.

3,727,761
FLUID FILTER

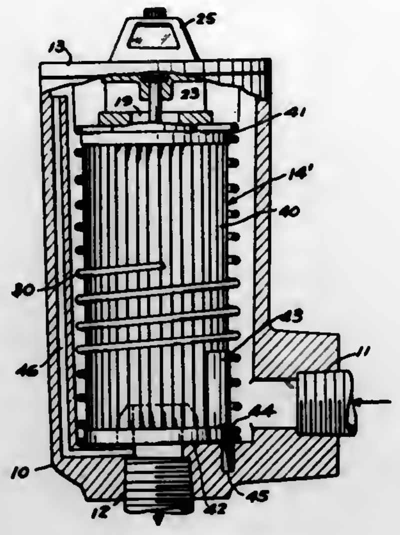
Ronald A. Aspinwall, Detroit, and MacKellar K. Graham, Birmingham, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 855,693, Sept. 5, 1969, Pat. No. 3,598,237. This application Feb. 12, 1971, Ser. No. 114,825The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.

Int. Cl. B01d *27/10*

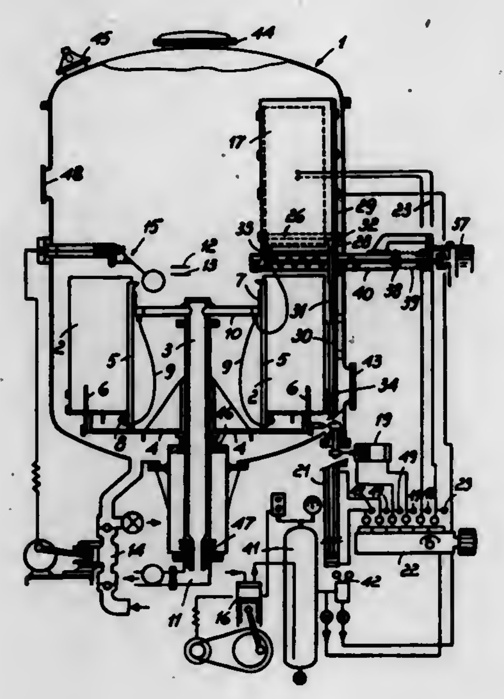
U.S. Cl. 210—130 **13 Claims**

A filter including a cylindrical filter element which is arranged to normally have fluid pass therethrough. A bypass valve is provided to bypass fluid directly to the outlet when the pressure at the inlet becomes excessive. A magnetized helical coil is provided adjacent the filter element to attract metal particles.



3,727,762
FILTER PRESS FOR CONTINUOUS FILTRATION UNDER PRESSURE

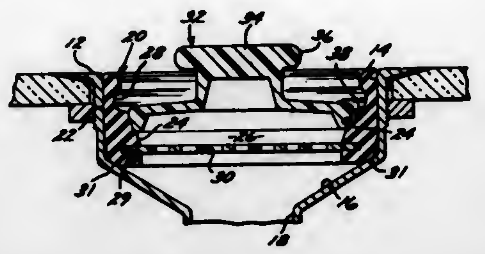
Giuseppe Padovan, Via Fenzi 39, Conegliano, Italy
Filed Aug. 30, 1971, Ser. No. 176,072
Claims priority, application Italy, Sept. 10, 1970, 41617 A/70
Int. Cl. B01d *35/12, 29/38, 29/02*
U.S. Cl. 210—136 10 Claims



A filter press operating under pressure including a vessel (1) filled with crude material with compressed fluid lying above. A hollow shaft projects into the vessel and supports an assembly of filter elements immersed in the crude material. At least one drying and removing unit for the filter cake is mounted in the vessel above the crude material, into which the filter elements are brought in succession. Driving means are provided for imparting a stepwise movement to the filter elements to the filter assembly and a raising and lowering movement to the individual filter elements with respect to the drying and removing unit.

3,727,763
STRAINER-STOPPER ASSEMBLY

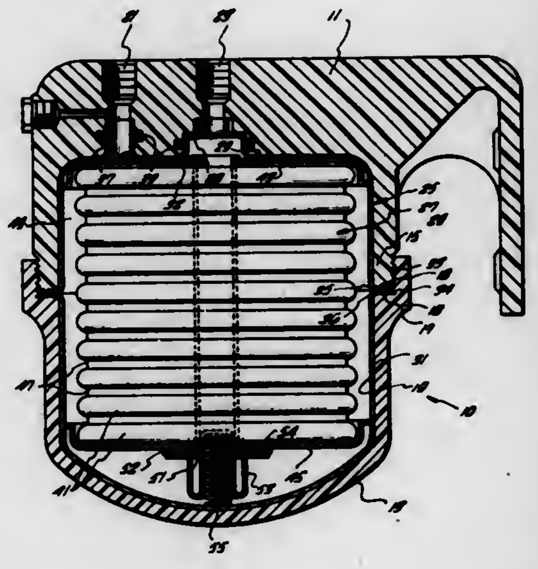
Peter T. Arenskov, 2311 Huntington, Anaheim, Calif.
Filed Aug. 24, 1971, Ser. No. 174,459
Int. Cl. E03f *1/00*
U.S. Cl. 210—163 1 Claim



A strainer-stopper assembly for location within the usual cylindrical drainage well of a sink, garbage disposer or the like. The assembly includes a resilient annular strainer body adapted for close engagement with the wall of the drainage well. The inner wall of the strainer body is frusto-conical, and a stopper having a frusto-conical outer wall is complementally engaged upon the inner wall of the strainer body. Downward urging of the stopper radially outwardly expands the strainer body into tight, sealing engagement with the adjacent wall of the drainage well.

3,727,764
FILTERING APPARATUS HAVING AN INTEGRALLY REMOVABLE FILTER CARTRIDGE

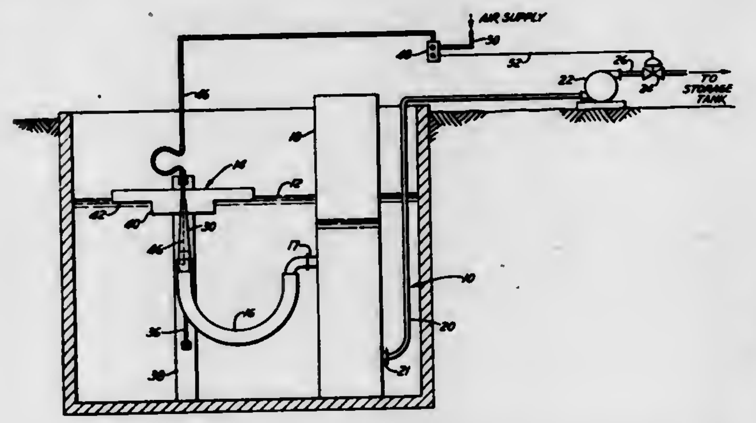
Hubert S. Ogden, 1850 N. Whitley, Hollywood, Calif.
Filed Nov. 22, 1971, Ser. No. 200,850
Int. Cl. B01d *27/08*
U.S. Cl. 210—232 13 Claims



A filtering apparatus is described in which a filter assembly is encapsulated in a flexible, pliable, light weight shell and is removable as a unit from the filter housing without manually contacting filter media and/or liquid. The filter housing comprises a manifold and a cylindrical casing joined together to form a cavity for receiving the cartridge. The manifold further includes inlet and outlet conduits extending therethrough. The filter cartridge comprises a pair of cylindrical shells interconnected at their open ends, with the interior of the shells forming a cavity for receiving a filter assembly. The end plane of one of the cylindrical shells includes a pair of tubular extensions extending into the inlet and outlet conduits of the manifold. The two cartridge shells are made of plastic or other suitable material and are sufficiently flexible to bear against the side walls of the housing cavity during operation. In one embodiment, the mating ends of the cartridge shells are coupled by a telescoping connection and bonded. In another embodiment, the ends of the cartridge shells form mating annular flanges which are bonded together and further secured between two shoulders formed by the interconnecting housing members. The filter assembly preferably comprises a plurality of annular filter pads surrounding a perforated open ended sleeve and stacked between a pair of annular compression plates. To replace the encapsulated filter cartridge, the manifold and casing are separated and the used filter cartridge is removed as a unit. A new cartridge can be installed within the housing in a similar manner.

3,727,765
SKIMMING DEVICE FOR USE ON A LIQUID SURFACE

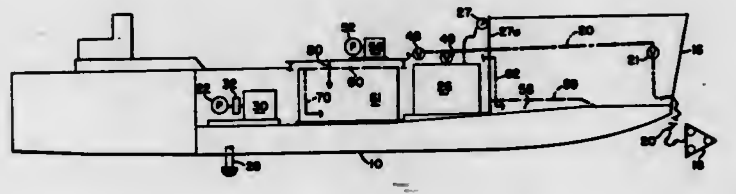
John L. Henning, Jr., and Warren J. Robicheaux, both of Port Arthur, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.
Filed Nov. 25, 1970, Ser. No. 92,639
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 2 Claims



A float-supported skimmer for removal of oil from the surface of a body of water. A float-supported skimmer trough is connected to a drain line through which skimmed oil is delivered to a sump and from the sump to a pump for discharging oil from the system. A valve in the discharge line from the pump controls the rate of discharge of oil from the system. An air bubbler line opens into the lower part of the skimmer trough and sends a signal responsive to the depth of oil in the skimmer trough to control the opening of the valve in the discharge line.

3,727,766
VACUUM SKIMMING APPARATUS FOR REMOVING LIQUID CONTAMINANTS FLOATING IN CONFINED BODIES OF WATER

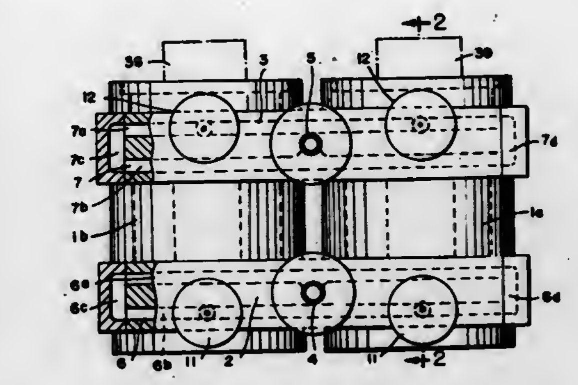
Don M. Horne, 5300 Swarthmore St., La Mesa, Calif.; William H. Heyser, 1408 Sunnyland Avenue, El Cajon, Calif., and Herman M. Neely, 934 W. Michelle St., West Covina, Calif.
Filed May 18, 1971, Ser. No. 144,500
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 1 Claim



A boat-mounted vacuum system for removing floating liquid contaminants, such as oil spills, particularly from confined bodies of waters such as harbors, bays, and the like. The system employs one or more water jet eductors for creating a vacuum in a vacuum tank located between the suction heads and the pump supplying high pressure water to the eductors so that the pump does not lose its prime when the suction heads are lifted off the water surface from which it is collecting the contaminants.

3,727,767
DOUBLE FILTER UNIT

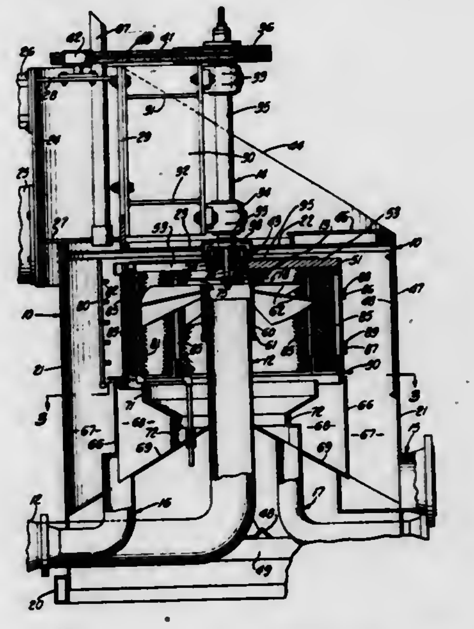
Friedhelm Itter; Max Feth, both of Remscheid, and Gerd Zimmerbeutel, Hueckeswagen, all of Germany, assignors to Barmag Barmer Aktiengesellschaft, Wuppertal, Germany
Filed Oct. 7, 1971, Ser. No. 187,457
Int. Cl. B01d *35/12*
U.S. Cl. 210—247 15 Claims



Double filter unit embodying two parallel filter pots with replaceable filters, two bars intersecting and connecting the filter pots, a loop passage in each bar, an inlet pipe on one bar, an outlet pipe on the other bar, and valved ports in each bar connecting the loop passages with the inlet and outlet passages of respective filter pots for selective closing off during filter change or cleaning.

3,727,768
WASTEWATER CONCENTRATION

Walter J. Talley, Jr., Brentwood Park, Calif., assignor to Sweco, Inc., Los Angeles, Calif.
Continuation of Ser. No. 42,165, June 1, 1970, abandoned.
This application Dec. 23, 1971, Ser. No. 211,763
Int. Cl. B01d *33/02*
U.S. Cl. 210—377 2 Claims

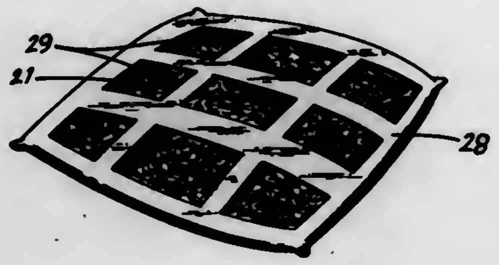


There are disclosed herein equipment and methods for screening and concentrating waste water overflow from combined sewer systems. Exemplary equipment includes a separator employing a substantially cylindrical rotating screen. Influent is piped upwardly into the equipment and deflected outwardly toward the inner surface of the screen in a manner to achieve a desired flow rate and flow pattern of the influent onto the screen. Means are provided for controlling the flow rate and for suitably directing the influent in a plurality of substantially discrete inclined streams toward the inner surface of the rotating screen. The screen is rotated at a speed to achieve a desired centrifugal force. Effluent passes through the screen to an outlet and the remaining concentrate passes to an outlet. A certain amount of the influent splashes from the inner surface to the screen, and is received by a backsplash pan and may be recirculated and rescreened. The screen is in the form of a screen cage having a plurality of removable screen panels for facilitating replacement of damaged screens or changing of screen type or mesh size. Cleaning means is provided for directing a cleaning fluid periodically at the screen. The methods disclosed involve the manner in which the influent, effluent, concentrate and backsplash are handled, and the manner in which the influent is screened to achieve a fluid concentrate which is pumpable to other treatment equipment for ultimate disposal. Additionally, a sequence of influent food and screen cleaning is described.

3,727,769
PRESTRESSED FILTER MEDIA

Howard O. Scholl, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed April 14, 1971, Ser. No. 133,914
Int. Cl. B01d *25/04*
U.S. Cl. 210—484 **12 Claims**

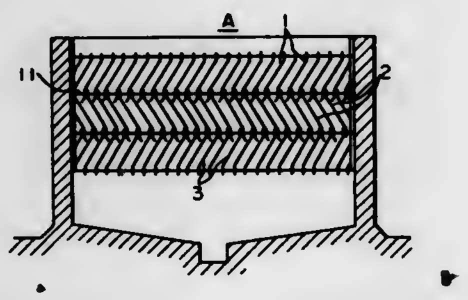


An improved fluid treating filter having a support frame disposed between at least two layers of filter media. The support frame is of unitary construction and bowed in a direction opposing the flow of a fluid. One layer of media is in communicative relation with the surface of the frame facing the flow of the fluid whereas the second layer is in communicative relation with the edges of the downstream surface of the frame and is in spaced relationship with the downstream surface. The filter may include a cover adaptable for outerfitting the filter wherein the cover has perforations for allowing the passage of the fluid therethrough.

3,727,770
SEPARATING PLATE ASSEMBLY FOR TREATMENT OF SUSPENSION

Tadao Mochizuki, 648-735, Hatsutomi, Kamagaya City, Chiba Prefecture, Japan

Filed June 7, 1971, Ser. No. 150,530
Claims priority, application Japan, July 31, 1970, 45/67097
Int. Cl. B01d *21/24*
U.S. Cl. 210—522 **11 Claims**

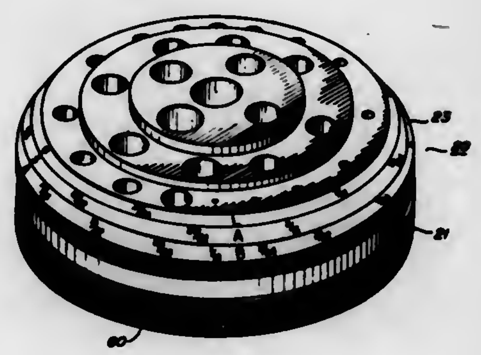


A multi-stage separating plate assembly comprises a plurality of vertical rows of inclined separating plates arranged in a zig-zag series of plates, said rows being laterally spaced to form a liquid guide path between adjacent rows. A given separating plate at any stage in one of said rows has the lower end thereof extending across the major part of the guide path which it partially defines and close to the upper surface of the next lower separating plate in the adjacent row inclined in the opposite direction.

3,727,771
DRILL DISPENSING CONTAINER

John T. Hoffman, 1604 E. Greenleaf St., Allentown, Pa.

Filed Aug. 20, 1971, Ser. No. 173,418
Int. Cl. B25h *3/04*; **B65d** *83/00*; **A47f** *1/00*
U.S. Cl. 211—69 **4 Claims**



A drill dispensing container with base plate having a central shaft receiving hole and holder with depending shaft for rotary motion therewithin. The plate has an axial alignment mark and three spring-loaded ball bearings radially disposed to the mark. The plate has axial cylindrical ball receiving pockets with partially covering lips for limiting bearing travel, and has a concentric recess forming an external rim of sufficient depth that extended bearings do not pass the plane thereof. The holder has through drill-receiving apertures axially disposed therewithin about three concentric circles which are staggered so that no two apertures are aligned along a common holder radius. The holder includes indicia for values of drills carried therewithin, each being radially co-aligned with its corresponding aperture. Indexing means positively co-align the indicia to the mark. Axial shaft motion with respect to the plate is restricted via a circumferential shaft groove restrained by a spring-biased bearing directed thereagainst, the bearing being housed within a radial aperture engaging with the hole. A set screw directs the bearing against the groove, permitting rotation, and restricting axial shaft motion with respect to the plate. The container is indexed via a separate spring loaded bearing disposed on the rim engaging within one of several indentations on the holder surface which faces the plate. The indentations are circularly located having its center at the holder axis, and are at least equal to the total through apertures.

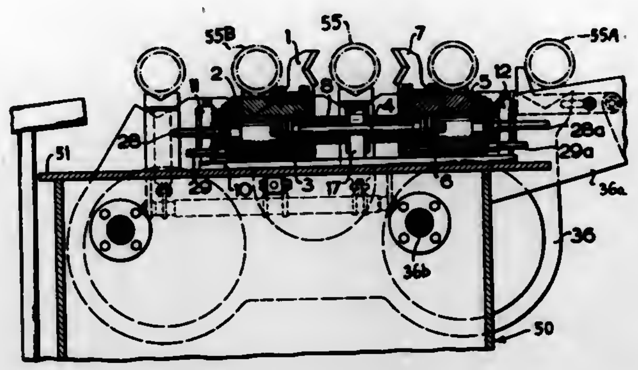
3,727,772
APPARATUS FOR CENTERING AND CLAMPING ELONGATED WORKPIECES

Kurt Pauls, Langenfeld, Germany, assignor to Th. Kieserling & Albrecht, Solingen, Germany

Filed Nov. 29, 1971, Ser. No. 202,812
Claims priority, application Germany, Dec. 31, 1970, P 20 64 664.4
Int. Cl. B23q *3/08*
U.S. Cl. 214—1 P **10 Claims**

Apparatus for centering and clamping tubes, rods or like workpieces has two double-acting cylinders which are reciprocable along parallel feed screws rotatably mounted in the frame of the apparatus. The feed screws have oppositely inclined mirror symmetrical threads meshing with internal threads provided on nuts which are adjustably fastened to the

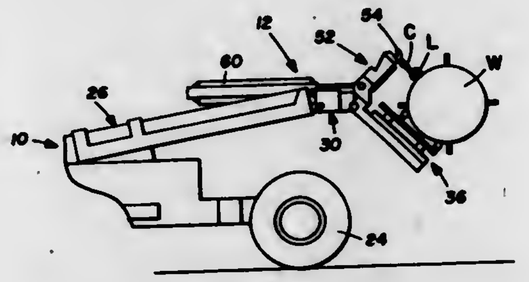
cylinders. The cylinders support mirror symmetrical work-engaging claws and receive pistons which are connected to each other by a piston rod extending midway between and being parallel with the feed screws. When the chambers of the cylinders receive a pressurized fluid so that the cylinders and their claws move toward or away from each other, the feed screws rotate and insure that the cylinders move at the same rate.



3,727,773
LIFT TABLE

Maston B. Wolfe, Jr., Dallas, Tex., assignor to Standard Manufacturing Company, Incorporated, Dallas, Tex.

Filed Aug. 5, 1970, Ser. No. 61,230
Int. Cl. B66c *23/56*
U.S. Cl. 214—1 D **15 Claims**



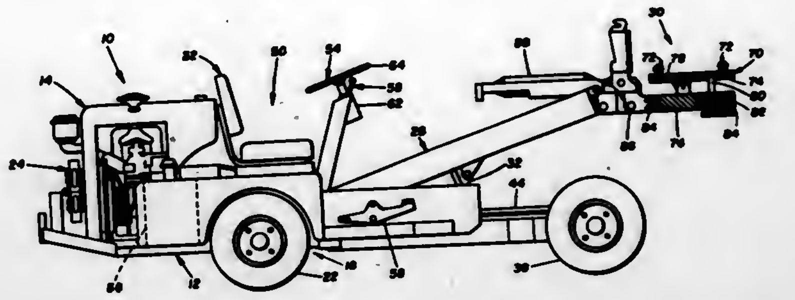
A lift table includes a receiving and supporting assembly and at least one lifting arm that extends perpendicularly to the receiving and supporting assembly. The assembly and the arm are mounted on a frame for pivotal movement between an article supporting positon, wherein the receiving and supporting assembly extends horizontally and the lifting arm extends vertically, and an article receiving position, wherein the lifting arm extends horizontally and the receiving and supporting assembly extends vertically. While the assembly is in the latter position, an article is attached to the lifting arm. Then, the assembly is pivoted to the article supporting position. During this movement, the receiving and supporting assembly moves under the article, so that the article is transferred from the lifting arm to the receiving and supporting assembly.

3,727,774
LIFT TRUCK

Maston B. Wolfe, Jr., Dallas, Tex., assignor to Standard Manufacturing Company Incorporated, Dallas, Tex.

Filed Sept. 1, 1970, Ser. No. 68,679
Int. Cl. B66c *23/56*
U.S. Cl. 214—1 D **13 Claims**

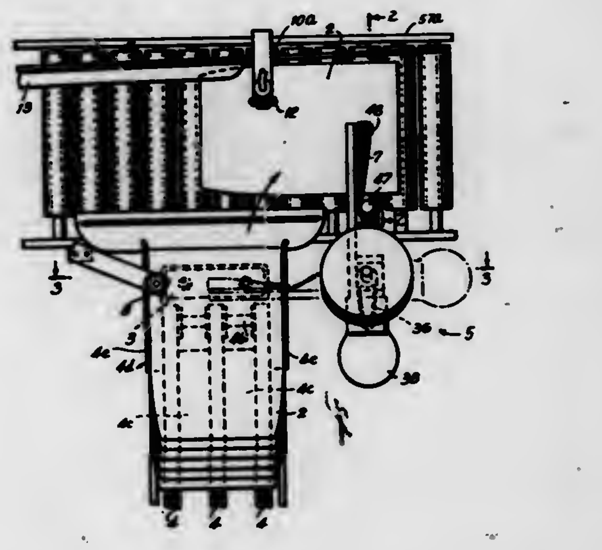
A lift truck includes a rear engine, a hydrostatic drive unit mounted just forward of the engine, and an article lifting mechanism mounted just forward of the hydrostatic drive unit. The engine drives the hydrostatic drive unit, and the hydrostatic drive unit propels the lift truck through a pair of rear wheels. The lift truck is guided by a steering mechanism that manipulates a pair of front wheels. An operating compartment is positioned over the hydrostatic drive unit and includes controls for the hydrostatic drive unit, the lifting mechanism and the steering mechanism.



3,727,775
PICKUP AND TRANSFER DEVICE

Aubrey G. Beazley, El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.

Continuation-in-part of Ser. No. 851,303, Aug. 19, 1969, Pat. No. 3,589,320. This application Feb. 23, 1971, Ser. No. 118,053
Int. Cl. B65g *25/04*
U.S. Cl. 214—1 BC **14 Claims**



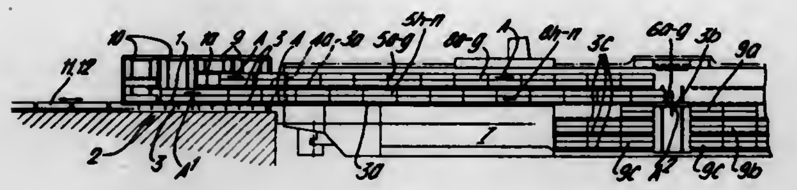
A fabric workpiece pickup and transfer device having an arm and an adhesive tape trailed over guide means on the arm to which a workpiece is pressed into adhesive contact, a motor for rotating the arm from one position to another, means for advancing the tape, and electrical circuit means for controlling the pickup and transfer functions; means for releasing the workpiece following transfer are also provided and may be operatively interconnected with said device.

3,727,776
AN INTEGRATED SYSTEM FOR LOADING AND UNLOADING CONTAINERS IN OR FROM CONTAINER SHIPS

Pieter Meeusen, Barendrecht, Netherlands, assignor to H. Nielsen & Son Maskinfabrik A/S, Herlev, Netherlands

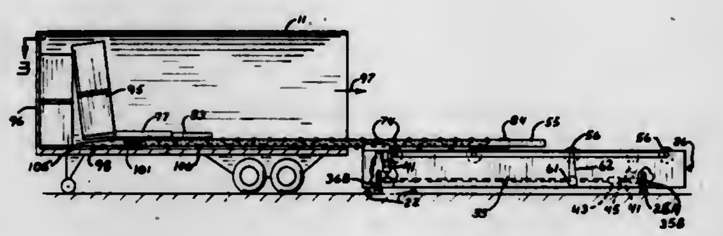
Filed Jan. 18, 1971, Ser. No. 107,400
Claims priority, application Netherlands, Jan. 21, 1970, 7000818
Int. Cl. B65g *63/00*
U.S. Cl. 214—14 **3 Claims**

A method of and means for loading and unloading containers in or from container ships in connection with the so called containerization, the transfer of each provided with endless conveyors, conveyors at the terminal being on platforms and conveyors in the ship being provided in lanes between the platforms and elevators in the ship, the said conveyors being in alignment to permit streaming of containers from the platforms to the elevators or vice versa. The platforms may be adjustable vertically to come to the level of said conveyors in the ship or to line up with ramps which have conveyors and fold down to provide an opening in the ship-s bow or stern and convey the conveyors in the streams from the platforms to the conveyors in the said lanes of the ship. Upper and lower platforms may be provided and go and return lanes provided in the ship so that conveyance of containers to the elevators in the ship as streams in one general direction can take place from platforms at one level while the conveyance of containers from the elevator to platforms at a different level at the terminal takes place in the reverse direction. Conveyance from the elevators is to longitudinal holds in the ship which have conveyors which line up with those on the elevators.



Except for gantry cranes at the terminal and in a marshalling area, cranes can be obviated and relatively fast streaming of containers is permitted.

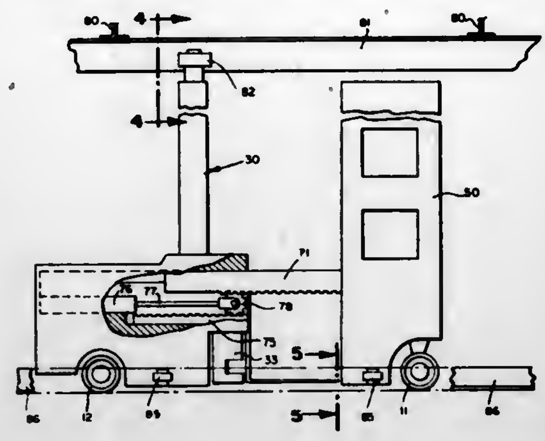
3,727,777
LOADER FOR TRUCKS
Douglas R. Hanson, 1720 9th Avenue, Anoka, Minn.
Filed May 7, 1971, Ser. No. 141,225
Int. Cl. B65g *67/04*
U.S. Cl. 214—41 **11 Claims**



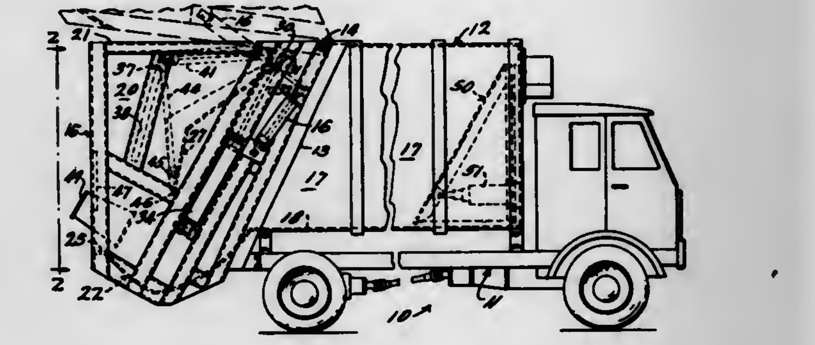
A loader for trucks or other vehicles which can be automatically operated, and which utilizes a loading slide which is initially inserted into a vehicle to be loaded, and which is moved automatically out of the vehicle as loading commences. An interlocking means can be provided for controlling the various functions of the loader assembly, and in this manner the loading can be automatic.

3,727,778
MATERIAL HANDLING SYSTEM
Edwin A. Hollenbach, Paoli, Pa., assignor to Drexel Industries, Inc., Horsham, Pa.
Filed July 8, 1971, Ser. No. 160,600
Int. Cl. B60p *1/44*
U.S. Cl. 214—75 R **3 Claims**

A fork lift truck, in preferred form, has a base frame, a rack frame, a mast, and an operator's platform. There is no center section at the bottom of the vehicle. The assembly is held together at the top with an arch formed by the mast and the truck rack frame. Two tie bars, one on each side on the vehicle, tie the frame together near the bottom. The tie bars are adjustable for height. A rigid mast supports an assembly which includes a carriage having a pivot-and-slide mechanism and a reach mechanism on which the fork is mounted. The pivot-and-slide mechanism permits the reach mechanism and its fork to be rotated and to be slidingly moved transversely from one side to the other. Thus, the mechanism permits the forks to deposit or to withdraw a load in both forward and side positions. An operator's platform is mounted on the truck forward of the mast.



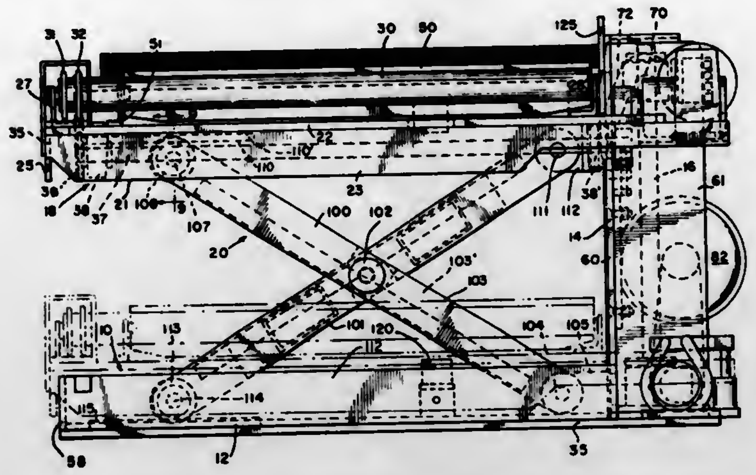
3,727,779
REAR LOADING REFUSE VEHICLE
William A. Herpich, and Donal W. Chaney, both of Galion, Ohio, assignors to Peabody Galion Corporation, Galion, Ohio
Filed Dec. 6, 1971, Ser. No. 204,925
Int. Cl. B65f *3/00*
U.S. Cl. 214—83.3 **7 Claims**



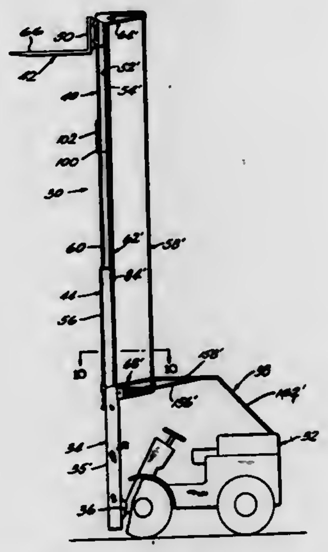
A refuse packing mechanism for the tailgate of a rear loading refuse vehicle is disclosed. A generally L-shaped packer blade is carried at its upper forward end by slide blocks. The blocks are movable back and forth along a generally vertically extending pair of tracks located in the upper forward part of the tailgate. Two similar slide blocks are movable in a similar pair of tracks located rearwardly of the first pair. A thurst link is pivotally connected at one end to each side of the packer blade near its lower trailing edge and at its other end to the slide block on that side of the tailgate. Cylinder and piston mechanisms are connected between the tailgate body and the two pairs of slide blocks for sequentially moving the slide blocks along their tracks for moving the packer blade rearwardly over refuse in the tailgate and forwardly through the bottom of the tailgate to sweep the refuse forwardly into the body of the vehicle.

3,727,780
SCISSORS-TYPE HOIST MECHANISM
Velio S. Buccicone, Gary, Ind., assignor to Buccicone Engineering Co., Inc., Gary, Ind.
Filed Jan. 4, 1971, Ser. No. 103,709
Int. Cl. B65g *47/00*
U.S. Cl. 214—95 R **8 Claims**

A hoist for use in sheet piling operations or the like which comprises a base frame and a vertically movable platform supported thereon. The platform is raised and lowered by operation of a single power driven lift screw mounted in an upright end portion of the base frame with the platform being connected to a bottom, horizontally disposed portion of the base frame by a scissors mechanism which holds the platform in a plane parallel with the plane of the horizontal portion of the base frame as the platform is raised and lowered.

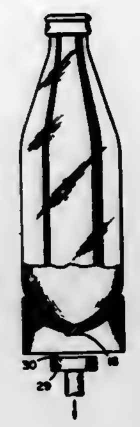


3,727,781
LIFT TRUCK LOAD LIFTING MECHANISM
Keith E. Ramsey, Jackson, Mich., assignor to The Knickerbocker Company, Jackson, Mich.
Continuation of Ser. No. 660,630, Aug. 15, 1967, abandoned. This application Jan. 5, 1971, Ser. No. 104,118
Int. Cl. B66f *9/16*
U.S. Cl. 214—701 P **23 Claims**



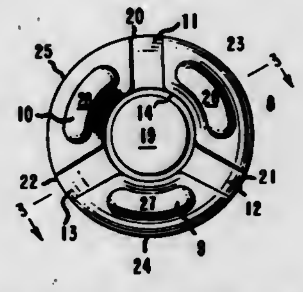
A load lifting mechanism for lift trucks in which an extensible mast carries a cantilever type load lifting carriage and is vertically actuated by a hydraulic ram and associated load lifting chains. The bending moment created by the load carried on the carriage is counterbalanced by a bending moment derived from load lifting tension elements acting on counterbalancing arms attached to an upper section of the mast, thereby substantially reducing or eliminating bending stresses on the mast regardless of the size of the load being lifted. A pair of laterally spaced chains are utilized as the tension elements in conjunction with laterally spaced counterbalancing arms and similarly spaced chain orienting arms connected to a lower section of the mast and/or to truck anchor points so that lateral as well as fore and aft stability of the mast and associated lift truck is increased. Preferably, the mast is oriented in a fixed upright position relative to the lift truck and a tilting carriage as disclosed herein is used for tilting the forks or other load lifting device attached to the carriage. Several embodiments of counterbalanced masts and telescoping dual rail mast sections and lift chain reeving arrangements are also disclosed.

3,727,782
PACKAGE FOR HOLDING PRESSURIZED FLUENT MATERIALS
Robert L. Doughty, West Hartford, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 28, 1970, Ser. No. 101,960
Int. Cl. B65d *23/00*
U.S. Cl. 215—1 C **6 Claims**



A composite package for holding pressurized fluent materials such as carbonated beverages, beer, aerosols and the like, which includes a thermoplastic container having a hemispherically shaped bottom section with a projection extending outwardly therefrom and a support for holding the container in an upright position having an aperture formed in its end wall through which the projection extends, such that the end wall mechanically engages the projection after insertion so as to attach the support to the container.

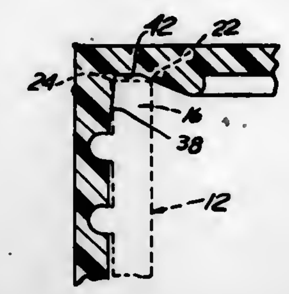
3,727,783
NONEVERTING BOTTOM FOR THERMOPLASTIC BOTTLES
Keith Stewart Carmichael, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 15, 1971, Ser. No. 153,268
Int. Cl. B65d *1/02*
U.S. Cl. 215—1 C **8 Claims**



A generally cylindrical thermoplastic bottle for bottling liquids under pressure such as beer, soda and aerosols, having a noneverting bottom under conditions of bottling and use wherein the bottom comprises at least three lobes around the bottom perimeter of the bottom on which the bottle stands, strap sections located between each lobe and a generally circular and axially aligned, recessed section defining a re-entrant cylinder of the base. To further improve eversion resistance, the bottom of the bottle can include a reinforcing ring attached to the re-entrant cylinder.

3,727,784
CLOSURE FOR BOTTLE
Frank T. Sargent, Nuneaton, England, assignor to Thetford Corporation, Ann Arbor, Mich.
Filed Oct. 20, 1971, Ser. No. 191,021
Int. Cl. B65d *41/04*
U.S. Cl. 215—40 **4 Claims**

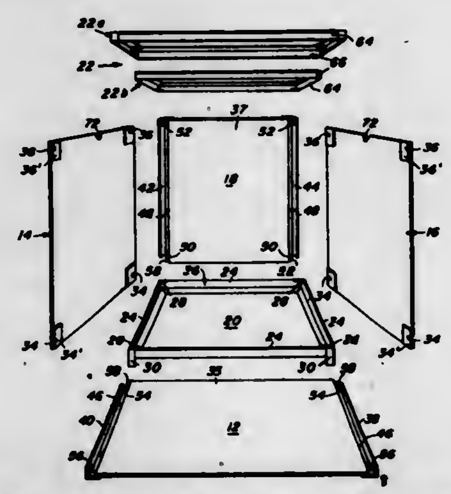
A closure for a flexible bottle made of polyethylene or other material having similar physical properties. The closure and the bottle are shaped so that when the closure is screwed onto the neck of the bottle sealing occurs between the closure and



the bottles at the end surface of the neck and at the inner and outer edges of the upper end of the neck.

3,727,785
MOBILE CARGO STORAGE UNIT

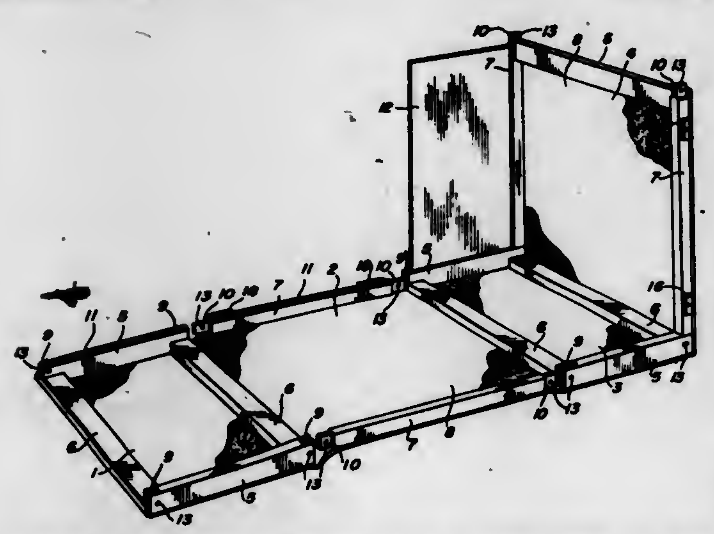
David E. Lutz, Carlisle, Pa., assignor to Minicube System, Inc., Carlisle, Pa.
Filed May 7, 1971, Ser. No. 141,199
Int. Cl. B65d *9/12*
U.S. Cl. 217—12 R **4 Claims**



A collapsible container of durable construction including an integral pallet base panel, a pair of end panels, a pair of side panels and a cover panel. The panels are interlocked together in such a manner that the side and rear panels can be removed only after the cover panel and one of the end panels have been removed. When the cover panel is in position the panels are precluded from vertical or lateral displacement.

3,727,786
KNOCK DOWN HAMPER

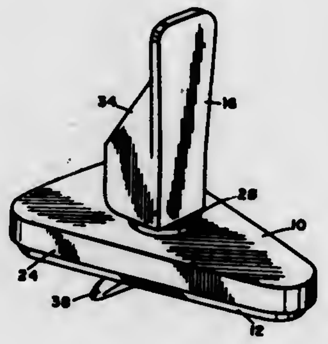
Anthony O. Fassel, 128 Greenwood Drive, Burlington, Iowa
Filed Feb. 22, 1972, Ser. No. 228,017
Int. Cl. B65d *9/14, 13/00, 7/24*
U.S. Cl. 217—16 **3 Claims**



A knock down hamper having a body containing an elongated portion divided into four sections, two of which are enclosed frames and two of which are partially enclosed frames. The frames are covered by a continuous piece of flexible material forming the cover of the hamper and which may be folded to make the hamper fit into a relatively thin and flat shipping and display carton. The top and bottom frame pieces have tongues and grooves designed to fit together and the bottom pieces of each frame have a continuous groove to hold the bottom board of the hamper. There are hinges on one of the top frame pieces to hold the lid of the hamper which fits inside of one of the frames when inserted in the shipping and display carton.

3,727,787
POP-TOP CAN RE-SEALER

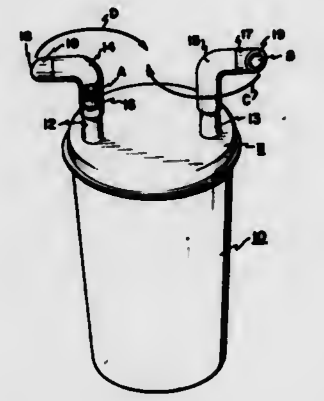
Gerrett W. Gregory, 68 Casselman Place, Chula Vista, Calif.
Filed Feb. 22, 1972, Ser. No. 227,931
Int. Cl. B65d *45/00*
U.S. Cl. 220—25 **6 Claims**



A sealer for opened cans, particularly but not necessarily limited to beverage cans, of the pull tab opener type, characterized by its re-usability and economical manufacture. The elongated wedge shaped opening in the end cap of the can is tightly closed, a pivoted handle controlling a vertical spanner bar passing through a flat plate having a compressible sealing element on its underside and the handle has a cam with over-center action to control a crosspiece inserted through the opening and turned crosswise by the handle.

3,727,788
FLUID CONTAINER STRUCTURE HAVING MUTUALLY COOPERABLE PORT CONNECTIONS

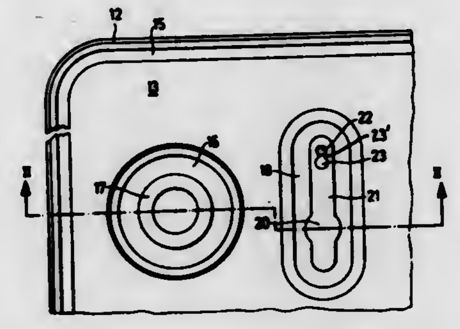
Legrand K. Holbrook, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah
Filed Dec. 9, 1970, Ser. No. 96,341
Int. Cl. B65d *51/16*
U.S. Cl. 220—44 R **11 Claims**



In a fluid container construction having a pair of ports, connector means for providing horizontal connection to such ports, and, additionally, for sealing the interior of the fluid container structure. This is facilitated, in a preferred form of the invention, by the connectors comprising elbows having cooperating, preferably tapered ends which can be placed in mutual proximity, with a junction cover being provided for sealing off or at least covering such ends at their point of mutual proximity. As the junction cover a collar is preferably provided, and which is slit to accomodate selective expansion and contraction of the collar, depending upon its position relative to the juncture of the two elbow connectors.

3,727,789
TRANSPORTING CONTAINERS

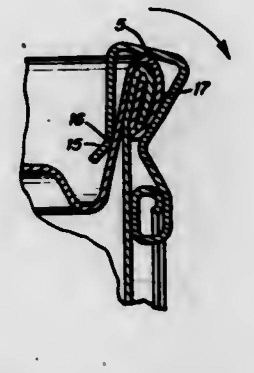
Heinrich Rieber, Jr., Reutlingen-Betzingen, and Gunther Lumpp, Reutlingen-Ohmenhausen, both of Germany, assignors to Heinrich Rieber, Reutlingen-Betzingen, Germany
Filed July 28, 1971, Ser. No. 166,913
Int. Cl. B65d *51/16, 53/02*
U.S. Cl. 220—44 R **1 Claim**



A transporting container having an opening is provided with a cover for tightly closing and sealing the opening. The cover has a portion which fits inside the container and is provided with a flexible sealing member which extends radially beyond the edge of the cover. The flexible member becomes deflected upon insertion into the container and frictionally engages the inside wall surface of the container. An opening is provided in the cover for permitting air to flow into and out of the container.

3,727,790
SPRING CLIP RETAINER FOR CAN CLOSURE

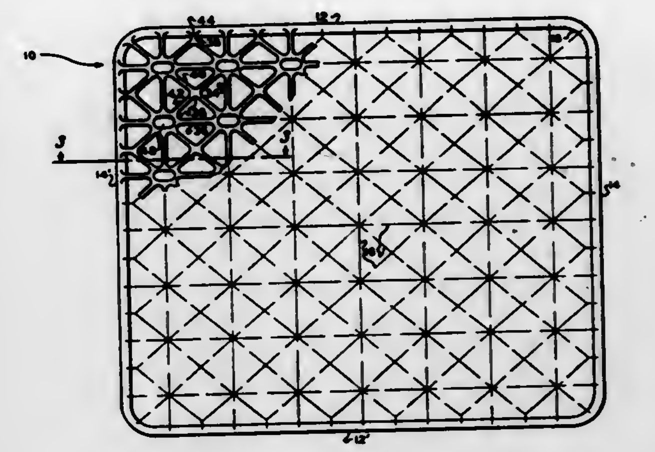
Herbert Arthur Bly, P.O. Box 57, North Brunswick, N.J.
Filed May 26, 1970, Ser. No. 40,582
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **8 Claims**



A retainer clip attached to the ring portion of the ring-and-tear-strip easy-opening devices commonly used on metal beverage cans, for the purpose of affixing the ring-and-tear-strip to the rim of the can and thereby conveniently disposing of the ring-and-tear-strip after removal from the can, formed with the minimum distance between the opposite sides of the clip less than the maximum cross sectional thickness of the can rim bead, and with contact points located so that the clip will be retained on the bead of the can rim with a rotational couple acting to press the ring-and-tear-strip against the can side, and formed and located on the lateral periphery of the ring with the open end of the clip on the uppermost side of the ring to ensure convenient placement in the optimum and least conspicious position on the can, thereby precluding interference with normal use of the opened can.

3,727,791
TRAY

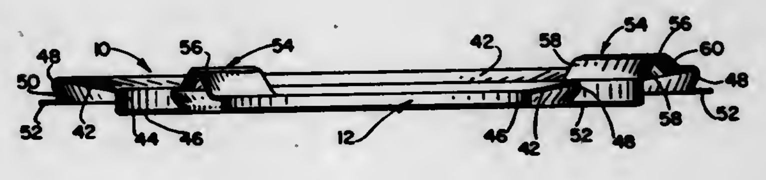
Hugh B. Fraser; Lewis T. Johnson; Melvin S. Shutt, and Harry A. Brookshire, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Oct. 8, 1970, Ser. No. 79,109
Int. Cl. B65d *1/34*
U.S. Cl. 220—66 **14 Claims**



A self-draining tray comprising upstanding side and end walls joined in curved junctions at the upstanding edges thereof, and a gridwork bottom member joined in upwardly curved junctions to the lower portions of said walls. Said wall members extend in a generally vertical direction throughout their structure so as to be self-draining, even when said tray is in an inverted position.

3,727,792
ATTACHMENT TO RIM OF A PAINT CAN OR THE LIKE

Myron M. Levin, Highland Park, Ill., assigner to E-Z POR Corporation, Niles, Ill.
Filed June 30, 1971, Ser. No. 158,163
Int. Cl. B44d *3/12*; B65d *41/46*
U.S. Cl. 220—90 **10 Claims**

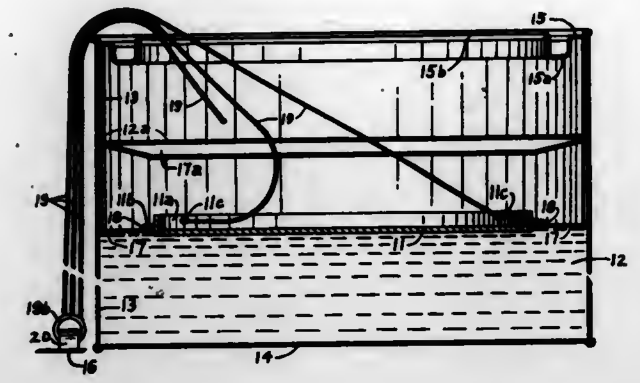


A device comprising an annulus or ring-like member formed of an inexpensive material such as plastic or the like, which is adapted to extend over and embrace the inner and outer annular beads of the rim of a can or container of paint to cover and close the friction groove of the rim and prevent paint or the like from entering the friction groove and/or contact the inner and outer annular beads of the rim, said device having raised means whereby a brush with paint may be pressed thereagainst to cause the excess paint to flow into the interior of the container.

3,727,793
PAINT COVER

Alan M. Staubly, 4940 Colfax Avenue South, Minneapolis, Minn.
Filed April 19, 1971, Ser. No. 135,301
Int. Cl. B65d *87/18*
U.S. Cl. 220—93 **7 Claims**

A cover shaped to float on the surface of paint remaining in a partially used can of paint to keep the air in the can from drying the surface of the paint. The cover preferably has a detachable flexible flange portion that has an outside diameter less than the inside diameter of the surrounding can but larger than the diameter of the opening of the can. Lines are provided to remove the cover from the outside of the can. The lines are connectable to the inside of the can's lid to expedite manual engagement thereof.



ERRATUM

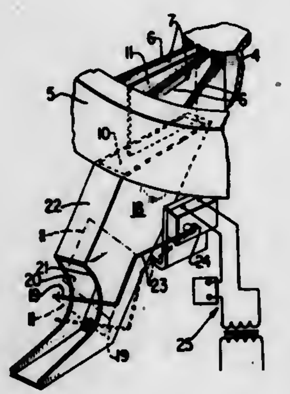
For Class 220—22 see:
Patent Nó. 3,727,795

3,727,794

MEMORANDUM DISPENSING DEVICE AT PRESELECTED INTERVALS

Jack E. DiEranco, 420 East 58th Street, New York, N.Y.
Continuation of Ser. No. 868,477, Oct. 27, 1969, abandoned.
This application Aug. 16, 1971, Ser. No. 172,175
Int. Cl. B65h *29/34*

U.S. Cl. 221—3 **6 Claims**



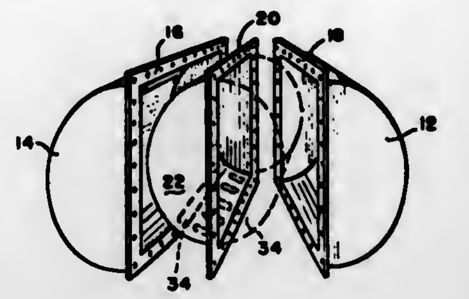
An automatic reminder dispensing memoranda at preselected intervals comprising a constant-speed, substantially-horizontally-rotating drum, said rotating drum being of cylindrical shape and having an outer cylindrical wall and an inner cylindrical wall, the space between said walls being divided by spaced axial walls defining memoranda receiving pockets, a stationary bottom having an opening therein of at least the distance between said cylindrical walls and in cooperation with said spaced axial walls, said rotating drum being spaced slightly from said stationary bottom, means for rotating said drum at constant speed, memoranda means inserted in said memoranda receiving pockets, means in cooperation with said opening in said stationary bottom to deliver said memoranda means at preselected intervals and a signal means in association with said means to deliver said memoranda means.

3,727,795

VEHICLE LIQUID TANK TRANSPORT WITH FLEXIBLE PARTITION

William W. Willsey, Route 82, La Grangeville, N.Y.
Filed Nov. 16, 1970, Ser. No. 89,690
Int. Cl. B65d *85/00*

U.S. Cl. 220—22 **5 Claims**



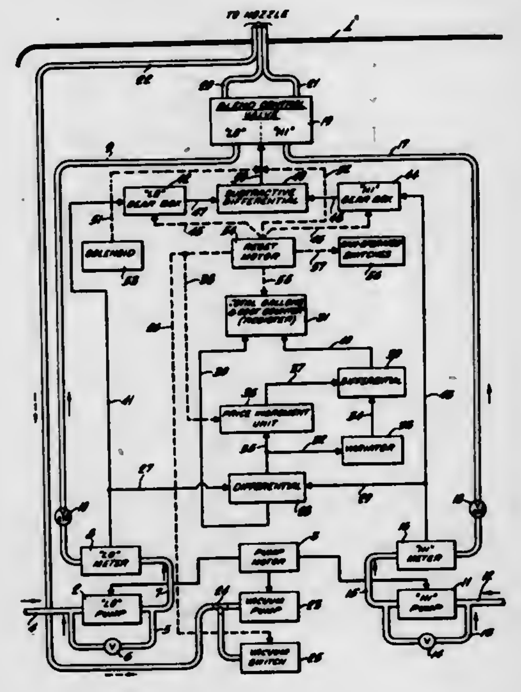
A liquid tank truck provided with a split tank and a central internal gasket member having a flexible partition of high strength. The split tank is provided with an inlet and outlet in each section so that separate liquid carrying compartments are formed, each of which may alternately have a liquid carrying capacity of substantially the volume of the entire tank.

3,727,796

MOTOR FUEL DISPENSING APPARATUS

Einar T. Young, Newtown Square, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
Division of Ser. No. 85,612, Oct. 30, 1970, Pat. No. 3,705,596, which is a division of Ser. No. 850,901, Aug. 18, 1969, Pat. No. 3,587,337. This application March 17, 1972, Ser. No. 235,702
Int. Cl. G01f *1/04*

U.S. Cl. 222—26 **5 Claims**



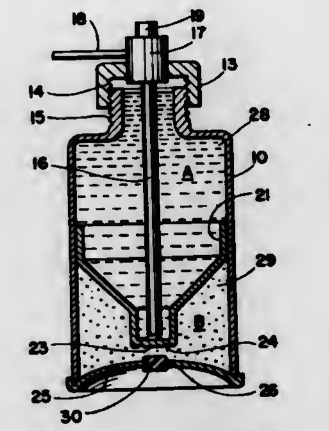
An apparatus for dispensing a selected grade of motor fuel (each grade having a different octane rating) has an array of operating pushbuttons a selected one of which may be actuated (the selection being made according to the grade of fuel desired) to start the dispensing operation. Upon the actuation of a pushbutton, certain instrumentalities in the apparatus are energized or released to (among other things) select gearing in the apparatus appropriate to the grade selected, reset the counter or register to zero, set a control valve to a predetermined position, and start up the pump to cause the dispensing of fuel to begin. All of these functions are performed automatically, i.e., without any further human intervention, once the pushbutton has been actuated. Upon the termination of the actual dispensing, electrical instrumentalities are automatically activated to carry out certain resetting operations, prior to the next dispensing operation. The dispensing apparatus is particularly suitable for a self-service type of operation.

3,727,797

DUAL COMPARTMENT SPRAY CONTAINER

Philip J. Cronan, 1933 South Bedford, Los Angeles, Calif.
Filed Sept. 7, 1971, Ser. No. 178,281
Int. Cl. B67b *7/26*

U.S. Cl. 222—80 **2 Claims**



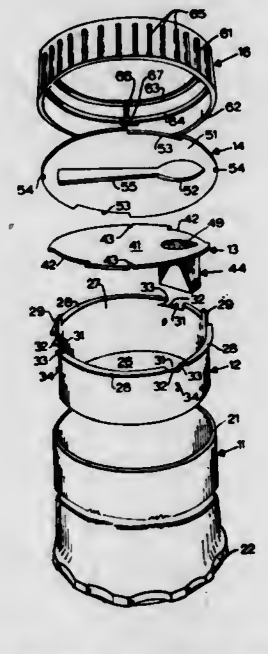
A portable spray can for resin paints incorporates a partition means dividing the interior into first and second chambers for containing catalyst and resin materials respectively. A spray means is threadedly received on one end of the can and includes an elongated rigid tube extending into one of the chambers. The arrangement is such that complete threading of the spray means onto the can urges the tube further into the one chamber to engage the partition means and punch out a portion of this partition means thereby placing the interior chambers in communication with each other. Mixing of the ingredients in the chambers can thus take place prior to a spraying operation, the mixture passing up through the tube and out the spray means when the spray valve is opened.

3,727,798

PLASTIC CONTAINER FOR DISPENSING MEASURED QUANTITIES AND REDUCING HEIGHT OF CONTAINER AS CONTENTS DISPENSED

Jonas C. Harschel, 8 Mariposa Court, Burlingame, Calif.
Filed Nov. 9, 1970, Ser. No. 87,919
Int. Cl. B67b *7/30*

U.S. Cl. 222—87 **7 Claims**



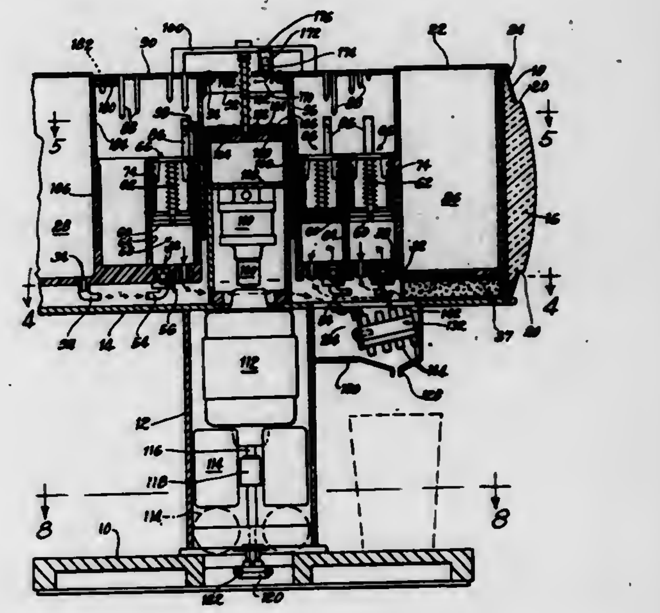
A plastic container is provided with a multi-part lid having a cutting edge which cuts into the side of the container and a dispensing compartment. Upon turning the lid in one direction a measured quantity of contents is forced into the dispensing compartment. Simultaneously a portion of the sides of the container are cut away and stored in a receptacle in the lid, the volume of the container being reduced an amount slightly greater than the quantity of contents dispensed. By turning the lid in the opposite direction the lid components are returned to closed position but the cutting edge of the lid is prevented from turning in a reverse direction.

3,727,799

DRINK DISPENSING AND MIXING SYSTEM

Phillip Nixon, 1352 South Estate, Lake Forest, Ill.
Filed Aug. 20, 1970, Ser. No. 65,471
Int. Cl. B67d *5/56*

U.S. Cl. 222—129.4 **15 Claims**



A construction for preparing mixed drinks including a plurality of separate compartments holding a variety of liquid ingredients. Dispensing apparatus associated with each compartment can be individually operated for removing portions of the ingredients from outlet means positioned at a common location. A selector means is associated with the construction, and actuating means for the dispensing apparatus are moved to operating position in response to movement of the selector means. Drive means are provided for automatically achieving dispensing of the desired ingredients. A mixing station is provided for alternative use with the mixing means being driven from the same source as the drive means used for achieving dispensing action.

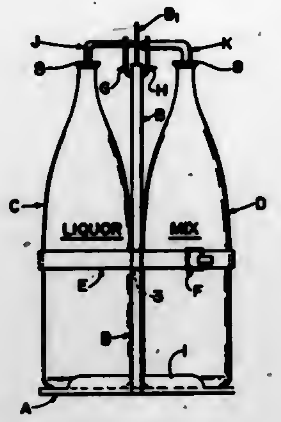
3,727,800

DRINK DISPENSER AND MEASURING DEVICE

Richard A. Santos, 4128 Margery Drive, Fremont, Calif.
Filed Feb. 22, 1971, Ser. No. 117,558
Int. Cl. B67d *5/56*

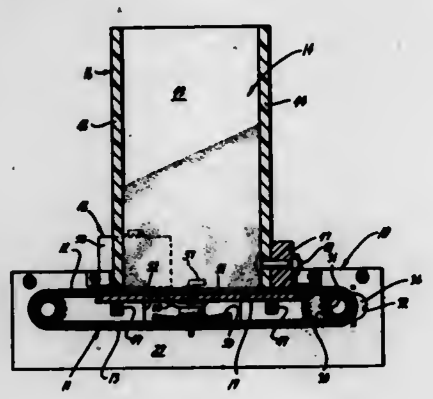
U.S. Cl. 222—129 **4 Claims**

A portable drink dispenser and measuring device comprising means for holding a bottle containing liquor and a bottle containing a mix in close proximity to each other and providing a smaller diameter pouring spout for the liquor bottle and a larger diameter pouring spout for the mix bottle, both spouts having their outlet ends spaced a slight distance away from opposite sides of a flexible partition so that the liquids issuing from both spouts in proper proportions when the device is moved into pouring position, will strike the partition and be deflected into a single drinking glass. The flexible partition serves an additional function in that it can be manually flexed for acting as a valve for closing off or lessening the flow of liquid from either spout so as to make a stronger or a weaker drink. Novel means holds the spouts in proper position and permits the removal of the spouts from the bottles when desired.



3,727,801
SPRINKLING DEVICE

Andrew A. Caridis, Foster City, and Clark K. Benson, Millbrae, both of Calif., assignors to Heat and Control, Inc., South San Francisco, Calif.
Continuation-in-part of Ser. No. 863,468, Oct. 3, 1969, abandoned. This application Aug. 30, 1971, Ser. No. 176,143
Int. Cl. B65g *3/12*
U.S. Cl. 222—196 15 Claims

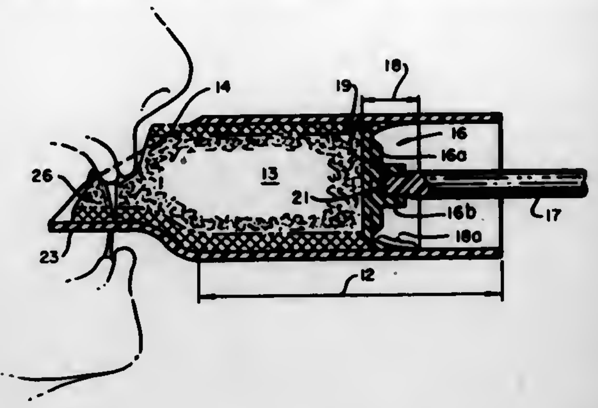


A continuous particle-sprinkling device comprising an endless perforate conveyor, a hopper mounted above the upper conveyor run, and an imperforate surface disposed therebelow. The hopper and surface form a container for the particles through which the upper run passes. In operation, the particles are carried in the conveyor performations of the upper run and over the downstream edge of the surface to pour in a substantially constant stream onto food surfaces passing therebelow. In one embodiment, a vibrator for the conveyor serves to disengage adherent particles from the conveyor and in a second embodiment rappers strike the conveyor falling particles.

3,727,802
HAND HELD FOOD HOLDER AND DISPENSER

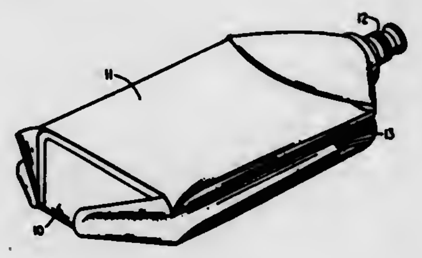
Gerald L. Schuurmacher, 319 Bonita Avenue, Piedmont, Calif.
Continuation-in-part of Ser. No. 785,241, Dec. 19, 1968, abandoned. This application July 20, 1970, Ser. No. 56,618
Int. Cl. A47j *9/00*
U.S. Cl. 222—205 5 Claims

A generally cylindrical food holder utilizing a plunger at one end driven by a stick to force the contents out the other end. the discharge end of the holder is characterized by a transversely extending sill adapted to be received within the mouth of the consumer to permit the consumer to bite against it while food is supported on it in his mouth. At the lateral side edges of the sill, upwardly extending wall portions serve to confine the bite of food supported on the sill so as to preclude leakage or spilling of fluids from the regions at the corners of the consumer's mouth. In one embodiment a deformable compliant bag is carried within the body of the holder, the upper edge of the bag being secured at the region between the body of the holder and the element forming the serving sill.



3,727,803
CONTAINERS

James Campbell Cobb, 16 Cowdry Avenue, Cammeray, N.S.W. 2062, Australia
Filed Dec. 31, 1970, Ser. No. 103,024
Claims priority, application Australia, April 8, 1969, 53084
Int. Cl. B65d *37/00*
U.S. Cl. 222—215 1 Claim



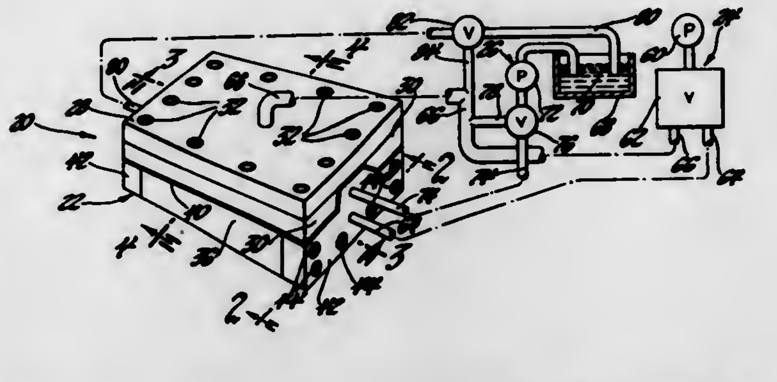
A collapsible container made preferably from material such as low density polythene for use principally in containing and dispensing viscous or semi-liquid products such as artists' colours the container having thin flexible walls rising from a base and terminating in a neck which may be closed by means of any suitable closure the base being normally flat and sufficiently stiff to provide a support for the container. Opposite walls of the container are provided with at least one fold whereby the walls may be collapsed after the fashion of a bellows to a substantially flat configuration which allows practically the whole of the contents to be expressed from the container.

3,727,804
VISCOUS FLUID DISPENSER WITH VALVED CHAMBER RECEIVING CIRCULATING VISCOUS FLUID

Kenneth A. Smith, Washington, and Lester C. Teague, II, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 30, 1970, Ser. No. 93,528
Int. Cl. G01f *3/20*
U.S. Cl. 222—318 1 Claim

A viscous fluid dispenser includes a dispenser housing with an elongated cavity divided into a pumping chamber and a viscous fluid chamber by a pumping diaphragm. An elongated dispensing slot in the housing communicates the viscous fluid chamber with the environment and is closed by a control diaphragm in response to fluid pressure supplied to a control chamber in the housing by a valved air pumping arrangement.

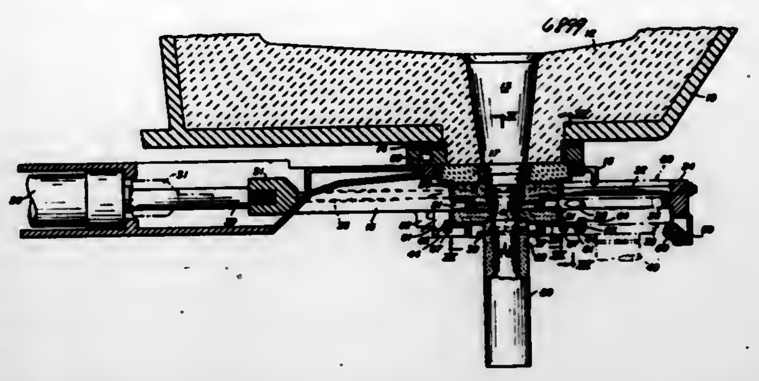
A viscous fluid pumping arrangement circulates a viscous fluid through the viscous fluid chamber between a valve controlled inlet and a valve controlled outlet when the dispensing slot is closed by the control diaphragm. The valved air pumping arrangement is actuatable to terminate the fluid pressure supplied to the control chamber, thus opening the dispensing slot, and to subsequently supply fluid pressure to the pumping chamber which causes the valves at the inlet and outlet of the viscous fluid chamber to close and isolate a quantity of the viscous fluid within the viscous fluid chamber. The fluid pressure supplied to the pumping chamber also causes the pumping diaphragm to deflect and force a predetermined amount of the quantity of isolated viscous fluid out of the viscous fluid chamber through the open dispensing slot thereby dispensing the predetermined amount of viscous fluid. In an alternate embodiment, the dispenser housing includes first and second tubular members positioned adjacent each other and opening to each other through an elongated dispensing slot in their common wall. A tubular pumping diaphragm received within the first tubular member divides the interior thereof into the pumping chamber and the viscous fluid chamber. A tubular control diaphragm received within the second tubular member defines the control chamber which receives fluid pressure from the valved air pumping arrangement to cause the control diaphragm to close the dispensing slot. When the valved air pumping arrangement is actuated, the supply of fluid pressure to the control chamber is terminated and transferred to the pumping chamber whereupon valves at the inlet and outlet of the viscous fluid chamber isolate a quantity of the normally circulated viscous fluid. The fluid pressure in the pumping chamber also defects the tubular pumping diaphragm and forces a predetermined amount of the quantity of isolated viscous fluid through the dispensing slot into the second tubular member and to the environment through a lower dispensing slot in the second tubular member. When the valved air pumping arrangement is deactuated, the control diaphragm expands and forces the viscous fluid remaining within the second tubular member outwardly thereof through the lower dispensing slot.



3,727,805
MECHANISM FOR SUPPORTING A SUBMERGED POURING TUBE ON A BOTTOM-POUR VESSEL AND METHOD OF REPLACING TUBES

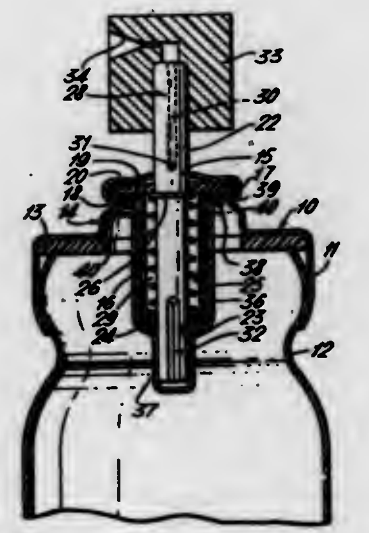
James T. Shapland, Wilkins Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Jan. 24, 1972, Ser. No. 220,232
Int. Cl. B22d *37/00*
U.S. Cl. 222—512 20 Claims

A mechanism for supporting a submerged pouring tube on a bottom-pour vessel which has a slidable gate closure, and a method of replacing such tubes. The pouring tube is removably suspended from a holder. The holder is removable and replaceable independently of the gate without disturbing other parts. The replacement holder can be inserted into the mechanism from underneath, where it is temporarily supported in horizontal alignment with the old holder. The same mechanism used to move the gates then is operated to move the replacement holder into the position originally occupied by the old holder.



3,727,806
VALVE ASSEMBLIES FOR AEROSOL CONTAINERS

Kenneth Wilmot, Clitheroe, England, assignor to Neotechnic Engineering Limited, Lancashire, England
Filed May 12, 1972, Ser. No. 252,898
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.2 7 Claims

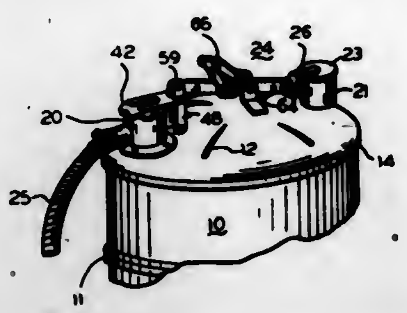


An aerosol container, of the type having a hollow body secured inside the container which cooperates with an elongate valve member operative from outside the container to dispense a predetermined amount only of the contents of the container for each operation, is provided with a second hollow body movable with the valve member and enclosing the first hollow body to form a capillary gap between the two bodies. Provided the container is left in the inverted, dispensing position, the liquid contents are drawn up through the gap by capillary action to fill the inside of the first hollow body ready for dispensing. In this way the container can be virtually completely emptied, minimizing wastage of the contents. The dispensing operation involves a pumping action urging the liquid up through the capillary gap into the first hollow body.

3,727,807
SAFETY CONTAINER FOR INFLAMMABLES

Frank S. Flider, Chicago, Ill., assignor to Justrite Manufacturing Company, Chicago, Ill.
Filed Dec. 14, 1970, Ser. No. 97,713
Int. Cl. A47g *19/14*
U.S. Cl. 222—469 10 Claims

A completely enclosed container has two openings or vents. One vent has an internal valve and a pouring spout attached thereto. The other vent has a spring biased safety cap which raises for filling or to vent vapors when the internal pressure exceeds some predetermined level, such as 5 p.s.i. A handle linkage is connected between the two vents so that the pouring valve opens first and the venting safety cap opens second, as the can is tipped. Suitable springs urge the valve, cap, and handle to an automatically closed position when the container is sitting at rest.



3,727,808

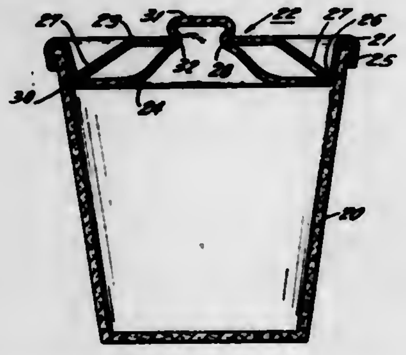
NON-SPILL DRINKING CUP TOP

Leonard C. Fitzgerald, Fairfax, Calif., assignor to Nospil Limited, Los Angeles, Calif.

Filed Aug. 13, 1971, Ser. No. 171,680

Int. Cl. B67d *3/00*

U.S. Cl. 222—482 **14 Claims**



A non-spill drinking cup cover is formed of two sections joined together at their center. The outer cover section can be secured to the outer periphery of a drinking cup in a conventional manner and further contains a relatively deep annular well extending around its outer periphery. Openings are provided at or near the bottom of this well, which are normally sealed by the inner cover member. The openings are unsealed by the user pressing down on the outer cover member to resiliently deform or deflect the outer cover member, thereby to move the bottom member down and away from the openings. The annular well may then be filled with fluid from the cup interior by conventionally tilting the cup, and the user may drink from any angular position on the rim of the outer annular well.

3,727,809

CAN END WITH BONDED SEAL SLIDE

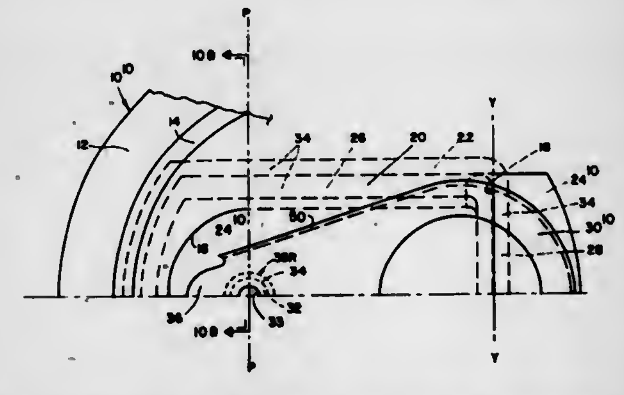
Donald L. Douty, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 61,384, Aug. 5, 1970, Pat. No. 3,622,055. This application Jan. 3, 1972, Ser. No. 214,851

Int. Cl. B65d *47/10*

U.S. Cl. 222—541 **61 Claims**

A can end is provided with a pour opening and has a pour width. The pour opening is provided with an entry aperture at one end of the pour opening. The entry aperture has a slide width greater than the pour width. The can end has a can end lapping portion and a can end sealing portion adjacent the pour opening and a plane of bulge strength adjacent the entry aperture. A slide is adapted to pass through the entry aperture and has a slide lapping portion and a slide sealing portion. The slide lapping portion is adapted to register with the can end lapping portion, and the slide sealing portion is adapted to register with the plane of bulge strength. A pull tab has a connection to the slide. Engaging means engage the can end lapping portion to press the can end lapping portion into intimate contact with the slide lapping portion and the slide sealing portion into intmate contact with the plane of bulge strength. A pressure barrier material is providd for sealing lapping contacting can end sealing portion and the slide lapping portion and also for sealing the intimately contacting plane of bulge strength and intimate slide sealing portion. The pressure barrier material is bonded to the can provided sealing portion with a first predetermined shear strength and to the slide lapping portion and to the plane of bulge strength with a second predetermined shear strength less than the first predetermined shear strength. The pull predetermined shear strength. The pull tab has a pivot plane at the connection to the slide, has a pressure portion on the one side of the connection, and has a beam strength greater than the beam strength of the slide. The pull tab is movable away from the can end lapping portion about the plane of weakness to cause the pressure portion to break the bond between the slide lapping portion and the pressure barrier material adjacent the can end sealing portion so that the pressure barrier material adjacent the can end sealing portion now functions as an exit and reclosure slide guide. The pull tab then is movable to break the bond between the pressure barrier material adjacent the plane of bulge strength and the slide sealing portion and to cause the slide to move through the entry aperture on the pressure barrier material adjacent the plane of bulge strength on such pressure barrier material as a guide to uncover the pour opening.



3,727,810

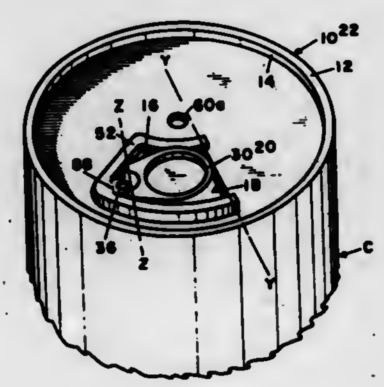
CAN END WITH PIVOTED BONDED SEAL SLIDE

Donald L. Douty, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 146,945, May 26, 1971, which is a division of Ser. No. 61,384, Aug. 5, 1970, Pat. No. 3,622,055. This application Jan. 28, 1972, Ser. No. 221,631

Int. Cl. B65d *47/10*

U.S. Cl. 222—541 **45 Claims**



A can end is provided with a pour opening having a pour width. The pour opening is provided with an entry aperture at one end of the pour opening. The entry aperture has a slide width greater than the pour width. The can end has a can end lapping portion and a can end sealing portion adjacent the pour opening and a plane of bulge strength adjacent the entry aperture. A slide is pivoted on the can end, is adapted to pass through the entry aperture and has a slide lapping portion and a slide sealing portion. The slide lapping portion is adapted to register with the can end lapping portion, and the slide sealing portion is adapted to register with the plane of bulge strength. A pull tab has a connection to the slide. The pull tab is connected to the can end by a score line. One member of the pivot and the connection press the can end lapping portion into intimate contact with the slide lapping portion and the slide sealing portion into intimate contact with the plane of bulge strength. A pressure barrier material seals the intimately contacting can end sealing portion and the slide lapping portion and also seals the intimately contacting plane of bulge strength and the slide sealing portion. The pressure barrier material is bonded to the can end sealing portion with a first predetermined shear strength and to the slide lapping portion and to the plane of bulge strength with a second predetermined shear strength less than the first predetermined shear strength. The pull tab has a plane of weakness on one side of the connection to the slide and a pressure portion on the other side of the connection. The pull tab is movable away from the can end about the plane of weakness to cause the pressure portion to break the score line and the bond between the slide lapping portion and the pressure barrier material adjacent the can end sealing portion so that the pressure barrier material adjacent the can end sealing portion now functions as an exit and reclosure slide guide. The pull tab then is movable to cause the slide to break the bond between the pressure barrier material adjacent the plane of bulge strength and the slide sealing portion and to cause the slide to move through the entry aperture on the pressure barrier material adjacent the plane of bulge strength as a guide to uncover the pour opening.

3,727,811

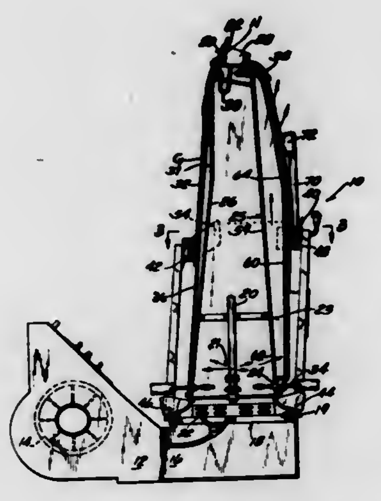
STEAM AIR TYPE GARMENT FINISHER

Norman A. Buckley, Wauwatosa, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 11, 1971, Ser. No. 105,214

Int. Cl. A41h *5/00*

U.S. Cl. 223—70 **3 Claims**



A garment finisher having a form for supporting a garment in a generally natural shape, particularly including collar, tail and breast clamp means for holding the garment tightly dressed on the form; means for diverting part of the garment conditioning and inflating fluid normally discharged through the garment generally to perforated front support means for discharge therefrom directly through the garment overlying the support means; and further particularly including an upwardly open bracket on the rear of the neck block suitable to be easily loaded with a conventional wire hanger and be unloaded to remove the hanger hung finished garment at the end of the operating cycle.

3,727,812

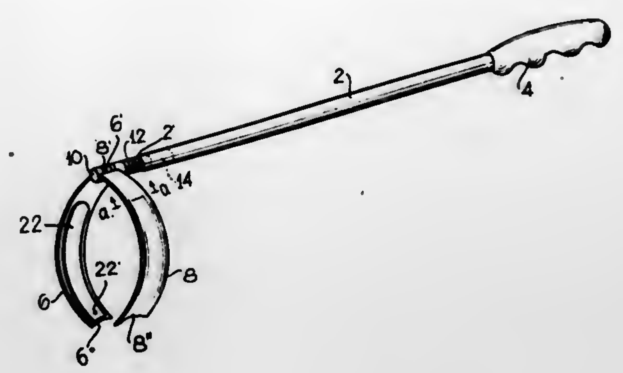
DEVICE FOR APPLYING STOCKINGS AND THE LIKE

Karl G. Weiss, 5 Disraeli St., Haifa, Israel

Filed Dec. 10, 1970, Ser. No. 96,692

Int. Cl. A47j *51/06*

U.S. Cl. 223—111 **6 Claims**



A device for aiding physically-handicapped persons to put on stockings comprises a pair of pivotable arms carried at one end of a handle, the arms being curved toward each other and pivotable from a closed position where they enclose the user's outstretched foot and leg, to open position to permit the device to be withdrawn from the leg by moving it transversely of the leg. The device also includes retaining means for releasably retaining the gathered stocking on the curved arms in the closed position. The arms are additionally provided with an extension pivotable from a folded closed position to an extended open position to enable the device to be used also for putting on underwear.

3,727,813

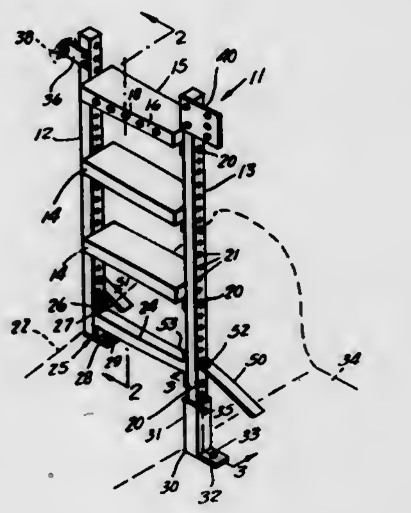
EQUIPMENT SUPPORTING RACK FOR A POLICE CAR

George W. Eby, 1015 Molalla Ave., Oregon City, Oreg.

Filed Aug. 10, 1971, Ser. No. 170,473

Int. Cl. B60m *11/00*

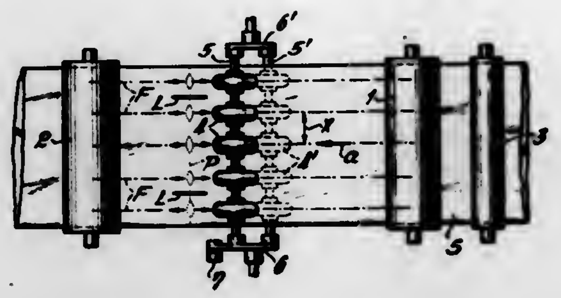
U.S. Cl. 224—42.42 R **8 Claims**



An article supporting rack intended to be installed between the front seat and the dashboard of a police car or similar emergency vehicle. The rack consists of a short vertical side bar secured on the top of the floor hump of the vehicle and a longer vertical side bar secured to the floor board adjacent the hump, the top ends of the vertical side bars being adjacent to the vehicle dashboard. A plurality of shelves are mounted between the side bars for supporting radio equipment and the like.

3,727,814
TEAR-OFF APPARATUS FOR SUCCESSIVELY TEARING OFF A LENGTH FROM THE LEADING END OF A MOVING FLATTENED TUBULAR WEB OF MATERIAL

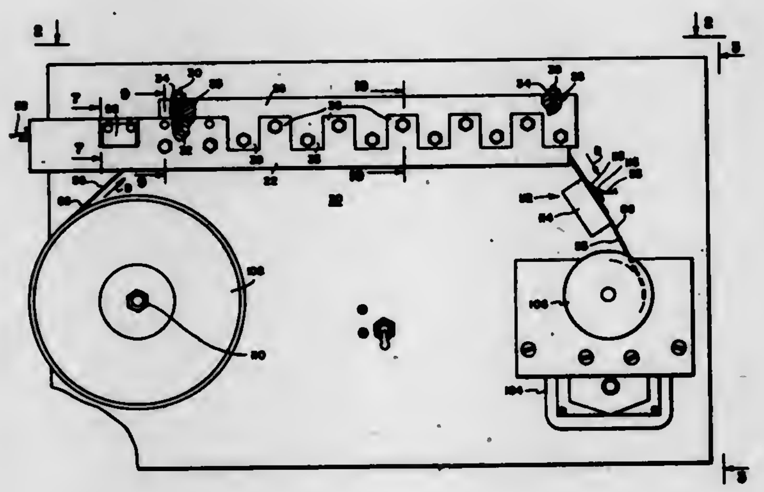
Gustav Kuckhermann, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Munsterstrasse, Germany
Filed March 4, 1971, Ser. No. 120,916
Claims priority, application Germany, March 9, 1970, P 20 11 101.7
Int. Cl. B26f *3/02*
U.S. Cl. 225—100 5 Claims



A tear-off apparatus for lengths of flattened tube from a transversely scored or perforated single or multi-ply paper or plastic moving tubular web including a pair of holding rolls adapted to turn at no more than the web feeding speed, a pair of tear-off rolls downstream of the holding rolls and adapted to turn faster than the web feeding speed and at least two rows of deflector rollers for the web extending transversely of the web downstream from the holding rolls and upstream of the tear-off rolls, said rollers being adapted to make substantially point contact with the web.

3,727,815
MEANS AND METHOD FOR TRANSPORTING A PHOTOGRAPHIC STRIP

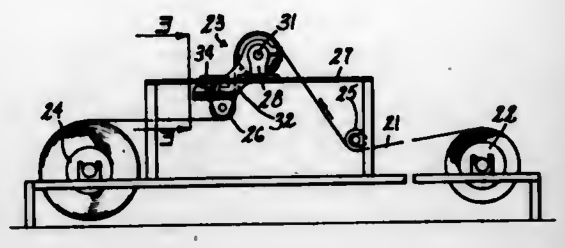
Theodore F. Schwartz, 11660 St. Andrews Way, Scottsdale, Ariz.
Filed Oct. 28, 1971, Ser. No. 193,488
Int. Cl. B65h *17/28*
U.S. Cl. 226—5 16 Claims



A means and method for transporting a photographic section of material by securing tape to a marginal edge of said material and applying tension to the tape for pulling said section through a processing area from a first position to a second position; and means for separating said section from said tape after said tape has pulled said section through said processing area.

3,727,816
WEB-GUIDING APPARATUS

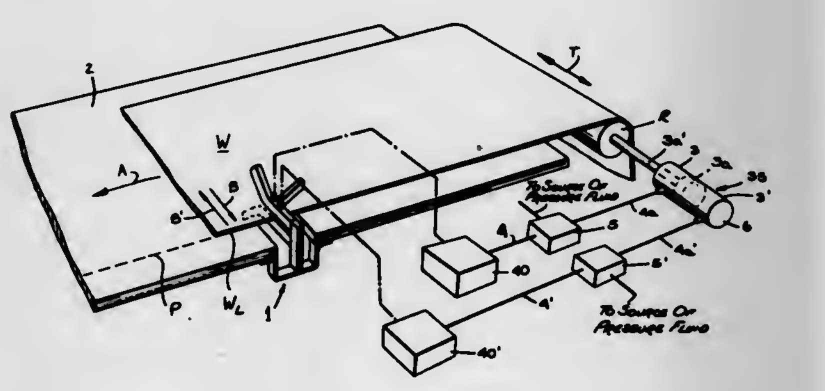
Pasquale Meneo, 57 Lakeview Avenue, Hamden, Conn.
Filed Dec. 27, 1971, Ser. No. 212,210
Int. Cl. B65h *25/26*
U.S. Cl. 226—19 12 Claims



Web-guiding apparatus having a plurality of pairs of web stretching slats supported across the peripheries of disks for rotation about a shaft, wherein the slats are independently movable longitudinally of the shaft. A cam follower is mounted under each slat at each end of each pair of slats and projects inwardly. Feelers sense deviations of the edges of the web from predetermined locations defining a passage for the web. A pair of circumferential cams are mounted one on each portion of the shaft, each cam having an inclined circumferential channel for receiving a cam follower and for defining a range of positions for the cam follower longitudinal of the axis of the shaft. The cams are independently rotatable in response to the feelers such that the slats are movable through the range of positions to restore the edges of the web to the predetermined locations.

3,727,817
EDGE SENSING APPARATUS

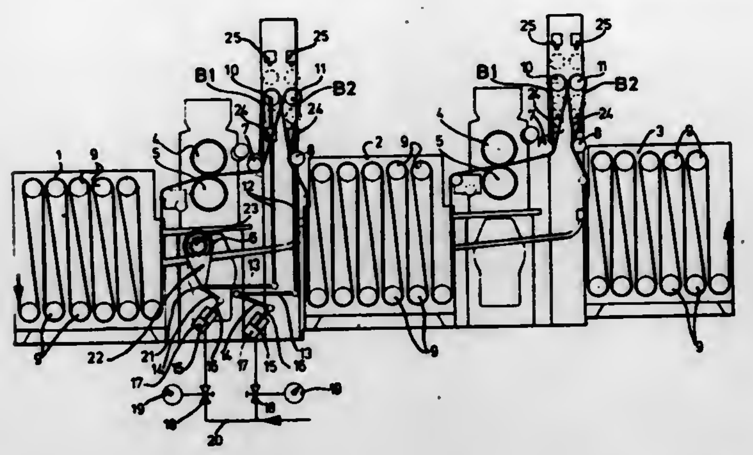
Raymond S. Tibavido, Seaford, N.Y., assignor to Leigh Systems, Inc., Syracuse, N.Y.
Filed Jan. 12, 1972, Ser. No. 217,329
Int. Cl. B65h *25/26*
U.S. Cl. 226—19 12 Claims



Apparatus for detecting the presence of a web material at a given location, including a movable member at the location, having a conduit therethrough, and pressure fluid means cooperating with the movable member for discharging through the conduit when no web material is present at said location and for building up pressure behind the movable member, for urging the latter against the web material when the web material is present at said location. Sensing means cooperate with said fluid pressure means for detecting such build up of pressure.

3,727,818
APPARATUS FOR GUIDING WEBS IN AN EXTENDED CONDITION

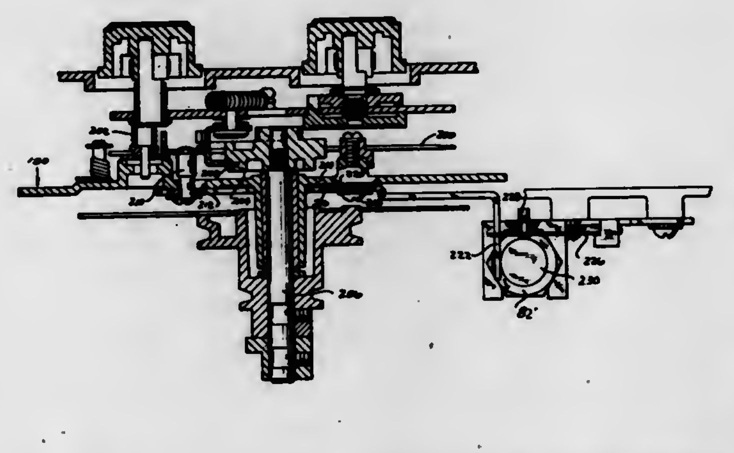
Willi Probst, Uzwil, Switzerland, assignor to Mashinenfabrik Benninger A.G., Uzwil, Switzerland
Filed July 21, 1971, Ser. No. 164,585
Claims priority, application Switzerland, July 31, 1970, 11519/70
Int. Cl. B65h *25/04*
U.S. Cl. 226—44 5 Claims



An apparatus for simultaneously guiding a number of webs, especially textile webs, in an expanded condition adjacent one another, comprising common drive means for the webs, and movable tension regulating rolls arranged between said common drive means. The tension regulating rolls impart a predetermined tension to the webs traveling thereover, and such tension regulating rolls are mounted to be movable so as to deflect or travel out of a reference position as a function of web elongation or contraction in order to correct the speed of the associated drive means. These tension regulating rolls extend over the entire width of the apparatus and are each individually associated with a given separate web for taking up the elongation or contraction of such associated web.

3,727,819
FEED MEANS FOR OPTICAL DISPLAY DEVICE AND CONTROL SYSTEM THEREFOR

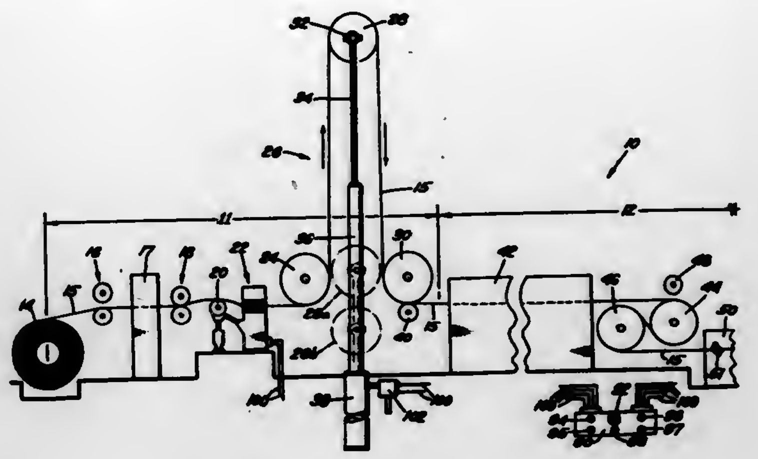
Max Kotler, 2 Surry Lane, Montvale, N.J., and Frank E. Ravese, 1856 Marine Parkway, Brooklyn, N.Y.
Division of Ser. No. 75,158, Sept. 24, 1970, Pat. No. 3,690,746. This application Oct. 20, 1971, Ser. No. 191,083
Int. Cl. G03b *1/22*
U.S. Cl. 226—46 10 Claims



A feed structure for a film projector is disclosed which is specially adapted to permit and inhibit feeding under the accurate and synchronized action of an electrical signal. The signal positions an electromagnetically actuated stop which coacts with the film feeding element so as to inhibit movement of that element only after the element has reached a predetermined position in its normal cycle of movement.

3,727,820
METHOD AND APPARATUS FOR CONTINUOUSLY PROCESSING STRIP

Curt Braun, Riverside, Calif., assignor to Hunter Engineering Co., Riverside, Calif.
Filed Feb. 18, 1972, Ser. No. 227,356
Int. Cl. B65h *17/42*
U.S. Cl. 226—113 7 Claims

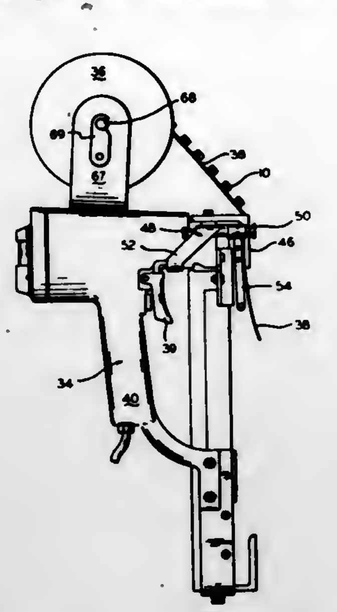


In a high-speed strip line having a processing section, through which strip must continue moving without interruption, there is a first, normally-full accumulator located ahead of the processing section, and a second, normally-empty accumulator located beyond it. Each of the accumulators has a storage capacity to allow strip to creep through the processing section at a very slow speed for a limited period of time, while one or both ends of the lie are shut down to perform a servicing operation. Thus, in one case, strip is paid out of the first accumulator while the entry end on the line is shut down, and creeps through the processing station to the takeup coil. In another case, strip is taken from the payoff coil and creeps through the processing station to the second accumulator, where it is stored while the delivery end of the line is shut down. In a third case, strip is paid out of the first accumulator and creeps through the processing section to the second accumulator where it is stored while both ends of the line are shut down. In each case, the line is slowed down from full speed to creep speed, at which point it changes over automatically to creep speed mode of operation through the processing station, while one or both ends of the line are shut down.

3,727,821
TOOL FOR ATTACHING IMPROVED WING HEADED FASTENERS

Richard W. Pabich, and Richard W. Trieber, both of Chicago, Ill., assignors to Acme Lane Co., Inc., Chicago, Ill.
Continuation-in-part of Ser. Nos. 615,830, Feb. 13, 1967, abandoned, and Ser. No. 689,939, Nov. 24, 1967, Pat. No. 3,429,013. This application Nov. 21, 1968, Ser. No. 777,652
Int. Cl. B27f *7/02*
U.S. Cl. 227—120 16 Claims

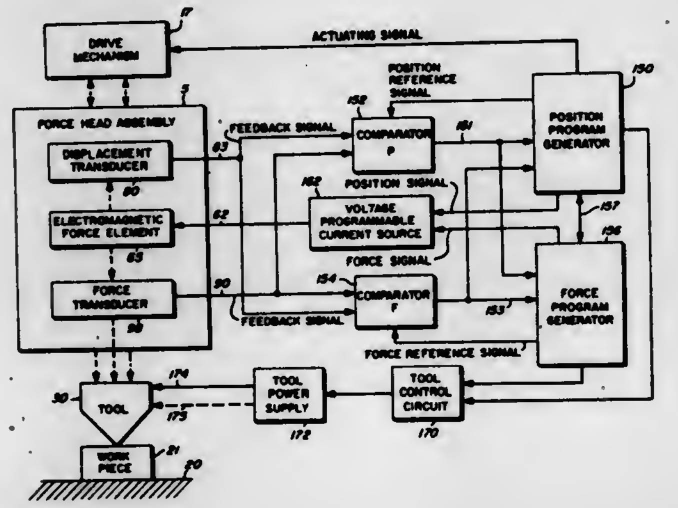
Tool attachments associated with air tools that force nails or other fasteners into members. Uniquely formed wing headed fasteners and the tool attachments are correspondingly adapted to each other to enable the wing headed fasteners to be pivotally mounted to said members with the nails from the tool for releasably holding a first member, such as a cabinet backing in a position relative to a second member such as a cabinet frame therebehind. The attachments are associated with air tools, or the like, to force nails through uniquely formed wing headed fasteners to hold same so that the wing headed fasteners are pivotally mounted to a member to



releasably hold a first member such as a cabinet backing in a position relative to a second member such as a cabinet frame therebehind.

3,727,822
ELECTROMAGNETIC FORCE SYSTEM FOR INTEGRATED CIRCUIT FABRICATION

Charles Wayne Umbaugh, Phoenix, Ariz., assignor to General Electric Company, Phoenix, Ariz.
Division of Ser. No. 78,039, Oct. 5, 1970, Pat. No. 3,697,837. This application Nov. 10, 1971, Ser. No. 197,406
Int. Cl. B23k *1/06, 5/20*
U.S. Cl. 228—1 **3 Claims**

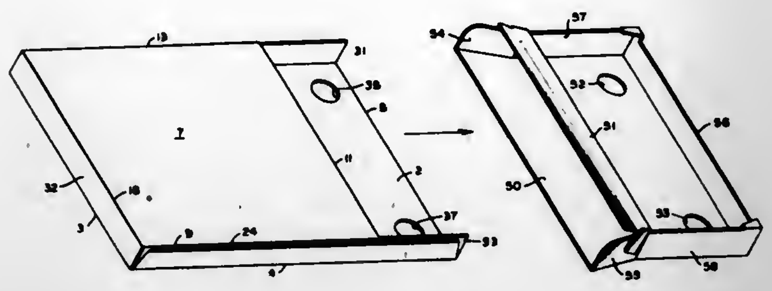


A feedback controlled spacial-force mechanism is used with a variety of tools for integrated circuit fabrication. The mechanism utilizes a force producing element having a force which may be held constant over a practical range of displacement. An optical-mechanical tool is also provided having an optical surface for contacting and bonding an integrated circuit work piece for effecting interconnection of circuit elements.

3,727,823
CONTAINER

William S. Sullivan, Nashua, N.H., assignor to Nashua Corporation, Nashua, N.H.
Filed March 31, 1971, Ser. No. 129,810
Int. Cl. B65l *5/00*
U.S. Cl. 229—16 R **4 Claims**

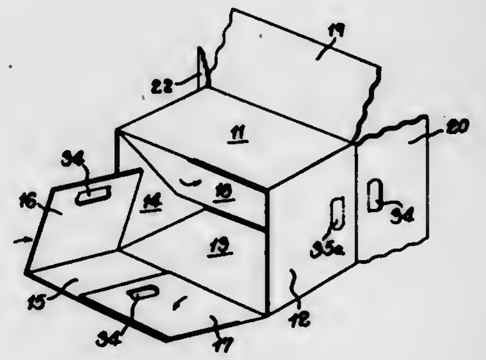
A box for retaining a stack of paper sheets and adapted to feed the sheets one by one to a copying apparatus. The box is formed from two folded blanks each having a top panel, a bottom panel, two side panels and one end panel so that each



folded blank has an open end. The open end of one blank fits over the open end of the other blank and any exposed paper sheets.

3,727,824
BOX WITH INTERLOCKING INNER WALL PANELS

Buddy E. Giebel, Monroe, Mich., and Charles Calia, Lancaster, Pa., assignors to Union Camp Corporation, Township of Wayne, N.J.
Filed Dec. 28, 1971, Ser. No. 213,032
Int. Cl. B65d *5/00*
U.S. Cl. 229—16 R **6 Claims**



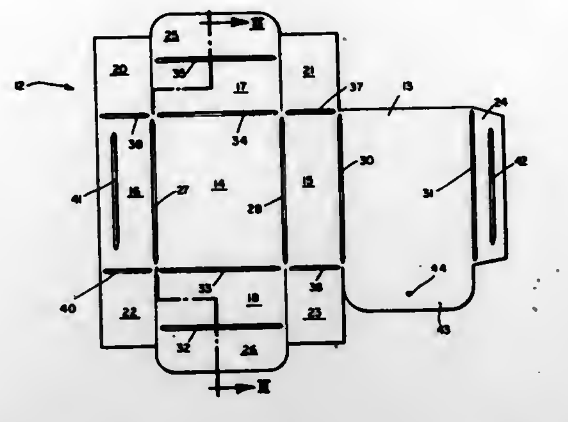
A four sided box formed from a substantially rectangular blank having reinforced side walls formed of inner and outer side panels, which inner side panels are extensions of the outer side panels folded to lie flat against the inner faces of the walls, the adjacent edges of the inner side panels having matching projections and indentations which form mating locks when the panels are folded into place and the adjacent edges of the inner side panels are pressed against each other.

3,727,825
PLASTIC CONTAINER

John S. Troth, Wilmington, Del., assignor to Pamark, Inc., Montchanin, Del.
Filed March 19, 1971, Ser. No. 126,053
Int. Cl. B65d *5/22*
U.S. Cl. 229—32 **6 Claims**

A container of sheet plastic construction is provided, constructed generally of a single sheet of material, with fold lines thereof being applied under heat and pressure, to facilitate ready folding of the container from flattened blank form, by the use of preferably conventional folding machinery. The container corner constructions are of especially deep construction, and have "dished," or tapered ends, to facilitate handling of nested stacks of container blanks, such as ready transfer of one blank in a stack laterally thereof, by high speed machinery. A re-closable snap type lock is also provided for

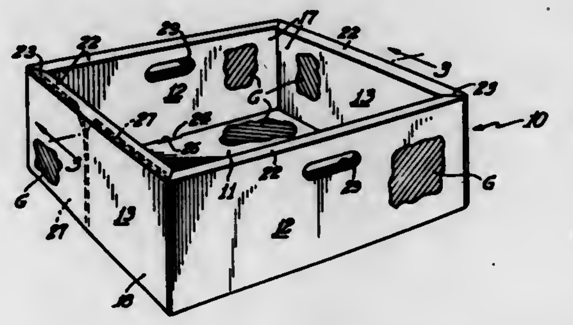
the container, as well as a hang tab. In the folded form, the containers have protruding corners, which cooperate, when a



plurality of containers are packaged, to act as spacers, with the container corners spacing container walls against scuffing and the like.

3,727,826
CROSS PLAY DOUBLE WALL TRAY

Charles J. Shepherd, Pasadena, Tex., assignor to Container Corporation of America, Chicago, Ill.
Filed March 26, 1971, Ser. No. 128,247
Int. Cl. B65d *5/22*
U.S. Cl. 229—34 R **1 Claim**

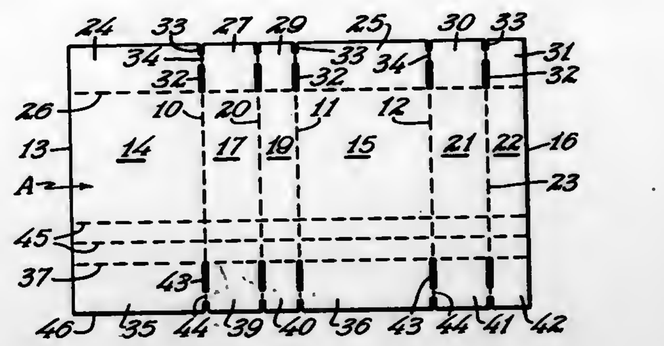


A multi-wall tray is formed from a cut and scored blank of corrugated container board or the like. In cutting and scoring the blank all of the score lines are inclined at an angle, preferably 45°, to the flute direction of the board. When the blank is folded to define the tray structure, the tray walls consist of plies of different flute orientation resulting in good stacking strength, at least ten per cent better than trays having normally oriented flutes in the corrugated board thereof. Moreover, there is a saving in board in orienting the blank therein in the fashion described.

3,727,827
VARIABLE SIZE CONTAINER

Larry L. Stice, Keokuk, Iowa, assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed May 25, 1970, Ser. No. 40,311
Int. Cl. B65d *5/02*
U.S. Cl. 229—37 R **1 Claim**

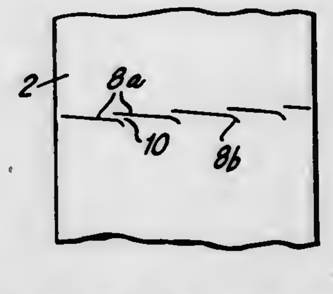
A variable size container includes side and end wall panels, and top and bottom closure flaps are hinged to the upper and lower edges thereof. A pair of additional score lines, parallel to those connecting the wall panels, divide the end wall panels into two side or end wall panels, either of these side-by-side side or end wall panels being foldable into the plane of the side wall panel to which it is connected when the ends of the blank are secured together and the container folded into rectangular form. Interrupted slots are provided between the adjoining flaps to permit easy severing of the flaps at the corners of the container while the other slots remain unsevered. Fold lines extending across the side and end walls adjoining at least one fold line connecting the side and end wall panels to the closure



flaps and along which the blank may be folded to increase the length of the closure flaps and form a shallower container.

3,727,828
FOIL OVER-LAPPED SLITS

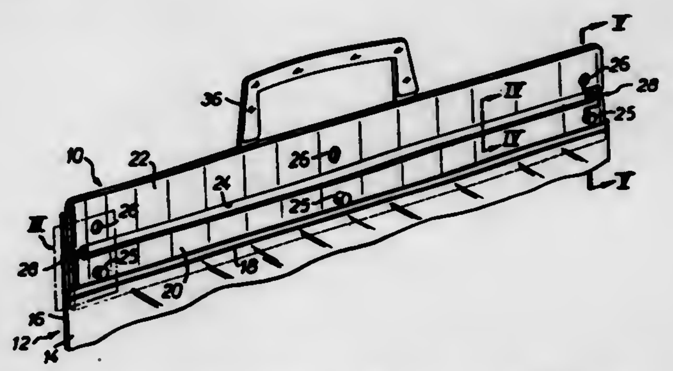
Charles Thomas Hall, Deptford, London, England, assignor to Molin's Machine Company Limited, London, England
Filed May 12, 1967, Ser. No. 637,968
Claims priority, application Great Britain, May 20, 1966, 22,710/66
Int. Cl. B65d *75/62*
U.S. Cl. 229—51 C **1 Claim**



An inner wrapper enclosing the contents, e.g. cigarettes, of a container has a row of slits extending across its width, the slits being obliquely arranged and slightly overlapping each other, to facilitate separation and removal of one part of the wrapper from another.

3,727,829
CLOSURE DEVICE FOR PLASTIC BAGS

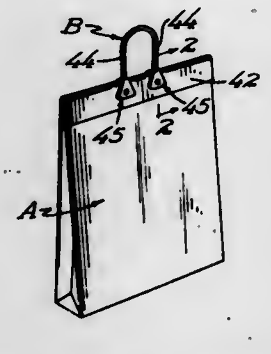
Christian Huni, Ris Orangis, France, assignor to Michel Claude Jean Mazereu, (Loir-et-Cher), France
Filed Feb. 19, 1971, Ser. No. 117,018
Int. Cl. B65d *33/16*
U.S. Cl. 229—54 R **10 Claims**



A closure device for plastic bags or sacks formed as a one-piece body of molded plastic and comprises a plate with upper and lower portions and an elongate slot provided therebetween, cooperating latching elements arranged in the portions for latching engagement with one another, and hinges disposed at the ends of the elongate slot connecting the portions of the plate to each other. Projections extending from the facing edges of the plate portions at the hinges for limiting the pivoting zone of the hinge and therefore facilitating the alignment of the latching portions in bringing them into latching position. A tear-away guarantee strip may be provided to seal the elongate slot requiring its removal to gain access to the interior of the bag or sack.

3,727,830
CARRYING HANDLE

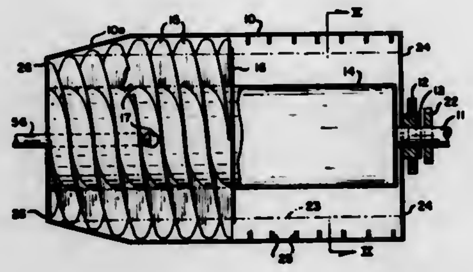
Robert E. Harrison, Newburgh, N.Y., assignor to Hoerner Waldorf Corporation, Ramsey County, Minn.
Filed Nov. 26, 1971, Ser. No. 202,204
Int. Cl. B65d *33/00*
U.S. Cl. 229—54 4 Claims



A bag is provided having an elongated reinforcing strip secured to its inner surface along the upper bag end. A fold line extends longitudinally through the reinforcing strip parallel to the strip sides and the attached bag wall and permits the upper bag edge to fold inwardly and downwardly to provide a bag edge of four thicknesses of paper. The upper edge of the bag is slit along opposite sides of one side wall from the upper edge to the fold line, providing a flap independently foldable outwardly of the opposite wall. Spaced apertures are provided through the upper end of the bag to accommodate a handle strap, the ends of which are channel-shaped and support pins to extend through the apertures, holding the bag closed and providing a bag handle.

3,727,831
METHOD AND APPARATUS FOR CLASSIFYING FINE PARTICLE MATERIALS

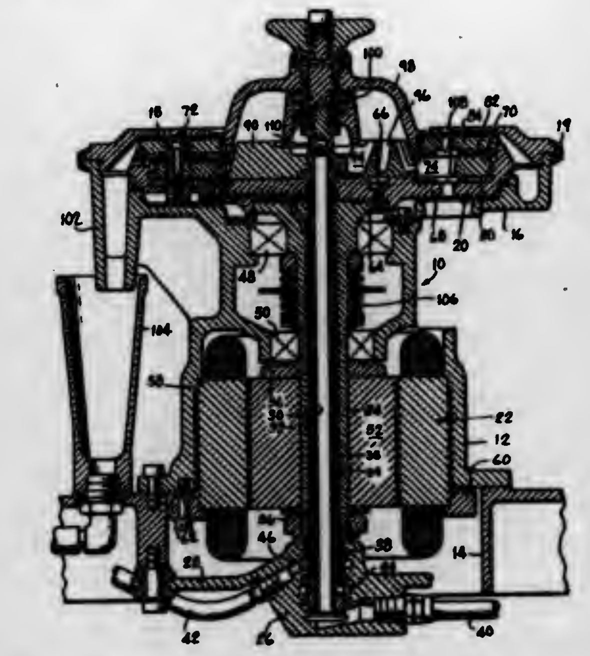
Sanford C. Lyons, Bennington, Vt., assignor to Georgia Kaolin Company
Filed Aug. 31, 1970, Ser. No. 68,391
Int. Cl. B04b *1/00*
U.S. Cl. 233—7 10 Claims



Methods and apparatus are provided for classifying fine particles by the steps of feeding a slurry or slip to be classified into a rotating bowl centrifuge divided into two pool areas, one pool providing a relatively high speed helical path for said slip wherein coarse particles are thrown to the periphery of the bowl and carried outwardly and a second pool providing a relatively low speed path over a ribbon type conveyor wherein intermediate size particles are thrown into the ribbon conveyor and returned along the bowl periphery to the first pool where they are intermingled with the coarse particles there thrown out of suspension and discharged and an effluent port for the remaining slurry.

3,727,832
TEMPERATURE CONTROL FOR CENTRIFUGAL ANALYZER

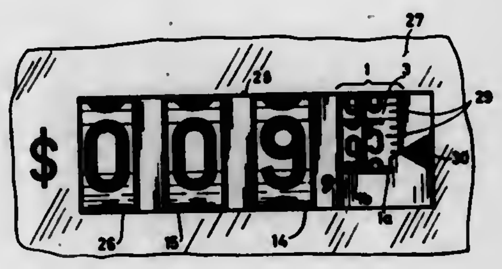
Ernest Maclin, Paramus, and Abe J. Perle, Verona, both of N.J., assignors to Electro-Nucleonics, Inc., Essex County, N.J.
Filed Feb. 19, 1971, Ser. No. 116,884
Int. Cl. B04b *15/02*
U.S. Cl. 233—11 1 Claim



Disclosed is a method and apparatus for providing close temperature control for the spinning, rotating cuvette and sample distributing disc assembly of a high speed centrifugal analyzer or comparable rotating head device by circulating a temperature conditioning fluid through the rotating assembly. This method of temperature control assures rapid thermal response of the rotor and sample so that precise temperature control and stability is provided for the rotor, cuvettes and test specimens in the rotating assembly. The conditioning fluid may be any fluid and it may either raise or lower the temperature of the assembly.

3,727,833
INDICATION CORRECTING ARRANGEMENT FOR COUNTERS

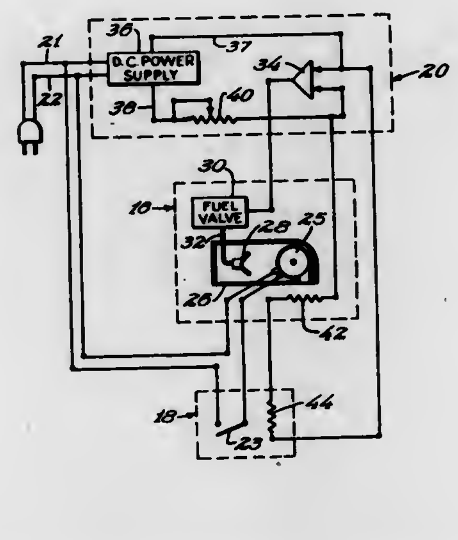
Helmuth Muller, St. Georgen, Germany, assignor to Kienzle Apparate GmbH, Villingen, Germany
Filed June 5, 1972, Ser. No. 259,875
Claims priority, application Germany, June 5, 1971, P 21 27 966.3
Int. Cl. G06c *27/00*, *15/42*
U.S. Cl. 235—117 R 12 Claims



A monetary counter has counter wheels for dollars and cents. The counter wheel of the lowest order counts cents up to 100, and represents the two lowest orders by first and second indicia on first and second counter wheel halves which are normally connected by coupling means. The second counter wheel half is connected by tens transfer means with the counter wheel counting and indicating dollars. When the value 99 cents is approached, the tens transfer means already turn the dollar counter wheel so far that it begins to show the following digit instead of the actually counted digit, causing errors. Resetting means are operated before reading out the counter, and reset the second counter wheel half, and thereby the dollar counter wheel, to a position indicating the actually counted dollars and cents.

3,727,834
ENTRY SENSING HEATER CONTROL SYSTEM

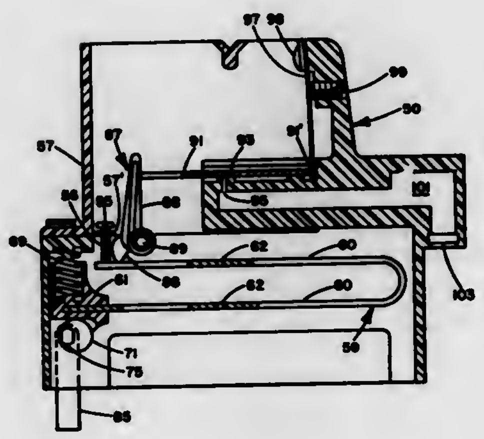
Richard N. Weatherston, Saint Paul, Minn., assignor to Weather-Rite Inc., Saint Paul, Minn.
Filed Jan. 27, 1972, Ser. No. 221,269
Int. Cl. F23n *5/14*
U.S. Cl. 236—9 7 Claims



A control system for entryway heating units which is responsive to both the temperature of the entryway and the discharge temperature of the heating unit. The combined resistance of two thermistors positioned in the entryway and in the discharge stream from the heater is monitored to derive a control signal for regulating the flow of fuel to the heater.

3,727,835
CEILING AIR TERMINAL

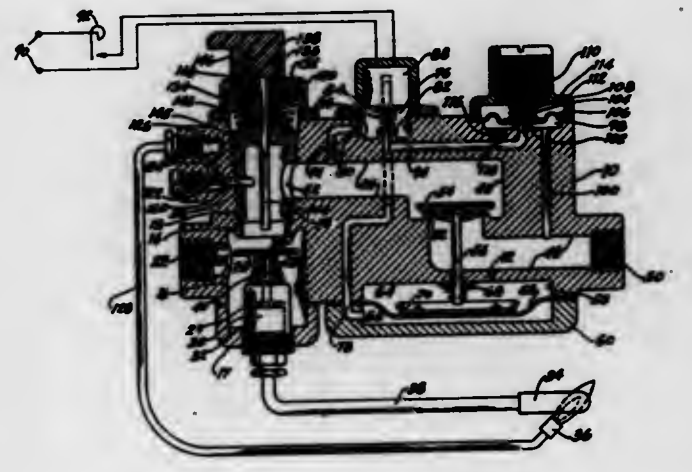
Ernest Rifkin, Dewitt, and William E. Clark, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed July 1, 1971, Ser. No. 158,820
Int. Cl. F24f *7/00*
U.S. Cl. 236—49 1 Claim



A ceiling air terminal serving as part of an air conditioning system for a building adapted to discharge conditioned air into an area to be treated. The terminal is provided with a bleed-type thermostat employing a bimetallic element movable in response to temperature variations in the air passing over the element from the area served by the air terminal. The bimetallic element regulates the quantity of air bled from the thermostat to thereby control the quantity of conditioned air discharged from the terminal. The thermostat includes a stop member associated with said bimetallic element to prevent any movement of said element beyond a predetermined distance.

3,727,836
MANIFOLD GAS VALVE

Charles D. Visos, 817 Big Bend Woods Drive, Manchester, Mo.; John J. Love, 1324 Graham, St. Louis, Mo.; Carl A. Smith, 766 Peal Drive, and Ralph E. Banes, 2323 Rose Garden Drive, both of St. Louis, Mo.
Filed Oct. 26, 1971, Ser. No. 192,431
Int. Cl. F16k *31/12*
U.S. Cl. 236—80 5 Claims

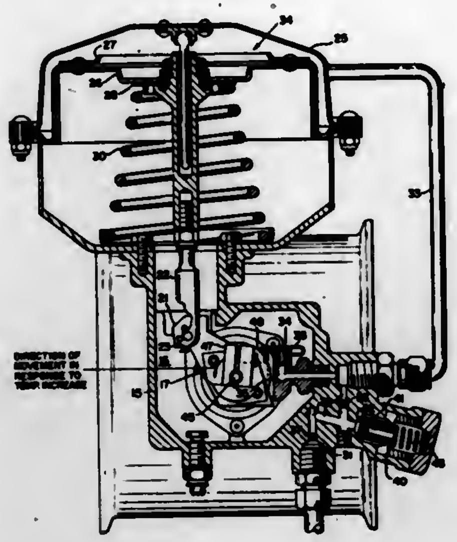


A gas valve device in which a biased closed main valve having a diaphragm operator controls the main flow of fuel therethrough from inlet to the main outlet. Inlet pressure is applied to one side of the diaphragm to move the valve open; the other side of the diaphragm is constantly exposed to outlet pressure. A first restricted passageway leads from the inlet to the one side of the diaphragm and has an "on" and "off" control valve therein. A second passageway leading from a point in the first passageway between the control valve and diaphragm to the main outlet has a pressure regulator valve therein a nd bleeds off a portion of the inlet pressure being supplied to the one side of the diaphragm through the first passageway at a regulated rate thereby to regulate the opening movement of the main valve, and a constant restricted bypass around the pressure regulator valve vents the pressure from the one side of the diaphragm to permit closure of the main valve when the on and off control valve closes. The bypass further provides smoother regulation of the bleed off and a measure of safety against leakage of inlet pressure to the one side of the diaphragm when the control valve is closed.

3,727,837
TEMPERATURE RESPONSIVE VALVE MECHANISM

Raymond W. Gazzera; Donald A. Nordal, both of Scottsdale, and Robert A. Null, Temple, all of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.
Continuation of Ser. No. 850,479, Aug. 15, 1969, abandoned.
This application June 21, 1971, Ser. No. 155,359
Int. Cl. F15b *13/16*; G05b *6/04*
U.S. Cl. 236—87 12 Claims

Valve mechanism has a butterfly with an actuator biased toward valve open position by a spring and toward valve closed position by fluid pressure. Means responsive to the temperature of fluid adjacent the butterfly are provided to effect controlled bleed of pressure from the actuator to cause the butterfly to modulate flow.



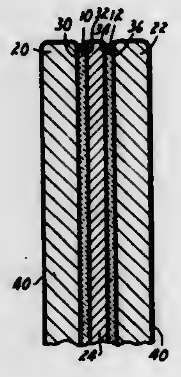
3,727,838
STEEL-CERAMIC RAILJOINT ENDPOST

Eugene H. Bergh, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed July 26, 1971, Ser. No. 166,203

Int. Cl. E01b *11/58, 26/00*

U.S. Cl. 238—152 **10 Claims**



An electrically insulating railjoint endpost having steel face plates and at least one high compressive strength thin insulating ceramic spacer sheet adhesively bonded on each face to steel face plates or steel filler plates. At least the edges are peripherally protected by a nonconducting polymeric coating, conveniently by coating of the entire endpost.

3,727,839
AGGLOMERATING POWDERED PRODUCTS

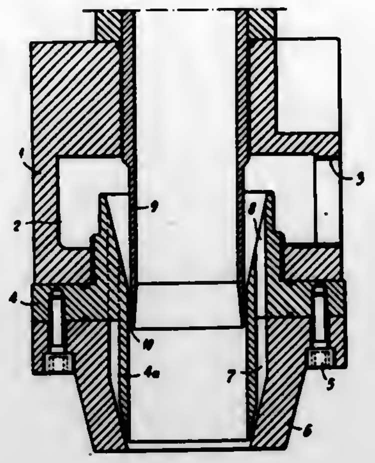
William Cornelius Marsh, Marysville, Ohio, assignor to Societe D'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Division of Ser. No. 835,173, June 20, 1969, Pat. No. 3,622,081. This application Sept. 21, 1971, Ser. No. 182,357

Int. Cl. A01n *17/02;* **A62c** *1/12*

U.S. Cl. 239—8 **2 Claims**

A process for agglomerating powdered materials in which the materials are discharged from the aperture of a conduit while simultaneously a stream of an aqueous medium is discharged codirectionally with the particulate material and in a course encircling the aperture with a second aqueous stream being discharged in an encircling course around the particulate material stream within the conduit at a location upstream of the aperture. A nozzle for agglomerating powdered materials, especially food products, which comprises at least two annular steam inlets into a central duct through which the material is passed also is disclosed. Other features of the invention appear in the specification and drawings.



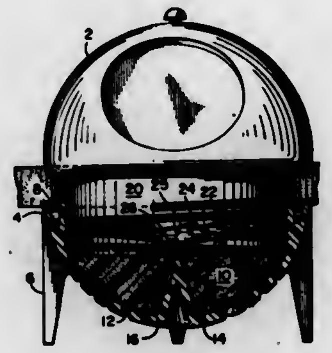
3,727,840
DISPERSANT CONTAINER AND DISPENSER

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 19, 1971, Ser. No. 173,049

Int. Cl. B05b *17/00*

U.S. Cl. 239—43 **4 Claims**



Container for dispersant material comprising first and second members adapted to be movably connected together, the first member having wick means disposed therein in communication with a surrounding atmosphere, the second member having therein a sealed reservoir containing fluid dispersant material, the first member further including means for opening the reservoir, whereby upon relative movement of the first and second members toward each other the reservoir opening means operates to open the reservoir, permitting flow of the dispersant material therefrom onto the wick means.

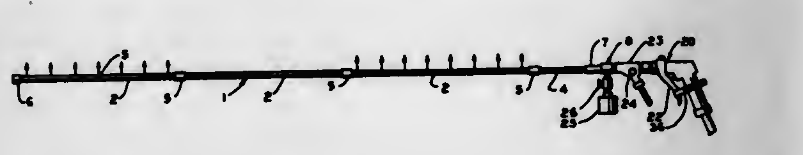
3,727,841
MULTIPLE JET FLUID SPRINKLING, SPRAYING AND DIFFUSING DEVICE

Robert W. Hengesbach, 7886 Munson Road, Mentor, Ohio

Filed Sept. 7, 1971, Ser. No. 178,355

Int. Cl. A01g *25/14;* **B05b** *1/20*

U.S. Cl. 239—145 **9 Claims**



Small diameter, normally straight tubes, some having discharge ports distributed along their lengths, and some being imperforate, are detachably connected in selected orders to form an elongated dispensing pipe line which is connectable at one end to a source of fluid under pressure and is plugged at the other end. The tubes are readily flexible transversely of their axes into curvilinear shapes throughout a wide range of radii, ranging from about 6 inches upwardly, by forces applied by the hands of an operator while his hands directly grip the tube. The tubes retain their normal cross sectional shape when so curved. They are of a plastic material having a good memory so that they are self-restoring or readily restorable manually to original lineal condition by reverse bending by hand. They are highly resistant to permanent or elastic deformation, or radial collapse, of their cross section. The tubes are so fully resistant to torsional deformation by manually applied forces and the coupling between the tubes hold the tubes so tightly that an operator, by applying rotational or torsional forces to any one of the tubes manually while gripping it directly in his hands, can rotate the entire line as a unit with each tube retaining its fixed rotated position relative to the others.

The tubes can be connected together with the ports of any tube directed at a different angle about the common axis from the ports of other tubes.

The ports of some tubes may be arranged in pairs with the ports of each pair directed so that the discharged jets impinge on each other abruptly and create a fog or mist.

The tubes may be detachably connected together in various rotated positions about their axes, and also with their axes in various angular positions resistive to each other for building temporary shower and auto washing structures.

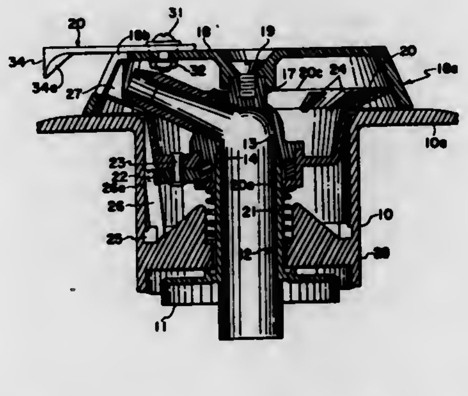
3,727,842
AGRICULTURAL SPRINKLER HEAD

Byron L. Ertsgaard, and Edwin J. Hunter, both of Riverside, Calif., assignors to Toro Manufacturing Corporation, South Minneapolis, Minn.

Filed June 24, 1971, Ser. No. 156,381

Int. Cl. B05b *3/08*

U.S. Cl. 239—232 **25 Claims**



A sprinkler having a nozzle and a diffuser therefor which cooperate to provide a variable distribution of water from the sprinkler head throughout the entire circumference thereof which accomplishes almost complete uniformity of distribution of the water within the maximum and minimum limits of projection of the eater stream from the head. The nozzle is continuously driven in a circular direction and intermittently rotates simultaneously with a diffuser plate, the diffuser having diffuser vanes formed thereon which are intermittently interposed into the water stream from the nozzle to break up the pattern and the distribution thereof. The nozzle and diffuser plate travel together for one complete revolution, in fixed relationship to one another. Upon completion of each revolution, the nozzle disengages itself momentarily from the diffuser plate, and indexes itself relative to the diffuser plate a predetermined incremental distance, whereupon it re-engages and makes another complete revolution, so that the nozzle is constantly changing its relationship with respect to the diffuser plate, and the water dispersing or diffusing vanes provided thereon. The relative indexing of the nozzle and the diffuser plate is accomplished by a gear formed on the nozzle, and a pinion carried by the diffuser plate, which pinion engages the gear on the nozzle, and also engages each complete revolution, a stationary pin which is the equivalent of one tooth of an internal gear. When the pinion engages the pin, it causes the aforementioned disengagement of the diffuser and nozzle and indexing of the nozzle to the next diffuser station or vane.

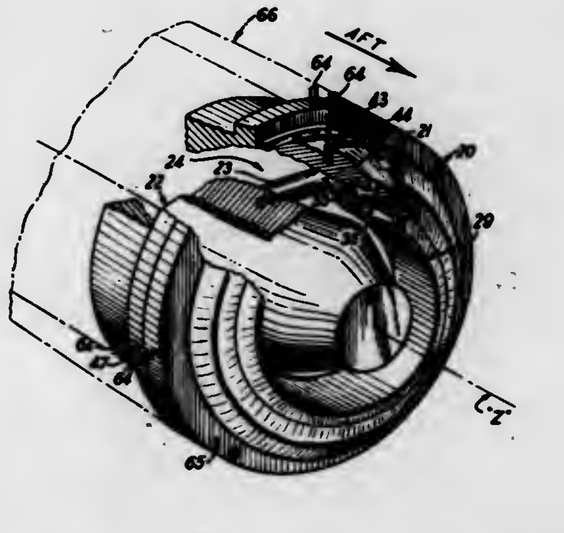
3,727,843
DUCT-FORMING ASSEMBLIES AND VECTOR CONTROL

Arthur R. Parilla, Box 127, Mountain Lakes, N.J.

Filed July 16, 1969, Ser. No. 842,149

Int. Cl. B64c *15/04*

U.S. Cl. 239—265.35 **35 Claims**



A pair of concentrically arranged members defining an annular duct therebetween including a throat section of minimum cross-sectional area are rigidly interconnected and universally mounted for omnidirectional rotation as a unit within an outer annular housing having an inner spherical seat. Two mutually independent rotational actuating systems, each employing a diametrically opposed pair of fluid cavity actuators built into the outer duct-forming member and pivotally mounted on the outer housing, provide simultaneous rotational control about two mutually orthogonal diametrical axes passing through the spherical center of rotation of the members and the pivot axes of the two actuator pairs. The upstanding walls of each actuator cavity are defined by a floating sealing member. Throat area adjustability is provided by an independently controlled annular throat adjusting segment which is constrained to translational motion along the duct axis relative to the inner member and has an axially skewed throat defining surface. Control over the position of the throat adjusting segment is via a toroidal bladder having a rectangular cross-section.

3,727,844
DISPENSING APPARATUS

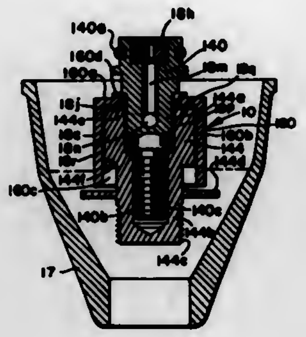
Robert S. Bencic, Chicago, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed April 30, 1971, Ser. No. 139,031

Int. Cl. F23d *13/38*

U.S. Cl. 239—414 **9 Claims**

An adjustable carbonated liquid dispensing nozzle is provided which maintains a high percentage of dissolved carbon dioxide in the liquid being dispensed. The dispensing nozzle is coupled to a control valve which controls the flow of carbonated liquid to the dispensing nozzle. The control valve may also selectively control the flow of one or more other fluids to the dispensing nozzle for mixture with the carbonated liquid. The dispensing nozzle includes an adjustable diffuser having a plurality of members in spaced relation to define flow paths therebetween. Means for maintaining a constant flow rate of carbonated liquid are located upstream of the diffuser. The diffuser is adjustable to provide a variable amount of dissolved carbon dioxide in the dispensed liquid while maintaining a substantially constant flow of liquid. The diffuser includes at least two relatively movable members which define a carbonization control gap therebetween and further includes a gradually increasing transverse area flow path for gradually exposing the carbonated liquid to atmospheric pressure. The carbonization control gap and the flow path cooperate to regulate the percentage of dissolved carbon dioxide in the dispensed liquid.



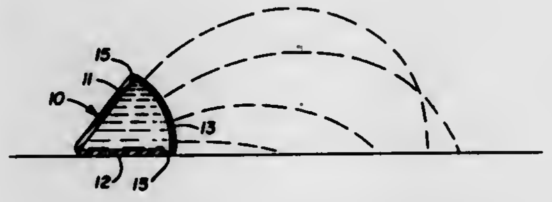
3,727,845
GARDEN SPRINKLER HOSE

Heino Bohlman, 35 Xavier St., Denver, Colo.

Filed Sept. 13, 1971, Ser. No. 179,905

Int. Cl. B05b *1/30*

U.S. Cl. 239—534 **1 Claim**



A garden sprinkler hose generally triangular in transverse cross section, comprising two firm relatively thick walls joined at one of their longitudinal edges, and a third relatively thin and flexible wall joined at its longitudinal edges to the two thicker walls, the third wall being provided with sprinkler holes. The hose is designed to rest on one of its thick walls. Water pressure in the hose causes the thin flexible wall to curve outwardly, the degree of curvature depending on the pressure in the hose, thereby to control and vary the area which receives water through the aperture in the flexible wall.

3,727,846
APPARATUS FOR SHREDDING AND DISPOSING OF CONSTRUCTION WASTE MATERIAL

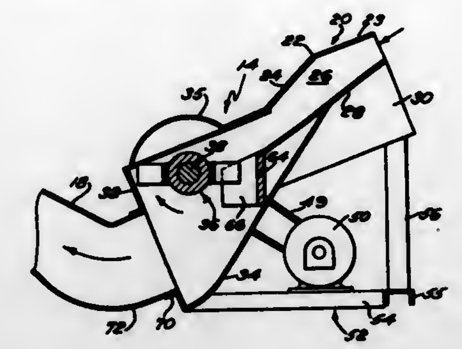
Jerome A. Rader, 900 Pennsylvania Avenue, Miami Beach, Fla.

Filed March 22, 1971, Ser. No. 126,794

Int. Cl. B02c *13/02, 13/288*

U.S. Cl. 241—47 **1 Claim**

Apparatus for disintegrating and disposing of bulk construction waste materials at a construction site, wherein the bulk material is fed into a shredding device for reducing the material to shredded particulate form, the shredded material thereafter being transferred by a vacuum-blower from the shredding device to a disposal area remote therefrom.



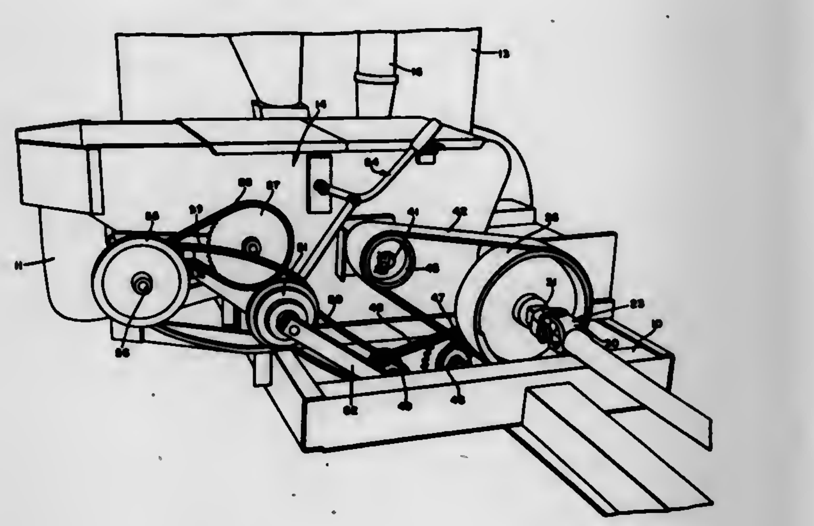
3,727,847
POWER SHAFT AND DRIVE FOR A FARM GRINDER-MIXER IMPLEMENT

Ivan Lloyd Nelson, Madrid, Iowa, assignor to Deere & Company, Moline, Ill.

Filed March 11, 1971, Ser. No. 123,251

Int. Cl. B02c *19/00*

U.S. Cl. 241—101 B **8 Claims**



A drive for a farm implement having a material-reducing unit and a material-blending unit composed of a driven power shaft with a rotary drive member fixed thereto for driving the blender and a second rotary drive member journaled to rotate on the shaft plus a coupler that is fixed to rotate with the shaft that is slidable axially along the shaft for coupling to the second rotary drive member. A drive extends from the second rotary drive member to the material-reducing unit for operating the latter.

3,727,848
HAMMER MILL WITH REPLACEABLE SPIDER ARM TIPS

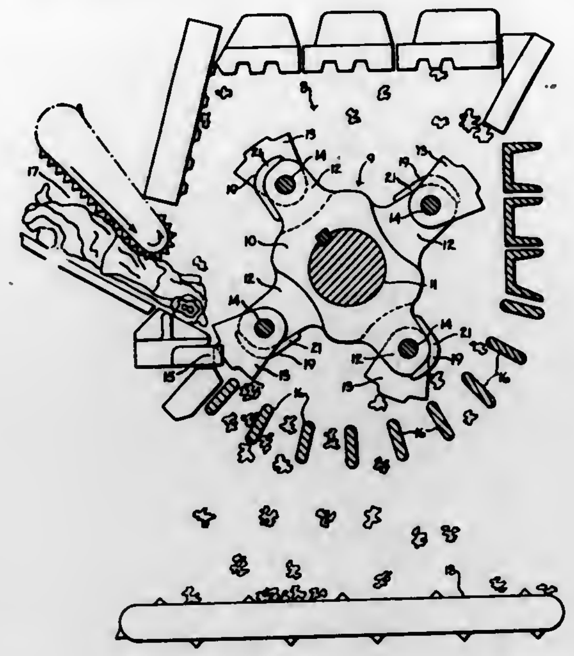
Terry M. Francis, Davenport, Iowa, assignor to Sivyer Steel Casting Company, Milwaukee, Wis.

Filed Dec. 10, 1971, Ser. No. 206,631

Int. Cl. B02c *13/13, 13/26, 13/28*

U.S. Cl. 241—194 **10 Claims**

A hammer mill in which the outer end portions of the spider arms between which the free swinging hammers are mounted, are protected against deleterious wear by replaceable caps or tips which are held in place by the insertion of a part thereof into a socket in the spider arm.



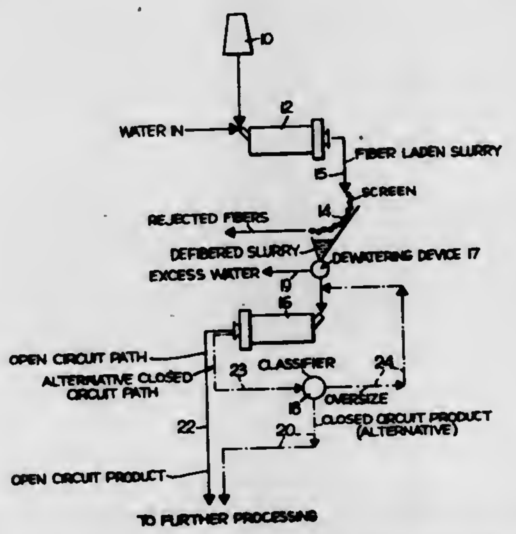
3,727,849
APPARATUS FOR AND METHOD OF LIBERATING AND REMOVING FIBROUS MATERIAL FROM A MINERAL ORE

David M. Kjos, Wauwatosa, and Chester A. Rowland, Jr., Shorewood, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 23, 1971, Ser. No. 201,433

Int. Cl. B27k *7/00*

U.S. Cl. 241—4 **31 Claims**



An apparatus for and a method of removing fibrous material from a mineral ore. In the described embodiment, the ore is first crushed in a suitable crushing apparatus to the proper feed size for a first grinding mill, normally a rod mill. The first grinding mill is so adjusted or designed as to grind the ore fed thereto to the coarsest grind at which most of the fibrous material is liberated from the rest of the ore. The fibrous material is a relatively coarse size when liberated at this grinding level. The ground material discharged from the first grinding mill is then fed as a slurry to a screening device having openings which are so sized as to retain on the screen as "oversize" the liberated fibrous material, but which pass the defibered slurry through the screen as "undersize." The defibered slurry is then passed to an additional grinding stage or stages in which the valuable or desired mineral is liberated to a desired degree from the defibered gangue material.

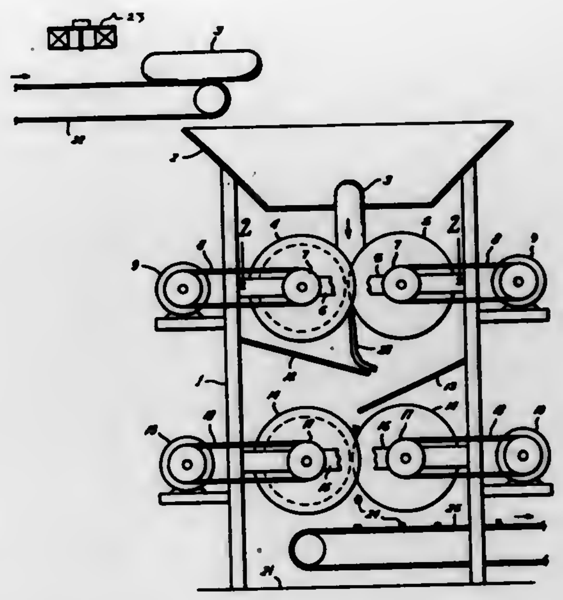
3,727,850
SCRAP RUBBER SHREDDING DEVICE

Clarence A. Krigbaum, 4621 Gasmer, Houston, Tex.

Filed April 16, 1971, Ser. No. 134,717

Int. Cl. B02c *18/06*

U.S. Cl. 241—159 **1 Claim**



A device for shredding scrap, such as used tires, to reduce the scrap to small portions which may be readily and easily disposed of.

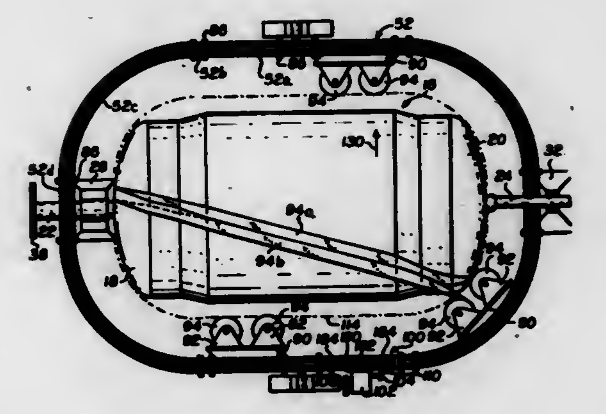
3,727,851
APPARATUS FOR WINDING INSULATION ONTO VESSELS

John J. Beninati, Kenilworth, N.J.; Paul P. Duron, Anaheim, Calif., and James L. Perry, Glen Ellyn, Ill., assignors to Airco, Inc., New York, N.Y.

Filed June 30, 1966, Ser. No. 561,833

Int. Cl. B65h *89/00*

U.S. Cl. 242—7.23 **14 Claims**



Thermal insulation is applied circumferentially to a vessel by rotating the vessel about its longitudinal axis to cover the cylindrical suraace with one layer per each revolution. A series of carriages are simultaneously driven about the vessel on a track inclined slightly to the horizontal axial plane of the vessel to wrap insulating tapes in a substantially longitudinal direction to provide interlocked layers of thermal insulation over both the end areas and intermediate surface.

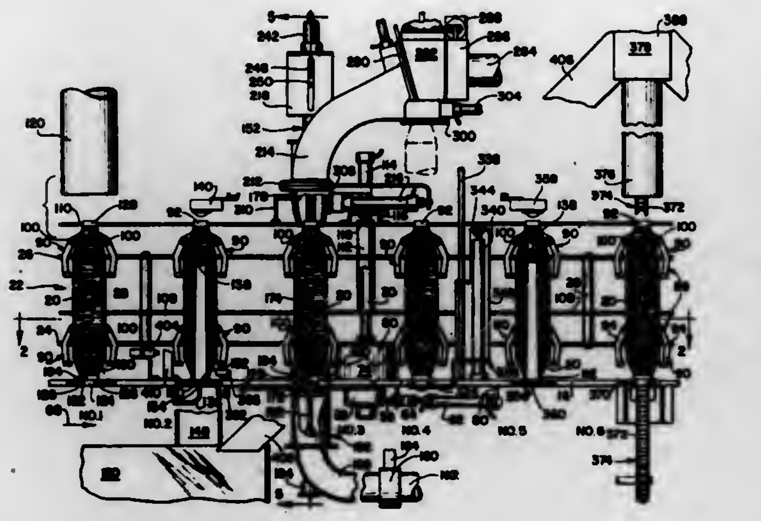
3,727,852
BOBBIN PROCESSING

John Nelson, North Kingstown, and William E. Stoppard, Warwick, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Continuation of Ser. No. 859,150, Sept. 18, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 186,183

Int. Cl. B65h *54/00*

U.S. Cl. 242—35.6 R **35 Claims**



An apparatus and a method for readying filled supply bobbins for receipt by a winding machine. As each bobbin is delivered to the apparatus it is given a preliminary servicing and inspection, whereupon the bobbin is either rejected or further processed by having a tailing or inner end of the body of yarn severed and an unwinding or outer end of the yarn picked-up and formed into a bunch which is deposited by means of a ram in a hollow core of the bobbin for retention therein until subsequent retrieval at the winding machine. Next the bobbin is again inspected and either rejected or directed to the winding machine. The rejected bobbins may be deposited in a bin for manual inspection.

3,727,853
FILM WINDING MACHINE

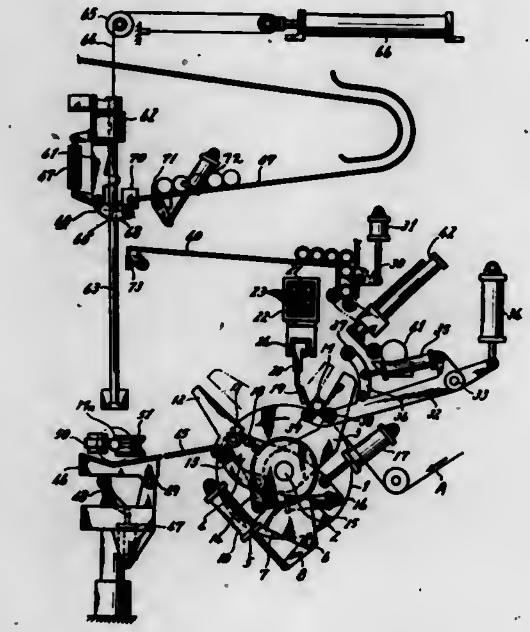
Hisashi Kinoshita, Moriguchi, Japan, assignor to Kabushiki Kaisha Fuji Tekkosho, Osaka, Japan

Filed Aug. 26, 1970, Ser. No. 67,027

Claims priority, application Japan, July 7, 1970, 59335/70

Int. Cl. B65h *19/26, 19/28*

U.S. Cl. 242—56 A **3 Claims**



A machine for winding film consecutively and automatically, by a predetermined length, on tubes without stopping the advance of the film which is continuously delivered from a film supply source to this machine, wherein all operations of film winding, film cutting, supplying a winding position with a roll core, discharging a full film roll from the machine, drawing out mandrel from the full film roll, inserting a mandrel into a tube to form a roll core, and shifting the formed roll core to a roll core magazine and a tube from a tube core magazine to a mandrel inserting position are performed in sequence automatically by an electric or pneumatic mechanism set up in accordance with a predetermined program.

3,727,854
AUTOMATIC WINDING SPOOL FEED APPARATUS

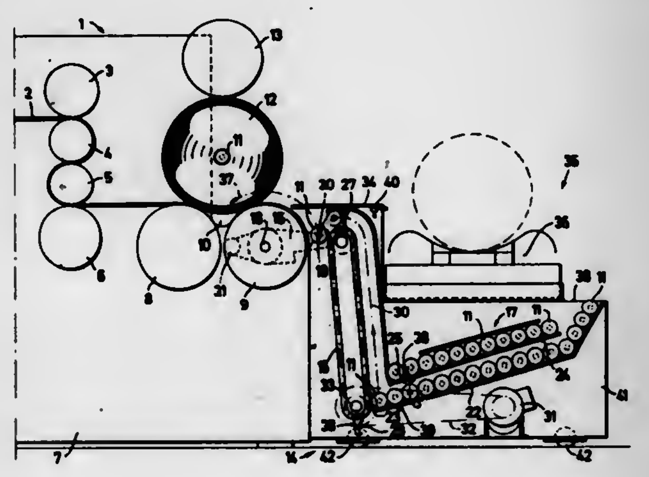
Oswald Grotzbach, Dalmen, Germany, assignor to Hergeth KG Machinenfabrik und Apparatebau, Dulmen (Westf), Germany

Filed July 12, 1971, Ser. No. 161,677

Claims priority, application Germany, July 25, 1970, P 20 37 006.3

Int. Cl. B65h *17/12*

U.S. Cl. 242—66 **15 Claims**



This apparatus is for feeding winding spools to a pair of side-by-side winding rollers of a fleece or fiber producing machine for the formation of storage rolls of textile or fiber material. The device comprises a storage magazine for the individual spools, a pivotal carrier for delivering individual spools from a ready position to a position upon the winding rollers after the previously formed roll has been removed, and a conveyor means for transferring the winding spools from the storage magazine to the pivotal carrier for the subsequent transfer to the winding rolls. The entire device can be mounted on wheels to render the machine portable to effect easy maintenance of both the feed apparatus and the winding machine.

3,727,855
WINDING METHOD AND APPARATUS

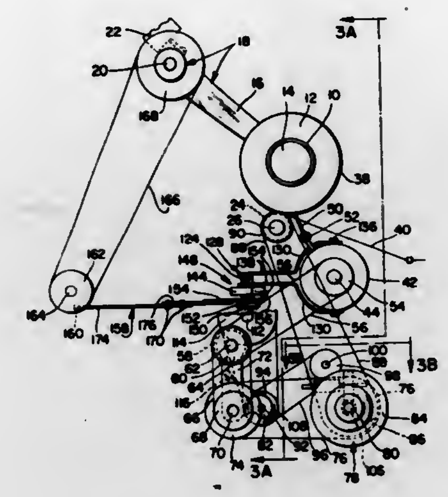
Hans H. Richter, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed April 5, 1971, Ser. No. 131,213

Int. Cl. B65h *54/38, 54/32*

U.S. Cl. 242—18.1 **8 Claims**

A method and apparatus for forming a wound yarn package on a winder having a rotary traverse cam and a cooperating follower yarn guide for traversing a strand of yarn as it is wound onto the package. The winder is equipped to synchronize ribbon breaking, scattering, and shortening of the traverse stroke of the yarn guide, for slowly or rapidly winding a cheese (or cone) shaped yarn package usually with tapered end faces so that the package is suitable for very rapid over-end unwinding within tolerable yarn breakage limits, as on a "shuttleless"loom. A package drive roll is operated at constant speed and the traverse cam speed is varied in the neighborhood of 10 to 30 percent or more to provide a form of ribbon breaking and constantly varying high and low wind ratios. Scattering is provided at opposite end portions of the package for a length sufficient to avoid hard corners at the opposite end faces of the package. Traverse stroke shortening is not always required but, depending on the characteristics of the yarn, is generally desirable for tapering the end faces to deter stitching. Stroke shortening and scattering are accomplished by axial shifting of the rotary traverse cam. The ribbon breaking and scattering features are synchronized so that the sharpest yarn reversals are provided at the end faces with broader reversals immediately inwardly of these faces.



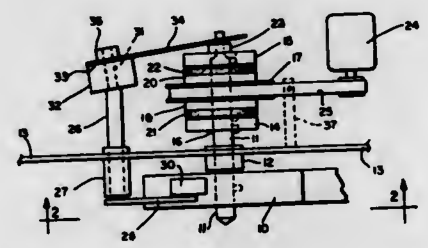
3,727,856
TORQUE CONTROL METHOD AND APPARATUS

Paul E. Kitch, W. Springfield, Mass., assignor to Scott Paper Company, Philadelphia, Pa.

Filed April 26, 1971, Ser. No. 137,315

Int. Cl. B65h *25/04, 25/28*

U.S. Cl. 242—75.5 **11 Claims**



A method and apparatus for controlling the amount of torque applied to a mandrel in response to a variable condition in which a variable force is obtained by flexing a flexible resilient member in an amount proportional to the variable condition which is sensed, the variable force being utilized to control the amount of torque applied to the mandrel.

In a particular embodiment, the method and apparatus disclosed are employed in winding or unwinding a roll of material in which a variable force is obtained by flexing a flexible resilient member in an amount relating to the diameter of the roll of material being wound or unwound. The roll of material is sensed or monitored to detect changes in its diameter and the variable force generated in accordance with such detected changes is utilized to operate a force-actuated friction clutch for varying the amount of drive torque or braking torque transmitted either from a drive motor or from a brake to the roll of material being wound or unwound in response to the progress of the winding or unwinding, respectively.

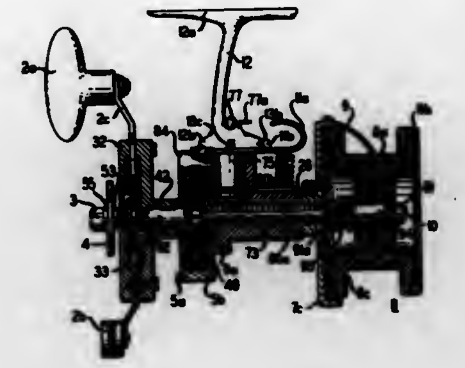
3,727,857
CONVERTIBLE FISHING REEL

George B. Chann, 160 Church Street, Bridgeton, N.J.

Filed Sept. 28, 1971, Ser. No. 184,440

Int. Cl. A01k *89/02, 89/04*

U.S. Cl. 242—84.2 B **11 Claims**



A two-way reversible spool fishing reel for spin casting, spool casting or spool winding. A star drag clutch provides for star drag or free spool operation; and a handle adjustment provides spool winding at two different speeds. A swivel mechanism connected to the shank of the rod support permits the position of the reel to be shifted with its axis parallel to the rod for spin casting, or normal to the rod at diametrically opposite positions for right-handed or left-handed spool casting or spool winding. A ratchet projections depending from the swivel mechanism locks against rotation of the shaft during spin casting, and presents a tapered face for ratchet action when the reel is shifted to right-handed or left-handed winding positions. The ratchet may be lifted to off position, or readily reversed to provide a noise maker. The crank handle is constructed with a slidable adjustment for keying a shift to high or low speed spool winding or free crank positions.

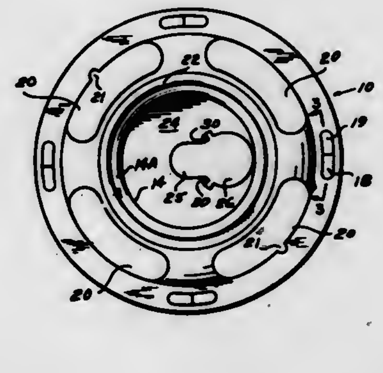
3,727,858
WIRE REEL

Richard D. Cornwell, and Darlene M. Cornwell, both of R. R. No. 1, Prior Lake, Minn.

Filed June 16, 1972, Ser. No. 263,423

Int. Cl. B65h *49/00*

U.S. Cl. 242—129 **2 Claims**

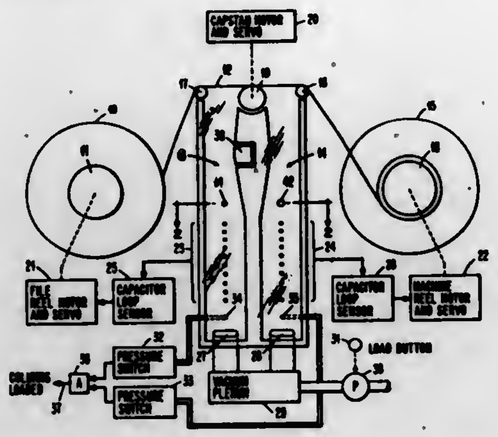


A reel for drawing off coiled spring wire comprises two mating and locking half drums. The coil is restrained internally. The wire end, brought out through an annular opening, is pulled as needed.

3,727,859
MEANS FOR EQUALIZING THE LOADING CHARACTERISTICS OF VACUUM COLUMNS

Robert P. Dobransky; Frederick B. Froehlich, both of Boulder; Bernard J. Halter, Longmont, and William H. Middleton, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 7, 1971, Ser. No. 150,321
Int. Cl. G11b *15/58, 23/12*
U.S. Cl. 242—182 **12 Claims**

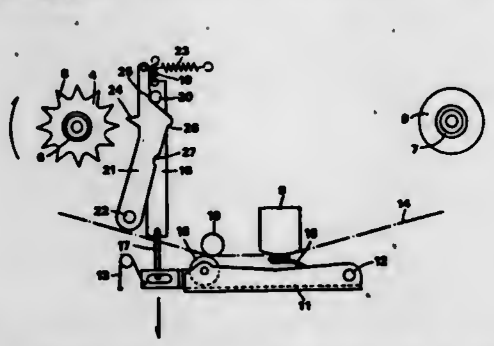


A magnetic tape unit having two vacuum column tape loop buffers, with a machine reel and a removable file reel disposed to selectively supply tape to or receive tape from one of the columns, and a single capstan located between the columns to control the tape movement. A tape processing station is mounted at a fixed position adjacent the upper portion of a narrow wall of the machine column. The lower portion of each column defines an operational zone and includes a capacitance-type loop position sensor whose output signal servo-controls the reel motors in accordance with the position of the tape loop bight within the zone. The upper portion of at least one of the columns includes air flow leakage means constructed and arranged to compensate for air leakage which occurs as the tape loop passes the processing station during loading of the tape loops into the columns, this controlled air leakage producing concurrent loading of the columns.

3,727,860
CONTROL ARRANGEMENT FOR TAPE RECORDERS

Osamu Okada, Tokyo, and Yuuji Mihori, Yokohama, both of Japan, assignors to Amerex Electronics Corp., New York, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,784
Claims priority, application Japan, Nov. 12, 1970, 45/112410
Int. Cl. B11b *15/32*; **G03b** *1/04*
U.S. Cl. 242—208 **10 Claims**

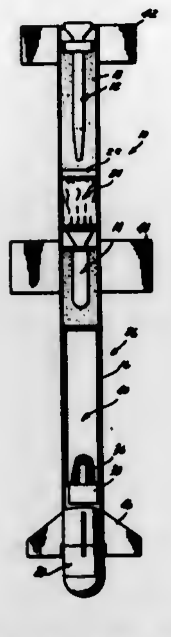


An arrangement for controlling the modes of operation of a tape recorder through displacement of a lever carrying the pinch roller, to predetermined positions. The free end of the lever is linked to a slide member carrying the indexing pin designed to operate with three spaced indentations on a stop lever. The stop lever has a projection which is brought into the path of motion of a sprocket-shaped rotary member which supports a magnetic tape reel, when the tape recorder is actuated so as to be in the stop position.

3,727,861
METHOD AND APPARATUS FOR SUPPRESSION OF ANTIAIRCRAFT FIRE

Edwin G. Swann, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 5, 1970, Ser. No. 22,101
Int. Cl. F41g *7/00*
U.S. Cl. 244—3.15 **4 Claims**

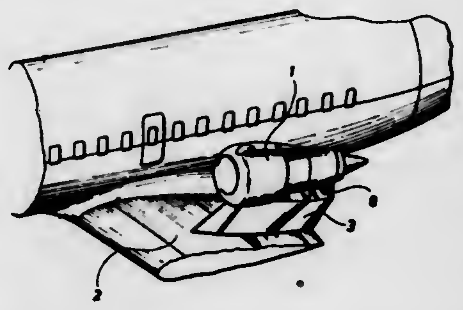


An aerial weapon is provided for the suppression of antiaircraft artillery fire against an air attack. This concept has been called various names in the past, notably AFIRM standing for Anti-Flak InfraRed Missile. A first rocket delivers the missile which descends on a parachute until the heat of an antiaircraft gun is sensed. A second rocket propels the missile to target under control of heat sensing guidance and control unit.

3,727,862
AIRCRAFT POWER-UNIT SUSPENSION SYSTEM

Norbert Kaufhold, Bremen-Burg; Klaus Konig, Lilienthal; Heinrich Keller, Bremen, all of Germany; Jan G. de Graaf, Zwanenburg, Netherlands; Jan Johan Blankenzee; Hans Bakker, both of Amstelveen, Netherlands, and Carolus Plettenburg, Rijsenhout, Netherlands, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

Filed Nov. 30, 1970, Ser. No. 93,737
Claims priority, application Germany, Nov. 29, 1969, P 19 60 005.6
Int. Cl. B64b *1/24*
U.S. Cl. 244—54 **5 Claims**

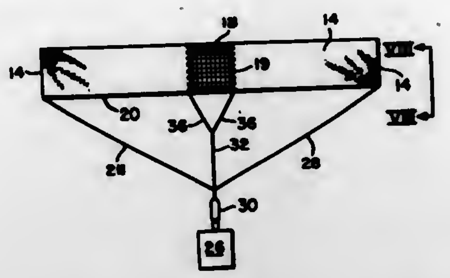


A suspension system for an aircraft power unit having a spacer member mounted on the structure of the airframe. Means are provided for mounting the power unit to the spacer member so as to permit the power unit to vibrate predominantly in one predetermined direction and avoid resonance between the power unit and the airframe structure. The mounting means includes an elastic member such as a torsion bar arranged between and connected to the spacer member and the power unit.

3,727,863
AIR-VENTING PARACHUTE

Victor G. Bockelmann, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 23, 1971, Ser. No. 155,929
Int. Cl. B64d *17/12*
U.S. Cl. 244—145 **9 Claims**

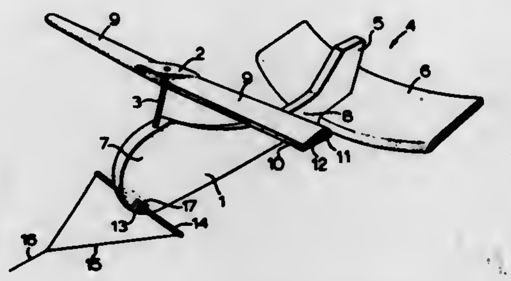


A parachute, particularly suitable for decelerating illuminating flare-type payloads, in which the canopy is constructed with an arrangement of high air permeable areas for venting the rising column of hot combustion gases from said flare and thereby slow the descent to increase flare performance.

3,727,864
HELICOPTER KITE

Walter P. Tolomizenko, 240 Ellis Avenue, Toronto, Ontario, Canada

Filed Feb. 8, 1971, Ser. No. 113,451
Int. Cl. B64c *31/06*
U.S. Cl. 244—154 **6 Claims**



The invention relates to a kite which simulates a helicopter and includes a body which has a rotor mounted on an axle above the front end thereof and a tail assembly at the rear end thereof. The rotor is of the type which rotates when acted on by a stream of air and which creates a lifting effect as it rotates. The tail assembly comprises a fin and a stabilizer of relatively large lateral extent. This large stabilizer serves to maintain the kite and the plane of the rotor in the desired attitude for stable flight and further serves to counter any tendency of the kite to drift or tilt to one side.

ERRATUM

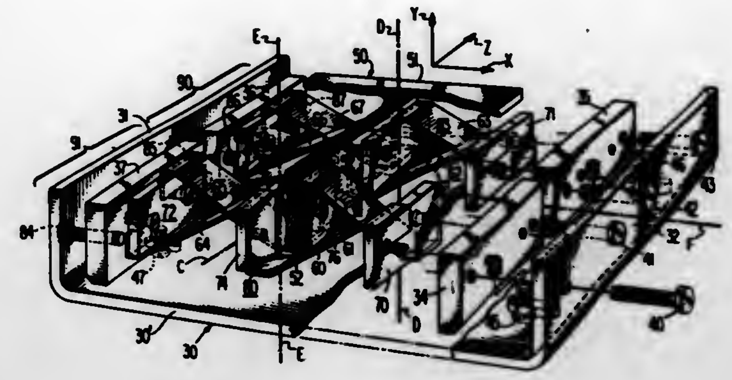
For Class 246—182 see:
Patent No. 3,728,539

3,727,865
SUSPENSION SYSTEM

David Robert Melrose, and Derek Sidney Binge, both of Hamilton Square, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1970, Ser. No. 79,496
Int. Cl. F16l *15/04*
U.S. Cl. 248—15 **28 Claims**

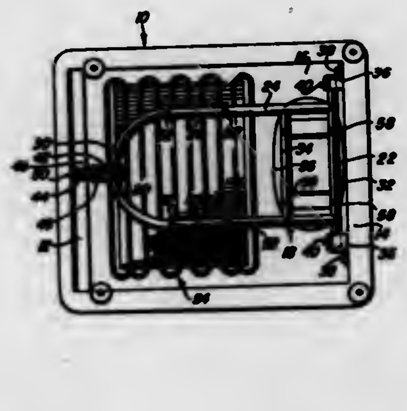
A rigid member having six degrees of freedom in a system in which the member is suspended from a support by a plurality of webs (preferably four or more) arranged to develop restoring stresses in the webs in response to any disturbing force or torque to restore the member to its equilibrium position. The properties of the webs may be selected to provide a wide range of system spring stiffness for use in an environment of significantly improved thermal isolation.



3,727,866
REPLACEMENT REFRIGERATOR COMPRESSOR BRACKET

Curry A. Drake, 2411 Baxter Street, Mobile, Ala.

Filed June 25, 1971, Ser. No. 156,794
U.S. Cl. 248—16 **11 Claims**



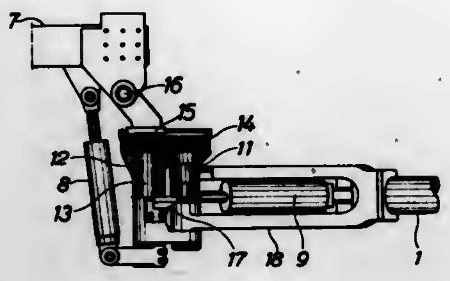
A horizontally elongated support frame including a single center mounting point at one end and a pair of opposite side mounting points at the other end by which the frame may be supported from a plurality of makes of refrigerators and/or freezers, the frame itself including further mounting means adapted to support a plurality of motor/compressor and condenser assemblies of different makes therefrom whereby the frame may be utilized to support specific motor/compressor and condenser assemblies from various refrigerators and/or freezers, not necessarily of the same manufacturer.

The bracket of the instant invention comprises a frame for mounting beneath a refrigerator or freezer and includes structure by which the step of mounting the frame from the refrigerator or freezer may be readily carried out with little effort on many different refrigerators and freezers of different manufacturers. Also, each of the three forms of support frame specifically disclosed hereinafter include structure by which motor/compressor and condenser assemblies of various manufactures may be supported therefrom.

3,727,867

DEVICE FOR TURNING THE FEED DEVICE FOR A ROCK DRILL

Ilmari Toppila, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland
Filed June 28, 1971, Ser. No. 157,429
Claims priority, application Finland, June 29, 1970, 1818/70
Int. Cl. E21c *11/00*
U.S. Cl. 248—16 2 Claims

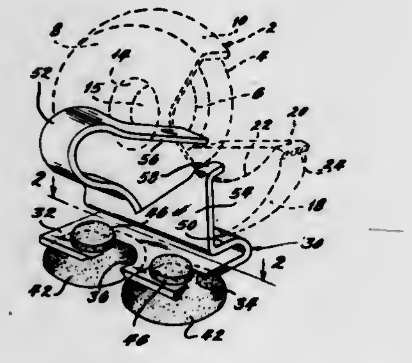


The present invention concerns a device for turning the feed device of a rock drill with references to the guiding jib around a transversal, fixed, horizontal shaft by the aid of a power cylinder. The invention is characterized in that the feed device has been connected to a turning shaft running parallel to the said fixed shaft and journalled in a turning head turnably carried on the fixed shaft, which shafts have been connected with each other, most appropriately with the aid of gears, and that a power cylinder has been connected between the guiding jib and the turning head.

3,727,868

HOLDER FOR TAPE DISPENSERS

Dwight D. Buchanan, 503 North Crescent Drive, Kirkwood, Mo.
Filed Nov. 12, 1970, Ser. No. 88,744
Int. Cl. B65h *75/36*
U.S. Cl. 248—309 17 Claims

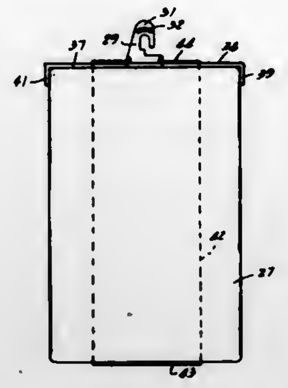


A holder for a tape dispenser includes a base which is engaged with suction cups for securing the base and holder to a supporting surface. In one embodiment the base supports a dispenser seat which in turn has a retaining arm projecting outwardly from it and then doubling back over the seat. The retaining arm fits through a hollow spindle on the dispenser and holds the dispenser against the seat. In other embodiments the base also supports a dispenser seat, and the seat has a pair of walls extending upwardly from it. The dispenser is clamped between the walls. Thus tape can be withdrawn from the dispensers with only one hand. In every embodiment the base is detachable from the suction cups to facilitate installation of the dispenser in the holder.

3,727,869

HOOK AND ACTUATOR FOR VENDING MACHINE

Charles H. Flubacker, 524 South Harvard Avenue, Arlington Heights, Ill.
Filed May 17, 1971, Ser. No. 143,923
Int. Cl. B65d *63/18*
U.S. Cl. 248—339 6 Claims

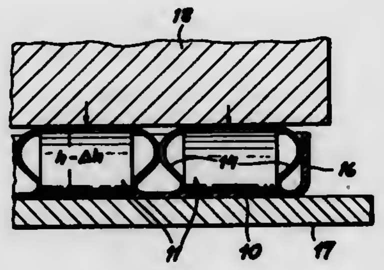


An improved merchandise supporting hook and release mechanism actuator for a vending machine for supporting merchandise in the vending machine and releasing it such that only a single article will be dispensed by the release mechanism during each duration.

3,727,870

RESILIENT SUPPORT

Rudi Bass, 98 Riverside Drive, New York, N.Y.
Filed May 10, 1971, Ser. No. 141,738
Int. Cl. A47g *29/00*
U.S. Cl. 248—350 9 Claims



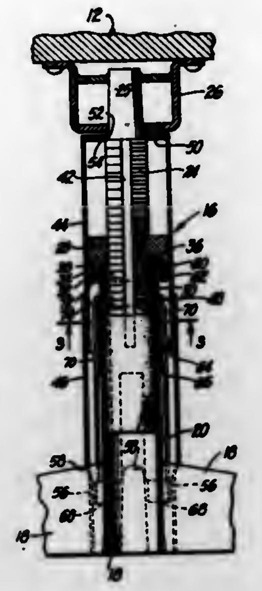
A base of resilient (polymeric or metallic) sheet material carries a multiplicity of cup-shaped projections of polygonal outline formed in one piece therewith, each projection having a generally prismatic shape with slits along their longitudinal edges enabling individual deformation of its several sides under pressure acting upon the bottom of the cup. The coplanar cup bottoms may support a load parallel to the base or may collectively act as a bumper or shock absorber. The mutual separation of the undeformed projections is substantially less than their height so that, in response to a predetermined loading stress, their outwardly bulging sides contact one another and prevent further depression of the cup bottoms toward the base.

3,727,871

SEAT-HEIGHT ADJUSTMENT DEVICE

Henry J. Harper, 720 Greentree, Pacific Palisades, Calif.
Filed April 14, 1972, Ser. No. 243,959
Int. Cl. F16m *11/00, 13/00*
U.S. Cl. 248—406 6 Claims

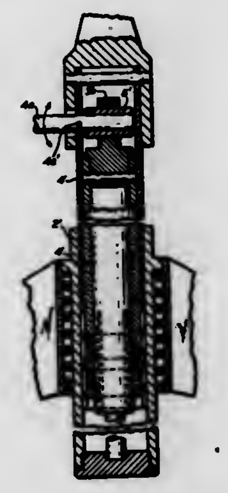
A seat-height adjustment device for a swivel chair including a clutch and upper and lower telescoping tubes. The tubes receive and cover the threaded spindle, hollow post, and bell nut of the chair. The clutch means is actuated by upward movement of the lower tube to releasably lock the bell nut for axial movement relative to the spindle upon a turning of the seat of the chair.



3,727,872

COLUMN OF AN OFFICE CHAIR

Albert Spieth, Baumrente 15, Oberesslingen, and Rudolf Spieth, Haus 14, Esslingen-Oberhof, both of Germany
Filed June 15, 1970, Ser. No. 45,950
Int. Cl. F16m *11/00*
U.S. Cl. 248—412 3 Claims



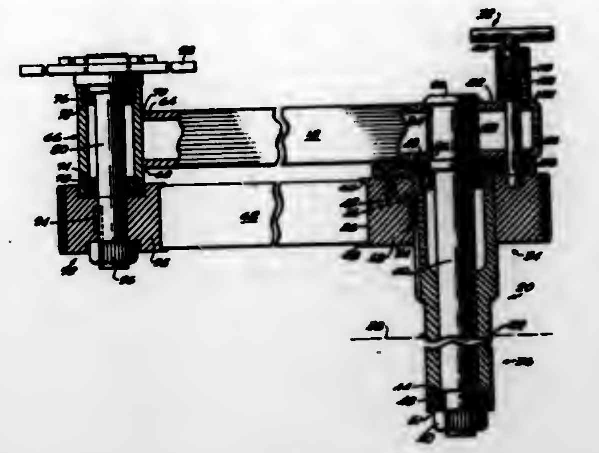
A releasable lock of a tube telescope, variable as to its length, as a column of an office chair, which comprises a cone, and a column tube movable as to its height and having a longitudinal slot at its free lower end. Tongues are supported by the column tube and the cone is pressed in the locking position against the inner face of the tongues. The latter carry a nose member pointing towards the cone, whereby the line of the convex surface of the cone converges in the direction towards a seat of the chair.

3,727,873

ADJUSTABLE CRANE SEAT

John H. Hill, 6255 S.W. 98th Street, Miami, Fla.
Filed July 19, 1971, Ser. No. 163,968
Int. Cl. F16m *11/08*
U.S. Cl. 248—418 6 Claims

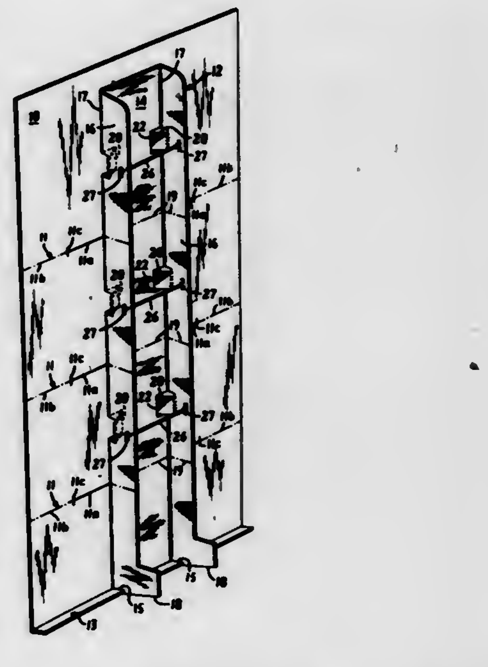
A vehicle and equipment seat support to allow one operator to efficiently operate the carrying vehicle and any mounted equipment where the controls of the mounted equipment are remotely mounted on the vehicle at a station different from that at which the vehicle controls are located, said combination including a first main seat support, a swingable arm with the seat rotatably journalled on the end of the arm, and belt means interconnecting the seat and the main support standard, so that when the swingable arm is rotated, it will travel through an arc about the main seat support and, simultaneously, the seat will be rotated relative to an axis through the main seat support.



3,727,874

FOLDING PANEL CONSTRUCTION

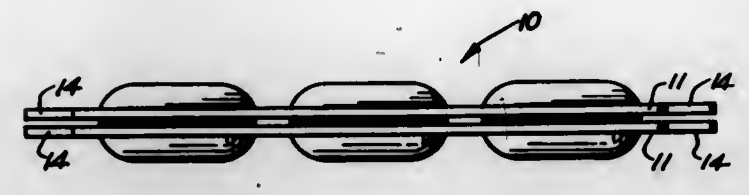
John H. Wuensch, Leonia, N.J., assignor to Electronic Assistance Corporation, Fair Lawn, N.J.
Filed Sept. 17, 1971, Ser. No. 181,368
Int. Cl. A47f *5/11*
U.S. Cl. 248—459 13 Claims



A self-erecting foldable display structure has a continuous display panel supported by a collapsible frame secured to its reverse side. The support frame includes an elongated back panel and a pair of side panels integrally hinged to the respective longitudinal edges of the back panel. Transverse fold lines are formed in both the support frame and the display panel dividing the structure into a plurality of sections. A combination of flaps and elastic bands in the support frame tend to maintain the frame with a U-shaped cross-section, thereby preventing folding of the structure. Manual flattening of the side panels against the pull of the elastic bands permits the structure to be folded along the transverse fold lines into a substantially flat, compact package. When the folded structure is held at its upper end and allowed to unfold freely, the support frame automatically reassumes its U-shaped configuration and supports the display panel in a substantially vertical position.

3,727,875
GREASELESS BAKED DONUT MOLD

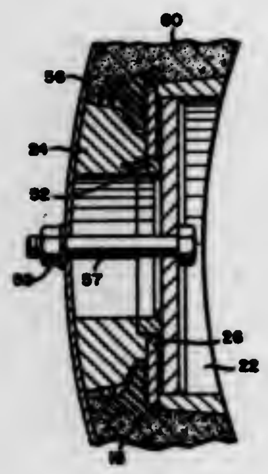
John D. Downing, 3218 Jennings Street, Sioux City, Iowa
Filed May 7, 1971, Ser. No. 141,200
Int. Cl. B29c *1/00*
U.S. Cl. 249—121 **1 Claim**



A device for producing donuts. This device includes a pair of members having a multiple number of depressions which when filled with the proper ingredients and placed matingly together and placed in an oven at the proper temperature, will produce donuts.

3,727,876
CORE DEVICE FOR VOID FORMING AND GASKET SUPPORT IN A MOLD WALL

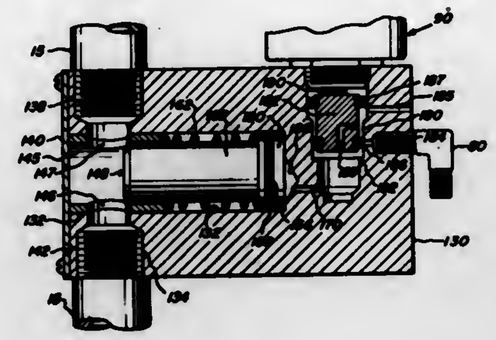
Lewis R. Keyser, Dayton, Ohio, assignor to Price Brothers Company, Dayton, Ohio
Filed Nov. 22, 1973, Ser. No. 200,972
Int. Cl. B28b *7/28*
U.S. Cl. 249—184 **13 Claims**



Method and apparatus for forming a void through the wall of a pipe during the casting process and supporting a gasket for embedment in the pipe about the void. The apparatus is made in three pieces, including an outer, contoured mold member which engages the pipe form and supports the gasket by engaging one of the faces, a ring shaped sustaining plate which engages an inner edge of the gasket in an interference fit, and an inner mold member which is also contoured, and in conjunction with the outer mold member, defines the void through the wall of the pipe. The inner and outer mold members, which are relatively expensive, can be stripped from the freshly cast concrete pipe at the same time the pipe form is removed and reused in another casting operation, while the relatively inexpensive sustaining ring is retained in the freshly cast pipe to support the gasket and maintain it round until the concrete has cured to sufficient strength to allow the sustaining ring to be removed.

3,727,877
PILOTED SHUT-OFF VALVE

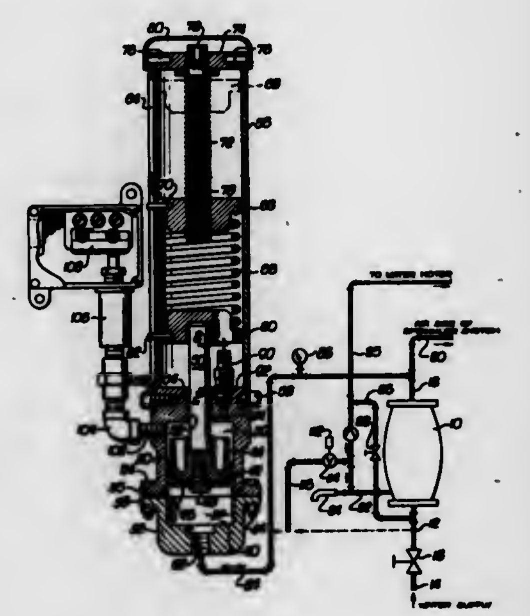
Luis Beguiristain, St. Paul, Minn., assignor to Chayes Dental Instrument Corporation, Danbury, Conn.
Division of Ser. No. 16,381, March 4, 1970, Pat. No. 3,636,974. This application Sept. 15, 1971, Ser. No. 180,568
Int. Cl. F16k *31/143, 31/42*
U.S. Cl. 251—30 **6 Claims**



A piloted shut-off valve particularly adapted for use in evacuator systems to control flow from a single vacuum source. The shut-off valve includes a valve body having a bore therethrough with a piston controlling flow between ports in the body, the piston defining with the bore a pilot chamber in which a three-way piloted valve controls the position of the piston and with the three-way valve being controlled from an electric source. The valve will operate in any position of the valve body irrespective of the force of gravity.

3,727,878
QUICK OPENING DEVICE FOR DRY-PIPE VALVES OF AUTOMATIC SPRINKLER SYSTEMS

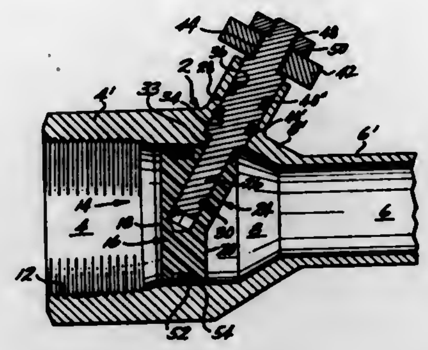
Charles F. Willms, Rutherford, N.J., assignor to Norris Industries, Inc., Los Angeles, Calif.
Division of Ser. No. 863,985, Oct. 6, 1969, Pat. No. 3,616,860. This application July 15, 1971, Ser. No. 162,958
Int. Cl. A62c *37/06*; F16k *31/145*
U.S. Cl. 251—57 **1 Claim**



A component for automatic sprinkler systems employed for fire protection is provided which is useful in dry-pipe systems to cause rapid opening of the dry-pipe valve of such systems in response to a slight but rapid decrease of air pressure in the sprinkler piping network attendant upon opening of a sprinkler head. Slow decreases in such pressure in relation to atmospheric pressure are off-set by an atmospheric bleed valve, a readily accessible adjustment for altering and visibly indicating the trip-off pressure is provided, and provision is made for either electrical or pneumatic operation.

3,727,879
SHUT-OFF VALVE

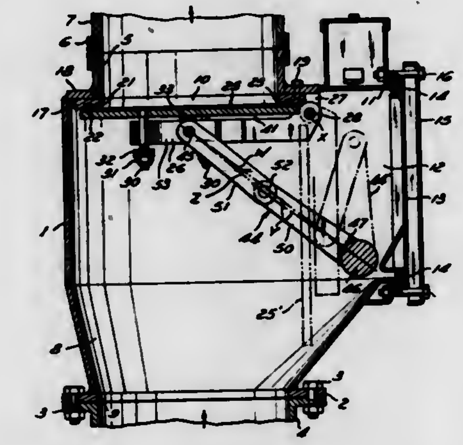
Peter J. Lange, and Harcourt G. Rummings, both of Seattle, Wash., assignors to Red Dot Corporation, Seattle, Wash.
Filed Dec. 4, 1970, Ser. No. 95,249
Int. Cl. F16k *1/226*
U.S. Cl. 251—84 **10 Claims**



A shut-off valve is disclosed wherein the flow is put through a cylindrical passage controlled by valve means including a truncated spheroidal closure member which is pivotally mounted in the passage to swing about an axis intersecting the cylindrical axis of the passage at an acute angle thereto, and normally centered at the intersection of the aforesaid axes. The member is separated at its periphery from the wall of the passage by a clearance in a diametral plane thereof which traverses the full circumference of the member; and there is a pressure deformable O-ring relatively slidably engaged on the periphery of the member in the clearance, which is adapted to compressibly interengage between the wall of the passage and the periphery of the member in the closure position of the member. There are also means operative to retain the O-ring on the periphery of the member as the member is swung into and out of the closure position thereof.

3,727,880
VALVE

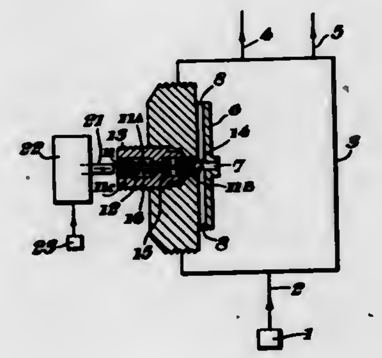
Arthur J. Stock, Lakewood, Ohio, assignor to Stock Equipment Company, Cleveland, Ohio
Continuation-in-part of Ser. No. 847,380, Aug. 4, 1969, abandoned. This application Dec. 22, 1970, Ser. No. 100,588
Int. Cl. F16k *25/00*
U.S. Cl. 251—85 **13 Claims**



A valve for controlling flow to a burner of pulverized coal and air mixture in which valve has a body with an opening surrounded by an auxiliary metal valve seat portion and an annular sealing gasket formed of resilient material such as natural or synthetic rubber that can deteriorate under extraordinary conditions such as heat or explosion. A generally flat gate plate positioned within the valve body is mounted on a movable supporting member so it can be moved from an open position to a closed position in which it contacts the gasket or the auxiliary seat portion to seal the valve opening. The gate plate is movably mounted on the supporting member so it can tilt, within limits, relative to the supporting member to reduce scuffing of the gasket on opening or closing of the valve, and so it is resiliently urged away from the supporting member toward the valve opening when the member is in closed position to hold the gate plate in contact with the gasket or with the metal seat portion if the gasket is inoperative or absent due to deterioration. The supporting member is pivotally mounted and is moved by pivotally connected link members that are in an over-the-center position when the valve is closed, to hold the gate plate closed even if the actuating means becomes inoperative when the valve is closed.

3,727,881
FLUID CONTROL SWITCHING ARRANGEMENTS

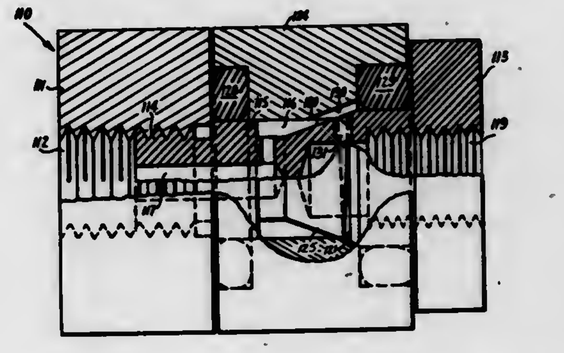
Edward John Ward, Haywards Heath, England, assignor to Norcon (Norris) Limited, Heath, England
Filed March 29, 1971, Ser. No. 128,985
Claims priority, application Great Britain, Dec. 12, 1970, 59,173/70
Int. Cl. F16k *1/14, 31/02*
U.S. Cl. 251—129 **7 Claims**



A fluid control switching arrangement having a control valve employing a needle slideable in a bore to close an outlet, wherein the friction losses introduced by a sealing ring are reduced by providing the sealing ring at a relatively thin central portion of the needle, between relatively thick end portions. The control valve may be pressure operated by a diaphragm or bellows, or may be operated by a electromechanical transducer.

3,727,882
METERING VALVE

Glenn A. Burris, and Joseph P. Lares, both of 967 Center Street, San Carlos, Calif.
Filed Aug. 19, 1971, Ser. No. 173,035
Int. Cl. F16k *5/10*
U.S. Cl. 251—209 **1 Claim**

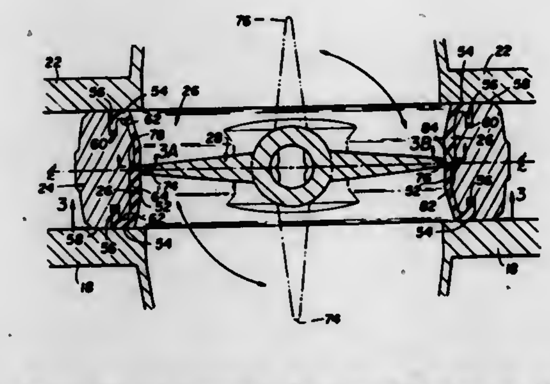


The present invention relates to a metering valve in which a valve plug has an annular groove tapering from zero width to a full width with the groove communicating with a port in a rotatable valve seat member. The relative position of the groove with respect to the port determines the size of the opening through which fluid is to pass to permit any desired degree of metering from 0 to 100 percent.

The valve plug is semi-spherical in the preferred form of the invention and is conical in a modified form of the invention. In another modified form of the invention the valve seat member is provided with a scale to indicate the relative position of the valve.

3,727,883
BUTTERFLY VALVE

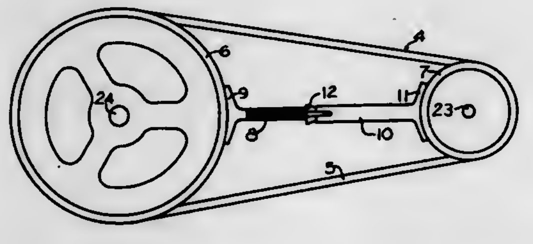
John A. Conners, Fairfield; Donald W. Liepelt, Madison, and William H. Baulieu, Monroe, all of Conn., assignors to Jenkins Bros., Bridgeport, Conn.
Filed Jan. 26, 1972, Ser. No. 220,958
Int. Cl. F16k *1/22*
U.S. Cl. 251—306 **5 Claims**



Butterfly valve assembly for installation in a pipe line between flanges. Assembly includes rigid tubular valve body and resilient valve seat insert to make tight seal with flanges when installed and to make tight seal with valve disc in service. Seat insert has certain dimensions undersize relative to valve body so that insert must be stretched when fitted to body and is further stretched when flanges are tightened during installation. Stretching assures secure fit between insert and body before installation and leak proof seal after installation. Seat insert and valve body have cooperating radial ledges asymmetrically located to prevent relative movement when valve disc is closed. Insert has annular flange sealing portions each with an inturned bead which enters an annular groove formed in the valve body. Flange sealing portions are so shaped that when valve is installed between flanges of a pipe line the beads are forced into but do not fill the grooves thus reducing tendency toward squeezing excess resilient material into, and consequent loosening of, the portion of the insert in which the disc must seat.

3,727,884
V-BELT TENSIONING MEANS

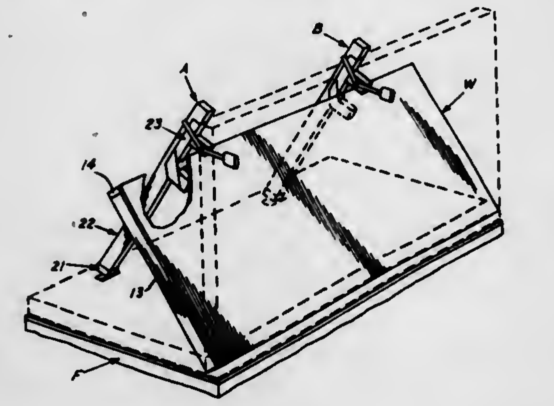
Harry Willis Custer, 30635 Helmandale Drive, Franklin, Mich.
Filed July 30, 1971, Ser. No. 167,632
Int. Cl. B66f *3/08*
U.S. Cl. 254—67 **1 Claim**



Improvement in a V-belt tensioning means for tensioning a V-belt operative in respect to a pair of sheaves is disclosed said V-belt tensioning means comprising jack means constructed to be disposed and to be axially operative between said sheaves, said jack means having identical outer ends constructed to engage said sheaves, respectively, said jack means having screw thread means operative to change the length of said tensioning means so as to apply a tensioning force to spread said sheaves apart to tension said V-belt, said improvement comprising said identical outer ends constructed to engage the walls of the V-grooves of said sheaves by each said end comprising a pair of spaced apart cylindrical legs disposed in the same plane and at an obtuse included angle with respect to each other so that when said tensioning means is disposed and made to be axially operative between said sheaves the walls of the V-grooves thereof are engaged by said cylindrical legs to center and lock said tensioning means therebetween.

3,727,885
LIFT APPARATUS FOR RAISING WALL SECTIONS

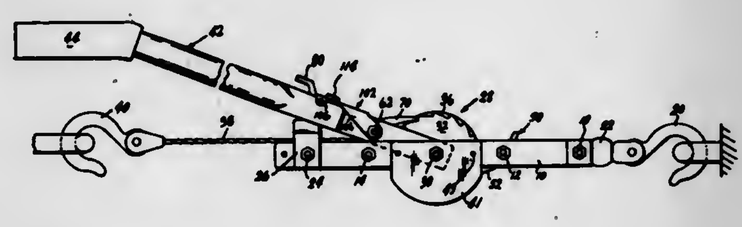
Kenneth Jones, 10071 W. 9th Drive, and Willard E. Patterson, 1250 Lee St., both of Lakewood, Colo.
Filed Nov. 5, 1971, Ser. No. 196,145
Int. Cl. B66f *13/00*
U.S. Cl. 254—133 **12 Claims**



Lift apparatus for raising wall sections from a prone position to an upright position comprises at least one lift assembly including a socket-like pivotal base, an upright support having the lower end releasably inserted into the pivotal base adapted to pivot with the base as the wall section is raised, and a movable lift member slidable up the upright support adapted to receive an upper end portion of the wall section and raise with the wall section as lifting forces are applied to the wall section and automatically latch against downward movement as the lifting forces are removed. For raising longer wall sections two or more similar lift assemblies are located at spaced intervals along the wall section and alternately raised in incremental distances until the wall section is upright.

3,727,886
RELEASE MECHANISM FOR RATCHET-TYPE POWER UNIT

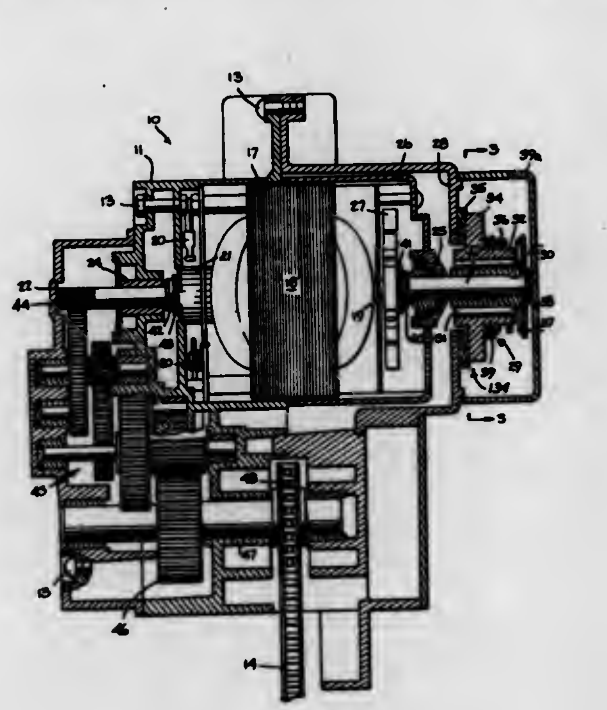
Robert L. Cain, West Lafayette, Ind., assignor to The American Gage & Manufacturing Co., Wauseon, Ohio
Filed March 10, 1971, Ser. No. 122,755
Int. Cl. A63b *61/04*
U.S. Cl. 254—164 **10 Claims**



Release mechanism for a ratchet-type power unit utilizing a ratchet drum upon which a flexible tension member is wound. Rotation of the drum is produced by oscillation of a lever arm having a ratchet catch pivotally mounted thereon. The release mechanism of the invention permits pivoting of the catch between a drum engaging ratcheting position, and an untensioning or "let down" position where the catch clears the ratchet teeth of the drum. The catch includes a torsion spring exerting a constant biasing force thereon about the catch pivot, and a leaf spring mounted on the catch is selectively engageable with a movable spring compressor which selectively permits the leaf spring to overcome the torsion spring bearing force. The spring compressor is mounted upon a slidable carriage for accessible manual operation and positioning, and the catch includes a manually operable portion disposed adjacent the spring compressor carriage.

3,727,887
POWER HOIST WITH LOAD BRAKE

George F. Lytle, deceased, late of St. Louis, Mo. (by Clara A. Lytle, executrix), assignor to Eaton Corporation, Cleveland, Ohio
Filed Jan. 31, 1972, Ser. No. 222,068
Int. Cl. B66d *1/00*
U.S. Cl. 254—168 **8 Claims**

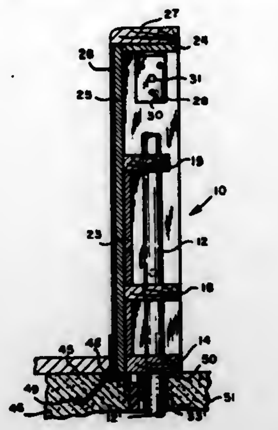


A power operated hoist having an overrunning clutch mounted on an extended end portion on the shaft of the hoist motor, and a simple brake that is constantly engaged between the clutch and a wall on the hoist frame so that the frame will accept directly the low amount of torque that is necessary to support a load on the load shaft of the hoist. Torque that is added by an operation of the motor will effect lowering of the load, while the heat that is generated by slip friction of the brake will be conducted away through a wall of the hoist frame. Lifting operation will be free from braking effect due to automatic release by the clutch. Speed reduction gears are connected to the opposed end of the motor shaft, being of rather simple design involving no brake parts.

3,727,888
HOCKEY RINK BOARD

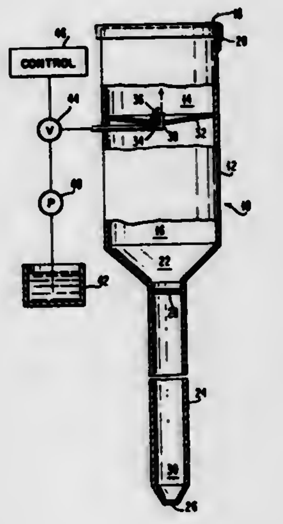
Arthur J. Nickolas, Mequon, Wis., assignor to Ice Crafts, Inc., Mequon, Wis.
Filed Sept. 4, 1970, Ser. No. 69,663
Int. Cl. E04h *17/16*
U.S. Cl. 256—24 **9 Claims**

Panel sections stand end to end to form a wall around a hockey rink or the like. Each panel has a central post for holding it upright and for pivoting it into alignment with similar panels to form a wall. The end of each panel has means for interlocking with an adjacent panel so as to secure it against rotation and to keep it in alignment with others so they present a smooth surface to the hockey rink side of the wall.



3,727,889
MIXING METHOD AND APPARATUS

Fritz J. Nagel, Memphis, Tenn., assignor to Chapman Chemical Company, Memphis, Tenn.
Filed March 8, 1971, Ser. No. 122,006
Int. Cl. B01f *5/00*
U.S. Cl. 259—1 R **20 Claims**

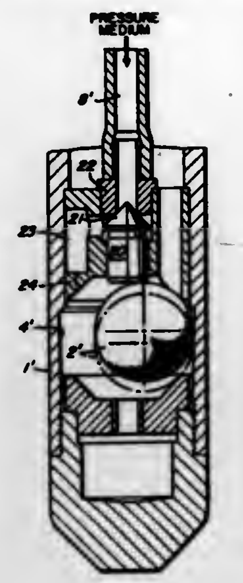


A measured amount of diluent fluid is directed in a stream into a container of a chemical substance so as to wash the chemical substance from the container while accomplishing a dilution and mixing of the chemical substance with the diluent fluid.

3,727,890
VIBRATOR FOR, AND METHOD OF COMPACTING CONCRETE AND SIMILAR MASSES

Franc Seidl, and Philipp Uebel, both of Munich, Germany, assignors to Wacker Werke KG, Munich, Germany
Filed Oct. 13, 1971, Ser. No. 188,905
Claims priority, application Germany, Oct. 14, 1970, P 20 50 364.4
Int. Cl. B01f *11/00*
U.S. Cl. 259—1 R **25 Claims**

A vibrator for, and a method for, compacting concrete and the like material in which the vibrator has a housing and an eccentric mass therein, a fluid supply leads into the chamber in which the mass is located for actuating the mass by fluid pressure and an exhaust leads from the chamber. The rate of supply of fluid to the chamber is regulated by a control sensitive to the amplitude of movement of the eccentric mass so that when the vibrator is engaged with the material to be compacted there is maximum fluid flow to the chamber and when the vibrator is disengaged from the material, the supply of fluid to the chamber is reduced.



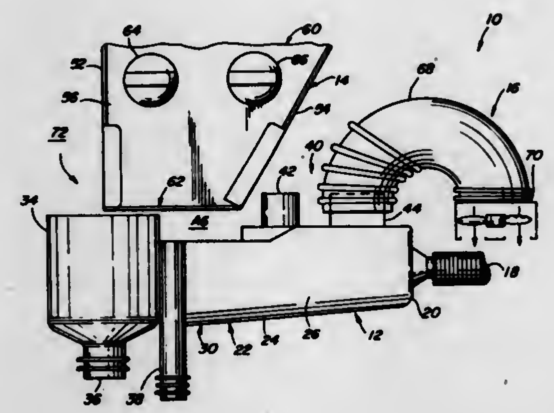
3,727,891
APPARATUS AND METHOD FOR MIXING PARTICULATE INGREDIENTS WITH A LIQUID

Frank David Brill, Norridge, Ill., assignor to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed Oct. 29, 1970, Ser. No. 85,144

Int. Cl. B01f *5/00, 15/02*

U.S. Cl. 259—4 **19 Claims**



In a system wherein particulate ingredients are added to a liquid through an outlet of a dispenser positioned above the liquid, an air flow is created to cause particles of the ingredients in the vicinity of the outlet of the particulate ingredient dispenser to be passed adjacent to the surface of the liquid and then to be extracted from the system. Mixture of the particulate ingredients and the liquid may be enhanced by forcing the air flow to pass either in close proximity to or through a curtain of the liquid.

3,727,892
FEEDBACK CONTROL FOR A CONTINUOUS MIXER HAVING A CONTROL OF INTERNAL PRESSURE

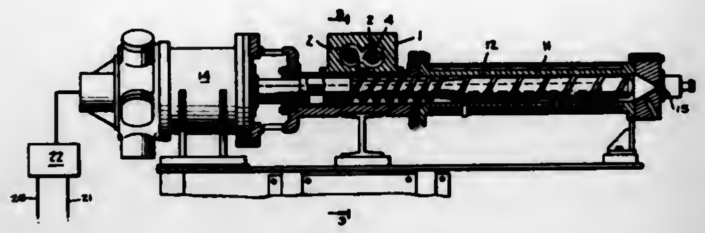
Angelo Joseph Notte; Peter Hold, both of Milford, and Klaus Juergen Spitzner, Oxford, all of Conn., assignors to USM Corporation, Boston, Mass.

Filed Dec. 14, 1971, Ser. No. 207,743

Int. Cl. B01f *7/02*

U.S. Cl. 259—10 **2 Claims**

This disclosure is directed toward an electromechanical feedback control for automatically regulating the discharge temperature in a continuous mixer. The feedback control senses both the mixer discharge temperature and the rate of change of mixer rotor torque. The torque rate of change is detected by a derivative circuit and serves to offer an anticipatory signal to the control system. The feedback control then regulates the internal pressure of the mixer in accordance with an error signal representing the difference between the measured mixer discharge temperature plus torque derivative signals and a preset desired temperature command signal.



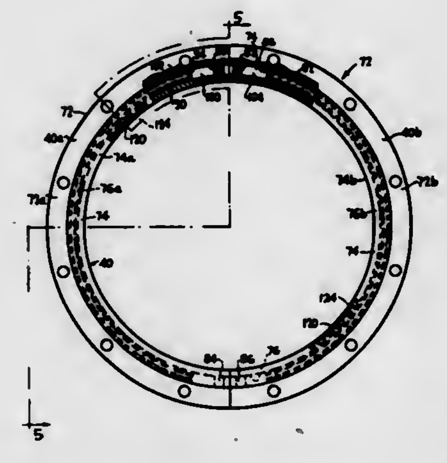
3,727,893
APPARATUS FOR PROCESSING RUBBER, PLASTIC AND THE LIKE AND PARTS THEREOF

James T. Matsuoka, Brecksville, Ohio, assignor to Intercole Automation, Inc., Cleveland, Ohio

Filed July 19, 1971, Ser. No. 163,918

Int. Cl. B01f *7/02*

U.S. Cl. 259—109 **4 Claims**



Apparatus for processing rubbers, plastics, other elastomers, and the like, including a rotatable material processing member having a processing portion within a material processing chamber and supporting shaft portions extending through end walls of the chamber and a seal having a water-cooled wear ring for preventing the leakage of material from the mixing chamber around the shaft portions of the rotors extending through the end walls of the mixing chamber.

3,727,894
APPARATUS FOR MOISTENING MIXABLE MATERIALS

Kurt Ahrenberg, Huettenweg 5, Herborn, Germany

Filed Nov. 13, 1969, Ser. No. 876,461

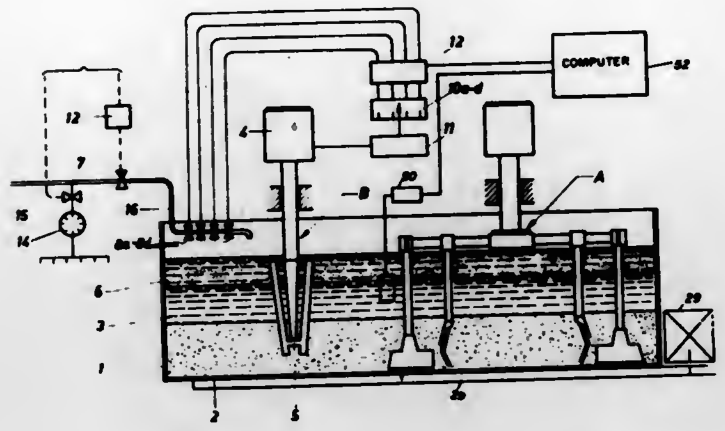
Claims priority, application Germany, Nov. 15, 1968, P 18 08 998.0

Int. Cl. B28c *7/04*

U.S. Cl. 259—154 **14 Claims**

The invention relates to methods of controlling the moistening of mixable materials and to apparatus for carrying out the methods. The invention is particularly applicable to the moistening of foundry casting sand with water. In one method of high-speed low-inertia auxiliary mixing tool is rotated in the

sand and the quantity of water added is determined in dependence on the resistance of the sand to rotation of the tool as measured by the power consumption of an electric motor driving the tool. Also disclosed is apparatus for carrying out the method automatically.



3,727,895
COOLING COATED WIRES, STRIPS AND THE LIKE

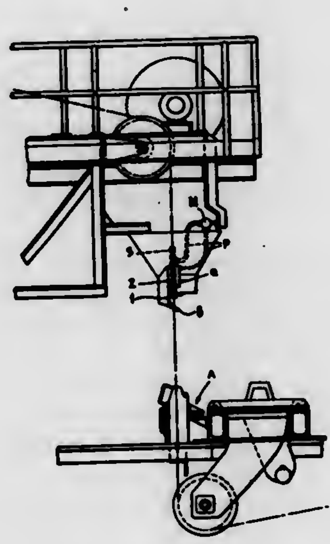
Herman William John Wondergem, Birmingham Gardens, New South Wales, Australia, assignor to Australian Wire Industries Proprietary Limited, Melbourne, Victoria, Australia

Filed June 26, 1970, Ser. No. 50,086

Claims priority, application Australia, June 26, 1969, 57082/69

Int. Cl. C21d *9/52*

U.S. Cl. 266—3 R **6 Claims**



An apparatus for cooling a coating on a wire comprising three separate coaxial passages through which the wire is adapted to pass after coating, the first and second passages passing through the walls of a pressurized gas manifold, the third passage having a tangentially directed liquid inlet bore therein and being flared at its lower end to define a liquid outlet passage between its lower end and the upper end of said second passage, means supplying liquid to said bore at such a rate as to cause a steady helical flow of liquid which fills said third passage but flows primarily from said outlet passage, and means supplying gas to said manifold at a pressure sufficient to cause substantially all of said quenching liquid to flow through said outlet passage.

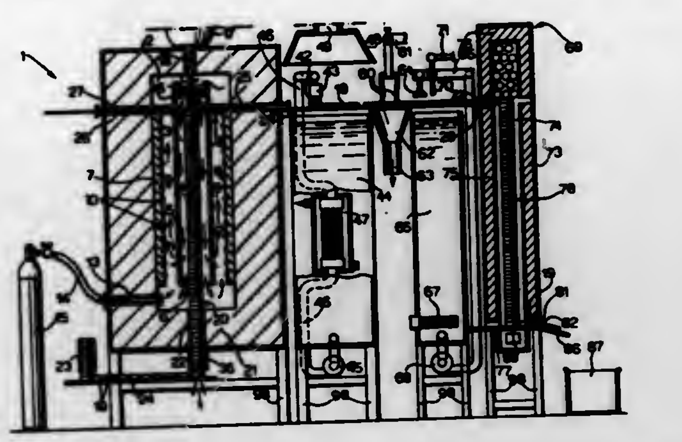
3,727,896
HEAT TREATMENT APPARATUS

Georg Claesson, Gladwyne, Pa., and Renato Battini, Turin, Italy, assignors to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy

Filed Nov. 22, 1971, Ser. No. 200,940

Int. Cl. C21d *9/40*

U.S. Cl. 266—4 R **20 Claims**



Apparatus for the heat treatment of annular metal components such as rings for rolling element bearings is disclosed. The apparatus is designed to be automatic and to take up less space in a factory production line. This is achieved by providing a tempering furnace and an annealing furnace each with at least one substantially vertical conduit through which a stack of the components can be transported in the axial direction of the stack. The conduits are arranged to be slightly larger than the diameter of the component being treated and there are provided means for creating a flow of heat exchange fluid through each furnace respectively, the flow of heat exchange fluid being in a direction opposite the direction of movement of the components. This allows each component to go through exactly the same temperature changes for exactly the same length of time as each other which is an advantage over previous systems in which the rings have been treated in irregular orientations where the temperature gradients within a furnace result in each component being raised to a slightly different temperature for different lengths of time resulting in a lack of uniformity in the eventual hardness of different finished components.

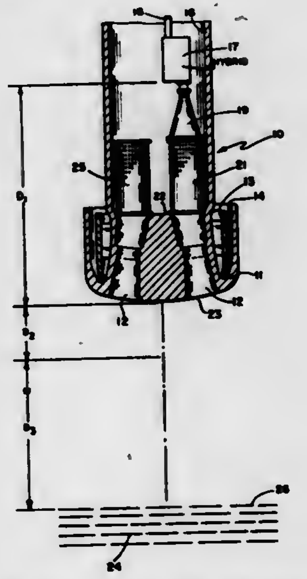
3,727,897
LANCE WITH DISTANCE MEASURING SUB-SYSTEM

Robert George Bennett, Lowell, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed Feb. 17, 1971, Ser. No. 116,075

Int. Cl. C21c *7/00*; G01s *9/04*

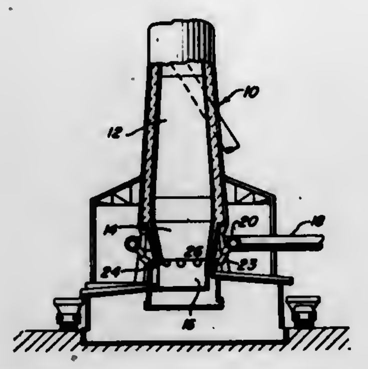
U.S. Cl. 266—34 LM **6 Claims**



The invention is directed to an assembly which includes in combination a lance for supplying a gas to a nozzle in combination with radar-type means for determining the distance between the nozzle and a reflecting surface spaced from the nozzle. In the preferred embodiment, the assembly comprises an oxygen lance for a basic oxygen furnace which includes means for determining the distance between the lance and the surface of the charge in the furnace.

3,727,898
FABRICATED TUYERE NOZZLE

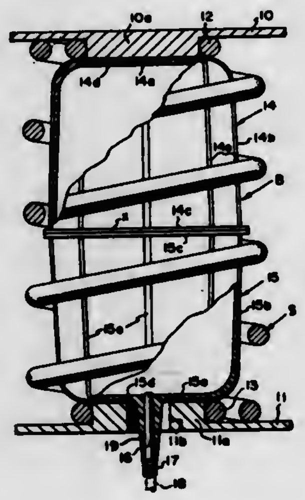
John E. Allen, 606 Timber Lane, Lake Forest, Ill.
Filed Feb. 22, 1971, Ser. No. 117,350
Int. Cl. C21b *7/16*
U.S. Cl. 266—41 **9 Claims**



A tuyere nozzle for a metallurgical furnace fabricated from a plurality of functional elements joined together to form a completed tuyere nozzle. The tuyere nozzle includes a nose element through which the air enters the furnace, which is formed from high conductivity, oxygen free, rolled or forged copper to resist the most severe temperature and abrasion conditions encountered in a furnace, and the pipe element, which conveys the heated air through the tuyere, is formed from lower thermal conductivity metal, as stainless steel, or ceramic lined metal, to minimize air blast heat loss, controlled water flow for uniform cooling of the hot surfaces, and preferably corrosion resistant to resist the corrosive action of molten lime and slag.

3,727,899
SPRING SUSPENSION UNIT PARTICULARLY FOR VEHICLE SUSPENSION SYSTEMS

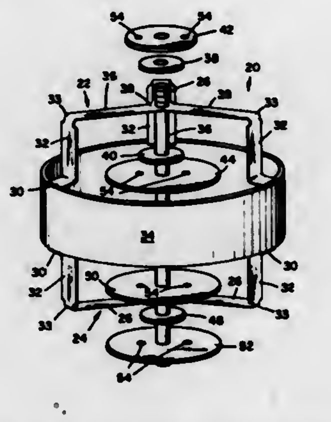
Robert C. Pemberton, Lansing, Mich., assignor to Air Lift Company, Lansing, Mich.
Filed April 7, 1971, Ser. No. 132,115
Int. Cl. B60g *11/62*
U.S. Cl. 267—34 **14 Claims**



A spring suspension unit adapted to extend between spaced relatively movable members so as yieldably to maintain them in spaced relation and including a coil spring with an inflatable, resilient synthetic plastic bag disposed within the coil springs and expandable to dispose side wall portions of the bag between the convolutions of the spring. The bag is formed of cup-shaped portions having projecting flanges at their open ends which are heat-sealed in abutting air-sealed relation and provide a radially projecting spring convolution engaging ring. Either a valve or a connector forms a part of the bag for facilitating the introduction of air under pressure thereto.

3,727,900
ADJUSTABLE NON-LINEAR SPRING AND SPRING SUSPENSION SYSTEM

Gerald F. Casey, Los Angeles, Calif., assignor to Fema Corporation, Pacioma, Calif.
Filed March 9, 1971, Ser. No. 122,425
Int. Cl. F16f *1/26*
U.S. Cl. 267—160 **21 Claims**



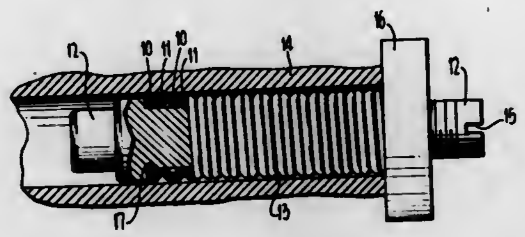
The spring, which is useful for obtaining linear motion in electro-mechanical devices, includes at least one leaf spring whose effective length is changed during movement in response to an applied force to vary its spring characteristics. The leaf spring includes a moveable portion to which is secured both a spacer shim and a washer placed over the shim. The radius of the washer is greater than the shim radius so that the washer edge overlays the shim. The arm length of the leaf from a fixed end of the leaf to the moveable portion provides a first force versus stroke characteristic of the spring, as may be represented by a curve, as may be configured substantially as a straight line having a first slope. As the spring moves further under the force, the edge of the washer contacts the leaf in accordance with the radius of the washer and the thickness of the shim so as to shorten the arm length of the spring and to provide a different force versus stroke characteristic, as may be further represented by another substantially straight line curve having a second slope different from the first. The combination of the linear curves produces a spring having a non-linear force versus displacement characteristic. Thus, by varying the thickness of the shim and/or the radius of the washer, and by adding as many additional shims of increasing radii between the washer and the first shim or by attaching similar springs to the original spring, the particular force versus stroke characteristics of the spring may be varied as desired to adjust the non-linear characteristics of the spring ensemble.

3,727,901
DUO COIL CONNECTING DEVICE

Ralph Textrom, Newport Beach, Calif., assignor to Richard P. Gallen, Los Angeles, Calif.
Filed Oct. 12, 1970, Ser. No. 79,747
Int. Cl. F16f *1/06*
U.S. Cl. 267—168 **12 Claims**

This invention relates to a coil spring-type connecting device which may be used to connect two pieces of material together, as an expansion bolt, for example, in masonry; as a quick-operating clutch; or a tube connector; or the like. Coil spring invention devices are known as are also the use of double coil springs. The present invention differs from the prior art in that the complete device comprises two coil springs

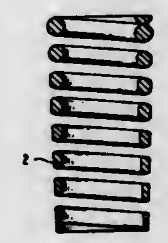
formed of flattened wire. The two coils are identical, except that the long axis of the flattened wire is tilted at opposed angles to the perpendicular axis of the coil. That is, one coil formed of flattened wire has what might be called a "positive" angle (such as facing to the right in the various figures) to the axis of the cooperating bolt, while the second coil has a negative angle (such as facing to the left). Preferably, the pitch of both coils is identical, and in the preferred form the pitch is approximately twice the distance which a single coil occupies axially of the device. Usually a preferred angle for the two coils is approximately 60°, as shown in FIGS. 2, 5, and 6, but it can be any other angle, such as approximately 30° shown in FIG. 4. The coils can be made of flat strip as shown in FIG. 5 and the pitch can be larger than normal, so that the individual coils are spaced apart as shown in FIGS. 6 and 7; and in fact, a



spacing or third coil may be placed between the angular coils and lying flat against the cooperating bolt. It is believed obvious that compression of the spring will twist the normal angle from that shown in FIG. 2 to that shown in FIG. 3, whereby the coil tightly engages the hole or cavity in which the connecting device is placed. If the coils are made of flat strip, as shown in FIG. 5, it is obvious that the edges of the coils will cut into one or the other or both of the cooperating members, i.e., the bolt or the cavity. When the connecting device is to be used for an expansion bolt in masonry, brickwork, or other material which has a tendency to crumble, it is preferred that the coils be spaced apart as shown in FIGS. 6 and 7, so that material displaced from the cavity wall by the expansion of the connecting device will have a place to rest without interfering with the actions of the coils.

3,727,902
COIL COMPRESSION SPRING

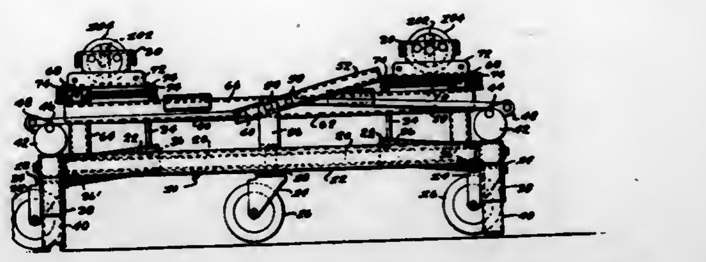
Manfred H. Burckhardt, Waiblingen; Hans-Herbert Wupper, Oberhaunstadt/uber Ingolstadt (Donau), and Siegfried Worbis, Jesingen/uber Plochingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertwerkheim, Germany
Filed April 27, 1971, Ser. No. 137,834
Claims priority, application Germany, April 28, 1970, P 20 20 678.4
Int. Cl. F16f *1/08*
U.S. Cl. 267—180 **21 Claims**



A coil spring with progressive characteristics, especially for the installation in brake valves of motor vehicles, in which the progressivity of the characteristics are realized by ground surfaces in the form of a truncated cone on one or both sides of a cylindrical coil spring made in the customary manner.

3,727,903
FURNITURE TRUCK FRAME

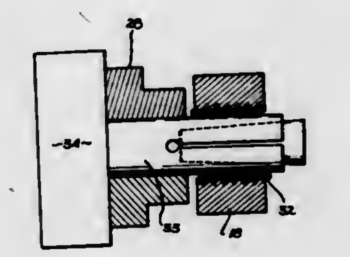
Joseph L. Brown, Charlotte, N.C., assignor to Brown Truck and Trailer Manufacturing Company, Charlotte, N.C.
Filed Jan. 18, 1971, Ser. No. 107,276
Int. Cl. B23q *37/00*, *3/18*; B25h *5/00*
U.S. Cl. 269—17 **5 Claims**



A truck for supporting furniture frames or the like comprising a wheeled base structure and a pair of laterally movable supporting elements each of which is mounted on the base structure by two support arms fixed separately to sleeve elements carried exteriorly on longitudinally extending base elements, each support arm extending beyond one end of the sleeve element to which it is fixed and each sleeve element being carried on its base element by longitudinally spaced rollers disposed respectively to ride the upper and lower surfaces of the base element with the roller disposed for riding the upper base element surface being located substantially nearer the end of the sleeve element from which the support arm extends. Additionally, the supporting elements may be mounted on the base element for selective vertical movement with respect thereto and a plurality of jacking legs may be mounted on the base structure with an operating arrangement for simultaneously and selectively lowering these legs to extend beneath the truck wheels whereby the truck is supported solely by these legs.

3,727,904
CONCENTRICITY COIL FOR SCREW THREADS

Eric G. Gabbey, P.O. Box 43271, Los Angeles, Calif.
Continuation of Ser. No. 773,529, Nov. 5, 1968, abandoned.
This application March 12, 1971, Ser. No. 123,911
Int. Cl. B23q *3/06*
U.S. Cl. 269—52 **1 Claim**

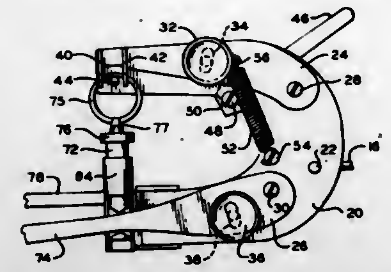


A coil of wire is provided which can be placed on the screw thread of a bolt or nut in order to provide a surface for holding the bolt or nut in the jaws of a chuck or the like. This permits the fastener to be held in a chuck on a known surface which assures concentricity with the axis of the pitch diameter and in a manner which eliminates damaging the threads.

3,727,905
SHANK AND HEAD MOUNTING FIXTURE

Robert F. Haven, R.D. No. 1 Stock Road, Hannibal, N.Y.
Filed Dec. 6, 1971, Ser. No. 205,030
Int. Cl. B25b *1/06*, *1/16*; B23p *5/00*
U.S. Cl. 269—224 **13 Claims**

A clamping fixture especially suited for holding the shank and head portions of a ring or the like, during manufacture or repair of jewelry, particularly engagement rings, or related style solitaires. The ring shank, or annular portion, is externally engaged by two members, one on each side of a stud which internally engages the ring shank. The portion to be attached, i.e., the ring head, is held in engagement therewith by a movable anvil. Convenient handles and locking means are provided for moving the work engaging members to, and holding them in, a desired position. Adjusting means are also provided for maintaining the various elements in desired respective positions and orientations.

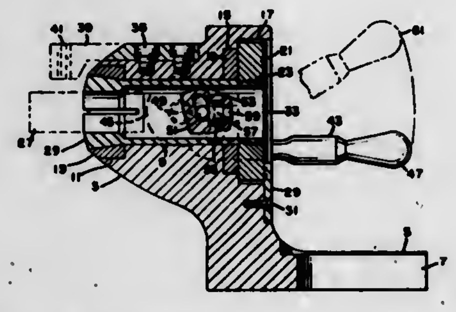


3,727,906
WORK HOLDING FIXTURE

Orlando Mileti, Athens, N.Y., assignor to James A. Warren and Leonard H. Warren, Coxsackie, N.Y., part interest to each

Filed Nov. 12, 1970, Ser. No. 88,858
Int. Cl. B23b *5/34*; B23g *3/06*

U.S. Cl. 269—287 1 Claim



Discloses a work holding fixture or collet fixture, and embodiments thereof, for holding a work piece for machining operation or operations. The work holding fixture comprises a main body having a bore therethrough receiving therein a clamping element or collet having a camming surface engaging a camming surface of another element cooperating upon appropriate lever action to effect radial movement of the clamping element to clamp or grip the work piece inserted in the clamping element.

3,727,907
CLOTH FEEDING AND SPREADING MECHANISM FOR CLOTH SPREADING MACHINE

Thomas W. Martin, Sr., and Thomas W. Martin, Jr., both of Nashville, Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.

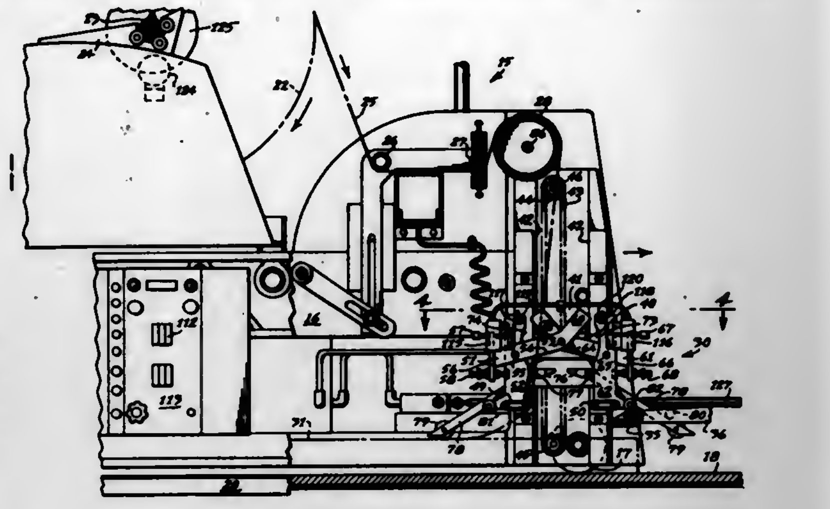
Filed Sept. 21, 1970, Ser. No. 73,983
Int. Cl. B65h *29/46*

U.S. Cl. 270—31 9 Claims

A spreading mechanism for a cloth spreading machine incorporating a pair of pivotally supported depending opposed tuck blades for cooperation with a conventional catcher mechanism in such a manner that the leading tuck blade is elevated by the catcher to swing away from the trailing tuck blade.

Each tuck blade is provided with a link member and a latching member so that when the leading tuck blade is swung upward away from the trailing tuck blade, the latch members engage the opposing link members to latch the trailing tuck blade in its spreading position, while the leading tuck blade is latched in its elevated non-spreading position.

A cloth feed mechanism for the spreading machine including a positively driven cloth feed roll, a first drive means for driving the feed roll at a normal speed related to the movement of the machine over a spreading table; a second drive means responsive to the cloth tension for driving the feed roll at a second speed faster than the normal speed; and a third drive means responsive to the end-folding position of the machine for driving the feed roll at a third speed faster than the first speed.

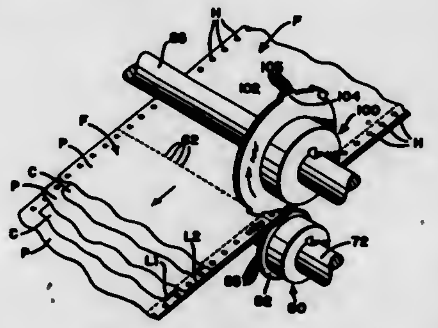


3,727,908
CONTINUOUS BUSINESS FORMS

Lloyd M. Whitesell; Louis Schriber, and Raymond M. Losse, all of Dayton, Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 22,513, March 25, 1970, abandoned. This application Aug. 17, 1970, Ser. No. 64,193
Int. Cl. B42b *1/02*

U.S. Cl. 270—53 7 Claims



Successively connected business forms are produced by feeding a plurality of paper webs and interleaving carbon webs from corresponding supply rolls into overlying relation and gluing together corresponding longitudinal edge portions of the webs. Lines of cross-perforations are formed in the overlying webs at longitudinally spaced intervals, and the edge portions of the webs are bonded or welded together across or adjacent each line of cross-perforations by a plurality of transversely extending impressions of intermeshing fibers which prevents relative longitudinal shifting of the webs when the webs are zig-zag folded before the glue sets. Preferably, the impressions are located at the fine longitudinal glue lines joining the paper webs to provide fast drying of the glue.

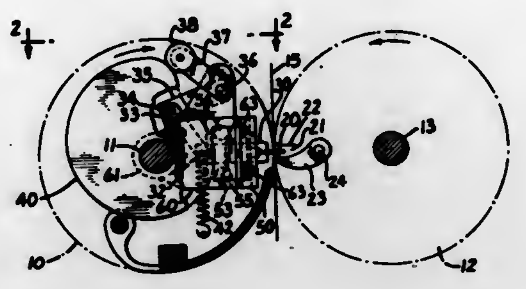
3,727,909
DEVICE FOR THE TILTING OF THE FOLDING BLADE OF A FOLDING-BLADE CYLINDER

Harry M. Greiner, Offenbach, and Karl Langer, Heusenstamm, both of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach am Main, Germany

Filed Oct. 23, 1970, Ser. No. 83,435
Claims priority, application Germany, Nov. 4, 1969, P 19 55 351.6
Int. Cl. B65h *45/16*

U.S. Cl. 270—71 6 Claims

Folding cylinders for handling the product of a printing press or the like in which a tucker blade in one of the cylinders engages the web, or associated webs, for tucking into an opposedly phased jaw or groove in the other cylinder, the blade being mounted in the blade cylinder for timed rocking movement about an axis which lies approximately on, or somewhat outside of, the rolling circle so that the blade, and particularly the edge thereof, moves into the jaw cylinder in a direction radially of the jaw cylinder. In a preferred embodiment of the invention the blade is guided in its rocking movement along arcuate track of slightly non-circular or oval contour so that the center of rocking movement is constantly varied in accordance with the angle of rocking, shifting outwardly of the rolling circle as the blade is rocked from neutral position.

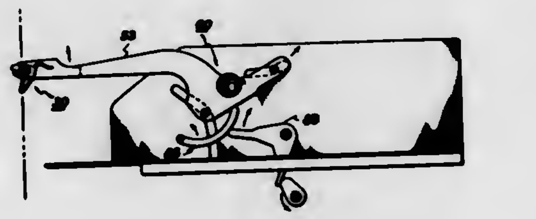


3,727,910
SHEET SEPARATOR CONTROL APPARATUS

Kishore N. Vora, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed April 26, 1971, Ser. No. 137,390
Int. Cl. B65h *3/56*

U.S. Cl. 271—19 4 Claims



Apparatus to control the operation of corner separator members operating to separate individual sheets from the top of the stack as they are depleted. A pair of sheet separator members positioned at the stack corners resist the movement of the sheets to force only the topmost sheets to buckle thereover and be fed therepast. The separator members, each mounted on an arm, move in a generally vertical path as the sheets are fed from the top of the stack. As the stack height decreases a biasing action enables pivotal movement of the separator member on the arm as contact is made with the stack edge near the bottom. A camming mechanism serves to raise the arm and separator member upwardly upon insertion of a new stack by mechanical actuation or an electrical signal.

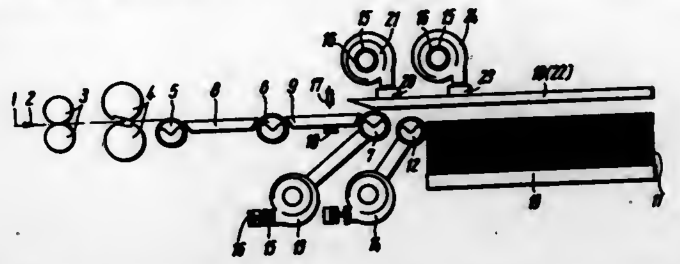
3,727,911
METHODS AND APPARATUS FOR PROVIDING AN OVERLAP BETWEEN INDIVIDUAL SHEETS IN PREPARATION FOR SUBSEQUENT STACKING

Hilmar Vits, Haschelrath, Germany, assignor to VITS Maschinenbau GmbH, Langenfeld (Rhineland), Germany

Filed April 22, 1971, Ser. No. 136,348
Claims priority, application Germany, April 30, 1970, P 20 21 375.6
Int. Cl. B65h *29/24*

U.S. Cl. 271—71 14 Claims

This is a method of providing an overlap between individual sheets in preparation for subsequent stacking by accelerating each sheet in comparison with the web feeding speed and then decelerating it down to stacking speed. It is characterized by applying to each sheet, during the time interval required to provide the desired overlap, either only accelerating or only decelerating forces.

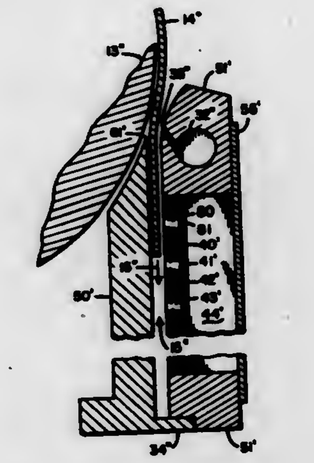


3,727,912
CARD BRAKE

Leroy A. Vos, Saint Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 11, 1971, Ser. No. 114,438
Int. Cl. B65h *9/14*

U.S. Cl. 271—51 2 Claims



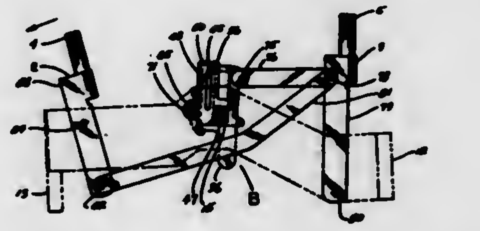
In a system employing a rotating magnetic head drum and a plurality of magnetic cards retained in a cartridge, a braking means which stops the motion of a card as it is transported from the cartridge to a fixed, predetermined position around the drum's periphery. The brake comprises a plate having a plurality of holes therein with a partial vacuum being formed on a first side of the plate. A pick-off means picks off the leading edge of card as it is being transported from the cartridge to its fixed position around the drum and diverts said card along a path adjacent the second side of said plate. The partial vacuum effect pulls the card into friction contact with said plate and thereby slows its motion. A stop bar is positioned to completely stop the motion of the card after it has been slowed down substantially by the plate.

3,727,913
BICYCLE TYPE EXERCISING MACHINE

Harold Glaser, Frontenac, and Charles H. Steuber, St. Peters, both of Mo., assignors to Innovex Incorporated, St. Louis, Mo.

Filed Dec. 20, 1971, Ser. No. 209,783
Int. Cl. A63b *23/04*

U.S. Cl. 272—73 10 Claims



A bicycle exercising machine comprising a seat and a handle bar, pedal members for receiving the user's feet, and a mechanism for rotating the pedal members to simulate bicycle riding. Motion transmitting linkage interconnecting the seat and the handle bar is provided to effect movement of the same toward and away from each other simultaneously with cycling action; there being an adjustment member for controlling the relative movement of the seat and handle bar toward and away from each other to accommodate users of all sizes.

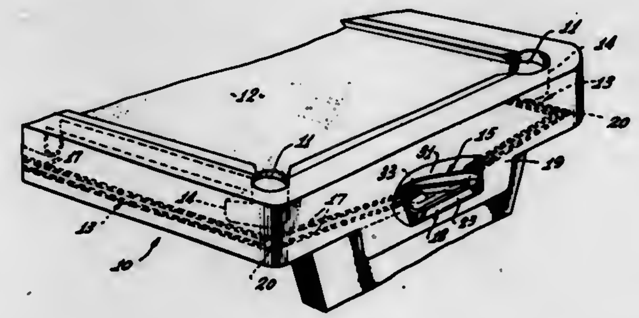
3,727,914
BALL-RETURN BILLIARD TABLE WITH COOPERATING RACKING DEVICE

Marvin A. Miller, 4323 W. Pico Boulevard, Los Angeles, Calif.

Filed Sept. 17, 1971, Ser. No. 181,299

Int. Cl. A63d *15/00*

U.S. Cl. 273—11 R **4 Claims**



A billiard table with ball-return tracks leading from the pockets to a ball-storage station at one end of the table, and having a triangular racking device with a removable bottom wall for collecting balls and transporting them to the table in a triangular group. The racking device is supported with one corner elevated, and different angles of incline toward the other two corners, and balls are delivered to the elevated corner by various alternative forms of feeder paths associated with the tracks.

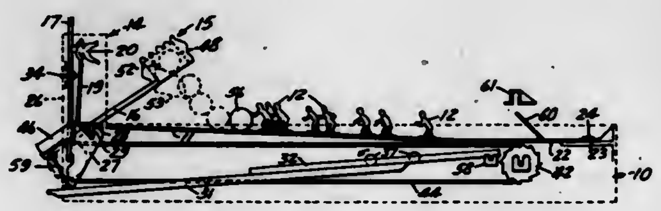
3,727,915
SIMULATED FOOTBALL GAME

Roland W. Anderson, 16032 Dawn Drive, Minnetonka, Minn.

Filed Oct. 12, 1971, Ser. No. 188,122

Int. Cl. A63f *7/06*

U.S. Cl. 273—94 R **8 Claims**



A game combining skill and chance for simulating a football contest between two opposing teams is disclosed. The game includes an elongated plate marked to simulate a portion of a football playing field and defensive players are movably positioned thereon. A "huddle" is provided for the offensive players. The "huddle" is mounted to a vertically pivotable arm and holds a projectile that is released upon an upper tilt of the lever with the direction and distance traveled by the projectile in part determining results of play. The "huddle" is remotely and secretly controllable by the offensive players so that the direction the projectile takes upon release is not known by the defensive player until the moment of release. Chance is provided by a play result indicator which utilizes a tiltable plate for rolling balls to a play result indicator; the play result indicator being presetable to the type of play desired by the offensive player.

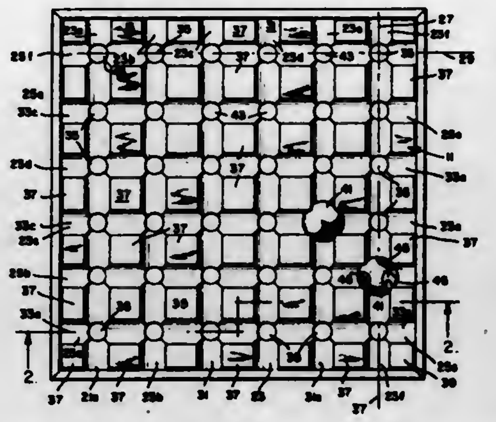
3,727,916
GAME DEVICE

Judith R. Miller, Box 283, Palos Verdes Estates, Calif.

Filed May 17, 1971, Ser. No. 144,046

Int. Cl. A63f *9/08*

U.S. Cl. 273—153 S **4 Claims**



A boxed game device capturing a number of symbol-bearing game-pieces, such as multi-numbered spheres or polyhedrons, in a grid composed of top-slotted, intersecting, cylindrical canals. All game-pieces are visible and can be moved and/or rotated by hand in the canals through the slots. Shallow concavities may be placed at the base of canal intersections to provide stabilizing positions for the game pieces.

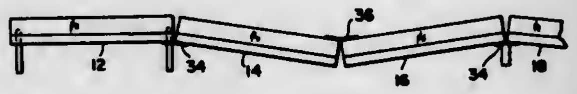
3,727,917
VARIABLE CONTOUR GOLF PUTTING DEVICE

George D. MacLean, 2713 Daly Avenue, Spring Lake, N.C.

Filed Sept. 29, 1971, Ser. No. 184,772

Int. Cl. A63b *67/02*

U.S. Cl. 273—176 H **6 Claims**



A portable adjustable golf putting green including a plurality of hingedly interconnected base sections extendable to form an elongated golf putting surface in conjunction with a flexible continuous associated surface covering. The apparatus is adjustable for varying putting surface contours, and is collapsible to an easily portable package by interconnecting adjoining base sections with hinges located alternately at the top and bottom surfaces thereof. Also provided is a plurality of pegs and blocks for supporting adjacent base sections at different selective elevations.

3,727,918
PORTABLE GOLF GAME

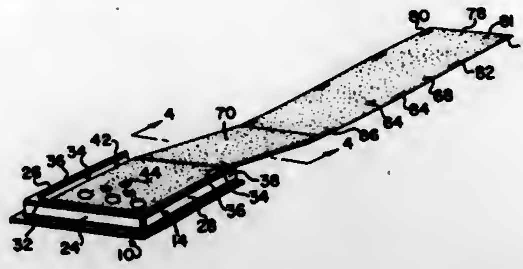
Walter Zawacki, St. Petersburg, Fla., assignor to U.S. Turf Corporation, St. Petersburg, Fla.

Filed May 24, 1972, Ser. No. 256,295

Int. Cl. A63b *67/02*

U.S. Cl. 273—176 FB **8 Claims**

A portable golf game comprises a) a base including a flat center panel, a rim surrounding the back and sides of the center panel; three rows of depressed pockets in the center panel for receiving a golf ball, and a channel wall joining the rim to the center panel, and b) a synthetic grass strip secured to and overlying the center panel, and having a plurality of openings aligned with the drpressed pockets of the center panel. The grass strip extends past the front of the center panel to provide a longitudinal putting surface. The first, second and third rows of pockets include one, two and three holes, respectively. The pockets in the first and second rows are offset from each other and have equal diameters which are less than the diameters of the pockets in the third row, which latter pockets are offset from the pockets in the second row. The bottom walls of all the depressed pockets are provided with scoring indicia which makes the degree of difficulty of a succeeding shot depend upon the success of the immediately preceeding shot.



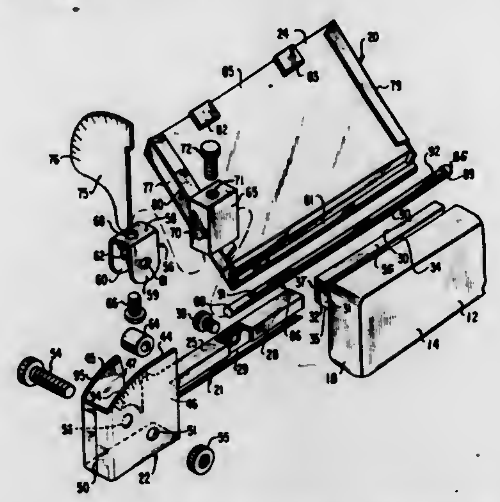
3,727,919
GOLF CLUB INCLUDING IMAGE REFLECTOR ATTACHMENT

John Wright Martin Scott, Gordon, Ga.

Continuation-in-part of Ser. No. 772,351, Oct. 31, 1968, Pat. No. 3,507,500. This application April 17, 1970, Ser. No. 29,550

Int. Cl. A63b *69/36*

U.S. Cl. 273—186 A **3 Claims**



A golf club attachment comprising a sighting apparatus including a mirror to reflect the image of the area ahead of the club head in an upward direction to the eyes of the golfer which enables the golfer to align the face of the club head with a golf ball and the flagstick used on the putting green of a golf course. The mirror is pivotable about a first axis normal to the ball striking surface of the club head and also about a second axis normal to the first axis. The attachment is detachably secured to the club head by a channel shaped connecting arm which may be slid along an L-shaped support bar mounted on the rear surface of the club head.

3,727,920
GOLF CLUB ATTACHMENT

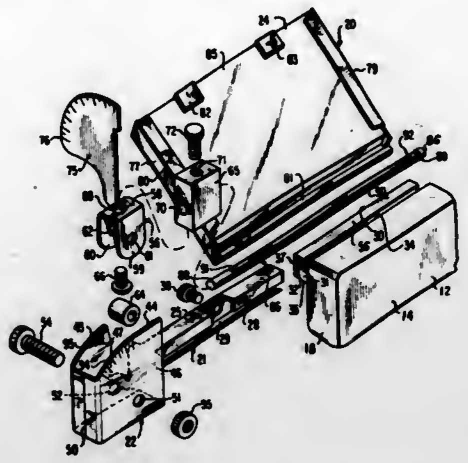
John Wright Martin Scott, Gordon, Ga.

Division of Ser. No. 29,550, April 17, 1970, which is a continuation-in-part of Ser. No. 772,351, Oct. 31, 1968, Pat. No. 3,507,500, which is a continuation-in-part of Ser. No. 568,232, July 27, 1966, Pat. No. 3,421,765. This application Oct. 18, 1971, Ser. No. 190,103

Int. Cl. A63b *69/36*

U.S. Cl. 273—186 A **6 Claims**

A golf club attachment comprising a sighting apparatus including a mirror to reflect the image of the area ahead of the club head in an upward direction to the eyes of the golfer which enables the golfer to align the face of the club head with a golf ball and the flagstick used on the putting green of a golf course. The attachment includes a housing, a clevis assembly in the housing, a first arm for mounting the housing to a golf club head and a second arm which supports a mirror reflecting surface. The mirror is rotatable about the longitudinal axis of the second arm and pivotable in a vertical plane passing through the longitudinal axis of the second arm. Indicia scales are provided on the housing for adjusting the position of the mirror relative to the housing.



3,727,921
MAGNETIC RECORDING AND REPRODUCING APPARATUS OF THE SPIRAL TRACK TYPE

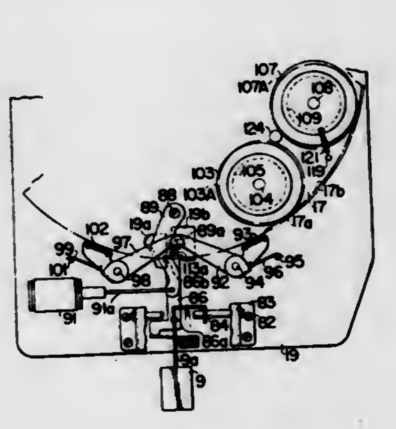
Saburo Kato, Ohta-ku, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1971, Ser. No. 192,877

Claims priority, application Japan, Nov. 5, 1970, 45/97444

Int. Cl. G11b *5/82, 21/04*

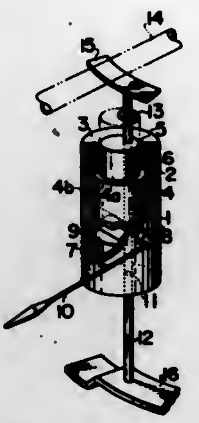
U.S. Cl. 274—4 J **10 Claims**



In apparatus for magnetically recording and/or reproducing information in a spiral track on a magnetic recording sheet, wherein the sheet is held in a fixed and downwardly facing position while a magnetic head is advanced by means including a turntable along a spiral inwardly directed path in contact with the sheet, mechanism for starting and stopping the turntable by successive depressions of a single button. The mechanism includes an actuation member movable between positions at which it respectively connects and disconnects the turntable and suitable drive means, and a slider connected to the button for moving the actuation member to a drive-connecting position on initial depression of the button, and unlocking the actuation member for return to drive-disconnecting position upon second depression of the button. The slider and actuation member are so arranged that the change from drive connection to disconnection occurs as the button is depressed. The apparatus further includes means for counting revolutions of the turntable, driven by an idler continuously in contact with the turntable, and means for automatically stopping the turntable upon completion of a recording or playback operation, as well as button-controlled means for effecting recording operation, and quick feed and reverse motion of the turntable.

3,727,922
TONE ARM LIFTING DEVICE FOR AUTOMATIC RECORD PLAYER

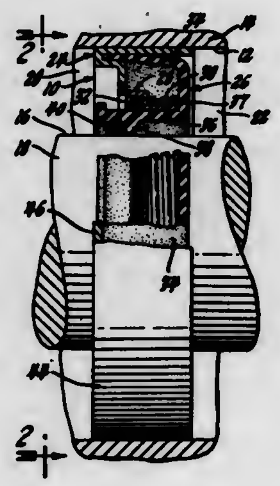
Toyonori Igata, Skizuoka, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Dec. 29, 1971, Ser. No. 213,601
Claims priority, application Japan, Dec. 29, 1970, 45/133341
Int. Cl. G11b *17/06*
U.S. Cl. 274—15 R 5 Claims



A tone arm lifting device for an automatic record player which is operable both manually and automatically. The lifting device comprises a cylinder and a piston adapted to slide within the cylinder. The piston has a smaller diameter portion in its upper portion, and is biased downwardly by a coil spring which tends to maintain it in its rest position. In the larger diameter portion, the piston is provided with a notch in which an eccentric cam is mounted for up and down movement of the piston. The cam is so arranged as to be rotatable by a cueing lever. The piston is also provided with an axial bore in which a lifting rod is axially movable. On the top of the lifting rod, there is mounted a lifting plate for the tone arm while the lower end thereof is carried on a cam plate for automatic operation. An abutting member is fixed to the lifting rod below the lifting plate. Turning the cueing lever causes an angular displacement of the eccentric cam, which permits the piston to be thrusted up against the return spring. This results in the smaller diameter portion of the piston protuding upwardly from the cylinder and pushing the abutting member upwardly to raise the lifting rods.

3,727,923
DOUBLE LIFE SHAFT SEAL

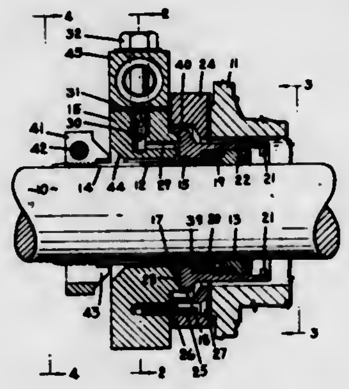
John C. McEwen, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 5, 1971, Ser. No. 195,971
Int. Cl. F16j *9/06, 15/00*
U.S. Cl. 277—9 3 Claims



A double life shaft seal includes a seal case and an elastomeric sealing annulus having first and second seal lips adapted to be sequentially contacted by a rotating shaft. A tensioned garter spring is initially located on the sealing annulus so as to bias the first seal lip into operative sealing engagement with the shaft to provide a first service life, the spring being positioned thereat by spring biased expanded constriction ring restrained against axial movement by engagement with blocking lugs on the seal case. After predetermined wear of the first seal lip, the constriction ring contracts in diameter and loses contact with the blocking lugs at which time the ring and the garter spring are axially shifted to a second position wherein the garter spring is located so as to bias the second seal lip into operative sealing engagement with the shaft to provide a second service life.

3,727,924
EXTERNALLY PRESSURIZED SEAL

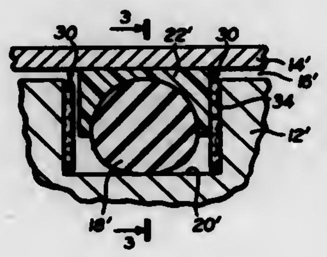
Douglas J. Henderson, Mississauga, Ontario, Canada, assignor to Champlain Power Products Limited, Rexdale, Ontario, Canada
Filed July 8, 1970, Ser. No. 53,225
Int. Cl. F16j *15/00;* B65q *53/00*
U.S. Cl. 277—23 6 Claims



An externally pressurized hydrostatic seal comprises a rotor and a stator disposed in face to face sealing relation, the stator providing internal passageways for the passage of liquid to the sealing faces. A manifold member is clamped to the stator, the manifold member providing a chamber to which liquid is supplied under pressure, and a series of fine orifices through which the liquid flows from the chamber into the passageways, the manifold member being readily replaceable so that if the seal becomes inoperative by blockage of the orifices, the fault may be easily remedied.

3,727,925
ANTIBLOW-BY RINGS

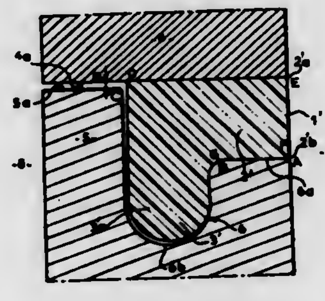
David W. Jones, Long Island, N.Y., assignor to C. E. Conover & Co., Inc., Fairfield, N.J.
Filed Dec. 22, 1970, Ser. No. 100,649
Int. Cl. F16j *15/46*
U.S. Cl. 277—165 10 Claims



This invention is an improvement in cap type seals that are used with O-rings. It provides a special ring, in the end of a groove that holds the seal, with radial passages in the special ring for equalizing pressure above and below the cap to prevent collapsing of the O-ring and failure of the seal under severe operating conditions, such as high amplitude pressure reversals that are so rapid that the seal does not have time to move and admit pressure to the clearance under the seal before the high pressure impulse of the reversal drives the seal down.

3,727,926
SEALING GASKET AND SEALED JOINT USING THE SAID GASKET

Jean-Luc Berry, 27 Mesnil sur L'Estree, France, assignor to E. P. Remy et Cie, Dreux, France
Filed July 29, 1971, Ser. No. 167,308
Claims priority, application France, Aug. 6, 1970, 7029083
Int. Cl. F16j *15/10*
U.S. Cl. 277—212 F 5 Claims

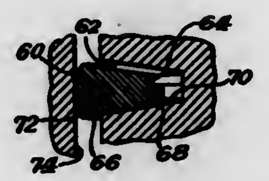


The invention relates to a sealed joint comprising a first and a second member between which is formed a substantially L-shaped cross-sectional recess in which is placed a gasket which has a corresponding L-shaped cross-sectional section.

The gasket and the recess are so formed that a continuous and excellent sealing is provided between the two members and the gasket, and that no excessive compression or deformation of the gasket is to be feared.

3,727,927
RING MANUFACTURE, PRODUCTIVE OF LINE CONTACT SEAL

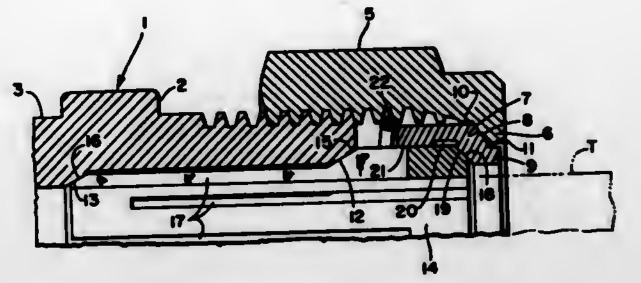
Norman M. Packard, Des Plaines, Ill., assignor to International Harvester Company, Chicago, Ill.
Division of Ser. No. 757,973, Sept. 6, 1968, Pat. No. 3,587,155. This application Aug. 6, 1970, Ser. No. 61,560
Int. Cl. F16j *9/20*
U.S. Cl. 277—216 3 Claims



Methods, apparatus, and improved structure having as their common basis the sequence of collapsing a piston ring in a fixture approximating engine bore diameter, and lapping a locality at the side of the ring while so collapsed, until a circumferentially continuous portion—narrow in width and preferably line size—of the side is flat in the range of at least about 10 to 5 light bands at standard inspection wavelength. One of the broadest methods disclosed is the use exclusively of rings so carefully made and so lap inspected as above on a percentage basis that the inner peripheral edge at the side has all points thereon in coplanarity to a degree equivalent to the stated range to seal in absolute contact in a substantially continuous sealing ring.

3,727,928
COLLET CHUCK

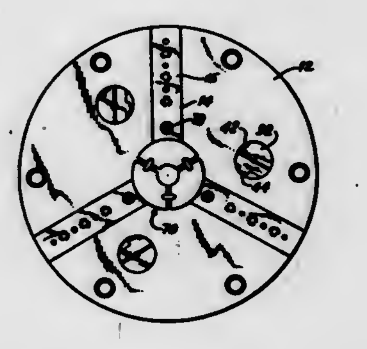
Milton L. Benjamin, Chagrin Falls, Ohio, assignor to Erickson Tool Company, Solon, Ohio
Filed Oct. 2, 1970, Ser. No. 77,674
Int. Cl. B23b *31/20*
U.S. Cl. 279—1 L 5 Claims



A collet chuck of the type wherein a nosepiece having screw-threaded engagement with the chuck body forces a contractible collet axially inwardly of the body to effect contraction of the collet through a nose ring interposed between the axially outer end of the collet and an inturned shoulder on the nosepiece, the collet chuck herein being characterized in that the nose ring has a close axially telescoping fit with the axially outer end portion of the collet and a radial clearance fit within the nosepiece so that the nose ring and collet remain coaxial during operation of the chuck so as to accurately grip a tool or the like with its axis substantially coinciding with the axis of the chuck body.

3,727,929
PRECISION AIR CHUCK

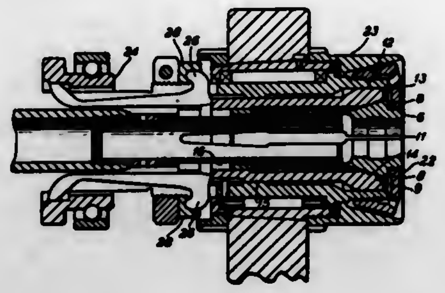
Anton Fink, Albertson, N.Y., assignor to Metrology System Corporation
Filed June 14, 1971, Ser. No. 152,650
Int. Cl. B23b *31/30, 31/16*
U.S. Cl. 279—4 10 Claims



An air actuated multi-jaw chuck. The jaws are actuated by a piston coupled to the jaws by means of an angularly deployed key which mates with a keyway connected to the jaw. Means are provided for adjusting the relationship between the jaw and the actuating mechanism. This permits the achievement of extreme concentricity. A radially acting collet accepts workpieces whose diameters might vary by as much as 0.040 inches and still maintain concentricity.

3,727,930
TAPERED CHUCKING ASSEMBLY

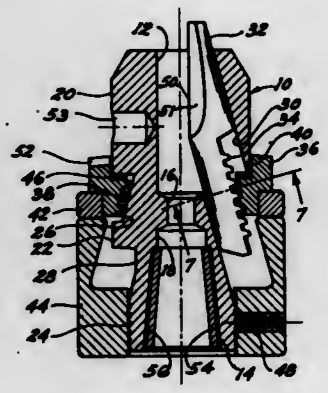
Clarence W. Anderson, 7813 W. Carmen, Norridge, Ill.
Filed Sept. 30, 1971, Ser. No. 185,294
Int. Cl. B23b *31/10*
U.S. Cl. 279—50 **10 Claims**



A combination to prevent binding between a tapered seat in a rotatable engaging element and the tapered head of a split, spring collet for holding work stock, said means providing a spiral groove on one of the tapered surfaces, which spiral groove is opposite to the direction of rotation of the engaging element.

3,727,931
PRECISION CHUCK

Lawrence W. Wightman, St. Louis, and Thomas J. Long, Bridgeton, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed April 6, 1971, Ser. No. 131,662
Int. Cl. B23b *31/04*
U.S. Cl. 279—62 **5 Claims**

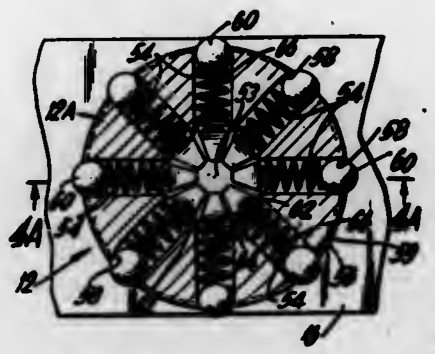


A key-operated universal drill chuck having round elongated jaws slidably guided in forwardly converging bores arranged around a central axis in a chuck body, which jaws are slidably moved in their bores by a key-operated traverse nut having internal screw threads engaging screw thread sections formed on each jaw, the traverse nut being made adjustable along the body axis whereby the clearance between the engaging screw threads on the traverse nut and on the jaws may be adjusted to minimize rotational movement of the round jaws in their bores, and the chuck body further including a loosely fitting drive shaft receiving bushing cemented thereto precisely concentric and in alignment with a fixture cylinder gripped in the chuck jaws.

3,727,932
SKI BINDING

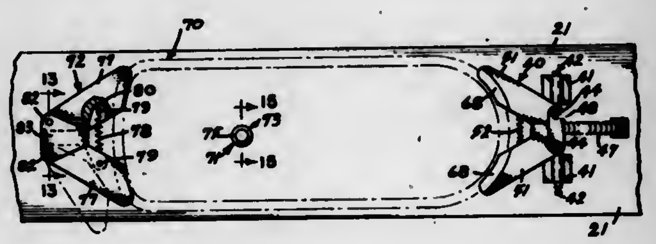
Barry Lewis Druss, and Kendall Scott Williams, both of Aspen, Colo., assignors to Chimera Research and Development, Inc., Holliswood, N.Y.
Filed March 30, 1970, Ser. No. 23,876
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 K **26 Claims**

A ski binding comprising but a single connection between the ski boot and the ski. The essential elements of the binding consist of a plug member and an interengaging socket member, one member being associated with the ski boot and the other with the ski. Optionally, a boot plate may be used to which the respective member may be attached in a conventional manner. In a preferred form, the plug member has simple screw means to adjust the force of loading interengaging spheres or balls, which is the desired release force by which the plug member is allowed to become detached from the socket member. The latter is an annulus of a diameter sufficient to receive the plug member. A plurality of recesses are spaced on the inner wall of the socket member to register with the spheres of the plug member. Any force whether longitudinal of the ski, or as a torque about the skier's body or legs, will develop a reactive force through or about the geometric center of the binding. If the force is sufficient in magnitude and duration an automatic separation of the engaging members is effected in response to the force.



3,727,933
SKI BINDING

Ivor J. Allsop, Bellingham, Wash., assignor to Jon I. Allsop; Michael G. Allsop and James D. Allsop, all of Bellingham, Wash.
Filed Sept. 21, 1970, Ser. No. 73,893
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **2 Claims**

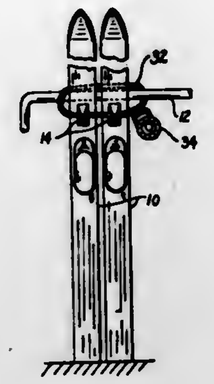


A ski binding adapted to release under predetermined conditions, and wherein the binding will release in a forward fall, or a twisting fall or any combination of the forward fall or twisting fall. The ski binding releases by rotation on or near the ball of the foot, and wherein the contact points of the heel and toe may be on rollers or hinges to reduce friction, and wherein there is provided a turntable for the ski boot. The binding is so constructed that in a forward twisting fall, the heel will release before any pressure is applied between the sole of the boot and the ski at the toe thereof.

3,727,934
SKI PROTECTIVE DEVICE

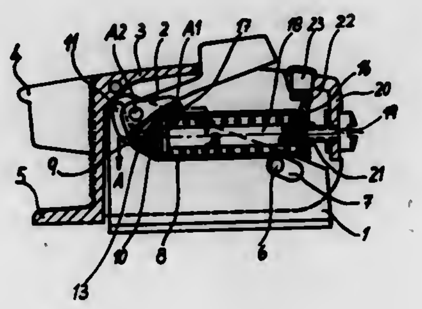
Charles J. Averbook, 809 Hill Street, Suite 2, Ann Arbor, Mich., and Robert J. Schmier, 1843 Lake Lila, Ann Arbor, Mich.
Filed May 17, 1971, Ser. No. 144,007
Int. Cl. A63c *11/02*
U.S. Cl. 280—11.37 K **1 Claim**

An anchoring loop for attachment to an article to be secured such as skis in the form of a strip of metal having its ends bent toward each other to form a base in a common plane, the remainder of the strip looping above the base for threading of a locking device. The loop is narrowed centrally to reduce impaction of snow and ice and to facilitate mechanical attachment which is to be supplemented by adhesive attachment.



3,727,935
RELEASABLE HEEL REATINER

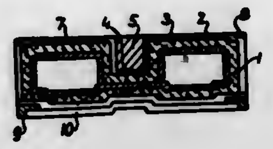
Paul Unger, Bructwiesenstr. 113, 8501 Altenberg, Germany
Filed June 2, 1971, Ser. No. 149,215
Claims priority, application Germany, June 4, 1970, P 20 27 412.8
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **12 Claims**



Releasable heel retainer for a ski binding that is provided on the base portion secured to the ski pivotally mounted for movement about a horizontal axis that extends longitudinally of the ski and the housing of which carries a sole holder, where inside the housing a release is disposed that acts against spring effect and causes the release of the ski boot under excessive load, which housing is displaceably journalled and supported on the base at the end remote from the sole retainer so that there results a slide crank type connection of the housing on the base, and displaceable mounting of the housing on the base is in the form of a guide means that protects the housing against rising from the base, and where furthermore a means is provided that is releasable manually or by a foot-step that fixes the open position of the retainer, and which heel retainer includes the improvement of the arrangement serving as the crank pivotally engaging the spring and this linkage slidingly engages a curved slot of the base which slot rises upwardly in the direction toward the sole retaining element, and where the linkage of the crank secured to the housing is disposed in a known manner ahead of the linkage of the crank on the base part secured to the ski.

3,727,936
SKI OF SHAPED LAMINATED MATERIAL AND METHOD FOR ITS MANUFACTURE

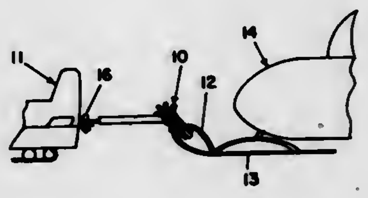
Jiri Klir, Praha; Bohumil Svoboda, Pardubice, and Jaroslav Bohac, Nove Mesto Na Morave, all of Czechoslovakia, assignors to Vyzkumny ustav Strojirenske technologie a ekonomiky, Praha, Czechoslovakia
Filed May 18, 1970, Ser. No. 38,130
Claims priority, application Czechoslovakia, May 23, 1969, PV 3665-69; April 7, 1970, PV 2310-70
Int. Cl. A63c *5/12*
U.S. Cl. 280—11.13 L **8 Claims**



A ski of shaped laminated material made as a hollow closed beam with integral walls with at least one longitudinal groove formed in the upper wall, housing a reinforcing strip. The ski being manufactured by applying a yielding fabric soaked with hardenable resin on a resilient hose, placing the whole into a mould and buildings up pressure in said hose under simultaneous heating to the hardening temperature.

3,727,937
SNOWMOBILE TOWING HITCH

Earl G. Maki, Jr., Sullivan, Wis.
Filed Jan. 5, 1972, Ser. No. 215,539
Int. Cl. B62b *13/00*
U.S. Cl. 280—24 **5 Claims**

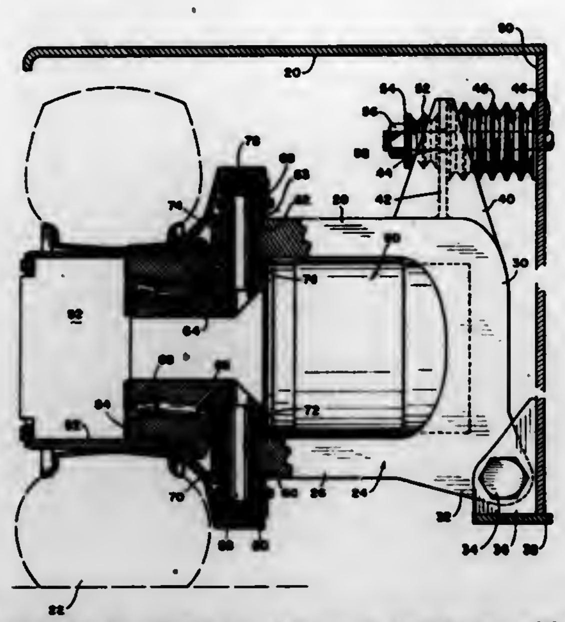


A hitch for towing one snowmobile with another which can be quickly disassembled for storage and transporting and readily reassembled for use. The hitch has a T-shaped tongue having an extendible cross member assembly. The outer ends swivel about the elongate axis of the cross member assembly. A pair of attaching clamp units are pivotally mounted in the swivel ends of the cross member assembly for clamping on the toe braces of the skis of a snowmobile which is to be towed.

3,727,938
VEHICLE WHEEL SUSPENSION AND MOUNTING MEANS

Edgar R. Goodbary, and James E. Thompson, both of Tulsa, Okla., assignors to Unit Rig & Equipment Company, Tulsa, Okla.
Continuation of Ser. No. 842,467, July 17, 1969, abandoned. This application July 26, 1971, Ser. No. 166,275
Int. Cl. B60g *3/00*
U.S. Cl. 280—96.2 **2 Claims**

A wheel mounting and suspension means for large wheels and vehicles wherein each wheel is independently mounted on the vehicle and independent wheel motors are provided for driving the vehicle wheels. Each vehicle wheel is carried by an independent yoke or support member which is secured between the wheel and vehicle in a manner to provide a universal mounting for each wheel. The wheel is journalled on the yoke member for rotation about a substantially vertical axis during steering of the vehicle, or the like, and the yoke

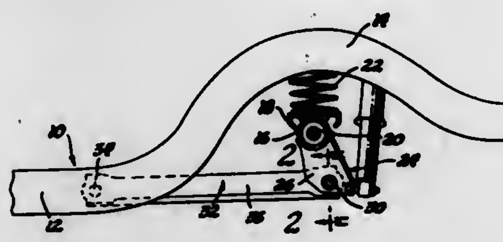


member is pivotally secured to the vehicle for rotation about a substantially horizontal axis to provide compensation for roughness or vertical variation in the terrain over which the vehicle travels. In addition, yieldable shock absorbing means in interposed between the yoke and the vehicle for cushioning or absorbing substantially all the shock due to vertical movements of the wheel during operation of the vehicle.

3,727,939
VEHICLE SUSPENSION CONTROL ARM

Petro Mykolenko, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 23, 1971, Ser. No. 155,896
Int. Cl. B60g *7/00*
U.S. Cl. 280—124 R **3 Claims**



A control arm particularly adapted for use in a vehicle suspension system includes a pair of spaced, parallel sides having aligned circular apertures therein, rigid inturned flanges extending around each of the apertures, and a sleeve disposed between the sides and in register with the apertures and with the flanges being closely received within the sleeve. A rubber bushing is received in the passage defined by the sleeve and the flanges and forces exerted on the control arm by the bushing are resisted partially by the portions of the flanges directly engaging the bushing and partially by the reamining portions of the flanges through the sleeve so that an even distribution of force across the control arm is achieved.

3,727,940
SUSPENSION STRUTS FOR INDEPENDENT WHEEL SUSPENSION SYSTEMS OF MOTOR VEHICLES

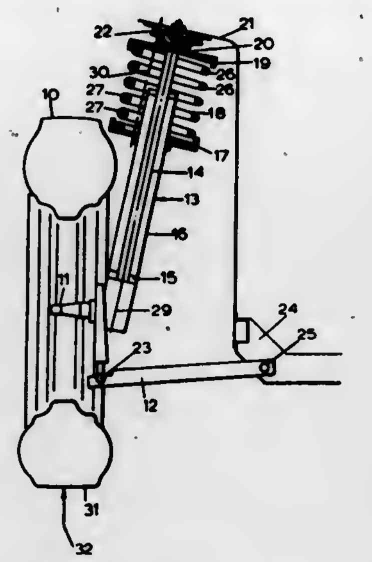
Karl Hug, Niedernhausen, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed June 29, 1971, Ser. No. 157,865
Claims priority, application Germany, July 1, 1970, G 70 24 634.3
Int. Cl. B60g *11/58*
U.S. Cl. 280—124 A **7 Claims**

A suspension strut for an independent wheel suspension of a motor vehicle comprises a telescopic damper with a helical compression spring arranged around the damper and seated at its ends on the cylinder tube and piston rod respectively of the damper. A wheel carrier is connected to the lower end of the damper cylinder tube and projects laterally therefrom.

To compensate for the bending moment produced by the offset disposition of the wheel carrier relative to the damper axis, those portions of the convolutions of the helical spring which are disposed on the same side of the spring as the laterally projecting wheel carrier — corresponding, in use, to the outboard side of the spring convolutions — are constructed to have a greater polar resistance moment than the portions of the spring convolutions which are disposed on the opposite side of the spring from the spring carrier.

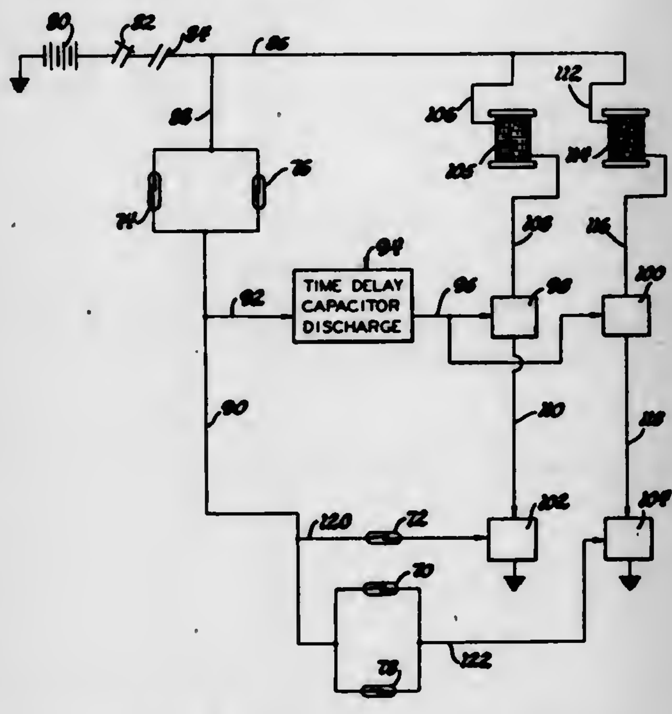
The spring starting material may for instance be circular-section spring stock, which, prior to convolution, has its cross-section locally reduced in area or changed in shape, by metal removal or by press-forming, to produce the portions having a smaller polar resistance moment.



3,727,941
AUTOMOBILE LEVELIZER CONTROL UNIT

Henry J. Ciolli, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 8, 1971, Ser. No. 205,834
Int. Cl. B60g *17/10*
U.S. Cl. 280—124 F **4 Claims**

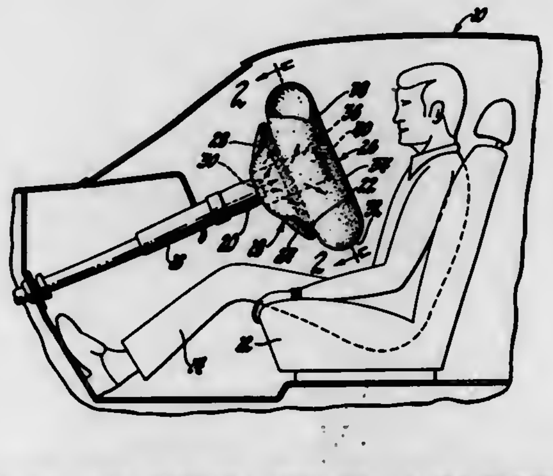


In preferred form, a vehicle leveling system having a load supporting device connected to a fluid supply system including first and second solenoid operated valves therein to control flow of leveling fluid to and from the load supporting device. The solenoid operated valves are controlled by a transistorized control circuit and a plurality of minireed switches therein located in a step-by-step relationship and operated by a permanent magnet movable relative to the minireed switches upon relative movement between the sprung and unsprung masses of the vehicle.

3,727,942
INFLATABLE OCCUPANT RESTRAINT CUSHION

Gary L. Arntson, Lansing, and Ross Rasmussen, Okemos, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 3, 1971, Ser. No. 139,638
Int. Cl. B06r *21/08*
U.S. Cl. 280—150 AB **4 Claims**

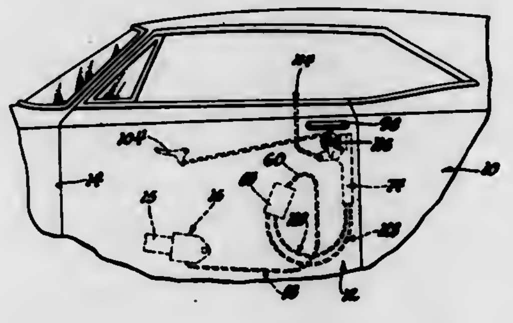


A vehicle body includes a steering column mounting a conventional steering wheel having a hub portion and a rim portion joined to the hub portion by spokes. A conventional gas generating device is mounted on the hub portion. An inflatable cushion includes a generally frusto-conically shaped inner wall mounted on the hub around the gas generator and merging into a generally arcuate cross section side wall which merges into the outer wall of the cushion. The outer wall is intended to be engaged by the driver. A tubular porous member extends from the inner wall around the gas generator to the outer wall to provide for diffusion of the generated gas and to also limit the movement of the outer wall with respect to the inner wall to provide in the former a depression of generally shallow concave cross section.

3,727,943
OCCUPANT RESTRAINT SYSTEM

Algis G. Augunas, Royal Oak; James C. Louton, Jr., Bloomfield Hills, and Roman Rafalik, Warren, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 18, 1971, Ser. No. 144,470
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 SB **5 Claims**

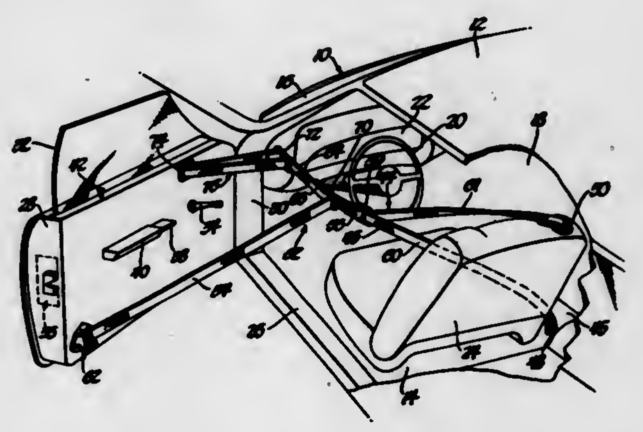


An occupant restrain system for a vehicle body which includes a door movable between open and closed positions and mounting a door lock engageable with a striker on the body for holding the door in closed position. The lock is of the uncoupling type and includes inside and outside release handles connected to an operating lever which is selectively coupled to an uncoupled from the detent for the bolt. A restraint belt includes a lap belt mounted at one end on the floor pan inboard of the seated occupant and a shoulder belt mounted at one end on the seat back or on the roof panel inboard of the seated occupant. The other ends of the belts are integrally or otherwise connected to each other at a belt juncture. A pulley arrangement interconnects the belt juncture and the door for moving the belt juncture forwardly upon opening movement of the door and permitting rearward movement thereof upon closing movement of the door. The belt juncture is also secured to one end of an outboard belt, the other end of which is secured to a belt retractor mounted on the door adjacent the outboard side of the seat cushion. The retractor includes a belt anchoring reeel having ratchet end plates, and a pawl which is normally spring biased into engagement with the end plates to block movement of the reel in a belt extending direction. A control lever is movable into engagement with a pawl extension to move the pawl to released position. The lock operating lever is fixed to one end of a shiftable cable, the other end of which is connected to one end of a second shiftable cable, the other end of which is fixed to the retractor control lever. Movement of the lock operating lever by either release handle shifts the first and second cables and the control lever to release the pawl. A third shiftable cable is connected to the second cable and to the lock bolt. Upon movement of the bolt to unlatched position, the third cable shifts the second cable to also release the pawl of the retractor. The connections between the second cable and the first and third cables permit movement of the second cable by either independently of the other.

3,727,944
CONTROL BELT SYSTEM FOR A VEHICLE BODY OCCUPANT RESTRAINING BELT ARRANGEMENT

Gary A. Wise, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 28, 1971, Ser. No. 166,799
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **1 Claim**



A control belt system for a vehicle body occupant restraining belt arrangement including a restraining belt whose ends are respectively fixed adjacent upper and lower inboard portions of a vehicle body seat and whose intermediate portion is slidably received within a first apertured member to define lap and shoulder belt portions. The control belt system includes a first control belt with one end attached to the first apertured member, a door mounted retractor normally retracting the other end of the first control belt which maintains the belt arrangement in an occupant restraining position when the door is in closed position and provides a direct path of force between the retractor and the lap and shoulder belt portions, a second apertured member slidable along an intermediate portion of the first control belt, and a second control belt with one end extending between the vehicle body and an upper forward portion of the door in a tackle arrangement and with the other end attached to the second apertured member. During door opening movement, the tackle arrangement is lengthened to retract the other end of the second control belt as the second apertured member slides along the first control belt and moves the belt arrangement forwardly to an easy-enter position.

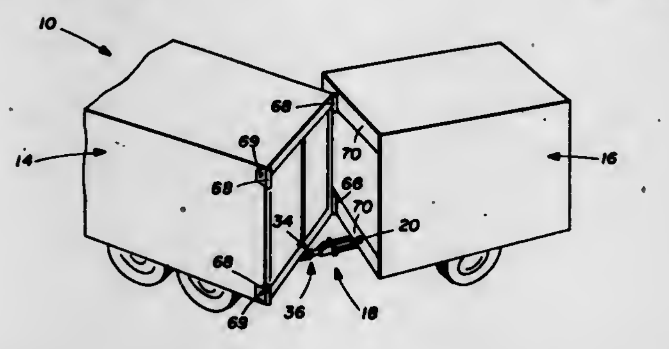
3,727,945
VEHICULAR HITCHING SYSTEM

John W. Parker, Irving, Tex., assignor to Parker Uptight Trailer Hitch Company

Filed March 29, 1971, Ser. No. 129,022

Int. Cl. B60d *1/02*

U.S. Cl. 280—408 **18 Claims**



A vehicular hitching system includes a shaft supported on a pup trailer for sliding movement outwardly from the front of the trailer, and air cylinders for biasing the shaft inwardly. A pintle hook is secured to the rear of a mother trailer and receives an eye mounted on the shaft. Four rollers are pivotally mounted at the rear corners of the mother trailer, and roller receiving plates extend across the top and bottom of the front surface of the pup trailer. During a relative turning movement between the trailers, two of the rollers engage and thereafter move across the roller receiving plates. During this action the shaft is drawn outwardly from the front of the pup trailer against the action of the air cylinders.

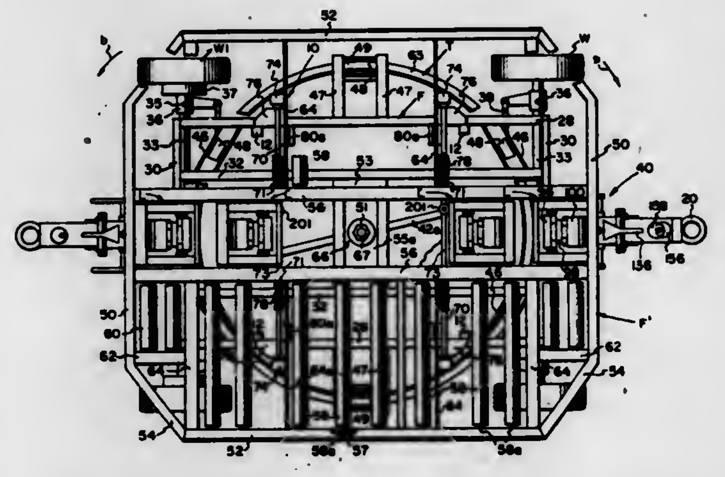
3,727,946
BAGGAGE CART

Leo E. Hearn, Flint, Mich., assignor to Saginaw Products, Mich.

Filed Dec. 3, 1970, Ser. No. 94,891

Int. Cl. B60d *7/00*

U.S. Cl. 280—408 **16 Claims**



A cart for supporting baggage containers and the like, including a frame supported on surface engaging wheels, a conveying platform rotatably mounted on the frame, apparatus on the frame and the platform cooperating to selectively lock the platform in various predetermined positions relative to the frame, latch assemblies at opposite ends of the conveying platform for securing opposite ends of a baggage container supported thereon, a steering tongue connected to each of the front and rear sets of wheels and pivotally coupled to a tow bar provided at each end, a releasable lock for selectively preventing relative movement of the steering tongue and the tow bar at either end of the cart to provide for selective locking and steering at either end so that when in train, the carts may be readily conditioned to steer from either end, and apparatus for releasably coupling the tow bar of one vehicle to the tow bar of an adjacent vehicle.

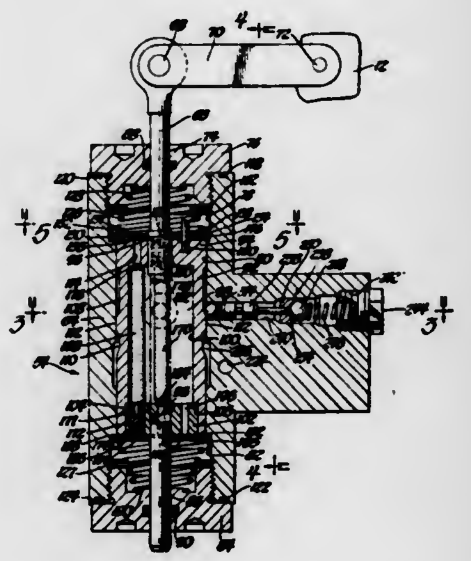
3,727,947
HYDRAULIC VALVE FOR VEHICLE LEVELING

Ralph E. Small, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1971, Ser. No. 195,950

Int. Cl. B60p *1/16*

U.S. Cl. 280—124 F **4 Claims**



A three position height control valve having a damping piston, a valve operator and valving components for controlling flow of fluid between a high pressure source, a low pressure source and a leveler unit. The valve piston orifices are varied by adjustable temperature responsive control rods to maintain a uniform damping action. Check valves allow flow of make-up fluid from one end of the piston to the opposite end thereof. They are carried by a tray on the end of the piston and movable apart therefrom to permit a quick return of the damping piston to a centered position.

3,727,948
RELEASABLE WELL JOINT

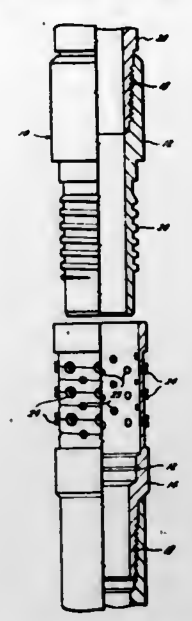
James H. Current, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed March 9, 1972, Ser. No. 233,269

Int. Cl. F16l *35/00*

U.S. Cl. 285—3 **7 Claims**

A releasable joint for use in a well tubing having a male and a female member and a seal therebetween in which one of the members has a connecting thread and the other member has a plurality of shear elements installed on a helix of the same lead as the connecting thread whereby the members may be rotatably engaged and disengaged as well as disengaged by shearing the elements by straight pull. In one embodiment the shear elements are threaded into holes extending through the female member whereby the shear value may be visually observed or changed without disassembling the joint. In another embodiment the shear elements may be positioned on the male member. The connecting thread may be formed of a plurality of segments which are spring loaded radially toward the other member and the thread may be of a buttress type.



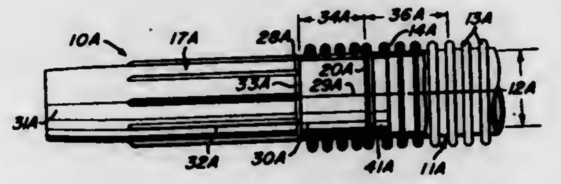
3,727,949
HOSE CONSTRUCTION

Donald L. Kleykamp, Springboro; Peter J. Neroni, Dayton, both of Ohio, and Homer N. Holden, Sylva, N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Dec. 20, 1971, Ser. No. 209,829

Int. Cl. A47l *9/24*

U.S. Cl. 285—7 **9 Claims**



An elongated hose construction is provided which is particularly adapted for use on a vacuum cleaner. The hose construction comprises a hose having a plurality of integral convolutions which give the hose optimum flexibility and at least one convolution comprising one end portion of the hose is used to attach a simple, inexpensive fitting thereto in a substantially air tight manner.

3,727,950
DIRT SEAL RING FOR PIPE SWIVEL JOINTS

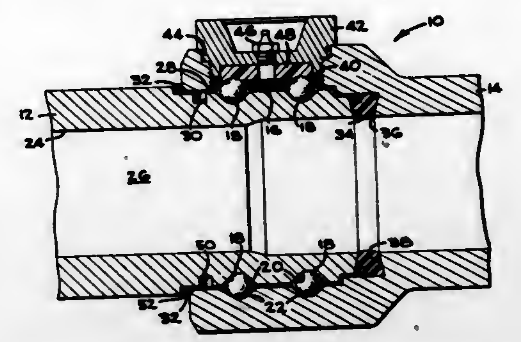
Harold N. Swanson, Anaheim, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 1, 1971, Ser. No. 194,202

Int. Cl. F16l *11/12*

U.S. Cl. 285—13 **6 Claims**

A pipe swivel joint with a one-piece, elastomeric dirt seal ring for protecting the joint's ball race chamber against intrusion of contaminants from the outside environment, and to relieve the ball race chamber from excessive pressure resulting from leakage past the joint's packing. The seal ring is located in the annulus between the joint's male and female elements, and comprises a body portion that fits into an outer annular groove on the male element to retain the seal in proper functioning position, a lip portion that fits tightly against both male and female elements to provide a seal therebetween, and a stretchable intermediate web-like portion interconnecting the body and lip portions. When the swivel joint is fully assembled with the seal ring installed, the intermediate portion is stretched axially to maintain the lip in sealing contact with both joint elements, precluding entry of outside contamination into the ball race chamber yet facilitating escape of pressure from it to the outside.



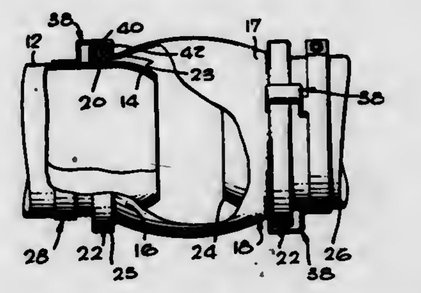
3,727,951
CONNECTOR CLAMP

Harold Shire, Beverly Hills; Ira R. Newman, Lakeview Terrace, and Robert S. Allison, San Gabriel, all of Calif., assignors to General Connectors Corporation, Burbank, Calif.

Division of Ser. No. 886,492, Dec. 19, 1969. This application Feb. 17, 1972, Ser. No. 201,379

Int. Cl. F16l *55/00*

U.S. Cl. 285—93 **5 Claims**



The invention is a generally cylindrical split ring adapted to tightly embrace a thin-walled tube. The ends of the clamp have constricting means for decreasing the diameter of a split ring in order to cause it to tightly embrace the tube. The split ring is provided with a plurality of integrally attached channel shaped combined claws and legs designed to grasp the ribs of a slip joint connector whereby the thin-walled tube and slip joint connector are releasably held in longitudinally fixed relationship. The combined claws and legs have a spacing function in that when the combined claws and legs engage a support or abutting surface, the cylindrical split ring of the clamp is held parallel to the support surface at a distance from the support surface equal to the distance from the end of the thin-walled tube where the cylindrical split ring must be secured. In this way, if the thin-walled tube is inserted through the split ring until its end abuts the support surface, the cylindrical split ring will be at the correct place on the thin-walled tube.

3,727,952
TUBE CONNECTOR

William D. Richardson, Palos Heights, Ill., assignor to Tuthill Pump Company, Chicago, Ill.

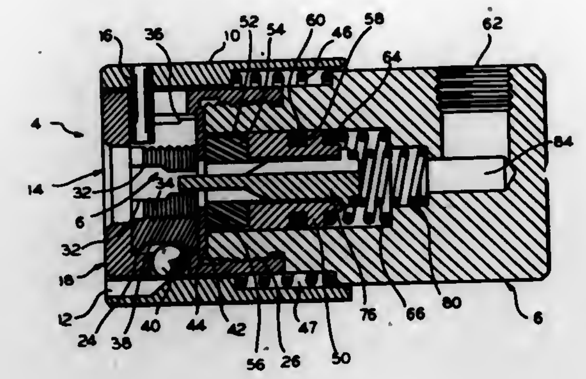
Continuation-in-part of Ser. No. 54,288, July 13, 1970, abandoned. This application March 2, 1972, Ser. No. 231,332

Claims priority, application Canada, April 19, 1971, 110704; France, June 22, 1971, 7122731; Germany, July 12, 1971, P 21 34 732.0; Great Britain, May 6, 1971, 13,531/71; Italy, May 15, 1971, 50367 A/71; Japan, May 26, 1971, 46/35610

Int. Cl. F16l *17/00*

U.S. Cl. 285—101 **17 Claims**

An easily, manipulatable tube connector for connecting apparatus to test equipment and the like, wherein, in an exemplary embodiment, the connector utilizes a pair of jaw-like, gripper members for attachment to the equipment to be tested



and the connector is easily positioned to the secured and sealing position by a simple axial movement and is easily and quickly removed thereafter.

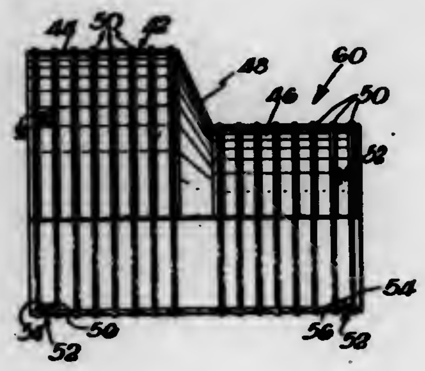
3,727,953
TUBE COUPLING

Ronald C. Martin, Waterville, Ohio, and Marty E. Sixt, Iowa City, Iowa, assignors to Advanced Drainage System, Inc., Newark, Del.

Continuation-in-part of Ser. No. 796,752, Feb. 5, 1969, Pat. No. 3,551,007. This application Oct. 6, 1970, Ser. No. 78,444

Int. Cl. F16l *33/20*

U.S. Cl. 285—177 4 Claims



Flexible coupling for interconnecting ends of corrugated tubes of different cross-sectional diameters comprises tubular body section with two integral elongate portions having different cross-sectional diameters that correspond to the cross-sectional diameters of the tubes to be connected thereto. In one embodiment, slit in each end portion of tubular body section enables end portions of body section to fit tightly over corrugated tubes to be connected to coupling. In another embodiment, plurality of locking lugs formed in tubular body section at each end thereof project into interior of body section for positioning between corrugations of tubes to be connected thereto.

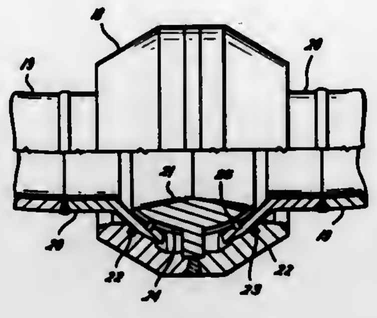
3,727,954
METHOD AND APPARATUS FOR CONNECTING AN UNDERWATER PIPELINE TO A PLATFORM

John P. Oliver, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Aug. 2, 1971, Ser. No. 168,045

Int. Cl. F16l *27/00, 27/04, 1/00*

U.S. Cl. 285—168 1 Claim



A rigid riser pipe section is connected to the end of an underwater pipeline by an articulated pipe section which permits the riser pipe section to be laid with the pipeline along the underwater level and then raised to connection along the length of a supporting leg of a platform.

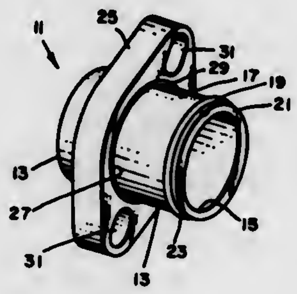
3,727,955
SEMIFLEXIBLE FLUID-TIGHT TUBE COUPLING

Efton T. Carter, 2737 Irwin, Lake Isabella, Calif.

Filed March 22, 1972, Ser. No. 236,949

Int. Cl. F16l *21/00*

U.S. Cl. 285—223 10 Claims



An apertured flange member with a beveled inner edge slidably disposed about a uniform cylindrical surface of a tubular member having an elongated axial bore and a circumferential recess immediately adjacent the tube's end extremity in which recess a resilient sealing ring is seated, and means for moving the flange member toward a second body arrangement to produce a fluid-tight (liquid or gas) communication between the bore and an opening in an end extremity of the second body arrangement by the action of the beveled edge urging only a portion of the sealing ring beyond its seat and toward and contacting the second body arrangement, whereby the sealing ring is compressed into an inescapable cavity formed by the beveled edge of the flange and the circumferential recess.

3,727,956
DEMOUNTABLE HANDLE ASSEMBLY

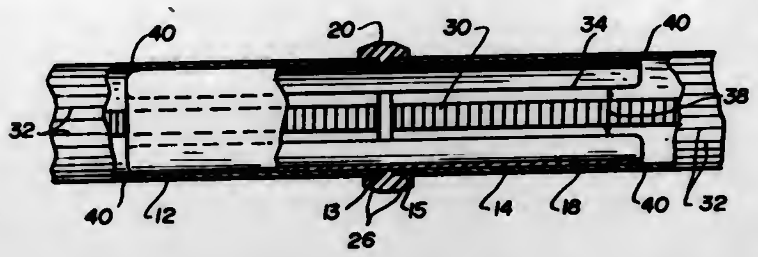
Samuel J. Popell, Chicago, Ill., assignor to Popell Brothers, Inc., Chicago, Ill.

Filed Sept. 7, 1971, Ser. No. 178,348

Int. Cl. F16b *7/00*; B25g *3/12*

U.S. Cl. 287—2 13 Claims

A demountable, lightweight, tubular appliance handle is shown, having two or more tubular sections. The tubular sections are interfitted by a C-shaped elongate spring connector normally press-fitted in one of the tubular sections to a point approximately one-half the length of the connector member to accomodate the next adjacent tubular section for slidable mounting on the exposed end of the spring connector member. A collar is slidably disposed adjacent the outer end



of the spring connector member to provide a wiping action along the exposed end of the connector member as the adjacent tubular section is slidably mounted thereon, such that the tubular section following the wiping action of the collar is more prone to removal than the next adjacent tubular section. The collar retention flange has flanking undercuts to receive the tubular element.

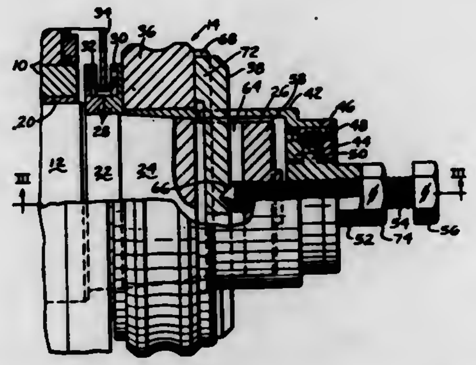
3,727,957
FORMING ROLL

Thomas A. Brown, Greensburg, and Joseph B. Huber, Acme, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Aug. 23, 1971, Ser. No. 173,910

Int. Cl. B60b *27/06*

U.S. Cl. 297—53 R 8 Claims



A form roll of hard material, such as cemented tungsten carbide, for example, is mounted on a driving shaft. A bar-like key engages a hole in the shaft and notches in the roll and is engaged by a screw which clamps the key to the roll. A split sleeve is forced between a cylindrical central bore in the roll and a tapered portion on the shaft which the roll surrounds.

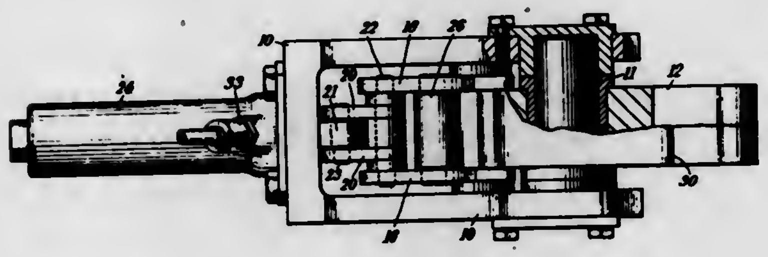
3,727,958
SELF-LOCKING COUPLING

Ralph Peters, Wolverhampton, Staffordshire, England, assignor to H. M. Hobson Limited, London, England

Filed Aug. 25, 1971, Ser. No. 174,729

Int. Cl. F16c *11/00*

U.S. Cl. 287—95 4 Claims



A coupling, arranged to lock automatically, in response to contact with a unit to be coupled, to couple said unit to a unit carrying the coupling, said coupling comprising a frame, a hook pivoted to the frame and spring urged to a free position, and a locking pin urged by another spring into contact with the rear face of the hook when the letter is in its free position and adapted to snap into a recess in the rear face of the hook, upon rotation of the latter into a locking position by contact with the unit to be coupled, to retain the hook in its locking position, the locking pin and the pivot of the hook being aligned, when the hook is in the locking position, with the line of action of the load exerted by or on the coupled unit.

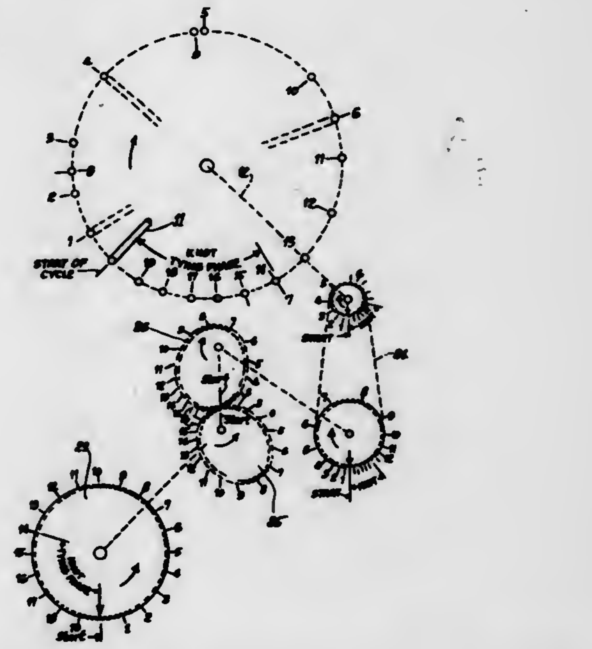
3,727,959
ELLIPTICAL GEAR DRIVE FOR BUNDLE TYING MACHINE

Robert G. Brown, Glenwood, Md., assignor to B. H. Bunn Company, Alsip, Ill.

Filed Feb. 16, 1972, Ser. No. 226,722

Int. Cl. B65h *69/04*

U.S. Cl. 289—15 5 Claims



A drive for the twine arm and knotter of a bundle typing machine which uses a continuously connected drive for both the twine arm and knotter. The twine arm, however, is relatively immobile when the knotter is operating and the knotter is relatively immobile when the twine arm is operating. This effect is achieved by connecting the two drives with elliptical gears.

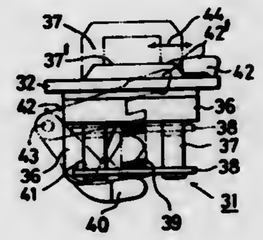
3,727,960
DOOR LOCKING MEANS FOR A VEHICLE

Masao Uemura; Kiyoshi Kumagai, and Satoru Toyama, all of Nagoya, Japan, assignors to Kabushikikaisha Anseikogyo, Nagoya and Mitsubishijidoshakogyo Kabushikikaisha, Tokyo, Japan

Filed Oct. 27, 1971, Ser. No. 192,985

Int. Cl. E05c *3/26*

U.S. Cl. 292—216 6 Claims

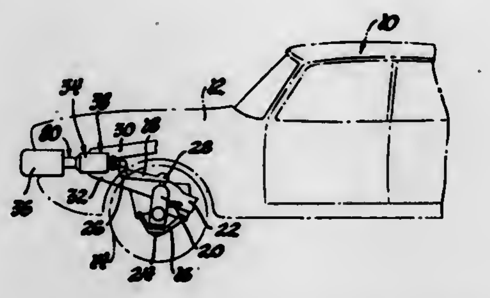


A door locking means comprising a latching means and a striker cooperative therewith including a striker rod usually retracted behind a base plate structure by means of a spring, a movable lever partly projecting through said base plate structure to be abutted by an abutting member of said latching means and a striker rod depressing lever pivoted on said base plate structure and pivotally connected to said movable lever.

3,727,961
FLUID SHOCK ABSORBING BUMPER ASSEMBLY

Horacio Shakespear, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 13, 1971, Ser. No. 207,113
Int. Cl. B60r *19/06*; B61f *19/04*; F16c *9/06*
U.S. Cl. 293—68 **8 Claims**

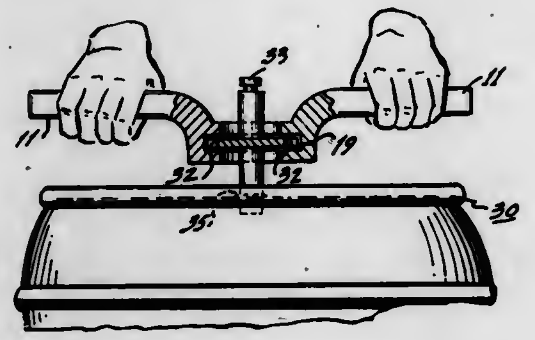


An energy absorbing device particularly adapted for automotive applications and functional in a first mode to damp the primary suspension spring of the vehicle and in a second mode to absorb the energy of impact on the bumper bar of the vehicle, the device including a composite tube assembly rigidly supported on the vehicle sprung mass portion, a support tube telescopically supported on the composite tube assembly and rigidly attached to the bumper bar, a double headed free piston slidably disposed in the composite tube assembly, and a link system connecting the unsprung mass portion of the vehicle to the piston. During compression and expansion deflections of the unsprung mass portion, the link system effects bodily movement of the piston which initiates throttled flow of a working medium between a pair of variable volume chambers to damp a primary suspension spring. When the bumper bar is impacted, the free piston is held fixed and the support tube collapses to effect throttled flow of the working medium through an orifice which traverses the length of a third chamber thereby to absorb the energy of impact on the bar.

3,727,962
KEG LIFTING DEVICES

James F. Reisinger, 17 Fourth St., East Brunswick, N.J.

Filed Oct. 14, 1970, Ser. No. 80,627
Int. Cl. B65g *7/12*
U.S. Cl. 294—16 **4 Claims**

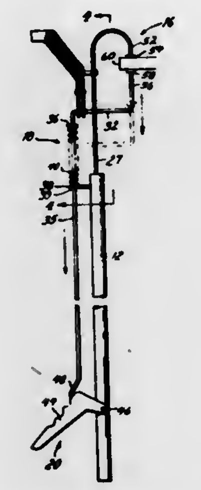


A lifting device for a keg comprises two C-shaped members interpivoted at one end and forming an annular structure in a closed position, said C-shaped members having a groove along the inside surface thereof and entirely about the inside periphery of said structure, said groove adapted to surround and coact with a spout or tap assembly associated with and rigidly fixed to said keg, and handle means extending outwards from said C-shaped members for lifting said keg when said groove is accommodating said spout.

3,727,963
GRASPING DEVICE

Samuel Dranoff, 3810 Conshohocken Avenue, Philadelphia, Pa.

Filed Sept. 29, 1971, Ser. No. 184,849
Int. Cl. A47f *13/06*
U.S. Cl. 294—23 **4 Claims**

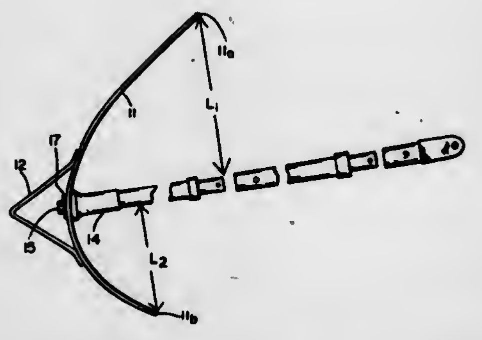


A grasping device having two sets of jaws is disclosed. One of the sets of jaws is open when the other is closed. One set of jaws is used for grasping articles while the other set is for grasping a shelf or the like when the device is not in use.

3,727,964
COMBINATION SNOW SHOVEL AND SNOW PULLER

Donald T. Nordvik, 7549 Noble Avenue North, Brooklyn Park, Minn.

Filed April 7, 1972, Ser. No. 242,013
Int. Cl. E01h *5/02*
U.S. Cl. 294—54 **8 Claims**



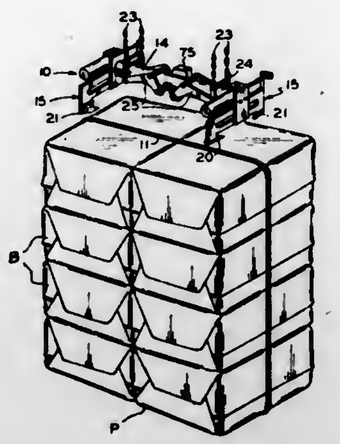
A combination snow shovel and snow puller comprising a snow blade having means for receiving a snow shovel handle or a snow puller handle to thereby allow the snow blade to be used either as a snow shovel or as a snow puller for pulling snow off the roof of a building.

3,727,965
LIFTING TOOL FOR BOUND PACKAGES

Albert E. Cranston, III, Gladstone, and Charles B. Lewis, Milwaukee, both of Oreg., assignors to Cranston Machiner Co., Inc., Oak Grove, Oreg.

Filed July 12, 1971, Ser. No. 161,499
Int. Cl. B66c *1/18*
U.S. Cl. 294—67 R **20 Claims**

A pair of hooking devices is mounted for telescopic extension and retraction in opposite ends of a tubular horizontal lifting beam. Each hooking device is equipped with a pair of opposed fingers adapted to engage under a binding extending across the top of the package. One of the fingers is a lifting finger and the opposite finger serves as a holding dog to retain the binding on the lifting finger when the two fingers are

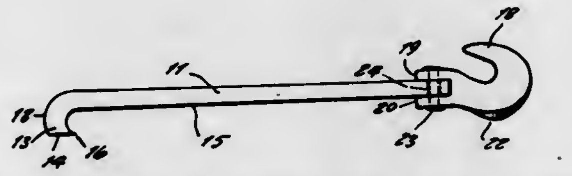


closed together. The two hooking devices initially engage the binding at points inward from the opposite sides of the package. Lifting chains connected with pivotal bell crank arms on the beam slide the hooking devices outward from opposite ends of the beam to approach the opposite sides of the package as it is lifted.

3,727,966
FREIGHT-SKID TOW BAR

Aubrey B. Stockwell, 324 N. Grover, Alma, Mich.

Filed May 12, 1971, Ser. No. 142,692
Int. Cl. B66c *1/00*
U.S. Cl. 294—82 R **1 Claim**

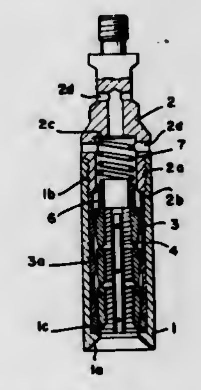


A tow bar for freight skidding, the device comprising an elongated strap iron which at one end has a clevis type hook secured thereto, the opposite end of the tow bar being downwardly turned so to form a biting edge.

3,727,967
UNIVERSAL OVERSHOT

Eugeniu Vasile Anastasiu, Bucharest; Teodor Gheorghe Baluteacu, and Nicolae Stefan Farcas, both of Cimpina, all of Romania, assignors to Institutul De Proiectari Si Cercetari Pentru Utilaj Petrolier, Bucharest, Romania

Filed June 17, 1971, Ser. No. 154,148
Int. Cl. E21b *31/02*
U.S. Cl. 294—86.31 **5 Claims**

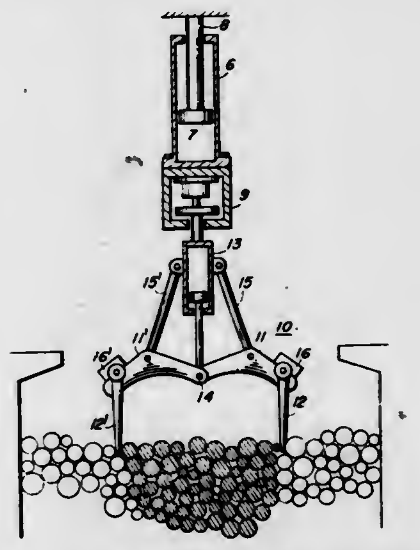


A universal overshot or fishing tool (adapted to enter a well or borehole) has a tubular body with a mouth adapted to receive a drill string or sucker rod (fish). A plurality of axially aligned bushings are received in the body and each has an inner wall tapering toward the mouth with a set of slips disposed in each of the bushings. The slips are each longitudinally slidable along and wedgingly engageable between the respective inner wall and the drill string or rod. A spring bearing on a sleeve in turn acting on the set of slips furthest from the mouth (uppermost slip) urges all of the slips axially toward the mouth. The set of slips have increasingly large diameters away from the mouth.

3,727,968
LUMBER GRABBING APPARATUS

Akira Tsuchihashi, and Kazuo Honma, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 25, 1971, Ser. No. 146,636
Claims priority, application Japan, June 12, 1970, 45/50318
Int. Cl. B66c *1/42*
U.S. Cl. 294—88 **3 Claims**

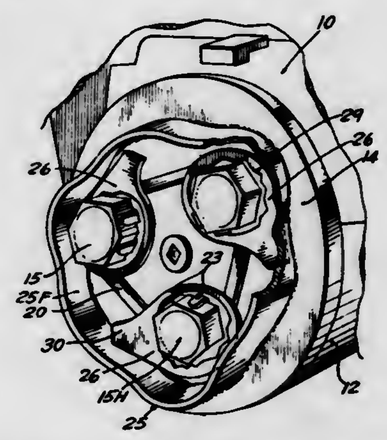


An apparatus for grabbing a material closely stacked in a compartment such as a hold, which is provided with means for smoothly and easily penetrating its grabbing arms into the interspace of the material so as to enable said grabbing arms to grab a large amount of the material at a time.

3,727,969
RAILROAD BEARING STRUCTURES

Thomas A. Eddy, Mahwah, and Charles E. White, Franklin Lakes, both of , N.J., assignors to Abex Corporation, New York, N.Y.

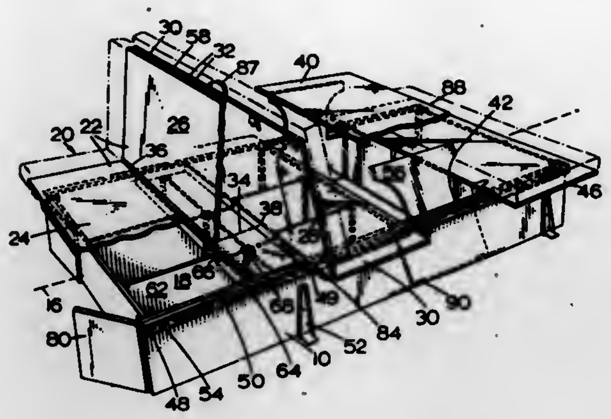
Filed Feb. 8, 1971, Ser. No. 113,309
Int. Cl. B60b *35/00*
U.S. Cl. 295—36 R **1 Claim**



Bolts used to secure the end cap of a bearing structure to the end of a railroad car axle are secured against loosening by the conjoint action of bent tabs on a template and a plurality of lock plates arranged in a unique way to cooperate with a shoulder on the end cap.

3,727,970
CAMPING ASSEMBLIES

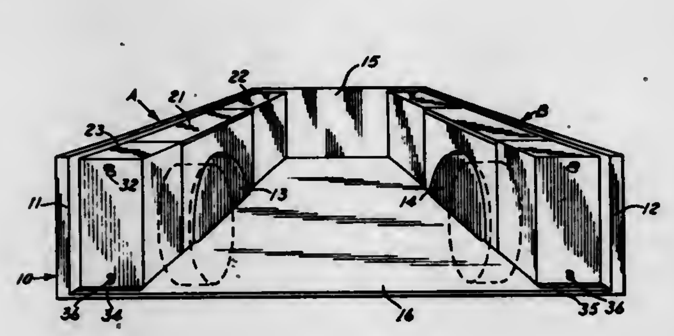
Norman E. Delmage, 22 Birchcliffe Avenue, Kitchener, Canada
Filed Feb. 17, 1971, Ser. No. 116,103
Int. Cl. B60p *3/38*
U.S. Cl. 296—23 R **6 Claims**



A camping assembly the parts of which are rapidly connectible and disconnectible for particular use in automobile vans is secured to a van deck via a set of laterally related longitudinals supported on edge by transverse connecting members over which lie a set of panels capable of constituting sleeping accomodation when the occupants lie transverse to the van axis, or seating with provision for a table, by lifting two adjacent pairs of hingedly connected panels such that the center pair assumes the sub-vertical thus providing two opposite seat-backs while the outer pair function as seats, all extending transversely over the van axis, with space for a table between two panels when one is slid into said seat position, storage accommodation existing between said longitudinals and connecting members.

3,727,971
UTILITY RECEPTACLE UNITS FOR PICKUP-TYPE VEHICLE BOXES

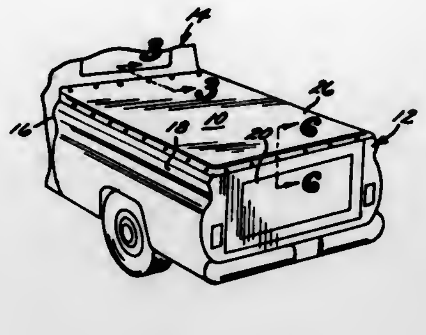
Melvin L. Sisler, 14470 E. 13th, Space A23, Meadow Mobile Home Park, Aurora, Colo.
Filed March 17, 1971, Ser. No. 125,210
Int. Cl. B62d *33/04*
U.S. Cl. 296—37 R **13 Claims**



A horizontally elongated, utility receptacle unit, preferably provided in pairs, for location entirely within a pickup box to effectively utilize the space along both inner side walls and over the upwardly arched fender sections while leaving the space between the fender sections open for the full utilization thereof. The receptacle unit may be formed as a main container which may be filled with a particulate weight material such as gravel for increased wheel traction and the main container may have auxiliary containers or container sections at the ends thereof which may contain fluids such as water, gasoline and the like or afford additional storage space.

3,727,972
COVER

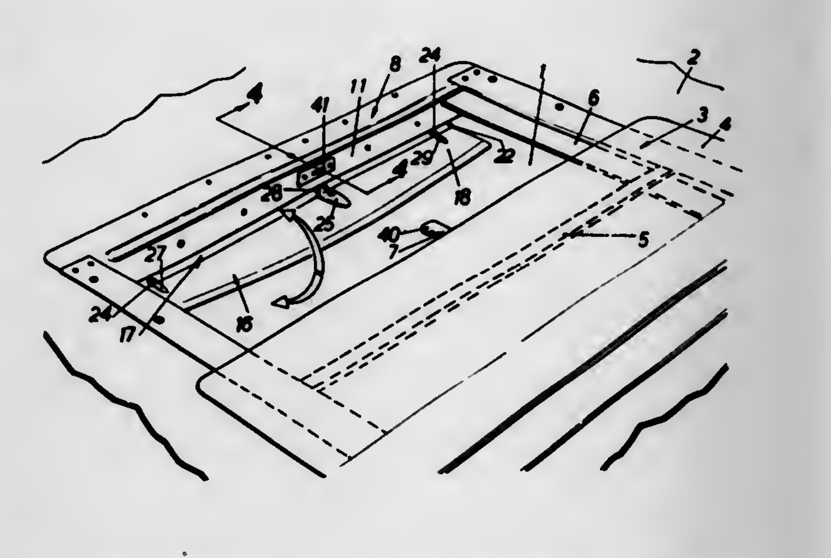
Earl H. Belk, 2438 San Francisco Avenue, Long Beach, Calif.
Filed Aug. 20, 1970, Ser. No. 65,474
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 R **3 Claims**



A cover to overlie the open bed of a vehicle afterbody, the cover including a flexible sheet provided in its periphery with a plurality of openings to receive complementally located headed buttons secured about the periphery of the vehicle bed. The cover includes an elongated retainer embedded in the sheet periphery so as to extend across the sheet openings in position to underlie the button heads and thereby secure the cover in position. Use of the retainer enables greater tolerance in the proper locations of the buttons and the sheet openings for receiving them. The retainer also provides a means for attachment of handles to stretch the cover taut.

3,727,973
HINGED DRAUGHT DEFLECTORS FOR VEHICLE OPENING ROOFS

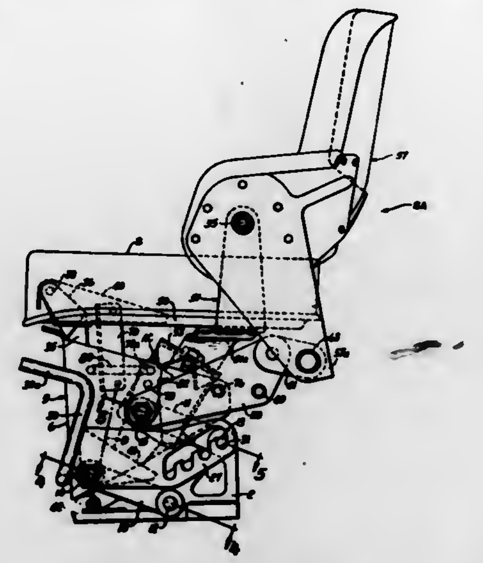
Joseph Perks, Birmingham, England, assignor to Weathershields Limited, Birmingham, England
Filed June 28, 1971, Ser. No. 157,504
Int. Cl. B60j 7/22
U.S. Cl. 296—137 E **10 Claims**



A hinged deflector for a vehicle opening roof comprises a transverse flap adapted to be hingedly connected to the front end of the roof opening. A transverse sealing strip for attachment to the roof at the front end of the opening is provided with a rearwardly disposed part-circular bead having an outer curved surface with which the edge of the flap adjacent to the strip is adapted to make full facial abutment, at least when the flap is in either an operative upwardly and rearwardly inclined position or an inoperative downwardly and forwardly inoperative position.

3,727,974
VEHICLE SEAT HAVING RESILIENT SUSPENSION AND CONSTANT ACTING DAMPING MEANS

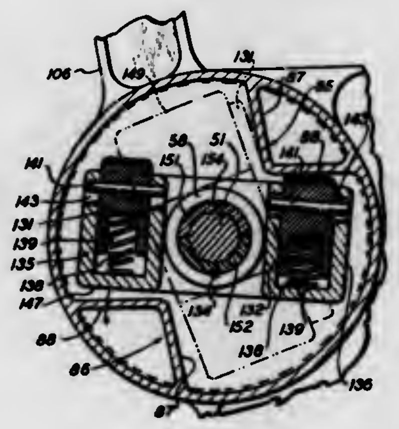
Richard F. Swenson, and John J. Gryga, Jr., both of Milwaukee, Wis., assignors to Swenson Corporation, Red Granite, Wis.
Filed Dec. 27, 1971, Ser. No. 212,122
Int. Cl. A47c *3/38*; **B60n** *1/02*
U.S. Cl. 297—300 **19 Claims**



A vehicle seat of the resiliently suspended type for use with earth working or agricultural implements or the like and wherein the seat itself is mounted on a parallel arm linkage arrangement and can be vertically adjusted to different heights. The seat furthermore has an air spring or the like for resiliently suspended the seat for a cushioning effect, which cushioning means can be locked out to provide a solid ride. In addition the seat has a damping means for providing a selectable stiffness or softness of the ride. This damping means is so constructed and arranged that it acts with essentially constant force on the seat regardless of the type of ride selected so that a constant force is applied by the damping means regardless of the vertical position to which the seat bounces or swings. Means are also provided for easily adjusting the vertical position of the seat so as to accommodate operators of different size.

3,727,975
FOLDING STADIUM CHAIR

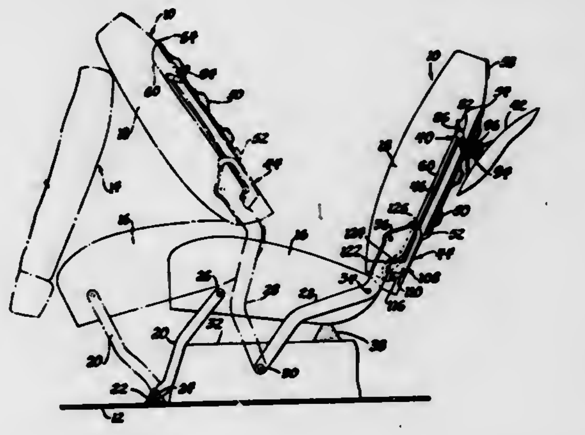
Paul G. Anderson, 641 A South Indian Hill Boulevard, Claremont, Calif.
Filed June 23, 1971, Ser. No. 155,711
Int. Cl. A47c *1/12*
U.S. Cl. 297—332 **5 Claims**



A stadium chair has spaced pairs of vertical side members with attachment means at the bottom of each side member pair for attachment to the riser face or the horizontal platform of the stadium row. The vertical members support pivot plates at the level of the seat. Fiberglass, plastic or cast or forged metal seat surfaces are attached to the pivots. The rear edge of each seat is weighted. Each vertical side member pair has a registry hub that includes a pair of arcuately spaced stops against which resilient locators on the seat register to predetermine occupied and unoccupied seat attitudes. A back rest is attached to spaced support members extending from the vertical side members. Preferably the registry hubs are compound such that side members between adjacent seats accommodate pivots for both seats.

3,727,976
VEHICLE SEAT

Leonard A. Lystad, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 22, 1971, Ser. No. 117,649
Int. Cl. B60n *1/04*
U.S. Cl. 297—340 **6 Claims**



A vehicle seat with a conventional seat cushion and seat back includes front and rear links respective each side of the seat with the respective ends of the links pivoted to the seat cushion and a vehicle body floor to mount the seat for bodily movement longitudinally of the vehicle body between a seating position and an easy enter position. A first latch mechanism mounted adjacent the upper edge of the seat back engages a vehicle body mounted keeper to hold the seat in seating position and is selectively actuatable to disengage the keeper and allow movement of the seat to easy enter position. The lower edge of the seat back is pivotally mounted on the rear links for movement about a transverse axis between the generally upright position of the seating position of the seat and a generally horizontal position defining a cargo floor and a cargo position of the seat. A second latch mechanism mounted on the seat back engages one of the rear links to prevent pivotal movement of the seat back to the generally horizontal position during movement of the seat to easy enter position. The second latch mechanism is selectively actuatable to disengage the one rear link as a control rod that extends between the latch mechanisms simultaneously actuates the first latch mechanism to allow the seat back to pivot to the horizontal position. The second latch mechanism subsequently is selectively engageable with the one rear link to maintain the seat back in the horizontal position defining the cargo position of the seat. A pin and slot connection between the first latch mechanism and one end of the control rod allows actuation of the first latch mechanism independently of the second latch mechanism.

3,727,977
ATTACHMENT OF A SAFETY BELT FOR AN ADJUSTABLE SEAT OF A MOTOR VEHICLE

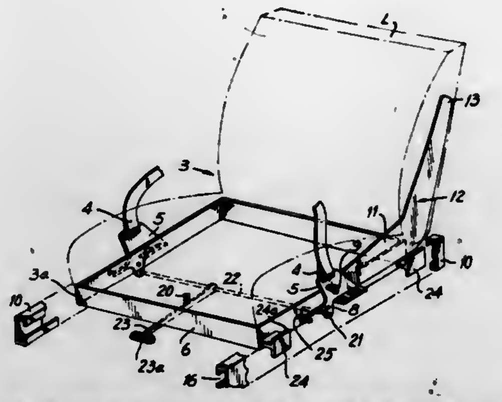
Gunter Gmeiner, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed March 23, 1971, Ser. No. 127,306

Claims priority, application Germany, March 24, 1970, P 20 14 007.2

Int. Cl. A47l *5/00*; B60r *21/10*

U.S. Cl. 297—344 10 Claims



A seat of a motor vehicle is longitudinally displaceable along guide rails at opposite sides of the seat and a clamping device is provided between the seat and guide rails to lock the seat in an adjusted position. The clamping device includes, on opposite sides of the seat, a pivotal plate on the seat frame with openings facing teeth on a flange of a guide rail. By operation of a lever, the plates are pivoted to release the clamping device, whereupon the seat can be adjusted after which the lever is released and the teeth are again engaged in the openings to lock the seat and rails. A safety belt is attached to the upper ends of the pivotal plates such that tensioning of the belt acts to engage the teeth in the openings.

3,727,978
MECHANISM FOR ADJUSTING THE POSITION AND FOLDING DOWN THE BACKREST OF A SEAT AND A SEAT, IN PARTICULAR FOR AN AUTOMOBILE VEHICLE, INCLUDING SAID MECHANISM

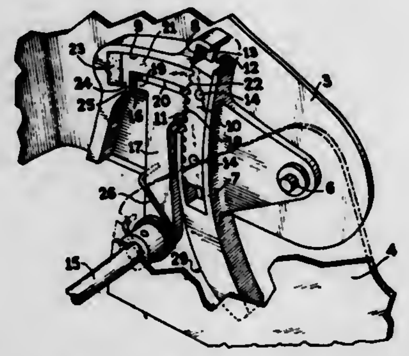
Alain Barriere, Montbeliard, and Gerard Germain, Hericourt, both of France, assignors to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, both of France

Filed April 11, 1972, Ser. No. 242,936

Claims priority, application France, June 11, 1971, 7121244

Int. Cl. B60n *1/02*

U.S. Cl. 297—369 17 Claims



A mechanism for adjusting in a given range and maintaining in position a foldable backrest relative to a squab of a seat and for backrest the bakrest out of the range of adjustment. The mechanism comprises an intermediate element relative to which the backrest is movable in a guided manner between two extreme positions of adjustment. The intermediate element is movable in a guided manner relative to the squab between the adjusting position and a position remote from the adjusting position. A first locking means integral with a control means is movable in a guided manner relative to the squab between a first position of locking engagement with the backrest and a second position of locking engagement with the intermediate element, the first locking means having an intermediate position for releasing the backrest ad the intermediate element. A second locking means is movable in a guided manner relative to the intermediate element between a first position of locking engagement with the backrest and a second position for releasing the backrest, the second locking means being co-operative with the first locking means so that the second locking means is shifted from its first position to its second position when the first locking means is shifted from its intermediate position to its second position.

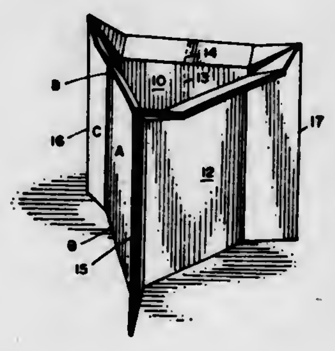
3,727,979
SELF-SUPPORTING STRUCTURES MADE FROM SHEET MATERIAL

Robert W. Schier, Glenview, and Ronald T. Furtak, Chicago, both of Ill., assignors to Design Dynamics, Inc., Northfield, Ill.

Filed Aug. 9, 1971, Ser. No. 170,248

Int. Cl. A47c *7/00*; F24c *1/16*

U.S. Cl. 297—440 6 Claims



Self-supporting structures made from preformed blanks of sheet material and capable of being folded are provided which are useful for portable seating structures, display bins, containers, holders, barbeque grilles, and many other applications.

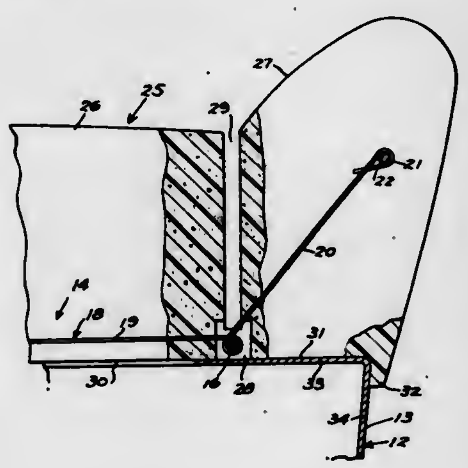
3,727,980
SEAT CONSTRUCTION

Henry J. Tischler, Bloomfield Hills, Mich., assignor to Gulf & Western Metals Forming Company, Southfield, Mich.

Continuation-in-part of Ser. No. 25,832, April 6, 1970, Pat. No. 3,639,002. This application Sept. 16, 1971, Ser. No. 181,041

Int. Cl. A47c *7/02*, *27/00*

U.S. Cl. 297—452 10 Claims



A seat construction comprising a frame including a base and a back. Each of the base and back have a frame with spaced side rails and a spring assembly mounted on the frame. Each spring assembly comprises a plurality of longitudinally extending wires, a plurality of transversely spaced wires having intermediate portions extending between the spaced wires and free ends extending beyond the longitudinally extending wires at an acute angle to the intermediate portion. Each spring assembly further comprises a longitudinal wire along each side edge connecting the free ends of said transversely spaced wires. Each spring assembly is embedded in a body of resilient foam plastic material.

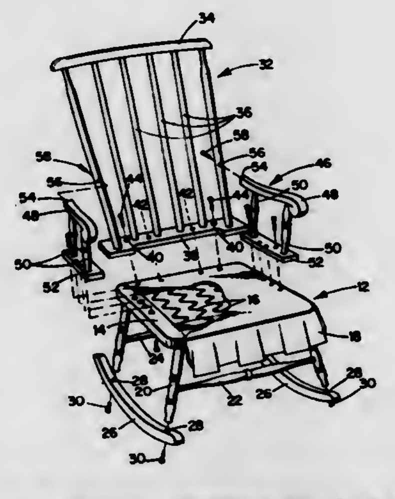
3,727,981
KNOCKED-DOWN CHAIR

Benjamin Ostroff, and Melvin George Ostroff, both of Gardner, Mass., assignors to Standard Chair of Gardner, Inc., Gardner, Mass.

Filed April 5, 1971, Ser. No. 131,264

Int. Cl. A47c *4/02*, *7/54*

U.S. Cl. 297—440 6 Claims



A chair which is shipped disassembled in a small size container and is assembled at destination. The chair has a separate back, arms and seat-leg unit. Optionally, it includes rocking chair runners. The back and arms have cleats fixed to their lower portions which provide a firm foundation and a flush surface to be rigidly fastened to the seat-leg unit. The chair is easily assembled with hand tools and is extremely stable.

3,727,982
METHOD OF ELECTRICALLY DESTROYING CONCRETE AND/OR MORTAR AND DEVICE THEREFOR

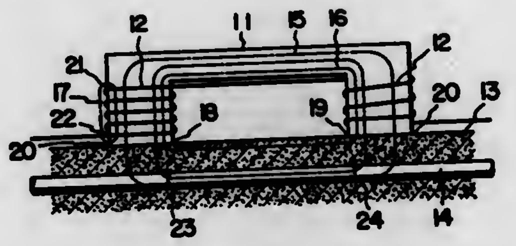
Yoshishige Itoh, Kitatamagun, Tokyo; Masatada Kawamura, Hoya-City, Tokyo, and Yoshio Kasai, Funabashi-City, Chiba-prefecture, all of Japan, assignors to Fuji Motors Corporation, Tokyo, Japan

Filed March 8, 1971, Ser. No. 121,710

Claims priority, application Japan, March 20, 1970, 45/23098

Int. Cl. E21c *37/18*; H05b *5/08*

U.S. Cl. 299—14 9 Claims



This invention relates to a method of electrically destroying a ferroconcrete body which comprises steps of conducting an alternating magnetic flux generated at an exciting coil to a ferromagnetic material present in the inner part of a ferroconcrete body or conducting an alternating magnetic flux generated at an exciting coil connecting capacitors in parallel to a part or entire part of a coil to said ferromagnetic material thereby to constitute a controlled magnetic induction circuit mainly including said ferromagnetic material and magnetic inductor, and raising the temperature of said ferromagnetic material, and a device therefor.

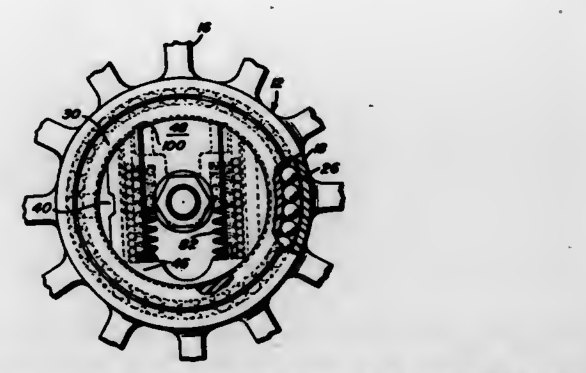
3,727,983
WHEEL WITH RESILIENT HUB

Raymond B. Leach, Omaha, Nebr., assignor to Miracle Hub and Wheel, Inc., Omaha, Nebr.

Filed Sept. 23, 1970, Ser. No. 74,719

Int. Cl. B60b *9/06*

U.S. Cl. 301—136 8 Claims



A wheel with a resilient hub in the form of a rotatable annular member journaled on a non-rotatable hub supported from an axle by a resiliently-biased slide member movably guided on the hub by the use of a bearing assembly. The hub includes apertures provided with plugs to provide communication to bearing races formed in the matching surfaces of the hub and annular member to facilitate assembly with the components being constructed of various materials and of various sizes for various uses.

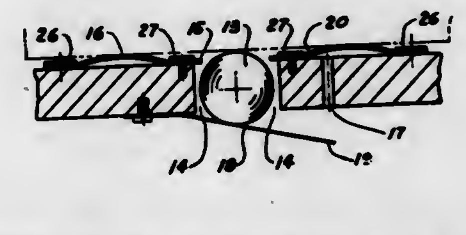
3,727,984
AIR CUSHION CONVEYOR LIFT CELLS

Henry H. Beck, 5 Ark Place., Huntington Station, N.Y.

Filed May 18, 1972, Ser. No. 254,574

Int. Cl. B65g *53/04*

U.S. Cl. 302—29 8 Claims



A pneumatic lift cell for air cushion floors is described in which depression of a spherical valve member by a load is operative to expand an annular diaphram concentrically disposed about the spherical valve member. The resultant lift cell results in a more efficient use of air and permits conveyance of loads having uneven bottom surfaces.

3,727,985
PNEUMATIC CONVEYING APPARATUS AUTOMATICALLY OPERABLE SUCCESSIVELY FOR WEIGHT RESPONSIVE FILLING, AND FOR ACTIVATION, DISCHARGING, PURGING AGAINST BACK PRESSURE, AND VENTING

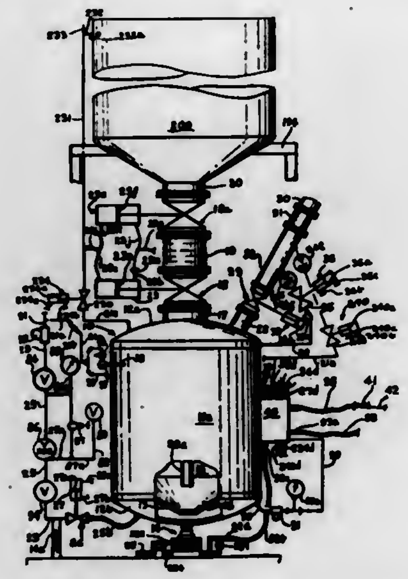
Brian R. Reuter, Houston, Tex., assignor to Consolidated Engineering Company, Houston, Tex.

Filed Jan. 3, 1972, Ser. No. 214,668

Int. Cl. B65g *53/40*

U.S. Cl. 302—53 6 Claims

The pressure vessel or fluid flow pump cycle of Reuter U.S. Pat. No. 3,355,221, issued Nov. 28, 1967, which has steps of filling, activation, discharging and purging, is disclosed as load cell or scale supported and vented, and is thus further adapted for lifting certain types of pulverulent material against back pressure, by placing check valve means in the purge line and/or in a pressurized gas line from source, the check valve means being substantially in adjacent communication with the discharge line downstream of the discharge valve. Thus the check valve may close and protect against back pressure urging material, (normally destined to be purged down the discharge line), back into the pressure vessel. The additional step of venting to atmosphere and/or to hopper any residual material not carried away by the purge step, is thus disclosed as an added step. The admission of pressurized gas from source can enter as when back pressure in some excess may be encountered. As check valves are subject to wear and failure, the employment of pressurized gas from source can act as a safeguard against the effects of back pressure. The added features set forth hereinabove may be employed with a variety of fluid flow pump structures, as agitator equipped pumps; also with pumps suspended below a load cell.

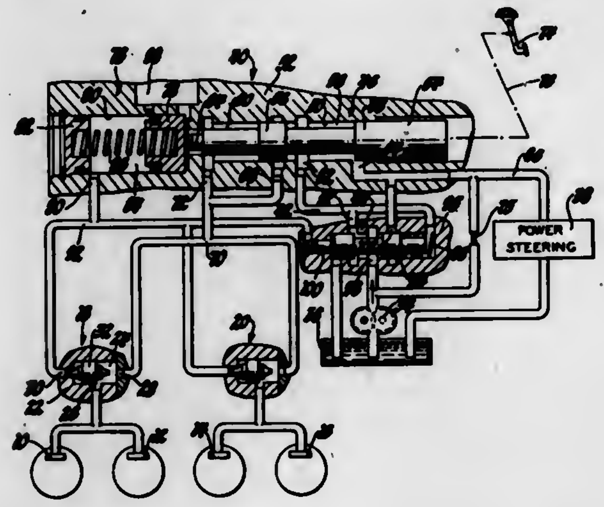


3,727,986
DIRECT APPLY BRAKE SYSTEM

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 22, 1971, Ser. No. 210,666
Int. Cl. B60t *11/20*

U.S. Cl. 303—2 **3 Claims**



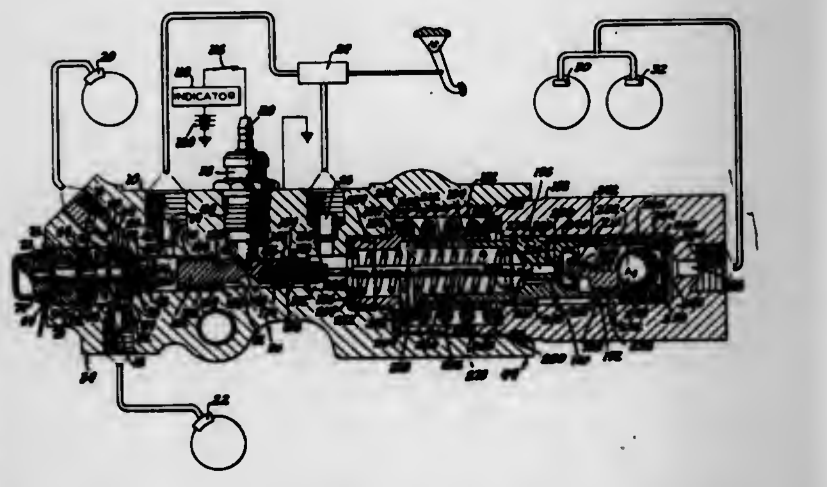
A direct apply brake system includes a control valve which when actuated applies fluid from a central hydraulic source directly to a wheel brake. A master cylinder is mounted in tandem with the direct apply brake control valve and actuated upon over-travel of the valve subsequent to loss of reaction pressure acting on the valve, thereby providing a back-up pressure source. Shuttle valves associated with the wheel brakes selectively connect the brakes to the brake control valve or the master cylinder, whichever is in operation. A shut-off valve blocks communication of the central hydraulic fluid to the brake control valve when the master cylinder is actuated to prevent loss of such fluid in the event of a fluid leak in the direct apply system.

3,727,987
DECELERATION ENERGIZED LOAD CONTROLLED BRAKE VALVE

Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 13, 1972, Ser. No. 217,542
Int. Cl. B60t *13/00*

U.S. Cl. 303—6 C **4 Claims**



A combination valve assembly for a dual circuit brake system in which a metering valve is in one circuit, a proportioner is in the other circuit, and a hydraulically reset pressure loss warning indicator unit is sensitive to both circuits. The proportioning action rates change to match vehicle loading, to accommodate uphill and downhill grades, and to accommodate any brake fade. This is accomplished providing a deceleration sensing mechanism which locates the proportioner piston to determine the amount of proportioning required based on the pressure at which deceleration triggers an inertia valve in the proportioner. Actuation of the warning unit because of pressure loss in the metering valve circuit causes the proportioner to be overridden by removing a valve element from a closed position to permit direct flow so that pressure through the proportioner is not proportioned.

3,727,988
FAILSAFE HYDRAULIC BRAKING APPARATUS FOR MOTOR VEHICLES

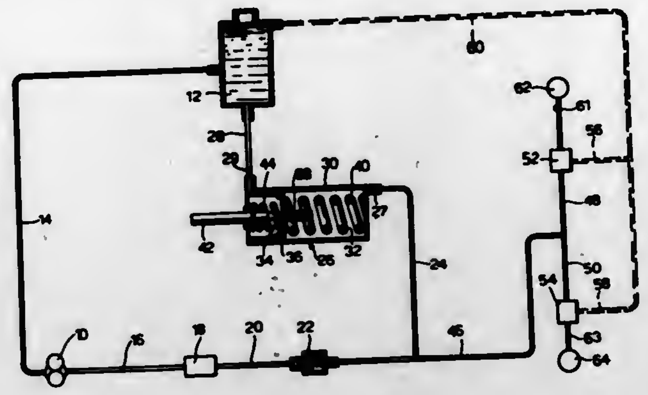
Marco Perugia, Turin, and Giancarlo Michellone, Cambiano, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed June 2, 1972, Ser. No. 259,313
Claims priority, application Italy, June 4, 1971, 68901–A/71
Int. Cl. B60t *13/18*

U.S. Cl. 303—6 C **6 Claims**

The invention relates to an hydraulic anti-skid braking system which will operate to produce at least partial braking, that is braking of at least some of the wheels of a vehicle, even in the event of failure of part of the system causing a loss of pressure in that part. The braking system is normally servo assisted but is arranged to produce braking without servo assistance in the event of a failure of the engine of the vehicle or the pump which produces the servo assistance. The braking circuit is formed in two independent parts each of which comprises a loop around which fluid is continuously circulated by a pump driven by the engine, the pressure of fluid in the loop is controlled by a modulator valve which is closed when the

brakes are operated, to increase the pressure and operate braking actuators which are either in series in the loop or in static branches of the circuit communicating with the loop. A pressure sensitive valve is provided to ensure that fluid always flows in the correct direction around the loop even in the vent of a failure causing an adverse pressure differential.

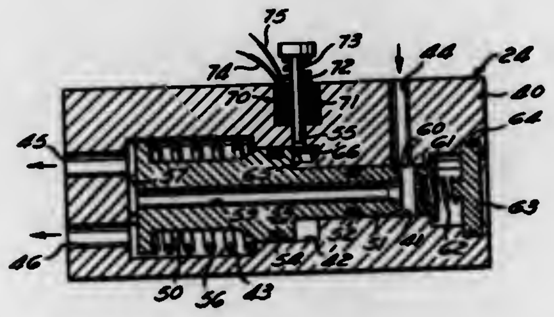


3,727,989
EMERGENCY BYPASS FOR BRAKE PRESSURE CONTROL

Frederick D. Keady, Arlington, Mass., assignor to The Weatherhead Company, Cleveland, Ohio

Filed Feb. 16, 1972, Ser. No. 226,907
Int. Cl. B60t *8/26*

U.S. Cl. 303—6 C **11 Claims**



A motor vehicle dual hydraulic brake system is disclosed having a front brake circuit and a rear brake circuit. A warning switch actuates an alarm device in response to a pressure failure in one of the circuits. A pressure modulating valve in the rear circuit maintains increases in rear brake pressure less than increases in front brake pressure when the front brake pressure exceeds a predetermined pressure. The warning switch is disposed forwardly of the fire wall of the motor vehicle and includes two front circuit outlet ports for supplying fluid pressure to the two front brakes. The pressure modulating valve is disposed adjacent the rear axle of the motor vehicle and includes two outlet ports for supplying fluid pressure to the two rear wheel brakes. An emergency control means which includes a solenoid is operable by the warning switch to render the pressure modulating valve inoperable in the event of a fluid pressure failure in the front circuit.

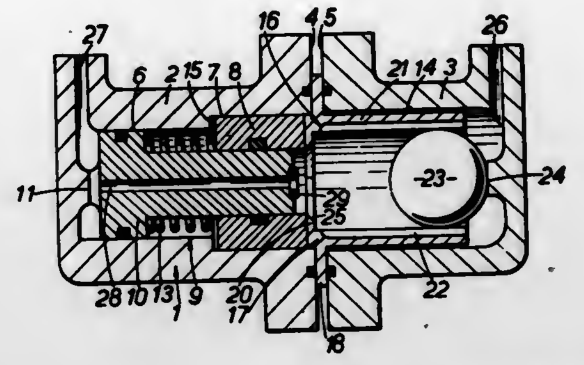
3,727,990
HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

Hans Josef Vogt, Vallendar, Germany, assignor to Girling Limited, Birmingham, England

Filed March 1, 1972, Ser. No. 230,750
Claims priority, application Great Britain, March 19, 1971, 7,445/71
Int. Cl. B60t *8/14*

U.S. Cl. 303—6 C **6 Claims**

A brake control unit for incorporation between an hydraulic master cylinder and a wheel brake actuator comprising an inertia-controlled valve member which is movable into engagement with a seating to cut-off communication between an inlet for connection to the master cylinder and an outlet for connection to the hydraulic actuator when the deceleration of the vehicle in which the unit is incorporated exceeds a predetermined value. The valve seating is movable between a first inoperative retracted position and a second operative advanced position, and means are incorporated for preventing the valve member from engagement with the seating unless the seating is in the advanced position.

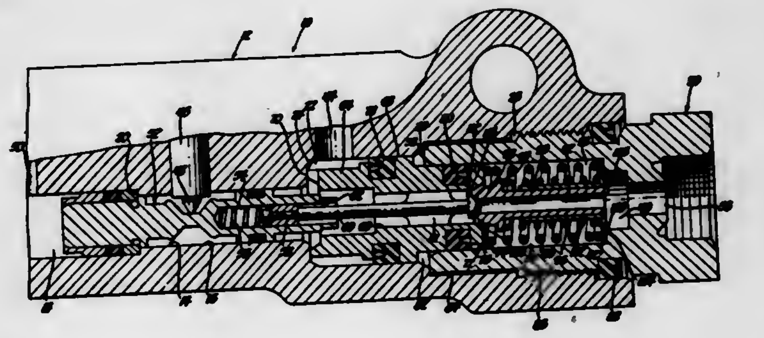


3,727,991
PRESSURE PROPORTIONING CONTROL VALVE

Edward J. DeHoff, and Donald E. Schenk, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 1, 1972, Ser. No. 249,314
Int. Cl. B60t *8/26, 11/34, 17/22*

U.S. Cl. 303—6 C **2 Claims**



A brake pressure proportioning valve assembly with an annular proportioning piston and valve cooperating with an annular valve seat, the outer periphery of the valve seat being a portion of the proportioning valve, and the inner periphery of the annular valve seat having a check valve control mechanism actuated to open either by differential pressure upon brake release or by pressure loss in another brake circuit so as to bypass the proportioner valve elements.

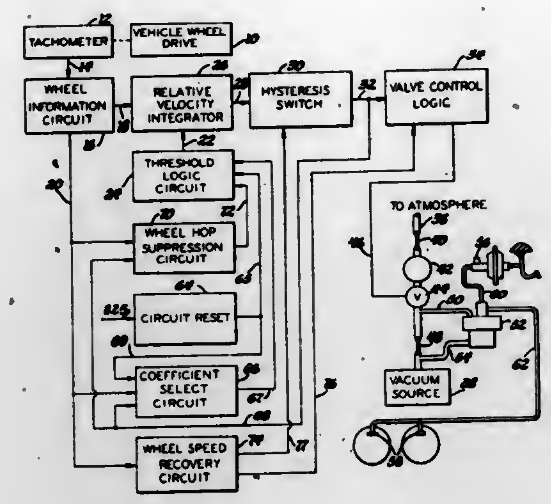
3,727,992
ANTI-LOCK BRAKE CONTROL SYSTEM

Lauren L. Bowler, Bloomfield Hills, and John L. Harned, Grosse Pointe Woods, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed March 15, 1971, Ser. No. 124,004
Int. Cl. B60t *8/12*

U.S. Cl. 303—21 P **1 Claim**

An anti-lock brake control system has a brake pressure modulator operated by a single solenoid controlled on-off valve which effects brake apply, brake release, and brake pressure hold modes. The hold mode is achieved by dithering the solenoid valve. An electronic circuit responsive to rotation of a braked wheel supplies signals to the solenoid valve to effect the various modes. The circuit includes a wheel speed recovery circuit for supplying to the valve during wheel recovery an operating signal for dithering the valve at a first level of wheel acceleration and for producing a brake apply signal above a higher value of wheel acceleration.


TACHOMETER
VEHICLE WHEEL DRIVE
WHEEL INFORMATION CIRCUIT
RELATIVE VELOCITY INTEGRATOR
HYSTERESIS SWITCH
VALVE CONTROL LOGIC
THRESHOLD LOGIC CIRCUIT
WHEEL HOP SUPPRESSION CIRCUIT
CIRCUIT RESET
COEFFICIENT SELECT CIRCUIT
WHEEL SPEED RECOVERY CIRCUIT
TO ATMOSPHERE
VACUUM SOURCE

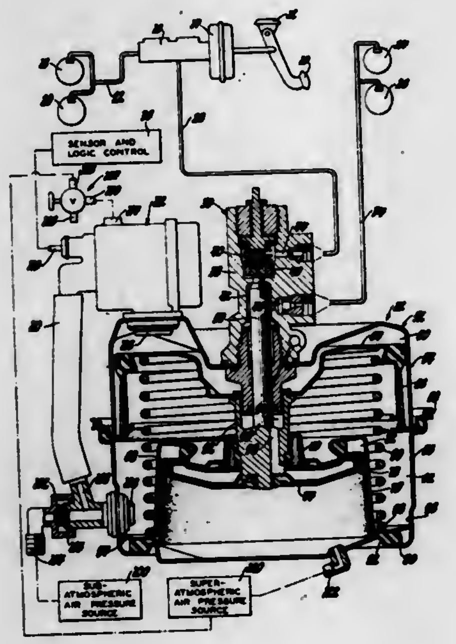
3,727,993
WHEEL LOCK CONTROL MODULATOR

Donald E. Schenk, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 13, 1972, Ser. No. 217,543

Int. Cl. B60t *8/02*

U.S. Cl. 303—21 F **4 Claims**


SENSOR AND LOGIC CONTROL
SUB-ATMOSPHERIC AIR PRESSURE SOURCE
SUPER-ATMOSPHERIC AIR PRESSURE SOURCE

A wheel lock control system in which the brake apply pressure modulator is divided into four chambers, one always subjected to super-atmospheric pressure and normally providing pressure support to the hydraulic displacement piston, one always being subjected to vacuum during operation, and the other two being subjected to vacuum or atmospheric air pressure or super-atmospheric air pressure or some intermediate pressure depending upon the system operational mode to control movement of the brake apply pressure modulating valve displacement piston.

3,727,994
AUTOMATIC LOAD DEPENDENT COMPRESSED AIR BRAKE SYSTEM

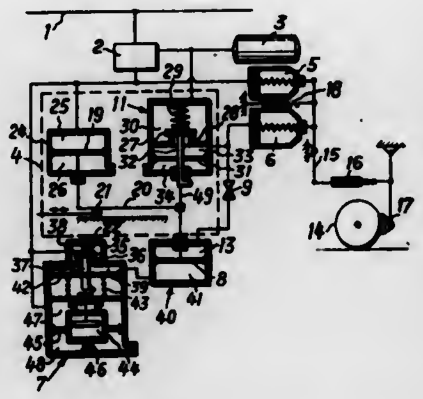
Siegfried Keller, Effretikon, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed March 5, 1971, Ser. No. 121,505

Claims priority, application Switzerland, April 10, 1970, 5328/70

Int. Cl. B60t *8/18*

U.S. Cl. 303—23 **4 Claims**



An automatic compressed air brake system for a vehicle the operation of which is dependent on the vehicle load includes brake cylinders for an unladen and for a loaded vehicle connected to a common spring restored actuating linkage. The load brake cylinder is connected to a pressure transmitter controlled by the vehicle load and the unladen brake cylinder pressure. A pressure limiting valve is connected to a control valve connected to the main brake line to control the charging of the load brake cylinder. This device generates an initial pressure for overcoming the restoring force of the linkage irrespective of vehicle load. Means are provided to relax the pressure in the load brake cylinder after the brake has initially responded. These means can exhaust the load brake cylinder and are controlled by the load brake cylinder pressure. The means disclosed are a hollow tappet in the limiting valve which is coupled by a lost motion coupling to a piston subject to the load brake cylinder pressure.

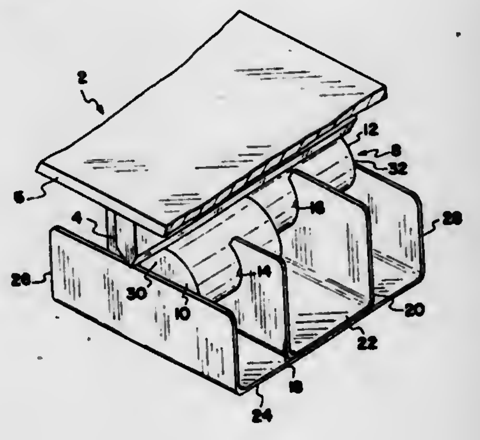
3,727,995
BEARING SYSTEM FOR BALANCE KNIFE EDGES AND SCALE PIVOTS

Werner Russell Ruefenacht, 2650 South West Temple, Salt Lake City, Utah

Filed Sept. 1, 1971, Ser. No. 177,057

Int. Cl. F16c *11/00*

U.S. Cl. 308—2 R **4 Claims**



A bearing system comprising two or more cylindrical bearing members positioned in tandem relation and having the axes thereof extending parallel to, but offset from, each other for supporting a knife edge or pivot therebetween. Support means for the bearing members is disclosed which permits limited pivotal movement of the bearing members to provide uniform support over the entire length of the knife edge.

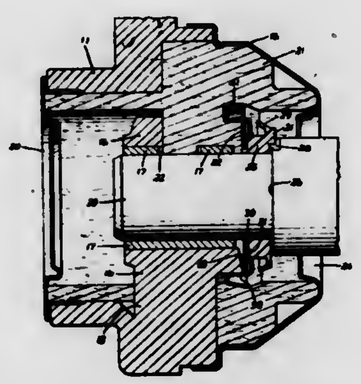
3,727,996
THRUST BEARING SYSTEM

Michael Davich, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed April 20, 1971, Ser. No. 135,581

Int. Cl. F16c *33/66*

U.S. Cl. 308—132 **9 Claims**



A thrust bearing system for use in rotating machines such as electric motors. An end shield is formed with an axially extending hub having a central, axially extending bearing surface and a feed aperture communicating with the bearing surface. A lubricant chamber is formed around the hub and contains a mass of lubricant filled absorbent material with part of the absorbent material extending into the feed aperture. A shaft is rotatably received within the bearing surface. A thrust bearing member is mounted on the shaft and has a thrust bearing surface disposed in a generally radial plane adjacent one end of the hub. A thrust receiving member is positioned in thrust receiving relationship between the thrust bearing surface and the one end of the hub. A retainer is press fit about the outer periphery of the hub and is interconnected with the thrust receiving member to center it about the shaft and restrain it from rotary motion. The retainer includes an outer peripheral flange which engages the absorbent material. The thrust receiving member normally engages the hub only adjacent its outer circumference and flexes into greater engagement with the hub when engaged by the thrust bearing member. The thrust bearing member includes an axially extending ledge which is received within the inner periphery of the thrust receiving member.

3,727,997
SLIDE AND SUPPORT BEARING FOR ROTORS OF LARGE TURBINE MACHINES

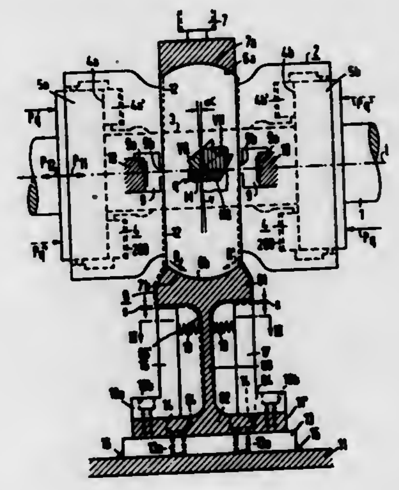
Adolf Brucher, Mulheim-Ruhr; Rudolf Gemein, Duisberg, and Gerold Holzer, Mulheim-Ruhr, all of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim(Ruhr), Germany

Filed Feb. 1, 9172, Ser. No. 222,570

Int. Cl. F16c *41/02*

U.S. Cl. 308—160 **10 Claims**

A slide bearing in the form of a support pr.ssure-bearing for turbine machine shaft members such as the shaft of a steam turbine rotor or the like, the shaft being aligned in the bearing and having a longitudinal shaft axis disposed in a vertical shart plane. The slide bearing includes shaft collars disposed on the shart, a pedestal, and a bearing housing mounted on the pedestal. The housing has mutually adjacent upper and lower housing parts. A bearing structure is disposed in the housing and has a bearing surface for supporting the shaft in the structure. The bearing structure has axial end faces formed as radially extending bearing surfaces for engaging the collars on the shaft for taking up axial pressure forces of the shart. The bearing structure has an additional bearing surface for laterally supporting the structure in the housing. The lower housing part includes a support cantilever mounted on the pedestal. The cantilevered support has a lower spherical dish-like surface bearing for engaging the additional bearing surface of the bearing structure. The support is resilient in a vertical plane containing the shaft axis and is deflectable about a vertical axis in the vertical plane. The support is dimensioned, so that its deformation-counter force acting in the region of the lower-dish like surface bearing at the start of the deflection of the support is less than the friction force between the dish-like surface bearing and the additional bearing surface of the bearing structure developed in response to a shift of the shaft from its aligned position during operation of the turbine. The upper bearing housing part has an upper spherical dish-like surface bearing for engaging the additional bearing surface of the bearing structure. The support is sufficiently resistant to buckling and to axial compressive load acting in the direction of gravity and is sufficiently resistant to bending in a plane normal to the shaft axis and transverse to the vertical shaft plane, so that the bearing structure slides at the upper surface bearing and moves the lower surface bearing of the cantilevered support when the shaft shifts from its aligned position during operation of the turbine. The cantilevered support deflecting with the shift of the shaft provided the shifting force of the shaft in the region of the lower surface bearing is less than the friction force developed between the lower surface bearing and the additional bearing surface of the bearing structure and greater than the deformation counter force of the cantilevered support.



3,727,998
GAS TURBINE ENGINE

Lionel Haworth, Bristol; Cyril Blea, Chellaston, and Michael Poucher, Duffield, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

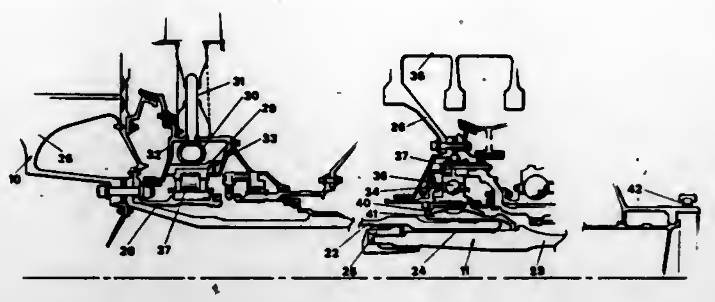
Filed Nov. 19, 1971, Ser. No. 200,394

Claims priority, application Great Britain, Nov. 21, 1970, 55,494/70

Int. Cl. F16c *27/06*

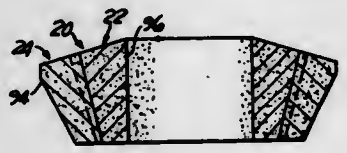
U.S. Cl. 308—184 R **16 Claims**

The invention relates to a gas turbine engine in which there is a rotor carried from a shaft, a first bearing supporting the shaft adjacent the rotor, a second bearing supporting the shaft remote from the rotor and a third bearing supporting the shaft at a further distance from the rotor. The first bearing is mounted so that under conditions of extreme inbalance of the rotor its supporting structure deforms to allow the rotor to invert, and the second bearing is adapted to allow rotation of the shaft during and after the inversion.



3,727,999
COMPOSITE HEAVY-DUTY BEARING RACE

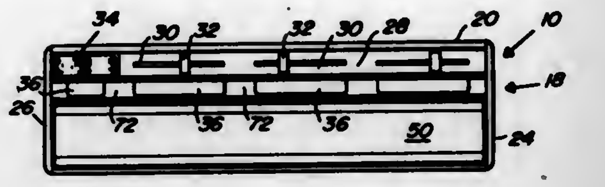
William M. Dunn, 28639 Oak Point Dr., Farmington, Mich., and Myron C. Sarnes, 20248 Woodhill, Northville, Mich.
Division of Ser. No. 95,299, Dec. 4, 1970. This application March 20, 1972, Ser. No. 235,969
Int. Cl. F16c *33/64*
U.S. Cl. 308—216 **2 Claims**



A composite mechanism element, such as a bevel pinion (FIGS. 1 to 6 inclusive), or the inner race of a tapered roller bearing (FIGS. 7 to 10 inclusive and 16) has its working or load-bearing portion or portions composed of sintered powdered high-performance alloy while its supporting portion not subjected to concentrated or heavy loads, is made of a base metal, such as sintered powdered iron. The toothed outer load-bearing portion of the composite bevel pinion (FIG. 6) and the hollow frusto-conical inner supporting portion (FIGS. 10 to 15) are separately briquetted from high performance alloy powder and low performance metal powder respectively and separately sintered after which the low performance inner supporting portion is pressed into the high performance toothed outer portion so as to be inseparably secured thereto. In the inner race (FIG. 15) of the composite tapered roller bearing (FIG. 16) the low-performance and high-performance portions of the inner race are separately compacted in dies in a briquetting press to form briquettes which are separately sintered and thereafter are pressed together in an assembling operation which causes the high performance and low performance portions of each race to be inseparably secured to one another. The composite outer race is formed by arranging base metal powder and high performance alloy powder in abutting zones in an annular cavity of a briquetting press die and compressing them to form a composite briquette which is then sintered and afterward deformed in a forging die into its final annular shape. The resulting composite sintered powdered mechanism elements are of much lower material cost than corresponding mechanism elements formed of high performance alloy throughout yet perform satisfactorily and have sufficient strength and durability for most purposes. The tapered roller bearing races (FIG. 9) or the bevel pinion (FIG. 15) may be used as they are if of satisfactory density for their intended uses, or they may be further densified by being subjected to an additional hot forging operation with the article sintered thereafter if deemed necessary.

3,728,000
DOOR ASSEMBLY FOR CARTRIDGE TAPE PLAYER

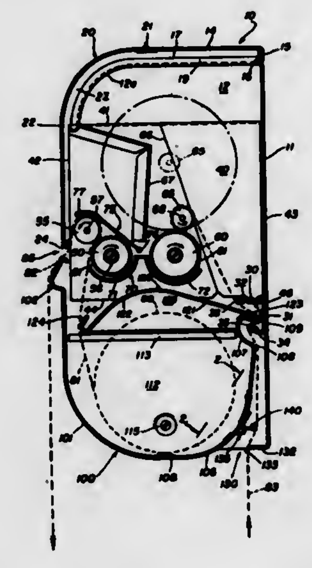
Paul D. McGee, Medinah, and Marcus M. Artner, Chicago, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed March 27, 1972, Ser. No. 238,631
Int. Cl. A47b *81/06*
U.S. Cl. 312—9 **4 Claims**



A door assembly for a cartridge type tape player having a front panel or escutcheon with a cartridge receiving opening therein includes a door member mounted swingably within said cartridge receiving opening. The door member includes a curved end portion upon which the door is mounted for rotation behind the front panel. The curved end is aligned with a plurality of windows in the front panel portion. Indicia, indicating the function of controls adjacent the windows, are provided at predetermined locations on the curved end portion of the door so that upon opening the door in response to the insertion of a cartridge into the cartridge receiving opening, the curved end portion is rotated to align the indicia with corresponding windows. The indicia thereby are made visible to one viewing the front panel of the tape player during the operation thereof.

3,728,001
TOWEL DISPENSING CABINET WITH SCRAPER ATTACHMENT

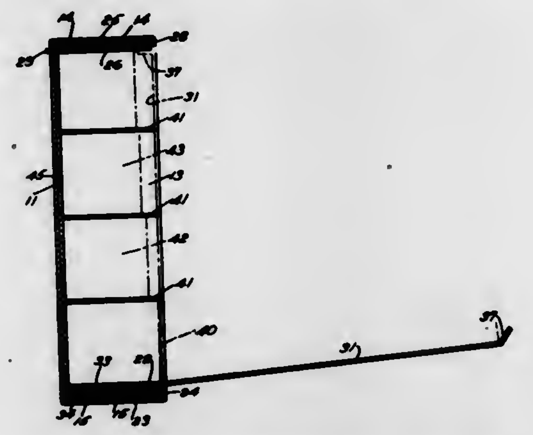
Erwin B. Bahnsen, Oak Brook, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah
Filed Jan. 27, 1971, Ser. No. 110,102
Int. Cl. B65h *19/00*
U.S. Cl. 312—38 **16 Claims**



A continuous towel dispensing cabinet includes an open-bottom housing having associated therewith a loop of towel that extends along an exit path to an exposed position accessible to a user and thence along a return path into the housing, an open-top clean towel receptacle mounted in the bottom of the housing and provided with a cover hingedly mounted thereon, dispensing apparatus and soiled towel take-up means mounted in the housing overlying the receptacle for respectively feeding clean towel to the exit path and retracting soiled towel from the return path, guard members for separating the dispensing apparatus and the take-up means from each other and from the receptacle, first and second scraper members carried by the receptacle adjacent to the open bottom thereof and cooperating to engage and scrape the soiled towel to remove soil particles therefrom, the first scraper member being detachably mounted on the receptacle by means of resilient retaining structure to facilitate cleaning and servicing thereof.

3,728,002
COLLAPSIBLE BOOKCASE

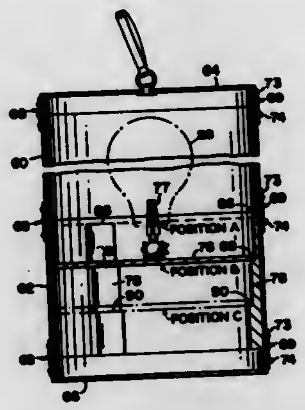
Leo L. Zacks, Barrington, R.I., assignor to Acushnet Van & Storage Inc., Tiverton, R.I.
Filed Nov. 15, 1971, Ser. No. 198,624
Int. Cl. A47b *43/00, 47/00;* **B65b** *5/64*
U.S. Cl. 312—259 **5 Claims**



A bookcase formed of cardboard-like material creased and folded to provide top, side and bottom walls with separate front wall and shelves, all held in assembled relation by a tubular member.

3,728,003
SECTIONAL CONVERTIBLE WIG CASE

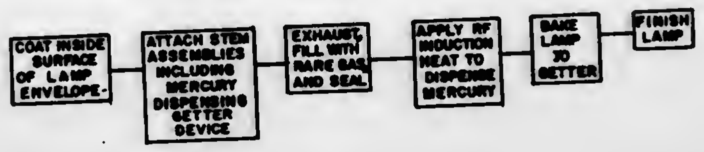
Philip Bohannon, 2802 West Sitka Street, Tampa, Fla.
Continuation-in-part of Ser. No. 850,982, Aug. 18, 1969, Pat. No. 3,628,655, which is a continuation-in-part of Ser. No. 679,900, Nov. 1, 1967, Pat. No. 3,479,106. This application Oct. 16, 1970, Ser. No. 81,418
Int. Cl. A47b *81/00*
U.S. Cl. 312—285 **6 Claims**



A sectional, convertible wig case for storing and transporting a wig and either a wiglet or fall. The case includes a wig stand having a base which partitions the case into two compartments and which may be supported at various heights within the case. Conveniently, the case is fabricated with removable wall sections such that when only the wig is transported, an upper section of the case may be removed to shorten the case and make it easier to carry. The sections are detachably connected by a hinge-latch combination allowing access to the interior of each section from either side. Each section is also capable of being disassembled into a flat configuration for storage or shipping.

3,728,004
METHOD OF EMPLOYING MERCURY-DISPENSING GETTERS IN FLUORESCENT LAMPS

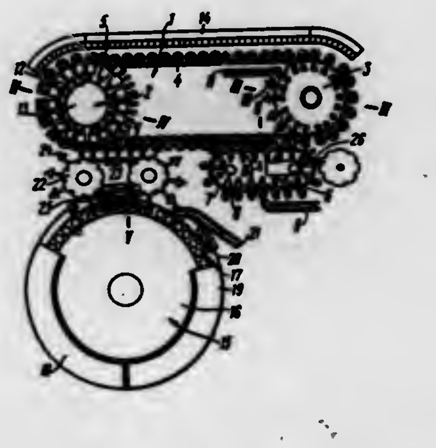
John F. Waymouth, Marblehead, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.
Filed June 25, 1971, Ser. No. 156,707
Int. Cl. H01j *9/18, 9/38*
U.S. Cl. 316—4 **8 Claims**


COAT INSIDE SURFACE OF LAMP ENVELOPE
ATTACH STEM ASSEMBLIES INCLUDING MERCURY DISPENSING GETTER DEVICE
EXHAUST, FILL WITH RARE GAS AND SEAL
APPLY RF INDUCTION HEAT TO DISPENSE MERCURY
BAKE LAMP TO GETTER
FINISH LAMP

A mercury-dispensing getter device is employed in manufacturing a fluorescent lamp by mounting the device within the sealed lamp envelope, flashing the getter by RF induction heat to dispense the mercury, and baking the lamps within an oven at 250°C for two to five minutes to provide gettering of the released and residual gases in the lamp.

3,728,005
AUTOMATIC APPARATUS FOR WELDING UP AND EVACUATION OF ELECTROVACUUM DEVICES

Albert Ivanovich Alexandrov; Solomon Isaakovich Levin; Valery Fedorovich Chestnov; Raisa Markovna Kovaleva; Tatyana Semenovna Birjukova; Albert Ivanovich Burko, and Mikhail Grigorievich Naumov, all of Saransk, MASSR, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Istochnikov Sveta, Saransk, U.S.S.R.
Filed Aug. 26, 1971, Ser. No. 175,093
Int. Cl. H01j *9/48*
U.S. Cl. 316—31 **3 Claims**



The invention relates to an automatic apparatus for welding up and evacuation of electrovacuum devices, such as incandescant lamps.

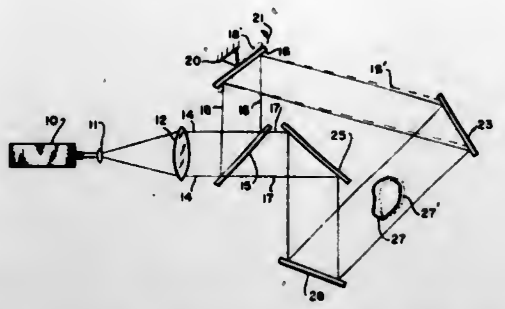
The apparatus according to the invention is characterized in that means for welding up component parts of said devices comprises a continuously moving chain conveyor having a chain running around at least two sprockets, the chain of said conveyor supporting stations adapted to hold component parts of said devices, while means for transferring assembled devices from said means for welding up component parts to means for degasification of and filling up said devices with an inert gas also comprises a chain conveyor, the chain of said conveyor supporting means for transferring assembled devices.

3,728,006
HOLOGRAPHIC SCHLIEREN METHOD

Robert E. Brooks, Redondo Beach, and Lee O. Heflinger, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 20, 1971, Ser. No. 190,917
Int. Cl. G01b *9/02*

U.S. Cl. 350—3.5 **10 Claims**



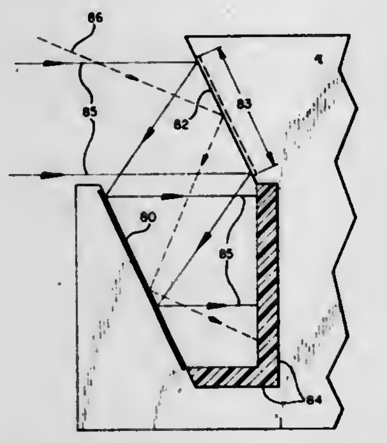
A double exposed hologram is reconstructed by the schlieren method. The hologram of a disturbed and undisturbed scene is twice exposed so that the reference beam forms a different angle with the recording material for each exposure. The recording material has a non-linear characteristic so that intermodulation products of the fringes are generated. The hologram is reconstructed with a reconstruction reference beam. All but a selected diffraction order are eliminated and the selected order is viewed with a knife edge to make visible the phase change of the scene recorded. The reconstruction reference beam must be substantially free of aberrations; otherwise there are no such restrictions on the recording optical elements.

3,728,007
REFLECTIVE TYPE LIQUID CRYSTAL DISPLAY DEVICE HAVING IMPROVED OPTICAL CONTRAST

Karl-Dieter S. Myrenne, and Clarence L. Hedman, Jr., both of Santa Clara, Calif., assignors to SCM Corporation, New York, N.Y.

Filed May 27, 1971, Ser. No. 147,474
Int. Cl. G02f *1/34*

U.S. Cl. 350—160 LC **9 Claims**



A high contrast reflective liquid crystal display device is disclosed comprising a transparent plate, a mirror disposed in spaced juxtaposition with the transparent plate, a mesomorphic compound confined between the transparent plate and the mirror, and means for establishing electric fields through selected portions of the mesomorphic compound. Ambient light rays impinging on the mirror are reflected along a first path. A light baffle is included which comprises a member located transverse to the first path and providing good light absorption and specular reflection. Reflected light from the mirror which is incident on the member is re-reflected along a second path to another member providing good light absorption and diffuse reflection. The mirror may be planar or serrated.

3,728,008
LIQUID CRYSTAL DISPLAY

Frank V. Allan, New York, N.Y., and Paul Y. Hsieh, Ridgewood, N.J., assignors to Ing. C. Olivetti and Co., S.p.A., Ivrea, Italy

Filed Dec. 1, 1971, Ser. No. 203,884
Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **9 Claims**

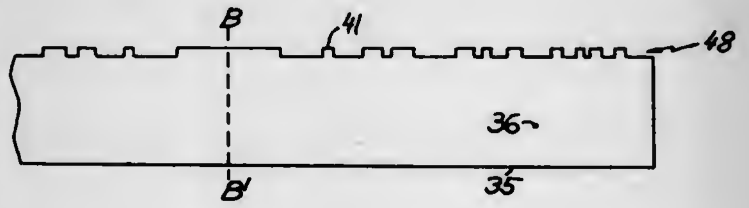
A silane derivative is chemisorbed on the interior surfaces of the substrates of a liquid crystal display to eliminate cloudiness of the display and to increase contrast.

3,728,009
PHASE FILTER COMBINATION WITH LENS OPTICS

Andre Fedotowsky, Cap Rouge, Canada, and Kurt Lehovec, Williamstown, Mass., assignors to Inventors & Investors, Inc., Williamstown, Mass.

Filed Nov. 2, 1971, Ser. No. 194,990
Int. Cl. G02b *27/00*

U.S. Cl. 350—162 ZP **11 Claims**



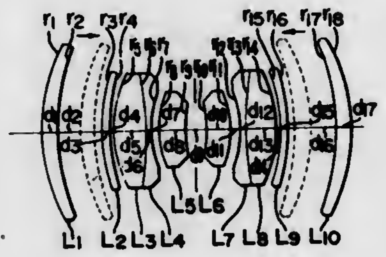
A zonal phase filter is combined with a lens optics to produce a circular image of a point light source. Integration of the phase filter with zone plate optics is described.

3,728,010
VARIABLE-MAGNIFYING-POWER SYMMETRICAL LENS SYSTEM

Nobunao Mikami, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1970, Ser. No. 69,814
Claims priority, application Japan, Sept. 8, 1969, 44/70570
Int. Cl. G02b *15/16*

U.S. Cl. 350—184 **9 Claims**



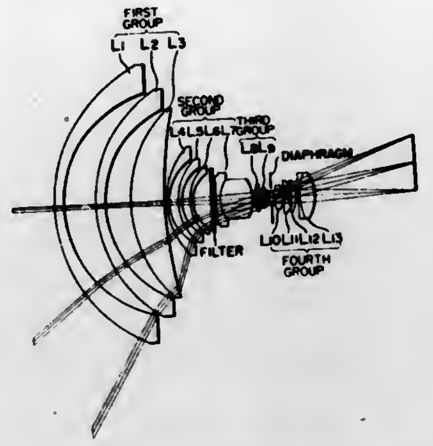
The invention provides a lens system especially adapted for use with photocopying machines, phototypesetters, etc. whose magnifying power may be varied continuously within a range near the unity magnification for example between 0.7 and 1.4. The lens system comprises lenses and lens groups symmetrically arranged with respect to a center stop in such a manner that the outermost lenses (the front and rear lenses) and/or the lens next to the outermost lenses may be shifted toward and away from the stop while maintaining said symmetrical relation. In an embodiment, the magnification is unity when the overall length of the lens system is the longest while the magnification is greater or smaller than unit when the overall length is shorter than the longest one. Aberrations including chromatic aberration are well corrected.

3,728,011
RETROFOCUS TYPE ULTRA-WIDE ANGLE LENS

Ikuo Mori, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed March 21, 1972, Ser. No. 236,716
Claims priority, application Japan, March 26, 1971, 46/17297
Int. Cl. G02b *9/64, 13/04*

U.S. Cl. 350—214 **2 Claims**



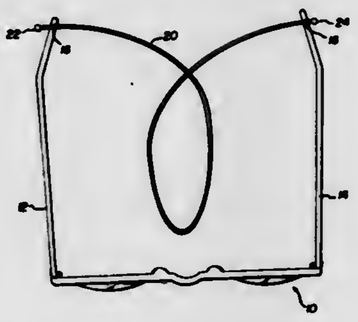
A retrofocus type ultra-wide angle lens, having 13 air-spaced elements in four groups, which include, as viewed from the object side of the lens, a first group consisting of two divergent meniscus elements and a convergent meniscus element, a second group consisting of three divergent meniscus elements and a convergent cemented component, a third group consisting of a divergent meniscus element and a positive cemented component, and a fourth group consisting of a convergent element, a divergent element, a convergent meniscus element and a cemented component. A diaphragm is disposed immediately behind the third group.

3,728,012
EYEGLASSES WITH RETAINER

Dixon P. Downey, 2100 S. Ocean Lane, Fort Lauderdale, Fla.

Filed Dec. 15, 1971, Ser. No. 208,155
Int. Cl. G02c *11/00*

U.S. Cl. 351—157 **8 Claims**



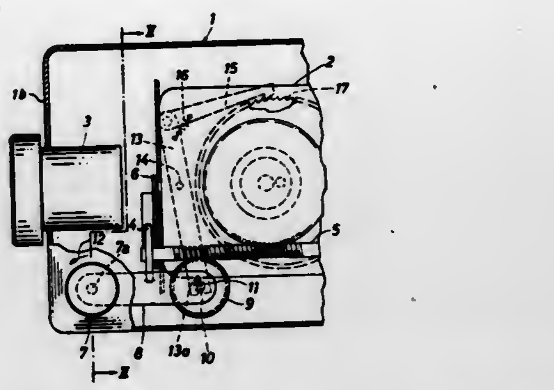
Eyeglasses having a retainer which passes through openings in side portions of the eyeglasses and is adjustable longitudinally to retain the eyeglasses firmly at the eyes of a person are provided with an improved retainer having great springiness and a high coefficient of friction at its surface to cooperate with openings in the side portions of the eyeglasses which are only slightly larger than the diameter of the retainer for receiving the retainer snugly but slidably so that either end of the retainer may be pulled to tighten it on the head of the person. The great springiness and high friction characteristics of the retainer cause it to bind in the openings tending to keep it in the adjusted position. However, the retainer is releaseable for removal from the head of the person. In the preferred embodiment, the retainer is a plastic monofilament strand.

3,728,013
AUXILIARY DRIVE FOR COMPONENTS OF PHOTOGRAPHIC APPARATUS

Friedrich Winkler, and Johann Zanner, Jr., Unterhaching, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 18, 1970, Ser. No. 73,353
Claims priority, application Germany, Sept. 20, 1969, P 19 47 756.6
Int. Cl. G03b *1/00*

U.S. Cl. 352—166 **9 Claims**



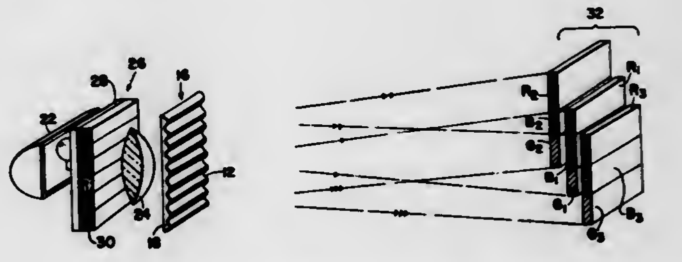
A programming device for the fading means in a motion picture camera can be indexed by the camera motor through the intermediary of an auxiliary drive which can be activated and deactivated at the will of the user. The auxiliary drive receives motion from a worm shaft which is constantly driven by the camera motor, and the auxiliary drive has a single worm gear or a cluster of coaxial worm gears movable into and out of mesh with the worm shaft in response to rotation of a knob, and a power train which indexes the programming device when the motor is on and the worm shaft meshes with the single worm gear or with a selected worm gear of the cluster. The programming device is a ratchet wheel and the power train has a pawl which is biased against the teeth of the ratchet wheel and a crankshaft which rocks a lever serving to transmit motion to the pawl.

3,728,014
APPARATUS FOR PROJECTING A SCENE

William M. Rosenblum, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 761,044, Sept. 20, 1968, abandoned. This application May 24, 1971, Ser. No. 146,553
Int. Cl. G03b *21/14*

U.S. Cl. 353—38 **6 Claims**

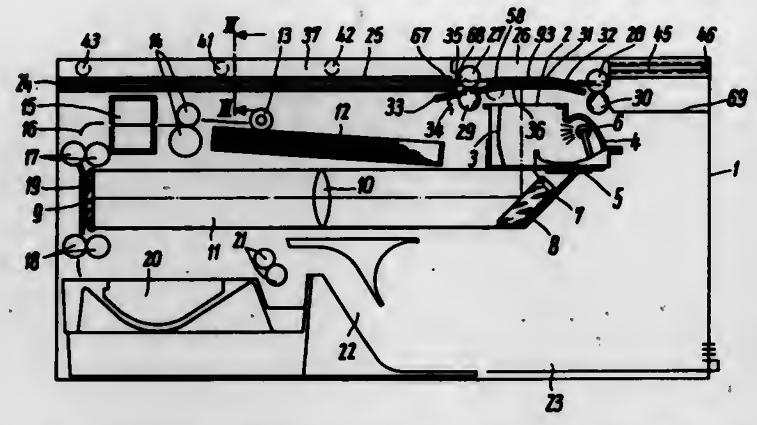


A system and apparatus for projecting scenes upon color additive film. This film is typically configured having a filter screen portion overlaying an image carrying base. The filter screen may be formed as an array of parallel color stripes laid down in a repetitive sequence of colors such as the primaries red, green and blue. A diffraction grating of a phase variety is inserted in the optical path of a projector to cause the projection of zero and first order images of a scene recorded upon the film. The diffraction grating incorporates a surface which is sinusoidal in cross section and is designed so as to cause a replication and mutual displacement of a film image resulting in a blending of the components thereof at a display surface.

3,728,015

COPYING APPARATUS

Egon Opravil, Hamburg-Bergedorf, Germany, assignor to Lumoprint Zindler KG, Hamburg, Germany
Filed May 3, 1971, Ser. No. 139,740
Claims priority, application Germany, May 5, 1970, P 20 21 833.1
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 11 Claims

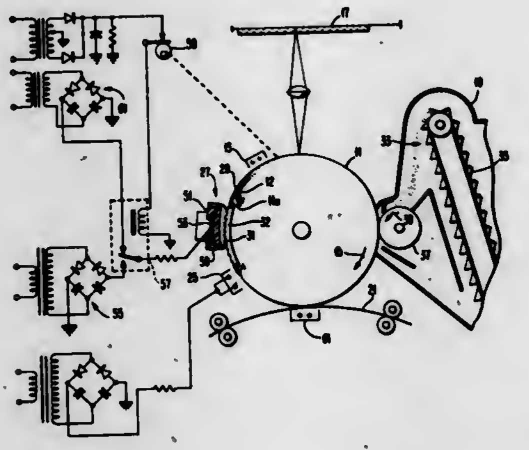


An improved copying apparatus with an exposure orifice on the upper surface of the apparatus and associated with a light source and a receiving surface, alongside which a copying material may be moved. A continuous transport arrangement with an inlet and an outlet slot is provided for foliate originals and a reciprocating transparent mounting for more bulky originals.

3,728,016

CLEANING APPARATUS FOR ELECTROSTATIC COPY DEVICES

Wilmer P. Harbour, Jr., and Carl A. Queener, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 22, 1971, Ser. No. 210,889
Int. Cl. G03g *15/22*
U.S. Cl. 355—15 9 Claims

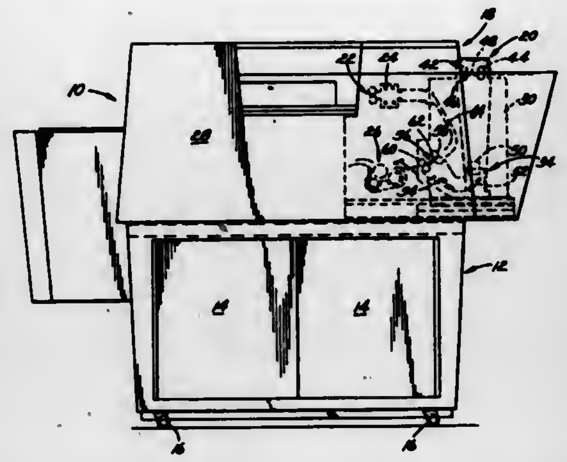


Cleaning apparatus for cleaning the residual toner image from an electrostatic plate of an electrostatic reproduction apparatus incorporates an open celled foam wiper which is mounted for wiping engagement with the plate. The foam wiper is mounted adjacent a conductor which is biased to attract charged toner particles to the wiper as the toner image moves relative therepast. The wiper is periodically cleaned by a serrated or grooved portion of the plate which follows the image and mechanically dislodges toner from the wiper. A reverse bias is applied to the conductor as the serrations on the plate move past the wiper creating a field between the wiper and the plate which repels toner from the wiper to the plate. The toner is carried by the serrations on the plate to the developer unit for use by the electrostatic reproduction apparatus.

3,728,017

SUSPENSION OF OPTICAL SYSTEM

Raymond J. Schmidlin, Lyndhurst, and Richard W. Germuska, Cleveland, both of Ohio, assignors to Addressograph Multigraph Corporation, Cleveland, Ohio
Continuation of Ser. No. 38,741, May 19, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,336
Int. Cl. G03b *27/00*
U.S. Cl. 355—18 5 Claims

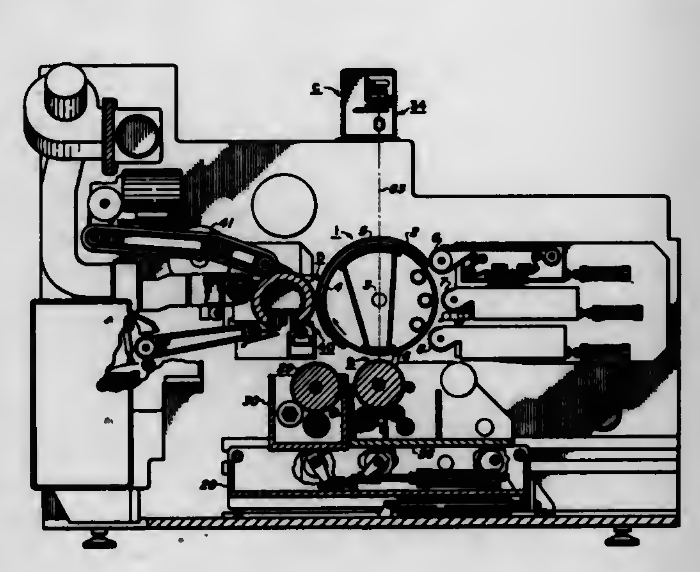


A copy duplicator machine is provided which has an optical apparatus, a sensitizing apparatus, a developing apparatus, and a printing apparatus. A compact rigid support structure mounts the optical apparatus on a larger and less rigid main frame support assembly. A fully yieldably means, preferably tracks, of less rigidity then the support structure, is the only operative interconnection between the main frame assembly and the support structure. Thus, distortional movement of the main frame is not transmitted as torsional movement to the support structure.

3,728,018

IMAGING APPARATUS

Armistead Wharton, Henrietta, and Earl V. Jackson, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Nov. 14, 1969, Ser. No. 876,847
Int. Cl. G03b *27/46*
U.S. Cl. 355—46 1 Claim

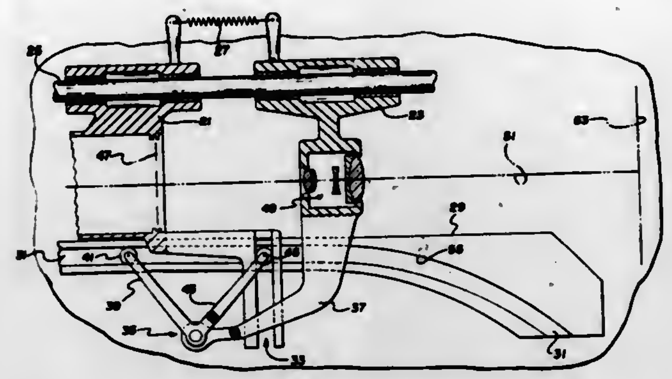


Apparatus having more than one separate object to project along partially separate optical paths having the same image plane for simultaneous superposition of the images of the two objects. The objects are transparencies with one containing the information to be imaged and the other premade to be the border for it. Both objects move in a carriage relative to an exposure slit for simultaneous scanning projection onto a moving member at the image plane.

3,728,019

AUTO-FOCUS PRINTING BELOW 1,1 × MAGNIFICATION

Charles E. Swing, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 13, 1971, Ser. No. 179,745
Int. Cl. G03b *27/36*
U.S. Cl. 355—58 4 Claims

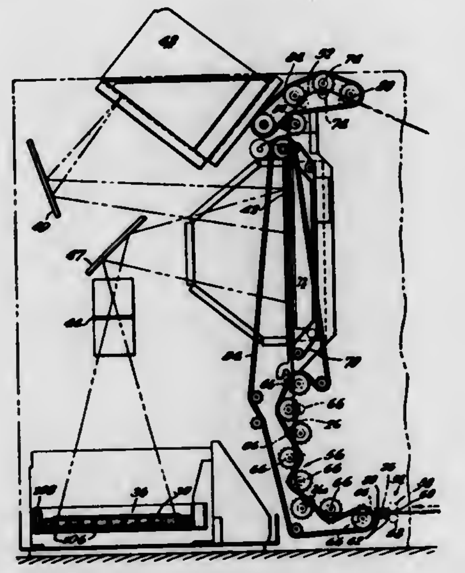


Automatic focusing is achieved for magnification factors ranging from above 1× through and below 1× by a mechanism which positions the negative with respect to the lens for a given magnification. The lens is positioned with respect to the image plane to establish the desired magnification. The negative holder is linked to the lens via a cam and follower which is configured to automatically establish the proper negative to lens spacing to maintain the system in focus.

3,728,020

APPARATUS AND METHOD OF COPYING ON A PLURALITY OF DIVERSE COPY MEDIA

Martin Abrams, Chicago, and Kenneth B. Tafel, Palatine, both of Ill., assignors to AES Technology Systems, Inc., Elk Grove Village, Ill.
Filed Dec. 8, 1970, Ser. No. 96,099
Int. Cl. G03b *27/70*
U.S. Cl. 355—66 24 Claims

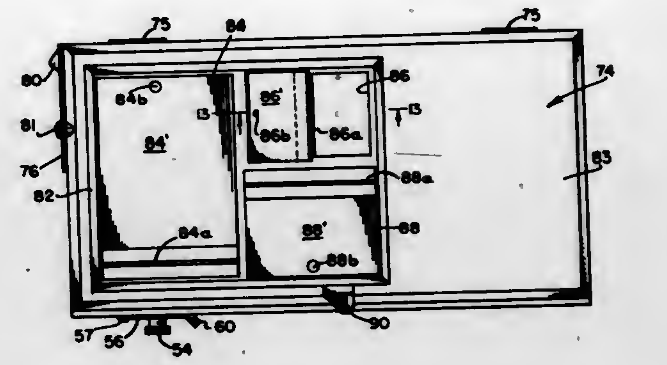


Apparatus and method of copying original documents in which the document to be copied is transported along a document feed path to a position for exposure. Different type copies are produced on diverse copy media, e.g., copy paper and microfilm, simultaneously by exposing the copy media to a focused image of the document and the surrounding field. Plural copies can be made on some media, e.g., copy paper. Typically, the paper copy is of the document and the surrounding field while the microfilm copy is more limited, being primarily of the document. A selected number of different type copies may be produced of each document. The number of paper copies may be different than the number of microfilm copies.

3,728,021

MULTIPLE PRINT EASEL

Rudolph Retzyl, and Martin D. Blanc, both of Chicago, Ill., assignors to Martin Yale Industries, Inc., Chicago, Ill.
Filed Nov. 17, 1971, Ser. No. 199,503
Int. Cl. G03b *27/58*
U.S. Cl. 355—74 10 Claims

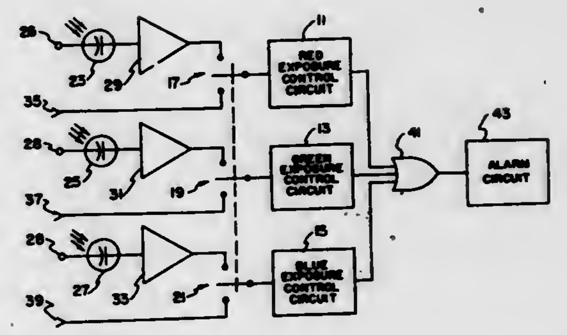


A multiple print easel for printing multiple exposures of both color and black and white in a plurality of different sizes from a single sheet of paper, said easel comprising a base with a paper holder slidably supported on the base, which paper holder retains the paper, a cover supported on the base over the paper holder and said cover provided with a plurality of different size openings each adapted to be separately closed, and wherein the paper holder with the paper may be positioned relative to said openings so that a plurality of prints may be produced from a single sheet, said easel having blocking means whereby the movement and positioning of the paper holder is controlled for proper positioning relative to the cover openings.

3,728,022

DODGING CIRCUITRY FOR PHOTOGRAPHIC PRINTING APPARATUS

Juan Antonio Rodriguez, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 7, 1971, Ser. No. 187,477
Int. Cl. G03b *27/76*
U.S. Cl. 355—80 4 Claims


RED EXPOSURE CONTROL CIRCUIT
GREEN EXPOSURE CONTROL CIRCUIT
BLUE EXPOSURE CONTROL CIRCUIT
ALARM CIRCUIT

In a photographic printing device, apparatus for extending the exposure time at reduced illumination to thereby provide more dodging time by the apparatus operator. An alarm is activated to warn the operator where one or more corrective filters are about to be inserted in the print beam path, so the operator will be informed that the time to accomplish dodging is ending.

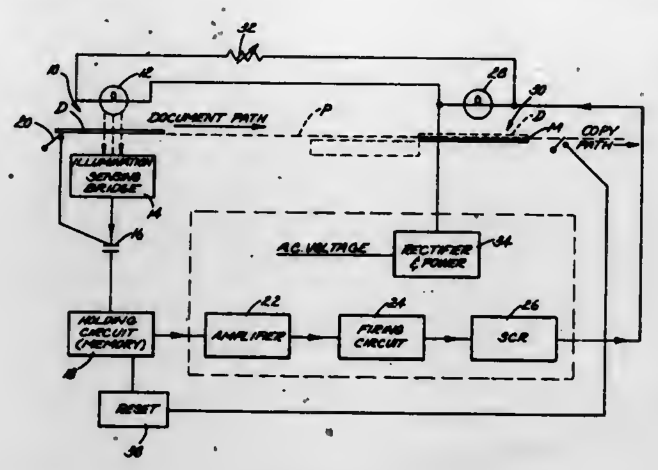
3,728,023
EXPOSURE CONTROL FOR ELECTROSTATIC COPIERS

Phillip J. Stevko, Euclid; Joseph L. Petrella, Cleveland, and Gerald A. Dissauer, South Euclid, all of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Oct. 14, 1971, Ser. No. 189,288

Int. Cl. G03b *27/78*

U.S. Cl. 355—83 **14 Claims**



An exposure control for contact copiers wherein an original document is moved on a path of travel first to an illumination intensity measuring and control station and thence to an exposure station. Illumination means are provided to direct a first quantum of light across the path of travel at the measuring and control station and a second quantum of light at the exposure station. Light intensity measuring and control means, including electrical circuity, are provided at the measuring and control station to sense the intensity of light passing through the original document and change the emitted intensity of the first quantum of light to provide a selected sensed intensity thereof. The emitted intensity of the second quantum of light is also changed directly proportional to the change in the emitted intensity of the first quantum. Means are also provided to maintain the emitted intensities while the original document is transferred from the measuring and control station to the exposure station.

3,728,024
COPYING APPARATUS

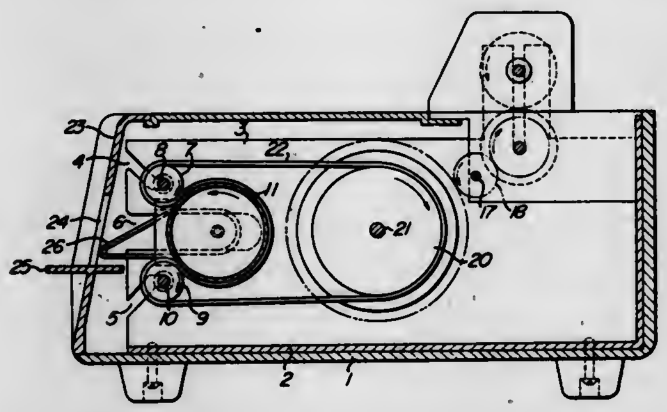
Nobuo Nagai, Yamatokoriyama-shi, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Filed Dec. 8, 1971, Ser. No. 205,932

Claims priority, application Japan, May 29, 1971, 46/44298

Int. Cl. G03b *27/10*

U.S. Cl. 355—110 **4 Claims**



A copying apparatus of the type in which a fluorescent tube lamp is rotated by an endless belt, and a document and a photosensitive copy sheet are passed in superposed relation to each other between the outer peripheral surface of said fluorescent tube lamp and said endless belt, whereby the image on the document is copied on the copy sheet; wherein upper and lower rollers are rotatably mounted with their stub shafts rotatably received in upper and lower slits formed in the opposite side walls of a frame structure, and the fluorescent tube lamp is supported at its opposite ends by bearings slidably received in middle slits formed in said side walls. Each bearing has disposed therein a rotor provided with electrode receiving holes in which the electrodes at each end of the fluorescent tube lamp are received.

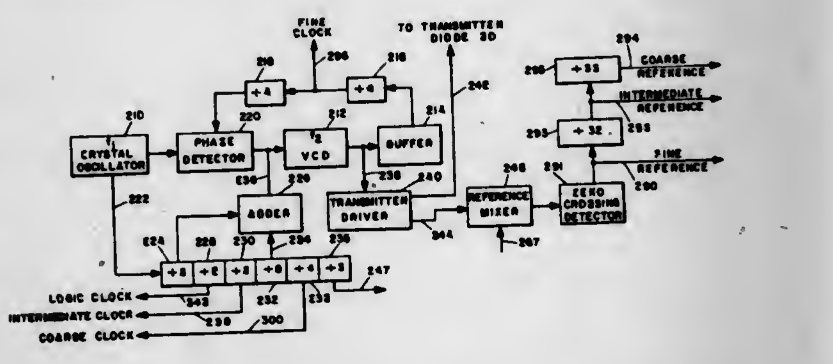
3,728,025
OPTICAL DISTANCE MEASURING EQUIPMENT

Thomas S. Madigan, San Diego; Richard F. Stone; David C. Dunn, both of Escondido; William F. Holzer, and Robert H. Sweet, both of San Diego, all of Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed March 8, 1971, Ser. No. 121,794

Int. Cl. G01c *3/08*

U.S. Cl. 356—5 **20 Claims**



Distance measuring equipment that utilizes a light beam that is intensity modulated by a carrier frequency which is frequency modulated by subcarrier frequencies to provide accurate fine, medium, and coarse distance measurements by detecting the phase shift of these carrier and subcarrier frequencies as a function of distance, and which system includes a cross coupling light transmission means for removing internal delay phase shift error, and that employs a light attenuating device to equalize the intensity of the cross coupling illumination with the return illumination received, and that employs a light transmitter having a substantially planar light source.

3,728,026
MEANS FOR MEASURING DISTANCE WHEN IT IS CONSIDERED PROBABLE THAT FOREIGN OBJECTS OR PARTICLES ARE BETWEEN THE MEASURING INSTRUMENT AND THE OBJECT TO WHICH THE DISTANCE IS TO BE MEASURED

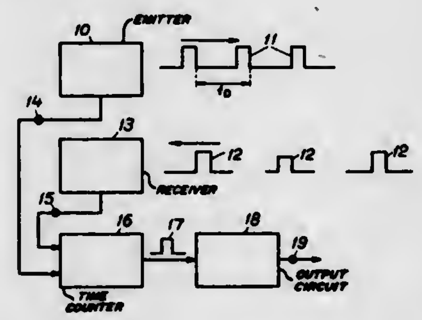
Erik Idestrom; Bernt Ling, and Anders Persson, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 8, 1971, Ser. No. 196,324

Claims priority, application Sweden, Dec. 10, 1970, 16692/70

Int. Cl. G01c *3/08*

U.S. Cl. 356—5 **5 Claims**



An arrangement for measuring distance under conditions when disturbances of various types may be expected to occur between the measuring instrument and the object to which the distance is to be measured comprises an emitter unit arranged

to emit a series of electro-magnetic pulses in the direction of the object and a receiver unit, which only registers the very first echo from each single pulse emitted, and the echo which of all those registered has covered the longest distance is considered to comprise a measurement of the distance to the object in question.

3,728,027
PORTABLE MAGNETIC BORING MACHINE HAVING LIGHT BEAM CENTERING DEVICE

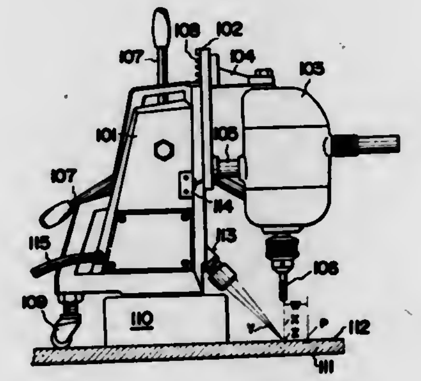
Takashi Watanabe, Naka-ku, Nagoya-shi, Japan, assignor to Nitto Giken Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1971, Ser. No. 105,457

Claims priority, application Japan, Jan. 13, 1970, 45/3644

Int. Cl. G01h *11/26*

U.S. Cl. 356—13 **13 Claims**



Portable apparatus for centering a boring machine by indicating a position to be perforated by means of projected light, the drill being aligned with the projected light. The apparatus is located relative to the workpiece by a magnetic element carrying the boring device.

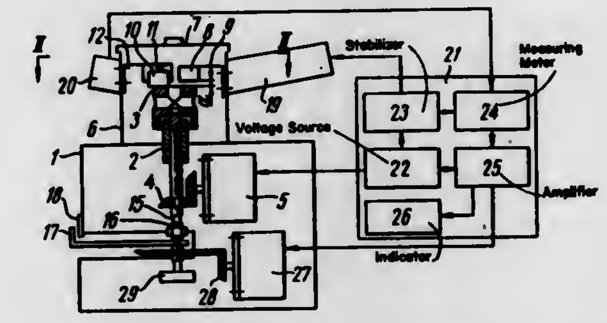
3,728,028
METHOD OF DISPERSION ANALYSIS OF SUSPENSIONS AND DEVICE FOR EFFECTING THE SAME

Jury Nikolaevich Kuznetsov, prospekt Levina 55 kv. 45, Yaroslavl, U.S.S.R.

Filed Oct. 30, 1970, Ser. No. 85,483

Int. Cl. G01n *1/00, 33/28*

U.S. Cl. 356—38 **7 Claims**



A method of dispersion analysis of a suspension, in which the suspension is distributed on a carrier by means of a scraper, the carrier being continuously moved in one direction relative to the scraper, the dispersion of the suspension is estimated in the method of the invention by the maximum layer of suspension at which a prescribed amount of particles per unit of the layer area project above the layer surface. A device for effecting the above-mentioned method, employs a carrier onto which the suspension is fed the carrier is provided with a drive for rotation of the carrier.

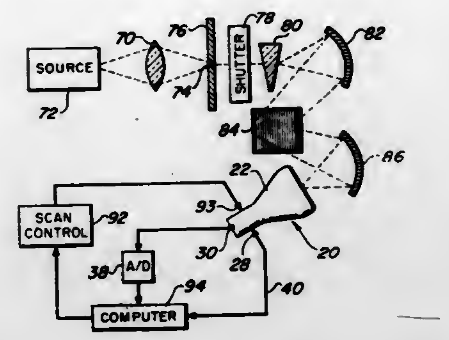
3,728,029
ELECTRO-OPTICAL SPECTROMETER

Tomas Hirschfeld, Framingham, Mass., assignor to Block Engineering, Inc., Cambridge, Mass.

Filed Feb. 22, 1971, Ser. No. 117,284

Int. Cl. G01j *3/06*

U.S. Cl. 356—83 **7 Claims**



An electronic image-encoder with an SEC vidicon in which the electron beam is positioned according to a coordinate pair stored as digital signals and applied as analog signals to the deflection coils of the vidicon. This permits the beam to read selected points on the vidicon target and the beam is blanked until the desired deflection signals are applied.

In one version of the device, the deflection signals are simply voltages corresponding to the values of the digital signals. In another version, one digital signal is converted to an analog deflection voltage and a standard ramp is used as the other deflection voltage, the beam being turned on to read only after a time interval following initiation of the ramp, which interval is proportional to the other digital signal.

A special application of the encoder incorporates a crossed-dispersion optical system for projecting several stacked spectral orders into the vidicon target.

In all cases, the electron beam actuation provides an output signal corresponding to the image intensity at the point selected by the digital signal pair, and this output signal is digitized for storage, manipulation or display.

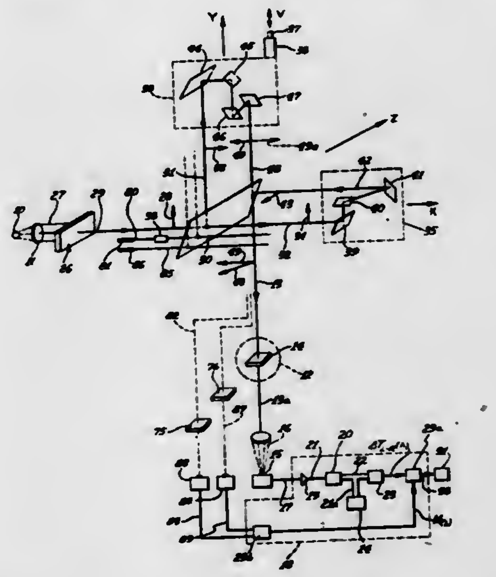
3,728,030
POLARIZATION INTERFEROMETER

Roland C. Hawes, Monrovia, Calif., assignor to Cary Instruments, Monrovia, Calif.

Filed June 22, 1970, Ser. No. 48,415

Int. Cl. G01b *9/02*; G01r *21/40*

U.S. Cl. 356—106 **24 Claims**



Fourier spectroscopy is used in the measurement of circular dichroism, the method involving the use of an interference polarization modulator which is characterized by production of negligible amplitude modulation in the absence of dichroism in the optical train that follows the modulator and in the detector. Either linear or circular dichroism in that region of the instrument will convert the polarization modulation into amplitude modulation. The polarization modulation is characterized by a different frequency for each wavelength of the radiation, thus the signals caused by the interaction of the radiation with dichroic sample may all be recorded simultaneously and may subsequently be "unscrambled" to derive the inverse Fourier transform of the ensemble of frequencies constituting the complete signal, and thus obtaining a transmission spectrum corresponding to the dichroism. The transmission spectrum in turn, in the case of the circular dichroism, may be converted into dichroism by dividing by the ordinary transmission spectrum (corresponding to ordinary absorption) which may be derived by ordinary Fourier spectroscopy.

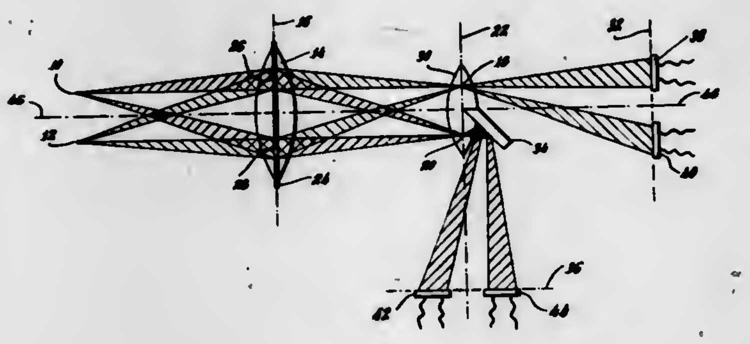
3,728,031
MULTICHROMATIC MULTIBEAM ABSORPTION PHOTOMETER

Emmett S. Watson, Jupiter, Fla., assignor to Milton Roy Company, St. Petersburg, Fla.

Filed Nov. 29, 1971, Ser. No. 202,742

Int. Cl. G01j *3/46*

U.S. Cl. 356—195 **9 Claims**



Apparatus for simultaneously and continuously comparing the absorption in two sample cells at two wavelengths. Two adjacent sample cells are illuminated from adjacent sources radiating at different wavelengths. A first lens positioned near the cells forms images of the two sources. A second lens positioned near the source images forms images of the cells. A plane mirror just behind the second lens displaces radiation from one source so that there are formed two sets of cell images, each at a different wavelength. Photocells at the cell images, and a comparison circuit, allow the absorption in both cells at both wavelengths to be compared.

3,728,032
FLOW CELL FOR SPECTROSCOPIC ANALYSIS OF DENSITY GRADIENTS

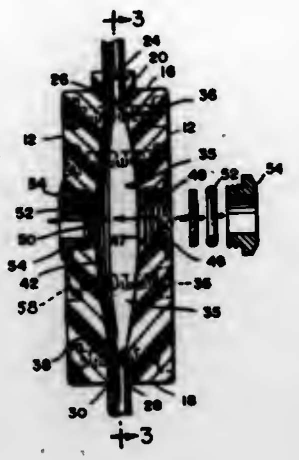
Hans Noll, 2665 Orrington Ave., Evanston, Ill.

Filed Oct. 13, 1971, Ser. No. 188,746

Int. Cl. G01n *1/10*

U.S. Cl. 356—246 **10 Claims**

A flow cell having a flow path which is step-free and totally streamlined so that pure laminar flow is achieved therethrough. Analytical resolution and sensitivity is further enhanced by the geometry of the flow path which combines minimal volume with maximal light path. There is likewise disclosed a two part mirror-image construction for reduced cost of manufacture and ease of maintenance.



3,728,033
PUSH-TYPE MECHANICAL PENCIL WITH IMPROVED LEAD ADVANCING MEANS

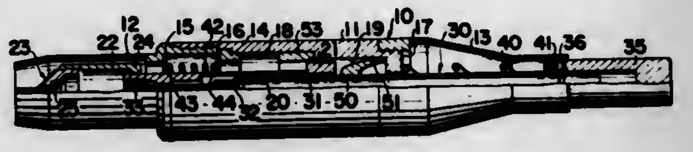
Sonokichi Seta, Tokyo; Takeo Naruse, and Masahiko Ikawa, both of Saitama, all of Japan, assignors to Dai Nihon Bungu Kabushiki Kaisha (also trading as the Japan Stationery Co., Ltd.), Tokyo, Japan

Filed May 4, 1971, Ser. No. 140,144

Claims priority, application Japan, May 6, 1970, 45/44033; May 6, 1970, 45/44034; May 22, 1970, 45/43345

Int. Cl. B43k *21/16*

U.S. Cl. 401—67 **4 Claims**



A barrel for a push-type mechanical pencil is provided with a large recess and a small recess, with both recesses being defined by a common shoulder. A slidable writing unit within the barrel has an engaging member attached thereto and is contained in the small recess, at its retracted position, by a spring. When a relatively small pushing pressure is applied to the writing unit, the engaging member enters into the large recess and engages to the shoulder, the shoulder being positioned at a writing position. When a relatively large pushing pressure is applied to the writing unit, the engaging member engages with a guide member slidable along the large recess. In such a state, when the pushing pressure is removed, the engaging member retracts into the small recess by leaving the guide member at the shoulder.

3,728,034
LIPSTICK CASE

Christian Winter, Eschenau/Mfr., Germany, assignor to Robert Huck, Nurnberg and Gunter Rene Evers, Stuttgart, both of Germany

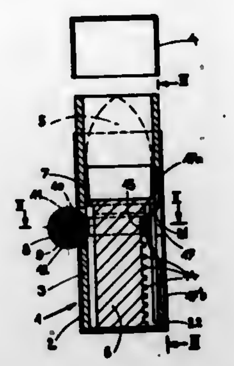
Filed May 11, 1971, Ser. No. 142,829

Claims priority, application Germany, May 13, 1970, P 70 17 807.3

Int. Cl. A45d *40/02*

U.S. Cl. 401—84 **17 Claims**

A lipstick case comprising a container and a seat for a stick of lipstick. The seat can be moved slidingly within the container, to present the stick at one end of the container. Inside the container is a spring means which on engagement locks the seat. Outside the container a driving means can be actuated which then disengages the spring means and moves the seat within the container.



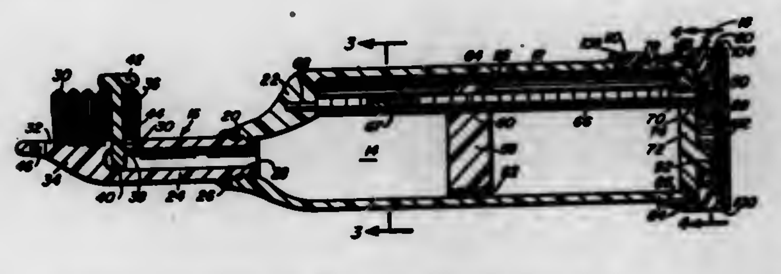
3,728,035
PLASTIC FOUNTAIN TOOTHBRUSH

Jack Reitknecht, 210 East Broadway, New York, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,798

Int. Cl. A46b *11/02*

U.S. Cl. 401—175 **14 Claims**



A plastic fountain toothbrush incorporating an elongated plastic cylinder with a brush head at one end thereof, a piston longitudinally slidably disposed therein for discharging toothpaste through a passageway into the brush head and an operating mechanism for the piston to move it longitudinally at the end of the cylinder remote from the brush head. The entire construction is waterproof to enable the entire device to be easily cleaned or rinsed off with plastic materials being used throughout to enable the device to be economically manufactured. Use of the fountain toothbrush promotes oral hygiene by eliminating transfer of germs from one conventional toothbrush to another by contacting the dispensing portion of a conventional callapsible toothpaste tube with the brush heads of several toothbrushes in a family.

3,728,036
BINDING FOR PERFORATED LEAVES MADE UP OF A SINGLEPLASTIC PIECE

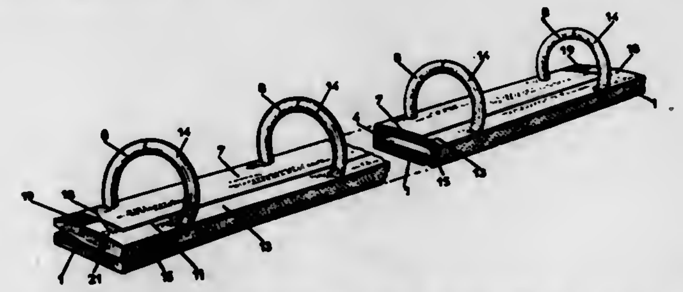
Georges Emanuel Cott, Enghien-les-Bains, France, assignor to Reliure Industrielle S.T.D., Argentheuil, France

Filed Nov. 17, 1970, Ser. No. 90,411

Claims priority, application France, Nov. 18, 1970, 6939668

Int. Cl. B42f *3/04*

U.S. Cl. 402—31 **9 Claims**



A binding for perforated leaves, including a base portion and shutters, opening rings for the perforated leaves formed of a resilient one-piece plastic construction, and reciprocable locking means positioned between the base and shutters and adapted to be actuated for controlled release of the leaves.

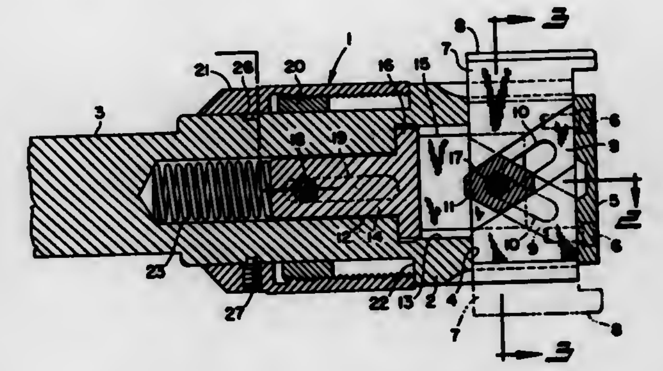
3,728,037
ADJUSTABLE FLOATING REAMER

Milton L. Benjamin, and Wilbur N. Miles, both of Chagrin Falls, Ohio, assignors to Erickson Tool Company, Solon, Ohio

Filed Nov. 4, 1971, Ser. No. 195,608

Int. Cl. B23d *77/04*

U.S. Cl. 408—168 **9 Claims**



An adjustable floating reamer characterized in that a shank member has a slot diametrically thereacross in which overlapping reamer blades are simultaneously adjusted radially outwardly or inwardly by an adjusting sleeve which is rotatable on said shank member and which has threaded engagement with an axially movable cam means engaged with said blades, said adjusting sleeve being spring-biased into frictional engagement with a shoulder on said shank member thus to retain the blade adjustment without additional locking means. Moreover, the present invention is further characterized in that the frictional retaining engagement between the adjusting sleeve and the shank member is increased upon imposition of radial inward load on the reamer blades. Yet another characterizing feature of this invention is the mounting of the blades for radial floating movement about parallel axes which are perpendicular to the slot in which the blades are slidable.

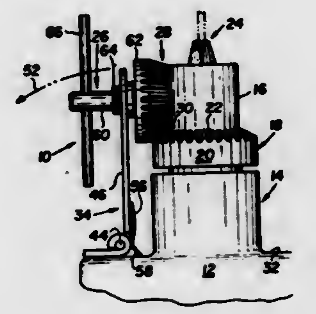
3,728,038
IMPROVED CHUCK KEY AND HOLDER

Arthur A. Gage, 2880 Sylvan Court, Oceanside, N.Y.

Filed Feb. 12, 1971, Ser. No. 114,820

Int. Cl. B23b *39/00*

U.S. Cl. 408—241 **10 Claims**

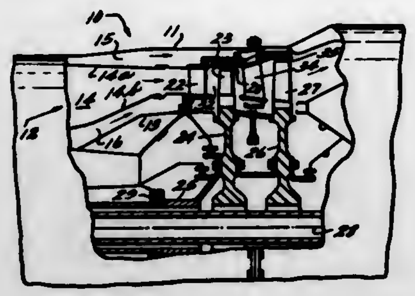


A Jacobs chuck key holder mounted on the hand-drill housing for pivoting movement from an out-of-the-way clearance position into meshing engagement with the Jacobs chuck, either the chuck ring or drill operative end thereafter being rotated relative to the other to cause engagement or disengagement of the drill jaws with the drill bit, and the key lacking, as unnecessary, a centering projection so that no special alignment of the key with the drill operative end is required for the aforesaid meshing engagement.

3,728,039
FLUID COOLED POROUS STATOR STRUCTURE

Larry W. Plemmons, Hamilton, and Charles E. Corrigan, Cincinnati, both of Ohio, assignors to General Electric Company, Lynn, Mass.

Filed Nov. 2, 1966, Ser. No. 591,462
Int. Cl. F01d *5/14*
U.S. Cl. 415—115 **4 Claims**

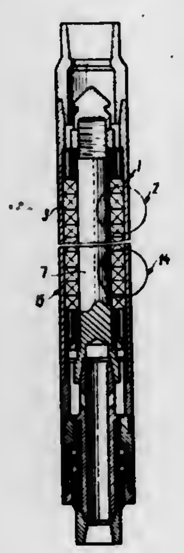


A cooling apparatus for a stator member of a high temperature turbo-machine wherein cooling fluid is caused to pass through said stator member thereby substantially cooling said member because of an existing pressure differential and high porosity characteristics of the stator member itself.

3,728,040
TURBODRILL

Jury Rolenovich Ioanesian, ulitsa Bolshaya Dorogomilovskaya, 58, kv. 56, and Rolen Arsenievich Ioannesian, naberezhnaya Tarasa Shevchenko, 1/2, kv. 49, both of Moscow, U.S.S.R.

Filed April 22, 1971, Ser. No. 136,525
Int. Cl. F01d *15/12;* **F03b** *3/10;* **E21b** *1/06*
U.S. Cl. 415—123 **5 Claims**



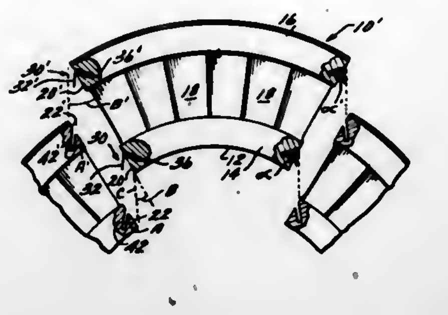
A turbodrill for drilling wells having a turbine for the turbodrill shaft rotation together with a hydrodynamic braking unit, the stator and rotor blades of which extend in the same direction.

3,728,041
FLUIDIC SEAL FOR SEGMENTED NOZZLE DIAPHRAGM

Richard Edward Bertelson, Marblehead, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Oct. 4, 1971, Ser. No. 186,044
Int. Cl. F01d *1/02, 9/00;* **F16j** *9/16*
U.S. Cl. 415—189 **8 Claims**

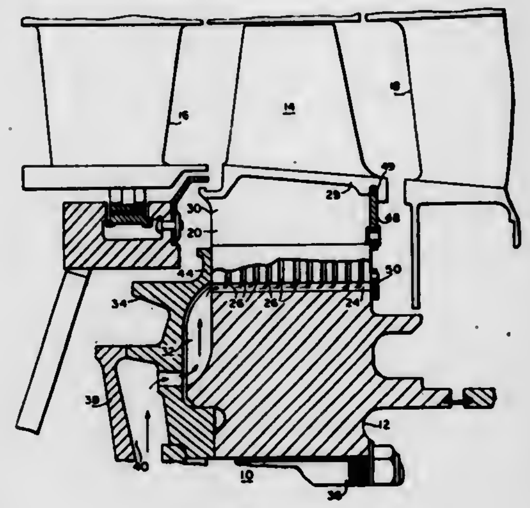
In a gas turbine engine, fluidic sealing is provided between the segments of a nozzle diaphragm in a manner that enables both the individual nozzle segments and the seal members to be brought together for joinder from directions that are generally radial in respect to the nozzle axis, thereby permitting assembly in areas where axial movement of the component parts is limited. The invention herein described was made in the course of or under a contract or subcontract thereunder (or grant) with the Department of the Army.



3,728,042
AXIAL POSITIONER AND SEAL FOR COOLED ROTOR BLADE

Birger O. Hugoson, Wallingford, Pa., and Norbert Vettel, Buergel, Germany, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 27, 1971, Ser. No. 175,590
Int. Cl. F02d *5/08*
U.S. Cl. 416—95 **7 Claims**



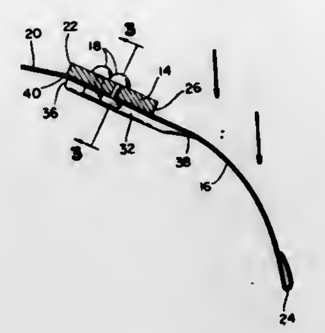
An axial positioning and sealing means for axially positioning turbine blades with respect to a rotor disc and for sealing the downstream side of cooling fluid flow passageways below the root portions of the blades is disclosed. The periphery of the rotor disc is provided with axial channels for receiving the root portions of turbine blades having radial cooling bores extending from the root portions through the tips of the blades. The channels are formed to provide an axially extending passageway communicating with the cooling bores whereby a cooling fluid flows through the passageway and into the bores to cool the plates. Sideplates means are provided for retaining the blades to the rotor disc.

Pads or protrusions are provided on each steeple of the rotor disc, with the pads being positioned and shaped such that the side faces of two adjacent pads define a radially extending, radially outwardly tapering channel over each of the passageways. Each positioning and sealing plate has tapered sides complementary in shape to the tapered channel whereby when said rotor disc is rotated at high speeds, the centrifugal force acting on said plate will urge the plate radially outwardly of the rotor disc to thereby wedge the plate against the pad and the root portion of the turbine blades. Locking means are provided for securing each plate against unlimited radial inward movement with respect to the rotor disc.

3,728,043
FLEXIBLE BLADE FAN WITH RIBBED BLADES

Shrinivas V. Pratinidhi, Chatham, Ontario, Canada, assignor to Fram Corporation, East Providence, R.I.

Filed Jan. 12, 1972, Ser. No. 217,350
Int. Cl. F04d *29/36*
U.S. Cl. 416—132 **15 Claims**

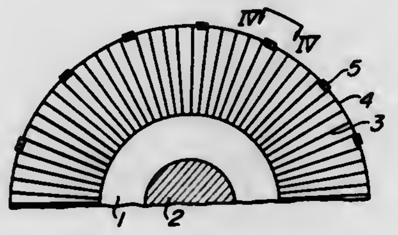


A flexible bladed automotive cooling fan in which the blades are provided with a plurality of radially spaced, transversely extending, raised ribs on the side thereof opposite the arms to which the blades are connected, the ribs extending from the leading edges of the arms to a position intermediate the trailing edges of the arms and the blades.

3,728,044
TURBINE ROTOR

Isao Fujita; Katsuo Daibo; Itsuro Aoki, and Satoshi Ninomiya, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 25, 1971, Ser. No. 156,914
Claims priority, application Japan, June 29, 1970, 45/56035
Int. Cl. F01d *5/22*
U.S. Cl. 416—190 **6 Claims**



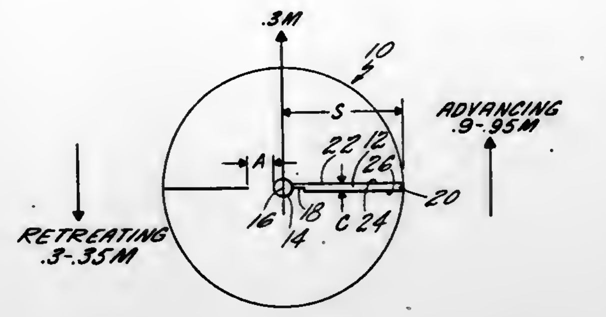
For restraining the vibration of turbine rotor blades, a turbine rotor embodying the present invention comprises devices for constituting some pairs of blade groups each composed of a plurality of the turbine rotor blades secured to a bucket cover and for reducing the existence of vibration modes by frictionally linking adjacent blade groups to each other.

3,728,045
HELICOPTER BLADE

David T. Balch, Monroe, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 22, 1971, Ser. No. 182,777
Int. Cl. B64c *27/46*
U.S. Cl. 416—223 **10 Claims**

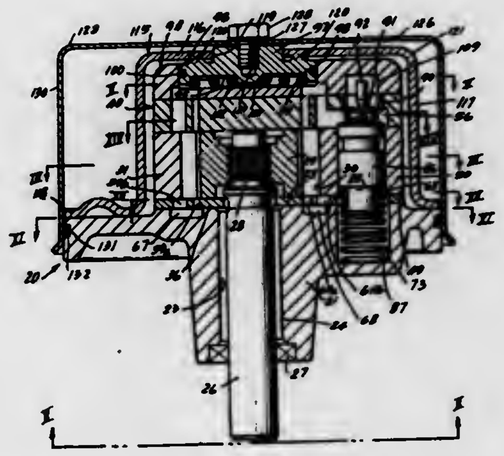
To alleviate the roll moment established during helicopter forward flight, it is necessary to vary the blade pitch angle around the azimuth with reduced angle on the advancing side and increased angle on the retreating side. To accomplish this without the introduction of unreasonable losses in lift capability and stability and without an undue increase in drag, the blade airfoil section is selectively shaped so as to delay or minimize blade flow separation, and high Mach number compressibility effects.



3,728,046
POWER STEERING PUMP

Hubert M. Clark, and Gilbert H. Drutchas, both of Birmingham, Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Oct. 6, 1971, Ser. No. 186,865
Int. Cl. F01c *19/08;* **F04c** *27/00;* **F04b** *23/12*
U.S. Cl. 417—79 **8 Claims**



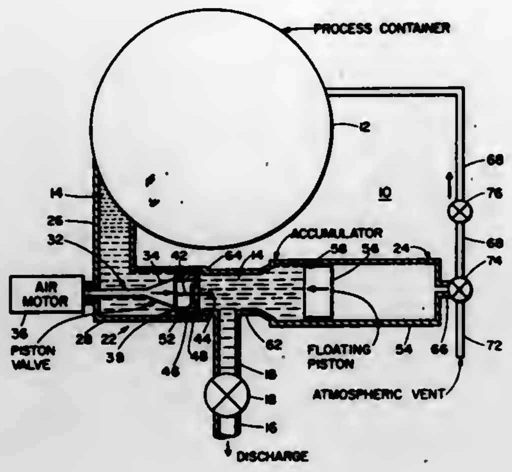
A power steering pump with the flow control valve in the cam and having pressure loading of the stacked pump elements with a controllable area for pressurization and using a drawn steel shell materially reduces the pressurized area acting on the upper pressure plate and hence on the stacked pump elements, thereby permitting selection of an optimized pressure area.

3,728,047
SOLIDS ACCUMULATOR PUMP SYSTEM

John K. Mangialardi, King of Prussia, Pa., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

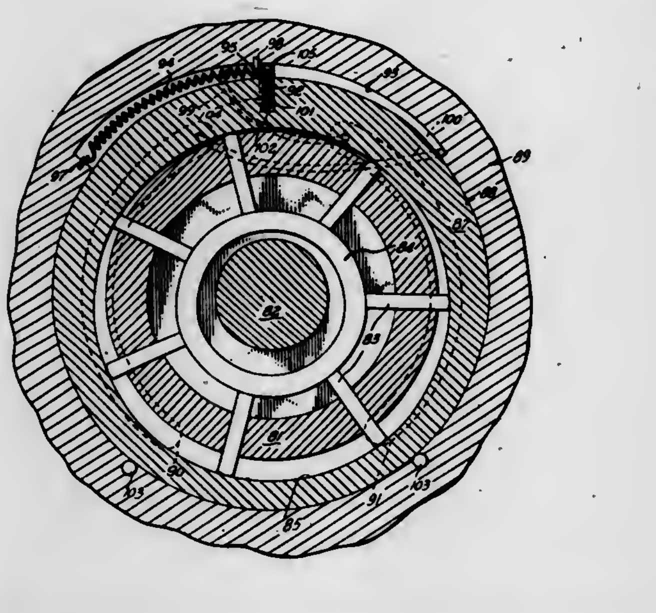
Filed Sept. 13, 1971, Ser. No. 179,740
Int. Cl. F04b *19/04*
U.S. Cl. 417—488 **3 Claims**

A solid waste pumping system for use with a process operating at a vacuum in which a reciprocating pump moves the solid waste into an accumulator having a floating piston. The piston discharges the waste by exposing the other side of the piston to ambient pressure.



3,728,048
VARIABLE DISPLACEMENT MOTORS

George D. Ratliff, Jr., 2314 Forest Drive, Pittsburgh, Pa.
Filed May 19, 1971, Ser. No. 144,845
Int. Cl. F01c *1/00, 21/16*
U.S. Cl. 418—17 3 Claims

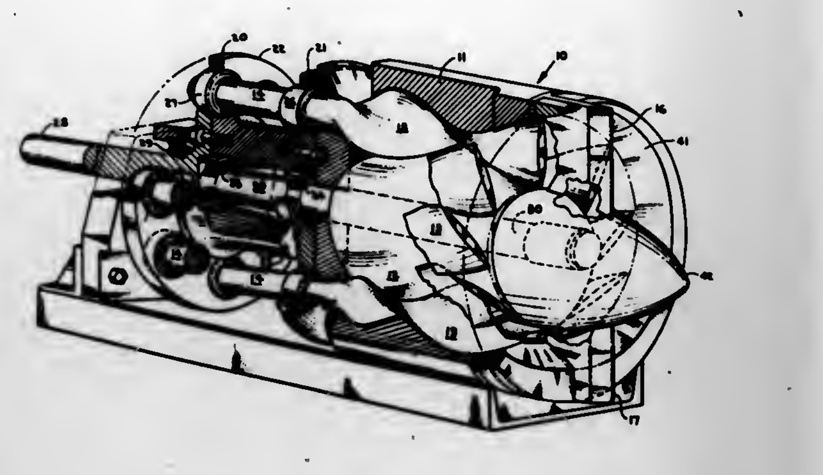


A vane-type motor uses the centrifugal force of the vanes to drag the control ring and control displacement. Reaction torque on the control ring is cancelled by a secondary vane mounted on the control ring and operating in a tapered chamber. The result is a hydrostatic motor which automatically and gradually shifts displacement in response to speed changes but will not respond to pressure changes.

3,728,049
POSITIVE DISPLACEMENT COMPRESSOR/TURBINE

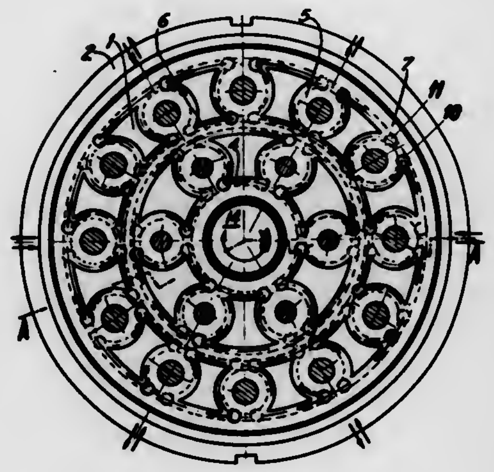
Lloyd E. Miller, Jr., 8330 S.W. 52nd Avenue, Miami, Fla.
Continuation-in-part of Ser. No. 59,248, July 29, 1970, abandoned. This application Nov. 5, 1971, Ser. No. 195,961
Int. Cl. F04c *1/16*; F04d *3/02*; F03c *3/00*
U.S. Cl. 418—55 27 Claims

A positive displacement screw device comprising a pair of housing members in fixed relationship to each other whose adjacent faces are helically threaded but separated to provide passage to and engagement by a plurality of helical rotor blades rotatably supported on a carrier which divide the volume therebetween into expansive pockets, enabling the device to be used as either a fluid pump or motor.



3,728,050
GEARED ENGINE

Wladyslaw Wisniewski; Jan Piotrowski, and Zbigniew Szeler, all of Gdynia, Poland, assignors to Centrum Techniki Okretowej Przedsiebiorstwo Panstwowe Wyodrebnione, Gdansk, Poland
Filed March 26, 1971, Ser. No. 128,368
Claims priority, application Poland, April 4, 1970, P 139729; April 4, 1970, P 139730
Int. Cl. F01c *1/00*; F03c *3/00*; F04c *1/00*
U.S. Cl. 418—165 2 Claims



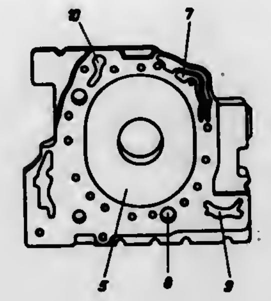
The invention relates to a geared engine which operates for liquid as well as for gas. If the arrangement is driven by another engine it operates as a gear pump or compressor. The geared engine consists of a central toothed wheel and of toothed wheels engaged with and offset around it, which toothed wheels are encircled by a toothed ring and meshed with it.

The medium flowing through the meshings of the toothed wheels and the central wheel and through the meshings of the wheels and the ring rotates them.

The toothed ring takes over the radial forces arising in the wheel, thus unloading the bearings of the wheels' axes. Depending on the construction of the engine the ring transfers the torque to the central wheel and further to the output shaft or to the casting, which can simultaneously be a winch barrel.

3,728,051
IRON OR STEEL COMPONENTS OF A ROTARY PISTON MACHINE

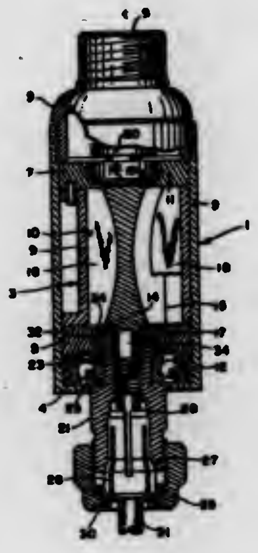
Gerhard Philipp Humbert, Margarethenhoehe, Koenigswinter, Germany
Filed Nov. 16, 1970, Ser. No. 89,589
Claims priority, application Switzerland, Dec. 12, 1969, 18501/69
Int. Cl. B01k *1/00*; C23c *11/16*
U.S. Cl. 418—178 2 Claims



The friction surface of a cast iron side wall member for a rotary piston engine is hardened by iontriding in an electrical glow discharge in a gas atmosphere containing nitrogen, after coating the areas not be be hardened, to inhibit glow discharge at those areas.

3,728,052
AIR OPERATED TOOL

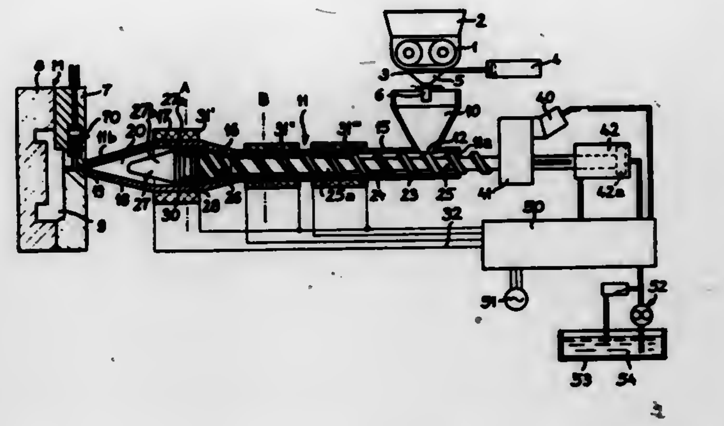
Philip A. Snider, Hicksville, Ohio, assignor to Dotko, Inc., Hicksville, Ohio
Filed April 16, 1971, Ser. No. 134,587
Int. Cl. F01c *13/00, 21/00*; B23b *47/00*
U.S. Cl. 418—181 6 Claims



An air operated tool characterized in that the tool chuck thereof has a pilot portion which is coaxial with the air motor rotor onto the shaft of which said chuck is screwed, and which engages a ball bearing in the tool housing so that the chuck and rotor will run true about their common axes despite eccentricity of the chuck threads. Moreover, the pilot portion of the chuck extends axially within the ball bearing thus to increase the effective diameter of the rotor shaft and to shorten the axial overhang of the chuck relative to the ball bearing so as to provide a compact tool in which the accuracy of rotation and strength are enhanced.

3,728,053
APPARATUS FOR THE INJECTION MOLDING OF PLASTIC OBJECTS

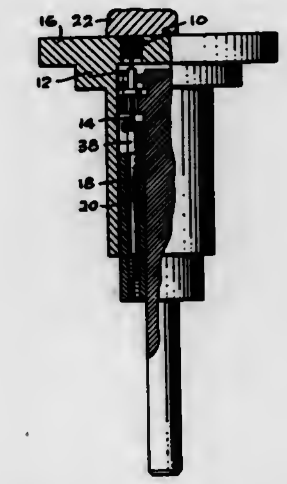
Bruno J. Stillhard, Wildeggstr. 38, 9000 Saint Gallen, and Fredy Z. Scheifele, im Grund, 9244 Niederuzwil, both of Switzerland
Filed Aug. 26, 1970, Ser. No. 67,020
Claims priority, application Switzerland, Sept. 4, 1969, 13407/69
Int. Cl. B29d *27/04*
U.S. Cl. 425—4 14 Claims



In the formation of plastic objects having an imporous dense film-like surface enclosing a foam-like porous core, the plastic material and an expanding agent are mixed, heated to a hot plastic compound, and transported through an enclosed axially elongated passageway by a threaded screw member. The threaded screw member is shaped to provide a flow path of variable transverse cross sectional area along its length. By axially displacing the screw member, dosed amounts of hot plastic compound, collected at the outlet end of the passageway, can be extruded for injection into a mold.

3,728,054
MAGNETIC CORE FORMING APPARATUS

Jack R. Bryant, Freehold Township, N.J., assignor to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.
Filed Dec. 17, 1970, Ser. No. 99,079
Int. Cl. B29f *3/00, 5/00*
U.S. Cl. 425—78 4 Claims



Apparatus for forming toroidal magnetic cores by compressing powdered ferrite material, including a punch for compressing the material and a stationary core rod extending through the punch to form the hole of the toroidal core, wherein the punch and core rod are constructed to reduce breakage of the core rod. The punch has a hole with a narrow forward end and a wide rearward end, and the core rod has a narrow forward end that slide through the forward end of the punch hole and a wide rearward portion for moving along the rearward end of the punch hole. The rearward portion of the core rod is sufficiently smaller than the rearward end of the punch hole to prevent sliding contact with the walls of the punch hole thereof, to eliminate friction therealong as the punch reciprocates. Yet, the diameter of the rearward core rod portion is much larger than the forward core rod portion, to reduce the unsupported length of the forward core rod portion where breakage is likely to occur.

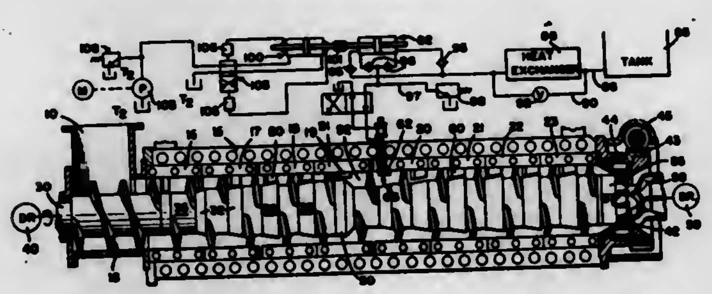
3,728,055
APPARATUS FOR TREATING ELASTOMERIC MATERIALS

Dean K. Bredeson, Piqua Ohio, and Robert Kent Slaby, Harbel, Liberia, assignors to The French Oil Mill Machinery, Piqua, Ohio

Division of Ser. No. 802,029, Feb. 25, 1969, Pat. No. 3,638,921. This application Aug. 31, 1971, Ser. No. 176,610

Int. Cl. B29h *1/10*

U.S. Cl. 425—84 2 Claims



Apparatus for adding liquids such as oils to elastomeric materials such as rubber includes a continuous screw press with intermediate chambers where the material is worked under pressure. Liquid is supplied near the center of the chamber through injector bars, and is mixed into the material as it proceeds out of the chamber toward the press exit. The elastomeric materials may be first processed in the press to remove included moisture.

3,728,056
EXTRUDER CONTROL SYSTEM

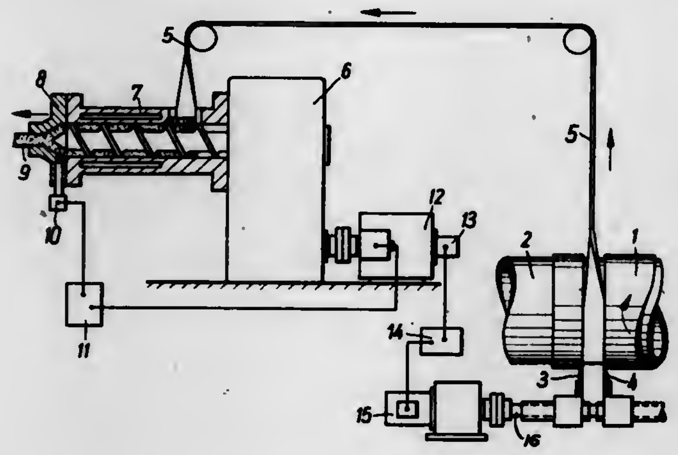
Helmuth Theysohn, Wiehbergstrasse 25C, Hannover, Germany

Filed June 7, 1971, Ser. No. 150,407

Claims priority, application Germany, June 8, 1970, P 20 28 064.2

Int. Cl. B29c *3/06*

U.S. Cl. 425—142 7 Claims



A screw type extruder having a rotary extruder screw is provided with a variable speed drive motor for rotationally driving the extruder screw, material feeding means for feeding plasticizable material at a variable flow rate into the extruder, and a control system for controlling both the extruder screw speed and the flow rate of material fed into the extruder. The control system comprises a pressure sensor for sensing the plastic compound pressure within the extruder and a control device for controlling the rotational speed of the extruder screw in dependence upon the sensed pressure to maintain the compound pressure at a constant value. The control system further comprises a speed sensor for sensing the actual rotational speed of the extruder screw and another control device for controlling the volume of the plasticizable material fed into the extruder in dependence upon the sensed extruder screw speed to maintain the flow rate of the plasticizable material fed into the extruder at a constant value.

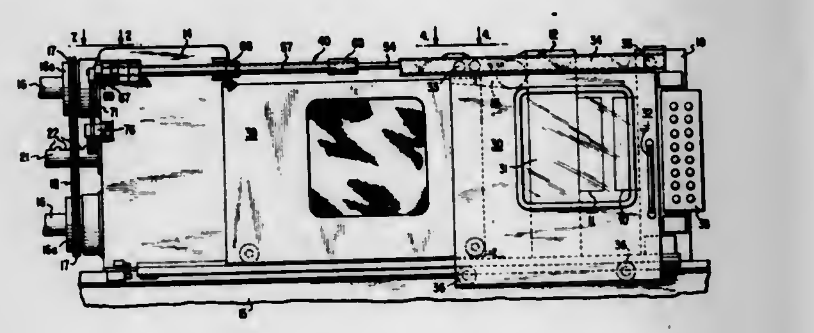
3,728,057
PLASTIC INJECTION MOLDING MACHINE SAFETY MECHANISM

Volker R. Grundmann, Glastonbury, and Larry K. Floyd, Plantsville, both of Conn., assignors to The New Britain Machine Company, New Britain, Conn.

Filed Sept. 2, 1970, Ser. No. 68,853

Int. Cl. B29f *1/100*

U.S. Cl. 425—136 9 Claims



In order to prevent injury to the operator, the advance of the movable platen and mold is physically restrained, whenever the windowed safety gate is slightly opened, by a pawl which engages a notched guide bar connected to the movable platen. The movement of the pawl is controlled by a mechanical linkage connected to the safety gate and includes a telescopic torque shaft which is rotated upon opening or closing of the safety gate by a cam and a spherical cam follower associated, respectively, with the gate and the rotatable shaft. Circuitry is provided for detecting an inoperability of the pawl whenever the gate is opened so as to actuate an alarm system and also, if desired, shut down the hydraulic pumps.

3,728,058
PLASTIC MELT TEMPERATURE CONTROL

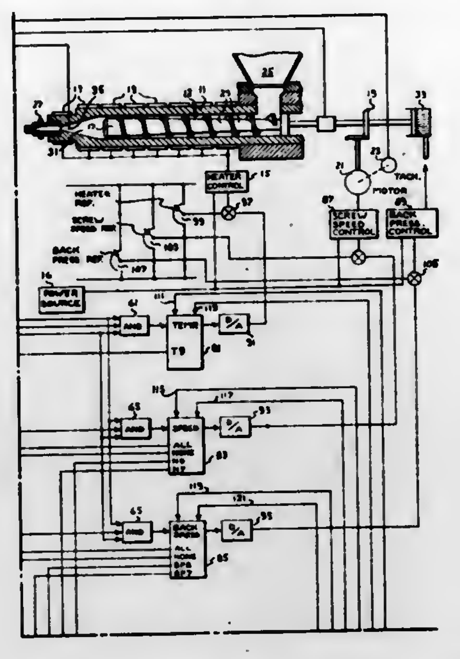
James E. Wheeler, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Nov. 1, 1971, Ser. No. 194,233

Int. Cl. B29c *3/02*

U.S. Cl. 425—144 11 Claims

A plastic melt temperature control for use with a plastic injection molding machine having a heated barrel, a reciprocating and rotating screw within the barrel and a hydraulic or similar system for applying pressure to the back of the screw, and electrical controls for the barrel heaters, the screw speed and the pressure system provides for the automatic adjustment of the temperature of the plastic. A pulse generator selectively applies pulses to three independent reversing counters, one counter for each of the functions controlled. The contents of each counter is proportional to the quantity of power derived from a power source to control each of the functions. Logic circuitry provides selective choice of counters the contents of which are to be increased or decreased in order to change the temperature of the plastic melt when required.



3,728,059
APPARATUS FOR DEFORMING A PLASTIC PIPE

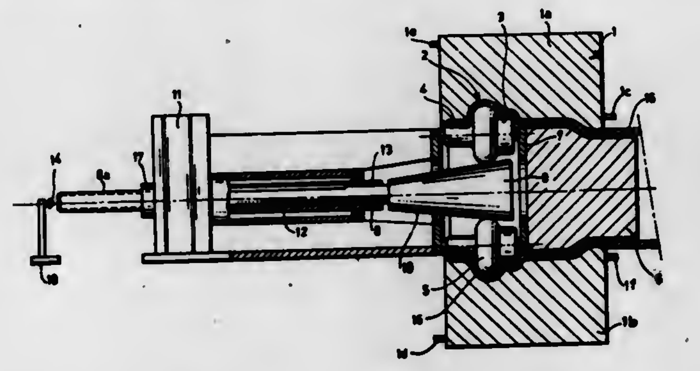
Warner Jan de Putter, Zwolle, Netherlands, assignor to Industriele Andernmening Wavin N.V., Zwolle, Netherlands

Filed Aug. 31, 1970, Ser. No. 68,328

Claims priority, application Netherlands, Sept. 4, 1969, 6913490

Int. Cl. B29c *17/00*

U.S. Cl. 425—155 5 Claims



Apparatus and method for providing a thermoplastic pipe with an inner groove, by subjecting a heat plasticized pipe to the action of some rotatably supported rollers which are expanded and rotated by means of a mandril. The assembly of all rollers is caused to move along the inner wall of the plastic pipe in a plane perpendicular to the axis of the pipe.

3,728,060
INJECTION MOLDING MACHINE

Karl Hehl, Siedlung 183, Lossburg, Wurttemberg, Germany

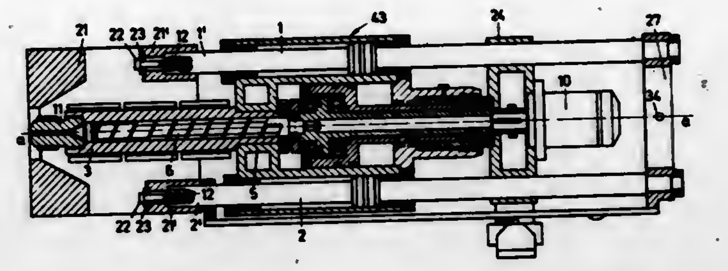
Filed April 14, 1971, Ser. No. 133,828

Claims priority, application Germany, April 24, 1970, P 20 20 060.6

Int. Cl. B28b *17/00*

U.S. Cl. 425—191 10 Claims

An injection molding machine having connecting sleeves for the connection of the supporting straps of injection units which operate transverse to and into the separating groove of a casting mold of the molding machine has separate means for securing the supporting struts in their respective connecting sleeves. Each of these means has a threaded bore defined in an end of a strut, and a bore with a shoulder defined in the sleeve, with the shoulder arranged to abut the surface of the strut end. A bolt is in threaded engagement with the threaded bore and in coaxial relationship with the strut. An injection unit operating transversely to the separating groove has a base provided with bearing surfaces for sliding engagement with the top of the machine base.



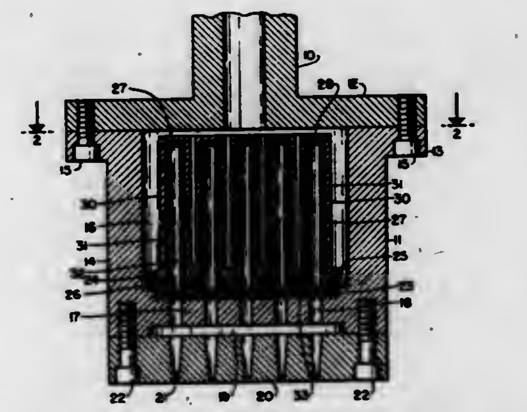
3,728,061
MULTI-LAYER SPINNERETTE WITH HEAD FILTER

Lambert H. Mott, c/o Mott Metallurgical Corp., P. O. Box Drawer L, Farmington Industrial Park, Farmington, Conn.

Filed June 24, 1971, Ser. No. 156,444

Int. Cl. D01d *3/00*; D29f *3/00*

U.S. Cl. 425—198 5 Claims



The central cavity of a spinnerette head assembly for the extrusion of synthetic polymer filters is substantially filled with tubular filters closed at one end and communicating with extrusion orifices, the filter area being presented to inflowing plastic being at least twice the cross-sectional area of the central cavity, the tubular filter elements having at least an outer layer with a lesser degree of filtration and an inner layer with a greater degree of filtration.

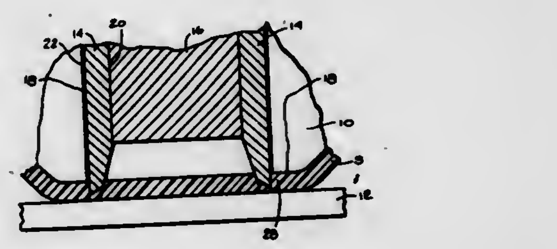
3,728,062
FORMING ARTICLES FROM SHEET MATERIAL

Lee R. Layman, Windsor Locks, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed April 2, 1970, Ser. No. 25,186

Int. Cl. B29c *17/00*

U.S. Cl. 425—291 2 Claims



In a trim in place thermoforming process for shaping articles from sheet material wherein a blade penetrates the sheet around the periphery of each article to facilitate later removal, method and apparatus improvements wherein limited portions of the leading surface of the blade are introduced into the sheet to a lesser extent than that of the remainder of the leading surface to form frangible tabs in the sheet adjacent side portions of the article which extend in the direction of sheet advancement, thereby reducing the criticality of the sheet thickness along the line of penetration for retaining the articles attached to the sheet. To form the tabs, the leading surface of the blade has indentations therein which are preferably oriented at an acute angle to the adjoining surface of the article being formed, as opposed to the adjoining surface of the portion of the sheet remaining after the article is removed.

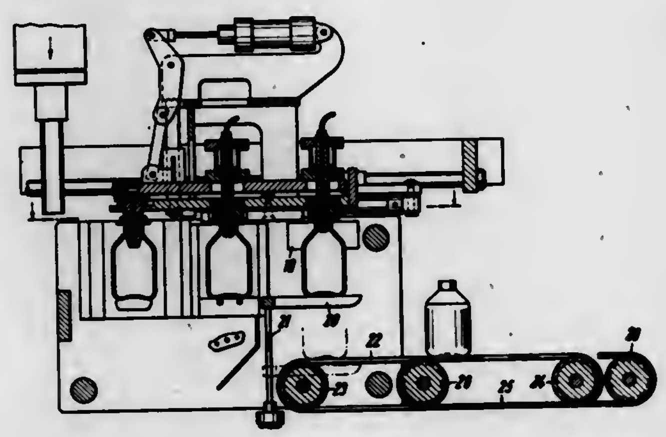
3,728,063
BLOWING MACHINE FOR PRODUCING HOLLOW BODIES, PARTICULARLY BOTTLES

Erhard Langecker, Hohlbuschener Weg 5, Meinerzhagen/Westphalia, Germany

Filed April 23, 1971, Ser. No. 136,784

Int. Cl. B29c *5/06, 6/04*

U.S. Cl. 425—326 B 13 Claims



In apparatus for producing hollow bodies in which a tubular-shaped blank is inflated in a mould within mould closure means alongside an extruder, characterized in that the mould closure means is provided with a blowing mould wherein said blank is inflated, test means for a leakproof test on a hollow body and preferably additional means for filling a satisfactorily tested hollow body, said blowing mould, said test means and said filling means each consisting of two halves, said halves being simultaneously movable between an open position and a closed position by said mould closure means, said blowing mould, said test means and said filling means being at equal distances from one another, and in that carrier means movable in relation to said closure means is provided on a transverse member over said closure means, said carrier means being provided with a blower nozzle a test nozzle and a filling nozzle situated in spaced relationship on the carrier means said spacing corresponding to the spacing of said blowing mould, test means and filling means, said blower nozzle being adapted to move a hollow body from said blowing mould to said test mould and said test nozzle being adapted to transfer a satisfactorily tested body to said filling means, when said halves are in the open position.

3,728,064
CONCRETE PLANK PRODUCTION

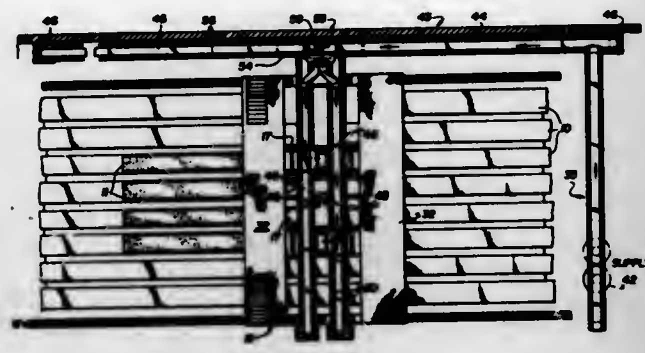
Peter J. Conway, Greenfield Park, Quebec, Canada, assignor to Grayron Industries Limited, Montreal, Quebec, Canada

Filed Feb. 1, 1971, Ser. No. 111,388

Int. Cl. B28b *3/20*

U.S. Cl. 425—376 5 Claims

Concrete planks are formed by moving one or more pairs of concrete extruders over a plurality of elongated plank-casting beds. The extruders are suspended from a gantry spanning and movable along the beds. The extruders are symmetrically positioned with respect to each other and the gantry whereby twisting and unbalanced load conditions are substantially eliminated. Plank lengths are simultaneously formed on beds and following their formation, the extruders are successively positioned over other beds while maintaining the symmetrical balancing of the extruders on the gantry.



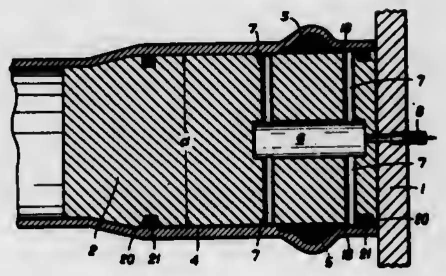
3,728,065
DEVICE FOR THE PRODUCTION OF TUBE SOCKETS

Eduard Figwer, Vienna, Austria, assignor to Inteco Establishment, Vaduz, Liechtenstein

Filed Nov. 3, 1970, Ser. No. 86,514

Int. Cl. B28b *11/08*

U.S. Cl. 425—392 6 Claims



A device for producing tubular sockets provided with an outwardly extending annular enlargement and made of plastic material comprises a removable annular core having a diameter equal to the desired inner diameter of the socket and a ring on said core for forming said enlargement, said ring being removably mounted on said core. The ring is subdivided into at least three segments which are hingedly connected with each other, except that the abutting ends of two segments are bevelled and form sharp points and are merely clamped together, so that after the removal of the core from the socket which has been molded on the combined core and ring, the latter may be collapsed by swinging the segments of the same inwardly about their hinges into bore of the socket and then may be removed from the bore, because the largest dimension of the collapsed ring is smaller than the diameter of the bore in the socket formed by the cylindrical core.

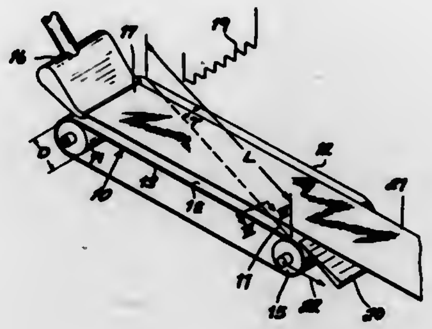
3,728,066
JOINT FOR ENDLESS BELTS

Hubert Stadler, 2560 Berndorf, and Horst Spanyar, A-5280 Braunau am Inn, both of Austria, assignors to Vereinigte Metallwerke Ranshofen-Berndorf Aktiengesellschaft, Braunau-am-Inn-Ranshofen, Austria

Continuation-in-part of Ser. No. 693,889, Dec. 27, 1967, abandoned. This application Nov. 30, 1970, Ser. No. 93,538

Int. Cl. B28b *1/00*

U.S. Cl. 425—471 6 Claims



A film-casting belt is composed of flexible metal of high hardness, especially stainless steel but possibly ordinary steel, copper and nickel, and has a thickness up to about 1 mm. The belt joint is made by butt-welding the ends of the band and a bias such that the weld seam runs at an angle to the direction of movement to the belt which ranges between 2° and 45° but preferably is between 2° and 15°. The weld seam is ground flush with the surface of the belt which has a tolerance ± 3 μ. The curvature of the band, which is maintained under tensions up to 200 tons, may be reversed to facilitate stripping of the synthetic-resin or cellulosic film from the surface.

3,728,067
DEVICE FOR FLASHING COMBUSTION FLASH BULBS ONE AFTER THE OTHER

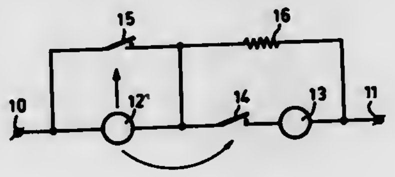
Wilhelmus Polycarpus DeGraaf, and Peter Andreas Waltherus Tielemans, both of Emmasingel Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 23, 1970, Ser. No. 74,811

Claims priority, application Netherlands, Oct. 3, 1969, 6915056

Int. Cl. F21k *5/02*

U.S. Cl. 431—95 1 Claim



The invention relates to a device for flashing flash bulbs one after the other. In a device according to the invention the flash bulbs are arranged in series, and a bulb is shunted by a make contact which reacts to the radiation heat which is released when said lamp is flashed.

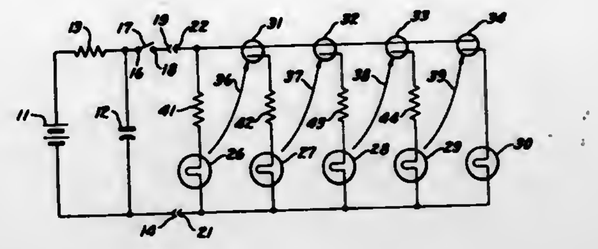
3,728,068
PHOTOFLASH LAMP ARRAY HAVING FLASH-ACTUATED SWITCHES

Paul T. Cote', Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,384

Int. Cl. F21k *3/02*

U.S. Cl. 431—95 10 Claims



A photoflash lamp array having flash-actuated switches respectively associated with a plurality of the flash lamps and adapted, when the associated lamp is flashed, to connect a next lamp into the electrical flashing circuit. Resistors are respectively connected in series with the plurality of flash lamps and function to insure continued operation of the lash array in the event that a flashed lamp becomes shorted instead of the usual open-circuit condition.

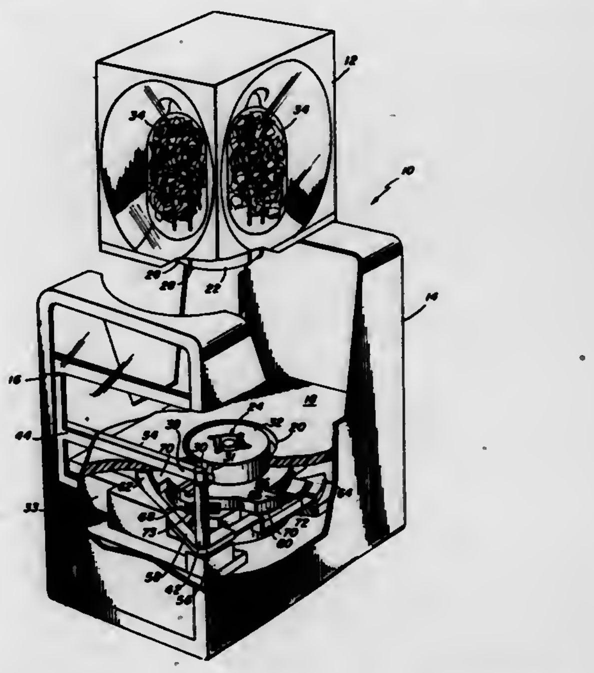
3,728,069
THERMALLY RESPONSIVE FLASH LAMP SEQUENCING APPARATUS

Edward F. Burke, Jr., Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 6, 1971, Ser. No. 159,773

Int. Cl. F21k *5/02*

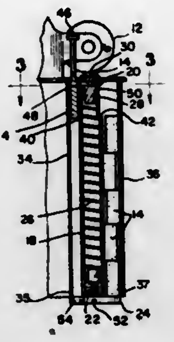
U.S. Cl. 431—93 35 Claims



Thermally responsive flash cube sequencing apparatus for use in or with a photographic camera successively advances the component lamps of a flash cube into a predetermined firing position. The sequencing apparatus includes a socket assembly for receiving a flash cube and thermally responsive indexing means for automatically indexing the socket assembly each time a lamp is ignited. The indexing apparatus comprises a pre-stressed thermally expansible sensing element disposed to receive a pulse of thermal energy from an ignited flash lamp. Thermal expansion and subsequent contraction of the sensing element actuates an escapement mechanism which controls the advancement of the socket assembly through four index positions effective to bring the individual flash lamps in the cube successively into the said firing position.

3,728,070
FLINT INJECTION APPARATUS

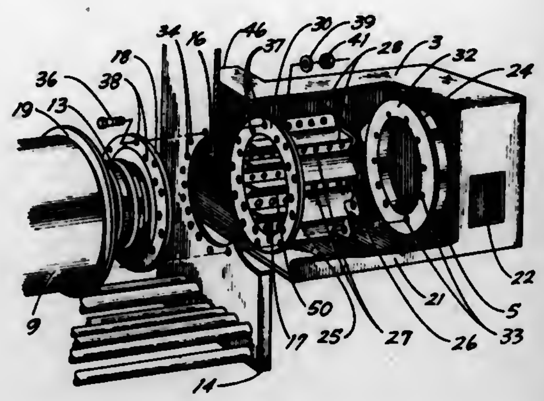
Virgil O. Rowlett, R.R. 2, Deputy, Ind.
Filed Dec. 2, 1971, Ser. No. 204,087
Int. Cl. F23q *2/38*
U.S. Cl. 431—124 **7 Claims**



A flint injection apparatus is provided for use with a lighter which utilizes a flint and a flint wheel for ignition. A spring biased plunger is carried in a casing. A trigger having an external portion and a portion slidably carried in an adjacent trigger casing is operatively associated with the plunger. A plurality of flints carried in an adjacent casing will pass, one at a time, through an opening into the plunger casing when the trigger is despressed and the lighter is properly oriented, permitting flints to be easily and rapidly changed.

3,728,071
BURNER ASSEMBLY

Paul A. Mutchler, University City, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed July 10, 1972, Ser. No. 270,157
Int. Cl. F23d *13/40*
U.S. Cl. 431—352 **2 Claims**



A burner assembly for a gas-fired furnace including a heat exchanger mounted in a housing in heat transfer relation with flowing air passing over the heat transfer surface of the heat exchanger, the gas burner assembly including a chamber of serrated cross-section, each serrated cross-section being a generally V-shaped pocket therein whereby fuel enters the chamber parallel to the axis of the chamber and each V-shaped pocket includes two flanks, a first flank having at least one aperture therein for combustion air to enter the chamber tranversely of the fuel passing through each V-shaped pocket, and a second flank having a baffle attached thereto whereby the fuel gas and the air mixing in the pockets are directed tangentially toward the center of the chamber.

CHEMICAL

3,728,072
NOVEL ACRYLONITRILE POLYMER FIBERS AND PROCESS FOR PRODUCING THE SAME

Zen-Ichi Orito, Hiroshi Sugimoto, Minoru Uchida, Hajime Sahara, Masatoshi Takesue, and Kiyoharu Nishida, Nagoya-shi, Aichi-ken, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan
Filed July 23, 1969, Ser. No. 844,105
Claims priority, application Japan, July 31, 1968, 43/54,103; Nov. 29, 1968, 43/87,438
Int. Cl. D02g *3/02, 3/24;* **D06m** *3/18*
U.S. Cl. 8—115.5 **8 Claims**

An acrylic fiber is provided with protuberances of more than 0.2μ height at intervals in the range of 1.5 to 12μ on the peripheral surface thereof. This novel acrylic fiber is manufactured by treating the fiber with a denaturalizing agent such as alkali metal hydroxides, sulfuric acid, hydroxylamine salts, and hydrazine, and immersing the treated fiber into a shrinking agent such as glycols, hydrotropic agents, metals having a low melting point and organic carbonate or γ-butyrolactone solutions which can dissolve the acrylonitrile polymer.

3,728,073
METHOD OF MAKING FLAME RESISTANT TEXTILES BY SUBSTITUTION OF C, H, O BY Mo OR W

Walter G. Pleskun, % David Clark Company Incorporated, 360 Franklin St., Worcester, Mass. 01604
Continuation-in-part of abandoned application Ser. No. 705,001, Feb. 13, 1968. This application May 20, 1971, Ser. No. 145,232
Int. Cl. D06c *7/04;* **D06m** *1/22, 3/28*
U.S. Cl. 8—115.5 **40 Claims**

An initial base material containing carbon and hydrogen atoms, preferably a textile in fiber form is heated with a reacting component containing a metal atom for the purpose of replacing part at least of the carbon and hydrogen atoms to increase the heat resistance and flame proof properties of the base material. The base material is preferably of the nylon type comprising a long chain polymeric amide, hereinafter frequently referred to simply as a polyamide, having recurring amide groups as an integral part of the main chain. Such base material is preferably heated with a reactive component or substance in a suitable vehicle or solvent. Such reactive component is preferably one containing a molybdenum atom though substances containing other metal atoms have been successfully employed. The base material is preferably thoroughly saturated with the reactive component, preferably molybdenum disulphide, in a suitable solvent or vehicle whereby a coating adheres to the base material. The saturated base material is then preferably dried and thereafter passed into a reaction chamber preferably in the presence of a catalyst and subjected to a high temperature which may range from about 600° F. to about 1200° F., preferably between about 700° F. and about 1100° F. and where a gaseous catalyst is employed preferably between about 700° F. and about 900° F. A temperature of about 800° F. has been found suitable for most purposes. The catalyst may be supplied in the saturating bath or when in gaseous form may form part of the atmosphere within the reaction chamber. Where a gaseous catalyst is employed it is preferably a halogen or halide such as fluorine, chlorine or hydrofluoride. After the reaction takes place the treated base material may be washed, rinsed and again dried. Suitable additives may be employed to improve the process such as anti-oxidants, surfactants and wetting agents of various types.

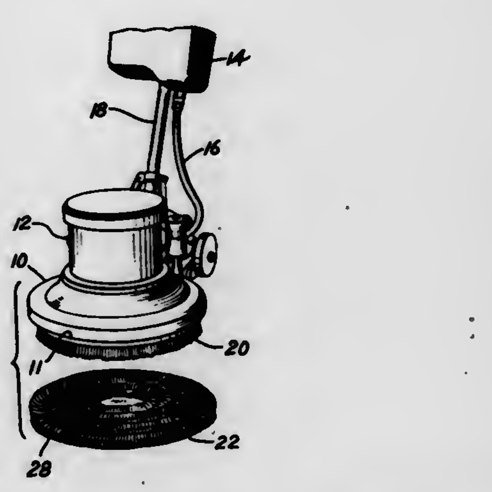
3,728,074
PROCESS FOR THE CLEANSING OF GARMENTS AND TEXTILES

Irving Victor, Minneapolis, Minn., assignor to Research Development Co., Minneapolis, Minn.
Filed June 13, 1961, Ser. No. 116,833
Int. Cl. D06l *1/02, 1/04, 1/10*
U.S. Cl. 8—142 **8 Claims**

A process of drying cleaning textiles and garment materials with compositions including 1,1,2-trichloro-1,2,2-trifluoroethane, trichloromonofluoromethane, and methyl chloroform, wherein the materials are washed and dried at low temperature, together with steps or procedures for the economical handling and recovery of solvent.

3,728,075
METHOD OF SHAMPOOING CARPET ON LOCATION

Bernard M. Cannan, Downers Grove, Ill., assignor to Servicemaster Industries Inc.
Filed Apr. 13, 1971, Ser. No. 133,601
Int. Cl. B08b *1/04;* **A47l** *11/34*
U.S. Cl. 8—147 **10 Claims**



Shampooing pile carpets on-location using mopheads made from a combination of seventy percent nylon, twenty percent cotton and ten percent rayon yarns. The looped yarns are aligned transversely to the direction in which the mop travels. The mop configurations are either circular, for use with rotary carpet shampoo devices or cylindrical for use with revolving drum type shampoo devices. In using either of said devices a liquid detergent in predetermined quantities is applied to the carpet, and the mophead is mechanically moved over the wetted area to shampoo the pile. The resilient nylon fibers sustain the weight of the device and provide an aggressive scrubbing action helping to release the soil from the fibers. The absorbent cellulosic yarns in the mop soak up the soiled liquid detergent.

3,728,076

PROCESS FOR THE HEAT-SETTING OF PADDED AND PRINTED ENDLESS SYNTHETIC FILAMENT GROUPS AND TOP SLIVERS

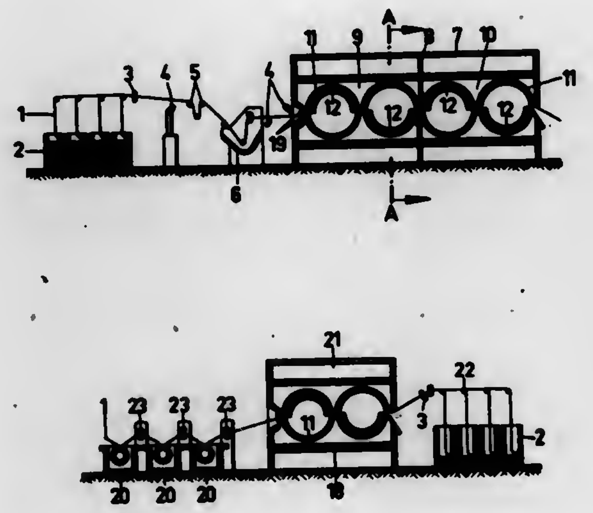
Heinz Fleissner, Egelsbach near Frankfurt Main, Germany, assignor to Vepa AG, Basel/Schweiz, Germany

Continuation-in-part of Ser. Nos. 676,780, Oct. 20, 1967, and Ser. No. 786,042, Dec. 23, 1968, Pat. No. 3,533,145. This application Feb. 6, 1970, Ser. No. 9,386

Claims priority, application Germany, Feb. 6, 1969, P 19 730.8

Int. Cl. D06c *1/08*

U.S. Cl. 8—149.1 **11 Claims**



The present disclosure is directed to a process for the continuous pad-dyeing or printing of continuous synthetic filament groups with dyestuffs which set under the influence of heat which comprises padding or printing synthetic filament groups with a treatment liquor containing dyestuffs and other auxiliary agents and passing steam which has been superheated to a temperature of about 170° to 230°C through the filament groups.

3,728,077

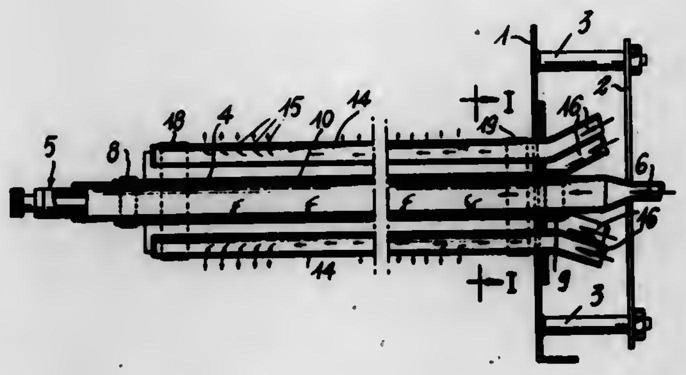
METHOD FOR REELED YARN DYEING AND APPARATUS FOR CARRYING THE METHOD INTO EFFECT

Giampiero Cadonati, Viale Vittorio Emanuele, 61/B, Bergamo, Italy

Filed Aug. 12, 1971, Ser. No. 171,102

Int. Cl. B05c *8/02*

U.S. Cl. 8—155.1 **7 Claims**



A method for reeled yarn dyeing as accomplished by operating from inside the yarn winding completely devoid of support, expansion means being provided for producing, upon expansion, individual tight-sealed compartments, in which the dye injectors are accomodated, and apparatus for carrying the method into effect.

3,728,078

TEXTILE DYE CARRIER EMULSIFIER COMPOSITION AND PROCESS FOR DYEING POLYESTERS THEREWITH

Ben N. Freshwater, Chattanooga, and Robert C. Goodrich, Signal Mountain, Tenn., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,163

Int. Cl. D06p *1/68*

U.S. Cl. 8—174 **11 Claims**

A liquid dye carrier composition including by weight about 60 to about 100% of a normally liquid alkylated biphenyl, about 40 to 0% biphenyl and about 5 to about 20% of anionic and/or nonionic emulsifiers based on the weight of the alkylated biphenyl. The liquid alkylated biphenyl may be employed alone or as a liquid isomeric mixture in a dye bath for dyeing polyester fibers and other articles having a synthetic polymer or other basis.

3,728,079

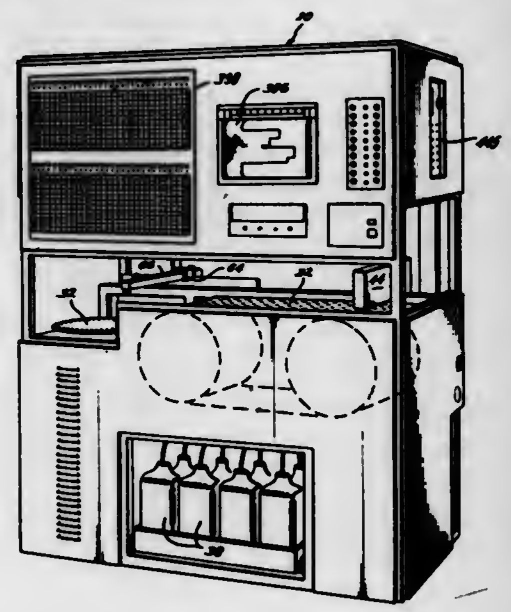
AUTOMATIC CHEMICAL TESTING APPARATUS

John J. Moran, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.

Original application June 14, 1968, Ser. No. 737,065, now Patent No. 3,622,279. Divided and this application June 21, 1971, Ser. No. 155,152

Int. Cl. G01n *1/14, 33/16*

U.S. Cl. 23—253 R **13 Claims**



A discretionary automated chemical testing apparatus for conducting multiple chemical tests on a plurality of samples. A loop conveyor carrying rows of tubes along various stations at which steps in chemical testing is performed with a sample dispensing assembly picking up and dispensing test samples in the tubes, a reagent dispensing assembly metering desired amounts of reagents at the proper stations, heating means at the stations as required for the chemical tests being performed, a testing assembly analyzing the results, tube cleaning and drying means preparing the tubes for reuse, and control means selectively controlling the sequential and multiple analysis.

3,728,080

CONTROL APPARATUS FOR AUTOMATIC CHEMICAL TESTING APPARATUS

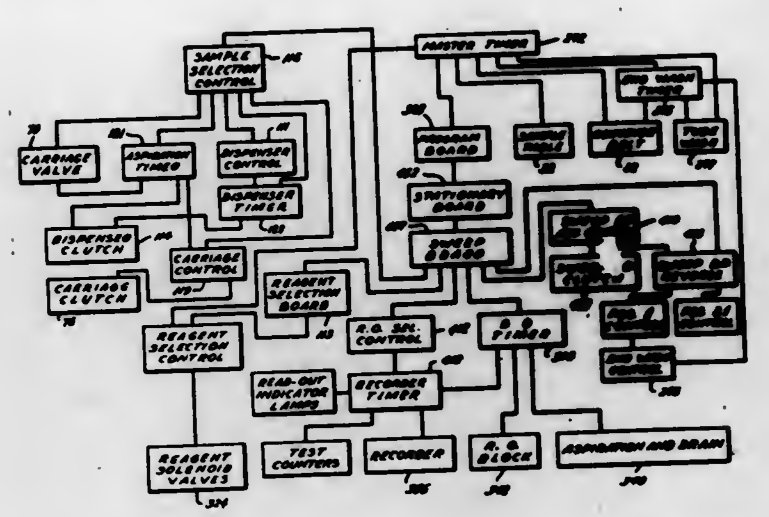
John J. Moran, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.

Original application June 14, 1968, Ser. No. 737,065, now Patent No. 3,622,279. Divided and this application June 21, 1971, Ser. No. 155,155

Int. Cl. G01n *1/14, 33/16*

U.S. Cl. 23—259 **12 Claims**

The improvement in a control apparatus in a chemical testing apparatus in which a plurality of reaction tubes are carried by a loop conveyor sequentially through various positions where samples are dispensed in the reaction tubes at a first position, reagents are injected into the tubes at predetermined positions, and readout means analyze the contents of the tubes at a predetermined position having a discretionary program selection board with an actuating switch for each tube carried by the conveyor for selectively programming chemical tests to be performed on each sample. A first electrical contact board electrically connected to the program selection board, and a second movable contact board movably indexed relative to the first board as the conveyors index with the second board having contacts electrically connected to and controlling sample dispensing, reagent injecting and the readout means as the second board indexes. A reagent selection board having a plurality of position receptacles corresponding to possible positions for injecting reagents into the tubes and connected to the reagent injecting means and electrically connected to the second movable contact board for actuation as the second board is indexed.



3,728,081

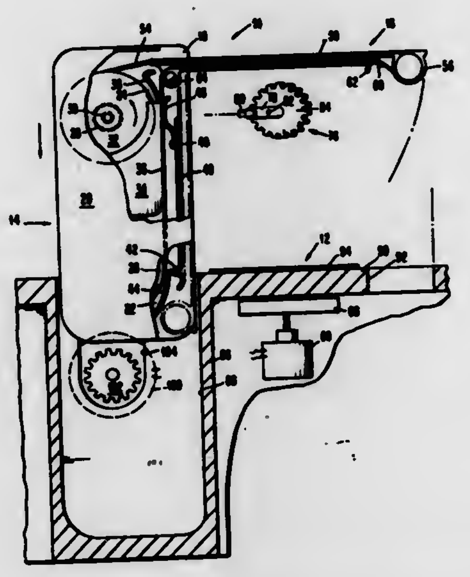
TAPE CARTRIDGE FOR USE IN AUTOMATED SAMPLE ANALYSIS APPARATUS

Edward J. Bidanset, Amawalk, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed July 8, 1971, Ser. No. 160,858

Int. Cl. G01n *31/00*

U.S. Cl. 23—259 **7 Claims**



A tape cartridge for use in automated sample analysis apparatus, including a casing having a tape supply portion and a tape take-up portion and permitting the exit from and return of the tape to the casing in a loop in its transport from the supply portion to the take-up portion. An elongated tape platen to longitudinally receive the loop of the tape may be hinged at one end of the platen to the casing to fold and lie along a portion of the casing in a stored position of the platen. The tape platen is swingable outwardly from the casing to an operative projecting position in which it coacts with external apparatus at opposite sides of the platen, the tape being adapted to receive a substance thereon utilized in sample analysis.

3,728,082

APPARATUS FOR LIQUID-LIQUID EXTRACTION

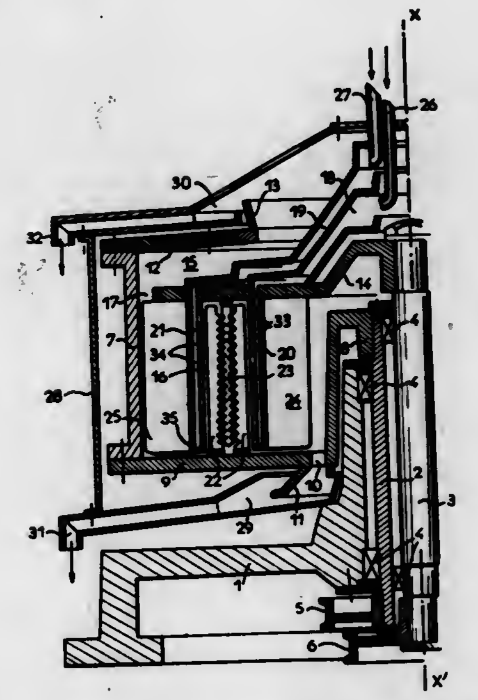
Francois Joseph Henri Hubert Mathieu and Odile Jeanne Marie Mathieu, both of 18 Rue d'Edimbourg, Calais, France

Filed Oct. 29, 1968, Ser. No. 784,273

Claims priority, application France, Oct. 31, 1967, 126,467

Int. Cl. B01d *11/04*

U.S. Cl. 23—269 **2 Claims**



The invention is concerned with a process and apparatus for carrying out liquid-liquid extraction by counterflow contact, wherein the two liquids move in a direction opposite to each other under the action of a centrifugal field and are subjected to agitation for dispersing them in one another.

3,728,083

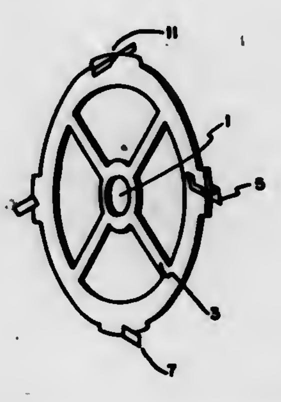
POLYMER FINISHER

Julius Greenburg, Richmond; Laszlo Joseph Balini, Chester, and William Norman Russell, Colonial Heights, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed March 3, 1971, Ser. No. 120,582

Int. Cl. B01j *1/00;* **C08f** *1/98*

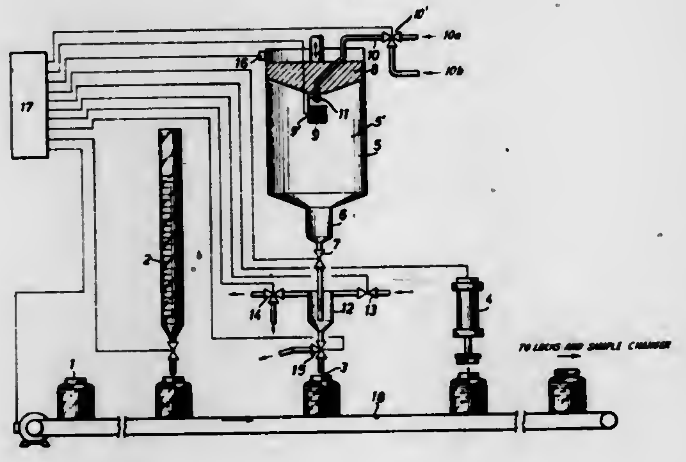
U.S. Cl. 23—285 **2 Claims**



Apparatus for promoting polymerization reactions such as polyester wherein an inner edge of the rim of a wheel in the rotating element of the apparatus is left intact in a continuous circle, and projections of specific designs are attached wherein pumping action can be obtained without interfering with the ability of the wheel to film polymer melts up to about 100,000 poises viscosity.

3,728,084
DEVICE FOR PREPARING COMBUSTIBLE SAMPLES CONTAINING COMPOUNDS LABELED WITH ^3H AND ^{14}C FOR MEASUREMENT OF THEIR RADIOACTIVITY

Wolfgang Hulsen, Spock, Germany, assignor to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany
Filed June 1, 1970, Ser. No. 42,464
Claims priority, application Germany, May 31, 1969, P 19 27 927.7; May 13, 1970, P 20 23 251.3
Int. Cl. G01n *31/12;* G01t *1/20;* G21h *5/00*
U.S. Cl. 23—253 PC **12 Claims**



A device for the preparation of combustible samples containing compounds labeled with ^3H and ^{14}C for measuring their radioactivity in a liquid scintillation counter device. The device includes a transport device which advances any number of flasks into position with respect to a burette, a combustion chamber, and a sealing and numbering device. The flasks receive a charge of scintillator solution from the burette, an absorber solution containing combusted samples from an absorber which is connected by an appropriate valve to the combustion chamber, and a seal from the sealing and numbering device.

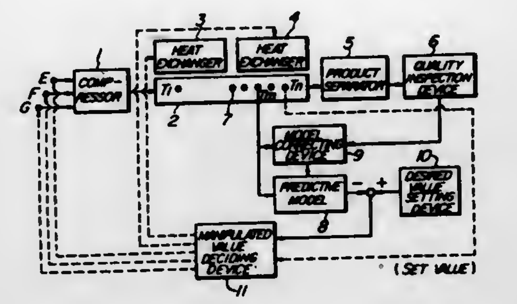
The combustion chamber includes a holder for carrying the samples, an electric ignition device and an injection device for flushing the combustion chamber after combustion.

To coordinately control the activity of the various parts of the device a control unit is provided.

3,728,085
PREDICTIVE CONTROL SYSTEM FOR POLYMERIZING ETHYLENE

Shunichiro Horiguchi, Shunichi Iizuka, and Masato Takami, Tokyo, Naomichi Furutani, Higashi-Murayama, and Koichi Haruna and Tomoo Ishikawa, Kodaira, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan
Filed Sept. 15, 1970, Ser. No. 72,328
Claims priority, application Japan, Oct. 1, 1969, 44/78,284
Int. Cl. C08f *1/98*
U.S. Cl. 23—284 **2 Claims**

In a tubular ethylene polymerization apparatus in which a mixture of ethylene gas, an initiator, a modifier and other required agents are compressed in a compressor and supplied into a tubular reactor for causing a polymerizing reaction in the reactor under heat exchange and the reaction product is passed through a product separator to separate an ethylene polymer from any unreacted gas, the quality of the ethylene polymer thus obtained being then measured by a quality inspection device, a predictive control system comprising temperature detecting means for detecting the temperature distribution within the reactor, a predictive model for predicting a quality value from the temperature value detected in a highest reaction zone in the reactor, a model correcting device for correcting the predictive model on the basis of the detected temperature value and the measured quality value, and a manipulated value deciding device for changing one or more manipulated variables controlling the reaction within the reactor depending on the deviation of the predictive quality value from a desired quality value.



3,728,086
METHOD OF PREPARING AMMONIUM PERCHLORATE CRYSTALS OF CONTROLLED SIZE

Arnold Adlcoff, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Apr. 17, 1969, Ser. No. 818,184
Int. Cl. C01d *1/30*
U.S. Cl. 23—302 **5 Claims**

A method for preparing uniform well-defined ammonium perchlorate crystals of controlled size which comprises dissolving ammonium perchlorate in an organic solvent and then precipitating in a mixture of an organic solvent and non-solvent for ammonium perchlorate. The ratio of solvent to non-solvent in the precipitating solution determines the size of the resulting crystals.

3,728,087
COBALT II HALIDE HYDRAZINE COMPLEXES

Christian H. Stapfer, Newtown, and Richard W. D'Andrea, New Hope, Pa., assignors to Cincinnati Milacron Chemicals, Inc., Reading, Ohio
No Drawing. Filed Apr. 6, 1970, Ser. No. 26,161
The portion of the term of the patent subsequent to Mar. 14, 1989, has been disclaimed
Int. Cl. C01b *21/00;* C01c *1/00*
U.S. Cl. 423—413 **15 Claims**

Cobalt (II) halide trihydrazinates of the formula

$$[Co(II)(R—NH—NH_2)_3]X_2$$

are prepared as well as cobalt (II) halide tris(hydrazine hydrochloride) complexes of the formula

$$[Co(II)(N_2H_4 \cdot HX)_3]X_2$$

where R is H, alkyl, aryl, haloaryl and X is halogen. The compounds are useful as driers for alkyl resins and to accelerate the oxidative polymerization of olefinic polymer systems, particularly unsaturated polyesters, in conjunction with organic peroxides and as promoters for ketone aldol condensation. Known Co II complexes of the formula $[Co(II)(R—NH—NH_2)_3]X_2$ also have these same uses.

3,728,088
SUPERALLOYS BY POWDER METALLURGY

John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 709,700, Mar. 1, 1968, now Patent No. 3,591,362, dated July 6, 1971. This application Aug. 25, 1969, Ser. No. 852,861
Int. Cl. B22f *1/00*
U.S. Cl. 29—182.5 **4 Claims**

This invention relates to the powder metallurgy of superalloys and, in particular, to dispersion strengthened age hardenable superalloys and wrought products thereof. The invention also relates to a powder metallurgy method for producing wrought metal shapes of age hardenable superalloys, such as dispersion strengthened superalloys characterized metallographically by a uniform distribution of dispersoids in both the longitudinal and transverse directions.

3,728,089
ALUMINUM-SILICON BASE SINTERED POROUS BEARING METALS

Takeo Segawa and Kenichi Tsuru, Fujisawa, Japan, assignors to Oiless Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 13, 1970, Ser. No. 63,429
Claims priority, application Japan, Aug. 22, 1969, 44/66,002
Int. Cl. B22f *1/00*
U.S. Cl. 29—182.5 **4 Claims**

Aluminum base sintered bearing metals having various advantages can be obtained from metal powders particularly including 5 to 50% by weight of silicon. It has been found that the addition of silicon substantially reduces the tendency of aluminum base metals to cause heat seizure and helps to prevent the surface clogging of the sintered product. Also, the metal mixture to be sintered including silicon powder has an improved compactibility.

3,728,090
SEMICONDUCTOR BONDING ALLOY

Joe G. Hoffman, Richardson, and Donald J. Manus, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed June 30, 1970, Ser. No. 51,253
Int. Cl. B32b *15/04*
U.S. Cl. 29—195 **3 Claims**

A bonding alloy for semiconductors and the like comprises a ternary alloy containing aluminum, germanium and zinc. The preferred embodiment of the invention comprises the aluminum-germanium-zinc ternary eutectic alloy which melts at 370° C. and which includes 20 wt. percent aluminum, 23 wt. percent germanium and 57 wt. percent zinc. In the use of the invention, a quantity of aluminum-germanium-zinc alloy material is positioned between a semiconductor device and a device receiving member. The resulting assembly is then heated to above the melting temperature of the alloy material, whereupon the alloy material bonds the semiconductor device to the device receiving member.

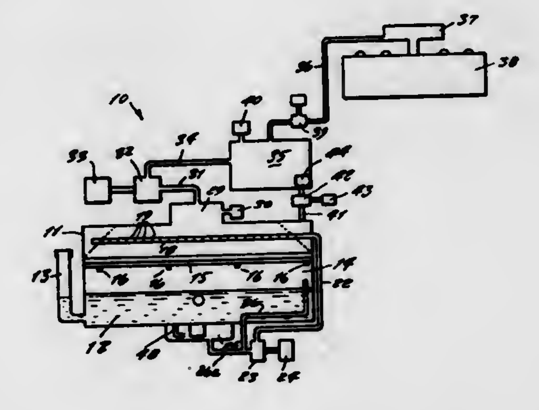
3,728,091
DISTILLATE PETROLEUM HYDROCARBON FUEL COMPOSITIONS CONTAINING NOVEL MULTIFUNCTIONAL ADDITIVES

Norman Jacobson and Jack Ryer, East Brunswick, N.J., assignors to Esso Research and Engineering Company
No Drawing. Continuation of abandoned application Ser. No. 739,178, June 24, 1968. This application Oct. 29, 1971, Ser. No. 193,693
Int. Cl. C10l *1/22*
U.S. Cl. 44—63 **2 Claims**

Distillate petroleum hydrocarbon fuel compositions such as gasolines, jet fuels or diesel fuels are compounded to contain small amounts of at least one amide formed by condensing a basic six-membered heterocyclic organic compound containing only carbon atoms and not more than two nitrogen atoms in the ring and wherein the compound contains at least one nitrogen atom containing at least one hydrogen atom attached thereto, with an acidic compound which may be an aliphatic mono or dicarboxylic acid, its anhydride or the corresponding acid halides or derivatives thereof containing from 6 to 20 carbon atoms per molecule. Between about 5 and 150 pounds of additive is used per 1000 barrels of distillate fuel. Generally between about 0.001 and about 1 wt. percent of the admixture is used. Such additives impart cleanliness, rust inhibiting and detergency properties to the fuels.

3,728,092
PETROLEUM OIL VAPORIZER

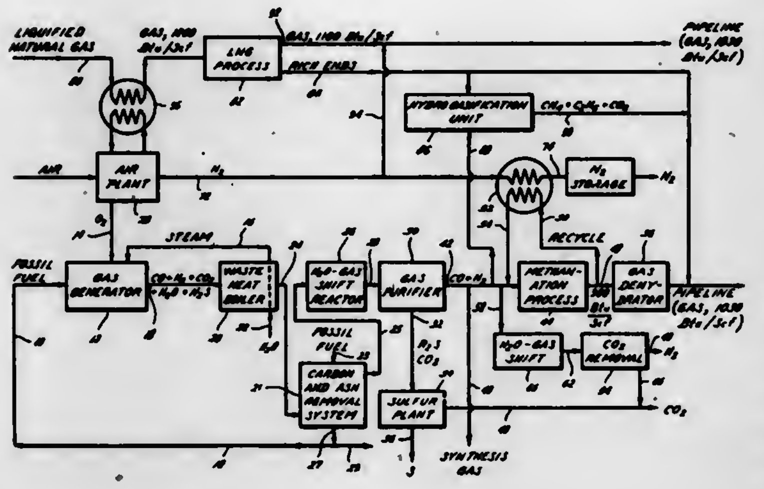
James J. Gorman, Jr., 207 Tanglewood Ave., Charleston, S.C. 29407
Filed Jan. 14, 1971, Ser. No. 106,407
Int. Cl. F02m *31/12*
U.S. Cl. 48—102 R **4 Claims**



A device for producing vapor from a petroleum product such as gasoline or the like, the device comprising a compressed vapor tank which intercepts a vapor line between a gasoline tank and either a fuel injection system or a carburetor of a gasoline engine, the gasoline tank in the present invention having a lower section for liquid gasoline above which there is a vaporizing space and a baffle plate with four drain openings, there being additionally a spray pipe of perforated type along the apex of an inverted V-shaped baffle above which there is a zig-zag path formed by parallel baffles, the path leading to a gas dome vapor collector, the collector being connected to a vapor compressor form which a discharge extends to the compressed vapor tank and from there through a line to the carburetor or injection system of an internal combustion engine.

3,728,093
PRODUCTION OF SYNTHETIC PIPELINE GAS

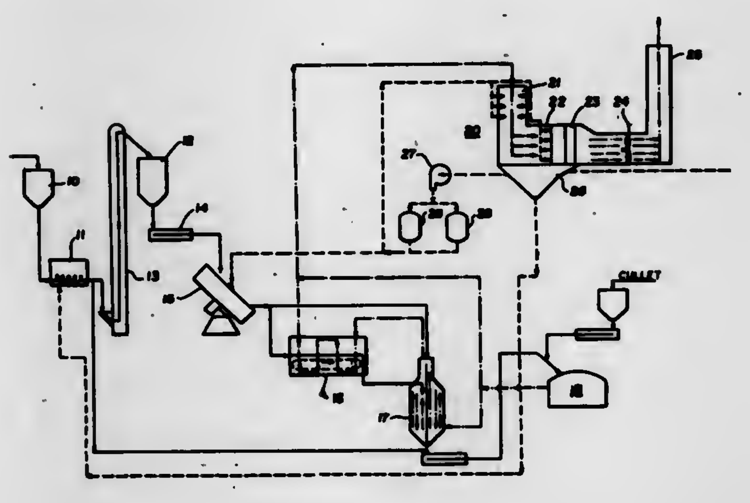
William W. Cofield, Houston, Tex., assignor to Transcontinental Gas Pipe Line Corporation, Houston, Tex.
Filed Oct. 14, 1971, Ser. No. 189,144
Claims priority, application Great Britain, Oct. 16, 1970, 49,372/70
Int. Cl. C01b *2/14*
U.S. Cl. 48—190 **8 Claims**



Apparatus for production of synthetic pipeline gas of desired heating value by integrating a system of producing synthetic gas from a carbonaceous material in a gas generator with a system of processing a liquefied natural gas whereby the leaner output from the gas generator is advantageously combined with the richer output from the liquefied natural gas system to provide the desired gas heating value, and the cold temperatures of the liquefied natural gas system is advantageously utilized in the gas generator system.

3,728,094
PROCESS OF MAKING GLASS

George A. Bowman, Pittsburgh, Pa., assignor to Bowman and Associates, Inc.
Filed July 15, 1971, Ser. No. 162,789
Int. Cl. C03b *5/16*
U.S. Cl. 65—27 **6 Claims**



The specification discloses a process for making glass in which, by a combination of integrated steps, waste chemicals in the form of vapor or particulates now lost up the glass furnace stack to atmosphere are recovered and recycled into either agglomerated or unagglomerated glass batch. Also chemicals normally discharged to the sewer in a waste water stream are recovered and recycled into either agglomerated or unagglomerated glass batch. The process also enables recovery and recycling into the glass batch of a substantial percentage of the B.t.u. content of the fuel supplied to melt the glass batch in a standard furnace. The process enables compliance with most regulations regarding air and stream pollution.

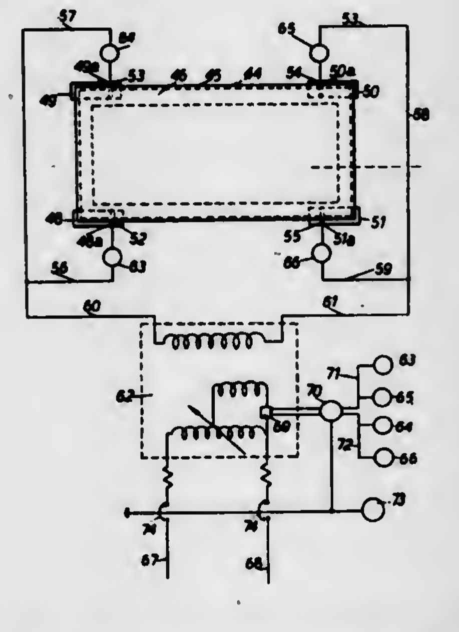
3,728,095
CHEMICALLY-STRENGTHENED GLASS-ENCAPSULATED GLASS ARTICLES AND PROCESS THEREFOR

Everett F. Grubb, Friedrich W. Hammer, and Joseph R. Monks, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
No Drawing. Continuation of application Ser. No. 606,550, Jan. 3, 1967. This application Feb. 16, 1971, Ser. No. 115,876
Int. Cl. C03b *29/00;* **C03c** *15/00*
U.S. Cl. 65—30 **11 Claims**

Forming glass articles by encapsulating a main body of a base glass composition with a glass of a different, denser composition during the glass gob-forming stage, forming a glass article from the gob wherein the main body portion is of the base glass and has at least its outer surface covered by the encapsulating glass and heat treating the article to provide an alkali metal ion exchange between abutting glass surfaces so that the surface of the base glass body is under tension and the surface of the encapsulating glass is under compression. The outer surface of the article may subsequently be subjected to an ion-exchange treatment to further increase its compressive stress.

3,728,096
METHOD AND APPARATUS FOR ELECTRICALLY WELDING A DOUBLE WALLED GLAZING UNIT

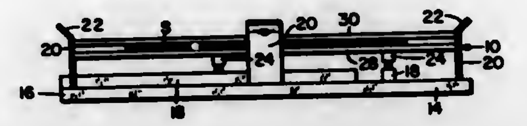
Frederick Harry Hart, Bolton, and William McFegan, St. Helens, England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England
Filed Oct. 16, 1970, Ser. No. 81,340
Claims priority, application Great Britain, Oct. 17, 1969, 51,231/69
Int. Cl. C03b *23/20*
U.S. Cl. 65—40 **11 Claims**



A glass article, e.g. an all-glass multiple glazing unit, is manufactured by uniting at least two glass parts by a continuous weld. The regions of the glass parts to be united are heated to soften the regions and to form the desired weld. This step of heating the region is performed by passing electrical heating currents through said region along two different paths of substantially equal resistance.

3,728,097
COMPRESSION SAGGING OF SHEET GLASS

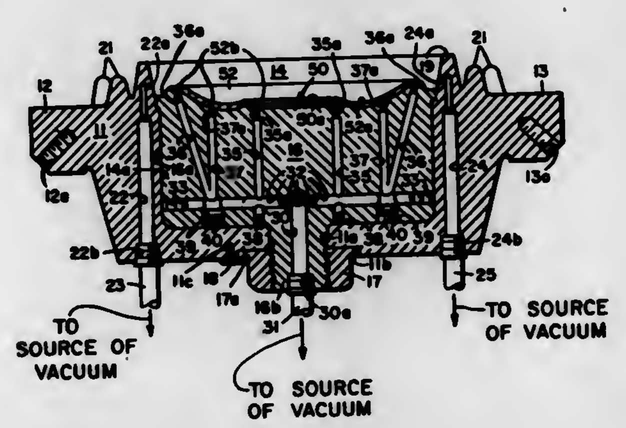
Lewis L. Bognar, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Apr. 9, 1971, Ser. No. 132,757
Int. Cl. C03b *23/02*
U.S. Cl. 65—102 **4 Claims**



The surface characteristics of as-drawn glass sheet are provided with improved flatness uniformity by positioning such sheet between a pair of precision ground fused silica slabs and subjecting such assembly to controlled radiant heat energy for a predetermined period so as to compressibly sag the sheet between the fused silica slabs and thereby provide improved surface flatness not heretofore obtainable.

3,728,098
MOLD ASSEMBLY

James W. Giffen, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed May 14, 1971, Ser. No. 143,474
Int. Cl. C03b *9/00*
U.S. Cl. 65—361 **4 Claims**



A mold assembly for vacuum forming articles of molten thermoplastic material such as a glass making material. A mold member is separably supported in a cavity of a mold support member with the facing surfaces of the walls of such members in intimate contact with each other. The forming surface of the mold member which is contacted by the thermoplastic material during the forming thereof comprises a foraminous or perforated ceramic coating of a thermal barrier material, the foramina of the coating extending therethrough and connecting said forming surface with vacuum passages extending through the mold member to the exterior thereof for connection with a source of vacuum for the vacuum forming purposes.

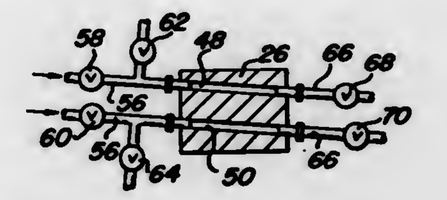
3,728,099
METHOD FOR THE TREATMENT OF SEEDS

James William Chiles, Jr., 1710 7th St., Clarksdale, Miss. 39614
No Drawing. Continuation-in-part of application Ser. No. 667,085, Sept. 12, 1967, now Patent No. 3,617,247. This application Mar. 1, 1971, Ser. No. 111,027
The portion of the term of the patent subsequent to Nov. 2, 1988, has been disclaimed
Int. Cl. A01n *21/02*
U.S. Cl. 71—77 **18 Claims**

A method is disclosed for increasing the yield of seedlings emerging from seeds in soil and stimulating the growth of said seedlings by contacting the seeds with a growth-enhancing amount of a compound comprising a carbamylalkenyl phosphorous ester, preferably the dimethyl phosphate of 3-hydroxyl-N-methyl-cis-crotonamide. The growth-enhancing compounds can be applied to the seeds in conjunction with known fungicides, such as, the compound O,O-diethyl-S-2(ethylthio)ethyl phosphorodithioate. The method not only accelerates the growth of the seedlings, but also increases the yield of harvestable crop. The method is particularly suited to the treatment of cottonseeds.

3,728,100
ELECTRIC FURNACE, PARTICULARLY OF THE TYPE—USING A DRY CRUCIBLE TO MELT HIGHLY REACTIVE METALS, AND METHOD

Patrick J. Wooding, Moorestown, N.J., assignor to Consarc Corporation, Rancocas, N.J.
Continuation-in-part of application Ser. No. 776,476, Nov. 18, 1968. This application Sept. 3, 1969, Ser. No. 855,001
Int. Cl. C21c *5/52;* **C22d** *7/04;* **H05b** *7/18*
U.S. Cl. 75—10 **31 Claims**



In the preferred embodiment the number of melts per unit time is increased for an electric furnace which uses a crucible to absorb the excess heat load by providing:

(1) Means to rapidly cool the crucible after the power has been removed, or

(2) Small, isolated quantities of water which reduce the explosion hazard.

The cooling means takes the form of passages which extend through the crucible and are connected to a source of water. Water is permitted to enter the passages only after the power has been removed or in small quantities only. When using the dry skull technique, the crucible will have been substantially emptied of molten metal. Means are provided to pass inert gas through the passages to clear residual water.

3,728,101
PROCESS FOR MAKING STAINLESS STEEL

John C. d'Entremont, Middletown, and Charles R. Taylor, Trenton, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
No Drawing. Filed Nov. 9, 1970, Ser. No. 88,181
Int. Cl. C21c *5/52;* **C22c** *39/14*
U.S. Cl. 75—11 **9 Claims**

An economical process for making a molten ferrous alloy containing from about 5.0 to 30.0% by weight chromium, and up to about 25.0% by weight nickel, which process includes the steps of preparing a charge consisting primarily of the ores of chromium and iron, smelting and reducing said charge by the submerged-arc process in a first vessel to yield a high carbon, high silicon molten alloy, transferring said alloy to a second vessel, directing gaseous oxygen thereagainst to reduce the carbon and silicon, and thereafter introducing a mixture of gaseous oxygen and an inert gas into said molten alloy below the surface thereof to complete the refining and to minimize the loss of chromium.

3,728,102

ANTI-PIPING COMPOSITION FOR THE PRODUCTION OF METAL INGOTS AND CASTINGS

William T. Buckingham, Cleveland, Ohio, assignor to Foseco International Limited, Nechells, Birmingham, England

No Drawing. Continuation of abandoned application Ser. No. 783,703, Dec. 13, 1968. This application Mar. 1, 1971, Ser. No. 119,943

Claims priority, application Great Britain, Dec. 13, 1967, 56,704/67

Int. Cl. C22b *9/08, 9/10*

U.S. Cl. 75—94 **8 Claims**

Anti-piping compositions comprising aluminium and oxidising agent are improved by the addition of a flame generating material such as paper pulp, sawdust, wood flour or cob flour.

3,728,103

METHOD OF REMOVING METAL VALUES FROM SOLUTION

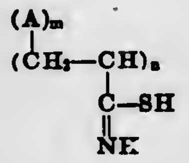
Marina Osipovna Lishevskaya and Alexandr Davidovich Virnik, Moscow, Genrikh Aramaisovich Gabrielian, Mytischi, Moskovkaya Oblast, Zakhar Alexandrovich Rogovin, Moscow, and Vladimir Fedorovich Borbat, Alexandr Mikhailovich Orlov, Mirriam Borisovna Ferberg, and Nina Ivanovna Markelova, Norilsk, U.S.S.R., assignors to Moskovsky textilny Institut, Moscow, U.S.S.R.

No Drawing. Filed June 22, 1970, Ser. No. 48,518

Int. Cl. C22b *43/00, 11/04*

U.S. Cl. 75—101 BE **11 Claims**

The present invention relates to new compounds which are grafft copolymers of cellulose and polyacrylthioamide and graft copolymers of synthetic polymers and polyacrylthioamide with the general formula



$$\begin{array}{l}(A)_m\\ |\\ (CH_2\text{—}CH)_n\\ \quad\quad\;\; |\\ \quad\quad\;\; C\text{—}SH\\ \quad\quad\;\; \|\\ \quad\quad\;\; NH\end{array}$$

wherein

A is cellulose or a synthetic polymer,

m is the degree of polymerization of cellulose and the degree of polymerization of such synthetic polymer ranging from 150 to 2,000,

n is the degree of polymerization of polyacrylthioamide ranging from 400 to 4,000, as well as to a method of producing said new compounds and to application thereof.

The method of producing said compounds resides in treating graft copolymers of cellulose and polyacrylonitrile, or graft copolymers of synthetic polymers and polyacrylonitrile, with hydrogen sulphide or with salts of hydrosulphuric acid in an aqueous or an organic medium at a temperature of 60–100° C. and subsequently isolating the target product.

The herein-proposed compounds can find application as electron-exchange complex-forming materials in chemical industry, metallurgy, and in other industries.

3,728,104

COBALT RECOVERY

Thomas Hunter Coffield, Orchard Lake, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Apr. 29, 1971, Ser. No. 138,757

Int. Cl. C22b *3/00*

U.S. Cl. 75—101 BE **18 Claims**

A process for recovery of cobalt from a hydrometallurgical reaction mixture prepared in a process for winning cobalt and/or nickel by contacting the reaction mixture containing cobalt tetracarbonyl anion with a strong acid and decomposing the cobalt carbonyl hydride formed to cobalt carbonyl, separating the cobalt carbonyl from the acidified reaction mixture and thermally decomposing the cobalt carbonyl to metallic cobalt and recovering the metallic cobalt.

3,728,105

EXTRACTION OF METAL VALUES FROM MANGANESE DEEP SEA NODULES

Roald R. Skarbo, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,131

Int. Cl. C22b *3/00, 5/00, 15/10*

U.S. Cl. 75—103 **11 Claims**

Copper, nickel, cobalt and molybdenum may be leached from deep sea manganese nodules using an aqueous ammoniacal ammonium solution at elevated temperatures and pressures.

3,728,106

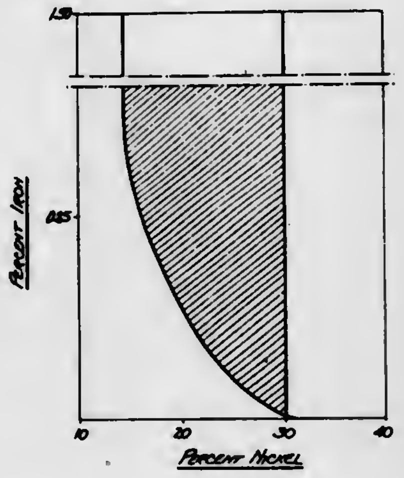
WROUGHT COPPER-NICKEL ALLOY

Frank A. Badia, Ringwood, N.J., David B. Anderson, Wilmington, N.C., and Gary N. Kirby, Ann Arbor, Mich., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,541

Int. Cl. C22c *9/06*

U.S. Cl. 75—159 **7 Claims**



Wrought copper-nickel alloys containing special amounts of chromium exhibit improved resistance to the impingement erosion effects of high velocity seawater. Small amount of iron also improve "parting" corrosion characteristics of alloys of lower nickel content.

3,728,107

ADDITIVES FOR PRODUCTION OF CAST IRONS

Domingos Loricchio, Sao Paulo, Brazil, assignor to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Original application Feb. 16, 1971, Ser. No. 115,694, now Patent No. 3,682,625, dated Aug. 8, 1972. Divided and this application Jan. 3, 1972, Ser. No. 214,961

Int. Cl. C22c *37/02, 37/04*

U.S. Cl. 75—130 R **2 Claims**

The addition of silicon carbide pelleted with chromite to molten iron has been found to homogenize the microstructure to control the hardness. An addition in the range of 0.10 to 1.0% silicon carbide pelleted with chromite increases the hardness of a casting. Catalytically activated silicon carbide in the range of from 0.1 to 1.5% by weight has also been found to reduce the hardness of an iron alloy. The additions are preferably made in the molten stage immediately subsequent to the exit from the furnace or cupola when casting the metal in the pan or forecrucible.

3,728,108

PROCESS FOR THE PRODUCTION OF REINFORCED COMPOSITE ALLOYS

Raymond Sifferlen, Saint-Ismier, Claude Guichard, Fontaines, and Jean-Claude Soret, Saint-Egreve, France, assignors to Societe Industrielle de Combustible Nucleaire, Annecy, France

Filed Mar. 31, 1970, Ser. No. 24,252

Claims priority, application France, Mar. 31, 1969, 6909746

Int. Cl. C22c *1/00*

U.S. Cl. 75—135 **8 Claims**

Reinforced composite alloys having improved characteristics and good ductility comprising a base metal or a metal alloy in which filaments or particles which are insoluble in the base metal, both in the solid state and the liquid state, and further characterized in that the particles or filaments are dispersed in a homogeneous manner in the base metal and perfectly bonded to the base metal are disclosed. A process and an apparatus for the preparation of the reinforced composite alloys are disclosed also.

3,728,109

MANUFACTURING METHOD OF FREE-CUTTING LEAD STEEL

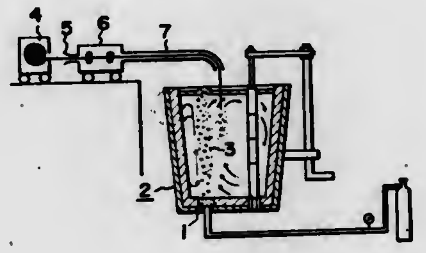
Masuta Okubo and Takaho Kawawa, Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kawasaki-shi, Japan

Filed Sept. 29, 1970, Ser. No. 76,428

Claims priority, application Japan, Oct. 4, 1969, 44/79,062

Int. Cl. C21c *7/00;* **C22c** *39/54*

U.S. Cl. 75—51 **6 Claims**



This invention relates to a method of producing free-cutting lead steel comprising pouring the molten steel into a ladle, stirring the steel by passing thereinto a gaseous material which does not harmfully affected the quality of the steel, and feeding a wire rod of lead or a lead alloy into the molten steel at an adding velocity of 1 to 20 metres per second, said wire rod having a diameter of 5–20 mm.

3,728,110

PROCESS FOR FORMING A SINTERED BRIQUETTE

Erhard Klar, Pikesville, and Algirdas E. Petrosh, Baltimore, Md., and Arthur B. Michael, Milwaukee, Wis., assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Dec. 10, 1968, Ser. No. 782,774

Int. Cl. B22f *1/00*

U.S. Cl. 75—211 **8 Claims**

Compactable, particulate compositions for compaction molding into briquettes comprising finely divided solids, containing normally liquid phase lubricant in excess of that which can be sorbed readily on said finely divided solids in admixture with a sorptive agent more highly sorptive of the lubricant than are the compactable finely divided solids. The sorptive agent sequesters unbound lubricant and improves the handling properties of the compactable powder composition.

3,728,111

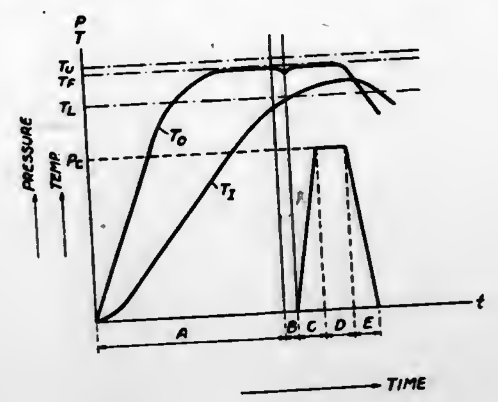
METHOD OF MANUFACTURING BILLETS FROM POWDER

Ingemar Stromblad, Vasteras, and Sven-Erik Isaksson, Robertsfors, Sweden, assignors to Allmanna Svenska Electriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 21, 1971, Ser. No. 182,451

Int. Cl. B22f *1/00*

U.S. Cl. 75—214 **13 Claims**



For manufacturing billets out of powder for further machining by rolling, forging or machining, powder is poured into a container having an evacuating opening and is then isostatically compressed by subjecting the container with the enclosed powder to a high extreme pressure. The billet is placed in a heated furnace and heated while it is simultaneously evacuated for degassing. After evacuation is completed, the billet is preheated in another furnace to a temperature suitable for pressure sintering and then in another furnace is subjected simultaneously to high heat and high pressure.

3,728,112

ELECTROPHOTOGRAPHIC MULTICOLOR COPY PROCESS EMPLOYING SOLUBILIZABLE DYES

Leo N. Chapin, Des Plaines, and Robert Freed, Lincolnwood, Ill., assignors to A. B. Dick Company, Niles, Ill.

Filed Dec. 1, 1970, Ser. No. 94,125

Int. Cl. G03g *9/02, 13/08, 13/14*

U.S. Cl. 96—1.2 **21 Claims**

This invention is addressed to an electrophotographic copy process for the production of true color copies in which at least two receptor sheets, each of which is provided with a binder, a photoconductor, a sensitizing component which sensitizes the photoconductor to at least a portion of the spectrum of visible light and a dispersed dye of a different color on each receptor, are separately given an electrostatic charge and exposed to an original such as a multi-color original, and the exposed receptor sheets are thereafter developed with a developer composition containing a toner in the form of a material which, in response to activation, serves as a solvent for the dispersed dye to effect transfer of the dye color from the underlying portions of each coating to a copy sheet pressed into surface contact with each receptor.

3,728,113

SELECTIVE TRANSFER SYSTEM AND COMPOUNDS FOR EMPLOYMENT THEREIN

Richard W. Becker, John A. Ford, Jr., Donald L. Fields, and Delbert D. Reynolds, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 6, 1971, Ser. No. 160,070

Int. Cl. G03c *1/40, 5/54, 7/00*

U.S. Cl. 96—3 **22 Claims**

A photographic element is provided in which a cleavable compound is employed to effect the imagewise elimination of a selected chemical moiety, such as a dye, a silver halide solvent, an antifoggant, a fixing agent, a toner, a hardener, a silver complexing agent, a fogging agent, a coupler, a sensitizer, a desensitizer, a developer, an oxidizing agent, etc. Color diffusion transfer processes and film units employing such cleavable compounds are also described.

3,728,114

DIRECT POSITIVE SHEET AND AN OFFSET PRINTING PLATE PRODUCED THEREFROM

Kiyoshi Futaki, Shigeyoshi Suzuki, and Yoshitake Yoshihiro, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sept. 11, 1970, Ser. No. 71,623

Claims priority, application Japan, Sept. 12, 1969, 44/72,039; Apr. 27, 1970, 45/36,146

Int. Cl. G03c *1/48, 5/54;* **G03f** *7/02*

U.S. Cl. 96—29 L **7 Claims**

An offset printing plate can be obtained from a positive sheet whose surface layer contains up to 30% by weight of nuclei for physical development of a high molecular compound without complicated after-treatment.

3,728,115

PHOTOGRAPHIC DRY COPYING MATERIAL

Albert Lucien Poot, Kontich, and Jan Frans van Besauw, Brasschaat, Belgium, and Anita von König, Leverkusen, and Helmut Kampfer, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 13, 1971, Ser. No. 143,226

Claims priority, application Germany, May 14, 1970, P 20 23 629.7

Int. Cl. G03c *1/40, 1/76, 3/26*

U.S. Cl. 96—29 D **20 Claims**

Photographic copies are produced by image-wise exposing a light-sensitive layer which contains a light-sensitive photo-oxidizing compound and an image-producing pyrazolin-5-one capable of being transferred to an image-receiving layer, the image-producing compound in the exposed areas being converted into a non-transferable compound by reaction with the light-sensitive compound, bringing the exposed layer into contact with an image-receiving layer which contains compounds which react with the image-producing compound to form colored compounds and heating of the layers while in contact with each other to a temperature of between 80 and 200° C. at which the image-producing compound is transferred from the unexposed areas of the light-sensitive layer to the image-receiving layer.

3,728,116

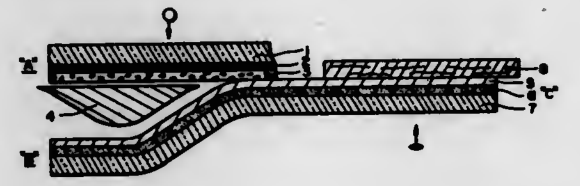
INSTANT ACCESS ONE-LAYER COLOR PHOTOGRAPHY

Burton Harvey Waxman; Robert Thomas Shannahan, both of Endicott, and Felix Viro, Appalachin, all of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed June 15, 1971, Ser. No. 153,186

Int. Cl. G03c *1/40, 5/54, 7/08*

U.S. Cl. 96—29 D **11 Claims**



An improved instant access diffusion transfer process for photographic materials in which multicolor dye images are produced in a transfer sheet by exposing a panchromatically sensitized silver halide emulsion through a single multicolor screening layer and subsequently developing the emulsion at a high pH and transferring it to an unsensitized receiving sheet.

3,728,117

OPTICAL DIFFRACTION GRID

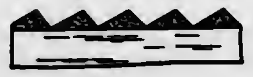
Johannes Heidenhain, Egerer, near Chieming, Horst Burkhardt, Stein an der Traun, and Heinz Kraus, Traunreut, Germany, assignors to Fa. Dr. Johannes Heidenhain, Traunreut, and Gunter Schmahl and Dietbert Rudolph, Gottingen-Greismar, Germany

Filed Dec. 18, 1968, Ser. No. 784,686

Claims priority, application Germany, Jan. 20, 1968, P 16 22 834.5

Int. Cl. G02b *5/18;* **G03c** *11/00*

U.S. Cl. 96—36 **5 Claims**



A method of producing optical diffraction grids having a predetermined asymmetric groove profile which comprises the steps of exposing a light sensitive layer to at least one system of fringes of light and positioning the light sensitive layer relative to the fringe system in such a manner that the locally resulting exposure is an asymmetric function with respect to a normal to the surface of the light sensitive layer, and subsequently developing the light sensitive layer.

3,728,118

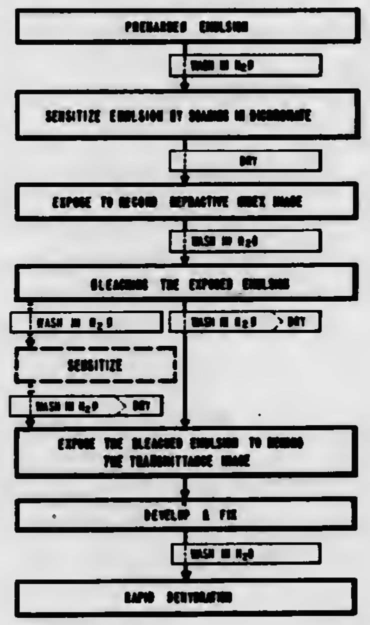
PROCESS FOR PRODUCING MULTIPLE RECORDING IN A SINGLE MEDIUM

Gary L. Fillmore, Endicott, and Richard F. Tynan, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,473

Int. Cl. G03c *5/22, 5/26, 5/38*

U.S. Cl. 96—48 R **6 Claims**


PREHARDENED EMULSION
WASH IN H2O
SENSITIZE EMULSION BY SOAKING IN DICHROMATE
DRY
EXPOSE TO RECORD REFRACTIVE INDEX IMAGE
WASH IN H2O
BLEACHING THE EXPOSED EMULSION
WASH IN H2O
WASH IN H2O > DRY
SENSITIZE
WASH IN H2O > DRY
EXPOSE THE BLEACHED EMULSION TO RECORD THE TRANSMITTANCE IMAGE
DEVELOP & FIX
WASH IN H2O
RAPID DEHYDRATION

The invention describes a method for individually recording a transmittance image and a refractive index image in a single photographic emulsion.

The invention relates to a method for recording different images in a single photographic emulsion, the latter

when processed in accordance with the invention providing, among other things, a unique type of complex-valued spatial filter.

3,728,119

PRODUCTION OF POSITIVE COPPER IMAGES UTILIZING PHOTOSENSITIVE LEAD COMPOUNDS

Johan Eugeen Vanhalst, Wilrijk, Walter August Van den Heuvel, Berchem, and Eric Maria Brinckman, Mortsel, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,808

Claims priority, application Great Britain, Feb. 17, 1970, 7,584/70

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 R **7 Claims**

An image reproduction system is provided using a photosensitive recording material containing a photosensitive lead compound capable of separating metallic lead on exposure to activating electromagnetic radiation. The lead compound stands in working contact with a reducing agent capable to promote the formation of metallic lead in the exposed portions. In a first step a print-out lead image is formed. In a second step the print-out lead image is removed and simultaneously a positive copper metal image is formed by a treatment with an aqueous copper (II) solution. As photosensitive lead compounds yellow lead(II) oxide and lead(II) iodide are preferred. The formation of metallic lead is promoted by ascorbic acid and the formation of metallic copper by sodium dithionite.

3,728,120

FORMATION OF RELIEF IMAGES

Edwin Hendrik Hazenbosch, Mechelen, and Albert Lucien Poot, Kantich, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,635

Claims priority, application Great Britain, Sept. 18, 1970, 44,668/70

Int. Cl. G03c *5/24, 1/72, 7/16*

U.S. Cl. 96—48 R **20 Claims**

A colloid pattern is formed by a process containing the steps of:

(1) information-wise exposing a hydrophilic colloid layer containing a mixture of:
  (a) a photosensitive organic polyhalogen compound, which is capable of forming by exposure to activating electromagnetic radiation (a) halogen-containing free radical(s),
  (b) an amino compound with aromatic character, and
  (c) a hydrophilic colloid that is capable of undergoing a hardening or decrease of water-solubility by a treatment with an aldehyde hardening agent suited for the hardening of protein colloids,
(2) treating the information-wise exposed colloid layer with said aldehyde hardening agent effecting a selection hardening in the unexposed portions of the recording layer, and
(3) removing the exposed portions of the colloid layer by means of a wash-off treatment leaving a relief pattern corresponding with the non-exposed portions of the colloid layer.

The hydrophilic colloid layer contains preferably gelatin as hydrophilic colloid, carbon tetrabromide as photosensitive organic polyhalogen compound, diphenylamine or N,N'-diphenyl-N,N'-diethylenediamine as aromatic amine and a colored pigment for obtaining by said process a colored colloid pattern.

3,728,121

MULTILAYER COLOR PHOTOGRAPHIC MATERIAL

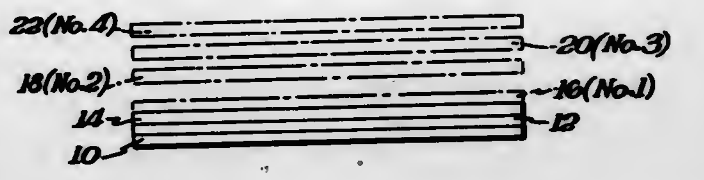
Hugo K. Zorn, Munich-Lochhausen, and Fritz Muller and Helmut W. Broll, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 19, 1970, Ser. No. 65,194

Claims priority, application Germany, Aug. 19, 1969, P 19 42 079.2

Int. Cl. G03c *1/76*

U.S. Cl. 96—74 **14 Claims**



To improve the color reproduction of a multi-layer color reversal material, at least one correcting layer of a fine-grained silver halide emulsion having a grain diameter below 1μ is incorporated in the material. It may be disposed over the uppermost, under the lowermost or between the active emulsion layers. The correcting layer may be spectrally sensitized or unsensitized, may be ripened with gold and may include a single halide or a mixture of several.

3,728,122

ONE-COMPONENT DIAZOTYPE LIGHT-SENSITIVE MATERIAL

Shigeaki Yoshida, Yokohama, Shuhei Shiraishi, Fujisawa, and Fumio Yuki, Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,932

Claims priority, application Japan, Dec. 17, 1969, 44/100,878

Int. Cl. G03c *1/60*

U.S. Cl. 96—75 **5 Claims**

One-component diazotype light-sensitive material containing a condensation product made from naphthalenesulfonate or alkylnaphthalenesulfonate and formaldehyde as a stabilizer in a precoat layer on a supporting sheet, said material having good stability.

3,728,123

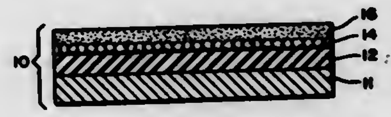
PLATE FOR DRY PLANOGRAPHY

Harry Frank Gipe, Baltimore, Md., assignor to Scott Paper Company, Philadelphia, Pa.

Original application Nov. 14, 1969, Ser. No. 876,688, now Patent No. 3,632,375, dated Jan. 4, 1972. Divided and this application May 20, 1971, Ser. No. 145,224

Int. Cl. G03c *1/52, 1/64, 1/66*

U.S. Cl. 96—75 **3 Claims**



A negative acting presensitized plate for use in dry planography, said plate comprised of a flexible substrate having coated thereon a layer of silicone rubber which when cured will not accept printing ink, a layer of polymeric anchoring material overlying and adhered to the silicone rubber layer and a layer of photoresponsive image forming material coated over said anchoring material with the anchoring material serving to bond the photoresponsive image forming material to the silicone layer.

3,728,124
COLORATION OF POLYESTER FILM MATERIALS

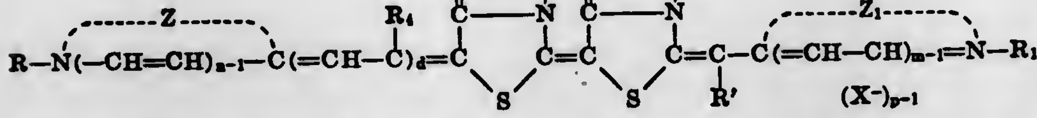
James Lyon Whyte, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Dec. 2, 1970, Ser. No. 94,564
Claims priority, application Great Britain, Dec. 5, 1969, 59,512/69
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R **10 Claims**

Grey dyed polyester photographic film support dyed with at least two dye components selected from 6-paratoluidino-3-methyl 1′9′ anthrapiridone, indanthrone, tetrachloro phthalo perinone and 1,4-bis(4-n-butyl-anilino)-5,8-dihydroxy anthraquinone.

3,728,125
PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL SUITABLE FOR SILVER-DYE BLEACHING METHOD

Keisuke Shiba, Masanao Hinata, Makoto Yoshida, Shinichi Imai, Akira Sato, and Shigeru Watanabe, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Aug. 20, 1970, Ser. No. 65,714
Claims priority, application Japan, Aug. 20, 1969, 44/65,827
Int. Cl. G03c *1/10*
U.S. Cl. 96—99 **14 Claims**

A light-sensitive silver halide emulsion containing a dye capable of being bleached in the silver dye bleaching process and at least one sensitizing dye having the general Formula I



[I]

wherein R, R_1, R_2 and R_3 each is selected from the group consisting of an alkyl, a substituted alkyl, an allyl, an aralkyl, a substituted aralkyl and an aryl group; wherein R′ is selected from the group consisting of a hydrogen atom, an alkyl group, a substituted alkyl group, and an aliphatic chain to be combined with the N of the heterocyclic ring containing Z_1; wherein R_4 is selected from the group consisting of a hydrogen atom, an alkyl and an aryl group; wherein *m*, *n*, and *p* are 1 or 2, and *d* represents 0, 1 or 2; wherein X represents an anion, wherein an intramolecular salt is formed when $p=1$; and wherein Z and Z_1 each is the non-metallic atomic group necessary to complete a 5- or 6-membered heterocyclic ring, is disclosed. The emulsion can be super-sensitized by the addition of a supersensitizing dye to the emulsion.

3,728,126
SILVER HALIDE EMULSION CONTAINING AN ORGANIC SELENIUM COMPOUND ANTIFOGGING AGENT

Robert Joseph Pollet, Vremdé, and Jozef Frans Willems, Wilrijk, both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed March 6, 1970, Ser. No. 17,304
Claims priority, application Great Britain, July 3, 1969, 12,234/69
Int. Cl. G03c *1/34*
U.S. Cl. 96—109 **10 Claims**

Light-sensitive materials comprising a silver halide emulsion layer and a compound having the formula:

$$R_1—Q—Se—R_2$$

wherein:

Q stands for selenium or sulphur, and

each of R_1 and R_2 (the same or different) stands for an alkyl group, an aralkyl group or an aryl group.

The compound of the general formula inhibits fogging and/or bronzing and/or stabilizes the emulsion.

3,728,127
SODIUM CASEINATE-CONTAINING PRODUCT AND METHOD FOR MANUFACTURING

Gaylord M. Palmer, Castro Valley, Calif., assignor to Foremost-McKesson, Inc., San Francisco, Calif.
Filed Aug. 18, 1970, Ser. No. 64,726
Int. Cl. A23j *1/20, 1/22, 3/02*
U.S. Cl. 99—20 **19 Claims**

A dry instantized sodium caseinate powder with essentially all of the particles containing a coating of water-soluble saccharide (e.g., corn syrup solids) in which a surfactant (e.g., lecithin) is dispersed. A process of forming this product includes the step of dry blending spray-dried sodium caseinate powder and fine saccharide powder, moistening the blend by subjecting thesame to a moist atmosphere containing finely divided surfactant to form moist aggregates and drying the aggregates. The moist atmosphere may be an atomized aqueous dispersion formed by mixing lecithin, water, and steam.

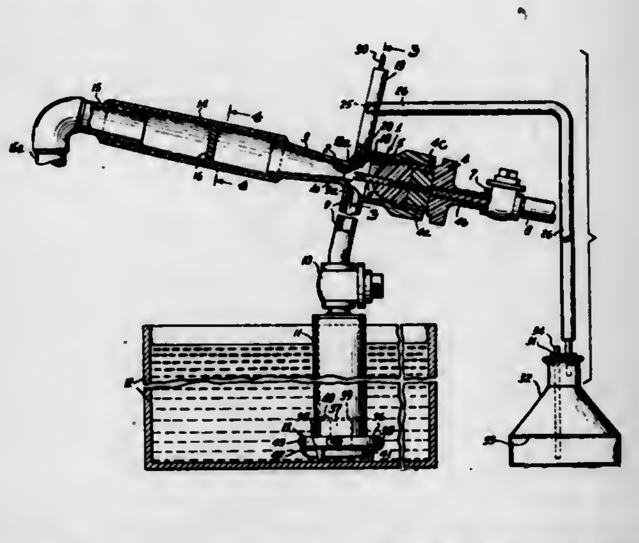
3,728,128
PREPARATION OF A BLAND WHEY PRODUCT

Anthony J. Luksas, Chicago, Ill., assignor to Beatrice Foods Co., Chicago, Ill.
No Drawing. Continuation-in-part of abandoned application Ser. No. 737,803, June 18, 1968. This application Oct. 5, 1970, Ser. No. 78,306
Int. Cl. A23c *21/00*
U.S. Cl. 99—57 **8 Claims**

The objectionable odors and tastes of whey are removed therefrom and a bland whey product is produced by growing yeasts in a fluid whey system containing at least 10 p.p.m. of dissolved oxygen to substantially prevent fermentation and provide assimilation.

3,728,129
METHOD FOR PREPARING AND DISPENSING AERATED DRINKS

Ralph G. Sargeant, 408 W. Windsor St., Lakeland, Fla. 33803
Continuation-in-part of application Ser. No. 76,040, Sept. 28, 1970, which is a continuation-in-part of abandoned application Ser. No. 856,064, Sept. 8, 1969. This application Mar. 29, 1971, Ser. No. 128,711
Int. Cl. A23l *1/00*
U.S. Cl. 99—78 **10 Claims**



Method of preparing drinks, such as orange juice, by combining a diluting liquid with a liquid beverage concentrate. A high velocity stream of one of the liquids is directed through the restricted throat of a Venturi located in a flow confining zone causing the other liquid ingredient to be drawn into this zone. This preliminary mixture is then forcibly impinged on a baffle surface in a final mixing zone. Air, preferably with a volatile flavor and/or aroma additive entrained therein, is introduced either into the flow confining zone where it becomes part of the preliminary mixture or into the final mixing zone upstream of the baffle.

3,728,130
PASTA CONTAINING ETHOXYLATED MONOGLYCERIDES

Richard R. Egan, Worthington, Ohio, and Ira A. MacDonald, Prior Lake, Minn., assignors to Ashland Oil, Inc., Columbus, Ohio
No Drawing. Filed Feb. 19, 1971, Ser. No. 117,054
Int. Cl. A23l *1/16*
U.S. Cl. 99—85 **9 Claims**

Pasta is prepared by forming and drying a pasta dough comprising flour, liquid and ethoxylated monoglycerides. The ethoxylated monoglycerides tend to improve the machinability of the dough and decrease the stickiness of the pasta during drying and the resulting pasta is firmer after cooking than pastas not containing ethoxylated monoglycerides.

3,728,131
TREATMENT OF BANANAS WITH CALCIUM HYDRATED LIME AND PRODUCT THEREOF

Ariens Damwyk, 37 Melendy Ave., East Watertown, Mass. 02172
Filed July 27, 1970, Ser. No. 58,304
Int. Cl. A23l *1/00*
U.S. Cl. 99—103 **12 Claims**

The invention relates to an edible dried banana product produced from peeled ripe bananas which are sliced and dipped in an aqueous solution of high calcium hydrated lime and thereafter dried at a temperature of about 80° to 150° F. for a period of up to about 160 hours, preferably with air circulation.

3,728,132
PROCESS FOR THE PRODUCTION OF FOODS AND DRINKS

Naoto Tsuyama, Mamoru Hirao, Masashi Kurimoto, Kaname Sugimoto, and Masakaza Mitsuhashi, Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan
No Drawing. Filed Nov. 17, 1970, Ser. No. 90,418
Claims priority, application Japan, Nov. 17, 1969, 44/91,980; Jan. 14, 1970, 45/3,977; Mar. 28, 1970, 45/26,270
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 R **12 Claims**

The present invention relates to a process for the production of various foods and drinks utilizing previously unknown sweeteners, comprising the addition of sucrose or sugars containing fructose to starch hydrolyzate, subjecting the mixture to actions of *Bacillus macerans* amylase, bacterial sacchalogenic-α-amylase (B.S.A.), fungal α - amylases, or pancreas amylase, producing oligosaccharide syrups containing transferred fructose and then utilizing the syrups as a material for the production of the said foods and drinks.

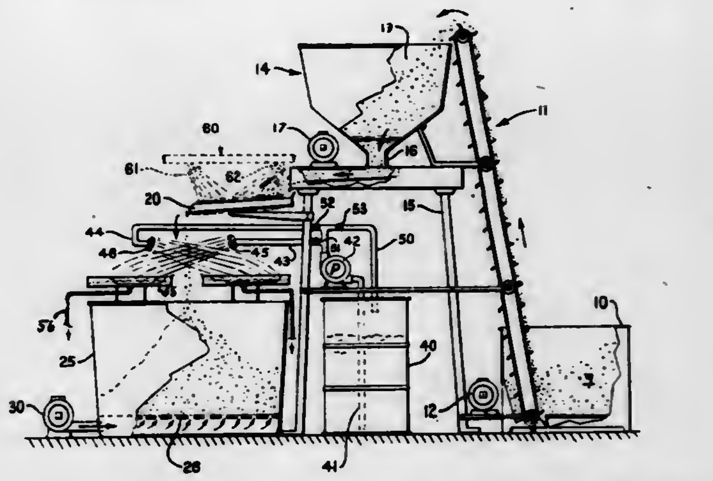
3,728,133
FOAMED MAYONNAISE COMPOSITION

Max E. Norris, Parma, Ohio, assignor to SCM Corporation, Cleveland, Ohio
No Drawing. Filed Aug. 11, 1971, Ser. No. 171,009
Int. Cl. A23l *1/24*
U.S. Cl. 99—144 **16 Claims**

A mayonnaise composition having a specific gravity of from 0.35–0.7 gm./cm.^{3} comprising water, vinegar, egg yolk, spices, and an emulsifier comprising in combination a hydroxy acid ester of a glyceride and a monoglyceride is set forth.

3,728,134
METHOD FOR REDUCING BACTERIA LEVEL OF DEHYDRATED ONION PRODUCTS WITH H_2O_2

Jerry Gilmore and John A. Scarlett, Modesto, Calif., assignors to Rogers Brothers Company, Livingston, Calif.
Filed Dec. 17, 1970, Ser. No. 99,005
Int. Cl. A23b *7/10, 7/02*
U.S. Cl. 99—156 **6 Claims**



Dehydrated onion aspirations and screenings of high bacteria count are sprayed with an aqueous hydrogen peroxide solution of low concentration. On being dried in a heated air stream, onion pieces are obtained which may be ground into a dehydrated powder either alone or in a blend with other onion pieces. The treatment with peroxide has the effect of greatly reducing the total bacteria count of the resulting powder, while minimizing or eliminating bleaching and loss of color and flavor.

3,728,135
WITHDRAWN

3,728,136
PROCESS AND APPARATUS FOR SHAPING FROZEN FLESH

Ian H. Langlands, Halifax, Nova Scotia, Canada, assignor to National Sea Products Limited, Halifax, Nova Scotia, Canada
Filed Feb. 19, 1970, Ser. No. 12,567
Claims priority, application Canada, Oct. 30, 1969, 66,256/69
Int. Cl. A23b *1/00*
U.S. Cl. 99—194 **17 Claims**

A method and apparatus for forming a pre-shaped food product, particularly fish, and the pre-shaped food product produced thereby are described. The method includes the step of forming individual portions of the flesh, each being of predetermined size and being at least in a partially frozen condition, into a predetermined shape by forcing the flesh portions individually into a forming die cavity adapted to impart the predetermined shape to each portion. The volume of each portion prior to the forming step equals the volume of each corresponding formed food portion. The frozen pre-shaped edible flesh food product has a smoothly contoured marginal outline in plan view, with the flesh adjacent the marginal edge being in a deformed condition relative to the flesh in the central region of the product. The apparatus includes a forming station having a forming die all arranged to engage and form portions of flesh fed thereto. A device for feeding individual portions of the flesh to the forming station is provided as well as mechanism for effecting actuation of the feeding device and the forming die in timed relation to one another to effect forming of the flesh portions. The forming station includes a fixed platen with the feeding device being arranged to feed each flesh portion to a position intermediate the forming die and the platen when the die is in a retracted position. When the forming die is advanced the flesh portions are engaged in pressurized relation between the die and the platen. The feeding device includes an endless conveyor belt defining a path of travel which extends over the fixed platen and the conveyor belt is driven in step-by-step fashion to bring successive flesh portions intermediate the forming die and the fixed platen to permit them to be formed in sequential fashion. Ejecting means associated with the die for positively ejecting the formed flesh therefrom when the die is retracted are also provided.

3,728,137

ELECTROLESS COPPER PLATING

Charles R. Shipley, Jr., Lucia H. Shipley, and Michael Gulla, Newton, and Oleh B. Dutkewych, Medfield, Mass., assignors to Shipley Company, Inc., Newton, Mass.

No Drawing. Continuation-in-part of application Ser. No. 752,250, Aug. 13, 1968. This application Aug. 23, 1971, Ser. No. 174,157

Int. Cl. C23c *3/02*

U.S. Cl. 106—1 **7 Claims**

An electroless copper plating solution comprising a source of cupric ions, hydroxyl radicals, formaldehyde or a formaldehyde precursor such as paraformaldehyde and a complexing agent for copper; said solution characterized by the addition of a formaldehyde addition agent. The formaldehyde addition agent provides for the slow release of formaldehyde into solution and contributes to improved tensile properties of a copper deposit.

3,728,138

FLAME-RETARDANT AND INTUMESCENT COMPOSITIONS

Erich Kuehn, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Original application May 3, 1968, Ser. No. 726,538, now Patent No. 3,639,535, dated Feb. 1, 1972. Divided and this application Jan. 5, 1971, Ser. No. 104,149

Int. Cl. C09d *5/18*

U.S. Cl. 106—15 FP **10 Claims**

Novel adjuvants and combinations thereof are provided which have the properties of importing flame-retardancy and intumescence to polymeric materials. The new adjuvants comprise halogenated and phosphorus-containing adjuvants of diallyl chlorendate and mineral acid salts of phenylbiguanidine derivatives. The latter may be advantageously combined with a wide variety of phosphorus-containing compounds, including especially, novel diallyl chlorendate derivatives to provide intumescent films and coatings.

3,728,139

DURABLE BOROSILICATE OPAL GLASSES

Gerald B. Carrier and James E. Flannery, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,834

Int. Cl. C03c *3/08, 3/22, 3/30*

U.S. Cl. 106—54 **3 Claims**

The present invention relates to borosilicate opal glasses containing a discontinuous opal phase which exhibit improved chemical durability as well as low thermal expansivity. These glasses preferably consist essentially, in weight percent on the oxide basis as calculated from the batch, of 72–76% SiO_2, 9–14% B_2O_3, 1–6% of alkali metal oxides, 3–9% of bivalent metal oxides, 0.5–2.0% TiO_2, 0–0.5% ZrO_2, 0–1.5% Al_2O_3, and 1–2% of oxides selected from the group consisting of MoO_3, WO_3, and As_2O_3.

3,728,140

PROCESSES FOR THE PRODUCTION OF AMYLOSE FILM

Mikihiko Yoshida, Okayama, Japan, assignor to Hayashibara Company, Okayama, Japan

No Drawing. Filed Jan. 26, 1971, Ser. No. 109,940

Claims priority, application Japan, Jan. 26, 1970, 45/7,163

Int. Cl. C08b *25/02*

U.S. Cl. 106—210 **8 Claims**

Processes for the economical production of starch film with high transparency, comprising hydrolysis of various starches utilizing alpha-1,6-glucosidase, blending the hydrolyzate with amylomaize starch in which amylose is the main constituent or to commercially available amylose, the hydrolyzate being an amylose of which short chain amylose is its main constituent, and forming films with the mixture.

3,728,141

ALKALINE-CURING CORRUGATING ADHESIVE

Dilip K. Ray-Chaudhuri, 484 Rolling Hills Road, Somerville, N.J. 08876; Jules E. Schoenberg, 2079 Lyde Place, Scotch Plains, N.J. 07076; and Keith E. Sickafoose, R.D. 1, Box 568, Princeton, N.J. 08540

No Drawing. Continuation-in-part of abandoned application Ser. No. 105,607, Jan. 11, 1971. This application July 12, 1972, Ser. No. 271,319

Int. Cl. C08b *25/02*

U.S. Cl. 106—213 **16 Claims**

Starch-based alkaline curing corrugating adhesives containing a novel crosslinking additive for use in the manufacturing of corrugated paperboard are described: said adhesives are characterized by their excellent stability with respect to viscosity, prolonged pot life, and their ability to form water-resistant bonds.

3,728,142

READILY DISPERSIBLE INORGANIC PIGMENTS

Hans Rudolph, Krefeld-Bockum, Gerhard Trenczek, Krefeld-Uerdingen, and August Böckmann, Klaus Prater, and Walter Gutsche, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,124

Claims priority, application Germany, Jan. 14, 1970, P 20 01 381.4

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **7 Claims**

An inorganic pigment such as titanium dioxide is rendered readily dispersible by providing it with a coating of an alkyd resin including radicals of a polycarboxylic acid and at least about 25% by weight of the radicals of fatty acids containing more than 6 carbon atoms, and further including radicals of polyols containing at least 3 hydroxyl groups, the ratio of oxygen atoms to carbon atoms in the polyol molecule not exceeding 0.7:1.

3,728,143

PIGMENT DISPERSION

Edward T. Pollard, Vermilion, Ohio, assignor to Plastic Molders Supply Co., Inc., Fanwood, N.J.

No Drawing. Filed Mar. 31, 1971, Ser. No. 129,968

Int. Cl. C09c *3/00*

U.S. Cl. 106—308 N **20 Claims**

Fatty acid amide coated pigments are obtained and used to formulate with uncolored thermoplastic materials. The colors of the pigments are fully developed and extremely high pigment loadings are obtained. The coated pigments are formed by admixing the pigment with melted fatty acid amide; solidifying the material by cooling it; grinding the material; and separating out the fines. The coated pigment particles are compounded with thermoplastic materials by low shear means, such as, injection molding. An improved form of the coated pigments can be obtained by admixing the melted fatty acid amide, and the pigment; extruding the admixture to form a creamy mass; solidifying and forming the creamy mass by passing it through cold and forming rollers; grinding the resultant wafer-like material; and separating out the fines.

3,728,144

METHOD FOR COATING METAL SUBSTRATES WITH MOLTEN METAL

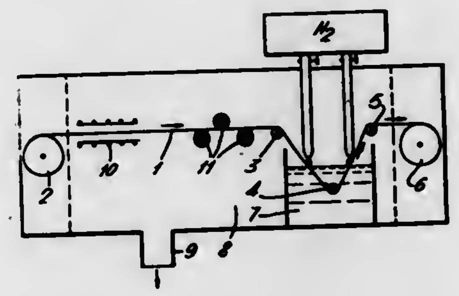
Lionel Van Poucke, Kortrijk, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium

Filed Apr. 16, 1971, Ser. No. 134,738

Claims priority, application Netherlands, Apr. 24, 1970, 7006051

Int. Cl. C23c *1/00*

U.S. Cl. 117—51 **7 Claims**



A method and apparatus for continuous coating of a metal substrate with a molten metal in which a metal substrate is successively annealed at an elevated temperature in a heating zone, cooled in a cooling zone and coated with a molten metal in an immersion zone, wherein the heating zone, the cooling zone and the immersion zone are maintained under a vacuum.

3,728,145

METHOD FOR TREATING A TRANSPARENT TUBE FOR USE IN AN OPTICAL ANALYZING APPARATUS

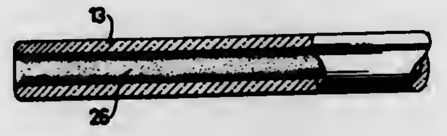
Vilhelm Einar Stellan Hjerten, Uppsala, Sweden, assignor to Incentive Research & Development AB, Stockholm, Sweden

Continuation-in-part of abandoned application Ser. No. 721,481, Apr. 15, 1968. This application Apr. 15, 1971, Ser. No. 134,152

Claims priority, application Sweden, Apr. 20, 1967, 5,527/67

Int. Cl. C03c *17/32, 19/00*

U.S. Cl. 117—54 **26 Claims**



A method for treating transparent tubes to eliminate the electroendosmotic effect comprising coating of the inner wall of the tube with a neutral hydrophilic substance, e.g. methyl cellulose, which eliminates electroendosmosis by increasing the viscosity or the resistance to flow adjacent to the tube wall for a liquid in the tube. Also the optical properties of the tubes can be improved by grinding of the outer and inner walls of the tube before the coating step to give the tube a constant wall thickness and a constant cross-section area.

3,728,146

GLASS FIBER REINFORCED ELASTOMERS

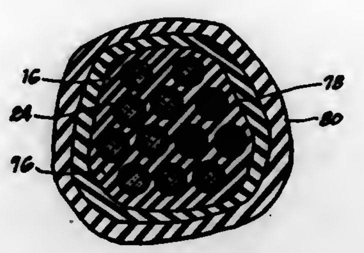
Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 22, 1971, Ser. No. 126,821

Int. Cl. C03c *25/02*

U.S. Cl. 117—72 **28 Claims**

Glass fibers for use in glass fiber-reinforced elastomeric materials and methods for preparing same wherein a glass fiber bundle is first impregnated with an elastomer or resinous polymer and then is coated with an elastomer compatible material for forming an impregnated glass fiber bundle having an inner coating comprising an elastomer or resinous polymer and an outer coating of the elastomer compatible material.



3,728,147

METHOD FOR COMBINED COATING AND COLD REDUCTION OF METAL

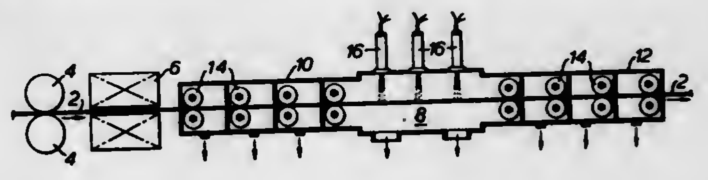
Walter Norman Jenkins and Terence Williams, Swansea, Wales, assignors to The British Iron and Steel Research Association, London, England

Filed Sept. 18, 1970, Ser. No. 73,350

Claims priority, application Great Britain, Sept. 23, 1969, 46,796/69

Int. Cl. B44d *1/50*

U.S. Cl. 117—93.31 **16 Claims**



Metal sheet or strip formed through a cold mill to reduce it to substantially final gauge is coated through contact with the mill rolls, with a fluid which is capable of cross linking or of polymerisation under the action of radiation of an accelerated electron beam, X-rays or gamma rays of providing a degree of lubrication of the mill rolls. The coated strip is then subject to radiation, either directly after coating or after an intermediate storage step including for example coiling and uncoiling.

3,728,148

METHOD FOR THE PRODUCTION OF ELECTRICAL PRESSURE SENSITIVE INSULATING TAPES

Hanns Pietsch and Julius Curts, Hamburg, Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

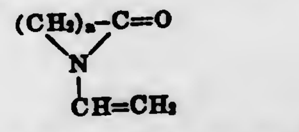
Filed Dec. 17, 1970, Ser. No. 99,250

Claims priority. application Germany, Dec. 24, 1969, P 19 64 747.3

Int. Cl. B44d *1/50;* **C09j** *7/02*

U.S. Cl. 117—93.31 **11 Claims**

A solution of a copolymer is applied to a base material. The copolymer comprises 65 to 90% by weight, based on total monomer weight, of at least one ester of acrylic acid with a straight or branched chain primary or secondary alcohol having 4–12 carbon atoms, 10 to 30% by weight, based on total monomer weight, of at least one N-vinyl lactam having the general formula



$$\begin{array}{c}(CH_2)_n\!-\!C{=}O\\ \diagdown\quad\diagup\\ N\\ |\\ CH{=}CH_2\end{array}$$

wherein *n* is 3, 4 or 5 and 0–20% by weight, based on total monomer weight, of at least one modifying monomer copolymerizable with the above recited monomers. The resultant coating is dried. An electrical insulating tape comprising a pressure sensitive self-adhesive coating on a carrier material is thereby obtained. The tape has improved adhesion, cohesion and gripping capacity.

3,728,149
CHROMIZING PROCESS

James L. Forand, Jr., Bethlehem, and Paik Woo Shin, Coopersburg, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 6, 1970, Ser. No. 61,817
Int. Cl. C23c *9/00*
U.S. Cl. 117—107.2 P **27 Claims**

In a method of forming a corrosion resistant coating on steel strip, the strip is coated on at least one side with a uniform distribution of a chromium-containing metal powder and a considerably less amount of an alkali or alkaline earth metal halide. The powder, containing the halide, is compacted on the strip. The strip is coiled, preferably in a tight coil, and heated in a heating zone in a protective atmosphere for sufficient time and at a temperature to cause diffusion between the metal strip and metal powder, and to thus form a protective stainless steel coating on the strip.

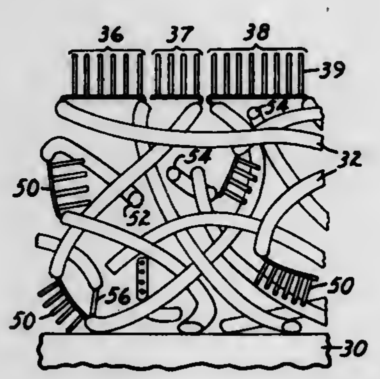
3,728,150
BONDABLE ADHESIVE COATED POLYIMIDE FILM

Edward L. Yuan, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed July 12, 1971, Ser. No. 161,871
Int. Cl. B44d *1/00*
U.S. Cl. 117—138.8 A **7 Claims**

Caustic treated polyimide film coated with an acrylic adhesive and laminate articles made therefrom.

3,728,151
FIBER AND FABRIC TREATING

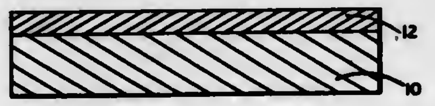
Patsy O. Sherman, Bloomington, and Samuel Smith, Roseville, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Application Jan. 15, 1968, Ser. No. 698,016, which is a continuation-in-part of abandoned application Ser. No. 614,925, Feb. 9, 1967. Divided and this application June 17, 1970, Ser. No. 57,884
Int. Cl. B44d *1/22*
U.S. Cl. 117—138.8 A **11 Claims**



Hybrid polymers provide sufficient oleophobicity and hydrophilicity in water so that fabrics treated therewith have increased ability to release oily stains on laundering. Oleophobic and hydrophilic moieties are combined in coatable copolymers so that the relative mobility of the moieties is assumed under some set of conditions of temperature and environment. Surfaces treated with the resulting copolymers respond reversibly to changes of environment, e.g. gaseous to aqueous milieu and vice versa, by a change in kind of properties. As a non-limiting example, fluorochemical moieties and hydrophilic polyether moieties are combined through sulfur atoms to give polymers which are applied as oil and water-repellent treatments with other, e.g. crease resistant, textile treatments. Fabrics thus treated are repeatedly launderable to remove oily stains.

3,728,152
METHOD FOR PRODUCING BUBBLE DOMAINS IN MAGNETIC FILM-SUBSTRATE STRUCTURES

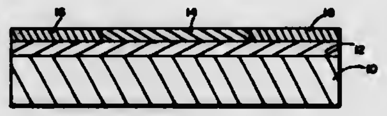
Jack E. Mee, Paul J. Besser, George R. Pulliam, David M. Heinz, and Perry E. Elkins, Orange County, Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.
Filed Dec. 28, 1970, Ser. No. 101,786
Int. Cl. H01f *10/02*
U.S. Cl. 117—235 **5 Claims**



A method for producing a bubble domain in a magnetic single crystal garnet film-substrate structure is disclosed. The method involves the epitaxial deposition of an iron garnet film of the proper crystallographic orientation and having a negative magnetostriction constant on a garnet substrate in which the room temperature lattice consant of the substrate is larger than the room temperaure lattice constant of the film, preferably by an amount less than 0.016 angstrom.

3,728,153
METHOD OF FORMING BUBBLE DOMAIN SYSTEM

David M. Heinz, Orange, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.
Filed Dec. 21, 1970, Ser. No. 100,230
Int. Cl. H01f *10/02*
U.S. Cl. 117—239 **3 Claims**



A method of forming a bubble domain system of magnetic material having a portion containing small diameter bubble domains and an adjacent portion having larger diameter bubble domains is disclosed. The method includes the step of providing a first single crystal magnetic film having a small bubble domain diameters therein and the further step of depositing a single crystal magnetic film having a lower magnetization level on a specific portion of said first film. The structure formed by this method has large diameter bubble domains in the portion having both of the films and small diameter bubbles in the portion having only one film.

3,728,154
SEMICONDUCTOR WAFER CLEANING

Clarence K. Suzuki, San Jose, Calif., assignor to Ronald R. Maagdenberg, Sunnyvale, Calif.
No Drawing. Filed Sept. 14, 1970, Ser. No. 72,126
Int. Cl. B08b *3/08*
U.S. Cl. 134—3 **13 Claims**

A process for cleaning semiconductor surfaces using an aqueous wash solution of dilute sulfuric acid. The dilute acid is made with ultra clean deionized water. The semiconductor surfaces to be cleaned are dipped in and out of the solution immediately after the solution is formed.

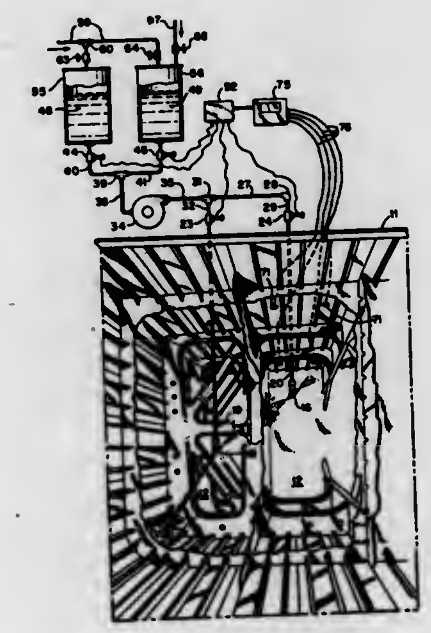
3,728,155
COPPER ALLOY CLEANING PROCESS

James A. Ford, North Haven, Conn.; Stuart R. Saunders, Kingston, England; Elmer J. Caule, New Haven, Conn., and Charles D. McLain, Alton, Ill., assignors to Olin Corporation, New Haven, Conn.
Division of Ser. No. 789,417, Jan. 6, 1969, Pat. No. 3,646,946. This application June 18, 1971, Ser. No. 154,669
Int. Cl. C23g *1/04, 1/10, 1/20*
U.S. Cl. 134—3 **10 Claims**

A process for removing surface oxides from copper alloys. For example, those alloys which form, on annealing, Al_2O_3 and related oxides are uniquely cleaned by a process which consists of a duplex treatment requiring a first immersion in a hot alkaline solution followed by a second immersion in a hot mineral acid solution.

3,728,156
LARGE SCALE TANK CLEANING METHOD

Gordon H. Miller, Richmond, Va., assignor to Texaco Inc., New York, N.Y.
Filed Nov. 5, 1971, Ser. No. 195,951
Int. Cl. B08b *3/02, 9/08*
U.S. Cl. 134—10 **8 Claims**



A method for cleaning large-scale tanks which are used for containing products that produce explosive mixtures upon washing out the residuals. The washing is done by high-velocity spraying which tends to cause an electrostatic charge to build up in the atmosphere within the tank. The charge is neutralized by alternating between washing fluids that build opposite polarity charges.

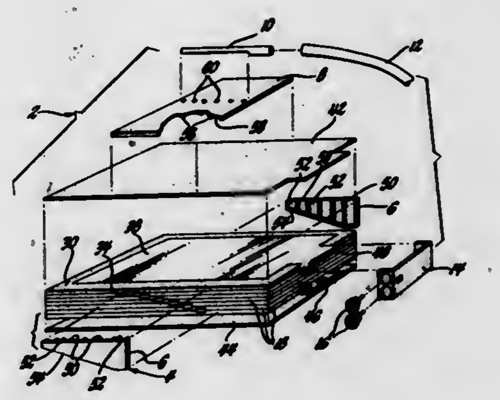
3,728,157
METHOD FOR CLEANING BULK TANKS

Andrew Geo. Griparis, Joliet, Ill., assignor to The Diversey Corporation, Chicago, Ill.
Original application Sept. 30, 1968, Ser. No. 763,823. Divided and this application June 22, 1970, Ser. No. 59,828
Int. Cl. B08b *9/08, 9/10*
U.S. Cl. 134—22 R **3 Claims**

Apparatus for spray cleaning the soiled interior surfaces of a tank by alternately: (1) applying a burst of cleansing liquid through a sprayer which directs a heavy spray mist to saturate the interior tank surfaces; and (2) enabling the applied cleansing liquid to soak for a timed interval on the tank surfaces. Portions of the apparatus can be used for cleaning pipelines associated with the tank. A tank sprayer which includes an equalization chamber for equalizing the flow of liquid around the spray head and a restricted outlet at one end of the equalization chamber to form a heavy spray mist in cleaning tank interiors. A quick drain valve for rapidly draining large amounts of liquid from a conduit including a solenoid actuated seal for selectively sealing or opening a series of drain openings around the perimeter of the valve. A liquid level indicating apparatus for indicating the drop in level below a preset level of liquid in any one of a number of closed containers each having a narrow neck for filling the container, including a detector inserted through each container neck for detecting the level changes, and a single air pressure sensor responsive to the detected changes in any of the containers for indicating a low level condition.

3,728,158
LOW SILHOUETTE BI-POLAR BATTERY

David T. Poe, Gaston, and Murray G. Sandberg, Muncie, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 16, 1971, Ser. No. 199,235
Int. Cl. H01m *39/06*
U.S. Cl. 136—10 **2 Claims**



A low-silhouette, bi-polar-electrode battery having a plurality of stacked cells separately venting through their respective sides via a multi-channeled venting system.

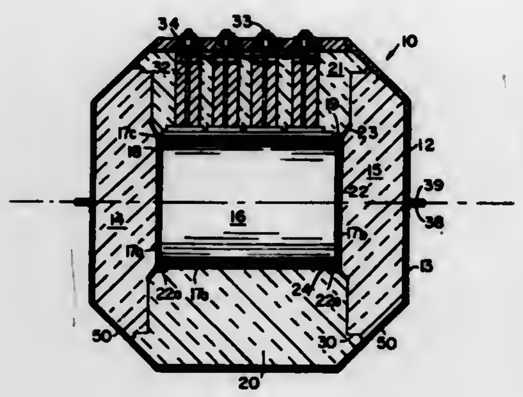
3,728,159
ELECTROCHEMICAL CELL WITH MODIFIED CRYSTALLINE DISULFIDE ELECTROCATALYSTS

Gideon M. Varga, Jr., Ho-Ho-Kus, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.
No Drawing. Filed June 4, 1971, Ser. No. 150,229
Int. Cl. H01m *27/04*
U.S. Cl. 136—86 D **7 Claims**

An electrochemical cell is improved when at least catalytic amounts of a modified crystalline disulfide of a Group VI–B metal is used as an electrocatalyst. The metal disulfide is modified with from 1 to 10 mole percent of a lower altervalent atom. The electrocatalyst can be used as an anode or cathode catalyst.

3,728,160
RADIOISOTOPE MEANS

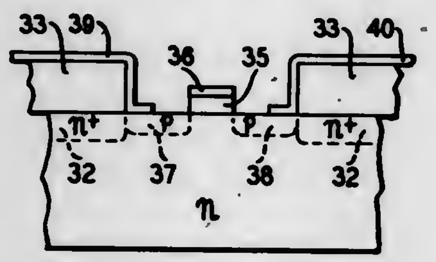
Nicholas H. DesChamps, Reeds Ferry, N.H.; Charles R. Fink, Nashua, both of N.H., and John J. Sullivan, Winchester, Mass., assignors to Sanders Nuclear Corp., Nashua, N.H.
Filed Aug. 19, 1968, Ser. No. 753,344
Int. Cl. G21h *1/10*
U.S. Cl. 136—202 **9 Claims**



A radioisotope support structure has a fuel capsule defining a first and a second end preferably with a foil insulation surrounding the capsule and first and second insulating end sections adjacent the first and second capsule ends respectively. Means urge the end sections toward toe capsule to firmly support the capsule therebetween in fixed position with respect to the end sections. First and second end caps are interposed between the capsule and the first and second end sections respectively to distribute a pressure load on the end sections and preferably a two-part housing encloses the fuel capsule and insulation with sufficient space therein to mount means for utilizing heat generated by the fuel capsule. In the preferred embodiment, thermoelectric means are assembled within the housing to convert heat generated by the fuel capsule into electrical energy whereby the assembly provides an efficient low weight high wattage output generator. In some cases, the foil insulation is omitted or used as a heat sink means.

3,728,161
INTEGRATED CIRCUITS WITH ION IMPLANTED CHAN STOPS

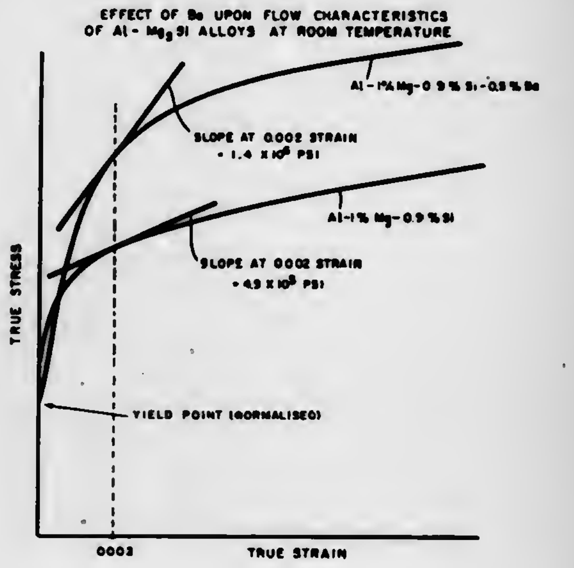
Robert Alan Moline, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 28, 1971, Ser. No. 213,044
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **8 Claims**



The specification describes a chan stop technique for eliminating spurious inversion of the surface of a semiconductor integrated circuit chip due to capacitive coupling between the metallization and/or the field oxide and the semiconductor. Spurious inversion is conventionally overcome by providing a low resistivity region, commonly referred to as a chan stop, uniformly under the field oxide. In making devices using ion implantation techniques, the channel or active region is first masked and the chan stop is formed by implantation or diffusion. After the field oxide is grown, the mask for forming the channel window must be aligned with the region previously masked. This alignment and the first masking step are eliminated in the process described by forming a uniform chan stop implant and compensating the chan stop impurities in the channel region by a compensation implant through the channel window. The chan stop and channel are thereby self-aligned.

3,728,162
METHOD OF PRODUCING CHILL CAST PARTICULATE COMPOSITES

Leonard B. Griffiths, North Reading, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Original application Sept. 15, 1967, Ser. No. 667,910, now Patent No. 3,558,305, dated Jan. 26, 1971, which is a continuation-in-part of abandoned application Ser. No. 597,401, Nov. 11, 1966. Divided and this application Oct. 2, 1969, Ser. No. 871,164
Int. Cl. C22f *1/16*
U.S. Cl. 148—3 **2 Claims**



A ductile and high strength chill cast beryllium composite composed essentially of beryllium particles substantially surrounded by an alloy matrix of aluminum-magnesium-silicon. The composite consists essentially of about 85–60% by weight beryllium, about 39.5–13% by weight aluminum, about 3.6–0.10% by weight magnesium, and about 1.5–0.08% by weight silicon. Within the ranges of proportions of elements contributing to the ductility and strength of the composite, two different alloy matrix species arise. One of the alloy matrix species contains an excess of silicon to magnesium to a degree whereby the matrix alloy may be categorized as silicon rich with respect to the magnesium content. In the silicon rich alloy matrix substantially all of the magnesium will combine with the silicon. The remaining alloy matrix species contains an excess of magnesium to silicon to a degree whereby the matrix alloy may be categorized as magnesium rich with respect to the silicon content. The mechanical properties of the composites embodying the silicon rich alloy matrix and the magnesium rich alloy matrix, such as ductility and strength, are outstanding; however, the ductility and strength characteristics of the composites embodying the silicon rich alloy matrix are more outstanding than the ductility and strength characteristics of the composites embodying the magnesium rich alloy matrix.

3,728,163
ALKALINE LIQUIDS FOR CLEANING METALS

Alexander Robley Morrison, Caulfield, and Heinz Dieter Herrmann, Boronia, Victoria, Australia, assignors to Balm Paints Limited, Melbourne, Victoria, Australia
No Drawing. Filed May 10, 1971, Ser. No. 142,049
Claims priority, application Australia, May 25, 1970, 1,312/70; July 31, 1970, 2,040/70
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.15 Z **8 Claims**

Grain-refining pretreatment liquids for ferrous or zinc-containing metal surfaces, which have a pH of at least 4.5 and contain a titanium grain-refining compound are stabilised by the addition thereto of a soluble copolymer of maleic acid (anhydride), fumaric acid or citraconic acid and ethylene or a methyl, ethyl or cyclohexyl vinyl ether. The copolymers must have a viscosity as a 4% by weight solution in water of pH 9 of at least 3.5 centipoise at 25° C. A process of zinc phosphating in which the grain-refining liquid so-stabilised in a water-rinse immediately preceding a phosphating liquid is also disclosed.

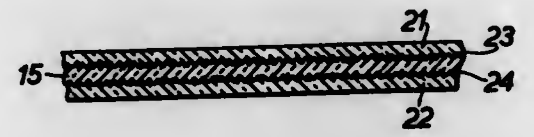
3,728,164
METHOD FOR FORMING A CHEMICAL COATING ON ALUMINUM OR ALUMINUM ALLOY

Takashi Abe, Koji Aizawa, and Masanobu Oguri, Osaka, Japan, assignors to Showa Aluminium Kabushiki Kaisha, Osaka, Japan
No Drawing. Filed Sept. 23, 1970, Ser. No. 74,837
Claims priority, application Japan, Oct. 13, 1969, 44/82,122
Int. Cl. C23f *7/06*
U.S. Cl. 148—6.27 **1 Claim**

A method for forming a chemical coating on aluminum or aluminum alloy in which the aluminum or aluminum alloy is immersed in an aqueous solution containing monoethylamine or diethylamine. The aqueous solution can be heated either before or after the addition of monoethylamine or diethylamine. After immersing, the metal may be subjected to pressurized steam.

3,728,165
METHOD OF FABRICATING A COMPOSITE SUPERCONDUCTOR

Brian Wilfred Howlett, Newbury, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Oct. 19, 1970, Ser. No. 82,414
Claims priority, application Great Britain, Oct. 27, 1969, 52,623/69
Int. Cl. C21d
U.S. Cl. 148—11.5 R **4 Claims**

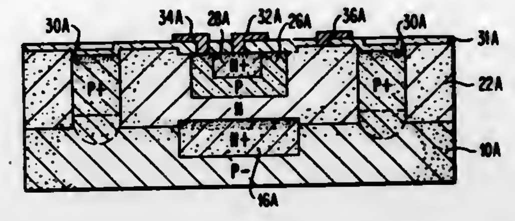


A15 superconductivity compounds of general formula A_3B are manufactured by forming an alloy of B in a carrier, contacting the alloy with A and heat treating so that a solid state reaction occurs between A and B.

3,728,166
SEMICONDUCTOR DEVICE FABRICATION METHOD AND PRODUCT THEREBY

Paul H. Bardell, Jr., Poughkeepsie, Fred Barson, Wappingers Falls, Charles E. Benjamin, Poughkeepsie, and Raymond P. Pecoraro, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 11, 1967, Ser. No. 608,628
Int. Cl. H01l *7/34;* **B01j** *17/00*
U.S. Cl. 148—175 **7 Claims**

This is a method for reliably reproducing, on the surface of an epitaxially grown monocrystalline layer, a pattern that was formed on the surface of the substrate on which the epitaxial layer was grown. By using a substrate having a {100.} crystallographic orientation, the {100.} epitaxial grown layer reproduces the pattern on the substrate surface directly above the substrate surface pattern. This permits accurate alignment that is necessary for any subsequent process operation, such as diffusion, to be accurately performed thereby increasing the yield in the manufacture of, for example, integrated semiconductor devices.



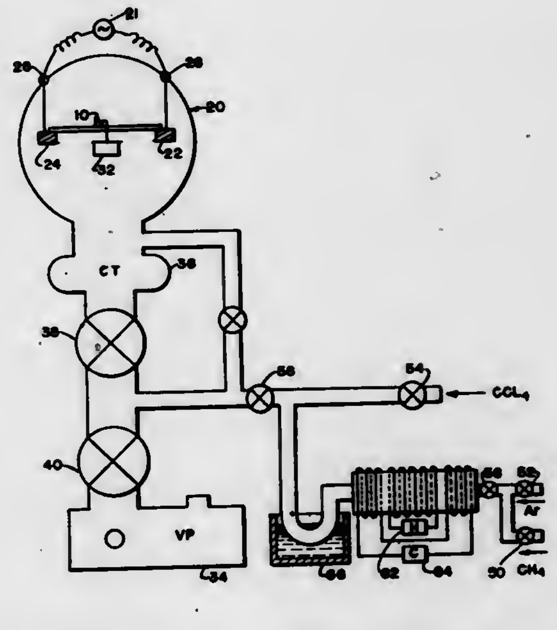
3,728,167
MASKING METHOD OF MAKING SEMICONDUCTOR DEVICE

Alan M. Garber, Boxford, Mass., assignor to GTE Sylvania Incorporated
Filed Nov. 16, 1970, Ser. No. 89,905
Int. Cl. H01l *7/02*
U.S. Cl. 148—187 **3 Claims**

An MIS device fabricated by forming the insulating structure of the gate of a thin layer of silicon oxide and an insulating material, such as silicon nitride, aluminum oxide, or aluminum silicate. The insulating structure masks the underlying channel during diffusion of the source and drain regions. Treatment in oxygen causes a thick field oxide to be grown at the silicon surface except under the insulating structure of the gate. Thus, a thin oxide is provided for the gate structure and a thick field oxide is provided for spacing the conductive metal paths away from the underlying silicon.

3,728,168
PROCESS OF MAKING A TITANIUM CARBIDE SHEATHED TITANIUM FILAMENT

Lloyd R. Allen, Belmont, and Brian W. Geary, Boston, Mass., assignors to National Research Corporation, Cambridge, Mass.
Filed Oct. 28, 1968, Ser. No. 771,010
Int. Cl. C21d *1/56, 1/74*
U.S. Cl. 148—20.3 **4 Claims**



Titanium filaments are carburized to produce a thick titanium carbide sheath and a central core of titanium metal with a dispersed strengthening phase. The resultant product is incorporated into a metal matrix to provide a composite of improved strength and stiffness.

3,728,169
ENCAPSULATION OF NITRONIUM PERCHLORATE EMPLOYING AMMONIA TO FORM AMMONIUM PERCHLORATE

James P. Diebold, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Mar. 18, 1963, Ser. No. 266,105
Int. Cl. C06d *5/06*
U.S. Cl. 149—5 **5 Claims**

1. A process for encapsulating nitronium perchlorate comprising the step of

flowing ammonia diluted with an inert gas over nitronium perchlorate particles.

3,728,170
PLASTIC-BONDED EXPLOSIVE COMPOSITIONS AND THE PREPARATION THEREOF

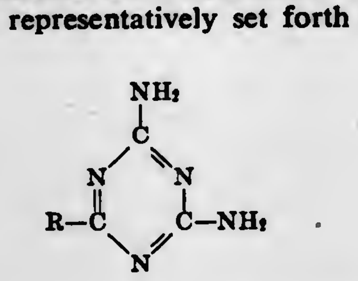
Barbara A. Stott, Ridgecrest, and Dino A. Sbrocca, China Lake, Calif., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Sept. 6, 1962, Ser. No. 222,262
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 **8 Claims**

1. A plastic-bonded explosive composition comprising a high explosive selected from the group consisting essentially of diaminotrinitrobenzene, cyclotetramethylenenitramine, and mixtures thereof, the copolymer of vinylidene fluoride and perfluoropropene and a synthetic organic silicone resin.

3,728,171
STABILIZED PROPELLANT COMPOSITIONS AND METHODS FOR THEIR PREPARATION

Larry P. Bundy, Brigham City, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.
No Drawing. Filed July 12, 1965, Ser. No. 471,795
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 **31 Claims**

Certain compositions, added to a high energy oxidizer, hydrazinium perchlorate, and a hydrocarbon polymeric fuel binder in a solid propellant formulation whereby said propellant is rendered curable to an elastomeric composition having good flexibility and hardness, where previously said propellant overcured to a hard and brittle material. The compositions are "stabilizers," having diverse structural forms representatively set forth below:



wherein R is hydrogen, phenyl, halogenated phenyl and/or $CX_4(CX_2)_n$, X being a halogen atom and *n* is an integer ranging between 0 and 8.

3,728,172
PRODUCT AND PROCESS FOR PRODUCING A CONTAINER CURED ILLUMINANT COMPOSITION

David R. Dillehay, Herman F. Krackenberger, and Howard C. Havron, Marshall, Tex., assignors to Thiokol Chemical Corporation, Bristol, Pa.
No Drawing. Filed Dec. 15, 1970, Ser. No. 98,481
Int. Cl. C06d *1/10*
U.S. Cl. 149—19 **28 Claims**

Illuminant fuels and oxidizers are added to crushable capsules containing curable, illuminant binders and to crushable capsules containing curing agents for the illuminant binders to form a homogeneously mixed, flowable powder, illuminant composition. This composition is dispensed into illuminant containers where a capsule rupturing pressure is applied rupturing the capsules in the composition. This results in the liquid binders and liquid curing agents being released and dispersed throughout the composition and interacting and forming a container cured illuminant.

3,728,173
DENSE EXPLOSIVE SLURRY COMPOSITIONS OF HIGH ENERGY CONTAINING A GUM MIXTURE

Melvin A. Cook, Lex L. Udy, and Albert G. Funk, Salt Lake City, Utah, assignors to Intermountain Research & Engineering Co., Inc.
No Drawing. Filed Oct. 17, 1969, Ser. No. 867,388
Int. Cl. C06b *1/00*
U.S. Cl. 149—21 **10 Claims**

A dense explosive composition of high energy is made up in heavy slurry form primarily of concentrated aqueous solution of a perchlorate, preferably sodium perchlorate, finely divided metallic aluminum, a self-explosive such as TNT or RDX, and a long term stable thickener comprising a guar gum or starch in combination with a xanthan gum. Sodium nitrate may be added to reduce fudge point.

3,728,174
GELATIN EXPLOSIVE CONTAINING HOLLOW RESINOUS PLASTIC SPHERES

Walter L. Reinhart, Westtown Township, Chester County, Pa., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 458,973, Sept. 28, 1954. This application Nov. 2, 1955, Ser. No. 544,579
Int. Cl. C06b *1/04*
U.S. Cl. 149—21 **16 Claims**

1. A gelatin explosive including, in its formula, hollow resinous nitrogen filled plastic pellets which are not attacked by other ingredients of the explosive and are of a size such that they pass a U.S.S. No. 8 screen, said pellets being included in an amount between about 0.1% and about 3% by weight.

3,728,175
SLURRY EXPLOSIVES

William Allan Craig, Glasgow, Scotland, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Nov. 8, 1971, Ser. No. 196,796
Int. Cl. C06b *1/04*
U.S. Cl. 149—29 **9 Claims**

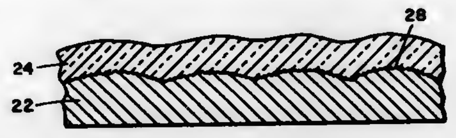
Slurry explosives comprising as thickener a Xanthomonas hydrophilic colloid cross-linked with an oxide of an element in a pentavalent or hexavalent state, for example antimony V, tellurium VI or chromium VI or an acid produced from the oxide or an alkali metal salt of such acid, the acid produced from the oxide having a dissociation constant $K<1.0$ in 0.1 to 0.01 N aqueous solution.

3,728,176
METHOD OF CAUSING ADHERENCE OF GLASS TO GOLD

John Francis Osborne, Tempe, and Hans Joachim Pille, Mesa, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Apr. 30, 1971, Ser. No. 139,051
Int. Cl. C23f *1/00*
U.S. Cl. 156—3 **6 Claims**

In Large Scale Integrated (LSI) technology, very complex circuits are manufactured which require at least two layer metallization patterns and often require three layers of metallization patterns in making all the interconnections among the transistors, diodes, resistors, etc. devices employed. Adjacent metallization layers are separated by silicon dioxide, SiO_2, phossil glass $P\text{-}SiO_2$ and other dielectric materials. Through connections between layers

are made by opening apertures in the intervening dielectric material and forming the next layer of metal over the dielectric layer, which metal layer includes a member extending through the aperture and into contact with either an underlying layer of metal or the above mentioned devices themselves. When gold is selected as the metallization, an additional intermediate layer is now required for interfacing with the dielectric material since dielectric materials have not heretofore adhered directly to gold. The present invention is directed toward eliminating the need for this intermediate layer and having the dielectric material to adhere directly to the gold.



3,728,177
METHOD OF PRODUCING A FLEXIBLE LAMINATE COPPER CIRCUIT

Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation
No Drawing. Original application July 30, 1970, Ser. No. 59,684, now Patent No. 3,677,828. Divided and this application May 27, 1971, Ser. No. 147,672
Int. Cl. H05k *3/06*
U.S. Cl. 156—3 **9 Claims**

A method of producing a laminate having high bond strength and excellent resistance to acid undercutting comprising oxidizing copper or its alloys to form an oxide film, applying a phosphoric acid solution to the oxide film, rinsing, drying, and adhesively laminating to a plastic film. The instant case also teaches a method of producing high tarnish resistance on copper and its alloys by so oxidizing and phosphating and further teaches a flexible printed circuit wherein the unwanted copper portion of the formed laminate is etched away, characterized by high peel strength and substantially no acid undercutting of the formed circuitry.

3,728,178
METHOD OF PRODUCING FLEXIBLE COPPER LAMINATE FOR PRINTED CIRCUITS

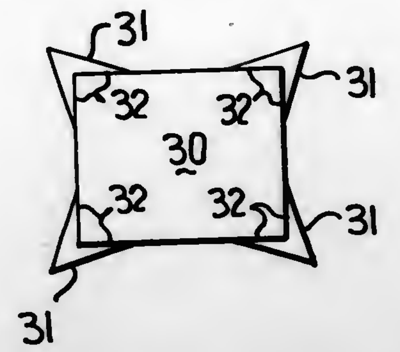
Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation
No Drawing. Original application July 30, 1970, Ser. No. 59,684, now Patent No. 3,677,828. Divided and this application May 27, 1971, Ser. No. 147,674
Int. Cl. H05k *3/06*
U.S. Cl. 156—3 **6 Claims**

A method of producing a laminate having high bond strength and excellent resistance to acid undercutting comprising oxidizing copper or its alloys to form an oxide film, applying a phosphoric acid solution to the oxide film, rinsing, drying, and adhesively laminating to a plastic film. The instant case also teaches a method of producing high tarnish resistance on copper and its alloys by so oxidizing and phosphating and further teaches a flexible printed circuit wherein the unwanted copper portion of the formed laminate is etched away, characterized by high peel strength and substantially no acid undercutting of the formed circuitry.

3,728,179
METHOD OF ETCHING SILICON CRYSTALS

Jimmy Lee Davidson, Melbourne Beach, and Donald R. Mason, Indialantic, Fla., assignors to Radiation Incorporated, Melbourne, Fla.
Filed May 20, 1970, Ser. No. 39,092
Int. Cl. H01l *7/50*
U.S. Cl. 156—8 **2 Claims**

A technique for making dielectrically isolated semiconductive devices on a single crystal silicon substrate, employing an etchant consisting of water, an amine and a complexing agent. The etchant acts on a silicon wafer cut from a single crystal at differing etch rates for three structural axes of the silicon crystal structure to form moats. By properly selecting moat orientation it is possible to substantially avoid undercutting of a masking oxide used to determine the geometrical pattern which is etched on the silicon wafer, and to shape the moat angles. The reduction of undercutting permits closer spacing of the pattern which is etched on the wafer, resulting in a significantly increased component density, and the angularity of the moat permits forming of smaller islands than has been feasible in the past.



3,728,180
POWDERLESS ETCHING BATH COMPOSITIONS

Harold J. Messerschmidt, Stockholm, Karl Heyman, Montclair, and Bernadou W. Johnsen II, Paterson, N.J., assignors to Mona Industries, Inc., Paterson, N.J.
No Drawing. Filed Mar. 29, 1972, Ser. No. 239,384
Int. Cl. B44m *3/02;* **C23g** *1/26*
U.S. Cl. 156—14 **18 Claims**

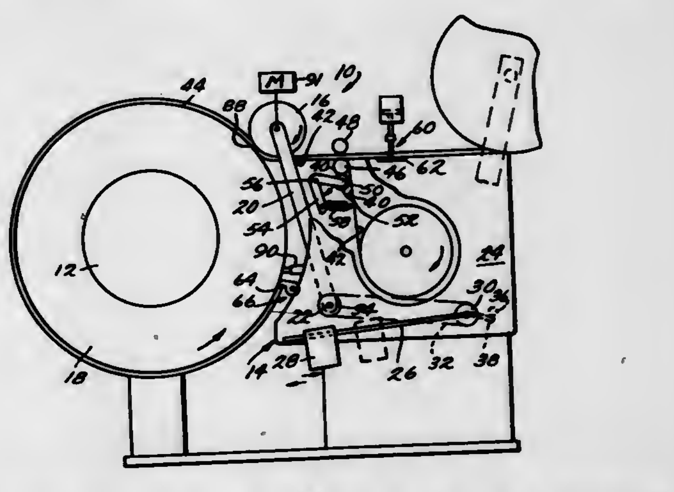
Powderless etching bath additive compositions, especially for etching photoengraving plates of magnesium, zinc or alloys thereof, containing

(a) a water soluble or dispersible sulfonated fatty acid of from 8 to 24 carbon atoms, and
(b) at least one saturated or olefinically unsaturated monocarboxylic acid of from 8 to 24 carbon atoms,

and etching baths also containing nitric acid and water, gives good etching performance, particularly decreased lateral etching and better side wall protection of the resist.

3,728,181
APPLICATION OF TREAD STRIP TO TIRE CASING

Kenneth I. Simmons, Jr., Hartford City, Ind., assignor to Bandag Incorporated, Muscatine, Iowa
Filed Sept. 28, 1970, Ser. No. 76,195
Int. Cl. B29h *17/02, 17/06*
U.S. Cl. 156—96 **8 Claims**

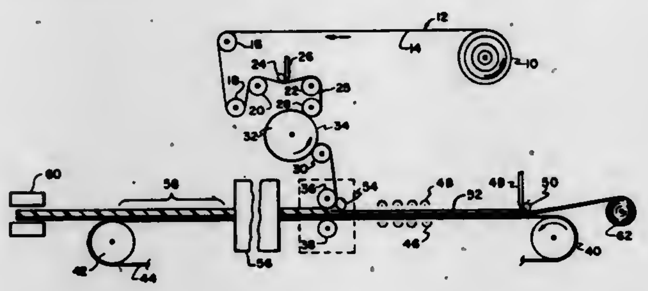


A precured rubber retread strip is applied to a prepared tire casing mounted for rotation about its axis by pressing the leading edge of a continuous tread strip against the tire periphery with a cold vulcanizing bonding medium disposed between the tire and the strip, driving either the tire or strip to cause rotation of the tire and wrapping of the strip around the tire, sensing the arrival of the leading edge of the strip at a predetermined point and cutting the strip in response to the arrival of the leading edge of the strip at a predetermined location so as to produce a strip of the appropriate length for the tire. The strip may be stretched longitudinally as it is applied to the tire or the tire circumference may be reduced by spreading the beads prior to application of the strip.

3,728,182
METHOD OF PREPARING RESIN-BACKED TUFTED CARPET TILES

Reuben Wisotzky, Lexington, Mass., and David K. Slosberg, Atlanta, Ga., assignors to Pandel-Bradford, Inc., Lowell, Mass.

Filed June 25, 1971, Ser. No. 156,830
Int. Cl. B32b *5/02*
U.S. Cl. 156—72 **20 Claims**

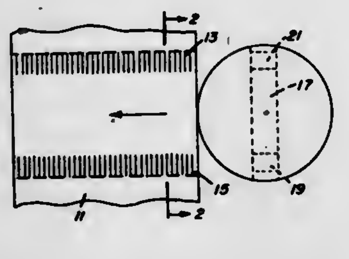


A method of preparing dimensionally stable solid vinyl resin-backed carpet tiles characterized by a fibrous face, which method comprises: laying the surface of a precoated tufted carpet under pressure between opposing rolls having a fixed adjustable gap therebetween onto the wet surface of a heavily loaded vinyl resin plastisol layer deposited on a release surface while maintaining a rolling bank of a liquid resinous material at the nip of the opposing rolls during the laying process; fusing the heavily loaded vinyl resin layer to the back of the carpet; cooling the fused layer; stripping the fused layer from the release surface; and cutting the solid vinyl resin-backed carpet so prepared into carpet tile sections.

3,728,183
METHOD OF AND APPARATUS FOR ULTRASONIC SPLICING

Walter C. Wasco; Charles W. Pierson, both of Rochester, and Leonard E. Pagnard, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed March 19, 1971, Ser. No. 126,091
Int. Cl. B29c *27/08*
U.S. Cl. 156—73 **7 Claims**

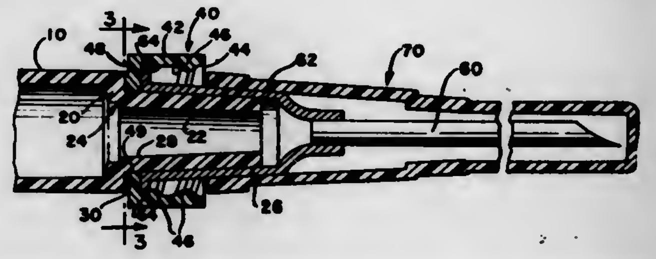


A method for ultrasonically uniting sheets of thermoplastic material comprising the steps of: a) providing an anvil having a plurality of spaced grooves in a surface thereof; b) positioning said sheets in superposed relationship on said anvil and covering said grooves; and c) traversing an ultrasonically vibrating horn across said grooves, and in contact with the area of said superposed sheets which covers said grooves and the surface of said anvil between said grooves. This method is of particular value when an electrically conductive metal coating is to be preserved across the spliced area. Two parallel spaced splices can be performed with a single ultrasonic horn having two pads designed to traverse two rows of grooves simultaneously. The ultrasonic horn should be mounted for pivoting about an axis midway between, and parallel to the rows, to assure uniform contact. The apparatus comprises a motor propelled carriage for the horn adapted for back and forth movement so that successive splices can be made during movements in opposite directions. Tracks at opposite ends of the anvil are provided for wheels to ride on to remove the horn from the work upon completion of a splice.

3,728,184
METHOD OF MAKING SYRINGE AND NEEDLE ADAPTER ASSEMBLY BY ULTRASONIC BONDING

George K. Burke, and Kenneth Raines, both of Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.

Division of Ser. No. 32,789, April 29, 1970, Pat. No. 3,638,650. This application Aug. 26, 1971, Ser. No. 175,310
Int. Cl. B29c *27/08*
U.S. Cl. 156—73 **2 Claims**

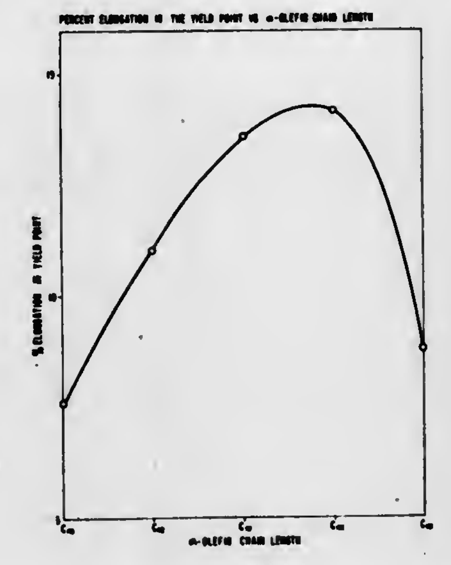


A needle adapter is supported in surrounding relationship to the boss on a syringe and has attaching portions to mount a hypodermic needle having attaching flanges on the hub thereof. The needle adapter includes a plurality of tapered spaced portions which are ultrasonically fused to spaced portions of the annular shoulder on the barrel of the syringe surrounding a boss extending therefrom.

3,728,185
OLEFIN-SO_2 COMPOSITIONS CONTAINING FINELY DIVIDED FUSIBLE INORGANIC MATERIAL AND METHOD FOR BONDING THEREWITH

Don N. Gray, Sylvania, Ohio, assignor to Owens-Illinois, Inc.

Filed May 22, 1970, Ser. No. 39,769
Int. Cl. B32b *31/26;* **C08f** *13/06*
U.S. Cl. 156—89 **18 Claims**

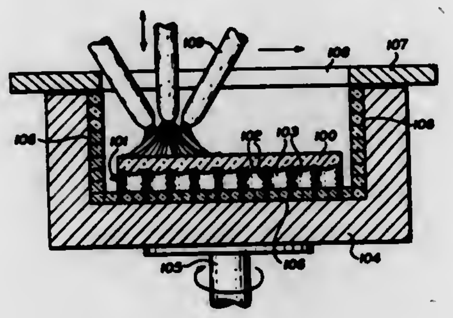


Compositions comprising a pyrolyzable olefin-SO_2 polymer having uniformly distributed therethrough a finely divided inorganic fusible or sinterable material, for example, sealing glass. The composition can be extruded into tape form, the tape applied to a surface or between surfaces, and then heated to a temperature sufficient to pyrolyze the polymer into gaseous components and also sufficient to sinter or fuse the inorganic particulate material onto the surface or surfaces.

3,728,186
OPTICAL ELEMENTS

Heinrich Mohn, Hailer, Kreis, Germany, assignor to Heraeus-Schott Quarzschmelz G.m.b.H., Hanau, Germany

Division of application Ser. No. 825,087, Mar. 20, 1969, and a continuation-in-part of applications Ser. No. 491,525, Sept. 30, 1965, and Ser. No. 630,147, Sept. 23, 1966, all now abandoned. This application Nov. 27, 1970, Ser. No. 106,230
Claims priority, application Germany, May 21, 1965, H 52,128
Int. Cl. C03b *29/02, 11/08;* **G02b** *5/08*
U.S. Cl. 156—153 **5 Claims**

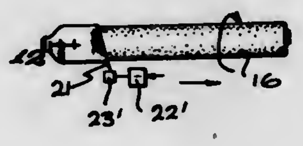


Method of forming a lightweight optical structure such as a mirror or window made up of an optical plate of quartz fused to a perforated support plate of quartz or fused silica by placing the optical plate on the perforated support plate in such position that the rear surface of the optical plate covers the perforation openings; and directing a high intensity, high temperature source of radiant heat onto the optical surface of the optical plate whereby to preferentially heat the areas of contact between the optical plate and the walls of the perforated support to selectively fuse such areas and to cause a portion of the rear face of the optical plate to deform and convexedly depend into the perforations of the support plate. The resulting optical structure is also described.

3,728,187
METHOD OF APPLYING ALTERNATE LAYERS OF PLASTIC FOAM AND GLASS FIBERS TO A METAL TUBE

Andrew R. Martin, 1782 Plaza Del Amo, Torrance, Calif. 90501

Filed Oct. 26, 1970, Ser. No. 83,798
Int. Cl. B31c *13/00;* **B65h** *81/00;* **F16l** *59/00*
U.S. Cl. 156—162 **7 Claims**



Alternate layers of plastic foam and glass fiber fabric between inner and outer moisture impervious walls of glass fiber filament-wound plastic layers forming a unitary jacket applied over a metal tube with a substance between the tube and the jacket preventing adherence of the jacket to the tube.

3,728,188
CHROME-FREE DEOXIDIZING AND DESMUTTING COMPOSITION AND METHOD

Robert Warren Yarrington, Ambler, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

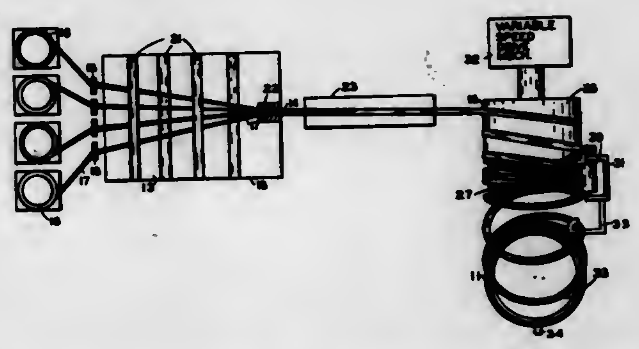
No Drawing. Filed July 29, 1971, Ser. No. 167,513
Int. Cl. C23g *1/15*
U.S. Cl. 156—22 **7 Claims**

A deoxidizing and desmutting process, employing chrome-free compositions and providing improved solutions for treating aluminum surfaces, in preparation for subsequent finishing operations. The invention, in both its method and composition aspects, involves preventing smut formation on the deoxidized aluminum surface, controlling surface etch during the deoxidizing process, and prolonging the effective life of the aqueous acidic deoxidizing solution.

3,728,189
METHOD AND APPARATUS FOR FABRICATING A PLURALITY OF FILAMENTS INTO A HELIX

George John Hannes, Maumee, James William Helmick, Toledo, James Arnold Dennis, Perrysburg, and John Marvin Current, Jerry City, Ohio, assignors to Johns-Manville Corporation, New York, N.Y.

Filed June 6, 1969, Ser. No. 830,949
Int. Cl. B29h *9/02;* **B65h** *81/00*
U.S. Cl. 156—173 **4 Claims**



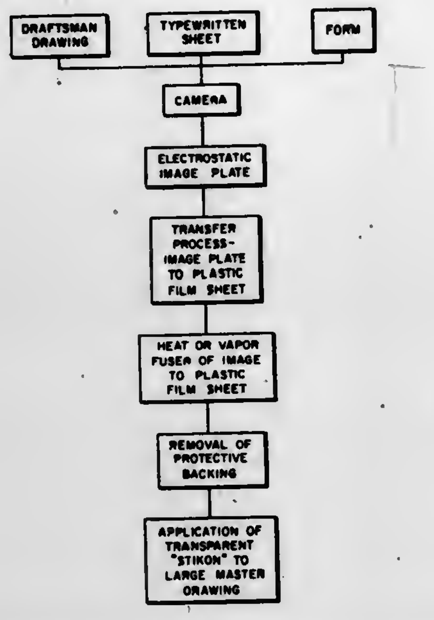
Method and apparatus for producing a helix by pulling a plurality of filaments through a resin bath, over a tensioning means through an orifice, and through a heating section for a first stage cure. The partially cured strand is drawn around a heated, stationary, helical forming surface upon which it is cured to mechanically stable form. The forming surface establishes the pitch of the helix, its inside diameter and the cross section of each turn. A drive hub having a knurled surface to frictionally engage the inner diameter of the cured helix is axially aligned with the forming surface and is driven at a suitable speed to enable the resin filled strand to be precured and finally cured in the time and at the temperature developed during the pass through the heating section and over the forming surface.

3,728,190
METHOD OF PREPARING ARCHITECTURAL AND ENGINEERING DRAWINGS

Robert E. Clay, 8260 E. 105th Ave., Henderson, Colo. 80640

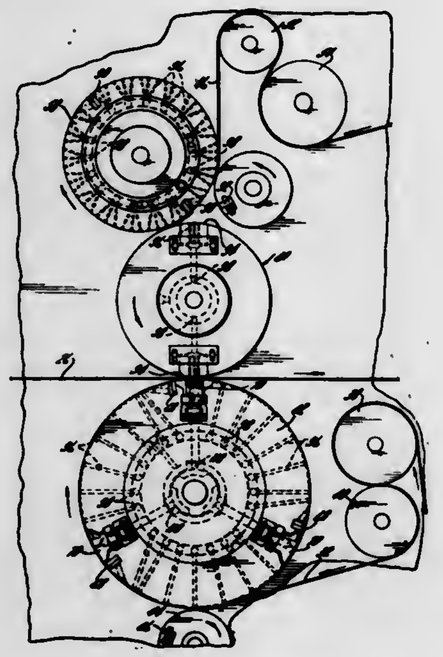
Filed Nov. 2, 1970, Ser. No. 86,102
Int. Cl. B32b *31/04*
U.S. Cl. 156—235 **3 Claims**

A master drawing, architectural or engineering, to which is adhesively attached a transparent plastic film sheet having an acetate or polyester base onto which informative matter supplemental to the subject of the master drawing has been transferred from a manually drafted and typed master copy by an electrostatic or xerographic type process. The film sheet has a pressure sensitive backing protected by a wax type paper sheet. After removal of the protective sheet, the film sheet is applied by pressure to the master drawing and appears as an integral part thereof, with the transferred matter in clean sharp lines and letters which do not become smeary when handled in use. The process of preparing drawings embodying my invention includes the steps of manually preparing a master copy containing informative matter supplemental to a master drawing, transferring same by electrostatic or xerographic process with either vapor or heat fusion of a powdered ink image of the master copy to the plastic film, and applying the film sheet by means of its adhesive backing to the master drawing.


DRAFTSMAN DRAWING
TYPEWRITTEN SHEET
FORM
CAMERA
ELECTROSTATIC IMAGE PLATE
TRANSFER PROCESS-IMAGE PLATE TO PLASTIC FILM SHEET
HEAT OR VAPOR FUSER OF IMAGE TO PLASTIC FILM SHEET
REMOVAL OF PROTECTIVE BACKING
APPLICATION OF TRANSPARENT "STIKON" TO LARGE MASTER DRAWING

3,728,191
WAISTBAND TAPE APPLICATION FOR DISPOSABLE DIAPERS

Anthony R. Wierzba and Harvey J. Spencer, Green Bay, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 19, 1971, Ser. No. 126,003
Int. Cl. B32b *31/10*
U.S. Cl. 156—265 **25 Claims**



A tape applicator for applying transversely extending strips of adhesive tape at predetermined intervals along the edge of a moving web of material such as disposable diaper stock, and for simultaneously applying release coated covered tabs over the strips of tape. The tape applicator may utilize either wide tape cut into short segments or, with an appropriate change of gear ratios, may use narrow tape cut in long segments to take advantage of the longitudinal strength properties of certain types of tape material. In the latter case, the long narrow tape segments are re-oriented and applied to extend transversely from the edge of the web material.

3,728,192
RUBBER-METAL ADHESION USING HALOGENATED QUINONE AND RESORCINOL-ALDEHYDE CONDENSATION PRODUCT

Robert W. Kindle, Cheshire, and Robert R. Barnhart and Philip T. Paul, Naugatuck, Conn., assignors to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Apr. 5, 1971, Ser. No. 131,470
Int. Cl. B32b *15/02, 15/06*
U.S. Cl. 156—306 **7 Claims**

The adhesion of rubber to metal (e.g., wire tire cord) is improved by incorporating a halogenated quinone (e.g., chloranil) and a resorcinol-aldehyde condensate (e.g., condensation product of resorcinol and acetaldehyde) into the rubber.

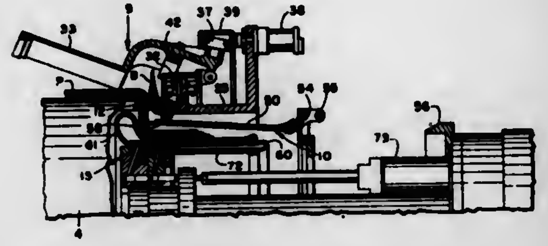
3,728,193
TERTIARYBUTYLSTYRENE/BUTADIENE BLOCK COPOLYMERS AS ADHESIVES

Leland Dennis McKeever and Wen-Jiu Cheng, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Oct. 12, 1970, Ser. No. 80,205
Int. Cl. C09j *3/00;* **B32b** *27/06*
U.S. Cl. 156—334 **5 Claims**

Adhesive copolymers of tertiarybutylstyrene and butadiene which show high adhesive strength are polymers which contain 1 to 50 weight percent tertiarybutylstyrene, 99 to 50 weight percent butadiene and have inherent viscosities of from 0.5 to 4 deciliters per gram.

3,728,194
ROTATING EXPANDABLE PLY RING MECHANISM

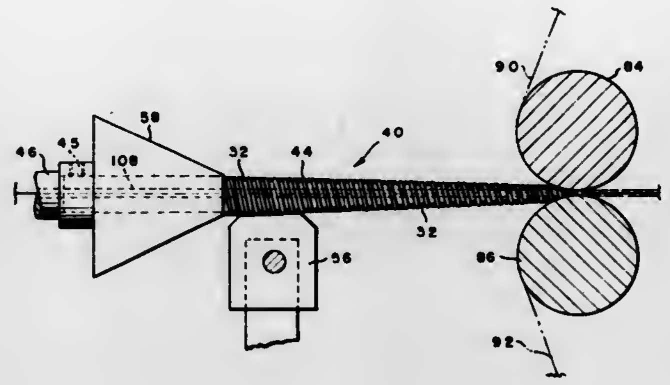
George E. Enders, Salem, Ohio, assignor to NRM Corporation, Akron, Ohio
Filed Nov. 27, 1970, Ser. No. 93,103
Int. Cl. B29h *17/16, 17/22*
U.S. Cl. 156—400 **19 Claims**



Ply ring mechanism consists of a plurality of ring segments which are adapted to be disposed adjacent the ends of a tire building drum for supporting the overhanging ply edges during stitching of the plies together. The ply ring segments are pressed into frictional engagement with the ends of the drum for rotation therewith during wrapping of the plies around the drum and subsequently retracted to provide adequate clearance for the ply turn-down, ply turn-up and other operations. The ply ring segments are also pivotally mounted at their axial outer ends to permit the ring segments to be expanded radially outwardly to clear the tire beads stored therein and adjacent end of the drum when setting the tire beads against the turned-down ply edges, such ply ring segments having a stepped contour to accommodate the long flippers on the beads during wrapping of the tire plies around the drum and ply ring segments disposed adjacent the ends of the drum.

3,728,195
APPARATUS FOR THE PRODUCTION OF NON-WOVEN NET FABRICS

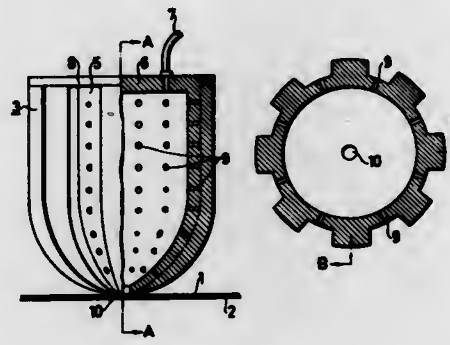
Milton M. Bolles, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Feb. 10, 1969, Ser. No. 798,044
Int. Cl. D04h *3/04*
U.S. Cl. 156—441 **2 Claims**



An improved apparatus for forming textile non-woven net fabrics composed of a sheet of weft threads adhesively secured to one or more sheets of warp threads, the weft sheet being formed by continuously winding a thread about a pair of spaced thread supporting screws to form a plurality of reaches therebetween, and wherein the screws are rotated about their longitudinal axes such that the helically threaded surface of the screws support the loop ends of the thread reaches to laterally advance the reaches in spaced relation along the screws to form the weft sheet.

3,728,196
APPARATUS FOR PRODUCING A PACKAGING CONTAINER COMPRISING A CONTAINER BODY OF THERMOPLASTIC MATERIAL AND A METAL FOIL LINING INSERTED INTO THE CONTAINER BODY

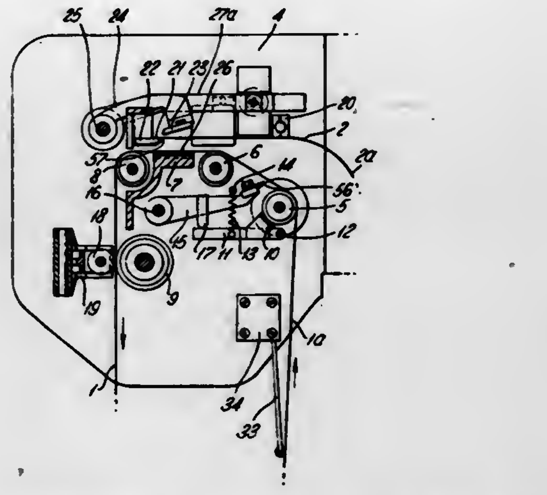
Anders Ruben Rausing, Blentarp, Sweden, assignor to Sabrefina SA, Fribourg, Switzerland
Original application Sept. 9, 1968, Ser. No. 758,433, now Patent No. 3,616,033. Divided and this application Mar. 17, 1971, Ser. No. 125,348
Claims priority, application Sweden, Sept. 25, 1967, 13,129/67
Int. Cl. B31f *1/00*
U.S. Cl. 156—443 **4 Claims**



Apparatus for providing a themoplastic container with a metal foil lining by shaping the metal foil lining as it is inserted into the container by forming overlapping folds of the foil so it will conform to the shape of the inner walls of the container.

3,728,197
SPLICING APPARATUS FOR SPLICING THE ADHESIVE LEADING END OF A WAITING WEB ONTO A RUNNING WEB

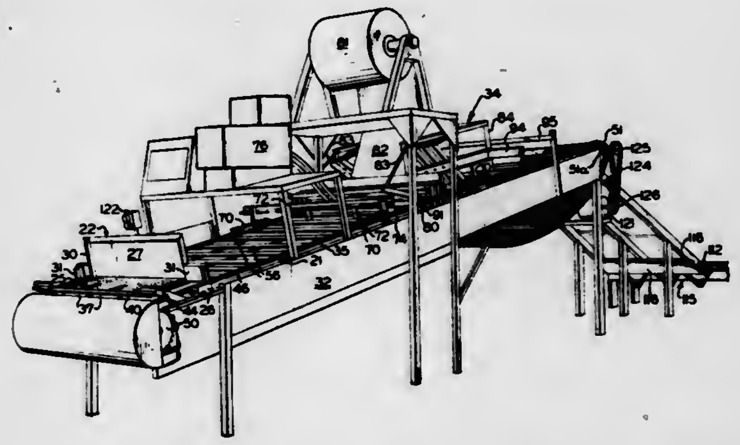
Richard William Harris and John Handley, London, England, assignors to Molins Machine Company Limited
Filed Dec. 8, 1970, Ser. No. 96,172
Claims priority, application Great Britain, Dec. 10, 1969, 60,374/69
Int. Cl. B31f *5/06;* **B65h** *19/16*
U.S. Cl. 156—506 **10 Claims**



A splicing arrangement in which a new wrapper web is spliced to a nearly-exhausted old web by means of adhesive tape, there being slack in the new web at the time of splicing, and when the splice has been made the old web is driven by driving rollers at a point downstream of the splicer faster than it is being consumed until the splice has passed the driving means and the slack in the new web is taken up, the driving at the higher speed then serving to accelerate the reel of the new web. When the reel has reached working speed the drive is discontinued.

3,728,198
APPARATUS FOR PACKAGING ROOFING ELEMENTS AND PROCESS

Boyce Robert White, Orlando, Fla., assignor to Boyce Robert White, Inc., Orlando, Fla.
Continuation-in-part of application Ser. No. 760,765, Sept. 19, 1968, now Patent No. 3,566,562. This application Jan. 19, 1970, Ser. No. 3,717
Int. Cl. B32b *31/10;* **E04d** *15/07*
U.S. Cl. 156—552 **3 Claims**



A plurality of asphalt shingles, customarily having dimensions one by three feet and cut-outs spaced a foot apart, are stacked in an inverse cupped disposition. The stack so-cupped is placed on a shingle feed device disposed over an endless belt-like member which has parallel spacing bars disposed perpendicular to the direction of travel of the endless member and which are spaced apart five inches from leading edge to leading edge. Each spacing bar slices off the lower of the cupped shingles held in the feed device which are carried therefrom by the endless member, a single shingle being carried by each spacing bar whereby each shingle is overlapped by the following shingle the same amount as would occur on a roof except that the shingles are inverted and, at this point, not staggered laterally. Under the overlapped shingles, a pair of diverging chains have stagger plates extending outwardly therefrom, the chains moving at about the same speed as the endless member so that the stagger plates each engage one of the cut-out portions of each shingle and cause the shingles to move alternately outwardly so as to be staggered laterally as they would be on a roof. Resiliently biased fingers engage the shingles on the moving member to ensure alignment with the spacing bars and a series of rollers on each side bear against the edges of the shingles finely to adjust their lateral position. Hot, quick acting glue is then applied from above the endless member to the exposed shingles in a predetermined pattern and extensible Kraft paper which is two feet in width is applied from an overhead roll under a compression belt to the center of the array of shingles whereby the shingle array is glued by intermittently applied beads of glue to the Kraft paper on a continuous basis. The Kraft paper is thereafter cut so as to connect only a predetermined number of shingles—say twenty—into a single array which are moved off the end of the endless belt by gravity and down a slide into a container. As the array is received in the container, the paper automatically folds between the individual shingles in an accordion-like manner. The container is inverted and secured, and the array, when opened, may be easily extended on the roof deck to its desired position. In a modification, the desired stagger plates can be on a converging chain under the endless member and brought to bear against the edges of the shingles rather than the cut-outs. In any event, the cut-outs can be a slit rather than spaced slots and the shingles need not be of the asphalt type.

3,728,199

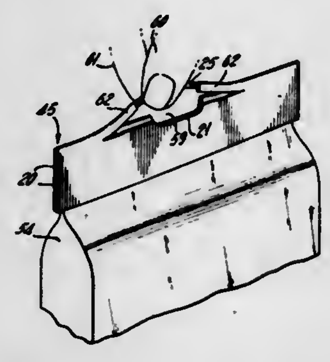
TAPE APPLYING APPARATUS

Alexander J. Stanley, New Brunswick, N.J., assignor to Nabisco, Inc.

Filed May 17, 1971, Ser. No. 144,026

Int. Cl. B31f *5/00*

U.S. Cl. 156—554 **6 Claims**



A relatively wide closure strip, preferably of metallic foil, is moved continuously in tension over the surface of a convex platen. The strip has a longitudinally aligned series of finger clearance apertures, and carries on its outer face a coating of thermoplastic adhesive of substantially lower melting point than that of the bag material to which the closure is to be applied. A narrow tearing tape is continuously fed over the platen in contact with the coated face of the strip and closely adjacent the common center line of the apertures, so that the tape spans the holes longitudinally. The inner zone of the platen immediately underlying the tape is maintained at a heating temperature sufficient to melt the plastic adhesive, thereby heat sealing the tape to the closure strip. An air jet cools the sealed joint, completing conversion of the strip and tape to a permanently composite web. The strip is hinge creased or serrated along the center line of the apertures to facilitate accurate subsequent folding, and the composite web is delivered either to storage reels or directly to packaging apparatus, as desired.

3,728,200

APPARATUS FOR PRODUCING A SEALING JOINT BETWEEN THIN SHEETS

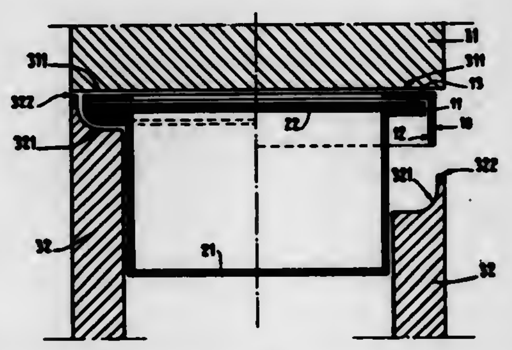
Jacques Peyraud, Cachan (Val De Marne), France, assignor to Societe Centrale Des Emballages Aluminum (Cebal) Paris, France

Division of Ser. No. 595,159, Nov. 17, 1966, Pat. No. 3,522,124. This application Nov. 28, 1969, Ser. No. 879,949

Claims priority, application France, Nov. 19, 1965, 39,112

Int. Cl. B30b *15/34;* B29c *19/02*

U.S. Cl. 156—583 **6 Claims**



Apparatus for the joinder of edge portions of sheet material into a sealing joint by arranging sheets with edge portions to be joined in aligned superposed relation and providing a blank of thermoplastic material having a shape and dimension corresponding to the shape and dimension of the edges to be joined including first and second platen elements movable toward and away from one another and shaped to contact and fold said blank about the edges of said sheets.

3,728,201

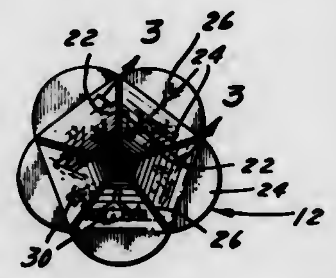
THEMATICALLY ILLUSTRATED ICOSAHEDRON ASSEMBLAGE AND METHOD OF ASSEMBLY

Frank J. Stroehmer, 2315½ S. Catalina, Los Angeles, Calif. 90007

Continuation-in-part of abandoned application Ser. No. 875,423, Feb. 6, 1970. This application July 27, 1971, Ser. No. 166,570

Int. Cl. A47g *33/08;* B32b *3/04, 31/18*

U.S. Cl. 161—14 **8 Claims**



There is disclosed an article of manufacture and a method of assembly for an ornamental icosahedron having printed on each face portion thereof a thematic illustration for relating various stories in a sequential manner. The ornamental icosahedron comprises a multiplicity of circular sheets of paper or other similar material, each of said sheets having scored lines in the shape of a triangle within the circumference of the circular sheet, each scored line of the triangle and its related arc portion of the circumference of the sheet defining a segmented foldable area having an adhesive material formed thereon, each segment also being numerically marked in a sequential manner to correspond to other

sequentially marked segments of other sheets, whereby said segmented areas are secured to matching segments, thus forming an ornamental icosahedron as a single unit.

3,728,202

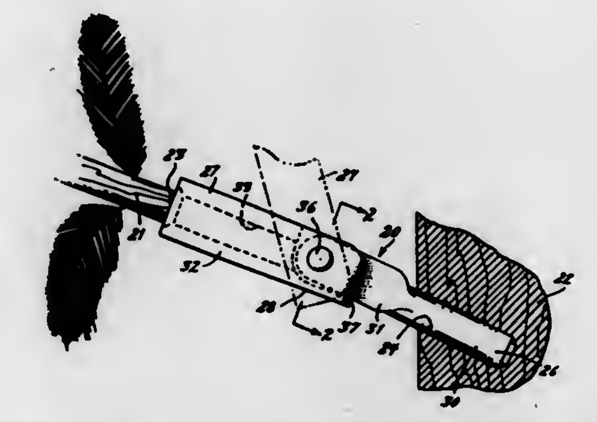
HINGE TYPE BRANCH HOLDER FOR ARTIFICIAL TREE

Ammon Baus, Philadelphia, and Frederick C. Keller, Cornwells Heights, Pa., assignors to Carey-McFall Company, Philadelphia, Pa.

Filed May 10, 1971, Ser. No. 141,505

Int. Cl. A41g *1/00*

U.S. Cl. 161—24 **6 Claims**



A connector for connecting a simulated branch to an artificial trunk, the connector including a branch holder, and a trunk attachment member, and pivot means swingably connecting together the branch holder and trunk attachment member.

3,728,203

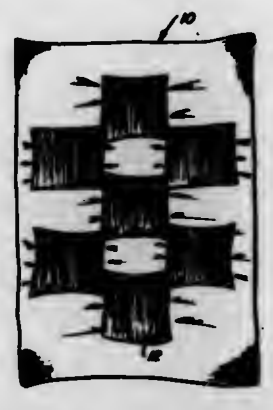
PATTERNED COMPOSITE MATERIAL

Louis N. Taylor, North Miami Beach, Fla., assignor to Lou Taylor, Inc., Hialeah, Fla.

Filed May 28, 1971, Ser. No. 148,111

Int. Cl. B32b *3/16, 3/00*

U.S. Cl. 161—39 **18 Claims**



A patterned composite material comprising a flexible sheet material adapted to be gathered in at least one direction with at least three rectangularly shaped elastic strip members individually applied to the sheet material in a stretched secured condition so that the sheet material connects the strip members. The strip members are so arranged on the sheet material that two strip members are positioned in line and spaced apart to form a space therebetween, with at least one strip member being positioned in a spaced distance to the side of the center axis of said two in line strip members. The elastic strip members are constructed to return to substantially their original dimensions after being stretched to carry the sheet material into a gathered configuration so that the plurality of elastic strip members forms a gathered composite pattern on the sheet material with the areas of the sheet material opposite the elastic strip members being gathered by the constrictive action of the plurality of elastic members and the adjacent areas to the elastic member secured areas being slightly depressed in relation to the plane of the areas opposite the elastic members.

3,728,204

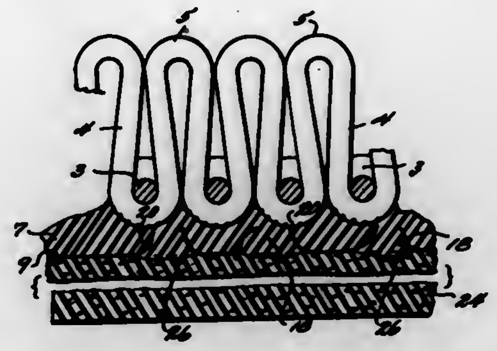
TEXTILE PRODUCT AND PROCESS FOR MAKING SAME

William H. Cochran II, P.O. Box 32, Stonington, Conn. 06378

Continuation-in-part of application Ser. No. 765,267, Oct. 4, 1968. This application Mar. 17, 1970, Ser. No. 20,200

Int. Cl. D03d *27/00;* D04h *11/00*

U.S. Cl. 161—66 **11 Claims**



An antistatic and flame retardant textile product having a base and a pile surface of yarn which is susceptible to the generation and/or accumulation of static charge and/or having the quality of allowing flame spread, an adhesive on the opposite surface of the textile product and an electrically and thermally conducting, static-dissipating metal foil bonded to the opposite surface of the product by means of the adhesive.

3,728,205

ANTISTATIC POLYMER COMPOSITION

Gordon D. Brindell, Crystal Lake, Ill., and Leland E. Dannals, Waterbury, Conn., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Original application Oct. 17, 1969, Ser. No. 867,410, now Patent No. 3,658,744. Divided and this application Aug. 13, 1971, Ser. No. 171,732

Int. Cl. B32b *7/00*

U.S. Cl. 161—67 **10 Claims**

Polymer compositions are provided which are sufficiently electrically conductive so as to inhibit the build-up of electrostatic charges. The compositions contain an effective amount of an antistatic agent selected from the group consisting of alkali metal salts of organic acids or mixtures thereof with or without at least one polyhydric alcohol.

3,728,206

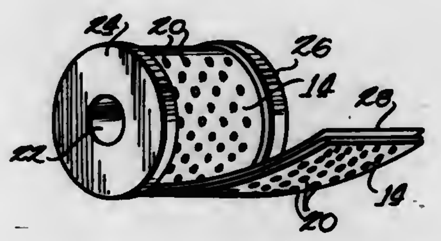
THERMOPLASTIC SUPPORTIVE STRUCTURE

George J. Buese, East Brunswick, N.J., assignor to Johnson & Johnson

Filed Nov. 23, 1970, Ser. No. 92,096

Int. Cl. B32b *3/10, 3/26*

U.S. Cl. 161—112 **10 Claims**



This composite supportive structure comprises a web of open-cell, resilient non-thermoplastic foam, such as polyurethane foam, containing within the same a matrix of foam-like thermoplastic material, such as trans-1,4-polyisoprene, which is cohesive and sufficiently plastic at elevated temperatures to be readily moldable and yet crystallizable into a rigid structure at room temperature. The foam-like thermoplastic matrix is present in sufficient quantity and distributed throughout the cellular structure of the web so as to substantially impart its moldability and rigidity characteristics thereto. The composite foam-within-a-foam structure is advantageously employed, preferably in perforated form, as an orthopedic wrap which, upon heating, can be readily molded to an injured limb and thereafter allowed to crystallize and harden to form a smooth, rigid supportive and protective cast.

3,728,207
NON-WOVEN FABRIC

Wilhelm Heling, Benshein-Auerback, Germany, assignor to Carl Freudenberg, Postfach, Germany

No Drawing. Filed Nov. 12, 1970, Ser. No. 89,043
Claims priority, application Germany, Dec. 12, 1969, P 19 62 331.5
Int. Cl. B32b *5/14*
U.S. Cl. 161—151 **2 Claims**

A non-woven fabric comprising a fibrous mat bonded with collagen, the concentration of collagen decreasing from the surface inwardly. In this way, the high-collagen surface can be applied against wounds, with which it is chemically compatible. By coating the low-collagen surface with plastic such as polyvinylidene chloride and forming a tube with the high-collagen surface inside, the tube will conform closely to sausage material filling even if the latter shrinks, so as to maintain a pleasing appearance; the plastic exterior, however, keeps the product impervious to water vapor and air.

3,728,208
OIL ABSORBENT FOAMED SILICATE FOR OIL POLLUTION CONTROL

J. Mark C. Whittington, Hedgesville, W. Va., and John E. Meyer and Glenn D. Tingle, Hagerstown, Md., assignors to GAF Corporation, New York, N.Y.

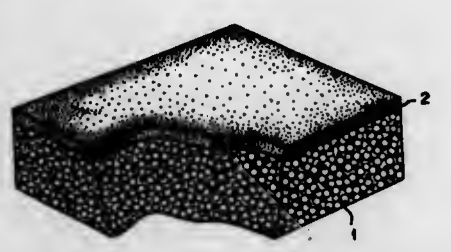
No Drawing. Filed Feb. 9, 1971, Ser. No. 114,076
Int. Cl. B32b *3/26, 5/18, 17/00*
U.S. Cl. 161—159 **19 Claims**

A porous alkali metal silicate foam having oleophilic-hydrophobic properties is provided for use in oil spill control and removal. The silicate foam is preferably formed from a blend comprising solid and liquid alkali metal silicates and an oil absorption-water repellent agent. The blend is pelletized, heated in an oven to expand the material into foam particles, and then shredded, graded and retreated with an oleophilic-hydrophobic agent to coat the internal and external surfaces and thereby further enhance the oil-absorption characteristics.

3,728,209
UNINFLAMMABLE STRUCTURAL MATERIALS

Suezo Sugaike and Masayuki Watanabe, Tokyo, and Shouzou Tanabe, Kanagawa, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 14, 1971, Ser. No. 162,594
Claims priority, application Japan, July 24, 1970, 45/64,358
Int. Cl. B32b *5/18*
U.S. Cl. 161—160 **3 Claims**

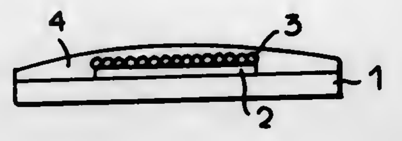


Uninflammable structural materials consisting of a board member prepared from aluminum nitride, phosphoric acid and light inorganic material and a foamed member made of aluminum nitride, phosphoric acid and inorganic foaming material and integrally bonded with said board member.

3,728,210
DRY TRANSFER

Jean Gustave Jules Piron, 360 D, Boulevard Emile Bockstael, Brussels, Belgium

Filed May 22, 1970, Ser. No. 39,752
Claims priority, application Great Britain, June 27, 1969, 32,716/69
Int. Cl. B44c *1/16;* **B32b** *7/06, 7/14*
U.S. Cl. 161—162 **20 Claims**



The invention relates to a dry transfer comprising a temporary support with printed ink signs and means for causing any selected ink sign to adhere to a receptor sheet under a sufficient pressure, so that said ink sign remains adhered to said receptor sheet when the temporary support is peeled away. Said means consist in layer of microcapsules retained on the free surface of each ink sign and containing a core material which will cause adhesion of ink sign to receptor sheet upon bursting of the microcapsules by liberating either a material reactivating a reactivatable adhesive applied on the ink sign, or a material which renders the receptor sheet temporarily tacky, or an adhesive material.

3,728,211
REINFORCED COMPOSITE

Claire G. Ball, Wheeling, Ill., and Arthur C. Grimm, Bellevue Borough, and Thomas Melville, Unity Township, Westmoreland County, Pa., assignors to United States Steel Corporation

Application Apr. 16, 1970, Ser. No. 29,211, now Patent No. 3,650,785, which is a continuation-in-part of abandoned application Ser. No. 663,315, Aug. 25, 1967. Divided and this application Aug. 30, 1971, Ser. No. 176,159
Int. Cl. B32b *5/16;* **D04h** *1/00*
U.S. Cl. 161—170 **2 Claims**

A reinforced composite of a castable matrix having discontinuous reinforcing filaments randomly distributed within the martix which reinforce the matrix and which are bonded to the matrix chemically and/or mechanically. The filaments have a non-round cross sectiontal configuration with width and thickness dimensions and with a width-to-thickness ratio of not greater than about five. For maximum reinforcing strength, the filaments should have an ultimate tensile strength at least equal to the average tensile stress developed in the filament at bond failure. The characteristics of the filaments are such as to permit dry admixing with the castable matrix material. A method of making the reinforced composite and apparatus for and a method of coating the filaments are disclosed.

3,728,212
HOT MELT ADHESIVE OF POLY(TETRAMETHYLENE)TEREPHTHALATE AND POLYSTYRENE OR POLYSTYRENE COPOLYMERS

John R. Caldwell and Winston J. Jackson, Jr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 11,033, Feb. 12, 1970, and Ser. No. 11,890, Feb. 16, 1970, which is a continuation-in-part of application Ser. No. 671,940, Oct. 2, 1967, now abandoned. This application Mar. 23, 1971, Ser. No. 127,333
Int. Cl. B32b *9/04;* **C08g** *39/10*
U.S. Cl. 161—182 **10 Claims**

Improved hot melt adhesives comprising a poly(tetramethylene terephthalate) polyester having an inherent viscosity of at least about 0.8, blended with a vinyl polymer selected from polystyrene and polystyrene copolymers and articles secured therewith.

3,728,213
ANTIBIOTIC PAPER

Charles Frank Hinz, East Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 773,954, Nov. 6, 1968, abandoned, and a continuation-in-part of Ser. No. 42,479, June 1, 1970, abandoned. This application Aug. 18, 1971, Ser. No. 172,880
Int. Cl. D21h *5/22, 3/12*
U.S. Cl. 162—161 **7 Claims**

Cellulose fibers possess strong antibiotic properties (including antiviral properties) when they have a uniform content of a small amount of a 2-(C_8–C_{18} substantially straight chain) pseudourea. The fibers remain antimicrobial when in addition they contain a normally water-soluble thermosetting wet strength resin in thermoset state. Antibiotic bandages, diapers, bed sheets, boxes, surgeons' gowns, etc. can be prepared from paper composed of these fibers.

3,728,214
POLYAMINE-ACRYLAMIDE-POLYALDEHYDE RESINS HAVING UTILITY AS WET AND DRY STRENGTHENING AGENTS IN PAPERMAKING

Herbert H. Espy, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,863
Int. Cl. D21h *3/58;* **C08g** *9/02*
U.S. Cl. 162—167 **17 Claims**

Disclosed is a novel polyamine-acrylamide-polyaldehyde resin useful in the papermaking art to enhance the wet and dry strength of paper.

3,728,215
AMINOPALYAMIDE—A CRYLAMIDE—POLYALDEHYDE RESINS EMPLOYING AN ALPHA, BETA-UNSATURATED MONOBASIC CARBOXYLIC ACID OR ESTER TO MAKE THE AMINOPOLYAMIDE AND THEIR UTILITY AS WET AND DRY STRENGTHENING AGENTS IN PAPERMAKING

Herbert H. Espy, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed March 12, 1971, Ser. No. 123,864
Int. Cl. D21h *3/58;* **C08g** *9/02*
U.S. Cl. 162—167 **18 Claims**

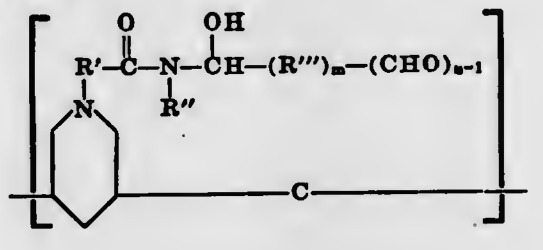
Disclosed are novel aminopolyamide—acrylamide—polyaldehyde resins useful in the paper making art to enhance the wet and dry strength of paper. The aminopolyamide results from the condensation of a polyalkylene polyamine with an alpha, beta-unsaturated monobasic carboxylic acid or ester.

3,728,216
DIALLYLAMINE-AMIDE-POLYALDEHYDE RESINS HAVING UTILITY AS WET AND DRY STRENGTHENING AGENTS IN PAPERMAKING

Ralph A. Bankert, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,865
Int. Cl. D21h *3/58;* **C08g** *9/02*
U.S. Cl. 162—167 **15 Claims**

Disclosed are resins prepared from a diallylamine, an amide and a polyaldehyde. The resins have the following repeating units

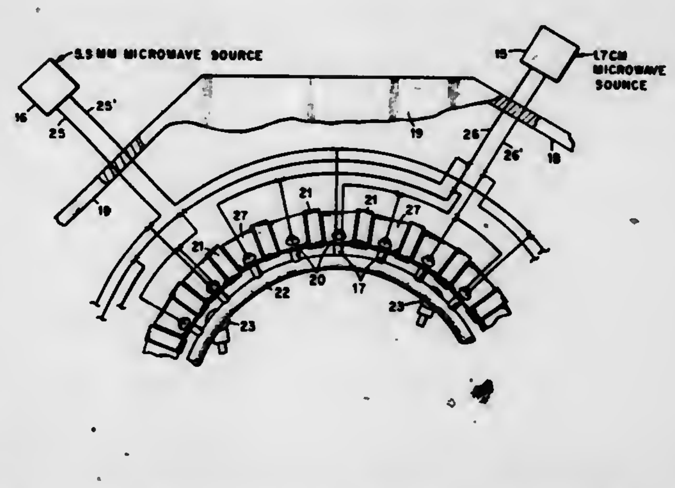


where R′ is methylene or ethylene, R″ is hydrogen or a lower alkyl radical, R‴ is a saturated or unsaturated aliphatic, cycloaliphatic or aromatic radical, *m* is 0 or 1 and *n* is at least 2. Also disclosed is the process for the preparation of the resin and its use to impart dry and wet strength to paper.

3,728,217
BUMPY TORUS PLASMA CONFINEMENT DEVICE

Raphael A. Dandl, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed June 5, 1972, Ser. No. 259,984
Int. Cl. G21b *1/00*
U.S. Cl. 176—3 **10 Claims**



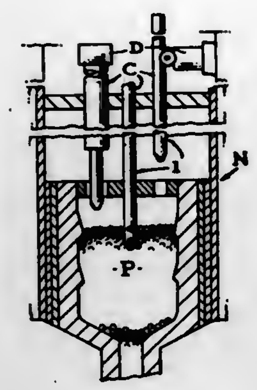
A toroidal thermonuclear plasma containment device is provided in which full toroidal plasma confinement is made possible by joining a set of individual segments containing steady-state, high-β, hot electron plasmas, sustained and heated by microwave power, to stabilize a less energetic toroidally confined plasma component. Each segment comprises a high-β relativistic electron plasma ring that is formed between two canted mirror coils with resonant and upper off-resonant microwave heating when the two mirror coils are pivoted about parallel axes (normal to the mirror axis) by equal but opposite angles to produce the nonaxisymmetric plasma ring. Thus, a bumpy torus is provided which is made magnetohydrodynamically stable by maintaining in each bump of the torus, and outside the toroidal plasma, a high pressure, relativistic electron plasma ring which is itself stabilized by cold plasma line tying.

3,728,218
CONTROL RODS FOR NUCLEAR REACTORS

Heinrich Gnutzmann, Mannheim, and Holger Kassler, Hannover, Germany, assignors to Brown Boveri/Krupp Reaktorbau G.m.b.H.

Continuation-in-part of application Ser. No. 765,955, Oct. 8, 1968. This application May 24, 1971, Ser. No. 146,288
Int. Cl. G21c *7/10*
U.S. Cl. 176—36 R **21 Claims**

A control rod for use in combination with a nuclear reactor system which comprises a pebble-bed reactor containing a loose pile of ball-shaped fuel elements into which the control rod is insertable, said rod being hollow and having defined in its hollow interior one or more channels for receiving fuel elements. The fuel elements are adapted to enter the channels via at least one entry opening at one end of the control rod. The control rod may be relatively smoothly tapered or have abrupt changes of cross-section with additional entry openings in both the tapered or abrupt change cross-section areas to receive other fuel elements.



3,728,219
CONTROL ROD DRIVE IN THE INTERIOR OF A PRESSURE VESSEL

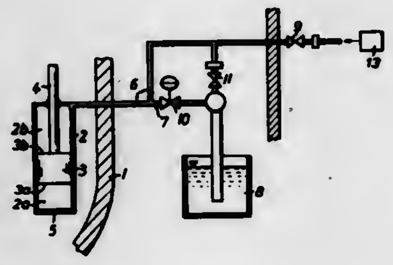
Jean Mattern, Fischbach, and Peter Daublebsky and Gunter Zeitzschel, Frankfurt, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Aug. 11, 1971, Ser. No. 170,878

Claims priority, application Germany, Aug. 11, 1970, P 20 39 845.2

Int. Cl. G21c *7/16*

U.S. Cl. 176—36 R **3 Claims**



In an operating system for a hydraulic or pneumatic control rod drive of a nuclear reactor including a lifting cylinder within the pressure vessel of the reactor and a lifting piston within the lifting cylinder and connected to the control rod which extends into the reactor core, the system including a line leading to an external pressure source and the lifting cylinder being in direct communication with the pressure medium in the pressure vessel on the side of the lifting piston facing the reactor core for urging the control rods into the core and a counter pressure produced within the lifting cylinder by the pressure source communicating therewith through the line for removing the control rods from the reactor core.

3,728,220
NUCLEAR REACTOR FUEL PINS

Kenneth Prince, Bowdon, and Alan Charles Anthony Saunders, Hale, England, assignors to United Kingdom Atomic Energy Authority, London, England

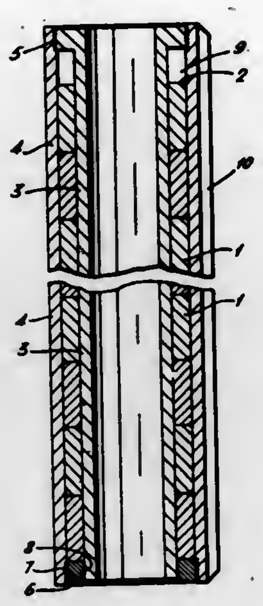
Filed June 1, 1971, Ser. No. 148,319

Claims priority, application Great Britain, June 17, 1970, 29,450/70

Int. Cl. G21c *3/18*

U.S. Cl. 176—58 **3 Claims**

A nuclear reactor fuel pin comprises a stack of annular fuel compacts sheathed by co-axial graphite tubes. The tubes are rigidily secured at one end and the outer tube has an inwardly extending flange which slidingly embraces the inner tube. The stack of fuel compacts abuts the flange so that under irradiation which causes radial shrinkage and longitudinal growth of the compacts, both tubes are strained.



3,728,221
APPARATUS FOR FACILITATING REMOVAL OF MODERATOR BLOCKS FROM A NUCLEAR REACTOR BY TILTING THE BLOCK SUPPORTING BASE PLATES

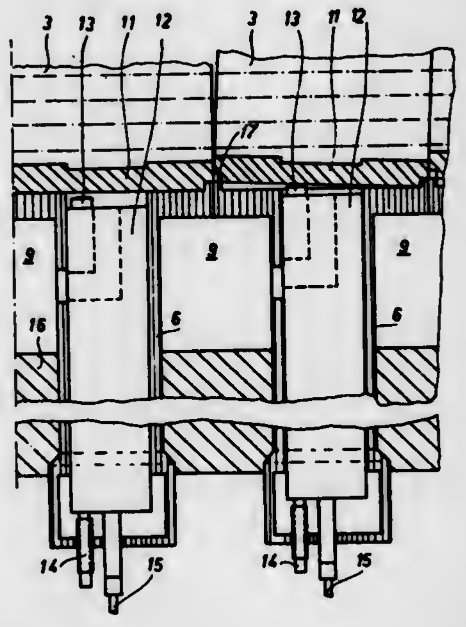
Josef Waldis, Untersiggenthal, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed May 11, 1971, Ser. No. 142,289

Claims priority, application Switzerland, May 29, 1970, 8,048/70

Int. Cl. G21c *5/02, 5/06, 5/10*

U.S. Cl. 176—84 **7 Claims**



In a nuclear reactor, columns of stacked moderator blocks are arranged in side-by-side relation. To facilitate removal of the moderator blocks, each column is supported upon a base plate which is arranged to be tilted from its normal vertical position by means of a piston arrangement so as to separate the blocks in one column from those in an adjacent column.

3,728,222
PROCESS FOR PREPARING NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE

Fumio Kato, Akira Yamaguchi, Toshio Tatano, and Yoshiaki Shimizu, Shizuoka-ken, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,478

Claims priority, application Japan, Oct. 27, 1970, 45/93,910

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **14 Claims**

Nicotinamide adenine dinucleotide phosphate is prepared by fermentation of microorganisms selected from the group of *Brevibacterium ammoniagenes, Arthrobacter ureafaciens, Arthrobacter citreus, Corynebacterium rathayi, Micrococcus varians, Serratia marcescens, Candida utilis, Saccharomyces cerevisiae* and *Streptomyces aureus.* Fermentation takes place in a culture medium containing at least one of the following: nicotinic acid, nicotinic acid amide, nicotinic acid mononucleotide, nicotinamide mononucleotide, nicotinic acid riboside, nicotinamide riboside, and nicotinic acid adenine dinucleotide; together with adenine derivatives.

3,728,223
PRODUCTION OF HYALURONIDASE FROM A STRAIN OF STREPTOMYCES

Yasuyuki Kaneko, Takaichi Ohya, and Genichi Amano, Aichi Prefecture, and Hitoshi Oiwa, Saitama Prefecture, Japan, assignors to Amano Seiyaku Kabushiki Kaisha, Naka-ku, Nagoya, Japan

No Drawing. Continuation of abandoned application Ser. No. 784,460, Dec. 17, 1968. This application Oct. 8, 1971, Ser. No. 187,851

Int. Cl. C07g *7/028*

U.S. Cl. 195—62 **9 Claims**

A novel hyaluronidase is produced by cultivating a new strain of *Streptomyces hyalurolyticus.*

3,728,224
ENZYME PURIFICATION PROCESS

Gerald Baltzer Borglum, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 12, 1970, Ser. No. 89,092

Int. Cl. C07g *7/02*

U.S. Cl. 195—66 R **8 Claims**

An enzyme solution containing various impurities can be purified by mixing said solution with a quaternary ammonium compound to form a precipitate between the impurities and the added compound and then separating said precipitate from the so-purified solution. This process is especially useful to treat an enzyme solution that is subsequently to be concentrated in an ultrafiltration procedure.

3,728,225
PROCESS FOR INCUBATING SALMONELLA

Robert John Kuncic, Summit, Ill., assignor to CPC International Inc.

No Drawing. Filed May 28, 1970, Ser. No. 41,645

Int. Cl. C12k *1/06*

U.S. Cl. 195—96 **6 Claims**

A preenrichment medium for Enterobacteriaceae which comprises sterilized corn steepwater having a pH of from about 6.0 to about 9.0 and a solids content of from about 5 to about 60 grams per liter. Also disclosed in a method of incubating Enterobacteriaceae by utilizing the aforementioned media.

3,728,226
BLOOD SERUM ANALYTICAL CONTROL STANDARD

Allan L. Louderback, Temple City, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Filed June 1, 1970, Ser. No. 42,597

Int. Cl. C12k *1/04*

U.S. Cl. 195—103.5 R **1 Claim**

A control standard for the analytical determination of multiple blood serum components consisting of a mixture of at least three of said blood serum components having their respective concentrations indiscriminately predetermined by random selection from the range of lowest to highest levels of each said component established by instrumentation parameters and clinical significance.

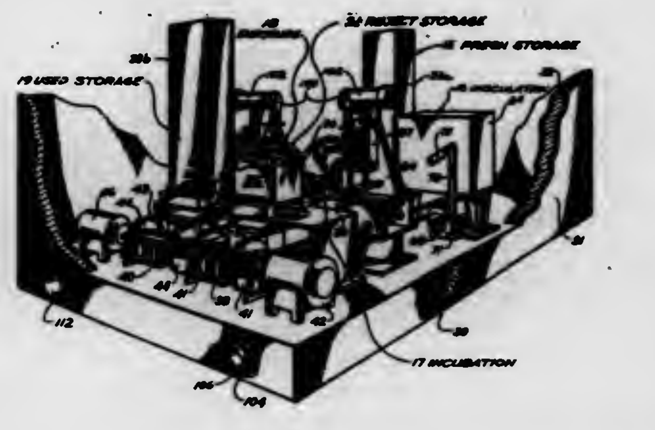
3,728,227
MICROORGANISM CULTURE APPARATUS

Edward E. Elson, Sherman Oaks, Don L. Isenberg, Irvine, Edwin R. Schnauss, Los Angeles, Edward H. C. Sie, Pacific Palisades, Earl V. Wagoner, Jr., San Pedro, and Melvin S. Weisbart, Huntington Beach, Calif., assignors to North American Rockwell Corporation

Filed June 18, 1968, Ser. No. 741,151

Int. Cl. C12k *1/00*

U.S. Cl. 195—127 **13 Claims**



Apparatus is described for storage, inoculation, incubation, and utilization of microorganisms, particularly those exhibiting luminescence. A plurality of stations are provided for performing these functions and a transport mechanism transports special culture vessels to successive ones of the stations during operation of the apparatus. Multiple vessels of sterile nutrient medium are stored and individually inoculated by an automatic inoculating mechanism. The resultant cultures of microorganisms are incubated in a controlled environment for optimum luminosity and then exposed to an environment which may contain toxic materials which will affect the luminous light output. An automatic warning system may signal presence of a toxic material. After use the cultures are stored within the apparatus for disposal. All of these operations are performed in a unified apparatus capable of operation for prolonged periods without maintenance.

3,728,228
DEVICE FOR INDICATION OF BACTERIAL SENSITIVITY TO ANTIBIOTICS

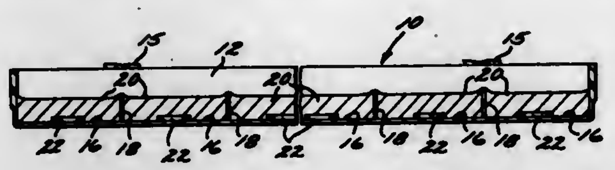
Lawrence P. Duranty, Rolling Hills Estates, Calif., assignor to M.D. Laboratories, Inc., Carson, Calif.

Filed Oct. 12, 1971, Ser. No. 188,033

Int. Cl. C12k *1/04*

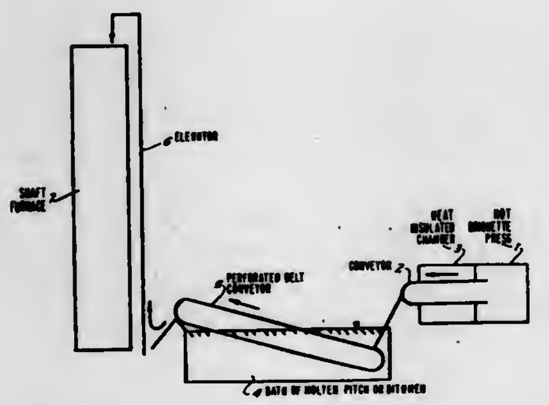
U.S. Cl. 195—127 **1 Claim**

A device for indication of bacterial sensitivity to antibiotics and including a tray divided into a plurality of compartments whch are each partially filled with a nutrient material for supporting bacterial growth. A different antibiotic agent is embodied in and diffused through the nutrient material in each compartment. A cover is pivoted to the tray to protect the tray interior from environmental contamination. In one embodiment the antibiotic agents are introduced in liquid form in the nutrient material, while in another embodiment the antibiotic agents are used to impregnate paper discs which are placed in the bottom of the compartments prior to filling with the nutrient material. The agents subsequently diffuse throughout the nutrient material and their capability for such diffusion is another measure of their effectiveness against microorganisms. The tray cover can be provided with appropriate indicia to identify the particular antibiotic agent in the various tray compartments. The tray, nutrient material, antibiotic agents and cover form an integral unit or package particularly adapted for use by non-laboratory personnel, such as in a physician's office.



3,728,229
PROCESS FOR THE MANUFACTURE OF ABRASION-RESISTANT SHAPED COKE

Wilhelm Reerink, Joachim Lehmann, and Kurt Kleisa, Essen, Germany, assignors to Bergwerksverband GmbH, Essen, Germany
Filed July 29, 1970, Ser. No. 59,133
Claims priority, application Germany, Apr. 23, 1970, P 20 19 569.1
Int. Cl. C10b *45/02, 53/08*
U.S. Cl. 201—6 **7 Claims**

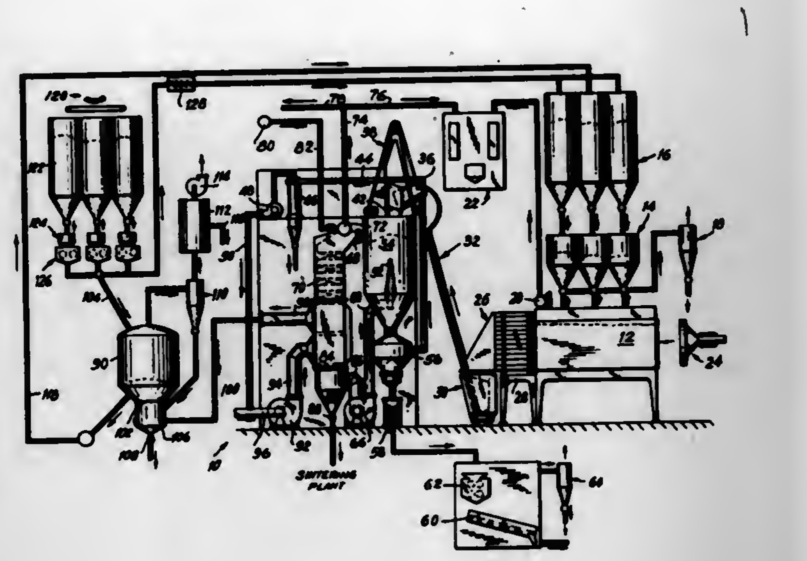


Briquettes made from a coking coal with or without the addition of coke are immersed in a high temperature bath of pitch or the like. The briquettes are thereby coated and impregnated with the bath composition. The briquettes then follow the normal procedure of passage through a furnace at a temperature such that coking results. This procedure avoids the violent evolution of gas which can otherwise occur within the coking furnace and results in shaped coke of high resistance to abrasion.

3,728,230
INDIRECTLY HEAT EXCHANGING PLURAL GAS STREAMS FOR DRY QUENCHING HOT COKE AND DRYING COAL

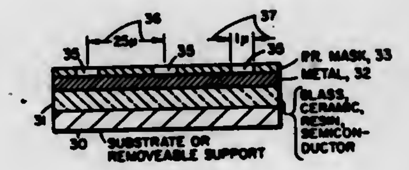
Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.
Filed Feb. 7, 1972, Ser. No. 224,154
Int. Cl. C10b *39/02*
U.S. Cl. 201—39 **4 Claims**

A coke plant and method for operating the same according to which the coke is cooled by dry-quenching and the coal is dried, prior to being charged in a coke oven, with heat extracted during dry-quenching of the coke. The coke plant and method, in addition to carrying out the latter operations, reduce pollution of the atmosphere by releasing only cleaned and desulfurized gas to the outer atmosphere.



3,728,231
METHOD OF FORMING AN ULTRAFINE APERTURE MASK

Harold Samuel Gurev, Paradise Valley, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Apr. 8, 1971, Ser. No. 132,495
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **13 Claims**


36
25μ
35
35
37
1μ
38
PR. MASK, 33
METAL, 32
GLASS, CERAMIC, RESIN, SEMICONDUCTOR
31
30
SUBSTRATE OR REMOVABLE SUPPORT

There is disclosed an ultrafine aperture metal mask and a method for forming the mask involving an electroplating step. Apertures are first formed by conventional techniques through a metal layer which is deposited on a glass, resin, ceramic or semiconductor type substrate. Thereafter, the patterned metal film is immersed in an electroplating bath which electroplates a metal which adheres to the metal film so as to close down the already formed apertures in the metal film. The substrate is nonconductive such that the metal from the electroplating bath does not deposit on the substrate. In this manner pinholes on the order of 0.1 to 0.2 micron can be formed from apertures having mean diameters of between 1 and 25 microns initially. The ultrafine aperture metal mask thus formed may be used in itself as a gas filter, as a diffusion mask and as a radiation mask for X-ray, gamma-ray or light. As a light mask it is most generally used for making other pinholed structures by photolithographic process. In addition the metal mask may be used directly for making other pinhole structures by etching through the mask with etchants which do not attack the mask itself. In one embodiment the metal mask is used either directly or indirectly to pattern a glassy substrate so that the glassy substrate then forms a diffusion barrier, a metallization mask, a filter or a screen.

3,728,232
METHOD OF PLATING USING A PROTECTIVE COATING ON AN ELECTROPLATING WORK SUPPORT

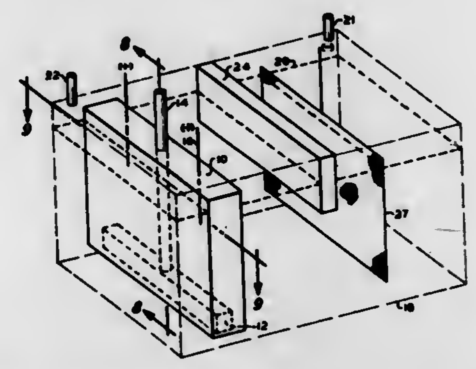
Koh Morita and Itsuo Shimizu, Yokohama, Japan, assignors to Chisso Corporation
No Drawing. Continuation of application Ser. No. 880,993, Nov. 28, 1969. This application Dec. 10, 1971, Ser. No. 206,883
Int. Cl. C23b *5/60, 5/70*
U.S. Cl. 204—30 **6 Claims**

Protection of plating jigs, baskets, plating racks, conveyor hooks and the like from chemical action in a plating operation is accomplished by coating the aforementioned apparatus with a composition comprising (1) a polymeric material insoluble in both water and plating solutions and (2) antimony oxide.

This is a continuation of application S.N. 880,993, now abandoned, filed Nov. 28, 1969.

3,728,233
POROUS ELECTRODE HAVING OPEN FEED CAVITY

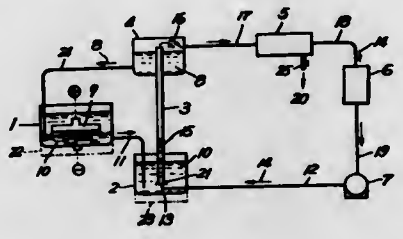
Benedict H. Ashe, Jr., and Homer M. Fox, Bartlesville, Okla., assignors to Phillips Petroleum Company
Continuation of application Ser. No. 75,293, Sept. 24, 1970, which is a continuation of appplication Ser. No. 739,507, June 24, 1968. This application Feb. 14, 1972, Ser. No. 226,039
Int. Cl. B01k *3/00;* **C07b** *29/06*
U.S. Cl. 204—59 R **17 Claims**



In an electrochemical process, the reaction takes place within the confines of a porous electrode element. The bottom of this electrode element has a cavity open to the bulk of the electrolyte. The gaseous or vaporous feed materials are introduced into this cavity, and are converted during their upward passage through the electrode without contact with the bulk of the electrolyte.

3,728,234
METHOD OF AND APPARATUS FOR CIRCULATING LIQUID METALS IN FUSED SALT ELECTROLYSIS

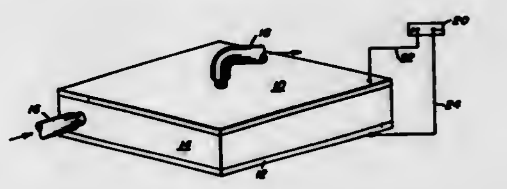
Hidetami Sakai, Funabashi, and Muneyoshi Arita, Sakura, Japan, assignors to Daiki Engineering Co., Ltd., Tokyo, Japan
Original application Mar. 10, 1970, Ser. No. 18,103, now Patent No. 3,642,603. Divided and this application Nov. 17, 1971, Ser. No. 199,450
Int. Cl. C22d *3/06, 1/06, 3/02*
U.S. Cl. 204—68 **3 Claims**



A method of and an apparatus for circulating a liquid metal in fused salt electrolysis comprising passing the fused alloy of the cathode liquid metal and the electrolytically liberated metal both coming out of the cell and the liquid metal for controlling the temperature of the cell through a lift pipe by making a mixture of an inert gas and the liquid metals by the jetting force of the gas, said mixture being small in specific gravity, lifting said liquid metals into a head tank positioned at a level high enough for recirculating the liquid metals into the electrolytic cell by gravity, separating the liquid metals from the inert gas in said head tank, recirculating the liquid metal necessary for electrolysis into the cell, condensing and separating the electrolytically liberated metal contained in the inert gas from the gas, and returning the inert gas into the lift pipe for further use by circulation.

3,728,235
ELECTROLYTIC METHOD FOR RECOVERING METAL FROM SOLUTION

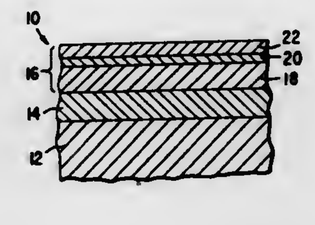
Austin C. Cooley, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Original application Feb. 12, 1969, Ser. No. 798,624. Divided and this application May 19, 1971, Ser. No. 144,968
Int. Cl. C22d *1/12*
U.S. Cl. 204—109 **6 Claims**



Method for recovering a metal from a solution in which the metal is present in ionic form, including a pair of oppositely disposed electrodes sealed to and separated by an electrically non-conductive spacing element which forms a disk-shaped chamber through which the solution is circulated along a spiral path as a swirling stream while impressing an electric potential across the electrodes to cause the metal ions in the solution to plate out on the electrode surface of lower potential. The swirling streams desirably are passed through two adjoining chambers having a common wall which serves as a cathode, and having two anodes spaced on opposite sides of the cathode. The method is particularly well adapted to recovering silver from fixing solutions employed in photographic processing and permits such recovery to be effected at exceptionally high current densities.

3,728,236
METHOD OF MAKING SEMICONDUCTOR DEVICES MOUNTED ON A HEAT SINK

Kenneth Perry Weller, Hightstown, and Cheng Paul Wen, Mercer, N.J., assignors to RCA Corporation
Filed Aug. 5, 1971, Ser. No. 169,438
Int. Cl. C23b *3/00*
U.S. Cl. 204—129.1 **10 Claims**



A region of a semiconductor material which is of a conductivity type or types required by the semiconductor devices being formed is provided on a low resistivity P type semiconductor substrate with a thin barrier region of high resistivity semiconductor material being between the substrate and the semiconductor device region. A metal heat sink body is provided on the semiconductor device region. The substrate is then removed by electrolytically etching the substrate. The barrier region is removed by chemically etching to expose a surface of the semiconductor device region. Contact pads are formed on the surface of the semiconductor device region and the semiconductor device region-metal body composite is divided into individual semiconductor devices each mounted on a heat sink.

3,729,237

METHOD OF MANUFACTURING ALUMINUM ELECTRODE FOIL FOR ELECTROLYTIC CAPACITORS

Martinus Gerard Jens Heijenbrok and Arend Van Herwijnen, Zwolle, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 56,051, June 24, 1970, which is a continuation of application Ser. No. 670,789, Sept. 26, 1967, both now abandoned. This application July 16, 1971, Ser. No. 163,471

Claims priority, application Netherlands, Sept. 27, 1966, 6613586

Int. Cl. C23b *1/00, 3/02*

U.S. Cl. 204—129.75 **4 Claims**

Improvement in etching of aluminum foil for electrolytic capacitors wherein ammonium persulfate, tartaric acid or a soluble tartrate is added to the etching solution.

3,728,238

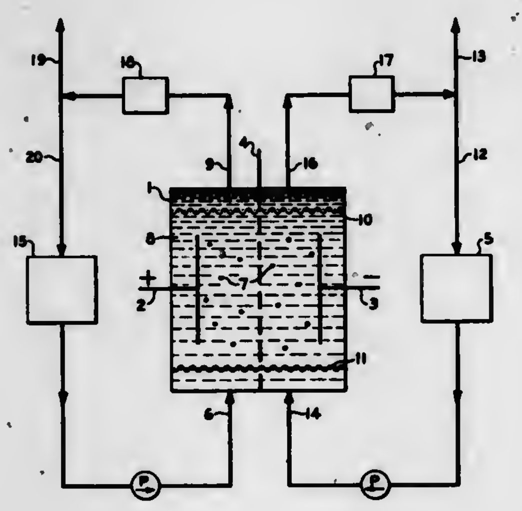
DECREASING HEXAVALENT CHROMIUM CONTENT OF LIQUIDS BY AN ELECTROCHEMICAL TECHNIQUE

Michael Tarjanyi, North Tonawanda, and Murray P. Strier, Amherst, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 14, 1971, Ser. No. 133,924

Int. Cl. B01k *3/00;* **C02c** *5/12*

U.S. Cl. 204—149 **14 Claims**



A method for decreasing the hexavalent chromium content of a solution which comprises passing an electric current through a solution containing hexavalent chromium material, which solution is contained as the electrolyte in a cell, said cell having at least one positive and one negative electrode, between which the current is passed, and wherein the electrolyte also contains a bed of particles, distributed therein, such that the porosity of the bed is from about 40 to 80%, porosity being defined as

$$\left(1-\frac{\text{volume of particles}}{\text{volume of cell wherein the particles are distributed}}\right)\times 100$$

The electrolysis of the electrolyte is continued until the desired reduction in the hexavalent chromium content thereof is obtained.

3,728,239

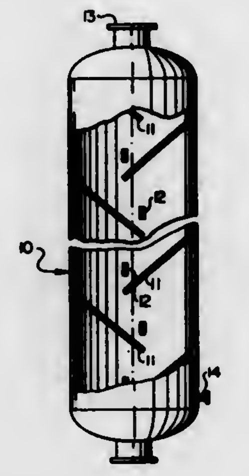
CATALYST STRIPPING IN A BAFFLED VERTICAL VESSEL

Gerald W. G. McDonald, Summit, N.J., assignor to Commonwealth Oil Refining Company, Inc., New York, N.Y.

Filed July 1, 1970, Ser. No. 51,491

Int. Cl. B01j *11/02;* **C10g** *13/14*

U.S. Cl. 208—150 **2 Claims**



Improved gas-solid contact is achieved when treating finely divided solids with a gas in a vertical cylindrical vessel provided with a plurality of vertically-spaced, downwardly sloping baffles and with a substantially vertical impingement plate mounted directly above a downwardly sloping baffle. The apparatus is particularly suitable for stripping residual hydrocarbons from catalyst used in fluid catalytic cracking processes.

3,728,240

CURABLE LIQUID POLYENE-POLYTHIOL COMPOSITIONS CONTAINING ACRYLIC ACID COPOLYMERS

Edwin W. Lard, Bowie, Md., assignor to W. R. Grace & Co.

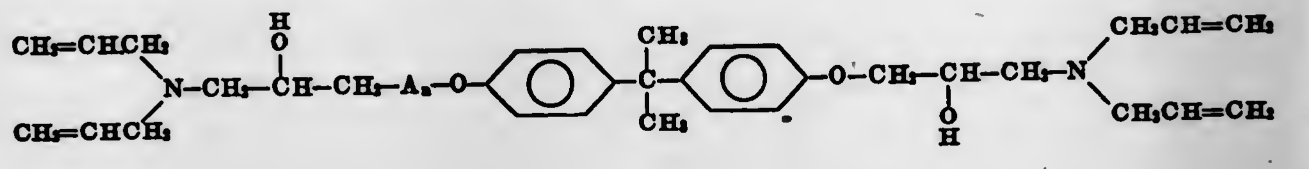
No Drawing. Application Nov. 2, 1970, Ser. No. 86,355, which is a continuation-in-part of abandoned application Ser. No. 74,185, Sept. 21, 1970. Divided and this application Dec. 6, 1971, Ser. No. 205,427

Int. Cl. B01j *1/00;* **C08d** *1/00*

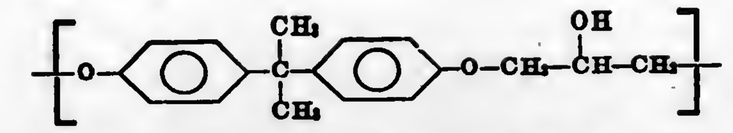
U.S. Cl. 204—159.16 **9 Claims**

A curable liquid composition consisting essentially of:

(a) a polyene having the formula



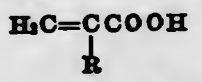
where A is



and *n* is essentially 0 or greater (e.g., 0–20);

(b) a polythiol, the equivalent ratio of polyene to polythiol being about 1:0.5–1.5; and

(c) a member selected from a group consisting of a monomeric acid having the formula



$$H_2C=\underset{R}{\underset{|}{C}}COOH$$

where R is H, CH_3, or C_2H_5 or a homopolymer of copolymer of such monomeric acid having an average molecular weight of about 140–1000, the group member constituting about 2–10% by weight of the composition.

The above composition can contain an effective amount of a photocuring rate accelerator.

3,728,241

ELECTROLYSIS OF FUSED MATERIAL

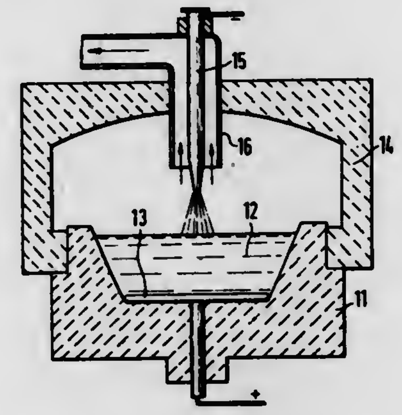
Thomas Richard Shelley and James Anthony Charles, Cambridge, England, assignors to National Research Development Corporation, London, England

Filed Apr. 15, 1970, Ser. No. 28,644

Claims priority, application Great Britain, Apr. 17, 1969, 19,751/69

Int. Cl. C01b *13/14;* **C22b** *5/00*

U.S. Cl. 204—164 **11 Claims**



According to the present invention a method of separating a required component from an electrolyte bath containing a molten material, e.g. a slag or ore which includes a component which is volatile or is convertible into a volatile compound by electrolysis, electrolysing the melt by passing a current between a pair of electrodes along a path which includes an arc struck between one electrode and the melt, and drawing off the required volatile component or volatile compound thereof given off from the melt during electrolysis, the composition of the melt being such that a major part of the required component is a product of electrolysis released at said arc.

The method is of particular interest for recovery of tin.

3,728,242

CONTINUOUS ELECTRODEPOSITION PROCESS

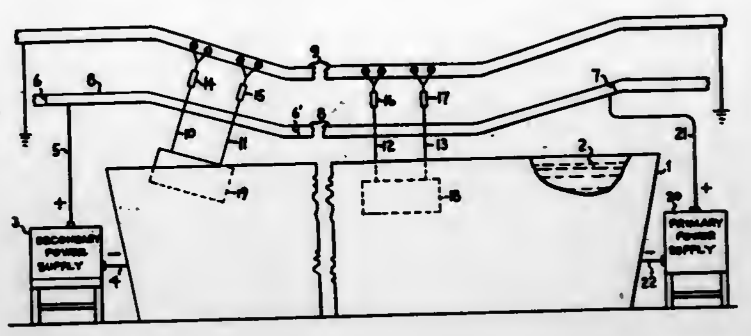
Frederick M. Loop, North Olmsted, and Boyd J. Smith, Brecksville, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 28, 1971, Ser. No. 138,260

Int. Cl. B01k *5/02;* **C23b** *13/00*

U.S. Cl. 204—181 **9 Claims**

In a continuous electrodeposition process where the article enters the electrodeposition bath in a power-off configuration, it has been found that surface irregularities occur on an article when that article is introduced power-off into the electrodepositable composition while the preceding article is still being coated and is in a power-on condition. This problem is solved by applying a small voltage to the article being introduced until such time as the coating voltage is applied.



3,728,243

ELECTROLYTIC CELL FOR THE PRODUCTION OF ALUMINUM

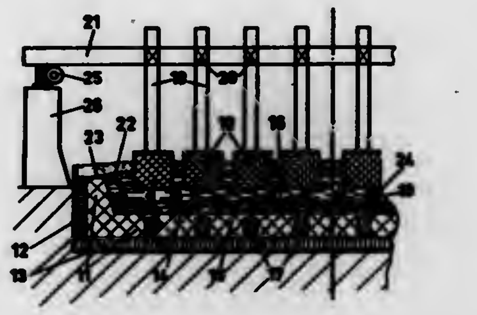
Wolfgang Schmidt-Hatting, Chippis, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Aug. 25, 1971, Ser. No. 174,892

Claims priority, application Switzerland, Sept. 1, 1970, 13,101/70

Int. Cl. C22d *3/02, 3/12*

U.S. Cl. 204—243 R **2 Claims**



Electrolytic cell for the production of aluminum having prescribed maximum horizontal distance between outer lower edges of the anodes and adjacent wall surfaces of the pot lining, pot lining with specified thermal isolating power, cathode bars insulated beneath the side wall of the lining and specific ratio of iron cross section to carbon cross section through the bottom of the lining, in order to reduce the horizontal components of the electric current in the cell.

3,728,244

HIGH CURRENT DENSITY ELECTROLYTIC CELL

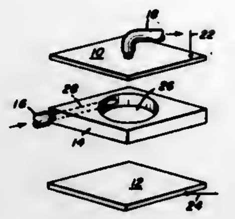
Austin C. Cooley, 1669 Lake Ave., Rochester, N.Y. 14650

Continuation of abandoned application Ser. No. 798,624, Feb. 12, 1969. This application June 21, 1971, Ser. No. 155,278

Int. Cl. B01r *3/00;* **C23b** *5/68*

U.S. Cl. 204—269 **12 Claims**

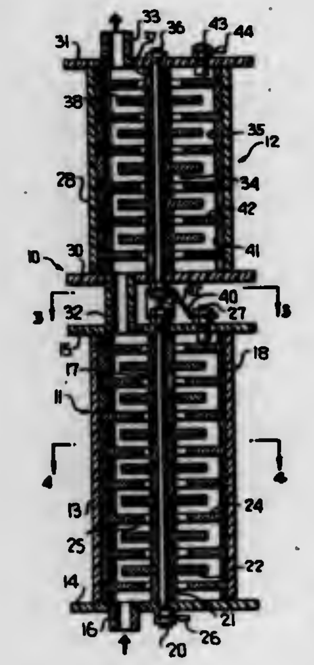
Apparatus for recovering a metal from a solution in which the metal is present in ionic form, including a pair of oppositely disposed electrodes sealed to and separated by an electrically non-conductive spacing element which forms a disk-shaped chamber through which the solution is circulated and means for impressing an electric potential across the electrodes to cause the metal ions in the solution to plate out on the electrode surface of lower potential. The apparatus is particularly well adapted to recovering silver from fixing solutions employed in photographic processing and permits such recovery to be effected at exceptionally high current densities.



3,728,245

APPARATUS FOR TREATING SEWAGE

William R. Preis, River Edge, and William Cole, Oakland, N.J., assignors to Cole Resedevel Corp., Fairlawn, N.J.
Filed Jan. 13, 1971, Ser. No. 106,162
Int. Cl. C02b *1/82;* C02c *5/12*
U.S. Cl. 204—275 11 Claims



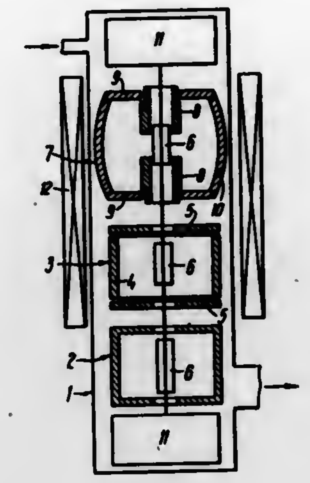
This disclosure relates to an apparatus and method for treating domestic and/or industrial waste water to render the same into a condition for either further reuse in industrial processing or for outflow into natural waters. The treatment utilizes the principles of electrolysis to ionize the water utilizing the sodium of sodium chloride to form sodium hydroxide and the chloride as a bleaching agent. The treatment takes place in a simple two stage cell.

3,728,246

DEVICE FOR APPLYING THIN FILMS TO ARTICLES

Eduard Mikhailovich Barkhudarov, ulitsa Chonkadze 10a, kv. 27; Nikolai Arsenovich Kervalishvili, prospekt Chavchavadze 19, kv. 16; and Vladimir Parmenovich Kortkhondzhia, ulitsa Dzerzhinskogo 4, all of Tbilisi, U.S.S.R.
Filed Aug. 25, 1971, Ser. No. 174,765
Claims priority, application U.S.S.R., Jan. 22, 1970, 1,395,686
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 2 Claims

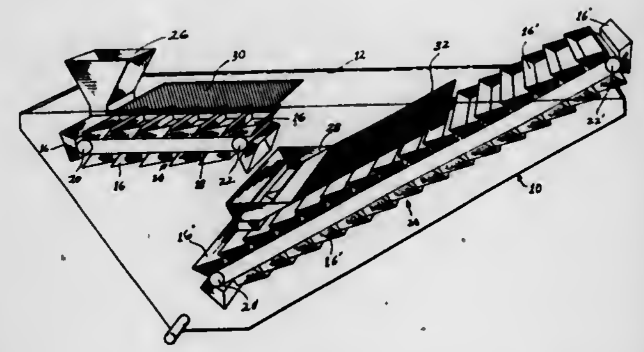
The cathode sputtered by ion bombardment and the anode have a common axis of symmetry in the vacuumized gas-discharge chamber. The anode is formed by two tubes of the same outside diameter. These tubes are installed along the axis of symmetry with a gap between the ends, said gap allowing the passage of the sputtered material of the cathode onto the article installed in the gap. The gas-discharge chamber is located in a magnetic field whose lines of force coincide in direction with the axis of symmetry. This magnetic field is intended to produce a low-pressure discharge in the chamber.



3,728,247

APPARATUS FOR COATING CONDUCTIVE ARTICLES

Eugene E. Haney, Middletown, Ohio, assignor to Armco Steel, Middletown, Ohio
Division of Ser. No. 781,049, Dec. 4, 1968, Pat. No. 3,316,392. This application March 1, 1971, Ser. No. 119,718
Int. Cl. B01k *5/02;* C23b *13/00*
U.S. Cl. 204—300 3 Claims



Apparatus for electrical deposition of a coating from an aqueous solution simultaneously on a plurality of conductive articles including a conductive container within a tank holding the aqueous solution for receiving a plurality of articles to be coated, and means for shifting the position of the articles relative to each other at predetermined time intervals.

3,728,248

APPARATUS FOR USE IN AN IMPROVED ELECTRO-DIALYSIS PROCESS

Roberto Passino, Rome, and Gianfranco Boari, Bari, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy
No Drawing. Original application Nov. 18, 1968, Ser. No. 776,821, now Patent No. 3,637,480. Divided and this application Jan. 17, 1972, Ser. No. 218,454
Int. Cl. B01d *13/02;* C02b *1/82*
U.S. Cl. 204—301 4 Claims

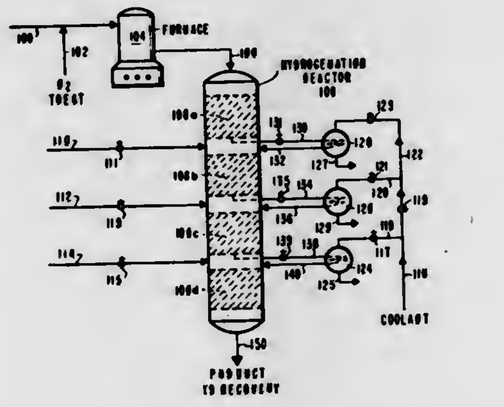
A process and apparatus for the desalination of salt water employing separate sodium and hydrogen form

cation exchange resins to soften, to dealkalize and to partially deionize the said water prior to substantial demineralization by electrodialysis. The salt concentrated waste stream from the electrodialysis cell may be employed to regenerate the sodium form exchange resin that becomes exhausted during the softening step.

3,728,249

SELECTIVE HYDROTREATING OF DIFFERENT HYDROCARBONACEOUS FEEDSTOCKS IN TEMPERATURE REGULATED HYDROTREATING ZONES

Fernando J. Antezana, New York, N.Y., and Jack M. Hochman, Boonton, and Harold N. Weinberg, Livingston, N.J., assignors to Esso Research and Engineering Company
Filed Feb. 5, 1971, Ser. No. 112,995
Int. Cl. C10g *13/00, 23/00*
U.S. Cl. 208—57 10 Claims



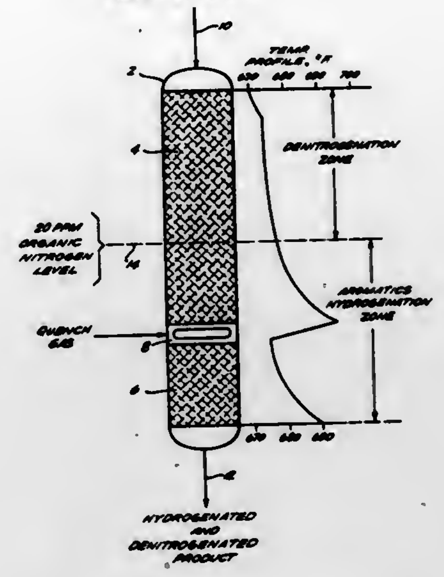
In the selective hydrotreatment of any plurality of differently constituted hydrocarbonaceous feedstocks in a plurality of hydrotreating zones, wherein a first such feedstock is hydrotreated in admixture with an excess of hydrogen in a first hydrotreating zone to obtain a first zone effluent that is then fed to a second hydrotreating zone into which a second hydrocarbonaceous feedstock is introduced, the first zone effluent is cooled to a temperature within a predetermined range prior to hydrotreatment in the second zone, the second feedstock constituting a partial but not the sole coolant for the cooling. Supplemental cooling is provided directly by contact with injected water or indirectly by interstage cooling exteriorly of the hydrotreating zones.

3,728,250

INTEGRAL HYDROFINING-HYDROGENATION PROCESS

Robert H. Hass and Nicholas L. Kay, Fullerton, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Continuation-in-part of application Ser. No. 679,861, Nov. 1, 1967. This application July 2, 1970, Ser. No. 51,765
Int. Cl. C10g *23/00*
U.S. Cl. 208—89 12 Claims

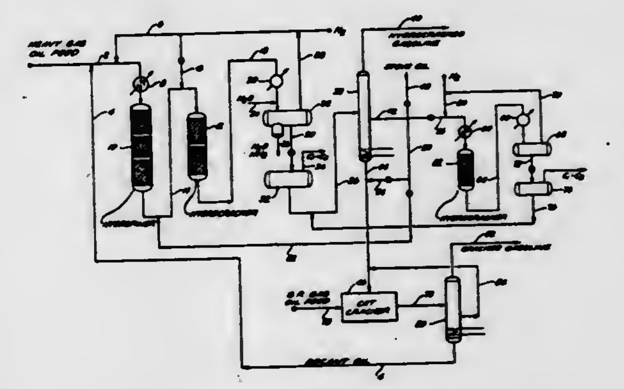
Aromatic mineral oil feedstock boiling below about 700° F. and also containing substantial amounts of organic nitrogen are first hydrofined over a catalyst comprising nickel plus molybdenum and/or tungsten to reduce the organic nitrogen content to below about 20 parts per million, and total effluent therefrom is then hydrogenated over the same type of catalyst at pressures above about 1,000 p.s.i.g. to effect a substantial saturation of aromatic hydrocarbons. The most significant novel feature of the invention lies in effecting hydrogenation of mono-aromatic hydrocarbons with the specified catalysts in the presence of both ammonia and hydrogen sulfide.


PREHEATED NITROGEN-CONTAINING FEED PLUS HYDROGEN
10
TEMP. PROFILE, °F
2
4
DENITROGENATION ZONE
20 PPM ORGANIC NITROGEN LEVEL
14
AROMATICS HYDROGENATION ZONE
QUENCH GAS
8
6
12
HYDROGENATED AND DENITROGENATED PRODUCT

3,728,251

GASOLINE MANUFACTURE BY HYDROREFINING, HYDROCRACKING AND CATALYTIC CRACKING OF HEAVY FEEDSTOCK

Arnold E. Kelley and Cloyd P. Reeg, Orange, and Frederick C. Wood and George D. Cheadle, Fullerton, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Apr. 11, 1968, Ser. No. 720,508
Int. Cl. C10g *23/02, 13/02, 11/00*
U.S. Cl. 208—89 6 Claims



A mineral oil feedstock having an API gravity between —5° and 20°, less than 20 wt. percent boiling below 600° F., at least 20 wt. percent boiling above 800° F. and containing condensed polyaromatic, sulfur and nitrogen compounds is initially subjected to catalytic hydrofining followed by hydrocracking at high pressures with a Group VI–B and/or Group VIII metal promoted, crystalline zeolite catalyst. The hydrocracking conditions are chosen to achieve 2–20% increase in hydrogen content of the 600° F.+ fraction and not more than 20 wt. percent conversion of the 800° F.+ fraction to lower-boiling hydrocarbons. Gasoline is recovered as product while subjecting the hydrocracked product boiling above 400° F. to catalytic cracking to recover a cracked gasoline product, a cycle oil and heavy bottoms, said bottoms being recycled to the hydrofining reaction.

ERRATUM

For Class 208—150 see:
Patent No. 3,728,239

3,728,252

DESULFURIZATION OF HEAVY LIQUID HYDROCARBON WITH CARBON MONOXIDE AT HIGH PRESSURE

Armin C. Pitchford, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,360
Int. Cl. C10g *29/04*
U.S. Cl. 208—243 **9 Claims**

ABSTRACT OF THE DISCLOSURE

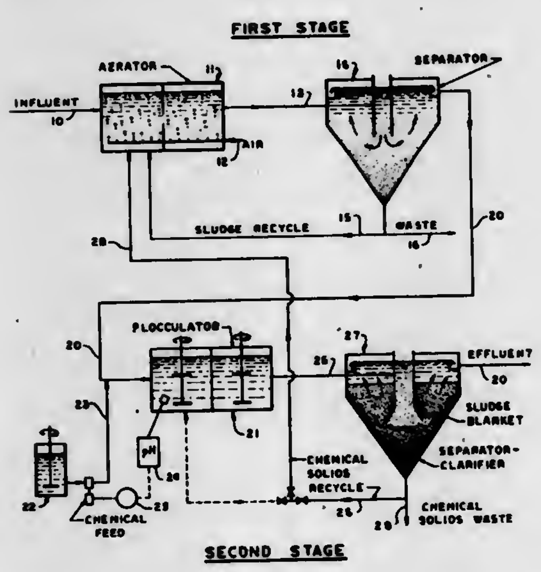
A heavy hydrocarbon feedstock is upgraded by at least one of the processes of desulfurization, decreasing carbon residues, increasing API gravity, and liquefaction of solid feedstock by reacting the feedstock at elevated temperature and pressure in the presence of carbon monoxide and in the presence of a catalytically active metal. In one embodiment the active metallic catalyst is associated with minor amounts of alkali or alkaline earth metals to minimize promotion of cracking side reactions. In a preferred embodiment a heavy hydrocarbon feedstock is upgraded in the presence of the catalyst system formed from a barium salt which has been deposited on cobalt molybdate dispersed on an alumina support.

3,728,253

ACCELERATED BIOLOGICAL-CHEMICAL WASTEWATER TREATMENT

Warren J. Kaufman, El Cerrito, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed May 5, 1971, Ser. No. 140,381
Int. Cl. C02c *1/06*
U.S. Cl. 210—5 **4 Claims**



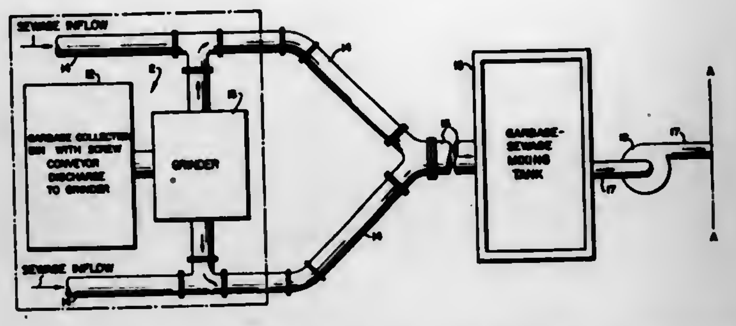
In a wastewater treatment plant employing an aerobic biological process as a first stage, followed by a chemical-flocculation stage, solids obtained in the latter stage are continuously recycled to the aerobic reactor of the first stage in amounts sufficient to maintain the content of inorganic suspended material therein at a level between 30 and 60 percent based on the weight of total suspended solids present in said reactor. The presence of the chemical solids permits the biological stage to remove degradable carbon with great efficiency, even at high applied volumetric loadings such as between about 300 to 600 pounds BOD per day per 1000 cubic feet of aeration tank capacity, and at high concentrations of active biological solids ranging from 3000 to 6000 mg./l., or more. Excellent removal of phosphates is achieved in the chemical-flocculation stage. A high degree of removal of organic nitrogen is also obtained.

3,728,254

METHOD AND APPARATUS FOR ECOLOGICAL RECYCLING OF WASTE PRODUCTS TO PRODUCE FERTILIZER AND GARDEN PLANT NUTRIENTS

Charles H. Carothers, 51 Irving Place, Red Bank, N.J. 07701

Filed Sept. 22, 1971, Ser. No. 182,584
Int. Cl. C02c *1/10*
U.S. Cl. 210—7 **14 Claims**


SEWAGE INFLOW
GARBAGE COLLECTION BIN WITH SCREW CONVEYOR DISCHARGE TO GRINDER
GRINDER
GARBAGE-SEWAGE MIXING TANK
SEWAGE INFLOW
A
A

A method and apparatus for ecologically recycling household organic waste, yard and garden trimmings and prunings, and storm sewerage along with sanitary sewage through an activated sludge treatment process modified to increase its aeration efficiency while eliminating the need for preliminary sedimentation tanks, final sludge digester tanks and the utilization of the communities' natural water resources for the stabilization and the purification of the final effluent discharge by effecting on site utilization of the final effluent discharge through a separation of the sludge component and the nutrient rich liquid component for respectively forming dried commercial fertilizer and/or commercially saleable compost and reducing the nutrient rich liquor to nutrient free water by conveying it as a feeder liquor through a suitably formed hydroponic garden containing commercially saleable plants arranged to extract the nutrients. The apparatus, in addition to the conventionally fitted activated sludge aeration tanks and a final sedimentation tank, provides a grinding unit for grinding the household organic waste and yard and garden trimmings and introducing them at suitable strategic points into the sanitary sewer lines to be conveyed by the sewage effluent to the plant site and delivered, after passage through a mixer to provide thorough mixing, to the aeration sludge tank fitted with a supplemental aeration system which adds to the conventional activated-sludge process a "trickling filter effect" substantially enhancing the aeration and bacterial growth ability of the aeration tank, a sludge removal pump having an outlet alternately adapted to deliver excess sludge to a drier for conversion as an end product to commercial fertilizer or to a spray means for spraying the sludge as a composting catalyst over a chip bed produced by passing yard and garden prunings through a conventional chipper to produce as an end product a rich commercial compost, and a hydroponic garden for extracting the nutrients from the separated nutrient rich liquor to produce as an end product nutrient free water.

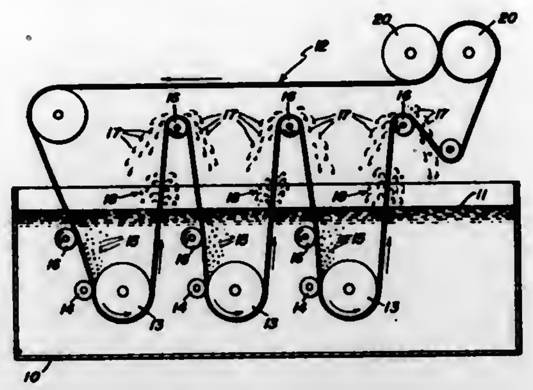
3,728,255

WATER PURIFICATION WITH POROUS ABRASIVES

Steve Eisner, Schenectady, and Carl H. Rowe, Ballston Lake, N.Y., assignors to Norton Company, Troy, N.Y.

Filed May 20, 1971, Ser. No. 145,297
Int. Cl. C02c *5/04*
U.S. Cl. 210—15 **11 Claims**

Apparatus and methods for purifying water containing oxidizable pollutants are disclosed wherein a porous belt aerates the water by alternatively soaking up water or air and discharging such in the opposite phase. In addition to the aeration function, the porous belt may be made abrasive in nature to generate nascent oxygen and hydrogen peroxide which kill undesirable microorganisms, the nascent oxygen and hydrogen peroxide being produced by the abrasive action against the surface of certain materials such as aluminum.

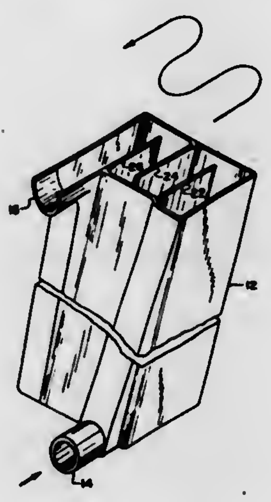


3,728,256

CROSSFLOW CAPILLARY DIALYZER

William W. Cooper IV, Sudbury, Mass., assignor to Abcor, Inc., Cambridge, Mass.

Filed June 22, 1971, Ser. No. 155,471
Int. Cl. B01d *13/00, 31/00*
U.S. Cl. 210—22 **24 Claims**



A crossflow capillary dialyzer particularly useful for the dialyzation of body fluids, such as blood, which dialyzer is characterized by a simple and economic design which promotes the velocity of dialyzate as it flows perpendicular to the capillary fibers in the dialyzer, and which dialyzer comprises a plurality of generally parallel capillary semipermeable membrane fibers enclosed at both ends in potted headers within a shell, and wherein a system of baffles is employed within the dialyzer shell, which baffles provide a tortuous or zig-zag flow path for the dialyzate as it crossflows over the capillaries.

3,728,257

METHODS AND MEANS FOR REMOVING HEAVY METAL IONS FROM LIQUIDS CONTAINING SUCH IONS

Kaj O. H. Fuxelius, Billingsfors, Sweden, assignor to AB Billingsfors-Langed, Billingsfors, Sweden

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,097
Claims priority, application Sweden, Feb. 9, 1971, 1,586/71
Int. Cl. B01d *15/00;* **C02b** *1/14*
U.S. Cl. 210—36 **2 Claims**

The invention relates to methods and means for efficiently removing heavy metal ions from aqueous or other liquids for the purpose of purifying said liquids and/or recovering said metals; said liquids are passed through an absorbent bed which contains a solid absorbent of carbon material having at least one thiol compound pre-adsorbed thereto, said bed having been prepared by passing a liquid or gas containing or consisting of the thiol compound through said carbon material. The invention also relates to a process for producing said absorbent bed.

3,728,258

SELF-EXTINGUISHING FLAMMABLE MIXTURES

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

No Drawing. Filed June 2, 1971, Ser. No. 149,355
Int. Cl. C09k *3/28*
U.S. Cl. 252—8.1 **4 Claims**

Self-extinguishing flammable mixtures are produced and a method provided for reducing the hazards associated with the transportation of flammable liquids. Flammable liquid is mixed with a water microgel system so that the liquid is present in an amount of between 5% to 30% by weight, based on the total weight of the mixture. The resulting mixture may be transported by any suitable means. When the mixture reaches its ultimate destination the two components may be separated by gravitational means such as centrifugation.

3,728,259

COMPOSITION FOR DRILLING WELLS AND METHOD FOR PREPARING SAME

Stanley A. Christman, Los Angeles, Calif., assignor to Esso Production Research Company

No Drawing. Original application May 27, 1970, Ser. No. 41,657, now Patent No. 3,633,689. Divided and this application July 7, 1971, Ser. No. 160,555
Int. Cl. C10m *3/22;* **E21b** *21/04*
U.S. Cl. 252—8.5 C **13 Claims**

Drilling of wells in sub-freezing environments is conducted by using a fluid which contains a major amount of an aqueous medium such as sea water or fresh water, a heteropolysaccharide produced by the action of bacteria of the genus Xanthomonas, an oxygenated hydrocarbon dispersant which may be a polyhydric alcohol such as ethylene glycol and, optionally, an alkaline medium to provide a desired pH, the polyhydric alcohol aiding in the dispersion of the heteropolysaccharide in the aqueous medium and acting as a freezing point depressant of the drilling fluid.

3,728,260

ADDITIVE FOR LUBRICATING COMPOSITION

Peter Flowerday, Slough, Benjamin Thomas Fowler, Abingdon, and Robert Robson, East Hendred, near Wantage, England, assignors to Esso Research and Engineering Company

No Drawing. Filed Oct. 6, 1970, Ser. No. 78,599
Claims priority, application Great Britain, Oct. 24, 1969, 52,217/69
Int. Cl. C10m *1/46*
U.S. Cl. 252—32.5 **15 Claims**

An EP additive package for aviation ester lubes comprises a triaryl phosphate and dialkylamine hydrocarbyl phosphate, optionally in admixture with dihydrocarbyl alkylamine phosphate.

3,728,261

LUBRICATING GREASE

Bill Mitacek, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 24, 1970, Ser. No. 101,417
Int. Cl. C10m *1/24, 1/18*
U.S. Cl. 252—41 **7 Claims**

Lubricating greases are improved as to bleeding, water wash-out, and wheel bearing leakage properties by the addition of a hydrogenated butadiene-styrene copolymer.

3,728,262

METHOD OF MANUFACTURING A MAGNETIC TAPE LACQUER

Hendrikus Johannes Lemmen, Johannes van Ruler, and Pieter Cornelis Scholten, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,097
Claims priority, application Netherlands, Mar. 18, 1970, 7003810
Int. Cl. H01f *1/26*
U.S. Cl. 252—62.54 3 Claims

A method of manufacturing a magnetic tape lacquer in which a polymer is used as a dispersing agent for the magnetisable particles. When using hydrolized vinylchloride-vinyl acetate, suitable solvents are 1,2-dichloroethane, diisobutylketone and nitrobenzene.

3,728,263

PIEZOELECTRIC CERAMIC COMPOSITIONS

Masamitsu Nishida, Osaka, and Hirumu Ouchi, Toyonaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

No Drawing. Filed May 5, 1971, Ser. No. 140,565
Claims priority, application Japan, May 19, 1970, 45/43,183; May 25, 1970, 45/45,322
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 14 Claims

Piezoelectric ceramic compositions having very high mechanical quality factors, high electromechanical coupling coefficients and highly stable dielectric constants over a wide temperature range, and comprising the ternary system $Pb(Zn_{1/2}Nb_{2/3})O_3$-$PbTiO_3$-$PbZrO_3$ and containing 0.1 to 5 weight percent of MnO_2, and further containing at least one oxide selected from the group consisting of 0.03 to 2.5 weight percent aluminum oxide and 0.05 to 5 weight percent stannic oxide.

3,728,264

PIPE CLEANING FLUID

Jean Florent Widlocher, 133, Rue de Cherche-Midi, Paris, France

Filed Feb. 19, 1971, Ser. No. 117,106
Claims priority, application France, Feb. 26, 1970, 7007003
Int. Cl. C02b *5/06*
U.S. Cl. 252—83 3 Claims

Pipe cleaning fluid comprises digallic acid, and other impurities derived from ground briar root and the like, dissolved in a suitable solvent.

3,728,265

HIGH-FOAMING LIQUID DETERGENT COMPOSITIONS

John Anthony Cella, Lake Forest, and Thomas Oliver York, Chicago, Ill., and William Howard Schmitt, Branford, Conn., assignors to Alberto-Culver Company, Melrose Park, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 9,976, Feb. 9, 1970. This application Dec. 16, 1971, Ser. No. 209,898
Int. Cl. C11d *17/00*
U.S. Cl. 252—90 9 Claims

High-foaming liquid detergent compositions, adapted to be packaged in conventional non-pressurized containers as, for example, glass bottles and metal or plastic containers, comprising substantially anhydrous compositions containing a compressible water-insoluble gas, particularly in the form of an aliphatic hydrocarbon or halogenated hydrocarbon, dissolved in an organic solvent, such as propylene glycol, which organic solvent is also water-soluble, and certain other agents to complete the liquid detergent compositions for their intended uses, such as hair shampoos. When said compositions are wetted or admixed with water, said dissolved compressible gas is displaced from said organic solvent and is released to form extremely profuse or large amounts of foams or suds.

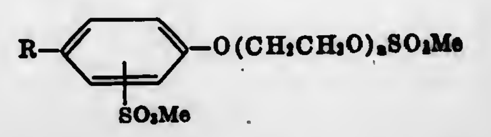
3,728,266

LIQUID DETERGENT COMPOSITION

Yoshiaki Komeda, Tokyo, and Yunosuke Nakagawa, Koshigawa, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed June 15, 1970, Ser. No. 46,485
Claims priority, application Japan, June 19, 1969, 44/48,467
Int. Cl. C11d *1/24, 7/54*
U.S. Cl. 252—95 3 Claims

A liquid detergent composition comprising an aqueous solution of (A) 0.1–80% by weight of a compound of the formula



wherein R is an alkyl of 8–22C, Me is an alkali metal and $40 \geqq n \geqq 1$, and (B) 1.0–60.0% by weight of a water soluble inorganic compound.

3,728,267

PEELING TYPE PICKLING COMPOSITIONS

Nobuyoshi Hirota and Tsutomu Matsushita, Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,917
Claims priority, application Japan, Jan. 14, 1970, 45/3,722; Oct. 9, 1970, 45/88,525; Nov. 25, 1970, 45/104,561
Int. Cl. D06l *1/00*
U.S. Cl. 252—142 5 Claims

A peeling type composition for use in the pickling treatment, which comprises a film-forming composition consisting essentially of sodium alginate or sodium alginate and gelatin, with at least one of starch, bentonite, talc, powdered silica and powdered active terra alba added thereto; a liquid acid or solid acid; a penetrant; and a solution promoting agent.

3,728,268

MIXTURES OF 1,1,2 - TRICHLORO-1,2,2-TRIFLUOROETHANE, ETHANOL AND ACETONE AND A TERNARY AZEOTROPE THEREOF

James Gordon Burt, Oxford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 11, 1970, Ser. No. 97,141
Int. Cl. C09d *9/00;* **C11d** *7/50;* **C23g** *5/02*
U.S. Cl. 252—170 2 Claims

A mixture of 1,1,2-trichloro-1,2,2-trifluoroethane, ethanol and acetone and a ternary azeotrope thereof, said mixture containing from about 82.3 to about 89.2 weight percent 1,1,2-trichloro-1,2,2-trifluoroethane and from about 0.8 to about 4.5 weight percent ethanol and said azeotrope containing about 86.4 weight percent 1,1,2-trichloro-1,2,2-trifluoroethane and about 1.6 weight percent ethanol and having a minimum boiling point of about 43.6° C.

3,728,269

VOLATILE CLEANING COMPOSITION

George M. Stephenson, Wilton, Conn., and John Frangos, New York, N.Y.; said Frangos assignor to said Stephenson

Filed Mar. 23, 1970, Ser. No. 21,725
Int. Cl. C09d *9/04;* **C11d** *2/50;* **C23g** *5/02*
U.S. Cl. 252—171 1 Claim

A new surface cleaner that is substantially completely volatile, requires no surface rubbing, can be utilized in a pressurized container, a degreasing or ultrasonic cleaning tank, a pump dispenser or other liquid delivery and dispensing systems, and comprises two or more readily volatilizable alcohols in solution with a surface active agent and a grease solvent. When packaged in pressurized containers or pump dispensers, the cleaner is capable of being sprayed as a liquid onto the surface to be cleaned, cleaning that surface, and completely evaporating, thereby eliminating the need for rubbing or wiping the workpiece surface and making the cleaner particularly applicable to optical lens surfaces. The force generated in expelling the formulation from the pressurized container spreads the formulation over the surface, loosening and dislodging particles of dirt and dust thereon while dissolving oils, waxes, salts—organic and inorganic surface contaminants. The volume and velocity of the delivered spray sluices and carries away all dislodged and dissolved materials to the lowest point on the surface being cleaned, leaving only a thin uniform film of the cleaning formulation evenly spread over the surface, which then evaporates substantially completely, leaving no visible residual film or spots. When the cleaning composition is contained in a degreasing or ultrasonic cleaning tank, the surface to be cleaned is dipped into the solution and, upon withdrawal of the surface from the tank, the cleaner will evaporatively run off carrying away the dissolved organic and inorganic substances with it, leaving a clean, residue-free surface.

3,728,270

CHEMILUMINESCENT FORMULATION CONTAINING INORGANIC SALT SOLUTION

Everett M. Bens and Carl H. Morley, China Lake, Calif., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed July 30, 1965, Ser. No. 476,789
Int. Cl. C09k *3/00*
U.S. Cl. 252—188.3 4 Claims

A method for increasing the efficiency in chemiluminescence of the composition, tetrakis(dimethylamino) ethylene (TMAE), for use in nocturnal markers where fire retardant materials should be utilized which comprises adding an inorganic salt of the alkali or alkaline earth metals to the composition TMAE at room temperature in the absence of air.

3,728,271

CHEMILUMINESCENT FORMULATION

William S. McEwan, China Lake, Calif., Hans B. Jonassen, New Orleans, La., and Carl H. Morley, Ridgecrest, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Feb. 26, 1969, Ser. No. 803,526
Int. Cl. C09k *1/06*
U.S. Cl. 252—188.3 CL 6 Claims

An improved chemiluminescent formulation consisting essentially of tetrakis(disubstituted-amino)ethylene, polyethylene and a lithium halide for use in climates where the humidity reaches 85% or higher.

3,728,272

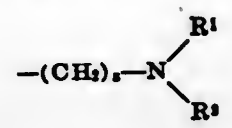
METHOD OF PRODUCING SODIUM ALUMINUM HYDRIDES

Bohuslav Casensky, 6 E. Krasnohorske, Prague I, Czechoslovakia; Jiri Machacek, 66 Hlavni, Krumvir, Czechoslovakia; and Jaroslav Vit, % Peter Andrews, P.O. Box 8145, SW. Station, Washington, D.C. 20024

No Drawing. Application Mar. 24, 1967, Ser. No. 626,664, now Patent No. 3,507,895, dated Apr. 21, 1970, which is a continuation-in-part of abandoned application Ser. No. 611,845, Jan. 26, 1967. Divided and this application Mar. 25, 1970, Ser. No. 22,669
Claims priority, application Czechoslovakia, Jan. 31, 1966, 604/66; Mar. 22, 1966, 1,906/66; Mar. 26, 1966, 2,009/66
Int. Cl. C01b *6/24, 6/28*
U.S. Cl. 252—188 3 Claims

Liquid reactant for use in reducing and halogenating reactions comprising a solution in benzene, toluene, xylene or tetrahydrofuran of

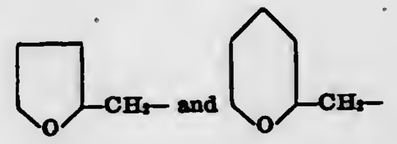
(a) a compound of the formula $NaAlH_2OR$ wherein



$$-(CH_2)_z-N\begin{matrix} R^1 \\ \\ R^2 \end{matrix}$$

z is 2 to 4 and R^1 and R^2 are the same or different and are selected from the group consisting of $O(CH_2)_z$, alkyl of 1 to 4 carbon atoms and an aliphatic ether group having a total of 2 to 4 carbon atoms and z has the same meaning as above, or

(b) a compound of the formula $NaAlH_x(OR^3)_{4-x}$, wherein x is 1 or 2 and R^3 is $(\text{alkylene } O)_yR^4$, wherein alkylene has 2 to 4 carbon atoms, y is 1 to 4 and R^4 is selected from the group consisting of alkyl of 1 to 4 carbon atoms, phenyl,



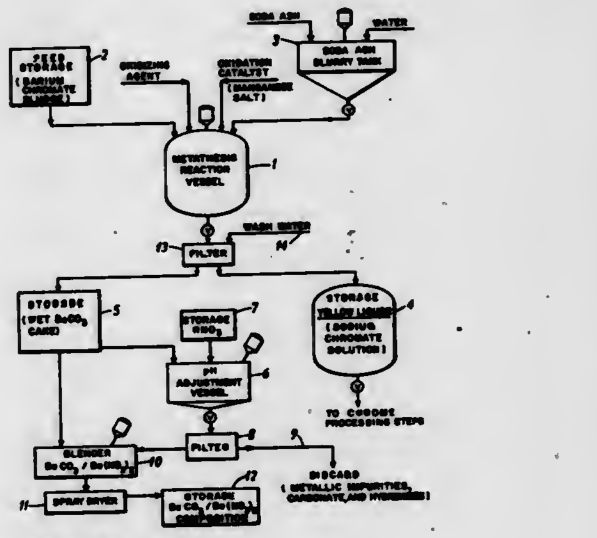
A specific compound coming under the second of these groups is sodium dihydro-bis-(2-methoxy-ethoxy)-aluminate of the formula $NaAlH_2(OCH_2CH_2OCH_3)_2$.

3,728,273

METHOD OF RECOVERING CHROMIUM AND BARIUM VALUES FROM WASTE BARIUM CHROMATE

Charles P. Bruen, Bernardsville, N.J., and Christian A. Wamser, Camillus, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 27, 1971, Ser. No. 183,969
Int. Cl. C09k *3/00;* **H05b** *33/00*
U.S. Cl. 252—182 23 Claims


FEED STORAGE (BARIUM CHROMATE SLUDGE)
2
OXIDIZING AGENT
OXIDATION CATALYST (MANGANESE SALT)
SODA ASH
WATER
3
SODA ASH SLURRY TANK
METATHESIS REACTION VESSEL
1
WASH WATER
14
13
FILTER
STORAGE (WET BaCO₃ CAKE)
5
STORAGE HNO₃
7
pH ADJUSTMENT VESSEL
6
STORAGE YELLOW LIQUOR (SODIUM CHROMATE SOLUTION)
4
TO CHROME PROCESSING STEPS
FILTER
8
9
BLENDER BaCO₃ / Ba(NO₃)₂
10
DISCARD (METALLIC IMPURITIES, CARBONATE, AND HYDROXIDES)
11
SPRAY DRYER
12
STORAGE BaCO₃ / Ba(NO₃)₂ COMPOSITION

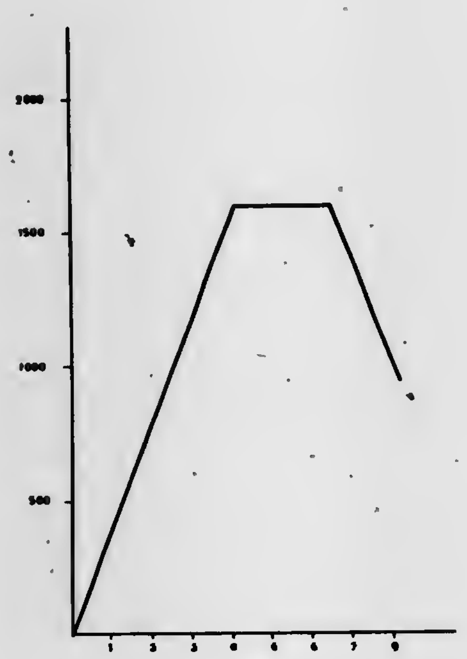
FLOW DIAGRAM:
RECOVERY OF CHROMIUM VALUES AND
RE-USABLE BARIUM CARBONATE COMP.
FROM BARIUM CHROMATE SLUDGE.

Recovery of chromium values and a re-usable barium carbonate composition from barium chromate waste treatment sludges, by digestion in an aqueous medium with at least a 100% stoichiometric excess of sodium carbonate, at temperatures between 80 and 250° C. A solution of sodium chromate "yellow liquor" is separated from the solid barium carbonate, a portion of which is dissolved in nitric acid at a pH of 4.5 to 5.5 as a means of purging insoluble impurities. The separated barium nitrate is recombined with the balance of the barium carbonate to provide the re-usable barium carbonate composition.

3,728,274

PROCESS FOR PREPARING SPHERES OF URANIUM OXIDE AND URANIUM OXIDE-PLUTONIUM OXIDE, HAVING A CONTROLLED POROSITY

Panayotis Gerontopoulos, Livorno, Dino Neri, Pisa, and Ruggero Renzoni, Milan, Italy, assignors to Snam Progetti S.p.A., Milan, Italy
Filed Dec. 5, 1969, Ser. No. 882,508
Claims priority, application Italy, Jan. 8, 1969, 11,249/69
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R **16 Claims**



This invention relates to a process for the production of a porous refractory material which comprises uranium oxide and an oxide selected from the group consisting of the oxides of thorium, plutonium, beryllium, silicon, aluminum and magnesium, which process comprises heating the refractory material in an inert or oxidizing atmosphere, replacing the inert or oxidizing atmosphere by a reducing atmosphere, further increasing the temperature of the heated refractory material to produce a material having a porosity of from 2% to 30%.

3,728,275

PREPARATIONS CONTAINING CONCENTRATED AQUEOUS ASYMMETRICALLY SUBSTITUTED BIS-TRIAZINYLAMINOSTILBENES AND THE USE OF THE PREPARATIONS FOR OPTICAL BRIGHTENING

Paul Horlacher, Mohlin, Aargau, and Gerhard Creutzburg, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Oct. 13, 1970, Ser. No. 80,485
Int. Cl. D06l *3/12*
U.S. Cl. 252—301.2 W **5 Claims**

Mixtures of new asymmetrically substituted bis-triazinylaminostilbenes are optical brighteners for organic materials. The mixtures are prepared by reacting cyanuric chloride with an aminobenzenesulfonic acid, 4,4'-diaminostilbene-2,2'-disulfonic acid and a mixture of an isomer mixture of dimethylmorpholines and diethanolamine.

3,728,276

PRESSURIZED FOAM-PRODUCING COMPOSITION AND PROCESS THEREFOR

George Lieberman, 13537 Mineola St., Pacoima, Calif. 91332; and Victor J. Pierce, 2040 Vestal 90026; and Samuel B. Prussin, 2126 Banyan Drive 90049, both of Los Angeles, Calif.
No Drawing. Continuation of application Ser. No. 601,837, Dec. 15, 1966, which is a continuation-in-part of application Ser. No. 519,445, Jan. 10, 1966. This application Feb. 20, 1970, Ser. No. 14,714
Int. Cl. A61k *7/00;* **A61l** *9/04;* **C09k** *3/30*
U.S. Cl. 252—305 **10 Claims**

A pressurized foam-producing composition comprising 75 to 95 percent by weight of a chlorofluorocarbon propellent system having a vapor pressure of 10 to 30 pounds per square inch gauge at 70° F. emulsified as the dispersed phase in an aqueous continuous phase in the presence of an emulsifier in an amount sufficient to yield a stable emulsion, the composition upon the release of pressure forming a foam which exhibits a crackling sound when subjected to shear.

3,728,277

STABLE WATER-IN-OIL EMULSIONS

John T. Foley, Readington Township, N.J., assignor to Witco Chemical Corporation, New York, N.Y.
No Drawing. Original application Jan. 12, 1970, Ser. No. 2,357, now Patent No. 3,654,117. Divided and this application Nov. 3, 1971, Ser. No. 195,517
Int. Cl. B01j *13/00*
U.S. Cl. 252—309 **8 Claims**

Water-in-oil emulsions containing emulsifier compositions comprising admixtures of (a) an imidazoline or oxazoline salt of a long chain fatty acid and (b) a salt of a long chain aliphatic amido amine and a long chain aliphatic carboxylic acid, said water-in-oil emulsions exhibiting excellent heat stability and metal coating properties for corrosion inhibition.

3,728,278

CATIONIC EMULSIONS

Michael C. Tramelli, Great Falls, Mont., assignor to Phillips Petroleum Company
No Drawing. Filed Apr. 25, 1968, Ser. No. 724,229
Int. Cl. B01j *13/00;* **C08h** *13/00*
U.S. Cl. 252—311.5 **5 Claims**

An improved cationic asphalt-in-water emulsion consisting of asphalt, water, a metallic salt, an inorganic acid, and a combination of cationic emulsifying agents which enables emulsions to be prepared which have less asphalt at specification viscosities, thereby reducing the cost of the emulsion.

3,728,279

METHOD AND COMPOSITION FOR THE EMULSIFICATION AND THE DEGRADATION OF PETROLEUM PRODUCTS AND FERTILIZERS THUS OBTAINED

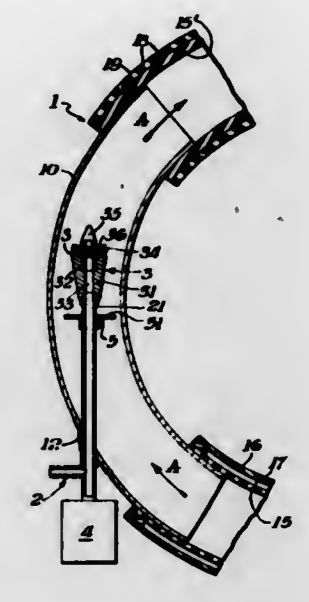
Georges Henri Salomone, 14 Avenue Pierre Ier de Serbie, Paris, France
No Drawing. Filed Jan. 29, 1971, Ser. No. 111,105
Claims priority, application France, Feb. 3, 1970, 7003764
Int. Cl. B01j *13/00*
U.S. Cl. 252—312 **2 Claims**

Petroleum products are rendered bio-degradable to produce fertilizer, by admixing therewith, per 100 parts by weight of petroleum product, 50 to 250 parts by weight of a mixture which is 15 to 80 parts by weight of a carbohydrate or protein nutrient for microorganisms, 10 to 50 parts by weight of a surface-active agent that reduces the surface tension, and a diluent which may be either 5 to 60 parts by weight of water, or 150 to 400% by weight of the total weight of the substance in the form of an absorbent powder.

3,728,280

PROCESS AND A DEVICE FOR THE CONTINUOUS PREPARATION OF EMULSIONS

Theo Sauer, Starnberg, and Dr. Gunter Schulz, Holzkirchen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Feb. 16, 1971, Ser. No. 115,625
Claims priority, application Germany, Mar. 12, 1970, P 20 11 667.0
Int. Cl. B01f *5/04;* **B01j** *13/00*
U.S. Cl. 252—314 **11 Claims**



Emulsions, such as suspensions containing silver halide, are prepared wherein the basic component and the resulting deposit are conducted in rising current. Further components are delivered into the basic component at sequentially arranged inlet points and are dispersed by means of the cross-current with the radially directed or pulsating cross-current being overlapped with oscillations directed in an axial direction to the tubular body in which the current flows.

3,728,281

CORROSION INHIBITING COMPOSITION CONTAINING HYDRAZINE AND A PYRAZOLIDONE OR AN AMINOPHENOL

Colin Elliott Marks, Quorn, and John Miller, Mapperley, England, assignors to Fisons Limited, Suffolk, England
Filed Mar. 31, 1971, Ser. No. 129,690
Claims priority, application Great Britain, Apr. 2, 1970, 15,570/70; May 13, 1970, 23,047/70
Int. Cl. C23f *11/14, 11/18*
U.S. Cl. 252—392 **18 Claims**

An aqueous composition for inhibiting corrosion in systems containing hot water comprises hydrazine and at least one activating compound which may be a pyrazolidone or an aminophenol.

3,728,282

LIQUID STABILIZERS FOR VINYL CHLORIDE POLYMERS

Walter P. Barie, Jr., Shaler Township, Allegheny County, Norman W. Franke, Penn Hills Township, Allegheny County, and Gary M. Singerman, Monroeville Borough, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Oct. 6, 1970, Ser. No. 78,603
Int. Cl. B01j *1/16;* **C08f** *45/56*
U.S. Cl. 252—400 **6 Claims**

The stabilization of polyvinyl chloride resins and polyvinyl chloride resin compositions with novel storage-stable liquid compositions comprising metal salts of linear aliphatic monocarboxylic acids, an acidic organophosphite or an acidic organophosphate and a hydrocarbon solvent.

3,728,283

MODIFIED Al-Ni CATALYST FOR DIMERIZING OLEFINS

Yves Chauvin, Saint Germain en Laye, and Jean Gaillard, Carrieres-sur-Seine, France, assignors to Institut Francais du Petrole, Rueil Malmaison, France
No Drawing. Filed May 15, 1970, Ser. No. 37,878
Claims priority, application France, May 20, 1969, 6916444
Int. Cl. C07c *3/10*
U.S. Cl. 252—429 B **16 Claims**

This invention relates to the manufacture of a dimerization catalyst, to the catalyst thus obtained and to a process for dimerizing olefins with the said catalyst.

The catalyst is manufacture by reacting a dihydrocarbyl aluminum monohalide with a controlled amount of water at a temperature less than 20° C., then separating the insoluble fraction and thereafter contacting the soluble fraction with nickel or a nickel compound.

The catalyst is preferably used at temperatures higher than 25° C.

3,728,284

NITRILE HYDROGENATION CATALYST

Jefferson W. Reynolds, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed July 29, 1970, Ser. No. 59,368
Int. Cl. B01j *11/22, 11/32*
U.S. Cl. 252—459 **4 Claims**

A hydrogenation catalyst of high activity, good crush strength and strong resistance to disintegration when employed in a fixed-bed hydrogenation process comprising a hydrogen-reduced mixture of sodium silicate and cobalt oxide in a weight ratio of sodium silicate:cobalt oxide of about 1:1 to 1:9.

3,728,285

CATALYST AND USE THEREOF FOR THE POLYMERIZATION OF EPOXIDES

Junji Furukawa, Koto, Nariyoshi Kawabata, Osaka, and Mikio Nakaniwa and Saburo Kanbara, Kyoto, Japan, assignors to Maruzen Petrochemical Company Limited, Tokyo, and The Toyo Rubber Industry Co., Osaka, Japan
No Drawing. Filed Feb. 8, 1967, Ser. No. 614,550
Claims priority, application Japan, Feb. 10, 1966, 41/7,386; Jan. 27, 1967, 42/5,000
Int. Cl. C08g *23/14*
U.S. Cl. 260—2 A **10 Claims**

Polymerization of epoxides by the use of a catalyst is shown. The catalyst comprises a reaction product of a dialkylzinc such as diethylzinc with a nitro compound selected from the group consisting of mono- and di-nitroparaffins, mono- and di-nitroolefins, halogene-substituted nitroparaffins, alkyl-nitroalkyl ethers, mono- and di-nitrocycloalkanes and phenylnitromethane. The catalyst may also be used advantageously for the homo- or co-polymerization of epoxides to prepare high molecular weight polyepoxides.

3,728,286

PYRAZOLANTHRONE ELECTRON EXCHANGERS

Reiner Welters and Dieter Randau, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
No Drawing. Filed May 19, 1971, Ser. No. 145,003
Claims priority, application Germany, May 19, 1970, P 20 24 268.6
Int. Cl. C08f *19/20, 19/00*
U.S. Cl. 260—2.2 R **22 Claims**

Improved water insoluble, water swellable redox polymers having a substantially inert hydrophilic polymeric portion and an electron exchanging redox portion covalently bonded thereto wherein the redox portion is an N-bonded pyrazolanthrone group.

3,728,287

HYDROLYZING POLYESTER

Chester F. Burmaster, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,291

Int. Cl. C08g *53/22*

U.S. Cl. 260—2.3 **7 Claims**

A process hydrolyzing polyesters comprising intermixing polyester articles and caustic 2-methoxyethanol or 2-ethoxyethanol and heating the resulting mixture for a short period of time.

3,728,288

IMPACT-RESISTANT RIGID POLYURETHANE FOAM COMPOSITIONS AND PROCESS OF MANUFACTURE

Walter H. Cobbs, Jr., Princeton, N.J., and Donald Dunn, Cincinnati, and Victor G. Soukup, Wyoming, Ohio, assignors to Cincinnati Milacron, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 654,853, July 20, 1967. This application May 18, 1970, Ser. No. 38,514

Int. Cl. C08g *22/48*

U.S. Cl. 260—2.5 BD **5 Claims**

Improved rigid polyurethane foam compositions are obtained whose brittleness is substantially reduced and impact resistance increased by prereaction of a polyisocyanate with a relatively minor amount of a difunctional organic compound and thereafter reacting the thus formed NCO terminated prepolymer with a polyhydroxy compound in the presence of a blowing agent and, optionally, a catalyst and surfactant. The resultant foam is employable in molding operations to produce improved molded articles.

3,728,289

ELASTIC, TEAR-RESISTANT, HIGH-DENSITY FOAMS BASED ON POLYCARBODIIMIDE-POLYISOCYANATES

Franz Gottfried Reuter and Walter Fensch, Hannover, Germany, assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 677,740, Oct. 24, 1967. This application Oct. 26, 1970, Ser. No. 84,145

Claims priority, application Germany, Sept. 29, 1965, P 12 64 764.2

Int. Cl. C08g *22/46*

U.S. Cl. 260—2.5 BF **7 Claims**

Process for the manufacture of highly-elastic tear-resistant polyurethane foams of relatively high density by a one step process which comprises reacting (1) a mixture comprising a linear polyhydroxyl compound having a molecular weight of about 1,000 to about 3,000, a chain extender such as a bifunctional glycol, a catalyst, and water with (2) a polyisocyanate having a melting point below about 25° C. which is a diisocyanate modified by reaction with carbodiimide or a mixture of a diisocyanate and the reaction product of a diisocyanate and a carbodiimide.

3,728,290

METHOD FOR THE PREPARATION OF A SEPARATION MEDIUM FOR GEL FILTRATION

Ingemar Haldor Johansson and Marius Klaus Joustra, Uppsala, Sweden, assignors to Pharmacia Fine Chemicals AB, Uppsala, Sweden

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,664

Claims priority, application Sweden, Apr. 29, 1970, 5,958/70

Int. Cl. B01d *39/04;* **C08f** *33/08, 47/08*

U.S. Cl. 260—2.5 N **12 Claims**

The present invention relates to an improved method for preparing a separating medium for gel filtration in which grains of a rigid hydrophilic macroporous copolymer of acrylamide (or 1-vinyl-12-pyrrolidinone) with N,N'-methylene-bis-acrylamide has copolymerized in its pores a second copolymer of one or more acrylamides (or 1-vinyl - 2 - pyrrolidinone) within N,N'-methylene-bis-acrylamide in the presence of an initiator (as set forth in U.S.P. 3,616,936) characterized in that the initiator is present in the pores of the rigid hydrophilic, macroporous copolymer when the copolymerizable substances of said second copolymer are introduced thereinto.

3,728,291

CATALYST COMPOSITION FOR POLYURETHANE FOAM

Felix P. Carroll, Chester, and Harold A. Green, Havertown, Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 842,692, July 17, 1969. This application June 21, 1971, Ser. No. 155,226

Int. Cl. C08c *17/08;* **C08d** *13/08;* **C08f** *47/10*

U.S. Cl. 260—2.5 AC **5 Claims**

In preparing polyurethane foams, triethylenediamine diformate salt is employed in combination with an amount of HPI (1-(2-hydroxypropyl) imidazole) not greater than the amount of the salt. Such amine catalyst compositions permit wider latitude concerning concentration of the organic tin catalyst, thus avoiding the critical sensitivity to concentration when using triethylenediamine alone as the amine catalyst. The blend of formate salt and HPI has other significant advantages over previously taught catalysts.

3,728,292

POLYAMIDES FOAMED WITH N-SUBSTITUTED CARBAMIC ESTER BLOWING AGENTS

Harry McGrath, Raymond Frederick Moore, and Eric Smith, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of abandoned application Ser. No. 834,897, June 19, 1969. This application July 16, 1971, Ser. No. 163,454

Claims priority, application Great Britain, June 27, 1968, 30,757/68

Int. Cl. C08g *53/08*

U.S. Cl. 260—2.5 N **12 Claims**

Manufacture of rigid nylon foam by the use of N-substituted carbamic esters as blowing agents, especially the carbamic esters from bis-isocyanates and monofunctional alcohols and those from heterocyclic NH compounds and alkyl chloroformates.

3,728,293

POLYURETHANE COMPOSITIONS CONTAINING PHENOL-ALDEHYDE RESINS AND POLYETHER POLYOLS

Llewellyn D. Booth, Lake Jackson, and Kenneth J. Hinze, Angleton, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 98,139, Dec. 14, 1970, which is a continuation-in-part of application Ser. No. 781,259, Dec. 4, 1968, now abandoned. This application Mar. 13, 1972, Ser. No. 234,320

Int. Cl. C08g *5/10, 5/18*

U.S. Cl. 260—17.2 **5 Claims**

The invention concerns non-cellular polyurethane compositions derived from acid catalyzed phenol-aldehyde

resins (novolacs) and polyisocyanates. It relates more particularly to non-cellular polyurethane compositions derived from polyether polyols, novolac resins and polyisocyanates.

3,728,294

METHOD OF BLENDING REINFORCING FIBERS AND MOLDING RESINS AND PRODUCT THEREOF

Marvin S. Levine, Hazel Crest, Ill., assignor to General American Transportation Corporation, Chicago, Ill.

No Drawing. Continuation of abandoned application Ser. No. 685,972, Nov. 27, 1967. This application Apr. 19, 1971, Ser. No. 135,449

Int. Cl. C08f *45/10*

U.S. Cl. 260—29.1 B **5 Claims**

There is disclosed a method of blending reinforcing fibers and thermoplastic molding resins, the molding mixture resulting therefrom being useful in injection molding and the like; the resin comprises from about 60 to about 93 parts by weight of the mixture and has a particle size in the range from about 125 mesh to about ⅛ inch, the fiber comprises from about 7 to about 40 parts by weight of the mixture and has a length in the range from about 125 mesh to about ½ inch, and a dispersant is provided in the mixture comprising from about 0.1 to about 0.5 part by weight of the mixture and being compatible with both the resin and the fiber and leaving substantially unchanged the nature of the molded compound formed therefrom, the ratio by weight between the resin and the fiber being in the range from about 1.5:1 to about 15:1 and the ratio by weight between the dispersant and the fiber being in the range from about 1:200 to about 1:15; the fibers and the dispersant are mixed in a commercial blending machine for a time interval of from about 1 to about 3 minutes so as uniformly to disperse the dispersant on the surface of the fibers, and thereafter the resin is added thereto and the ingredients mixed for a time interval of from about 5 minutes to about 15 minutes to produce the molding mixture, whereby to provide a molding mixture wherein the resin and the fiber and the dispersant are thoroughly mixed and dispersed throughout the body of the mixture so as to maintain the resin and the fiber in a uniformly dispersed relationship during the storage of the molding mixture and during the handling and molding of the molding mixture into a molded compound.

3,728,295

DILATANT LATEX OF AT LEAST TWO ALIPHATIC MONO-UNSATURATED ESTERS AND AN ALIPHATIC MONO-UNSATURATED CARBOXYLIC ACID

Earl L. Skinner, Homewood, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of abandoned application Ser. No. 735,271, June 7, 1968. This application Feb. 25, 1971, Ser. No. 118,877

Int. Cl. C08f *29/38*

U.S. Cl. 260—29.6 TA **33 Claims**

There is provided a dilatant latex formed from a plurality of monomers including at least two aliphatic mono-unsaturated esters and a small amount of an aliphatic mono-unsaturated carboxylic acid. The polymer is formed by an emulsion polymerization technique carried out in the presence of a water-soluble polyhydric alcohol which is a nonsolvent or substantially a nonsolvent for the polymer. There are also provided novel coating compositions in which this product may be used as a paint vehicle component or used as an additive to other latex type paint vehicles to adjust the rheological properties of the system.

3,728,296

STABLE SOLUTIONS OF POLYGLUTAMIC ACID DERIVATIVES

Yasuo Fujimoto and Masayuki Teranishi, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,260

Claims priority, application Japan, Feb. 10, 1970, 45/11,123

Int. Cl. C08g *51/30, 51/34*

U.S. Cl. 260—30.4 N **22 Claims**

Stable solutions of polyglutamic acid derivatives, useful for forming films or artificial leathers, are produced by adding a polyether polyol or an alkylenediamine polyether polyol to an inert organic solvent solution of a polymer of an N-carboxylic acid anhydride of a glutamic acid γ-ester.

3,728,297

PYRAZOLYL ESTERS OF PHOSPHORIC ACIDS

Hellmut Hoffmann, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

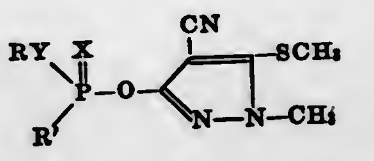
No Drawing. Filed Aug. 17, 1970, Ser. No. 64,668

Claims priority, application Germany, Aug. 21, 1969, P 19 42 561.7

Int. Cl. C07f *9/08, 9/16, 9/38*

U.S. Cl. 260—310 R **7 Claims**

1-methyl-4-cyano - 5 - methylmercapto-pyrazol-(3)-yl esters of O,O-dialkyl-phosphoric acids or O-alkyl-alkane-phosphonic acids or mono- or di-amides of phosphoric or phosphonic acids or their thiono analogues, having the formula



(I)

in which

R denotes a straight-chain or branched alkyl radical,

R' denotes a straight-chain or branched alkyl radical or an alkoxy, alkylamino or dialkylamino radical,

Y denotes an oxygen atom or an imino or alkylimino group, and

X denotes an oxygen or sulphur atom, the alkyl radicals of R, R' and Y having from 1 to 6 carbon atoms,

which possess arthropodicidal, especially acaricidal and insecticidal, and in some cases rodenticidal, properties and process for their preparation.

3,728,298

POLYURETHANE PRINTING INK AND METHOD OF USING SAME

George Hartmann, 69—43 Nansen St., Forest Hills, N.Y. 11375

Filed Sept. 4, 1970, Ser. No. 69,666

Int. Cl. C08g *51/42*

U.S. Cl. 260—31.4 R **4 Claims**

A printing ink formed from liquid urethane polymer of polyether type, having an extended pot life. Variation in formulation permits control of viscosity, color and elasticity. The ink may be applied by direct or transfer printing to smooth, textured surfaces and to textile surfaces with surface adherence or pressed into the weave or knit to control stretchability of the fabric in localized areas.

3,728,299

TEXTILE SIZING SOLUTION COMPRISING AN INTERPOLYMER OF A HYDROPHOBIC MONOMER AND AN UNSATURATED ORGANIC CARBOXYLIC MONOMER AND A HALOGENATED HYDROCARBON SOLVENT

Charles K. Schramm, Westfield, N.J., assignor to Colloids, Inc., Newark, N.J.
No Drawing. Filed Jan. 22, 1971, Ser. No. 108,956
Int. Cl. C08f *45/30;* **D06m** *15/00*
U.S. Cl. 260—33.8 UA **8 Claims**

A process for sizing textile yarns wherein the textile yarn is subjected to an organic solvent solution of an interpolymer of a hydrophobic monomer and an unsaturated organic carboxylic monomer containing 3 to 9 carbon atoms and at least 1 carboxyl group, and the organic solvent is thereafter removed.

3,728,300

PROCESS FOR PRODUCING POLYMER BLENDS

Saburo Minekawa, Yokohama-shi, Koretaka Yamaguchi, Kawasaki-shi, Kazuo Toyomoto and Einosuke Fujimoto, Yokohama-shi, and Kuniaki Sakamoto, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Aug. 9, 1968, Ser. No. 751,545
Claims priority, application Japan, Aug. 26, 1967, 42/54,503
Int. Cl. C08f *19/06, 45/02, 45/28*
U.S. Cl. 260—33.6 AQ **10 Claims**

Process for producing a uniformly mixed polymer blend of a great utility as a rubber material for producing various rubber products which comprises copolymerising a conjugated diolefin with a monovinyl-substituted aromatic compound to produce a random copolymer of the conjugated diolefin and the monovinyl-substituted aromatic compound having a content of the monovinyl-substituted aromatic compound of 50–95% by weight in the presence of a conjugated diolefin homopolymer or a random copolymer of a diolefin and a monovinyl-substituted aromatic compound having a content of a monovinyl-substituted aromatic compound of not more than 40% by weight, dissolved in an inert medium.

3,728,301

DISPERSIONS

David Hugh Spence and Arthur Topham, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Aug. 13, 1970, Ser. No. 63,642
Claims priority, application Great Britain, Aug. 18, 1969, 41,058/69
Int. Cl. C08g *51/02, 51/28, 51/30*
U.S. Cl. 260—33.6 R **13 Claims**

A composition of matter comprising a dispersion of a solid, preferably a pigment, dyestuff or textile finishing agent, in an organic solvent and a polyurea essentially free from basic amino groups which contains at least two urea groups and at least two alkyl, alkenyl or alkapolyenyl groups containing at least eight carbon atoms, said polyurea being soluble in the organic solvent, and the use of the said compositions of matter.

3,728,302

HEAT HARDENABLE THICKENED EPOXY RESIN MASSES

Dietrich Helm, Unna, Germany, assignor to Schering AG, Bergkaman, Germany
No Drawing. Filed June 7, 1971, Ser. No. 150,755
Claims priority, application Germany, June 12, 1970, P 20 30 054.3
Int. Cl. C08g *51/04, 51/10*
U.S. Cl. 260—37 EP **8 Claims**

Heat-hardenable epoxy resin masses ranging from a soft to a brittle consistency prepared by thickening, at a temperature from 20° C. to 120° C., a mixture of (1) a liquid epoxy resin, (2) dicyandiamide, and (3) a tertiary amine accelerator, in the presence of a monoamine or diamine. Further heating of the masses at 150° C.–180° C. causes the storage-stable hardenable masses to harden.

3,728,303

HEAT STABILIZED VINYLIDENE FLUORIDE POLYMER

Yutaka Kometani, Nishinomiya, Shun Koizumi, Osaka, and Takesi Suzuki and Chuzo Okuno, Settu, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka-fu, Japan
No Drawing. Continuation-in-part of application Ser. No. 689,800, Dec. 12, 1967. This application Oct. 7, 1970, Ser. No. 78,967
Claims priority, application Japan, Dec. 12, 1966, 41/81,422
Int. Cl. C08f *45/56*
U.S. Cl. 260—45.7 R **6 Claims**

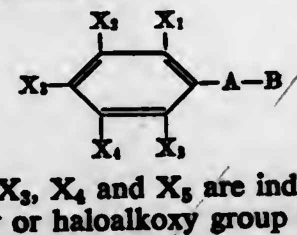
Polyvinylidene fluoride stabilized against heat, especially furnished with stability at a high temperature around 260° C., containing from 0.01 to 5% by weight of at least one of sodium chloride, sodium chlorate, potassium chloride and potassium chlorate.

3,728,304

FLAME-RETARDING ORGANIC SYNTHETIC HIGH POLYMER COMPOSITION

Shoichi Hirao and Akira Taniuchi, Kyoto, Takuji Nakano, Suita, and Masahiko Miyazaki, Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan
No Drawing. Filed Mar. 2, 1971, Ser. No. 120,344
Claims priority, application Japan, Mar. 13, 1970, 45/21,746
Int. Cl. C09k *3/28*
U.S. Cl. 260—45.75 K **8 Claims**

A halogen-containing organic compound, which is represented by the formula,



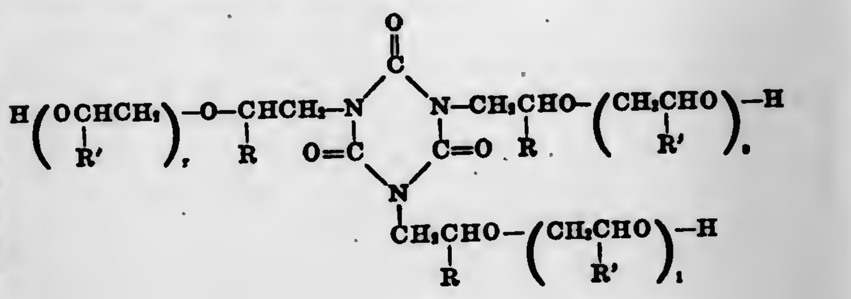
wherein X_1, X_2, X_3, X_4 and X_5 are individually an alkyl, haloalkyl, alkoxy or haloalkoxy group having 1 to 3 carbon atoms, or a halogen or hydrogen atom; A is an oxygen or sulfur atom; and B is a branched-chain alkyl, haloalkyl, hydroxyalkyl or hydroxyhaloalkyl group having 4 or more carbon atoms, and which compound has at least one halogen atom in the molecule, imparts excellent flame-retardancy to an organic synthetic high polymer and, at the same time, scarcely bleeds in said high polymer, is excellent in compatibility therewith and further imparts plasticity thereto.

3,728,305

PROCESS FOR PREPARING AN IMPROVED ANTI-STATIC FIBER CONTAINING HIGH MOLECULAR WEIGHT TRIS(β - HYDROXYALKYL)-ISOCYANURATE-ALKYLENE OXIDE ADDUCTS

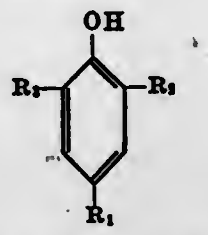
Rodney Lee Wells, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed May 30, 1972, Ser. No. 257,869
Int. Cl. C08g *51/58*
U.S. Cl. 260—45.85 **10 Claims**

It has been suggested that the utility of synthetic fibers of polyamide could be increased by dispersing in the polyamide about 1 percent to about 10 percent of a compound represented by the formula:

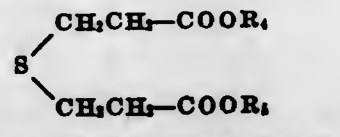


wherein R and R' are independently at each occurrence hydrogen, methyl or ethyl and *r*, *s*, and *t* are integers from 31 to about 200.

However, with incorporation of this antistatic additive in the polyamide, serious problems have been encountered in melt-spinning due to the frequent occurrence of "nubs" or enlarged places in the extruded polyamide filament. It has now been found that the occurrence of said nubs in the antistatic polyamide fiber can be greatly reduced by dispersing in the polymer at least 0.5% by weight, based on the weight of the antistatic agent, of a phenol compound represented by the formula:



where R_1 is hydrogen or an alkyl radical containing 1 to 5 carbon atoms, R_2 is an alkyl radical containing 12 to 18 carbon atoms, and R_3 is an alkyl radical containing 12 to 18 carbon atoms; and at least 0.5% by weight, based on the weight of the antistatic additive, of a sulfur compound of the formula.



where R_4 is an alkyl radical containing 8 to 18 carbon atoms and R_5 is an alkyl radical containing 8 to 18 carbon atoms.

3,728,306

COMPOSITION COMPRISING AN EPOXY RESIN WITH AN ORGANOSTANNOIC ACID-CARBOXYLIC ACID ANHYDRIDE REACTION PRODUCT

Mark Markovitz and Leo S. Kohn, Schenectady, N.Y., assignors to General Electric Company
No Drawing. Continuation-in-part of application Ser. No. 757,156, Sept. 3, 1968. This application July 27, 1971, Ser. No. 166,612
Int. Cl. C08g *30/12*
U.S. Cl. 260—47 EC **1 Claim**

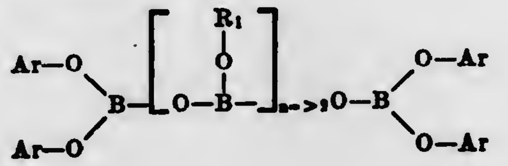
Epoxy resins cured with organostannoic acid-carboxylic acid anhydride reaction products provide rapid low-temperature curing of epoxy resins which are characterized by good electrical and physical properties including corona resistance.

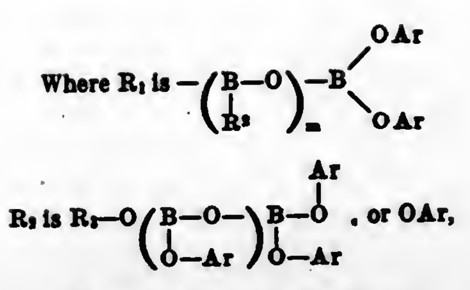
3,728,307

METHOD OF PREPARING HARDENABLE PLASTICS COMPRISING CONDENSING MIXED ARYL BORATES WITH HCHO

Franz Josef Huster, Drachenfelsstr. 5, Troisdorf, Germany
No Drawing. Continuation-in-part of applications Ser. No. 519,805, Nov. 2, 1965, and Ser. No. 852,151, Aug. 13, 1969, both now abandoned. This application Oct. 27, 1971, Ser. No. 192,934
Claims priority, application Germany, Nov. 3, 1964, D 45,766
Int. Cl. C08g *5/06, 33/18*
U.S. Cl. 260—51 R **3 Claims**

Novel mixed aryl borates of the general formula $BO_x(OAr)_y$, wherein Ar is an aryl radical, *x* is greater than 1 but less than 1.5 and *y* is greater than 0 and less than 1, which mixture contains branched chain aryl borates of the formula:





R_3 is R_1 or Ar and m is =>1.

which mixed aryl borates are made by reacting a phenolic compound with boric acid or boric oxide with an excess of boron at elevated temperatures and for extended periods of time sufficient to condense the boron compound and the phenolic compound and cause water as well as phenolic compound to be condensed out of the reaction and removed therefrom. These mixed aryl borates are reactable to produce a preproduct which is then reacted with trioxane and, if desired, a solid formaldehyde yielding materials to form thermosetting resins of the phenol-aldehyde type containing boron thereon.

3,728,308

CATALYST FOR URETHANE REACTION

Ronald D. Allison and Louis G. Rey, Sarnia, Ontario, Canada, and Roy E. Morgan, Jr., Richwood, Tex., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Feb. 18, 1971, Ser. No. 116,628
Int. Cl. C08g *22/40*
U.S. Cl. 260—77.5 AB **4 Claims**

The reaction of an organic polyisocyanate with a polyol to produce a polyurethane is catalyzed by an alkali metal salt of the polyol. Both the polyol and the catalyst should be substantially anhydrous.

3,728,309

PROGRESSIVE HEATING IN POLYESTER CONDENSATIONS

Emil J. Maxion, North Brunswick, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed June 13, 1969, Ser. No. 833,155
Int. Cl. C08g *17/01*
U.S. Cl. 260—75 M **10 Claims**

Unusually high reaction temperatures may be employed in the solid state polycondensation of crystalline linear polyester prepolymers or resins (e.g., polyethylene terephthalate) having a reduced specific viscosity of 0.2 or more by maintaining the polycondensation temperature initially (e.g., at 200–230° C.) between the sticking temperature of the resin in the amorphous state and in the initial crystalline state until the resin sticking temperature has substantially further increased as the reaction progresses, and thereafter elevating the polycondensation temperature either stepwise or gradually to a level (e.g., 240° C. or more) substantially above the initial crystalline sticking temperature in producing resins of higher molecular weight without significant agglomeration; the reaction rates are generally faster and higher molecular weights are obtainable than heretofore.

3,728,310

MIXED POLYAMINES FORMED BY THE ACID-CATALYZED CONDENSATION OF 3-CHLOROANILINE, 2,5-DICHLOROANILINE, AND FORMALDEHYDE AS CURING AGENTS FOR POLYURETHANES

Norman K. Sundholm, Middlebury, and Ivan Mankowich, Cheshire, Conn., assignors to Uniroyal, Inc., New York, N.Y.
No Drawing. Filed Oct. 12, 1970, Ser. No. 80,237
Int. Cl. C08g *22/16*
U.S. Cl. 260—75 NH **2 Claims**

The mixtures of polyamines formed by the acid-catalyzed condensation of 3-chloroaniline, 2,5-dichloroaniline, and formaldehyde in certain ratios have improved properties for curing polyurethanes. They are readily blended with the liquid polyurethane because they are liquid or have low solidification points.

3,728,311

POLYUREAS, POLYURETHANES AND POLYAMIDES BASED ON A TETRA-OXO DIAMINE COMPONENT

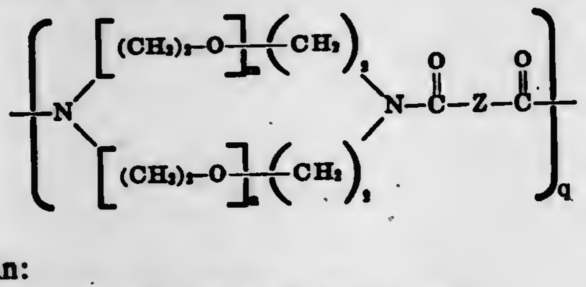
Chung Ho Park, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 16, 1971, Ser. No. 208,931

Int. Cl. C08g *20/02, 22/02, 22/16*

U.S. Cl. 260—77.5 C **16 Claims**

Disclosed herein are polymers of the structure



wherein:

m and *n*, alike or different, are 1 to 5,
q is 25 to 1000; and
Z is selected from:
  divalent hydrocarbon groups containing from 2 to 20 carbon atoms,
  hydrocarbondioxy groups, —O—Z'—O—, containing from 2 to 20 carbon atoms, and
  hydrocarbondiamino groups, —NH—Z'—NH—, containing from 2 to 20 carbon atoms; said Z and Z' groups being composed of divalent aliphatic groups, arylene groups or combinations thereof.

3,728,312

MOLTEN PRODUCTION OF POLYAMIDES FROM TEREPHTHALIC ACID DIALKYL ESTER AND TRIMETHYL HEXAMETHYLENE DIAMINE UNDER REDUCED PRESSURE

Johannes Schneider and Wolfgang Pungs, Troisdorf, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

No Drawing. Filed Sept. 18, 1970, Ser. No. 73,675

Claims priority, application Germany, Sept. 18, 1969, P 19 47 217.4

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **4 Claims**

In the production of polyamides by pre-condensing polyamide-forming reactants in the presence of water, removing water, and then polycondensing to form the polyamide, the improvement which comprises terminating the polycondensation when the viscosity of the product falls in the range of about 50 to 90, transferring the material at a temperature of about 200 to 300° C. to a screw extruder having a vacuum outlet, and advancing said material through the screw extruder while continuing polycondensation to a final viscosity of about 116 to 150. Advantageously the polyamide when polycondensation is terminated at a viscosity of 50 to 90 is sent to a feeder bin under pressure of an inert gas and from there is discharged into the screw extruder.

The resulting polyamides, though quite hard, are low melting and thus light stabilizers can be blended therein and the easier working will not degrade the stabilizers, so transparent hollow articles of improved appearance can be made by injection molding.

3,728,313

ARYLENE SULFIDE POLYMER COATING COMPOSITION

Harold Wayne Hill, Jr., and James E. Edmonds, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Original application July 25, 1969, Ser. No. 845,098. Divided and this application Oct. 12, 1971, Ser. No. 188,492

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **8 Claims**

Adherent coatings of arylene sulfide polymers are formed by applying a mixture of the polymer and an oxide or sulfide of cobalt or molybdenum to a solid substrate such as iron, steel, aluminum and ceramic.

3,728,314

CHEMICAL COMPOSITION FOR VISCOSITY CONTROL AND FILM FORMING MATERIALS

Izhak Blank, Haifa, Israel, assignor to Hydrophilics International, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 36,931, May 13, 1970. This application May 3, 1971, Ser. No. 139,544

Int. Cl. C08f *15/14, 15/18*

U.S. Cl. 260—80.8 **7 Claims**

A hydrophilic copolymer is formed through the bulk copolymerization of methyl methacrylate, an acrylic acid, and an acrylate plasticizer, in particular amounts, followed by treatment of the formed copolymer, in powder form, with an aqueous, basic material, such as ammonium hydroxide.

3,728,315

COPOLYMERIZED HARD PLASTIC HYDROGEL COMPOSITIONS

Robert Gustafson, 5129 N. St. Louis Ave., Chicago, Ill. 60625

No Drawing. Filed Aug. 3, 1971, Ser. No. 168,769

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.75 **7 Claims**

A shape-retaining cross-linked polymer formed from monomers including from about 20% to about 35% by weight of the copolymer of an alkylene glycol methacrylate, said alkylene having from one to three carbon atoms, from about 5% to about 35% by weight of the copolymer of a hydroxy alkyl methacrylate, said alkyl having from one to three carbon atoms, and from about 55% to about 70% by weight of the copolymer of a compound being a member selected from the group consisting of ethyl methacrylate and n-butyl methacrylate and a contact lens formed therefrom.

3,728,316

CHLORO-1,3-BUTADIENE/α-ALKYL ACRYLATE ESTER-GRAFTED COPOLYMERS

Donald Max Simons, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 836,376, June 25, 1969. This application Nov. 16, 1970, Ser. No. 90,112

Int. Cl. C08f *15/26*

U.S. Cl. 260—80.77 **14 Claims**

Lower alkyl and cycloalkyl esters of unbranched α-C_1–C_4 alkylacrylates copolymerize in emulsion with 2-chloro-1,3-butadienes until all the latter monomer is exhausted, then graft onto the copolymer backbone so formed. The reaction proceeds in two distinct steps, the

grafting step requiring the presence of a polymerization catalyst, an anionic surfactant, and at least one cation of the group: triethanolammonium, tri(2-propanol)ammonium, diethanol-ammonium, and C_1–C_3 alkyldiethanolammonium. Novel grafted copolymers of 2-chloro-1,3-butadienes produced by this process range from rubbery to plastic materials. Grafted copolymers of 2-chloro-1,3-butadienes with methyl methacrylate are excellent adhesives for plasticized polyvinyl chloride.

3,728,317

OPTICAL CONTACT LENSES AND RELATED DEVICES

Izhak Blank, Haifa, Israel, assignor to Hydrophilics International, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 36,931, May 13, 1970. This application May 3, 1971, Ser. No. 139,545

Int. Cl. C08f *15/14, 15/18*

U.S. Cl. 260—86.1 R **5 Claims**

A copolymer having hydrophilic surfaces is formed through the bulk copolymerization of methyl methacrylate and acrylic acid, in particular ranges, followed by a treatment of the formed copolymer with a mild, basic material, such as ammonium hydroxide, in order to neutralize the acid groups present. The depth of penetration of the basic material determines the degree to which the material is hydrophilic.

3,728,318

SUSPENSION POLYMERIZATION OF UNIFORM POLYMER BEADS

Herman C. Hamann, Melrose Park, and David H. Clemens, Willow Grove, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 4, 1971, Ser. No. 121,130

Int. Cl. C08f *1/11, 15/02, 15/04*

U.S. Cl. 260—86.7 **6 Claims**

Uniform polymer beads are produced by a suspension polymerization technique with the aid of a cationic dispersing or suspending agent in combination with a protective colloid, the polymerization being carried out with a basic pH. Polymer or copolymer beads which are uniformly sized and which represents a relatively narrow "cut" or range of a standard sieve classification are produced.

3,728,319

REACTION PRODUCTS OF POLY N-VINYLPYRROLIDONE OR POLY N-VINYLPYRROLIDONES WITH ALKYL SIDE CHAINS AND ORGANIC SECONDARY OR TERTIARY AMINES

Robert J. Kiesel, Chester, N.J., David I. Randall, Easton, and Nathan D. Field, Allentown, Pa., and Stanley Rudoff, Elizabeth, N.J., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Feb. 19, 1970, Ser. No. 12,867

Int. Cl. C08f *7/12, 27/00*

U.S. Cl. 260—88.1 R **8 Claims**

Amino-alkylated heterocyclic N-vinyl polymers are disclosed. The polymers are the reaction product of polyvinyl pyrrolidone, alkylated polyvinyl pyrrolidone, or N-vinylpyrrolidone with a saturated secondary or tertiary amine. The product can be prepared by reacting the polyvinylpyrrolidone or alkylated polyvinyl pyrrolidone with amine in the presence of a suitable solvent and a free radical initiator. Alternatively, monomeric N-vinylpyrrolidone can be simultaneously polymerized and amino-alkylated.

3,728,320

POLYMERIC EPOXIDES

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 812,079, May 11, 1959, now Patent No. 3,135,705, dated June 2, 1964, which is a continuation-in-part of abandoned application Ser. No. 738,626, May 29, 1958. This application June 30, 1960, Ser. No. 39,809

Int. Cl. C08f *7/12*

U.S. Cl. 260—88.3 A **13 Claims**

High molecular weight, water-insoluble copolymers of propylene oxide and higher alkylene oxides with a monoepoxide of a diene or polyene and particularly with butadiene monoxide, vinyl cyclohexene monoxide, and 1,2-epoxy-5,9-cyclododecadiene are described.

3,728,321

POLYMERIC EPOXIDES

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 812,079, May 11, 1959, now Patent No. 3,135,705, dated June 2, 1964, which is a continuation-in-part of abandoned application Ser. No. 738,626, May 29, 1958. This application June 30, 1960, Ser. No. 39,811

Int. Cl. C08f *7/12*

U.S. Cl. 260—88.3 A **10 Claims**

High molecular weight, water-insoluble copolymers of propylene oxide and higher alkylene oxides with an ethylenically unsaturated glycidyl ether and particularly with allyl glycidyl ether are described.

3,728,322

LIGHT SENSITIVE ESTERS OF POLYVINYL ALCOHOL

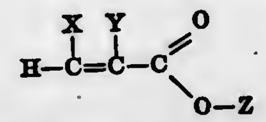
Harlan B. Freyermuth, Easton, and Nathan D. Field, Allentown, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Jan. 14, 1970, Ser. No. 2,941

Int. Cl. C08f *27/12*

U.S. Cl. 260—91.3 VA **4 Claims**

A light sensitive film-forming polymer having the general formula



$$H-\overset{X}{\overset{|}{C}}=\overset{Y}{\overset{|}{C}}-C{\overset{O}{\nearrow}}\!\!\!\!{\underset{O-Z}{\searrow}}$$

wherein X is selected from the group consisting of halogen, lower alkoxy, phenoxy, heterooxy, C-heterocyclic or polycyclic aryl moieties, Y represents hydrogen, halogen, cycloalkyl or lower alkyl and Z represents the residue of a polyvinyl alcohol which may be partially or completely esterified.

3,728,323

PROCESS FOR THE POLYMERIZATION OF CONJUGATED DIENES

Tai Chun Cheng, Mogadore, and Adel F. Halasa, Bath, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 854,289, Aug. 29, 1969. This application Sept. 7, 1971, Ser. No. 178,489

Int. Cl. C08d *3/04, 3/06, 1/32*

U.S. Cl. 260—94.2 T **15 Claims**

Conjugated dienes are polymerized by a new catalyst system which permits control of the molecular weight and gives a more easily processed product. This catalyst system comprises (1) a potassium hydrocarbon compound having 1–10 carbon atoms in which the hydrocarbon portion is a primary, secondary or tertiary alkyl or an aryl radical, and (2) a potassium alkoxide of 4–10 carbon atoms, preferably a tertiary-alkoxide. The diene polymers produced by this process have controllable molecular weights in the range of 25,000 to 1,000,000 preferably 100,000 to 500,000, broad molecular weight distribution, glass transition temperatures higher than normally obtained, high degree of branching and are more easily processed in the production of rubber and other compositions for commercial use.

3,728,324

PROCESS FOR THE POLYMERIZATION OF CONJUGATED DIENES

Tai Chun Cheng, Mogadore, and Adel F. Halasa, Bath, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 854,274, Aug. 29, 1969. This application Sept. 7, 1971, Ser. No. 178,492

Int. Cl. C08d *1/20, 3/04, 3/06*

U.S. Cl. 260—94.2 T **15 Claims**

Conjugated dienes are polymerized by a new catalyst system which permits control of the molecular weight and gives a more easily processed product. This catalyst system comprises (1) a potassium hydrocarbon compound having 1–10 carbon atoms in which the hydrocarbon portion is a primary, secondary or tertiary alkyl radical, and (2) a sodium tertiary-alkoxide of 4–10 carbon atoms. The diene polymers produced by this process have controllable molecular weights in the range of 25,000 to 1,000,000, preferably 100,000 to 500,000, broad molecular weight distribution, glass transition temperatures higher than normally obtained, high degree of branching and are more easily processed in the production of rubber and other compositions for commercial use.

3,728,325

POLYMERIZATION OF CONJUGATED POLYOLEFINS

Carl J. Carlson and Samuel E. Horne, Jr., Akron, Ohio, assignors to The B. F. Goodrich Company

No Drawing. Filed Apr. 21, 1955, Ser. No. 503,027

Int. Cl. C08d *1/14, 3/12*

U.S. Cl. 260—94.3 **3 Claims**

Conjugated polyolefin hydrocarbons are polymerized to rubbery or resinous polymers having essentially an all 1,4 structure with catalysts containing titanium compounds. The cis- and trans-1,4-ratios can be varied by adjustment of the titanium to aluminum ratio of the catalyst.

3,728,326

HYPOCALCEMIC PEPTIDE AND PROCESS OF PREPARING IT USING A TWO-PHASE N-BUTANOL-PYRIDINE-ACETIC ACID-AMMONIUM ACETATE-WATER SYSTEM

Irving Putter, Martinsville, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation of abandoned application Ser. No. 653,342, July 14, 1967. This application July 2, 1971, Ser. No. 159,559

Int. Cl. C07c *103/52;* **C07g** *7/10*

U.S. Cl. 260—112 T **11 Claims**

This invention relates to a hypocalcemic peptide derived from thyroid gland, in pure form and defined composition. In accordance with the invention, the peptide is prepared by counter-current extraction of thyroid gland extract with a two-phase n-butanol-pyridine-acetic acid-water-ammonium acetate system. Further purification is effected by counter-current extraction with a two-phase n-butanol-water-acetic acid system. The invention also provides a process for treating thyroid glands using a two-phase n-butanol-pyridine-acetic acid-water-ammonium acetate system to produce thyroid gland extract suitable for use in said counter-current extractions.

3,728,327

PROTEIN AND METHOD OF EXTRACTING SAME FROM SOYBEANS EMPLOYING REVERSE OSMOSIS

Dean Russell Frazeur and Robert Bruce Huston, Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

No Drawing. Continuation-in-part of application Ser. No. 43,981, June 5, 1970. This application Apr. 10, 1972, Ser. No. 242,677

Int. Cl. A23j *1/14*

U.S. Cl. 260—123.5 **2 Claims**

An aqueous homogenized slurry of soybean particles is subjected to a separation so as to separate insoluble materials from liquid and the liquid is subjected to reverse osmosis to obtain as a retentate soy proteins including both those which are insoluble and soluble in water at the protein isoelectric point.

3,728,328

COBALT COMPLEXES OF AN AZO COMPOUND AND A TRIDENTAIE ORGANIC LIGAND

Paul Lienhard, Riehen, Fabio Beffa, Basel, and Charles Soiron, Riehen, Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 496,651, Oct. 15, 1965. This application Mar. 11, 1968, Ser. No. 711,887

Claims priority, application Switzerland, Oct. 20, 1964, 13,579/64

Int. Cl. C09b *45/10, 45/20, 45/30*

U.S. Cl. 260—147 **10 Claims**

Complex azo dyestuff-cobalt compounds consisting essentially of, per molecule:

a cobalt atom:

one molecule of a colorless tridentate organic ligand which is coordinatively bound to said cobalt atom by way of three nitrogen atoms and which is free from ionogenic groups which do not partake in complex formation, each of said nitrogen atoms participating in the formation of a five- to six-membered ring of which said cobalt atom is a member; and

one radical of an azo dyestuff, bicyclically bound to the cobalt atom and being free from groups which are capable of dissociating acid in water but do not partake in complex formation, whereby the thus constituted complex is rendered cationic;

and one equivalent of a colorless anion, are disclosed; they are useful for coloring organic polymeric materials and especially for dyeing acrylic fibers from an aqueous bath.

3,728,329

PROCESS FOR PRODUCING PEARL ESSENCES

Nobumitsu Yano, Saitama-ken, Masao Fukushima, Tokyo, Masanori Kishi, Omiya-shi, and Fumio Nagayoshi, Saitama-ken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Jan. 15, 1970, Ser. No. 3,245

Int. Cl. C07d *51/52, 51/54*

U.S. Cl. 260—211.5 R **6 Claims**

By crystallizing at least one compound selected from nucleic acids and their relative nucleic compounds from an aqueous solution thereof in the presence of at least one ionic surface active agent in the solution, there are obtained pearl essences of crystals having smooth surfaces, uniform size and shape, a long diameter of 3–100 microns, a short diameter of 1–40 microns and a thickness of 0.03–3 microns, in a high yield. The pearl luster of the thus obtained pearl essences is strong, and these pearl essences are rich in resistance to chemicals, heat and light. The ionic surface active agents used are cationic, anionic or amphoteric, and are preferably used in a proportion of 1–0.001% by weight of the aqueous solution.

3,728,330

PROCESS FOR MANUFACTURING CELLULOSE XANTHATE AND VISCOSE PREPARED FROM SAID CELLULOSE XANTHATE

Hannes Sihtola, Tiilimaki 30A, Helsinki 33, Finland, and Boris Nizovsky, Gyldenintie 14A, Helsinki 20, Finland

No Drawing. Continuation-in-part of application Ser. No. 825,390, May 16, 1969. This application June 2, 1971, Ser. No. 149,370

The portion of the term of the patent subsequent to Aug. 17, 1988, has been disclaimed

Int. Cl. C08b *9/00, 21/20*

U.S. Cl. 260—217 **25 Claims**

Viscose manufacturing process. Aged alkali cellulose containing 20–36 wt. percent cellulose and more than 14 wt. percent NaOH is re-steeped with a sodium hydroxide solution containing less than 15% by weight NaOH and pressed to reduce the amount of NaOH in the alkali cellulose, yielding a second alkali cellulose containing less than 14% by weight NaOH and at least 24% by weight cellulose based on the total weight of said second alkali cellulose. The second alkali cellulose is xanthated with carbon disulfide. The amount of carbon disulfide required for xanthation based on the total weight of the cellulose in the alkali cellulose is very low and for rayon staple and cellophane may be as low as 14–24% due to the low amount of sodium hydroxide and the high amount of cellulose present in the alkali cellulose.

The xanthate is thereafter dissolved in dilute sodium hydroxide or water to yield viscose.

3,728,331

PROCESS FOR REDUCING THE VISCOSITY OF A CELLULOSE ETHER WITH HYDROGEN PEROXIDE

Albert B. Savage, Midland, Mich., assignor to the Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 4, 1969, Ser. No. 813,720

Int. Cl. C08b *11/00*

U.S. Cl. 260—231 R **10 Claims**

A controlled reduction of the viscosity of a cellulose ether is achieved by blending an essentially dry, free-flowing particulate cellulose ether with a predetermined amount of hydrogen peroxide, heating the blended cellulose ether at about 50°–150° C. to react substantially all the added hydrogen peroxide, and recovering a lower viscosity, particulate cellulose ether having an intrinsic fluidity greater than the initial cellulose ether. High yields and a readily controlled viscosity reduction are obtained.

3,728,332

PREPARATION OF STARCH ESTERS

Martin M. Tessler, Edison, and Morton W. Rutenberg, North Plainfield, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 3, 1971, Ser. No. 177,777

Int. Cl. C08b *19/04*

U.S. Cl. 260—233.5 **7 Claims**

Starch dispersions in aqueous or non-aqueous media are reacted with acyl guanidines to produce starch esters.

3,728,333

METHOD OF OBTAINING MONOHYDRATE OF SODIUM SALT OF 6 - (3 - PHENYL-5-METHYLISOXAZOLE - 4 - CARBAMINO)-PENICILLANIC ACID

Marina Aleveevna Panina, ulitsa Gorkogo 4, kv. 59, Moscow, U.S.S.R.; Gersh Izrailevich Kleiner, Moskovskaya ulitsa 57, kv. 15, Riga ,U.S.S.R.; Ivan Timofeevich Strukov, Balaklavsky prospekt 20, korpus 3, kv. 209; and Alexandra Fedorovna Zdobnova, Sevastopolsky prospekt 38, kv. 24, both of Moscow, U.S.S.R.; Maria Kuzminichna Andreeva, ulitsa Strautu 62, kv. 1, Riga, U.S.S.R.; and Nonna Mikhailovna Ryabova, Varshavskoe shosse 69, korpus 1, kv. 140, Moscow, U.S.S.R.

No Drawing. Filed Nov. 4, 1970, Ser. No. 86,990

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **3 Claims**

A method of obtaining a monohydrate of sodium salt of 6 - (3 - phenyl-5-methylisoxazole-4-carbamine)-penicillanic acid consisting in that 6-aminopenicillanic acid is made to interact with acid chloride of 3-phenyl-5-methylisoxazole-4-carboxylic acid in an aqueous-acetone medium in the presence of sodium bicarbonate at pH=7–8, then 6-(3-phenyl - 5 - methylisoxazole - 4 - carbamino)-penicillanic acid is extracted from the reaction mass, for example, with butylacetate while being acidified to pH=1–3, then the obtained extract is treated with an equimolecular amount of sodium salt of acetic acid and the desired product is separated.

3,728,334

6 - (1 - CARBOXYCYCLOALKYLCARBOXAMIDO) PENICILLANIC ACID, DERIVATIVES AND SALTS THEREOF

Kenneth Butler, Old Lyme, Ronnie D. Carroll, East Lyme, and Ernest S. Hamanaka, Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,762

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **24 Claims**

A novel class of broad spectrum antibiotics derived from 6 - (1 - carboxycycloalkylcarboxamido) penicillanic acids and derivatives and salts thereof.

3,728,335

METHODS OF PREPARING 21-FLUORO-16,17-ALKYLIDENEDIOXY-3,20-DIKETO-PREGNANES

Francisco S. Alvarez, Sunnyvale, Calif., assignor to Syntex Corporation, Panama, Panama

Filed May 26, 1971, Ser. No. 147,218

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 D **23 Claims**

A fluorination method for preparing 21-fluoro-pregnanes and also methods of preparing 9α,11β-dichloro-6α,21-difluoro-16α,17α-alkylidenedioxy-pregna-1,4-diene-3,20-dione and 9α,11β-dichloro-6α,21-difluoro-16α,17α-alkylidenedioxy-pregn-4-ene-3,20-dione derivatives from the corresponding 21-acyloxy-6α-fluoro-16α,17α-alkylidenedioxy-3,20-diketo-pregnane derivatives. The fluorination process comprises (1) displacement of the corresponding 21-mesyloxy, or 21-tosyloxy, pregnane derivative with bromide ion to yield the corresponding 21-bromo pregnane derivative, and (2) displacement with fluoride ion to effect replacement of the 21-bromo thereby yielding the corresponding 21-fluoro pregnane derivative. A salient feature is the use of a sulfone solvent in the fluoride displacement step, thereby affording improved yields and purer products. The process of preparing 9α,11β-dichloro-6α,21-difluoro-16α,17α-alkylidenedioxy-3,20-keto-pregna-1,4-diene or -pregn-4-ene derivatives comprises treating the corresponding 21-bromo-6α-fluoro-16α,17α-alkylidenedioxy-3,20-dione-pregnane derivatives according to the aforementioned displacement process in combination with a subsequent 9α,11β-chlorination process. The aforementioned processes are characterized by high yields and high purity products.

3,728,336

(LOWER)ALKOXYTETRAHYDROPYRANYL ETHERS AND 5',6'-DIHYDRO-2H-PYRAN-4'YL ETHERS OF 7β-METHYL-Δ⁴-ANDROSTANES

Alexander D. Cross, San Francisco, and John A. Edwards, Los Altos, Calif., assignors to Syntex Corporation, Panama, Republic of Panama

No Drawing. Continuation-in-part of applications Ser. No. 731,300, May 22, 1968, and Ser. No. 766,321, Oct. 9, 1968. This application May 11, 1970, Ser. No. 36,457

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **12 Claims**

The 4'-(lower)alkoxytetrahydropyran-4'-yl ethers and 5',6'-dihydro-2H-pyran-4'-yl ethers of 7β-methyl-Δ^4-androstanes have high oral anabolic activities.

3,728,337

PREPARATION OF 9α-FLUORO-11-OXO-STEROIDS

Derek Harold Richard Barton, London, England, assignor to Research Institute for Medicine and Chemistry Inc.

No Drawing. Filed June 9, 1971, Ser. No. 150,842

Claims priority, application Great Britain, June 17, 1970, 29,437/70

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 D **11 Claims**

9α-fluoro-11-oxo steroids can conveniently be prepared by enolisation of an 11-oxo steroid with a substituted alkali metal amide and subsequent fluorination of the enolate by reaction with perchloryl fluoride. The invention is particularly applicable to 3-oxygenated - 11 - oxo steroids, although it is necessary to protect any 3-oxo groups.

3,728,338

6-ALKYL - 3 - HYDROCARBONACEOUS-16α,17α-DIHYDROXYPREGNA - 3,5 - DIEN - 20-ONE CYCLIC 16,17-ACETALS AND CONGENERS

Charles S. Markos, Deerfield, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Apr. 18, 1972, Ser. No. 245,253

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 D **10 Claims**

Preparation of 6-alkyl-3-hydrocarbonaceous-16α,17α-dihydroxypregna-3,5-dien-20-one cyclic 16,17-acetals and 3-thienyl analogs thereof, together with their valuable anti-inflammatory properties, is disclosed.

3,728,339

STYRYL COMPOUNDS

Klaus-Dieter Bode and Josef Schroeder, Leverkusen, and Carl-Wolfgang Schellhammer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

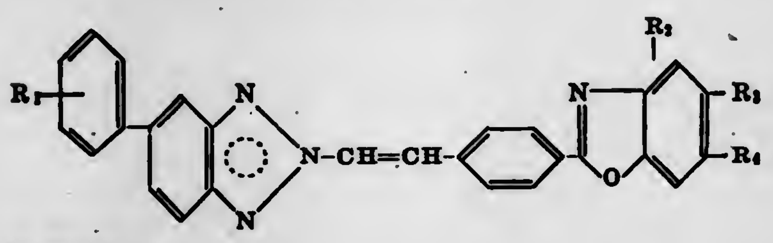
No Drawing. Filed Oct. 22, 1970, Ser. No. 83,237

Claims priority, application Germany, Nov. 3, 1969, P 19 55 066.4

Int. Cl. C09b *23/14*

U.S. Cl. 260—240 D **6 Claims**

Styryl compounds of the formula



in which

R_1 represents hydrogen, halogen, alkyl, alkenyl, alkoxy or aryl radicals, and

R_2, R_3 and R_4 denote hydrogen, halogen, alkyl, alkoxy, cycloalkyl, aralkyl or aryl radicals or the nitrile group, and

R_2 and R_3 can conjointly form a six-membered aromatic ring, as well as their preparation and their use as optical brightening.

3,728,340

PIPERAZINE DERIVATIVES AND PROCESSES FOR THEIR MANUFACTURE

Thomas Raabe, Heusenstamm; Steffen Piesch, Oberursel; Klaus Resag, and Rolf-Eberhard Nitz, both of Frankfurt (Main)-Fechenheim, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt Main, Germany

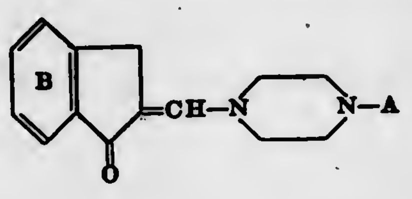
Filed April 27, 1971, Ser. No. 137,997

Claims priority, application Germany, April 30, 1970, P 20 21 262.8

Int. Cl. C07d *51/72*

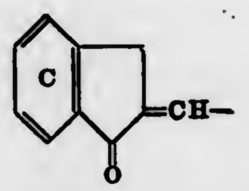
U.S. Cl. 260—240 R **4 Claims**

The present invention relates to new, pharmacologically valuable piperazine derivatives of the general formula



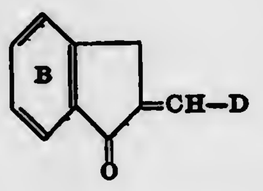
wherein

A means an alkyl or hydroxyalkyl radical having from one to four carbon atoms in the alkyl moieties, a benzhydryl or phenyl radical or one of the groups -COOR or

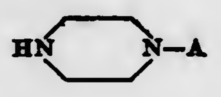


R representing alkyl having from one to four carbon atoms and the benzene rings B and/or C may be substituted by halogen

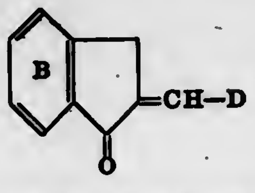
and to the production of such derivatives by reacting a compound of the general formula



wherein D stands for ONa, OK, OH, Cl or Br with a piperazine compound of the general formula



wherein A has the meaning given above, or by reacting, at a molar ratio of 2:1, a compound of the general formula



wherein D means ONa, OK, OH, Cl or Br with piperazine.

3,728,341

PROCESS FOR THE PURIFICATION OF CEPHALEXIN

Harold A. Crisp, Harrow Weald, John F. Oughton, Gerrards Cross, and Graham A. Pearce, Woodnesborough, near Sandwich, England, assignors to Glaxo Laboratories Limited, Middlesex, England

No Drawing. Filed July 20, 1970, Ser. No. 56,261

Claims priority, application Great Britain, July 25, 1969, 37,491/69

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **1 Claim**

A new crystalline form of cephalexin i.e. the γ-form. A process for the manufacture of cephalexin having this form comprises contacting cephalexin having the β-crystalline form with methanol. The β-crystalline form in highly pure pharmaceutical grade can be obtained by contacting the so-produced α-cephalexin with an aqueous medium.

3,728,342

3-ACYLOXYMETHYL CEPHALOSPORINS AND METHOD OF PREPARATION

Stjepan Kukolja, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Dec. 3, 1970, Ser. No. 94,988

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **9 Claims**

3-cycloalkylcarbonyloxymethyl and 3-cycloalkylalkanoyloxymethyl Δ^3-cephalosporins [e.g., 7-(2'-thienylacetamido)-3-cyclobutylcarbonyloxymethyl - Δ^3 - cephem-4-carboxylic acid], are prepared by reaction of a 7-acylamido-Δ^2-desacetylcephalosporin with the anhydride of an aliphatic carboxylic acid to form the corresponding Δ^2-acyloxymethyl cephalosporin which can be oxidized and reduced to form the corresponding Δ^3-compound.

3,728,343

SUBSTITUTED 1H-PYRIDO[2,3-b][1,4]THIAZINE-2(3H)-THIONES

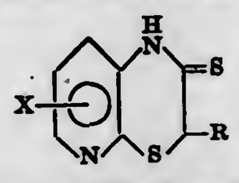
Kao Hwang, Highland Park, and James Daniel Ratajczyk, Waukegan, Ill., assignors to Abbott Laboratories, Chicago, Ill.

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,502

Int. Cl. C07d *99/10*

U.S. Cl. 260—243 R **2 Claims**

Novel substituted 1H - pyrido[2,3-b][1,4]thiazines - 2 (3H)-thiones represented by the formula



wherein X is hydrogen, hydroxy, mercapto, lower alkyl, lower alkoxy or halo and R is hydrogen, hydroxy, lower alkyl, lower alkoxy or halo. The compounds exhibit anti-inflammatory and anti-secretory activity.

3,728,344

PROCESS FOR PREPARING TRIAZINES AND CROSSLINKED POLYMERS OF COPOLYMERS

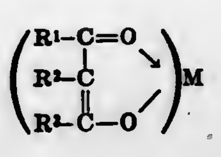
William E. Emerson, and Edwin Dorfman, both of Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 634,877, May 1, 1967, abandoned. This application May 22, 1970, Ser. No. 38,651

Int. Cl. C07d *55/50*

U.S. Cl. 260—248 CS **9 Claims**

This invention (A) relates to a process for producing at preferably low reaction temperatures, a triazine at high levels of conversion and yield from a haloalkane nitrile such as perfluoroalkane nitrile by the novel employment of a catalytic amount of a member selected from the group consisting of (1) an organic amine oxide, (2) an organic amine oxide hydrochloride of said organic amine oxide, and mixtures thereof, and (3) an organometallic catalyst selected from the group consisting of (a) an organometallic compound containing at least one metal-to-carbon bond in which said metal is selected from the group consisting of metals of the Periodic Table Groups IIIB, IVB, VB, VIB, VIIB, VIII, IB, IIB, a group VA metal having an atomic weight of at least about 30, and a Group IVA metal, and (b) a metal or metalloxy beta-ketoenolate of the formula:



in which *n* is an integer equal to the valence of the metal or metalloxy ion, and in which each of R^1, R^2, and R^3 is selected from the group consisting of hydrogen and an organic substituent, and in which R^2 additionally includes halogen, nitro or sulfo, and also (B) relates to the novel employment of the above described catalyst in a catalytic amount employed with a polymer or copolymer containing at least greater than an average of one cyanohaloalkyl group per molecule of the polymer or copolymer, to form a cross-linked polymer or copolymer.

3,728,345

PREPARATION OF QUINOXALINE-2-CARBOXAMIDE DERIVATIVES

Timothy Henry Cronin, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed March 19, 1971, Ser. No. 126,342

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 R **5 Claims**

Process for the preparation of N-(hydroxyalkyl)-2-quinoxalinecarboxamide-1,4-dioxides through treatment of 2-quinoxalinecarboxylic acid, aminoalkyl ester, 1,4-dioxide acid addition salts with a base in a reaction-inert solvent at 10°–60° C. and pH of 7–14.

3,728,346

HYDROXYPHENYLHYDROXYALKYLAMINOALKYLTHEOPHYLLINES

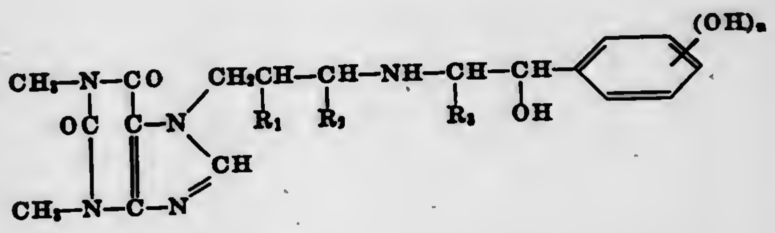
Karl Heinz Klingler, Langen, Germany, assignor to Deutsche Gold-und Silber-Scheideanstaet vormals Roessler, Frankfurt am Main, Germany

Filed July 16, 1971, Ser. No. 163,468

Int. Cl. C07d *57/48, 57/52*

U.S. Cl. 260—256 **10 Claims**

Compounds are prepared having the formula



Where R_1 and R_2 are alkyl of one to four carbon atoms or one of them is hydrogen, R_3 is hydrogen or alkyl of one to two and *n* is 1 or 2 or a salt thereof. The compounds have outstanding broncholytic activity.

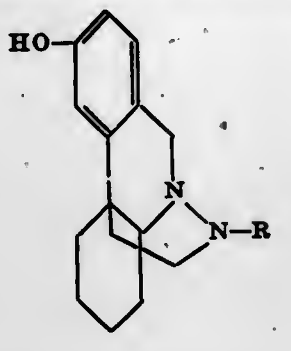
3,728,347
AZAMORPHINAN COMPOUNDS

Kazuo Kigasawa, Kawasaki; Mineharu Hiiragi, and Nagatoshi Wagatsuma, both of Tokyo, all of Japan, assignors to Tokeda Chemical Industries, Ltd., Osaka, Japan

Filed April 3, 1970, Ser. No. 25,530
Claims priority, application Japan, April 3, 1969, 44/25204
Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A **8 Claims**

Azamorphinan compounds of the formula



wherein R is an aralkyl group, a lower alkenyl group or a lower cycloalkylalkyl group, and pharmaceutically acceptable salts thereof, have useful analgesic activity and do not invite drug dependence.

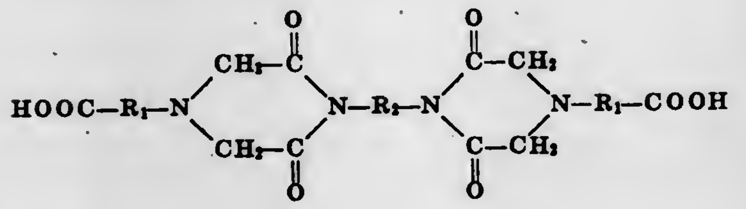
3,728,348
DICARBOXYLIC ACIDS CONTAINING DIKETOPIPERAZINE GROUPS AND POLYMERS PREPARED THEREFROM

Lester T. C. Lee, Parsippany; Eli M. Pearce, Somerville, both of N.J., and Morton H. Litt, University Heights, Ohio, assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 21, 1970, Ser. No. 39,510
Int. Cl. C07d *51/72*

U.S. Cl. 260—268 DK **11 Claims**

Dicarboxylic acids having the formula



wherein R_1 represents a phenylene or alkylene radical and R_2 represents a divalent organic radical, are prepared by reacting a tricarboxylic acid having the formula $HOOCR_1N(CH_2COOH)_2$, such as nitrilotriacetic acid, with a diamine having the formula $H_2NR_2NH_2$, such as hexamethylene diamine, in a substantially 2:1 molar ratio in the presence of an inert solvent. The dicarboxylic acids are useful as monomers in preparing linear film and fiber-forming polyamides and polyesters in accordance with conventional methods for preparing such polymers from dicarboxylic acids.

3,728,349
COMPOSITIONS FOR AND METHOD OF TREATING INFLAMMATORY CONDITIONS

Thomas A. Dobson, Dollard des Ormeaux, Quebec, and J. Guy Rochefort, Saint Laurent, Montreal, Quebec, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Filed June 26, 1970, Ser. No. 50,296
Claims priority, application Canada, Aug. 7, 1969, 058,988
Int. Cl. A61k *27/00*

U.S. Cl. 424—285 **6 Claims**

Compositions for oral or parenteral administration containing, as the active ingredient, γ-oxo-2-dibenzofuranbutyric acid or its water-soluble pharmaceutically acceptable salts, and methods for treating inflammatory conditions by administering said compositions.

3,728,350
1-(2-CARBOXYPHENYL)-5,7-DIMETHOXY-3,4-DIHYDROCARBOSTYRIL INTERMEDIATES FOR ACRONYCIS

James R. Beck, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 653,667, July 17, 1967, Pat. No. 3,624,087. This application July 6, 1971, Ser. No. 128,527
Int. Cl. C07d *33/00*

U.S. Cl. 260—287 R **1 Claim**

The total synthesis of acronycine and related compounds with readily available 1-(2-carboxyphenyl)-5,7-dialkoxy-3,4-dihydrocarbostyrils is described, as are various classes of other intermediates useful in the synthesis.

3,728,351
RADIOIODINATED QUINOLINE DERIVATIVES

Raymond E. Counsell, and Persis Pocha Mehta, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed May 31, 1968, Ser. No. 733,248
Int. Cl. C07d *33/54*

U.S. Cl. 260—288 A **5 Claims**

Radioiodinated analogs of 4-substituted-7-iodoquinolines when administered parenterally or orally are selectively concentrated in animal tissues containing melanin and may be used for the detection and location of melanotic tumors as well as other abnormal growths. The preferred quinoline compounds are 4-(dialkylaminoalkylamino)-7-iodoquinolines, such as for example 4-(3-dimethylaminopropylamino)-7-iodoquinoline. The radioiodinated compounds are prepared by isotope exchange between the natural iodinated compounds and radioactive alkali metal iodides.

3,728,352
PHENYLALKYLAMINOTETRAHYDROISOQUINOLINES

Sydney Archer, and John W. Schulenberg, both of Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 826,681, May 21, 1969, Pat. No. 3,557,120, which is a continuation-in-part of Ser. No. 569,021, Aug. 1, 1966. This application April 8, 1970, Ser. No. 26,765
Int. Cl. C07d *35/36, 35/38*

U.S. Cl. 260—287 R **10 Claims**

Reaction of a 1-aminomethyl-1,2,3,4-tetrahydro-6,7-dimethoxyisoquinoline with an aldehyde or ketone effects ring-closure to an imidazo compound, viz., a 1,2,3,5,6,10b-hexahydro-8,9-dimethoxyimidazo[5,1-a]isoquinoline and alkaline treatment of the related 1-[N-(α-halo lower-alkanoyl)]aminomethyl-2-benzyl-1,2,3,4-tetrahydro-6,7-dimethoxyisoquinoline effects ring-closure to a pyrazino compound, viz., a 1,3,4,6,7,11b-hexahydro-9,10-dimethoxy-2H-pyrazino[2,1-a]isoquinoline. The final products possess sedative, tranquilizing and related pharmacodynamic effects.

3,728,353
PREPARATION OF C-SUBSTITUTED PIPERIDINE

Siemen H. Groen; Johannes J. M. Deumens, both of Geleen, and Petrus A. M. J. Stijfs, Merkelbeek, all of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed July 10, 1970, Ser. No. 54,001
Claims priority, application Netherlands, July 11, 1969, 6910764
Int. Cl. C07d *29/06*

U.S. Cl. 260—293.52 **7 Claims**

A process for the preparation of a carbon-substituted piperidine by the hydrogenation of a N-substituted γ-cyanoketoimine in the presence of a hydrogenation catalyst, is disclosed. A primary amine having the same substituent as the

nitrogen atom of the starting γ-cyanoketoimine is receovered in high yield from the reaction mixture. The carbon substituted piperidines thus produced are useful as starting materials for the production of herbicides or pharmaceuticals.

3,728,354
2-PERCHLOROCROTONYLAMINO-5-TRIFLUOROMETHYL-1,3,4-THIADIAZOLE

Dietrich Rucker, Wuppertal-Elberfeld; Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 16, 1969, Ser. No. 842,369
Claims priority, application Germany, Aug. 1, 1968, P 17 95 037.7
Int. Cl. C07d *91/62*

U.S. Cl. 260—306.8 D **1 Claim**

2-(N-acyl)-amino-1,3,4-thiadiazoles, i.e. 2-[N-(optionally alkyl)-N-(alkanoyl, chloroalkanoyl, fluoroalkanoyl, alkenoyl, chloroalkenoyl, alkoxycarbonyl, alkoxyalkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, and phenoxycarbonyl)-amino]-5-trifluoromethyl-1,3,4-thiadiazoles, which possess herbicidal properties, and which may be produced by conventional methods.

3,728,355
3-CARBOCYCLIC-5,5-DIALKYL-2-IMIDAZOLIDINETHIONES

John Joseph D'Amico, Akron, and Darrell Dexter Mullins, Norton, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 21, 1970, Ser. No. 74,145
Int. Cl. C07d *49/30, 49/34*

U.S. Cl. 260—309.7 **2 Claims**

3-Carbocyclic-5,5-dialkyl-2-imidazolidinethiones useful as intermediates and accelerators of vulcanization of chloroprene rubbers.

3,728,356
THIOGLYCEROL-NITROGEN BASE MOLECULAR COMPLEX

Harvey A. Yablonsky, Elizabeth, N.J., assignor to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 812,903, April 2, 1969, Pat. No. 3,686,296. This application Dec. 15, 1971, Ser. No. 208,441
Int. Cl. C07c *149/24, 149/14*

U.S. Cl. 260—309 **8 Claims**

A thioglycerol-nitrogen base molecular complex useful as a depilatory; complexes are unimolecular or hemimolecular.

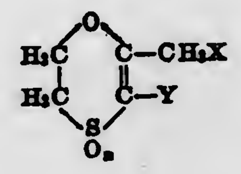
3,728,357
2-(SUBSTITUTED-METHYL)-5,6-DIHYDRO-1,4-OXATHIIN-3-CARBOXAMIDES

Barry I. Knight; Michael Carcumelli-Rodostamo; Marshall Kulka, all of Guelph, Ontario, Canada, and Bogislav Von Schmeling, Hamden, Conn., assignors to Uniroyal, Inc.

Filed Sept. 8, 1970, Ser. No. 78,344
Int. Cl. C07d *89/14*

U.S. Cl. 260—327 P **5 Claims**

Chemicals of the formula



wherein X can be various substituents, particularly halogen and univalent radicals containing a hetero atom, and Y is carboxamide, are useful as agricultural fungicides. The carboxamide may be variously substituted. Examples are 2-chloromethyl-5,6-dihydro-1,4-oxathiin-3-carboxanilide (X = chlorine, Y = phenylcarbamoyl, *n* = zero) and 5,6-dihydro-2-thiocyanomethyl-1,4-oxathiin-3-carboxanilide (X = thiocyano, Y = phenylcarbamoyl, n = zero).

3,728,358
PROCESS FOR THE PREPARATION OF MACROCYCLIC LACTONES

Braja D. Mookherjee, Matawan; William I. Taylor, Summit, both of N.J., and 104, 71, 18,701, assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation of Ser. No. 18,701, March 11, 1970, abandoned. Filed June 25, 1971, Ser. No. 156,955
Int. Cl. C07d *9/00*

U.S. Cl. 260—343 **4 Claims**

Macrocyclic ketones are converted into the corresponding lactones with a peracid in the presence of a boron trifluoride etherate catalyst and an inert solvent to form a reaction mixture. This mixture is heated until the conversion is complete and the desired lactones can be recovered by conventional means. The novel lactone obtained, 1-hydroxy-9-cyclohexadecanolide, is useful as a fragrance ingredient.

3,728,359
HYDROXY CYCLOHEXADECANOLIDES

Braja D. Mookherjee, Matawan, and William I. Taylor, Summit, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 18,684, March 11, 1970. This application June 25, 1971, Ser. No. 156,980
Int. Cl. C07d *9/00*

U.S. Cl. 260—343 **1 Claim**

A mixture of hydroxy cyclohexadecanolides is obtained by oxidation of hydroxy-cyclohexadecanones in the presence of a boron-trifluoride etherate catalyst. Said hydroxy cyclohexadecanolides are useful as intermediates for the production of ambrettolide and isomers thereof.

3,728,360
ESTER DERIVATIVES OF TETRAHYDROCANNABINOL

Harry G. Pars, Lexington; Raj K. Razdan, Belmont, and Klaus K. Weinhardt, Brighton, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 11,297, Feb. 13, 1970, abandoned. This application Aug. 31, 1971, Ser. No. 176,720
Int. Cl. C07d *7/18*

U.S. Cl. 260—345.3 **18 Claims**

Novel 1-[ω-(dilower-alkylamino)acyloxy]-3-alkyl(and cycloalkyl-lower-alkyl) 6a, 7,8,10a-(and 6a,7,10,10a- and 7,8,9,10-)tetrahydro-6,6,9-trilower-alkyl-6H-dibenzo[b,d]pyrans and acid salts thereof. These compounds possess biological acitivity and are useful as therapeutic agents.

3,728,361
SYNTHESIS OF HALOGENATED NAPHTHOQUINONES

Donald W. Fuhlhage, Kansas City, Mo., assignor to Thompson-Hayward Chemical Co., Kansas City, Kans.

Filed June 5, 1969, Ser. No. 830,887
Int. Cl. C07c *49/66*

U.S. Cl. 260—396 R **4 Claims**

This invention relates to a method of preparing halogenated naphthoquinones by hydrolyzing hexahalogenated dihydronaphthalene in an acid medium, at an elevated temperature and in the presence of available halogen.

3,728,362
(3-METHYL-5-CARBOXY-2-PENTENYL)QUINONES

Hiroshi Morimoto, Hyogo; Masazumi Watanabe, and Isuke Imada, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 8, 1971, Ser. No. 113,773

Claims priority, application Japan, Feb. 7, 1970, 45/10846; Feb. 11, 1970, 45/11616

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—396 R **10 Claims**

The present invention relates to (3-methyl-5 carboxy-2-pentenyl) quinones, lower alkyl esters and pharmaceutically acceptable salts thereof. The compunds are useful as anti-inflammatory agents.

3,728,363
QUINONE DERIVATIVES

Hiroshi Morimoto, Hyogo; Masazumi Watanabe, Takatsuki, and Isuke Imada, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

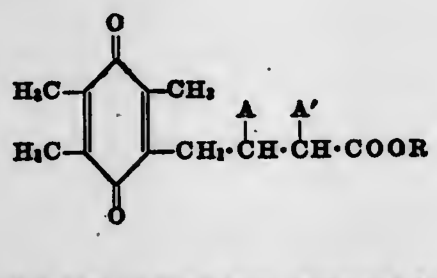
Filed March 15, 1971, Ser. No. 124,545

Claims priority, application Japan, March 17, 1970, 45/22497; March 18, 1970, 45/22805

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—396 R **5 Claims**

Compounds of the formula



wherein one of A and A′ represents hydrogen and the other is a lower alkyl group and R is hydrogen, alkyl, cycloalkyl or unsaturated alkyl and pharmaceutically acceptable salts thereof have vitamin E and anti-inflammatory action.

3,728,364
PREPARATION OF 17ALPHA-PROPADIENYL STEROIDS

Pierre Crabbe, Mexico, Mexico, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

Continuation-in-part of Ser. No. 148,173, May 28, 1971, abandoned, which is a continuation-in-part of Ser. No. 817,562, April 18, 1969, abandoned. This application July 27, 1971, Ser. No. 166,628

Int. Cl. C07c *169/08, 169/20*

U.S. Cl. 260—397.4 **24 Claims**

Disclosed is a process for the preparation of 17a-propadienyl steroids of the estrogen, estrane, and androstane series which contain optional substitution at other positions of the nucleus. This process involves treating a corresponding 3-(halopropynyl) steroid with a metal, metal couple, or metal salt reagent in organic reaction media and in the presence of a proton donor. The product 17a-propadienyl steroids of the 6,6-difluoroandrostane and 19-norandrostane series, optionally substituted at the C-3, C-17, and C-18 positions, are new compounds. The 17a-propadienyl products are useful as estrogenic, anti-androgenic, and progestational agents.

3,728,365
CYCLOPENTADIENYL-(GROUP IV-B METAL) HYDROCARBYL SULFINATES

Joseph J. Mrowca, 1513 Forsythia Ave., Wilmington, Del.

Filed Sept. 25, 1970, Ser. No. 75,694

Int. Cl. C07f *7/28*

U.S. Cl. 260—429.5 **9 Claims**

Novel sulfinato derivatives of cyclopentadienyl-titanium and -zirconium compounds, useful as plant-growth regulants, are prepared (1) by reacting sulfur dioxide with certain unsubstituted or substituted (cyclopentadienyl) titanium or -zirconium compounds or (2) by reacting a hydrocarbon sulfinic acid salt with a compound of the formula Cp_aMX_{b+c}; e.g., bis(benzenesulfinato)dicyclopentadienyltitanium (1) from SO_2 and dicyclopentadienyldiphenyltitanium or (2) from sodium benzenesulfinate and dichloro(dicyclopentadienyl)-titanium.

3,728,366
LIQUID/LIQUID EXTRACTION OF COBALT VALUES

Manfred J. Michlmayr, San Francisco, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed April 5, 1971, Ser. No. 131,401

Int. Cl. C07f *15/06;* **C22b** *23/00*

U.S. Cl. 260—439 R **5 Claims**

Selective extraction of cobalt from alkaline aqueous solutions of its salts with organic solutions of lower diphenylphosphinocarboxylic acids and their oxides is disclosed.

3,728,367
SOLUTION CONTAINING A TRIVALENT ANTIMONY-TARTARIC ACID COMPOUND

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1970, Ser. No. 93,864

Int. Cl. C07f *9/90*

U.S. Cl. 260—446 **13 Claims**

Solutions of monomeric trivalent antimony-tartaric acid compounds having a molar ratio of antimony to tartaric acid of 1 to 1 to 2 to 1 stabilized with an anion such as chloride in certain polar organic solvents are useful for incorporating flame-retarding antimony compounds into polymeric articles.

3,728,368
PROCESS FOR THE PREPARATION OF ARYLDIMETHYLCHLOROSILANE

Andre Bazouin, Luzinay, and Marcel Lefort, Caluire, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed April 22, 1971, Ser. No. 136,567

Claims priority, application France, April 23, 1970, 7014777

Int. Cl. C07f *7/08, 7/12*

U.S. Cl. 260—448.2 P **9 Claims**

Aryldimethylchlorosilanes, useful as reactive intermediates in organosilicon chemistry, are prepared by reacting a diaryldimethylsilane with an organochlorosilane R_{4-n}Si Cln, where R is an aliphatic or aromatic hydrocarbon group and $n = 1$ or 2, in the presence of aluminium trichloride.

3,728,369
STABILIZATION OF VINYL ISOCYANATES

Dietrich H. Heinert, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 7, 1969, Ser. No. 874,981

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 SP **9 Claims**

Vinyl-type isocyanates, such as vinyl, isopropenyl, styryl, and vinylphenyl isocyanates, are stabilized by acidified lower aliphatic dialkyl ketals, such as 2,2-dimethoxypropane and -butane and 2,2-diethoxypropane. Such ketals inhibit discoloration and/or formation of solids.

3,728,370
CATALYTIC PROCESS FOR CONVERTING AROMATIC NITRO COMPOUNDS TO AROMATIC ISOCYANATES

Gerhard F. Ottmann, Wuppertal-Elberfeld, Germany; Wilhelm J. Schnabel, Branford, and Eric Smith, Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 703,252, Feb. 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 625,580, March 24, 1967, abandoned. This application Sept. 16, 1970, Ser. No. 72,863

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 PC **14 Claims**

In the process for providing an organic isocyanate by the reaction of an organic nitro compound with carbon monoxide in the presence of a noble metal based catalyst, the improvement which comprises performing the reaction in the presence of an unsaturated organic compound having at least one multiple bond conjugated to another multiple bond in selected aliphatic or cycloaliphatic systems or in the presence of an unsaturated organic compound having at least one multiple bond conjugated to an aromatic hydrocarbon nucleus.

3,728,371
3-MERCAPTO-2-CHLOROPROPYL-N,N-DIHYDROCARBYL THIOLCARBAMATES

William Carter Doyle, Jr., Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Division of Ser. No. 854,344, July 30, 1969, Pat. No. 3,634,457, which is a division of Ser. No. 625,603, March 24, 1967, Pat. No. 3,510,290. This application April 23, 1971, Ser. No. 137,079

Int. Cl. C07c *155/08*

U.S. Cl. 260—455 A **10 Claims**

By a method of synthesis based on a secondary amine, carbon disulfide and epichlorohydrin there are produced 2,3-epithiopropyl N,N-dialkylthiolcarbamates which are used as selective herbicides, particularly in pre-emergent control of grasses such as brome and volunteer oats.

3,728,372
CHRYSANTHEMIC ACID PREPARATION

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Jan. 18, 1971, Ser. No. 107,429

Int. Cl. C07c *143/68*

U.S. Cl. 260—456 R **3 Claims**

Syntheses of chrysanthemic acid and esters involving reduction of 3,3,6,6-tetramethylbicyclo [3.1.0] hexane-2,4-dione, esterification to a sulfonic acid ester, and ring cleavage.

3,728,373
METHOD FOR MAKING CYANACRYLIC ACID ESTERS

Wolfgang Imohel, Unna, and Peter Borner, Altluene, both of Germany, assignors to Schering AG, Bergkamen/Westfalia, Germany

Filed May 20, 1971, Ser. No. 145,242

Claims priority, application Germany, May 29, 1970, P 20 27 502.9

Int. Cl. C07c *121/46, 121/52*

U.S. Cl. 260—464 **6 Claims**

A method for making cyanacrylic acid esters by depolymerizing polycyanacrylic acid esters continuously. The polymer, admixed with an inert liquid of high boiling point and a polymerization inhibitor, is depolymerized by heating a thin layer of this mixture — up to 5 centimeters thick — at a temperature from 150° – 250°C. at a pressure of 0.5 – 40 mmHg.

3,728,374
CYANOVINYLENE-TRIARYLAMINES

John G. Fisher, and Curtis E. Diebert, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 4, 1972, Ser. No. 215,439

Int. Cl. C07c *121/70*

U.S. Cl. 260—465 D **7 Claims**

Cyanovinylene-substituted triarylamine compounds produce fluorescent, light-fast greenish-yellow to yellow shades on polyester and cellulose acetate fibers.

3,728,375
CYANOACRYLATE ADHESIVE COMPOSITIONS

Harry W. Coover, Jr.; John M. McIntire, both of Kingsport, Tenn.; assignors to Eastman Kodak Company, Rochester, N.Y.

This application May 12, 1971, Ser. No. 142,816

Int. Cl. C07c *121/30, 121/48, 121/52;* **C07d** *9/00*

U.S. Cl. 260—465.4 **10 Claims**

This invention relates to cyanoacrylate adhesive compositions containing less than about 200 parts per million of water. These compositions have unique long-term adhesive activity which extends their utility for periods up to 2 years and longer.

3,728,376
CATALYTIC REDUCTION PROCESS

Joseph Levy, and William Walker, both of Rutherford, N.J., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed June 15, 1970, Ser. No. 46,513

Int. Cl. C07c *101/18*

U.S. Cl. 260—472 **12 Claims**

Catalytic reduction of an ester of a nitrobenzoic acid and tertiary-amino alcohol to the corresponding amine by gradually adding the ester to an agitated suspension of noble metal catalyst in inert water immiscible solvent under hydrogen pressure. Improved yields and product purity are obtained in a more facile manner.

3,728,377
4,4-BIS(ALKOXYCARBONYL)BENZOIN ETHERS

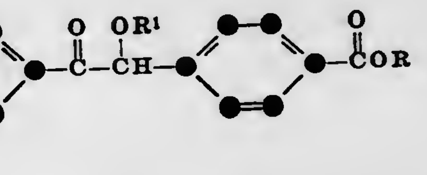
Charles A. Kelly, and James G. Pacifici, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 5, 1972, Ser. No. 260,702

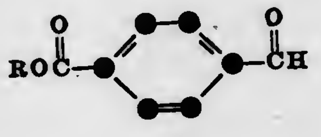
Int. Cl. C07c *69/78*

U.S. Cl. 260—473 R **6 Claims**

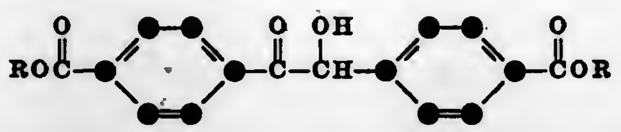
Disclosed are certain novel 4,4′-bis(alkoxycarbonyl)benzoin ethers which have the formula



and which are useful as photoinitiators of polymerization, e.g., in the formation of coatings and thin films. The novel 4,4′-bis(alkoxycarbonyl)-benzoin ethers are prepared by contacting aldehydes of the formula



with a cyanide catalyst to form 4,4′-bis(alkoxycarbonyl)benzoins of the formula



and by reacting such 4,4′-bis(alkoxycarbonyl)benzoins with an alcohol of the formula R^1OH to form a 4,4′-bis(alkoxycarbonyl)benzoin ether of the foregoing formula. Each of R and R^1 are straight or branched chain alkyl of one to 10 carbon atoms.

3,728,378
QUATERNARY ALKYL AROMATICS

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 21,182, March 19, 1970, abandoned. This application April 28, 1970, Ser. No. 32,767

Int. Cl. C07c *63/06, 69/78*

U.S. Cl. 260—476 R **15 Claims**

Quaternary alkylated aromatics prepared by alkylation of unsaturated bond using dialkylcopper lithium which are useful for control of insects.

3,728,379
PROPOXYPHENE SALTS

Verlin C. Stephens, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed June 29, 1971, Ser. No. 158,126

Int. Cl. C07c *143/84*

U.S. Cl. 260—490 **7 Claims**

The α-d and α-l forms of the 4-chloro-m-toluene-sulfonate and 3,4-dichlorobenzenesulfonate salts of propoxyphene. These salts are suitable for formulation of these analgesic and antitussive compounds into aqueous suspensions having acceptable taste characteristics.

3,728,380
P-CHLOROBENZAMIDOACETOHYDROXAMIC ACID

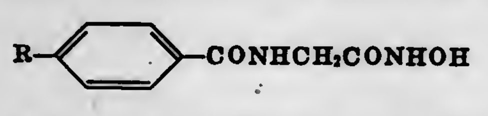
Roland N. Johnson, and Jon A. Andersen, both of Norwick, N.Y., assignors to Morton-Norwich Products, Inc., Norwick, N.Y.

Filed May 17, 1971, Ser. No. 144,322

Int. Cl. C07c *103/30;* **A61k** *27/00*

U.S. Cl. 260—500.5 H **1 Claim**

Novel benzamidoacetohydroxamic acids of the formula:



wherein R is nitro or chloro are potent inhibitors of urease. Combined with urinary tract antibacterials an improvement in the prevention of formation of urinary calculi in the presence of urea splitting organisms is observed.

3,728,381
PRODUCTION OF 2-HALOETHYLPHOSPHONIC ACID

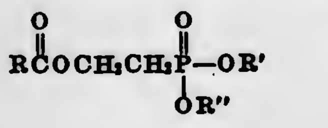
David L. Randall, and Calvin Vogel, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,481

Int. Cl. C07d *9/38;* **A01n** *5/00*

U.S. Cl. 260—502.4 R **9 Claims**

2-Haloethylphosphonic acids are prepared from 2-acyloxyethylphosphonic acids or esters of the formula:



$$R\overset{O}{\overset{\|}{C}}OCH_2CH_2\underset{\underset{OR''}{|}}{\overset{O}{\overset{\|}{P}}}-OR'$$

wherein R is alkyl, cycloalkyl, haloalkyl or aryl and R′ is hydrogen, alkyl, haloalkyl, cycloalkyl and R″ is the same or different as R′, or R′ and R″ are joined by methylene groups to form a heterocyclic ring, by anhydrous hydrogen halide cleavage at a temperature of about 30°–200°C. The products are useful as plant growth regulators.

3,728,382
15-METHYL AND 15-ETHYL PROSTAGLANDIN ANALOGS

Gordon L. Bundy, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 4, 1970, Ser. No. 34,518

Int. Cl. C07c *61/32*

U.S. Cl. 260—514 D **3 Claims**

Prostaglandin E and F compounds with a methyl or an ethyl substituent at the C–15 position are disclosed. These are useful for the same pharmacological purposes as the unsubstituted prostaglandins.

3,728,383
α(M-ALKOXYPHENOXY) AND α(M-TRIFLUOROMETHYLPHENOXY) M-TOLUIC ACIDS

Charles Malen, Fresnes; Bernard Danree, St. Germain en Laye, and Pierre Desnoyers, Fontenay aux Roses, all of France, assignors to Societe en nom Collectiv "Science Union et Cie," Societe Francaise de Recherche Medicale, Suresnes, France

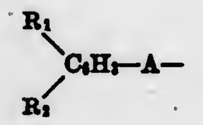
Filed Dec. 29, 1969, Ser. No. 888,941

Claims priority, application Great Britain, Jan. 6, 1969, 726/69

Int. Cl. C07c *65/00*

U.S. Cl. 260—520 **3 Claims**

Meta-toluic acid α-substituted by the radical of the formula



wherein:

A is oxygen, sulfur, imino- or lower-alkylimino, and

R_1 and R_2 are hydrogen, halogen, lower alkoxy or trifluoromethyl, provided that R_1 and R_2 are not simultaneously hydrogen, when A is oxygen.

These compounds possess thrombolytic, fibrinolytic, vascular brittleness inhibiting and immunodepressant activities.

3,728,384
METHOD OF PRODUCING 1,8-NAPHTHALDEHYDE MONOCARBOXYLIC

Anatoly Tikhonovich Menyailo; Inna Evgenievna Pokrovskaya; Mikhail Valerievich Pospelov, and Antonina Karpovna Yakovleva, all of Moscow, U.S.S.R., assignors to Nauchno-Issledovatelsky institut sinteticheskikh spirtov, Moscow, U.S.S.R.

Filed July 24, 1970, Ser. No. 58,209

Int. Cl. C07c *51/34*

U.S. Cl. 260—523 R **12 Claims**

A method of producing 1,8-naphthaldehyde monocarboxylic acid, characterized in that acenaphthylene is ozonized in the medium of a lower aliphatic alcohol, or in a mixture of a lower aliphatic alcohol with water, or in a mixture of an aliphatic ketone with water, in the presence of an alkaline earth metal hydroxide. The resulting reaction mass is treated with hydrochloric acid, the formed 1,8-naphthaldehyde monocarboxylic acid is separated from the alkaline earth metal hydroxide and washed to remove the traces of hydrochloric acid.

3,728,385
N-OXIDE-IMINODICARBOXYLATES

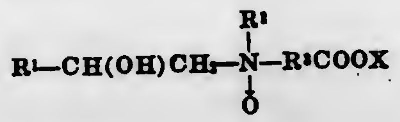
Bjorn Sundby, Piscataway; Edward J. Kenney, Bernardsville, and Harold E. Wixon, New Brunswick, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,909

Int. Cl. C07c *101/12*

U.S. Cl. 260—534 E **5 Claims**

Novel oxides of aminocarboxylates or aminocarboxylic acids are of the formula:



$$R^1-CH(OH)CH_2-\underset{\underset{O}{\downarrow}}{\overset{\overset{R^1}{|}}{N}}-R^3COOX$$

wherein R^1 is an aliphatic hydrocarbon radical of four to 20 carbon atoms, R^2 is a hydrocarbon radical of one to four carbon atoms or is R^3COOX, R^3 is a divalent aliphatic or aromatic hydrocarbon radical of one to nine carbon atoms, which may be the same as or different from another R^3 radical which may be prsent in the compound, X is hydrogen, alkali metal, alkaline earth metal, other suitable salt-forming metal, ammonium, alkylamine or alkanolamine, which may be the same as or different from any other X in the formula, with it being understood that in the case of divalent or trivalent X's it may be joined to a plurality of the shown organic moieties through the carboxylic oxygen(s) thereof.

The novel compounds are possessed of surface activity and are substantive to fibrous materials, e.g., cotton and wool. They may be used as detergents or components of detergent compositions and serve as softeners for fibrous materials.

3,728,386
N-CYCLOALKYLALKYL AND N-CYCLOALKYL SUBSTITUTED PHENYL UREAS AND HALO ACETAMIDES

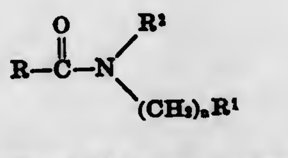
Lester L. Maravetz, Westfield, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed July 27, 1970, Ser. No. 58,672

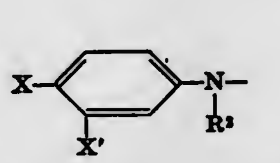
Int. Cl. C07c *127/18*

U.S. Cl. 260—553 A **6 Claims**

Compounds characterized by the following structural formula:



wherein R is one selected from the group consisting of Y—CH_2 and



Y is one selected from the group consisting of chlorine, bromine and fluorine, X is one selected from the group consisting of hydrogen, chlorine, CF_3, C_1 to C_4 alkyl, bromine, C_1 to C_4 alkoxy, and C_1 to C_4 alkylthio, and X′ is one selected from the group consisting of chlorine, hydrogen, CF_3, and bromine; R^1 is C_3 to C_4 cycloalkyl optionally substituted with C_1–C_3 alkyl, chlorine, bromine, R^2 is one selected from the group consisting of hydrogen, and C_1 to C_4 alkyl, cyclopropyl, cyclopropylmethyl and C_1 to C_3 alkoxy, and R^3 is one selected from the group consisting of hydrogen, C_1–C_3 alkyl, cyclopropyl, cyclobutyl, cyclopropylmethyl or cyclobutylmethyl, optionally substituted with C_1 to C_3 alkyl, chlorine, and bromine; *n* is either 0 or 1.

These compounds have been found to possess biological activity and have been found to be useful as herbicides.

3,728,387
ACRYLAMIDE OF METHACRYLAMIDE MONOMER WITH N-SUBSTITUTED AMININMIDE RESIDUES

Richard E. Freis, Bloomington, Minn., and Billy M. Culbertson, Worthington, Ohio, assignors to Ashland Oil, Inc., Columbus, Ohio

Filed March 17, 1972, Ser. No. 235,814

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 H **10 Claims**

N-substituted acryl- and methacrylamides are disclosed which compounds as a class are structurally characterized in having an amido substituent in the form of a methylene or polymethylene radical terminally containing a quaternary ammonium acylimine group. These vinyl aminimide monomers can be homo- or copolymerized to provide either linear thermosetting polymers or linear polymers from whence thermoset cross-links can be derived, all having recognized utility in a variety of coating applications.

3,728,388
1-AMINO-2,3-DISUBSTITUTED CYCLOPROPENYLIUM SALTS

John W. Schulenberg, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,618

Int. Cl. C07c *87/40*

U.S. Cl. 260—563 P **13 Claims**

1,2,3-Trisubstituted-cyclopropenylium salts having antibacterial and antiviral activity and prepared either by reaction of a 2,3-disubstituted-cyclopropenone with a trialkyloxonium tetrafluoroborate followed by reaction of the resulting 1-alkoxycyclopropenylium tetrafluoroborate with an amine or by reacton of a 2,3-disubstituted-cyclopropenone with an organo metallic compound followed by treatment of the resulting carbinol with a strong acid.

3,728,389
BIOLOGICALLY ACTIVE AMIDINES AND THEIR PREPARATION

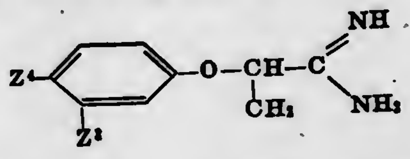
Harold Francis Hodson, and Anthony Winchester Randall, both of London, England, assignors to Burroughs Wellcome Co., North Carolina Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 644,064, June 7, 1967, abandoned. This application Dec. 15, 1969, Ser. No. 885,307

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 R **10 Claims**

Amidine compounds of the formula



in which one of Z^3 and Z^4 is halogen, hydrogen, trifluoromethyl or lower alkoxy when the other is hydrogen; salts of these compounds; their synthesis; and pharmaceutical preparations thereof. Said compounds are useful in the treatment of cardiac arrhythmias.

3,728,390
PREPARATION OF AZINES

Trevor Jenkins; Brian John Needham, and Michael Arthur Smith, all of Loughborough, England, assignors to Fisons Limited, London, England

Continuation of Ser. No. 543,073, April 18, 1966, abandoned. This application Oct. 7, 1970, Ser. No. 78,972

Claims priority, application Great Britain, April 20, 1965, 16,666/65

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 B **27 Claims**

Azines and isohydrazones are prepared in high yields by first reacting chlorine and gaseous ammonia to form chloramine and then reacting the thus-formed chloramine with aqueous ammonia and a carbonyl compound.

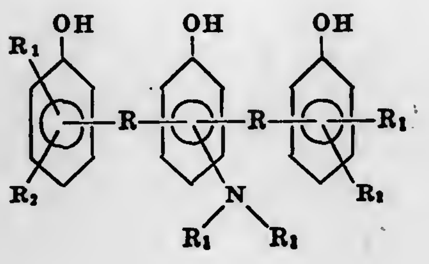
3,728,391
2,6-BIS-[(2-HYDROXY-ALKYL-PHENYL) METHYL]-4-AMINO-PHENOLS

Michael Robin, Colonia, N.J., and Sheldon R. Schulte, Columbus, Ohio, assignors to Ashland Oil, Inc., Houston, Tex.

Filed March 20, 1970, Ser. No. 21,523
Int. Cl. C07c *87/28*

U.S. Cl. 260—570 R **13 Claims**

Novel UV stabilizers of the following formula:



wherein each R individually is a saturated aliphatic hydrocarbon group or linkage of one to eight carbon atoms, each R_1 and R_2 individually is a bulky hydrocarbon group having from 1 to 22 carbon atoms or is an amino substituted alkyl of from one to 22 carbon atoms or is $—NR_3R_3$ or is hydrogen and each R_3 individually is either hydrogen or a lower alkyl of 1 to 8 carbon atoms, or both R_3's are linked together so that $—NR_3R_3$ forms a heterocyclic ring, and at least one R_1 and/or R_2 on each phenolic nucleus being other than hydrogen, and provided along with the method of preparation.

3,728,392
PREPARATION OF P-NITROSODIPHENYLAMINE

Joseph Levy, Paramus, N.J., and Louis Self, Bronx, N.Y., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 20, 1970, Ser. No. 56,692
Int. Cl. C07c *87/54*

U.S. Cl. 260—576 **10 Claims**

Preparation of a p-nitrosodiphenylamine by rearrangement of an N-nitrosodiphenylamine at a temperature of from about 20° to about 50°C. in the presence of hydrogen chloride and a two solvent system comprising a water immiscible alcohol and an aromatic solvent having boiling points of from about 80° to about 160°C.

3,728,393
PROCESS OF SYNTHESIS OF LONG-CHAIN ALIPHATIC AMINES

Rene Gaige, Pont de Glaix, and Gerard Schneider, Caluire, both of France, assignors to Progil, Paris, France

Filed Oct. 23, 1969, Ser. No. 868,825
Claims priority, application France, Oct. 31, 1968, 650571
Int. Cl. C07c *85/02*

U.S. Cl. 260—585 A **7 Claims**

Process of synthesizing long-chain aliphatic primary amines by reacting 1-bromo-alkanes with an excess of ammonia at a temperature not exceeding the critical temperature of ammonia, for example at 60°–130°C, under a pressure of 5 to 40 atmospheres in the presence of a solvent which is a mixture of an organic compound and water which forms an homogeneous minimum boiling point azeotrope.

3,728,394
POLYSUBSTITUTED DIHYDROPYRENES

Luther A. R. Hall, Woodcliff Lake, N.J.; John A. Gurney, Tarrytown, N.Y., and Harris B. Renfroe, Montvale, N.J., assignors to Ciba-Geigy Corporation

Division of Ser. No. 635,287, April 7, 1967, Pat. No. 3,557,218, which is a continuation-in-part of Ser. No. 499,064, Oct. 20, 1965, abandoned. This application Oct. 16, 1970, Ser. No. 81,578
Int. Cl. C07c *49/76*

U.S. Cl. 260—591 **1 Claim**

The compound 2-benzoyl-1,3,6,8,15,16-hexamethyl-15,16-dihydropyrene is prepared by reacting 1,3,6,8,15,16-hexamethyl-15,16-dihydropyrene with benzoyl chloride in the presence of stannic chloride. The dihydropyrene starting material is prepared by a multi-step synthesis starting with trimethylphenol. The compound is useful as a photochromic material.

3,728,395
INSECT CONTROL

Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed March 29, 1971, Ser. No. 129,217
Int. Cl. C07c *49/20, 49/24*

U.S. Cl. 260—594 **7 Claims**

Long chain aliphatic carbonyl compounds having mono-unsaturation at position C-2,3 which are useful for the control of insects.

3,728,396
ALIPHATIC KETONES

John B. Siddall, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 78,908, Oct. 7, 1970. This application Oct. 12, 1970, Ser. No. 80,128
Int. Cl. C07c *49/12*

U.S. Cl. 260—593 R **7 Claims**

Preparation of novel carbonyl compounds useful as lubricants, plasticizers, intermediates, odorants and insect control agents.

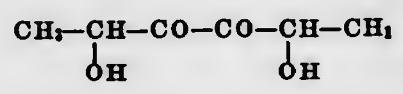
3,728,397
DIOL DIONE COMPOUNDS AND METHOD OF MAKING SAME

Luciano Re, Meyrin/Geneva, and Gunther Ohloff, Bernex/Geneva, both of Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 736,269, June 12, 1968, Pat. No. 3,576,014. This application Dec. 12, 1969, Ser. No. 889,811
Claims priority, application Switzerland, June 16, 1967, 8620/67; June 5, 1968, 8254/68
Int. Cl. C07c *49/12*

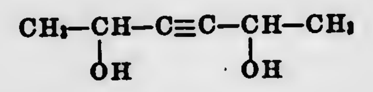
U.S. Cl. 260—594 **4 Claims**

A process for the preparation of dioldione compounds of the formula



$$CH_3-\underset{\displaystyle OH}{\underset{|}{CH}}-CO-CO-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$$

by ozonizing an reducing a compound of the formula



$$CH_3-\underset{\displaystyle OH}{\underset{|}{CH}}-C\equiv C-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$$

3,728,398
PREPARATION OF FORMALDEHYDE

Raymond Maux, Bully-les-Mines, France, assignor to Societe Chimique des Charbonnages, Paris, France

Filed March 17, 1970, Ser. No. 20,256
Claims priority, application France, March 20, 1969, 6908178
Int. Cl. C07c *45/16*

U.S. Cl. 260—603 HF **4 Claims**

This invention relates to an improved process for the preparation of formaldehyde by oxidising methanol by air in the presence of a silver catalyst and is characterised in that the gases leaving the installation after separation of the condensable products, viz. water, methanol and formaldehyde, are at least partly reinjected in the cold state into the gaseous mixture leaving the catalyst layer.

3,728,399
AKYLTHIO SUBSTITUTED POLYNUCLEAR PHENOLS

Ronald B. Spacht, Hudson, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 664,601, Aug. 30, 1967, Pat. No. 3,565,857. This application Sept. 10, 1970, Ser. No. 71,230
Int. Cl. C07c *149/36, 149/38*

U.S. Cl. 260—609 F **4 Claims**

Alkylthio substituted polynuclear phenolic age resisters and age resistant polymers containing said age resisters.

3,728,400
PROCESS FOR PREPARATION OF POLYMERCAPTANS

Francis W. Michelotti; John M. Jordan, both of Easton, Pa., and Neville P. Cook, Ringoes, N.J., assignors to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed Sept. 17, 1970, Ser. No. 73,635
Int. Cl. C07c *149/14, 149/10*

U.S. Cl. 260—609 A **7 Claims**

Polymercaptans especially suitable as epoxy resin curing agents are produced by reacting a polyhalo compound with sodium sulfhydrate in the presence of dimethyl sulfoxide, dimethylformamide, a dimethylformamide-(lower) alkyl alcohol mixture or a dimethyl sulfoxide-(lower)alkyl alcohol mixture as a solvent for the reaction system.

3,728,401
ALPHA-HALOGENO-LAUROYL PEROXIDES, SOLUTIONS THEREOF, AND METHODS OF PREPARING THEM

Georgette Steinbach Van Gaver, Paris, France, assignor to Produits Chemiques Pechiney Saint-Gobain, Paris, France

Filed Dec. 29, 1966, Ser. No. 605,628
Claims priority, application France, Jan. 17, 1966, 6646153
Int. Cl. C07c *73/02*

U.S. Cl. 260—610 D **3 Claims**

New alpha-halogeno-lauroyl peroxides are described with novel processes of making them and with some reference to their uses. In general, they are prepared by mixing an alpha-halogeno-lauroyl halide diluted in a solvent inert to the constituents of the reaction medium with hydrogen peroxide in the presence of caustic soda under conditions of temperature, pressure, agitation favorable to their reaction.

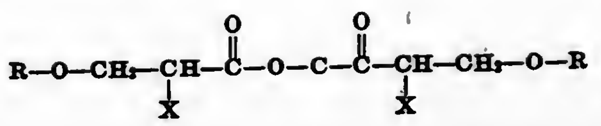
3,728,402
DIACYL PEROXIDES

Donald L. Deardorff, Riverside; Edwin T. Chesler, East Providence, and Joseph L. Fath, Barrington, all of R.I., assignors to Teknor Apex Company, Pawtucket, R.I.

Continuation-in-part of Ser. No. 662,578, Aug. 23, 1967, abandoned. This application May 15, 1968, Ser. No. 729,451
Int. Cl. C07c *73/02*

U.S. Cl. 260—610 D **3 Claims**

3-Alkoxy acyl peroxides having the formula:



$$R-O-CH_2-\underset{\displaystyle X}{\underset{|}{CH}}-\overset{\displaystyle O}{\overset{\|}{C}}-O-C-\overset{\displaystyle O}{\overset{\|}{C}}-\underset{\displaystyle X}{\underset{|}{CH}}-CH_2-O-R$$

in which R is alkyl containing from one to 14 carbon atoms, and X is hydrogen or methyl are new compounds which resemble common diacyl peroxides in manner of decomposition, but exhibit important differences in chemical and physical properties. The new peroxides are liquids at ambient temperatures and possess a higher degree of thermal stability than the commonly used aliphatic acyl peroxides of similar structure and molecular weight. The new compounds, and especially the 3-alkoxyisobutyryl peroxides, are suitable for use as initiators for the polymerization or copolymerization of ethylenic monomers and for the cross-linking of unsaturated polyesters.

3,728,403
PROCESS FOR PREPARING 2,5-DICHLORO-4-BROMOPHENOL

Frank Ross, Villa Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 511,356, Dec. 3, 1965, which is a continuation-in-part of Ser, No. 393,397, abandoned. This application Sept. 9, 1968, Ser. No. 758,621
Int. Cl. C07c *39/27, 39/30*

U.S. Cl. 260—623 H **7 Claims**

A process for the production of 2,5-dichloro-4-bromophenol which comprises contacting 2,5-dichlorophenol with a substantially equimolar amount of bromine in the presence of a catalytic quantity of iodine.

3,728,404
SPIRO COMPOUNDS

Donald H. Kubicek, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 6, 1968, Ser. No. 734,852
Int. Cl. C07c *17/32, 23/04*

U.S. Cl. 260—648 D **8 Claims**

Spiro compounds having a cyclopropane ring and a ring containing an olefinic double bond are prepared by dihalocarbene addition to certain unsaturated cyclic hydrocarbons.

3,728,405
PROCESS FOR PREPARING POLYFLUOROPERHALOCYCLOBUTENES

John Allan Thoroughgood, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 14, 1970, Ser. No. 72,027
Int. Cl. C07c *17/00, 23/06*

U.S. Cl. 260—648 F **6 Claims**

An improved process for the preparation of polyfluoroperhalocyclobutenes by reacting hexachlorobutadiene with hydrogen fluoride at 300°–500° C. in the presence of a zinc fluoride catalyst.

3,728,406
PROCESS FOR THE PREPARATION OF 5-VINYLNORBORNENE-2

Cornelis H. Vrinssen, Geleen, and Constant M. A. Cramers, Obbicht, both of Netherlands, assignors to Stamicarbon N. V., Heerlen, Netherlands

Filed Dec. 7, 1971, Ser. No. 205,753
Claims priority, application Netherlands, Dec. 12, 1970, 7018160
Int. Cl. C07c *5/24*

U.S. Cl. 260—666 PY **9 Claims**

A process for preparing 5-vinyl norbornene-2 is disclosed, wherein butadiene is reacted with cyclopentadiene and/or dicyclopentadiene, with the reaction discontinued when no more than 50 mole percent of the (di)cyclopentadiene is converted. The process produces high efficiencies of converted raw materials into 5-vinyl norbornene-2. 5-vinyl norbornene-2 is a known compound having known use, such as, e.g., as a monomer suitable for polymerization with ehtylene and propylene into rubbery polymers.

3,728,407

PROCESS FOR THE PREPARATION OF 1,2-BIS(3-CYCLOHEXEN-1-YL) ETHYLENE USING BASE-TREATED OLEFIN DISPROPORTIONATION CATALYSTS

Donald H. Kubicek, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 22, 1971, Ser. No. 211,068

Int. Cl. C07c *13/38*

U.S. Cl. 260—666 PY **8 Claims**

The olefin disproportionation conversion of 4-vinylcyclohexene to 1,2-bis(3-cyclohexen-1-yl)ethylene is improved by using a base-treated olefin disproportionation catalyst which is washed with a polar solvent (e.g., water) subsequent to the base treatment and prior to activation of the catalyst.

3,728,408

CONVERSION OF POLAR COMPOUNDS USING HIGHLY SILICEOUS ZEOLITE-TYPE CATALYSTS

Michael A. Tobias, Piscataway, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 5, 1969, Ser. No. 821,940

Int. Cl. C07c *1/20*

U.S. Cl. 260—668 C **4 Claims**

A method of converting an organic polar compound comprising contacting the same in a conversion zone under conversion conditions with a crystalline aluminosilicate catalyst the silica/alumina ratio of which is more than 10/1.

3,728,409

PROCESS FOR MAKING POLYNUCLEAR AROMATIC COMPOUNDS

Charles M. Selwitz, Monroeville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 5, 1970, Ser. No. 87,289

Int. Cl. C07c *15/14*

U.S. Cl. 260—668 C **12 Claims**

A process for the production of a polynuclear aromatic compound from an aromatic compound having a labile hydrogen atom attached to its nucleus which involves heating the latter aromatic compound with a noble metal salt of an organic acid in the presence of a strong acid and molecular oxygen in a reaction system free of halide ions and nitrate ions.

3,728,410

HYDROCARBON CONVERSION

Thomas R. Hughes, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 25, 1971, Ser. No. 109,715

Int. Cl. C07c *15/02, 15/14*

U.S. Cl. 260—668 B **9 Claims**

A process for converting an alkyl aromatic to a different alkyl aromatic which comprises contacting the alkyl aromatic and an alkane having at least two carbon atoms with a catalyst mass having a component which has catalytic activity for alkane dehydrogenation and a second component which has catalytic activity for olefin averaging. Preferred alkyl aromatic feedstocks are ethyl benzene and butyl benzene. A particularly preferred catalytic mass for the reaction comprises platinum on alumina and tungsten oxide on silica.

3,728,411

ACID CATALYZED CONVERSION OF AROMATICS TO ALKYL AROMATICS

Michael Siskin, Maplewood, and Joseph J. Porcelli, Scotch Plains, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 96,263, Dec. 8, 1970, abandoned. This application Jan. 31, 1972, Ser. No. 222,275

Int. Cl. C07c *15/02*

U.S. Cl. 260—668 R **11 Claims**

A process for making ethyl benzene and other valuable products by contacting either toluene or benzene with a catalyst system consisting essentially of niobium or tantalum pentafluoride dissolved in anhydrous liquid hydrogen fluoride.

3,728,412

REMOVAL OF ACETYLENES FROM OLEFINIC AND PARAFFINIC HYDROCARBONS

Harlin D. Johnston, and Dennis L. Ripley, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 3, 1972, Ser. No. 215,169

Int. Cl. C07c *11/12*

U.S. Cl. 260—677 A **5 Claims**

A process for the selective removal of acetylenes from olefinic and/or paraffinic hydrocarbons, wherein the hydrocarbons are contacted at elevated temperatures with a supported barium catalyst in the presence of steam.

3,728,413

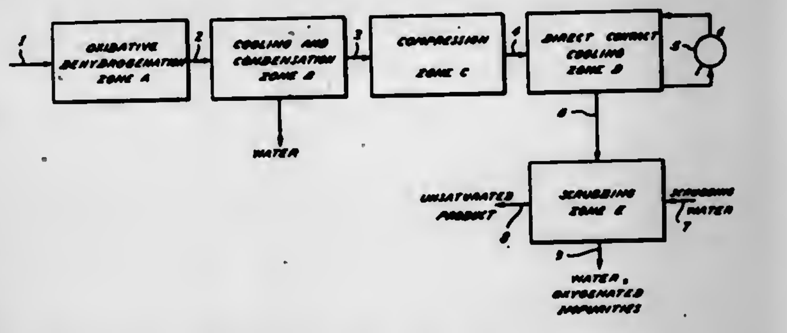
REDUCED FOULING IN OXIDATIVE DEHYDROGENATION PROCESS

Rudolph C. Woerner, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 775,862, Nov. 14, 1968, Pat. No. 3,683,042. This application Aug. 4, 1970, Ser. No. 60,899

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 D **12 Claims**


1
OXIDATIVE DEHYDROGENATION ZONE A
2
COOLING AND CONDENSATION ZONE B
3
COMPRESSION ZONE C
4
DIRECT CONTACT COOLING ZONE D
5
6
WATER
UNSATURATED PRODUCT
8
SCRUBBING ZONE E
SCRUBBING WATER
7
9
WATER, OXYGENATED IMPURITIES

Oxygenated impurities are separated from oxidative dehydrogenation effluents by treating the effulent by cooling, compressing, cooling by direct contact with water and scrubbing. Reduced fouling of equipment is achieved.

3,728,414

OLEFIN DISPROPORTIONATION

Robert Van Helden; Charles F. Kohll, and Pieter A. Verbrugge, all of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 14, 1970, Ser. No. 72,161

Claims priority, application Netherlands, Feb. 27, 1970, 7002795

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **6 Claims**

Olefins are disproportionated in the presence of a novel catalyst composition comprising (*a*) a conventional olefin disproportionation catalyst, (*b*) a Group III*a* metal, Group III*a* metal compound or mixtures thereof and (*c*) a carrier of at least 75 percent alumina. The novel catalyst has a long catalytic lifetime and good disproportionation activity.

3,728,415

PRODUCTION OF N-BUTENES FROM ETHYLENE

Robert P. Arganbright, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed March 25, 1971, Ser. No. 128,144

Int. Cl. C07c *3/20*

U.S. Cl. 260—683.15 R **9 Claims**

Ethylene can be dimerized in excellent yields over a unique catalyst of palladium oxide with molybdenum oxide and/or tungsten oxide on a catalyst support. The catalyst is specific for ethylene. For example 52 weight % n-butenes were produced over a 2% PdO – 10% MoO_3 on Alcoa H-151 alumina at an ethylene feed rate of 50 ml/min. at 35°C. A 2% PdO–10% WO_3 on Alcoa H-151 alumina at ethylene feed rate of 100 ml/min. and 70°C. gave 56 wt. % n-butenes.

3,728,416

PROCESS FOR PRODUCING HIGH SOFTENING, NON-CRYSTALLINE CONDENSATION COPOLYMERS

George A. Akin, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 846,575, July 31, 1969, abandoned. This application Aug. 25, 1971, Ser. No. 174,981

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 **4 Claims**

An improved process for the preparation of copolymers from a copolymer derived from terephthalic acid, isophthalic acid and Bisphenol A and a homopolymer derived from isophthalic acid and Bisphenol A by extruding a molten mixture of the copolymer and the homopolymer whereby copolymerization of the two p9lymers occurs in situ to produce a randomized copolymer. The process is thus useful in the production of a copolymer product which finds application in the production of fibers, films, sheets, molded objects and other products.

3,728,417

PERESTER FREE RADICAL INITIATOR FOR GRAFT POLYMERIZATION

Donald F. Knaack, Wilmington, Del., assignor to Avisun Corporation, Philadelphia, Pa.

Filed Dec. 5, 1968, Ser. No. 781,573

Int. Cl. C08f *15/04*

U.S. Cl. 260—878 **10 Claims**

A polyolefin graft polymer is prepared by the graft polymerization of at least one ethylenically unsaturated monomer onto a polyolefin using a perester free radical initiator selected from the group consisting of t-butyl 2-ethylperhexanoate, t-amyl 2-ethylperhexanoate, t-butyl 3,5,5-trimethylperhexanoate, t-amyl 3,5,5-trimethylperhexanoate, t-butyl 2-ethylperbutyrate, t-amyl 2-ethylperbutyrate, t-butyl perisobutyrate and t-amyl periso butyrate.

3,728,418

BLEND OF STYRENE POLYMERS FOR USE IN FLOOR POLISH COMPOSITIONS

Edward Hinsdale Gleason, Monroeville, Pa., assignor to Sinclair-Koppers Company, Pittsburgh, Pa.

Division of Ser. No. 791,776, Jan. 16, 1969, abandoned. This application Oct. 13, 1970, Ser. No. 80,501

Int. Cl. C08f *29/56*

U.S. Cl. 260—898 **1 Claim**

A floor polish composition having excellent resistance to plasticizer migration contains water, a mixture of a styrene copolymer (styrene and acrylic or methacrylic acid) and a styrene multi-polymer (styrene, acrylic acid, an ester of acrylic acid and acrylonitrile) and suitable waxes, alkali soluble resins and surfactants.

3,728,419

PHOSPHATED MIXED ESTERS OF HYDROXY AMINES

James R. Stanford, Sugarland, and Paul G. Vogelsang, Jr., Houston, both of Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Division of Ser. No. 682,618, Nov. 13, 1967, Pat. No. 3,557,001. This application Feb. 3, 1970, Ser. No. 8,436

Int. Cl. C07f *9/08;* **C02b** *3/06*

U.S. Cl. 260—928 **7 Claims**

Phosphate mixed esters of hydroxy amines containing less than eight carbon atoms in hydrocarbon groups attached to the amino nitrogen and hydroxy hydrocarbons containing at least six carbon atoms in a hydrocarbon group thereof are prepared and used as scale inhibitors.

3,728,420

PHOSPHATED MIXED ESTERS OF OXYALKYLATED POLYOLS AND MONOHYDRIC SURFACE ACTIVE COMPOUNDS

James R. Stanford, and Paul G. Vogelsang, Jr., both of Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Division of Ser. No. 584,672, Oct. 6, 1966, Pat. No. 3,502,587. This application Dec. 9, 1969, Ser. No. 883,638The portion of the term of this patent subsequent to March 24, 1987, has been disclaimed.

Int. Cl. C07f *9/08;* **C02b** *1/18*

U.S. Cl. 260—950 **6 Claims**

At least partially water soluble phosphated mixed esters of non-surface active polyols containing at least one hydroxyethyl group and monohydric surface active compounds containing oxyethylene groups are prepared by reacting said polyols and said monohydric compounds with polyphosphoric acid or phosphorus pentoxide at temperatures of 50°C. to 175°C. The products are useful as scale inhibitors in hard waters and are especially useful in squeeze-type operation in oil recovery systems where the chemical must be adsorbed on the underground formation in such a manner that it is slowly released into the water as it passes over the formation.

3,728,421

PREPARATION OF METAL OXIDE GRAINS

Arend Jansen Noothout, Oosterbeek, Netherlands, assignor to Reactor Centrum Nederland, The Hague, Netherlands

Filed Dec. 8, 1970, Ser. No. 96,282

Claims priority, application Netherlands, Dec. 9, 1969, 6918435

Int. Cl. C09k *3/04*

U.S. Cl. 264—0.5 **10 Claims**

A method is disclosed of preparing spherical particles of metal oxide hydrate and metal oxide hydrate with carbon, which particles can be converted into spherical oxide, and if carbon has been incorporated, into carbide particles.

Spherical oxides and carbides of actinide metals are used as fissile material in nuclear technics.

An aqueous solution of a metal salt is mixed at a low temperature with one or more ammonia liberating agents and subsequently solidified by dispersion in a phase of high temperature non-miscible with water, after which the solid substance obtained is separated, washed and subjected to thermal treatment.

3,728,422

METHOD OF MAKING AN IMAGE TRANSMITTING DEVICE

Fumio Sugaya, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

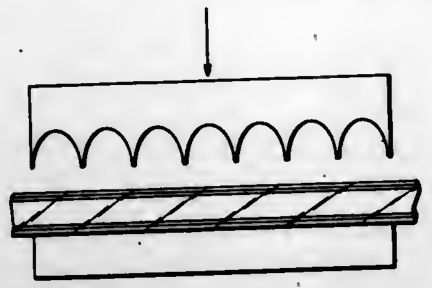
Filed Dec. 17, 1971, Ser. No. 209,211

Claims priority, application Japan, Dec. 17, 1970, 45/113925

Int. Cl. B29d *11/00*

U.S. Cl. 264—1 **4 Claims**

A method of forming an image transmitting device by forming a sandwich structure comprising a center of a first film having a high refractive index and a low melting point sandwiched between two second films having a low refractive index and a medium melting point, the center being sandwiched between two third filmshaving a high melting point.



The sandwich structure is heated and pressed in a grooved mold such that the first film forms columns surrounded by the second film. The pressed sandwich structures may then be stacked and cut.

3,728,423

MATCHING THE VOLUME SHRINKAGE OF ORGANIC FIBERS TO THAT OF THE RESIN MATRIX IN CARBON OR GRAPHITE COMPOSITES

Robert C. Shaffer, Playa Del Rey, Calif., assignor to Hitco

Filed March 30, 1972, Ser. No. 239,722

Int. Cl. C04b *35/52, 35/54, 35/72*

U.S. Cl. 264—29 **9 Claims**

Organic fibers are partially carbonized to match their volume shrinkage upon complete carbonization to that of the resin matrix. Improved carbonized composite parts are manufactured with high reliability and low failure rates despite high adhesion between initially partially carbonized fiber surfaces and encompassing matrix resins during temperature cycling occurring in processing. Partially carbonized fibers having active surface components are firmly adhered to matrices comprising flexible but self-supporting thermosetting resin materials of carbonizable character. A composite part of complex shape and thin wall sections may be formed from these materials by molding under pressure and temperature. The flexible characteristic of the resin is maintained through the molding phase and permits differential shrinkage to occur without fabric-resin separation. The molded part is however self supporting and the resin matrix may thereafter be partially carbonized at an appropriate temperature level. Following this the entire part may be graphitized at an elevated temperature in an inert atmosphere, followed by infiltration and reimpregnation if desired.

3,728,424

METHOD OF MAKING FLAT CABLES

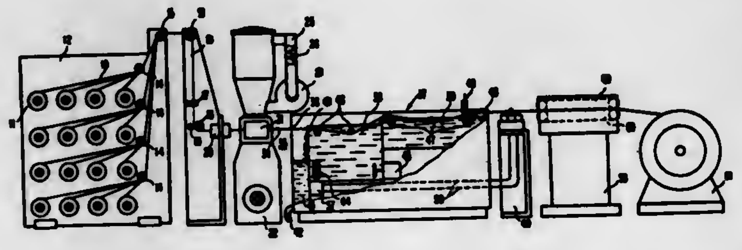
Ralf Rudiger Bauer, Baden-Wuerttemberg, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,563

Claims priority, application Germany, Aug. 22, 1969, P 19 42 784.0

Int. Cl. B29f *3/10*; **B29c** *25/00*

U.S. Cl. 264—40 **5 Claims**



Method of making flat cables with plastics by extrusion. For cooling, at least two cooling zones are provided. The width of the flat cable is adjusted by setting the temperature difference of the cooling zone, in which the cable sets, and of the preceding cooling zone.

3,728,425

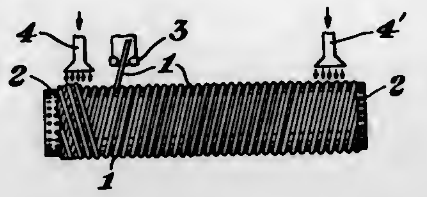
PROCESS FOR POTTING HOLLOW FIBER MEMBRANES

Paul G. Schrader, Antioch, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 23, 1968, Ser. No. 731,614

Int. Cl. B29d *7/20, 27/00*; **D01f** *3/40*

U.S. Cl. 264—49 **11 Claims**



An improved method for potting plasticized, acetylated cellulose hollow fibers is disclosed wherein an improved bond between the cured resin and the fiber results when the resin comprises a polyepoxide resin, from 6 to 100 phr of an aromatic amine and from 0.5 to 5 phr of a thixotropic agent. The thixotropic agent imparts desirable application characteristics to the uncured resin and, particularly, minimizes wicking.

3,728,426

METHOD OF AND APPARATUS FOR MAKING HOLLOW ARTICLES

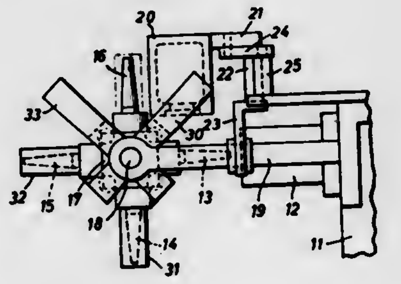
Stefan Fischer, Im Korreagarten 21, Lohmar, Germany

Filed Sept. 28, 1970, Ser. No. 76,656

Claims priority, application Germany, Sept. 27, 1961, P 19 48 978.2

Int. Cl. B29c *17/07*

U.S. Cl. 264—97 **8 Claims**



A method and apparatus for producing hollow thermoplastic articles, especially bottles. Pre-mouldings are formed by injection moulding and are transferred to a blow mould for shaping into the desired articles. Chamber or protective zone means are provided for screening the pre-mouldings from external influences as they are removed from the injection mold and transferred to the blow mould.

3,728,427

ELECTRICALLY CONDUCTIVE RESINOUS STRUCTURAL MATERIAL AND METHOD FOR ITS PREPARATION

Clinton D. Thompson, Providence, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.

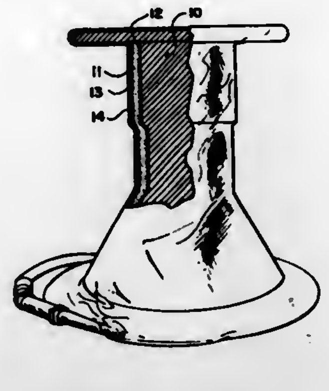
Filed Nov. 17, 1970, Ser. No. 90,310

Int. Cl. B29c *24/00*; **B32b** *5/16*

U.S. Cl. 264—101 **4 Claims**

A structural material having an electrically conductive surface is presented along with a method for its preparation. The material is particularly useful wherever it is desirable to eliminate the danger of electro-static sparks or other electrical conduction along the material's surface. The material is

resinous in character, can be reinforced, and is prepared by coating a mandrel with a resinous gel, depositing conductive metal slivers, flakes or needles upon it before it cures, applying glass cloth, applying pressure to the cloth, slivers and gel while the gel cures to force the slivers to the surface against mandrel and then removing the material from the mandrel after it has cured.



3,728,428

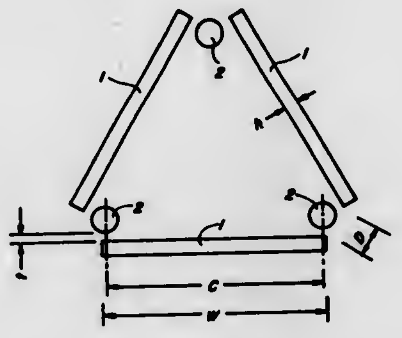
PROCESS FOR PRODUCING HOLLOW FILAMENTS

Garland L. Turner, Chesterfield County, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 881,806, Dec. 3, 1969, Pat. No. 3,635,641. This application June 10, 1971, Ser. No. 151,749

Int. Cl. B28b *21/54*; **B29f** *3/00*

U.S. Cl. 264—177 F **1 Claim**



A spinnerette for spinning hollow filaments having a maximum amount of hollow space in relation to the outer dimensions of said filaments. The filaments are extruded from a group of preferably three slots and corresponding three round openings or dots. The polymer occluding area defined by the arrangement of the slots forms substantially an equilateral triangle. The round openings are arranged near or at the ends of the slots, but not in communication with the slots. Filaments melt spun from the nested embodiment of this spinnerette consistently have above 35 percent hollow space. The spinnerette is much less subject to breakage than similar designs. Specific parameters for spinning with such as orifice configuration are set forth.

3,728,429

SLUSH MOLDING PROCESS

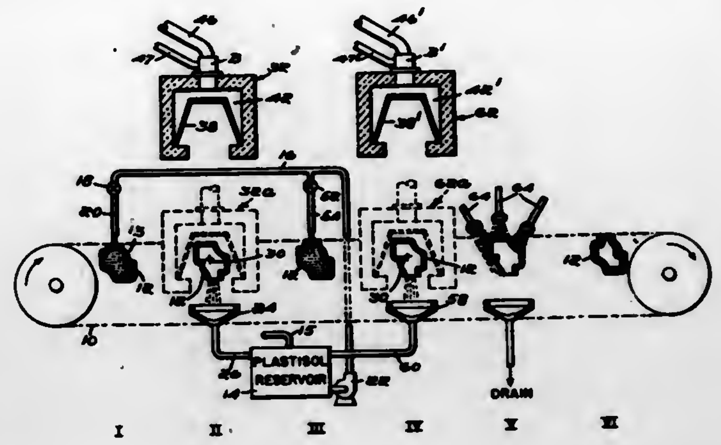
Daniel E. Colby, Somersworth; Philip E. Rogers, Dover, and Frederick J. Sliwinski, Rochester, all of N.H., assignors to McCord Corporation, Detroit, Mich.

Continuation of Ser. No. 756,178, July 29, 1968, abandoned. This application Aug. 27, 1970, Ser. No. 67,631

Int. Cl. B29c *5/12*

U.S. Cl. 264—302 **9 Claims**

A process for slush molding hollow thin-walled flexible plastisol articles which begins with the application of an initial thin coating of liquid plastisol to the interior surface of a cooled open mold. This initial coating is then gelled by impinging pressurized hot gas directly onto the exterior surface of the mold, preferably while the mold is inverted and rocking about a horizontal axis. Thereafter, the thickness of this initially gelled coating is increased by applying additional liquid plastisol to the interior surface of the mold, which additional plastisol is then gelled by the latent heat stored in the mold wall during the previous heating step. The entire gelled plastisol coating is finally fused by a second impingement of pressurized hot gas directly onto both the exterior mold surface and the plastisol coating on the interior mold surface, while the mold is rotating about a horizontal axis.



3,728,430

METHOD FOR PROCESSING COPPER VALUES

Jay B. Clitheroe, Salt Lake City, Utah, and Forrest H. Lacy, Jr., Houston, Tex., assignors to The Anlin Company of New Jersey, Houston, Tex.

Filed Dec. 14, 1970, Ser. No. 97,851

Int. Cl. C01g *3/12*; **C22b** *15/08*

U.S. Cl. 423—26 **4 Claims**

The steps of leaching copper values from oxide ores, mixed sulfide-oxide ores, and other oxide copper bearing materials in an aqueous medium or suspension containing soluble sulfites or bisulfites and precipitating the copper as copper sulfide in an aqueous medium or suspension containing elemental sulfur and soluble sulfites or bisulfites. The precipitated copper, along with any other copper present as elemental copper or copper sulfide, is then separated by conventional methods.

3,728,431

PRODUCTION OF TITANYL SULFATE SOLUTIONS

Gerhard Kienast; Heribert Stutgens, and Hans-Gunter Zander, all of Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed March 17, 1971, Ser. No. 125,153

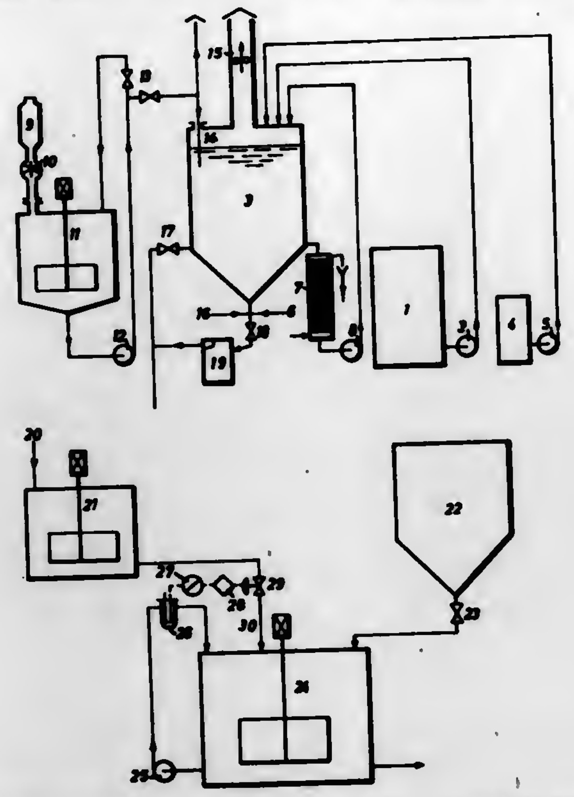
Claims priority, application Germany, March 28, 1970, P 20 15 155.7

Int. Cl. C01g *23/00, 23/04*

U.S. Cl. 423—69 **6 Claims**

A titanium- and iron-containing slag is ground, the iron is magnetically separated and the balance is decomposed with sulfuric acid to produce a titanyl sulfate solution which is further treated to render it suitable for preparation of superior titanium dioxide pigments.

Specifically, a portion of the ultimate titanyl sulfate solution is subjected to reduction by the addition thereto of magnetically separated iron and sulfuric acid, the reduction being carried out to give a titanium(III)content of about 50 to 90 grams per liter calculated as TiO_2. This reduced solution is added to the titanyl sulfate solution produced by sulfuric acid decomposition of the relatively iron-free slag, their relative proportions being such as to provide a titanium (III) content of 0.1 to 4 grams per liter calculated as TiO_2. This prevents formation of trivalent iron which would pose a problem during later production of pigment. A portion of the resultant solution is then recycled for reduction of titanium IV to titanium (III) by additional iron and sulfuric acid.



3,728,432

PURIFICATION OF SODIUM ALUMINATE SOLUTIONS

Marc Petitjean, Marseille Ile, and Georges Rollet, Marseille, both of France, assignors to Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 660,914, Aug. 16, 1967, abandoned. This application Aug. 24, 1970, Ser. No. 66,593

Claims priority, application France, Aug. 18, 1966, 6673427

Int. Cl. C01k *7/02*

U.S. Cl. 423—121 **10 Claims**

Solutions of sodium aluminate obtained by the alkaline treatment of bauxite ores are purified by the removal of dissolved iron therefrom through the placing of these solutions in contact with granular bauxite ores. The contacting of solutions of sodium aluminate with granular bauxite ore causes the rapid decomposition of dissolved iron and precipitation of the resultant iron oxide on the bauxite grains.

3,728,433

CONTINUOUS PROCESS FOR SCRUBBING SULFUR DIOXIDE FROM A GAS STREAM

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 9,894, Feb. 9, 1970, Pat. No. 3,574,097. This application March 26, 1971, Ser. No. 128,428. The portion of the term of this patent subsequent to April 6, 1988, has been disclaimed.

Int. Cl. C01b *17/16*

U.S. Cl. 423—242 **21 Claims**

An input gas stream containing SO_2 is continuously treated in order to remove a substantial portion of the SO_2 therefrom by the steps of: (a) scrubbing the input gas stream with an aqueous absorbent containing an alkaline reagent; (b) treating the resulting rich absorbent stream with a reducing agent at conditions selected to convert the sulfite compound contained therein to the corresponding thiosulfate compound; (c) reacting the resulting thiosulfate compound with carbon monixide at reduction conditions selected to produce the corresponding sulfide compound; (d) stripping hydrogan sulfide from the resulting solution to form a regenerated aqueous absorbent stream; and, thereafter, (e) passing at least a portion of the regenerated absorbent stream to the scrubbing step.

3,728,434

TREATMENT OF METAL HYDRIDES

Robert N. Sanders, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 6, 1968, Ser. No. 707,360

Int. Cl. C01b *6/04*

U.S. Cl. 423—274 **11 Claims**

Metal hydrides prepared under nitrogen or other highly adsorbed gas are treated to reduce evolution of such gas upon slurrying with inert liquids by (1) heating under reduced pressure to 100° to 200° C. for 1 to 24 hours, (2) contacting with helium, hydrogen or other slightly adsorbed gas and (3) cooling to ambient temperature in contact with the latter gas.

3,728,435

FLUORINATION OF BORIC ACID AND PHOSPHOROUS ACID

Robert A. Wiesboeck, Stone Mountain, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 60,147, July 31, 1970, Pat. No. 3,635,673. This application Sept. 27, 1971, Ser. No. 184,202

Int. Cl. C01b *25/10*

U.S. Cl. 423—301 **8 Claims**

A method of producing boron trifluoride or phosphorus trifluoride using a metal fluorosulfonate fluoride, $MF(FSO_3)$, as the fluorinating agent is disclosed. Boric acid, H_3BO_3, and phosphorous acid, H_3PO_3, respectively, are employed as the boron or phosphorous source.

3,728,436

METHOD OF OBTAINING SILICON MONOXIDE

Vadim Sergeevich Krikorov, K-482, korpus 347, kv. 30; Vladimir Grigorievich Krasov, K-482, korpus 447, kv. 118; Boris Alexandrovich Sukhodaev, K-482, korpus 349, kv. 9; Vilaly Kazimirovich Kokin, K-482, korpus 320, kv. 36; Valentin Danilovich Zhelninsky, K-482, korpus 328, kv. 112; Nikolai Mefodievich Sukhanov, K-482, korpus 318, kv. 81; Gennady Mikhailovich Leonov, K-482, korpus 405, kv. 113; Nikolai Ivanovich Likholetov, K-482, korpus 321, kv. 159; Igor Tikhonovich Kovalev, K-482, korpus 338-a, kv. 52; Vladimir Vladimirovich Gusev, k-482, korpus 337, kv. 15, and Andrei Petrovich Medvedev, K-482, korpus 305, kv. 66, all of Moscow, U.S.S.R.

Continuation of Ser. No. 748,904, July 31, 1968, abandoned. This application Nov. 9, 1970, Ser. No. 88,153

Int. Cl. C01b *33/00*

U.S. Cl. 423—325 **5 Claims**

A method for obtaining silicon monoxide comprising mixing finely divided polycrystalline silicon particles with amorphous silicon dioxide in a molar ratio of polycrystalline silicon particles to the amorphous silicon dioxide of 1,1 – 1:2:1 whereafter the mixture is sintered at a temperature of 1,250° – 1,400° C. in air for 2–2.5 hours, after which the mixture is subjected to a heat treatment wherein after crushing the mixture, it is subjected to a temperature of 1,350° – 1,400° C in vacuo for 1–2 hours. Silicon monoxide is removed from the vacuum chamber and is of high quality for use in electronics, optics, illumination devices and radio equipment.

3,728,437

CARBON BLACK PRODUCTION

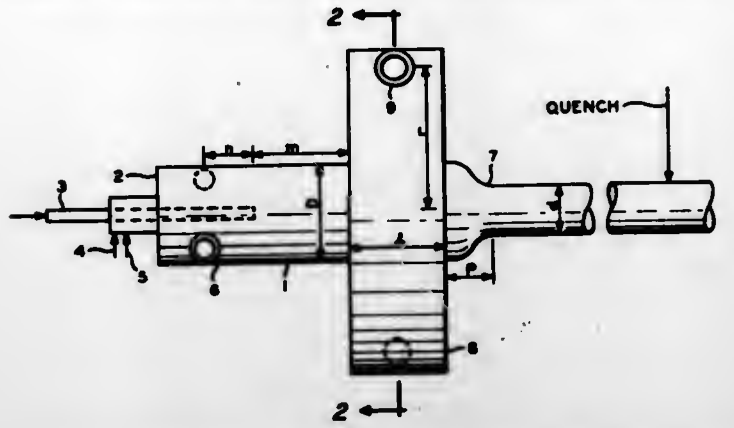
John W. Vanderveen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 16, 1971, Ser. No. 115,539

Int. Cl. C09c *1/50*

U.S. Cl. 423—450 **8 Claims**

Method and apparatus for producing carbon black in which a first mass of hot combustion gases containing hydrocarbon feed is passed centrally and counter currently to a second mass of hot helically-flowing combustion gases whereby the hydrocarbon feed is pyrolytically decomposed to carbon black which is removed from the downstream end of the reactor and a portion of the hot combustion gases substantially free of carbon black are removed through ports in the upstream end of the reactor.



3,728,438

METHOD OF PRODUCING POTASSIUM SULPHATE FROM ALKALI METAL SULPHATES OR THEIR MIXTURES WITH CARBONATES

Gakif Zakirovich Nasyrov, prospekt Nauki, 12, kv. 49, Leningrad, U.S.S.R.

Filed Sept. 3, 1970, Ser. No. 69,447

Int. Cl. C01d *5/00, 1/04*

U.S. Cl. 423—551 **3 Claims**

A method of producing potassium sulphate from alkali metal sulphates or their mixtures with carbonates wherein the sulphates or their mixtures with carbonates are treated with a solution of potassium hydroxide followed by isolating the potassium sulfate product. The present method is preferably carried out by employing a counterflow continuous flow scheme involving not less than two treatments of the sulphates with alkaline solutions, and after each alkaline treatment, the mother liquor, which is essentially a mixture of alkali hydroxides, is separated from the residue obtained, the first treatment of the sulphates being carried out with the mother liquor obtained in the course of the second alkali treatment and further each treatment of the sulphates being carried out with the mother liquors obtained in each subsequent treatment, the last treatment of the sulphates being carried out with a solution of potassium hydroxide, followed by isolating the potassium sulfate product. The present method finds application in the complex treatment of alunite, natural sulphates, in treating soda-sulphate wastes of alumina production, etc.

3,728,439

TREATMENT OF A SULFITE CONTAINING AQUEOUS STEAM TO SELECTIVELY PRODUCE ELEMENTAL SULFUR

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 5, 1970, Ser. No. 87,393

Int. Cl. C01b *17/02*

U.S. Cl: 423—567 **20 Claims**

An input water stream containing a water-soluble sulfite compound is treated to produce elemental sulfur, while minimizing the formation of undesired sulfate by-products by the steps of: (a) selectively converting the sulfite compound to the corresponding thiosulfate compound; (b) reacting a portion of the resulting thiosulfate-containing stream with a reducing agent to form a sulfide-containing stream; (c) reacting the remaining portion of the thiosulfate-containing stream with the sulfide-containing stream to form the corresponding polysulfide compound; and thereafter, subjecting the resulting stream containing the polysulfide compound to decomposition conditions selected to form elemental sulfur, hydrogen sulfide, and a substantially sulfate-free treated water stream. The principal utility of this treatment procedure is associated with the clean up, or regeneration, of sulfite-containing aqueous streams such as are produced by contacting SO_2-containing flue gas with a suitable aqueous absorbent stream. Key features of this process are the selective conversion of the sulfite compound to the corresponding thiosulfate compound, the subsequent reduction of a portion of this thiosulfate compound to the corresponding sulfide compound and the use of this sulfide compound to selectively reduce the remaining portion of the thiosulfate compound to elemental sulfur.

3,728,440

CONTINUOUS PROCESS FOR SCRUBBING HYDROGEN SULFIDE FROM A GAS STREAM AND SELECTIVELY PRODUCING ELEMENTAL SULFUR WHILE MINIMIZING THIOSULFATE MAKE

Robert J. J. Hamblin, Deerfield, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 802,356, Feb. 26, 1969, Pat. No. 3,594,125. This application July 19, 1971, Ser. No. 163,843

Int. Cl. C01b *17/04*

U.S. Cl. 423—573 **18 Claims**

H_2S is removed from a gas stream and sulfur is selectively produced by the steps of: (1) sequentially scrubbing the gas stream with a first recycle water stream containing NH_4OH and then with a second recycle water stream which is substantially free of any NH_4OH to produce a treated gas stream which is reduced H_2S content and is substantially free of NH_3 and a rich absorbent stream containing NH_4HS; (2) catalytically reacting a portion of the rich absorbent stream and a third recycle water stream containing ammonium polysulfide and NH_4HS with a first air stream to produce an effluent stream containing ammonium polysulfide; (3) catalytically reacting the resulting ammonium polysulfide-containing liquid stream with a second air stream at oxidizing conditions effective to produce liquid sulfur and a substantially sulfide-free water stream containing NH_4OH and a minor amount of $(NH_4)_2SO_3$; (4) stripping NH_3 from at least a portion of this last water stream in order to produce a water stream which is sbustantially free of ammonium and sulfide; (5) separately recycling a portion of the water stream formed in step (3) as a portion of the first recycle water stream and a portion of the water stream formed in step (4) as the second recycle water steram to the scrubbing step; and, (6) reacting another portion of the water stream formed in steps (4) with another portion of the rich absorbent stream at thiosulfate reduction conditions to form at least a portion of the third recycle water stream and passing same to step (2).

3,728,441

REMOVAL AND RECOVERY OF SULFUR FROM A GAS STREAM CONTAINING HYDROGEN SULFIDE

Robert J. J. Hamblin, Deerfield, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 802,356, Feb. 26, 1969, Pat. No. 3,594,125. This application July 19, 1971, Ser. No. 163,844

Int. Cl. C01b *17/04*

U.S. Cl. 423—573 **11 Claims**

H_2S is removed from a gas stream and sulfur is produced by the steps of: (1) sequentially scrubbing the gas stream with a first recycle water stream containing NH_4OH and then with a second recycle water stream which is sbustantially free of NH_4OH to produce a treated gas stream which is reduced in H_2S content and is substantially free of NH_3 and a bottom water stream containing NH_4HS; (2) catalytically treating the bottom water stream with an air stream to produce an effluent stream containing ammonium polysulfide; (3) treating the ammonium polysulfide-containing stream to recover sulfur and to produce a water stream which is substantially free of NH_4OH and a water stream containing NH_4OH; and, (4) separately recycling at least a portion of these last two streams to the scrubbing step.

3,728,442
METHOD OF PRODUCING VANADIUM PENTOXIDE

Dmitry Afanasievich Pakhomov, ulitsa D. Bednogo, 58a, kv. 46; Stanislav Mikhailovich Arkhipov, ulitsa Koshurnikova, 12, kv. 81; Alexandr Egorovich Pruntsev, ulitsa D. Bednogo, 58, kv. 23; Semen Avramovich Milsky, ulitsa D. Bednogo, 58a, kv. 21, and Alexei Petrovich Pleskachev, ulitsa D. Bednogo, 58, kv. 31, all of Novosibirsk, U.S.S.R.

Filed June 7, 1971, Ser. No. 150,791
Int. Cl. C01g *31/00*

U.S. Cl. 423—592 **6 Claims**

A method of producing vanadium pentoxide, characterized in that ammonium vanadate is treated with a 2.0 – 2.5 N. mineral acid at a H^+/VO_3^- ratio = 1.0 – 1.1 g-equiv. The resultant vanadium acid precipitate is separated from the mother liquor, washed with water to the pH value of the washings equal to 4 – 5 and calcined at a temperature of 500° – 600° C.

The proposed method makes possible the production of a granulated dustless final product of a high degree of purity.

3,728,443
PRODUCTION OF HIGH ASPECT RATIO ACICULAR RUTLE TIO

Robert Berisford, and Eric P. Johnson, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 14, 1971, Ser. No. 180,449
Int. Cl. C01g *23/04, 33/08;* B01d *9/00*

U.S. Cl. 423—610 **5 Claims**

TiO_2 fibers are produced in the form of single acicular rutile crystals from a calcined blend of TiO_2, salt and oxyphosphorus components. High aspect ratio fibers are achieved by the use of water in the blend and critical control of the ratios of the solid components.

3,728,444
METHOD AND COMPOSITIONS FOR INDUCING RESISTANCE TO BACTERIAL INFECTIONS

Elton S. Cook, and Kinji Tanaka, both of Cincinnati, Ohio, assignors to Stanley Drug Products, Inc., Portland, Oreg.

Filed April 28, 1971, Ser. No. 138,331
Int. Cl. A61k *27/00*

U.S. Cl. 424—315 **1 Claim**

A variety of substances are reported which alter host resistance to cocci and bacilli bacterial infections. Nevertheless, because of the extreme difficulty of total eradication, and the frequent reappearance of the same strains even after their apparently successful elimination, there is a continuing need for drugs for the treatment of coccic infections. Some amino sulfonic acids have been found effective in inducing resistance to infections due to cocci and bacilli.

3,728,445
CONTROLLED RELEASE MEDICAMENT

Frank M. Bardani, Rye, N.Y., assignor to Controlled Medications Limited, Calgary, Alberta, Canada

Filed Oct. 19, 1970, Ser. No. 82,548

Claims priority, application Great Britain, Sept. 28, 1970, 46086/70

Int. Cl. A61k *27/12*

U.S. Cl. 424—22 **12 Claims**

The invention relates to novel extended-release medicament preparations, particularly in tablet form, and to a method of preparing same. The preparations of the invention are based on the desired medicament, an excipient such as a sugar, a defined class of binder and a "barrier" salt such as magnesium stearate.

3,728,446
SPECKLED DENTIFRICE GEL

Francis D. Roberts, West Millington, and James Norfleet, Plainfield, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 54,635, July 13, 1970, abandoned. This application Jan. 11, 1971, Ser. No. 105,652
Int. Cl. A61k *7/16*

U.S. Cl. 424—49 **11 Claims**

Oral composition containing aqueous liquid and alkali metal carboxymethyl cellulose gelling agent and including non-toxic impalpable colored particles of insoluble salt of the gelling agent. The composition is formed by coloring a soluble polyvalent metal salt, such as aluminum sulfate, or soluble polyvalent metal hydroxide such as calcium hydroxide which forms a water-insoluble salt with the gelling agent, such as aluminum or calcium carboxymethyl cellulose. The dyed salt or hydroxide is then incorporated into the oral composition thereby forming non-toxic impalpable particles of the insoluble salt of the metal with the gelling agent. The speckled dentifrice may also be formed by first incorporating the metal salt or hydroxide into a dyed dentifrice gel thus permitting dye from the gel to become adsorbed into the thereby formed particles, or by incorporating the metal salt or hydroxide into an uncolored gel thereby forming particles which are themselves colored or are then dyed.

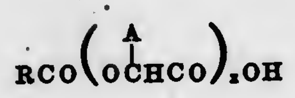
3,728,447
FATTY ACID LACTYLATES AND GLYCOLATES FOR CONDITIONING HAIR

Lloyd Osipow, New York, N.Y., and Dorothea Marra, Summit, N.J., assignors to C. J. Patterson Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 464,825, June 17, 1965, abandoned. This application March 3, 1970, Ser. No. 16,230
Int. Cl. A61k *7/06*

U.S. Cl. 424—70 **16 Claims**

Agents containing fatty acid lactylates and glycolates of the formula



$$RCO\left(O\overset{A}{\overset{|}{C}}HCO\right)_xOH$$

wherein RCO is the acyl radical of a fatty acid of from six to 22 carbon atoms, A is either CH_3 or H and *x* is a number from about one to four and their ammonium, alkali metal and physiologically acceptable amine salts are used for conditioning hair, that is, for improving the texture and manageability as well as curl or wave retention of the hair.

3,728,448
ANTIBIOTIC BL617 AND PROCESS FOR PRODUCING SAME

Martin Paul Kunstmann, Pearl River, N.Y.; Charles Brainerd Williamson, III, Gainesville, Fla., and John Norman Porter, Ramsey, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed April 6, 1971, Ser. No. 131,745
Int. Cl. A61k *21/00*

U.S. Cl. 424—121 **4 Claims**

This disclosure describes a new antibiotic, designated BL617, produced in a microbiological fermentation under controlled conditions using a strain of *Streptomyces luteoverticillatus*. The new antibiotic is active against a variety of microorganisms including fungi and thus is useful in inhibiting the growth of such microorganisms wherever they may be found.

3,728,449
GERMICIDAL IODINE COMPOSITIONS FOR APPLICATION TO SKIN TISSUE INCLUDING TEATS OF MILK ANIMALS

Abraham Cantor, Elkins Park, Pa., and Murray W. Winicov, Flushing, N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

Continuation of Ser. No. 832,482, June 11, 1969, abandoned. This application May 1, 1972, Ser. No. 249,096
Int. Cl. A61k *27/00*

U.S. Cl. 424—150 **12 Claims**

An improved germicidal-iodine composition for application to skin tissue and particularly to teats of milk animals in the control of mastitis, wherein an aqueous nonionic carrier-iodine composition providing available iodine concentration in the range of about 0.25 to 2 percent, and containing nonionic carriers of the types which have been cleared for use in contact with food equipment in an amount providing a ratio of carrier to available iodine within the range of 5:1 to 20:1, is supplemented by an emollient in the form of a water-soluble polyhydric alcohol or ethoxylated lanolin, and the emollient is protected against reaction with the iodine by providing a suitably high distribution coefficient for the iodine and maintaining a pH in the composition in the range of about pH 3 – 6.5, and preferably buffered at about pH 3.5 – 4.5. Buffering can be effected by various food acids and salts of food acids.

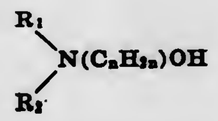
3,728,450
INOSINE DERIVATIVES

Paul Gordon, Chicago, Ill., assignor to Newport Pharmaceuticals, Inc., Newport, Calif.

Division of Ser. No. 853,864, Aug. 28, 1969, Pat. No. 3,645,007. This application May 21, 1971, Ser. No. 145,929
Int. Cl. A61k *25/00*

U.S. Cl. 424—180 **9 Claims**

Complexes are formed in inosine and amino-alcohols of the formula



where R_1 and R_2 are lower alkyl and *n* is an integer of 2 to 4 The complexes having pharmacological activity including the ability to restore deteriorated learning and memory behavior. The preferred aminoalcohol is dimethylamino isopropanol. The preferred ratio of inosine to aminoalcohol is 1:3.

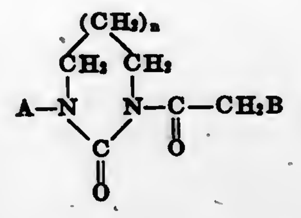
3,728,451
CYCLIC UREA AMIDE PHOSPHATES USEFUL AS INSECTICIDES

Peter E. Newallis, Overland Park, Kans., assignor to Allied Chemical Corporation, New York, N.Y.

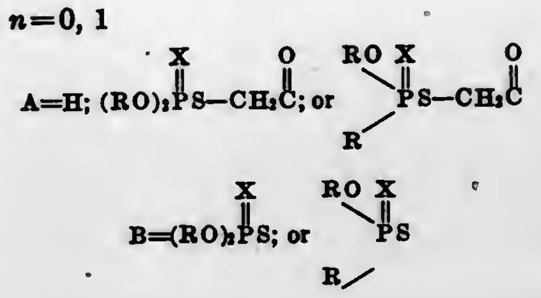
Division of Ser. No. 694,418, Dec. 29, 1967, Pat. No. 3,629,280. This application Aug. 12, 1970, Ser. No. 63,269
Int. Cl. A01n *9/22, 9/36*

U.S. Cl. 424—200 **8 Claims**

A new class of cyclic urea amide phosphates and phosphonates, utilized as insecticides, and having the following general structure covering the compounds of this invention:



wherein $n = 0, 1$



and wherein *R* = lower alkyl group having 1–5 carbon atoms; *X* = *O* or *S*.

3,728,452
WATER-SOLUBLE COMPOSITION COMPRISING SULFADIMIDINE AND PYRIMETHAMINE

Raphael Ralph G. Haber, and Eva Schoenberger, both of Givatayim, Israel, assignors to Abic Ltd., Ramat-Gan, Israel

Filed Jan. 20, 1971, Ser. No. 108,231
Int. Cl. A61k *27/00*

U.S. Cl. 424—229 **6 Claims**

The present invention relates to a water-soluble composition of N(4,6-dimethyl-2-pyrimidinyl)sulfanilamide (hereinafter called "sulfadimidine") and 2,4-diamino-5-chlorophenyl-6-ethyl-pyrimidine (hereinafter called "-pyrimethamine") solubilized with glycols. for oral administration to animals in the form of an aqueous solution thereof, said composition comprising free sulfadimidine and free pyrimethamine both dissolved in a water miscible organic solvent selected from the group consisting of propylene glycol, tetrahydrofurfurylethyleneglycol ether, polyethylene glycol, and methylidene glycerol, and mixtures thereof, the ratio of pyrimethamine: sulfadimidine being between 1:20 to 1:4 by weight.

3,728,453
DIALURIC ACID COMPOUNDS AS ANTIBACTERIAL AND ANTIFUNGAL AGENTS

John D. Douros, Jr., and Al Fred Kerst, both of Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Aug. 6, 1970, Ser. No. 75,310
Int. Cl. A01n *9/00, 9/22*

U.S. Cl. 424—251 **23 Claims**

Dialuric acid and dialuric acid monohydrate can be used to inhibit and/or prevent the growth of undesirable herbs, bacteria, fungi, yeast, and other microorganisms. This invention is particularly concerned with the bacteriostatic and bactericidal properties of dialuric acid compounds against *Staphylococcus aureus*, *Escherichia coli*, and *Xanthomonas phaseoli*.

3,728,454
ALLOXAN COMPOUNDS AS ANTIBACTERIAL AND ANTIFUNGAL AGENTS

John D. Douros, Jr., and Al Fred Kerst, both of Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Aug. 14, 1970, Ser. No. 75,311
Int. Cl. A01n *9/00, 9/22*

U.S. Cl. 424—251 **24 Claims**

Alloxan, alloxan monohydrate, and alloxan tetrahydrate can be used to inhibit and/or prevent the growth of undesirable herbs, bacteria, fungi, yeast, and other microorganisms. This invention is particularly concerned with the bacteriostatic and bactericidal properties of alloxan compounds against *Staphy-lococcus aureus* and *Escherichia coli*.

3,728,455
NOVEL COMPOSITIONS OF MATTER

David Kupfer, Pearl River, N.Y.; Henry George Roscoe, Montvale, N.J., and Donald Arthur Blickens, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed June 24, 1971, Ser. No. 156,512
Int. Cl. A61k *27/00*

U.S. Cl. 424—270 **5 Claims**

This disclosure describes compositions of matter useful for inhibiting the formation of histamine in mammals and the method of inhibiting histamine formation in mammals therewith, the active ingredients of said compositions of matter being certain substituted 4-phenyl-2-mercaptothiazoles.

3,728,456
FUNGICIDAL COMPOSITIONS AND METHODS OF COMBATING FUNGI USING PHTHALIMIDOMETHYL ISOTHIOCYANATE

Gerhard Zumach; Bertram Anders, both of Cologne-Stammheim; Ferdinand Grewe, Burscheid; Engelbert Kuhle, Berg. Gladbach, and Helmut Kaspers, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 729,547, May 16, 1968, Pat. No. 3,558,650. This application Oct. 21, 1970, Ser. No. 82,827

Claims priority, application Germany, June 13, 1967, F 52666

Int. Cl. A01n *9/22*

U.S. Cl. 424—274 **5 Claims**

Phthalimidomethyl isothiocyanate which possesses fungicidal properties and which may be produced by reacting the corresponding N-chloromethyl-phthalimide, optionally in the presence of a solvent, with a compound which donates the thiocyanate group, e.g., trimethylsilyl isothiocyanate, and alkali metal and ammonium thiocyanates.

3,728,457
MEDICAMENT WITH AN ANTI-INFLAMMATORY AND ANTI-ULCEROUS ACTION

Roland Yves Mauvernay, Riom, and Norbert Busch, Loubeyrat, both of France, assignors to Societe Anonyme dite: Centre Europeen de Recherches Mauvernay-Cerm, Riom, France

Filed Dec. 21, 1971, Ser. No. 210,586
Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **4 Claims**

For anti-ulcerous and anti-inflammatory treatment, a medicament is administered to a patient consisting of N-[2-phenyl-2-isoamyloxy]-ethyl-pyrrolidine. The medicament can be administered parenterally in an amount of 10 to 50 mg/day or orally in an amount of 100 to 220 mg/day or rectally in an amount of 150 to 300 mg/day.

3,728,458
METHODS OF CONTROLLING NEMATODES USING 2-BUTYL-4,6-DINITRO-PHENOL CARBOXYLIC ESTERS

Max Pianka, St. Albans, England, assignor to The Murphy Chemical Company Limited, St. Albans, England

Filed July 24, 1969, Ser. No. 844,638

Claims priority, application Great Britain, July 25, 1968, 35,589/68

Int. Cl. A01n *9/00, 9/22, 9/24*

U.S. Cl. 424—311 **8 Claims**

Nematodes and fungi in the soil may be controlled by 2-butyl-4,6-dinitrophenols and their carboxylic or carbonate esters.

3,728,459
CERTAIN N-SUBSTITUTED OCTADECADIENOIC ACID AMIDES USED TO REDUCE CHOLESTERAL LEVELS

Takashi Seki; Chiharu Saito, both of Toyonaka; Katsuyuki Toki, Nishinomiya; Keisuke Matsuka, Toyonaka; Yoshio Suzuki, Amagasaki, and Akira Kobayashi, Ikeda, all of Japan, assignors to Sumitomo Chemical Co. Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 478,758, Aug. 10, 1965, abandoned, which is a continuation-in-part of Ser. No. 342,682, Feb. 5, 1964, abandoned. This application July 13, 1970, Ser. No. 54,648

Int. Cl. A61k *27/00*

U.S. Cl. 424—324 **3 Claims**

Method of reducing elevated level of cholesterol in blood by administering an N-substituted octadecadienoic acid amide is provided, as well as compositions containing the N-substituted octadecadienoic acid amide.

3,728,460
ANORECTIC PHARMACEUTICAL COMPOSITION CONTAINING CERTAIN α-(METHYLAMINO-METHYL)-ALPHA-(4′-HALO-PHENYL)-BENZYL ALCOHOLS AS ACTIVE INGREDIENTS

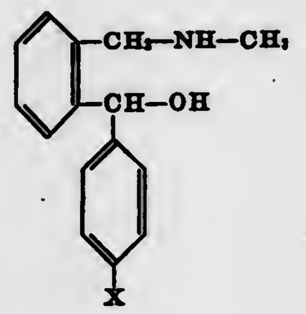
Kurt Freter, Beaconsfield; Manfred Gotz, Hudson; James T. Oliver, Beaconsfield, all of Canada, and Karl Zeile, Ingelheim/Rhine, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhine, Germany

Continuation-in-part of Ser. No. 785,750, Dec. 20, 1968, Pat. No. 3,635,974. This application July 13, 1971, Ser. No. 162,299

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **2 Claims**

Anorectic pharmaceutical compositions containing as an active ingredient a compound of the formula



wherein *X* is chlorine or fluorine, or a non-toxic acid addition salt thereof; and a method of curbing the appetite of warm-blooded animals therewith.

3,728,461
USE OF VIOLURIC ACID AS A FUNGICIDE OR BACTERICIDE

John D. Douros, Jr., and Al F. Kerst, both of Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Aug. 31, 1970, Ser. No. 78,322
Int. Cl. A01n *9/00, 9/22*

U.S. Cl. 424—251 **6 Claims**

Violuric acid can be used to inhibit and/or prevent the growth of many undesirable forms of algae, bacteria and fungi. This invention is particularly concerned with the algaecidal properties of violuric acid against the algae species Scenedesmus, Plectonema, Anabaena, Ankistrodesmus, Oscillatoria, Coccochloris, Chlamydomonas, Lyngbya, Synura and Chlorella. The bactericidal properties of violuric acid are especially useful in combating Xanthomonas and Erwinia species.

ELECTRICAL

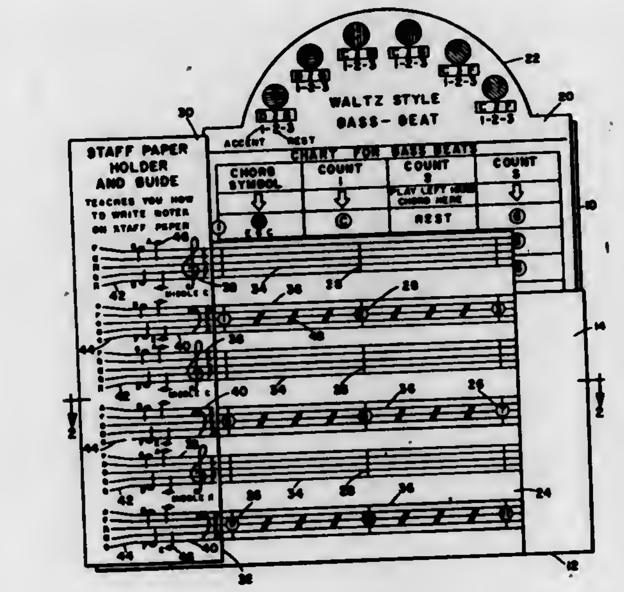
3,728,462
HOLDER AND GUIDE FOR WRITING AND READING MUSIC

Verna M. Leonard, 6353 N. Blackstone, Fresno, Calif.

Continuation of Ser. No. 43,907, June 5, 1970. This application April 13, 1972, Ser. No. 243,892

Int. Cl. G09b *15/02*

U.S. Cl. 84—471 **2 Claims**



A staff paper holder and guide for semi-skilled musicians such as rock and roll devotees having musical talent but little formal music education. When placed in front of the user either on a writing surface or a music rack the left hand edge has a flap to accept an edge of staff paper and the flap has indicia thereon identifying by name the lines and spaces of the staff paper, including ledger lines, critically positioned so that juxtaposition of the staff paper with the indicia is more or less automatically achieved. The holder includes a pocket and a replaceable card with indicia thereon to guide the user in reading and playing the written music to secure a proper base beat.

3,728,463
EXPANSION AND CONTRACTION COMPENSATION ARRANGEMENT FOR SUPERCONDUCTING CABLES

Dieter Kullmann, and Fritz Schmidt, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

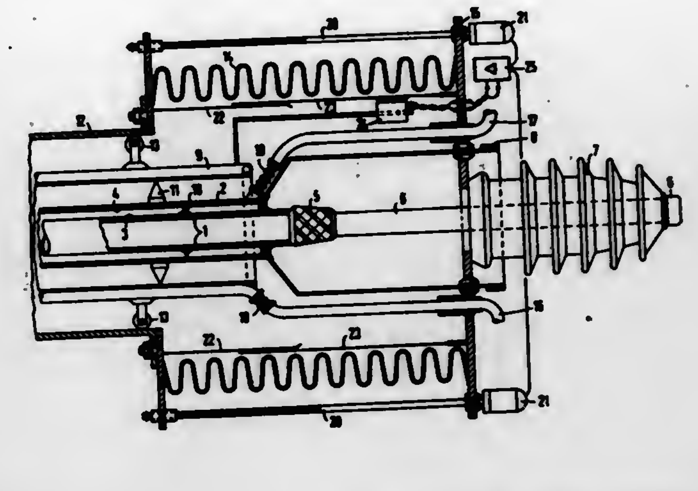
Filed March 3, 1972, Ser. No. 231,592

Claims priority, application Germany, March 15, 1971, P 21 12 406.1

Int. Cl. H01v *11/02*; **H02g** *15/02*

U.S. Cl. 174—12 R **4 Claims**

A compensation arrangement for accommodating the contraction occurring in superconducting cables as they are cooled down to the operating temperature. The superconducting cable is of the type wherein the superconducting material is applied as a layer on coaxial carrier tubes of electrically normal-conducting material, and the carrier tubes are inserted into a protective tube. The cable is movably guided in the protective tube, and a cover plate is located at an end of the cable and adapted for carrying the current connections and the coolant feed lines to the cable. A corrugated tube is provided for connecting the cover plate with the protective tube. Also, the cover plate is movable relative to the protective tube by means of a servo control in such manner that the connections to the cable remain essentially free of mechanical stresses under the thermal movements that occur.

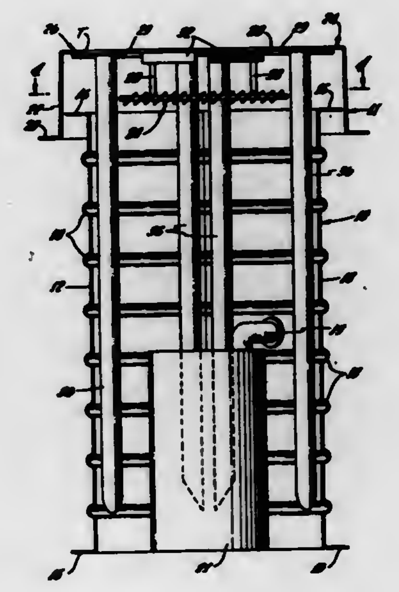


3,728,464
UNDERGROUND TRANSFORMER ENCLOSURE, AND METHOD OF INSTALLING THE SAME

Roy Griffing, 485 North State Highway, Lake Arrowhead, Calif.

Filed April 17, 1972, Ser. No. 244,463
Int. Cl. H01f *27/08*; **E02d** *29/04*

U.S. Cl. 174—16 R **24 Claims**



The enclosure for buried transformers is formed of two separate fiberglass parts, namely a hole liner and a cover. The hole liner comprises two corresponding semicylindrical sections which are joined together and then mounted around the transformer, in vertical relationship. The cover comprises a top portion and a skirt portion, and includes depending conduits for convecting cooling air down to the bottom of the hole liner. The convected air then passes upwardly through a central opening in the top portion of the cover. In accordance with the method, earth is compacted around the hole liner, following which the cover is mounted in telescoped relationship around the upper region of the hole liner. The cover is supported on the compacted earth, not on the hole liner, which means that the cover position is readily adjusted in the event the grade changes.

3,728,465

ELECTRICAL APPARATUS WITH THERMALLY STABILIZED CELLULOSE INSULATION

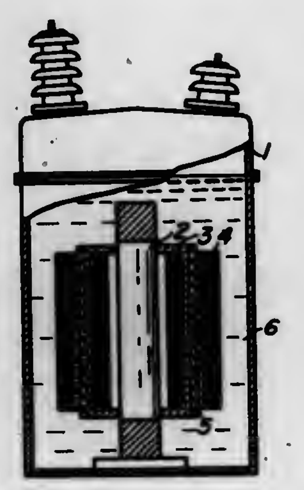
Eiji Yasui, Hitachi; Akira Miyoshi, Tamotsu Okamura, both of Tokyo, and Nobuhiko Shito, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 106,929, Jan. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 786,089, Dec. 23, 1968, abandoned. This application April 5, 1972, Ser. No. 241,114

Claims priority, application Japan, Dec. 28, 1967, 42/83611; July 5, 1968, 43/46926; July 5, 1968, 43/46927

Int. Cl. H01b *7/02*

U.S. Cl. 174—17 LF 8 Claims



An electrical apparatus containing an insulating oil which is in contact with a cellulosic insulating material improved in heat resistance and stability by incorporation of a urethane compound containing at least one urethane bond and having a molecular weight of 75 to 1000.

3,728,466

COAXIAL CABLE HAVING A FLUID STOP THEREIN AND METHOD FOR PRODUCING A COAXIAL CABLE WHICH IS IMPERVIOUS TO THE PASSAGE OF AIR THERETHROUGH

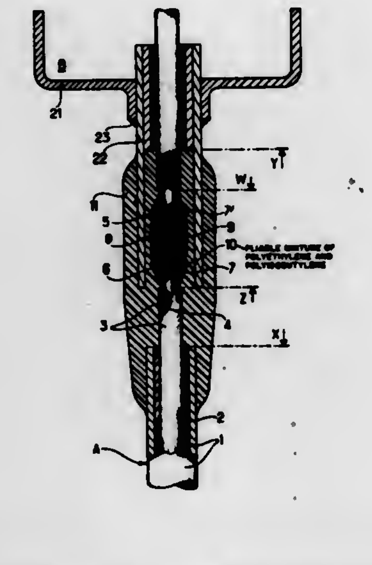
Lucien Rocton, Malakoff, and Robert Belisaire, Paris, both of France, assignors to Compagnie Industrielle des Telecommunications Cit Alcatel, Paris, France

Filed July 19, 1971, Ser. No. 163,573

Claims priority, application France, July 17, 1970, 7026551

Int. Cl. H02g *15/00, 1/00*

U.S. Cl. 174—23 R 15 Claims



A method of producing a cable having an internal blocking zone which is impassable to air, thereby assuring the imperviousness of the cable at the entrance to an equipment box to which the cable is connected, the blocking zone including an internal volume surrounding the inner conductor of the cable and filled with a pliable insulating material.

3,728,467

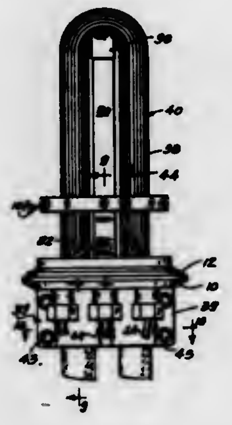
BURIED-TYPE SPLICE CASE

Milton A. Klayum, Wood Dale, and Chester E. Pierachale, Wheaton, both of Ill., assignors to Reliable Electric Company, Franklin Park, Ill.

Filed Nov. 9, 1971, Ser. No. 196,911

Int. Cl. H02g *9/02*

U.S. Cl. 174—38 5 Claims



A buried-type ready-access splice closure comprises a dielectric base with a pair of openings for receiving the opposite runs of a loop of cable. The base is split along a parting region that passes through the centers of the openings. The base also has clamping means for clamping the runs of the cable and for grounding the shield of the cable outside of the base. The loop of cable has its coverings stripped away to expose the insulated core wires for splicing to service wires. The loop is supported by a bracket that is attached to the base and to the clamping means, and the loop and bracket are enclosed by a cover that is removably clamped to the base. Additional openings are provided in the base for receiving the service wires which may be sealed to the base by a nut and bushing arrangement. The split base permits ready substitution of another cable or extension of the cable to another location if the splice case is originally used as a dead end housing for the cable.

3,728,468

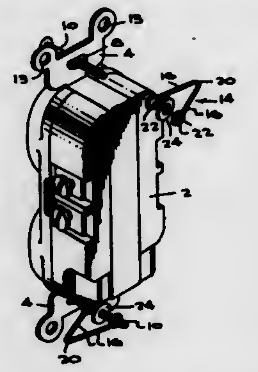
SPRING TYPE GROUNDING MEANS FOR ELECTRICAL FIXTURES

Christopher B. Grauer, 3755 Northview Drive, Jackson, Miss.

Filed Feb. 16, 1972, Ser. No. 226,690

Int. Cl. H01r *3/06*

U.S. Cl. 174—51 7 Claims



A spring clip contact member is disclosed in the form of a unitary V-shaped member formed of a pair of arms connected at an apex with rounded eyelet contact terminals being formed in the ends of the arms opposite the apex. The V-shaped member is mounted on the mounting screw between the yoke of an electrical receptacle and the receptacle mounting box to be spring biased outwardly into forcible contact with both the receptacle and the box for providing a grounding circuit between the receptacle and the grounding circuit of the box in one embodiment with a second embodiment being disclosed in which the end of one of the arms is welded to the receptacle yoke. In another embodiment, the spring contact member is formed with a rounded loop defining the apex of the V-shaped member.

3,728,469

CAVITY STRUCTURE

Frederick Rybarczk, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed March 11, 1971, Ser. No. 123,201

Int. Cl. B44d *1/02*

U.S. Cl. 174—52 S 18 Claims

By rounding and/or rendering obtuse at least the vertical angles of the connecting walls in a ceramic cavity which come into contact with a noble metal coating or pad therein, "peel-back" of the noble metal coating or pad is prevented.

3,728,470

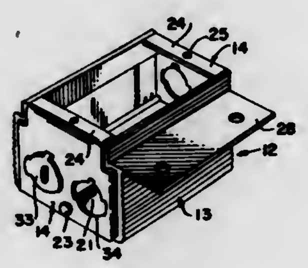
ELECTRICAL OUTLET BOX WITH CABLE CONNECTORS

William Maier, 125 Lawlor Terrace, Stratford, Conn.

Filed Sept. 27, 1971, Ser. No. 183,840

Int. Cl. H02g *3/16*

U.S. Cl. 174—58 18 Claims



An extruded box body with open ends has a bottom wall and a pair of side walls, with opposing channels formed at the inside of the side walls. A pair of separate box ends are provided with keeper members which are received and frictionally held in the channels. One of the side walls has an external mounting flange for securing the box to a supporting stud, and a keeper rib on the bottom wall of the box body is supportably engaged by a special fastener driven into the side of the stud. The box ends have knock-out plugs which when removed, leave openings to receive cable connectors. The openings have diametrically opposed recesses and the connectors have lugs which pass through the recesses and then hold the connectors in place when the latter are turned through 90°.

3,728,471

PRINTED CIRCUIT BOARDS WITH KNOCKOUTS

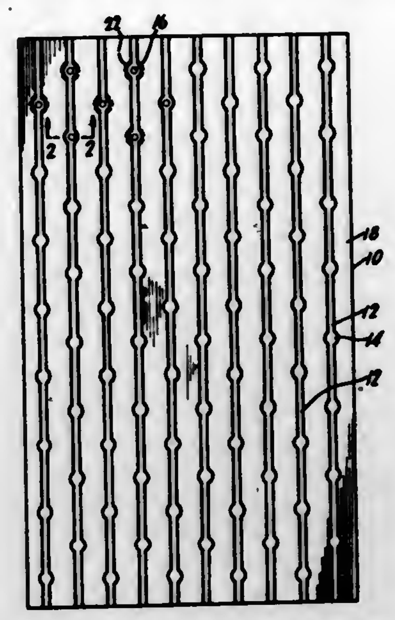
Harold L. Blinkhorn, Goshen, Ohio, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Oct. 8, 1971, Ser. No. 187,661

Int. Cl. H05k *7/06*

U.S. Cl. 174—68.5 2 Claims

Electrically non conductive relatively flexible board has electrically conductive parallel lines printed thereon, each line having spaced circular regions with transverse bores with circular peripheral groove permitting ease of removal.



3,728,472

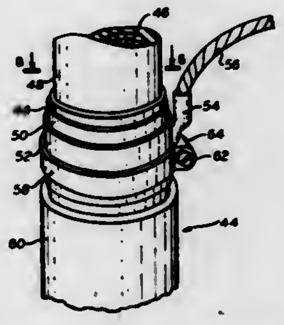
MECHANICAL PRESSURE TYPE ELECTRICAL CONNECTIONS FOR TERMINATING AND CONNECTING METALLIC CABLE SHIELDS

Raoul H. Leuteritz, Westfield, and Attila Dima, Piscataway, both of N.J., assignors to General Cable Corporation, New York, N.Y.

Filed March 31, 1972, Ser. No. 239,938

Int. Cl. H02g *15/08*

U.S. Cl. 174—78 13 Claims



This invention is a support formed from a flat strip that is bent around electric cable and that has its ends interlocked to form a short section of tubing which is inserted between the insulation shield and the metal shield that surrounds the insulation shield. It is used at splices and other terminations to support the metal shield so that contact rings, connectors and the like can be clamped to the outside of the metal shield without exerting force on the insulation of the cable. cable.

3,728,473

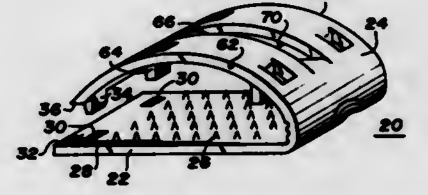
MULTI-ORIFICED ELECTRICAL CONNECTOR

Lai Che Kuo, Fanwood, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Oct. 6, 1971, Ser. No. 187,076

Int. Cl. H01r *5/00*

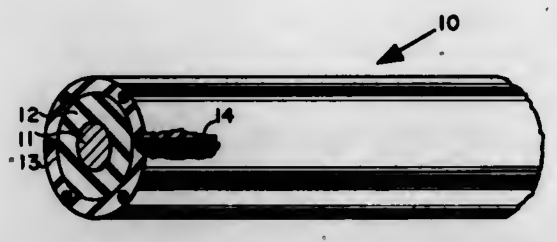
U.S. Cl. 174—84 C 12 Claims



A connector preferably for crimpable coupling of either bare or insulated flat conductive material such as the foil shield of shielded cable to further conductive material and comprising a base portion and a selectively formed arcuate portion arranged in spaced, opposing latchable relationship, which portions are provided, respectively, with, in one embodiment, piercing teeth on one of the opposing surfaces and pressure means in the form of protuberances on the other for urging the interposed conductive material against the piercing teeth as the connector is crimped thereabout. One or more latching tabs and their mating apertures are provided and selectively arranged for locking interengagement as the convexedly formed deformable arcuate portion is compressively flattened upon the crimping of the connector about the conductive material. Inwardly projecting deflectable protuberances may be provided on one or both of the connector portions for coupling a further conductor thereto.

3,728,474
SHIELDED POWER CABLE

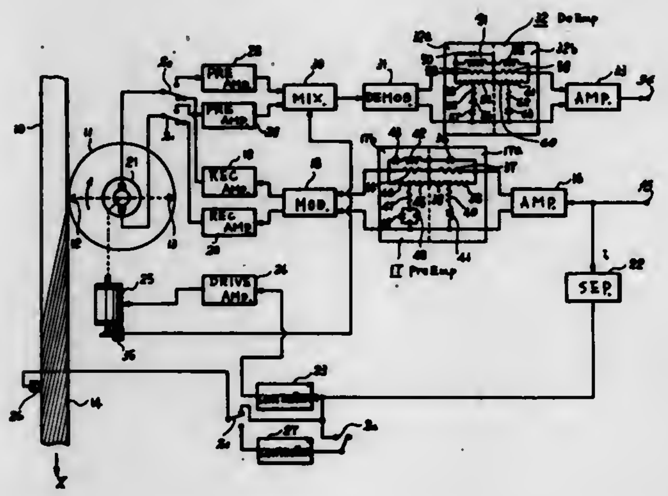
Edwin H. Arnaudin, Jr., Eden, N.C., assignor to Anaconda Wire and Cable Company, New York, N.Y.
Filed Nov. 15, 1971, Ser. No. 199,064
Int. Cl. H01b *9/02*
U.S. Cl. 174—115 **6 Claims**



Electric power cables with semiconducting jackets have stranded or bunched drain conductors embedded in the jackets, in line with the cable axis.

3,728,475
BEAT SIGNAL SUPPRESSION SYSTEM FOR A SYSTEM FOR TRANSMITTING A FREQUENCY MODULATED WAVE OR A DEVICE FOR RECORDING AND REPRODUCING A FREQUENCY MODULATED WAVE

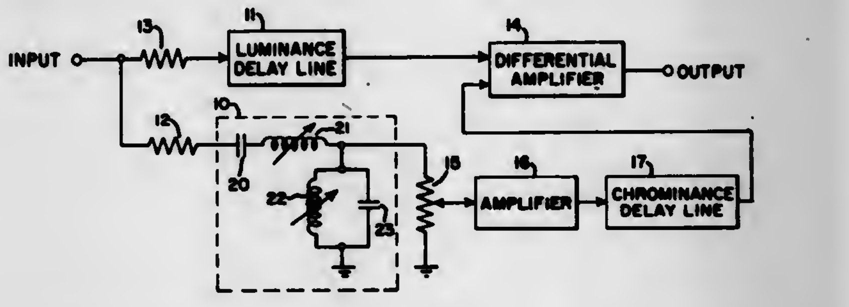
Yuzuru Inoue, Tokyo, and Akiyoshi Morita, Yokohama, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan
Filed July 6, 1970, Ser. No. 52,420
Claims priority, application Japan, July 4, 1969, 44/53177
Int. Cl. H04n *5/78*; G11b *5/04*
U.S. Cl. 178—5.2 R **4 Claims**



A system for transmitting or recording and reproducing a frequency modulated wave suppresses beats produced by a carrier wave and a signal component of high energy level distribution, which is disposed in a range of higher frequencies of a wave signal. A frequency component, which is liable to be reproduced as a beat signal, is subjected to pre-emphasis. A demodulated signal obtained by demodulating the frequency modulated signal is subject to deemphasis with a characteristic opposite to the pre-emphasis characteristics applied to the wave signal. Thus the frequency-phase characteristics of the signals is uniform throughout the system, whereby the influence exerted by moire beat interference on the demodulated signal can be minimized.

3,728,476
LUMINANCE NOTCH FILTER

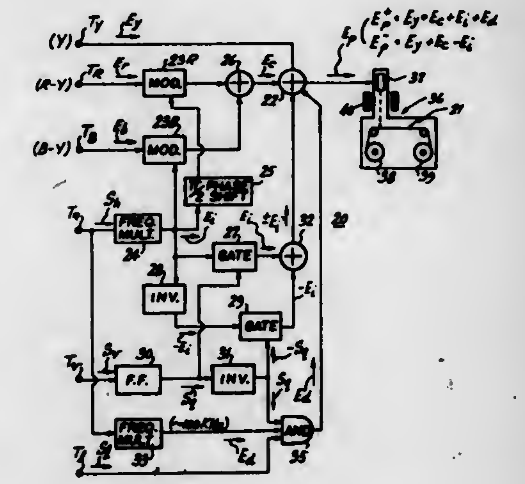
William C. Bates, Clay, and Thomas T. True, Camillus, both of N.Y., assignors to General Electric Company
Filed March 17, 1971, Ser. No. 125,275
Int. Cl. H03h *7/04*; H04n *5/14*
U.S. Cl. 178—5.4 **7 Claims**



Chrominance frequency components in the luminance channel of a color television camera are reduced by a luminance channel notch filter having substantially linear phase characteristics and adjustable notch depth. The luminance notch is developed by subtraction of a bandpass-filtered video signal from the overall video input signal. The filter, which exhibits symmetrical transient response, improved low light level noise performance and minimizes spurious color effects due to interaction of chrominance signal components with the luminance signal.

3,728,477
RECORDING AND REPRODUCING COLOR PICTURE INFORMATION

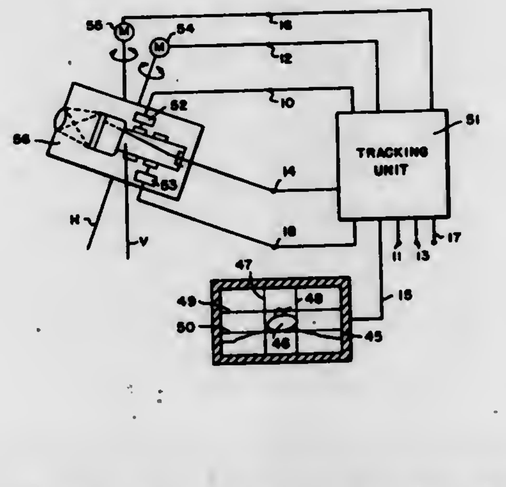
Yasuharu Kubota, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 27, 1971, Ser. No. 211,918
Claims priority, application Japan, Dec. 28, 1970, 45/128495
Int. Cl. H04n *5/84, 9/00*
U.S. Cl. 178—5.4 CD **37 Claims**



Successive scenes or fields of color picture information are recorded by exposing successive frames or portions of an elongated strip of radiant energy-sensitive record medium, for example, monochrome photographic film, to radiant energy in the form of light or an electron beam, and modulating the radiant energy for recording, in each of the frames or record medium portions information representing a composite signal which contains luminance and chrominance signals and an index signal having the same frequency as the color carrier for the chrominance signal and with the phase of either the index signal or the chrominance signal carrier, but not both, being reversed for successive color picture fields, that is in successive frames. In reproducing the recorded color picture information, the information recorded in the successive frames or record medium portions is detected to simultaneously reproduce first and second composite signals corresponding to two successive color picture fields, the chrominance and index signals are separated together from the first and second reproduced composite signals and added and subtracted to provide the chrominance signal and the index signal separate from each other, and the separated index signal is then employed to demodulate the chrominance signal and thereby provide color difference signals which, with the luminance signal separated from one of the reproduced composite signals, define a respective color picture.

3,728,478
ELECTRO-OPTICAL TRACKER

Douglas M. Turner, and Donald G. Quist, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed May 8, 1968, Ser. No. 727,741
Int. Cl. H04n *3/22*
U.S. Cl. 178—6.8 **5 Claims**

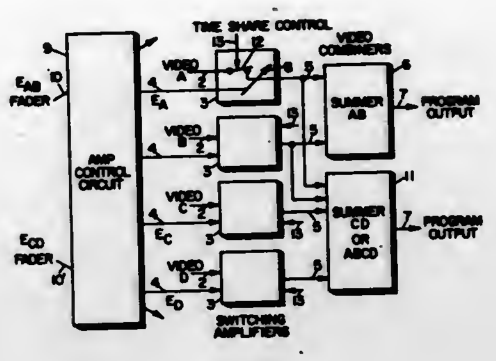


A target adaptive television contrast tracker for missile application wherein the adaptive feature comprises a linearly weighed tracking gate, which keeps account of positive target edge information, and means for determining the width of the target to keep account of negative target edge information. The tracking gate is arranged to coincide with the positive target edge information, and the mean raster position between the positive and negative target information coincides with the center of the target.

3,728,479
LOGIC CONTROL FOR VIDEO PROCESSING IN PROGRAM SWITCHERS

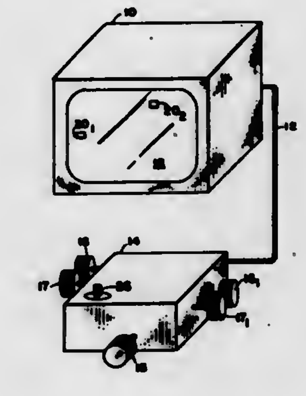
Nallaswamy Srinivasan, Liverpool, N.Y., assignor to General Electric Company, New York, N.Y.
Filed Oct. 1, 1971, Ser. No. 185,556
Int. Cl. H04n *5/22*
U.S. Cl. 178—6.8 **9 Claims**

Amplitude sharing of a plurality of video signals to produce special visual effects by use of parallel arranged switching amplifiers employing digital control of gain controlling analog signal generating circuits.



3,728,480
TELEVISION GAMING AND TRAINING APPARATUS

Ralph H. Baer, Manchester, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Continuation of Ser. No. 697,798, Jan. 15, 1968, abandoned.
This application March 22, 1971, Ser. No. 126,966
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **46 Claims**



The present invention pertains to an apparatus and method, in conjunction with standard monochrome and color television receivers, for the generation, display, manipulation, and use of symbols or geometric figures upon the screen of the television receivers for the purpose of training simulation, for playing games, and for engaging in other activities by one or more participants. The invention comprises in one embodiment a control unit, connecting means and in some applications a television screen overlay mask utilized in conjunction with a standard television receiver. The control unit includes the control means, switches and electronic circuitry for the generation, manipulation and control of video signals which are to be displayed on the television screen. The connecting means couples the video signals to the receiver antenna terminals thereby using existing electronic circuits within the receiver to process and display the signals. An overlay mask which may be removably attached to the television screen may determine the nature of the game to be played or the training simulated. Control units are provided for each of the participants. Alternatively, games, training simulations and other activities may be carried out in conjunction with background and other pictorial information originated in the television receiver by commercial TV, closed-circuit TV or a CATV station.

3,728,481
METHOD FOR IMPROVING THE ACCURACY OF EVALUATING CERTAIN OBJECTS IN THE FIELD OF A RASTER SCAN

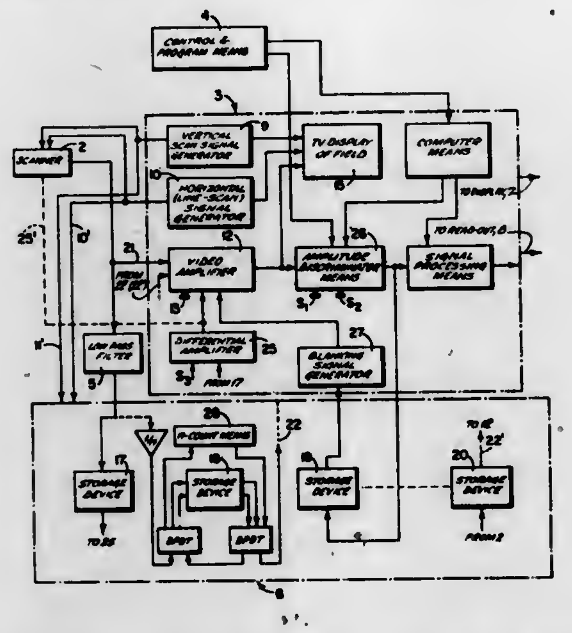
Walter Froehlich, Karlsruhe, and Walter Lang, Aalen, both of Germany, assignors to Carl Zeiss-Stiftung, Wuerttemberg and Siemens Aktiengesellschaft, Munich, Germany

Filed March 10, 1971, Ser. No. 122,675

Claims priority, application Germany, March 11, 1970, P 20 11 470.9

Int. Cl. H04n *5/14*

U.S. Cl. 178—7.1 **10 Claims**



The invention contemplates a method and means for evaluating an area or other function of an object scanned within the field of view of a raster-scan device such as a TV camera. A control video signal is first formed for a complete raster and is stored. It is then used as a basic reference for creating the video signal developed upon subsequent scanning of an object or objects in the same field of view as that comprehended by the original control video signal. In the form specifically disclosed, the stored video signal is used to control the amplification of newly produced video signal, in synchronism with the raster development thereof. The invention is described in the context of area evaluation of scanned objects, wherein amplitude-discrimination techniques are relied upon to make an additional evaluation of object brightness.

3,728,482
FOCUSING

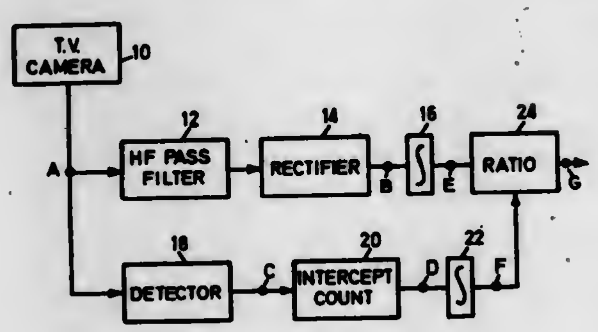
James Frank Wren, Wrestlingworth, England, assignor to Image Analysing Computers Limited, Melbourn, Royston, Hertfordshire, England

Filed Nov. 5, 1970, Ser. No. 87,107

Claims priority, application Great Britain, Nov. 5, 1969, 54,114/69

Int. Cl. H04n *5/26;* **G03b** *3/10*

U.S. Cl. 178—7.2 **21 Claims**



The invention provides a system for modifying the electrical signal corresponding to the high frequency content of a video signal in accordance with variations in other parameters of the video signal, so as to render the modified signal substantially independent of such variations. Such modification is referred to as normalising the high frequency signal. One system is described for normalising with respect to the number of feature boundaries, another the density changes across the boundaries and another the obliquity of the boundaries to the scanning direction. A further modification allows improvement to the signal to noise ratio of the modified signal.

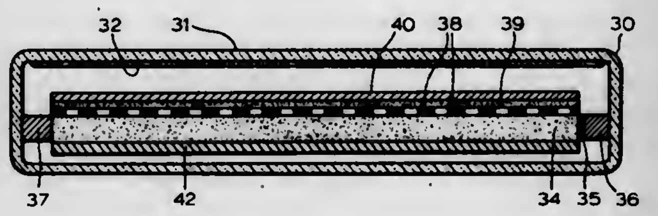
3,728,483
ACOUSTICALLY SCANNED IMAGE DISPLAY DEVICE

Robert Adler, Northfield, and Sam H. Kaplan, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed March 22, 1972, Ser. No. 236,885

Int. Cl. H01j *1/62, 63/04*

U.S. Cl. 178—7.3 D **14 Claims**



An image display device features a generally thin envelope having a transparent viewing wall. A luminescent screen is disposed on the inner side of the viewing wall. Spaced within the envelope from the screen is a sheet of piezoelectric material which propagates acoustic wave s repetitively launched therein. Distributed over the piezoelectric sheet are an array of electron sources. These may be either sources for generating electrons from the vicinity of the surface of the sheet or a plurality of apertures in the sheet and through which a flow of electrons is controlled. In any case, the release of electrons toward the screen is in response to electric fields developed by the acoustic waves. An electron accelerating field is created between the sources and the screen, and the apparatus further includes an arrangement for modulating the intensity of the released electron stream in response to a video signal.

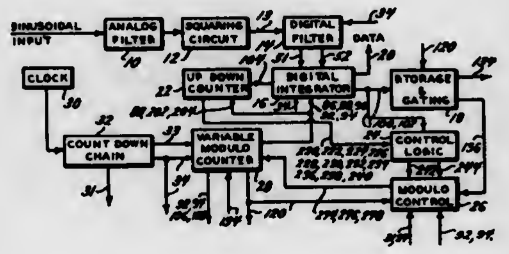
3,728,484
DIGITAL DEMODULATOR

Lynn J. Hawkey; William A. Landers, and Frank E. Nesbitt, all of Florissant, Mo., assignors to McDonnell Douglas Electronics Company, St. Charles, Mo.

Filed July 26, 1971, Ser. No. 166,054

Int. Cl. H03k *13/22*

U.S. Cl. 178—68 **28 Claims**



Accurate demodulation of a digital signal is effected by using a digital filter, a digital integrator and a digital counter to provide digital demodulation of that signal, and also by repeatedly updating the time base of the clock of that digital demodulator throughout the time that signal is being demodulated.

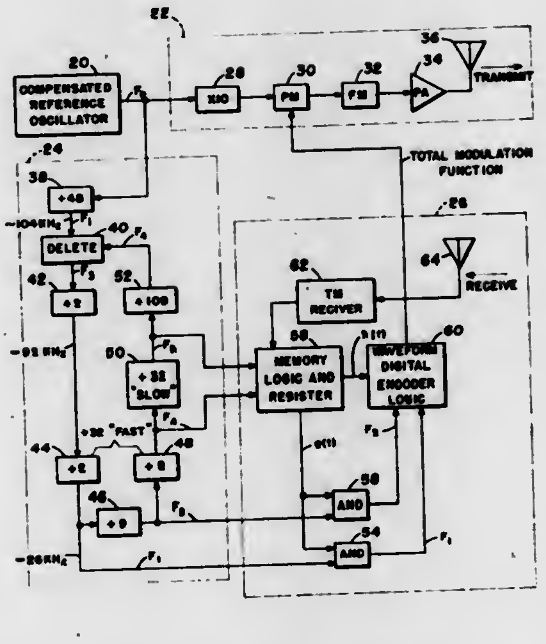
3,728,485
TIME-MULTIPLEXED TIME REFERENCE DISSEMINATION SYSTEM

Eugene F. Osborne, Westminster; Lauren J. Rueger, Silver Spring, and Otis E. Gooding, Laurel, all of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 9, 1971, Ser. No. 161,032

Int. Cl. H04b *1/04*

U.S. Cl. 178—69.5 R **6 Claims**


COMPENSATED REFERENCE OSCILLATOR
TRANSMIT
TOTAL MODULATION FUNCTION
RECEIVE
TM RECEIVER
MEMORY LOGIC AND REGISTER
WAVEFORM DIGITAL ENCODER LOGIC
DELETE
AND
54

Signals produced by the Navy Navigation Satellite System enable a receiver of these signals to determine the precise time by decoding a certain portion of the transmitted signal. This portion is known as the beep word and represents a phase modulation pattern synchronized to Naval Observatory time. A method and apparatus is proposed to provide timing accuracy to within one-tenth of a microsecond by the addition of two modulation frequencies in the satellite's beep word that are coherent in time and frequency with the bit rate modulation on the RF carrier.

Since each Navy (Doppler) Navigation Satellite is radio "-visible" to every position on earth at least twice each day, and moves frequently at high latitudes, a truly global system is proposed for the dissemination and recovery of high accuracy timing references that are related to a single Primary Standard of Time. The principal radio signals are transmitted one-way from satellite to ground.

3,728,486
VOICEGRAM SERVICE

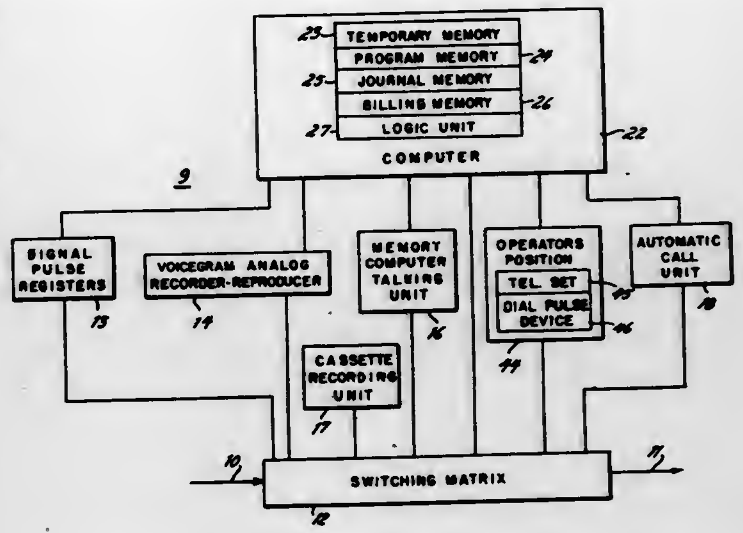
Constantine Raymond Kraus, 845 Mount Moro Road, Villanova, Pa.

Filed Aug. 26, 1971, Ser. No. 175,069

Int. Cl. H04m *11/00*

U.S. Cl. 179—2 R **33 Claims**

A voicegram service center for use with a telephone system, including recording as an analog signal at the service center, a voicegram of spoken words or data (datagram) received from a sending telephone subscriber's set, delivering to a preselected receiving telephone subscriber's set a reproduction voicegram in the sender's voice or reproduction data (datagram) as derived from the recorded analog signal at the service center, providing at the service center a cassette replica of the reproduction voicegram or data as delivered to the receiving set, and providing at the service center information pertaining to the identifying numbers of the respective sending and receiving sets, the originating time and date of the voicegram or data, the time length of the voicegram or data recording, the delivery time and date of the reproduction voicegram or data, the number of attempts required to make the reproduction voicegram or data delivery, the time length of the reproduction voicegram or data delivery, and the class of the voicegram or data for computing the charge of the voicegram or data to the sending set.



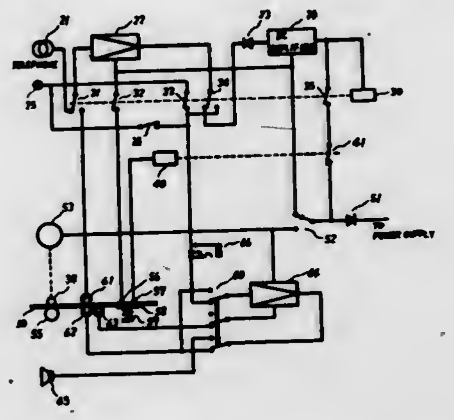
3,728,487
AUTOMATIC TELEPHONE RESPONDING AND RECORDING SYSTEM

Kiyoshi Hata, Kobe, Japan, assignor to Funai Electric Company, Limited, Osaka, Japan

Filed Nov. 9, 1970, Ser. No. 87,746

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R **3 Claims**

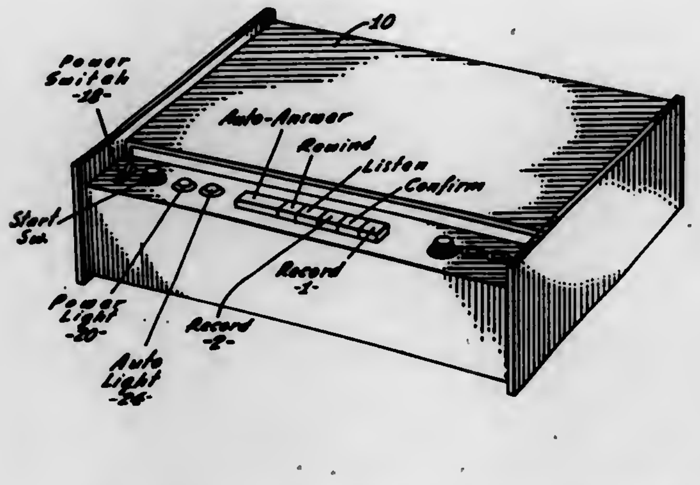


A recording and reproducing system utilizing a magnetic tape having at least two individual recording tracks with magnetic heads associated with each of said tracks, a circuit responsive to the call signal of a telephone to activate the recording and reproducing systems so that a previously recorded message can be transmitted to the caller and at the same time the caller's message can be recorded.

3,728,488
TELEPHONE ANSWERING SYSTEM AND APPARATUS INCLUDING IMPROVED RING RESPONSIVE CIRCUITRY FOR SELECTIVELY CONNECTING AND ISOLATING THE SYSTEM FROM THE TELEPHONE LINE

Elmer C. Bonsky, Long Beach, and Lawrence A. Curtis, Huntington Beach, both of Calif., assignors to T.A.D. Avanti, Inc., Paramount, Calif.

Filed May 8, 1972, Ser. No. 250,888
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 R 3 Claims



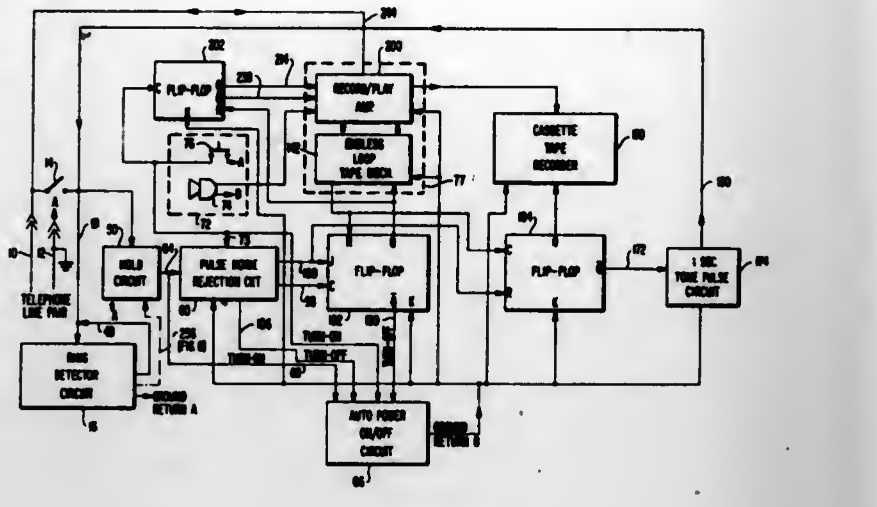
An improved telephone answering system and apparatus is provided which includes circuitry for sensing telephone rings, and which in response thereto seizes and holds the telephone line, and which in its standby state is fully isolated from the telephone line from a direct current standpoint. The system and apparatus of the invention responds to the ring signal to seize the telephone line, normally for a first time interval T_1 while an announcement is transmitted over the line to the calling party, and then for a time interval T_2 to permit the calling party to record his message. The system and apparatus responds to changes in voltage or current on the telephone line, indicating that the calling party has hung up, to return the system to its standby condition, in which it is again disconnected from the telephone line. The system and apparatus has an additional feature in the form of a timing circuit which automatically returns it to an off mode, isolated condition, in the event that the transition from T_1 to T_2 does not occur within the system within a certain time interval for any reason. This timing circuit assures that the unit will immediately be disconnected from the telephone line in the event of any malfunction within its circuitry.

3,728,489
TELEPHONE ANSWERING APPARATUS

Walter Gary Beacham, Norfolk, Va., assignor to BTI, Ltd., Norfolk, Va.

Filed May 23, 1972, Ser. No. 256,142
Int. Cl. H04n *1/64*
U.S. Cl. 179—6 R 22 Claims

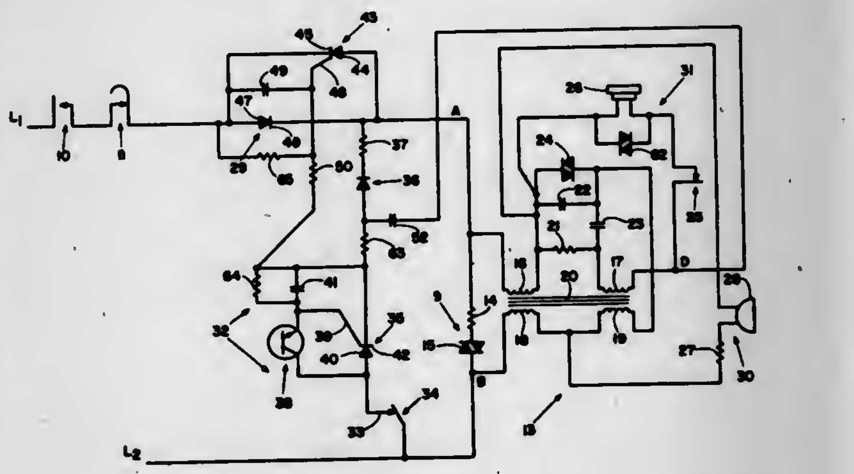
A telephone answering system with recording and playback modes. The system is coupled to a telephone line and is electrically independent of the telephone set with which it operates. The system is actuated by a ring signal on a telephone line and includes a circuit which is responsive to the ring signal to interrupt and seize the phone line for a short interval. Thereafter a hold circuit coupled to the line feeds its output to a pulse noise rejection circuit which determines if a true call is on the line and if so triggers a control circuit which causes a prerecorded message on a first tape recorder to be transmitted to the caller. Afterward, the system will couple any spoken message from the calling party to a second tape recorder in response to the prerecorded message. The recorded messages on the second tape recorder from the calling party then may be played back later at will.



3,728,490
POST PAY TELEPHONE PAYSTATION CIRCUIT

Jan Nowicki, Komoka, Ontario, Canada, assignor to Bell-Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Sept. 7, 1971, Ser. No. 178,052
Int. Cl. H04m *17/02*
U.S. Cl. 179—6.3 11 Claims



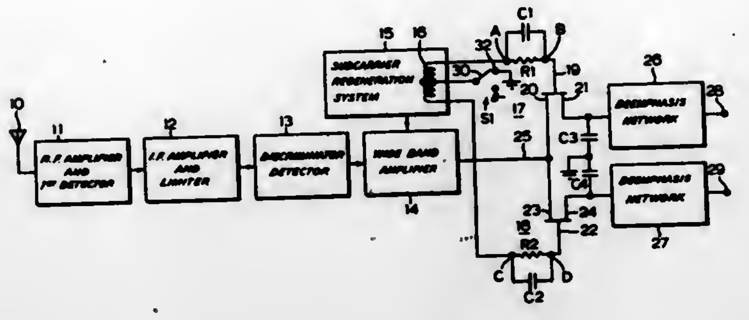
A telephone paystation which permits normal dialing to a called party without prior deposit of a coin. When the called party answers, the paystation transmitter circuit is completely disabled by transmitting reverse battery polarity from the central office to the telephone paystation. Normal operation is restored upon deposit of a coin by turning off a controlled rectifier which previously shunted the telephone line at the paystation.

3,728,491
STEREOPHONIC FM RECEIVERS HAVING DECODERS EMPLOYING FIELD EFFECT TRANSISTORS

Roland H. Fichtner, Waterloo, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed March 5, 1971, Ser. No. 121,373
Int. Cl. H04h *5/00*
U.S. Cl. 179—15 BT 10 Claims

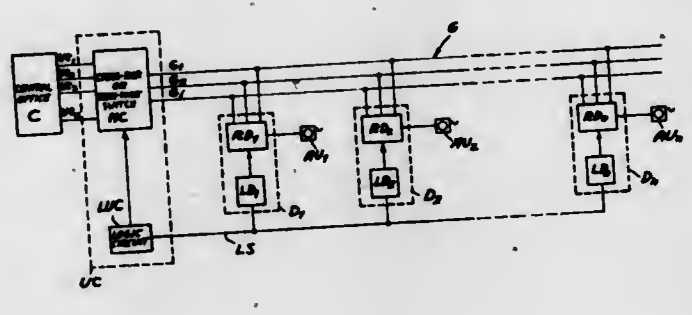
The conventional four diodes of a stereophonic decoder are replaced by two field effect transistors, the composite FM signal being applied to the input electrodes of the field effect transistors and the 38 kHz switching signal being applied to the gate electrodes thereof.



3,728,492
TRAFFIC CONCENTRATOR FOR TELECOMMUNICATION SYSTEM WITH TREE STRUCTURE

Ilio Cappetti; Flavio Melindo, and Giovanni Perucca, all of Turin, Italy, assignors to Centro Studi e Laboratori Telecomunicazioni S.P.A., Turin, Italy

Filed Sept. 10, 1970, Ser. No. 71,084
Claims priority, application Italy, Sept. 12, 1969, 53316 A/69
Int. Cl. H04j *3/12*
U.S. Cl. 179—18 FC 9 Claims

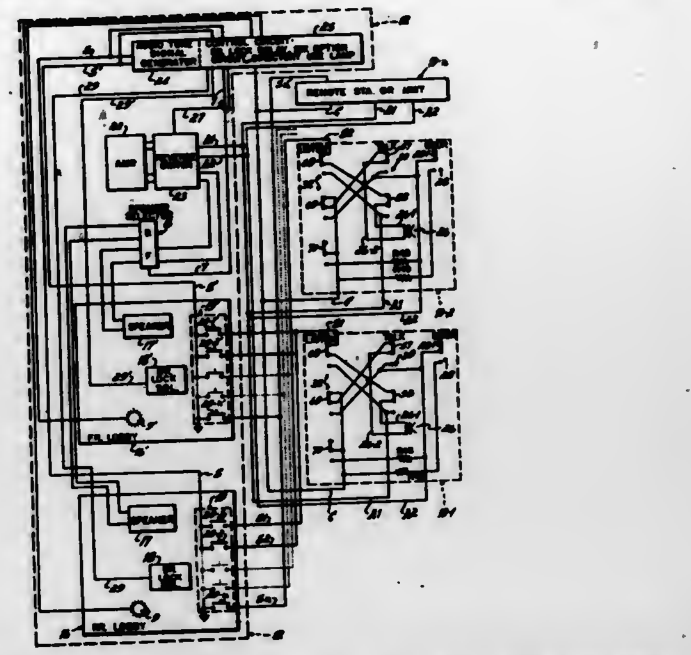


A telephone system with a plurality of subscriber lines branched off a common trunk line with a number of parallel channels less than the number of subscriber lines includes a single service line extending from a terminal station to all the subscriber stations for the exchange of call, switching and disconnect signals. Each subscriber station is allotted a time slot in a scanning cycle established at the central office by a master clock and characterized by a relatively wide starting pulse followed by a series of relatively narrow address pulses each initiating a signaling interval assigned to a respective subscriber. A timer at a subscriber station, responding to the starting pulse, measures a delay period individual to that station at the end of which the assigned address pulse starts a slave clock conditioning the subscriber station for the transmission and reception of signals during specific phases of its time slot and for the seizure or release of a channel of the trunk line in response thereto.

3,728,493
INTERCOMMUNICATION SYSTEM

William B. Ter Veen, Cincinnati, Ohio, assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed March 4, 1971, Ser. No. 121,034
Int. Cl. H04m *9/08*
U.S. Cl. 179—37 3 Claims

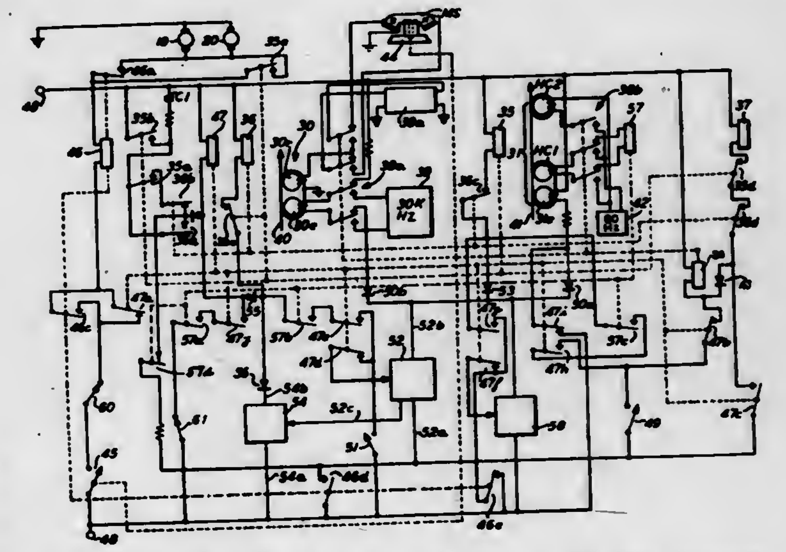


A two-way intercommunication system for selectively interconnecting a central station, such as an apartment or office lobby, with any one of a multiplicity of remote units, such as individual apartments or offices of a multi-unit building.

3,728,494
SIGNAL CONTROL SYSTEM FOR ENDLESS TAPE RECORDER

Richard Kohler, CH 6300 Zug, Switzerland, and William F. Fagan, Rochelle Park, N.J., assignors to McGraw-Hill Company, Elgin, Ill.

Filed Nov. 15, 1971, Ser. No. 198,874
Int. Cl. G11b *15/02, 15/12*
U.S. Cl. 179—100.2 S 17 Claims

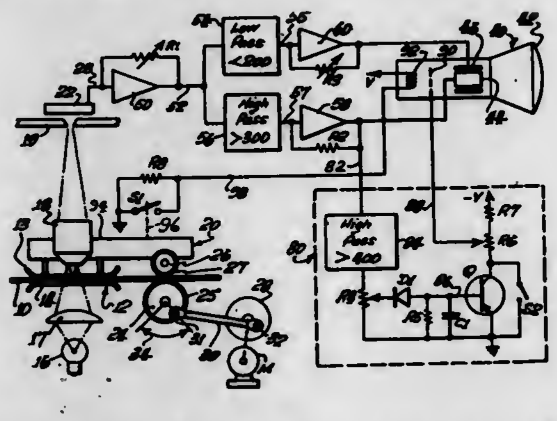


A dictating machine using an endless magnetic tape records a control signal alongside the audio track only during the recording of dictation, and forms an erased section in advance of the last recording when a playback control is depressed to listen back to a portion of the recording and when the operator hangs up the microphone denoting the end of his use of the machine. A control signal detector allows the operator to rewind only to the beginning of his dictation assuring privacy to each user, and shifts the machine automatically into recording when he advances the tape to the prior position of farthest advance. Fast rewind and/or fast forward drive of the tape are possible only when the machine is in playback or when the operator hangs up the microphone. Either loss of control signal or release of a manual playback control stops the rewind and starts a normal advance of the machine in playback condition, which then continues until the forward mark — i.e., erased section — is reached. However, if the user presses the manual record control during playback the tape is moved fast forward until the forward mark is reached and the machine is then shifted automatically into normal record condition. Various safety controls and timing circuits assure a well-nigh automatic and error-free use of the machine.

3,728,495
METHOD AND APPARATUS FOR CONTROLLING DISTORTION IN PHOTOGRAPHIC SOUND RECORDS

Petro Vlahos, Tarzana, Calif., assignor to The Association of Motion Picture and Television Producers Inc., Hollywood, Calif.

Filed Sept. 2, 1971, Ser. No. 177,323
Int. Cl. G11b *27/36*
U.S. Cl. 179—100.3 P **9 Claims**

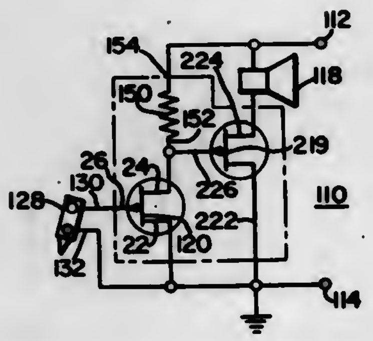


Correct exposure of photographic sound records for motion pictures and the like is insured by processing as part of each record a conventional test signal, scanning the completed test signal record, and producing a cathode ray tube display that shows both the magnitude and the direction of the change in printing exposure that is required to correct any distortion. The test signal typically comprises a high frequency tone that is amplitude modulated at a low frequency. The test record is preferably scanned by oscillating it back and forth, typically by hand, approximating one-tenth normal speed. An effectively continuous signal output is thereby obtainable from only 1 or 2 inches of record. High and low frequency components, corresponding to the test tone and the modulation frequency, are isolated from the scanner output and are applied after suitable respective amplification to the *x* and *y* deflection circuits of the cathode ray tube. The tube is preferably blanked under control of the high frequency component to eliminate spurious signals during turnaround of the oscillating film.

3,728,496
THIN FILM TRANSISTOR PHONOGRAPH AMPLIFIER

Derrick J. Page, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 5, 1970, Ser. No. 34,843
Int. Cl. G11b *3/00;* **H03f** *1/08, 3/16*
U.S. Cl. 179—100.4 A **5 Claims**



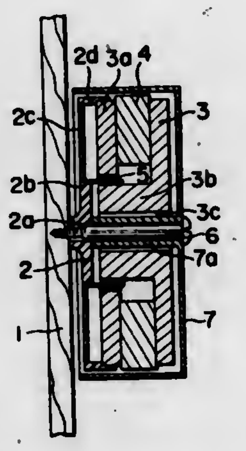
This disclosure relates to an electrical circuit for conducting a signal from a high impedance ceramic pick-up cartridge, as is used in a phonograph, to a thin film field effect transistor and then to a speaker via a matching transformer.

If desired, two thin film field effect transistors may be used and the signal fed directly to a speaker without employing a matching transformer.

3,728,497
DYNAMIC LOUDSPEAKER USING WALL AS DIAPHRAGM

Akira Komatsu, 2382 Oizumigakuen-cho, Tokyo, Japan

Filed June 28, 1971, Ser. No. 157,395
Claims priority, application Japan, July 6, 1970, 45/67265
Int. Cl. H04r *9/04*
U.S. Cl. 179—181 W **3 Claims**

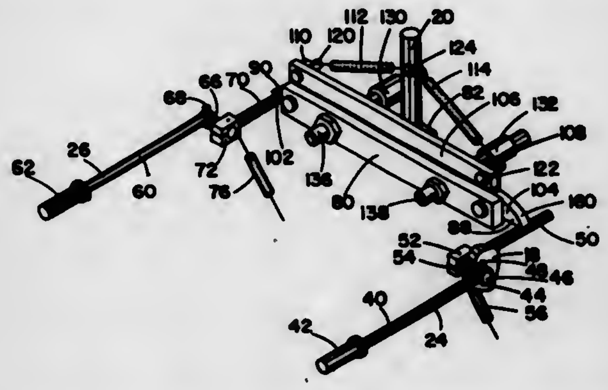


A hollow pillar portion is connected to the damper or casing of a transducer to mount the transducer onto a support on board member by a screw which passes through the hollow pillar portion. The hollow pillar portion enables both the low and high frequency characteristics to be maintained and enables the transducer to be affixed to the board member without rotation of the transducer.

3,728,498
SIMULTANEOUS DUAL HAND LEVER CONTROL

Ali R. Aslanbayrak, and Ovid W. Woods, both of Columbus, Ohio, assignors to Abex Corporation, New York, N.Y.

Filed Aug. 9, 1971, Ser. No. 169,893
Int. Cl. F16p *3/22*
U.S. Cl. 192—131 R **10 Claims**

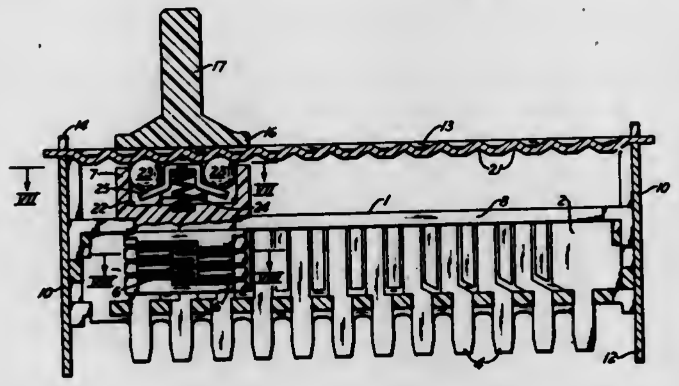


A dual hand lever control for actuating the shipper rod which controls a hydraulic press valve in response to the simultaneous depression of both hand levers. A cross bar, centrally attached to the lower end of the shipper rod, carries a pivotally mounted, bell-crank at each of its opposite ends. Each of these bell cranks is movable with the shipper rod and also is pivotable along a secondary path to permit movement of one of its bell-crank arms into and away from an intermediate position in the path of movement of its cooperating hand lever. A linking bar is pivotally connected at each of its ends to the other bell-crank arm of each bell crank. Actuation of a single control lever exerts a force on its bell crank to pivot the bell crank along its secondary path without moving the shipper rod and, through the linking bar, to withdraw the other bell crank from the path of movement of the hand lever. When both hand levers are operated, these forces are exerted on both bell cranks but are cancelled by the linking bar to permit actuation of the shipper rod.

3,728,499
ADJUSTABLE ELECTRICAL CONTROL DEVICE WITH LONGITUDINAL INDEXING FOR SLIDE SWITCH

Mogens W. Bang, Ridgway, and Richard P. Kronenwetter, St. Marys, both of Pa., assignors to Stackpole Carbon Company, St. Marys, Pa.

Filed Dec. 14, 1971, Ser. No. 207,902
Int. Cl. H01h *15/00, 1/42*
U.S. Cl. 200—16 F **8 Claims**

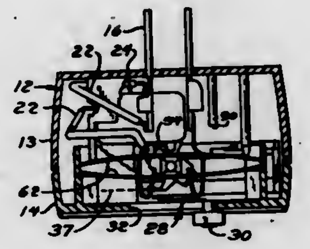


One wall, such as the upper wall, of an elongated case of an adjustable electrical control device is provided with a slot extending lengthwise of the case. Disposed in the case lengthwise thereof is a pair of laterally spaced electrical elements engaged by electric contact means carried by a slide extending through the slot. A bar above the case extends lengthwise of it and is provided with longitudinally spaced recesses. The slide is moved along the case by an actuator connected to it, and either the slide or the actuator carries spring-pressed means normally projecting into one of the bar recesses, whereby the slide and actuator can be indexed along the bar.

3,728,500
ADJUSTABLE ON-OFF TIMER WITH IMPROVED MANUAL CONTROL MEANS

Leslie G. Ingram, Southern Pines, N.C., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 7, 1972, Ser. No. 216,176
Int. Cl. H01h *43/10, 7/08*
U.S. Cl. 200—38 FB **3 Claims**



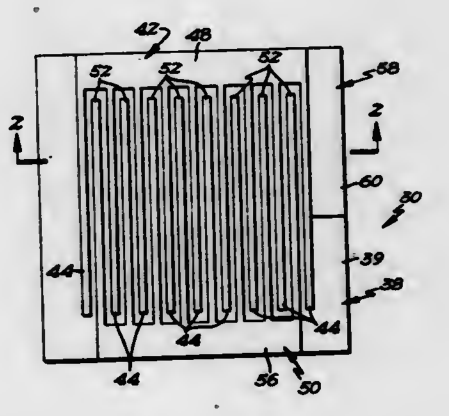
An one-off timer having a time drive dial and on and off members adjustably carried thereon, a switch controlling output power from the timer, a switch operator, trip members between the dial members and switch effective to actuate the switch responsive to movement of the dial members, and a manual selector control element for shifting and/or holding the switch in the power off or on conditions and/or allowing automatic on-off cycling of the timer.

An on-off timer in essence provides for adjustably programmed on and off power outputs over some definite period, such as over a 24-hour period. Such automatically controlled power outputs during each of these time periods can be used for the operation of lights, appliances, etc., and the consumer has rapidly accepted such a timer. When it is desired to discontinue the automatic repeating cycle, there typically is provided a manual control to shift to the constant power "on" or power "off" condition.

3,728,501
TOUCH SENSITIVE ELECTRONIC SWITCH

Willis A. Larson, Wayzata, and Stephen R. Tell, Bloomington, both of Minn., assignors to Magic Dot, Inc., Minneapolis, Minn.

Filed March 16, 1972, Ser. No. 235,373
Int. Cl. H01h *35/00*
U.S. Cl. 200—52 **4 Claims**



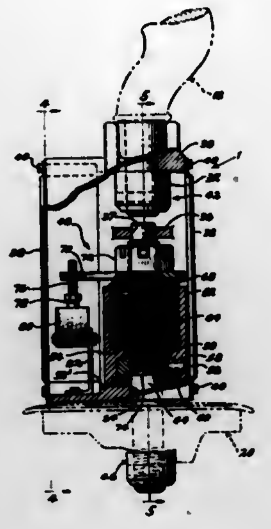
A touch sensitive electronic switch which has no moving parts and is actuated by the skin resistance of an operator causing a lowering of D.C. resistance across the face of the switch is disclosed. The electronic switch, in the preferred embodiment shown, includes three electrodes spaced and arranged with respect to each other upon an insulator. The second electrode is laterally spaced and insulated from the first electrode and arranged around and about the first electrode with the level of the top surface of the second electrode rising above the level of the top surface of the first electrode. The third electrode is laterally spaced and insulated from one electrode and vertically spaced from the other electrode to provide a conductive electrical shielding electrode between the first and second electrodes. The first and second electrodes are exposed to the finger of an operator upon the top surface of the insulator in a manner that the operator's finger bridging between the fist and second electrodes allows a direct current path to be set up laterally between the first electrode and the second electrode to thereby provide an activation of the switch through a lowering of the D.C. resistance across the face of the switch. When the operator's finger is removed, the shielding effect of the third electrode prevents any leakage currents from flowing between the first electrode and the second electrode and establishing such a direct current path.

3,728,502
ELECTRIC HOIST OVERLOAD PROTECTION DEVICE

Harold V. Hawkins; Ralph A. Dick, both of Williamsville, and Allan E. Eldridge, Tonawanda, all of N.Y., assignors to Columbus McKinnon Corp., Tonawanda, N.Y.

Filed Sept. 24, 1971, Ser. No. 183,430
Int. Cl. H04h *3/14*
U.S. Cl. 200—85 R **12 Claims**

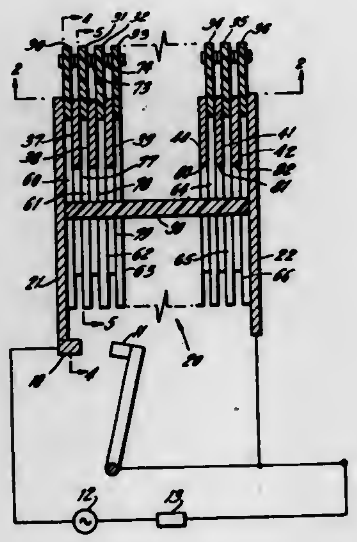
A hoist overload prevention device featuring a pair of spring devices deformable under relatively low and relatively high loading conditions, and a snap action switch arranged to be "reset" and "cut out" during such low and high loading conditions, respectively, whereby an electric circuit for controlling lifting operation of the hoist is "cut out" upon the occurrence of an overload condition and subsequently "reset" only after substantially all loading is removed from the hoist.



3,728,503
SHOCK-PROOF ARC CHUTE FOR HIGH VOLTAGE CIRCUIT BREAKER WITH METALLIC ARC PLATES HAVING OFF-SET LINES OF OPENINGS

Challiss I. Clausing, Marlton, N.J., and Frank J. Pokorny, Hatboro, Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Jan. 22, 1971, Ser. No. 108,872
Int. Cl. H01h *33/08*
U.S. Cl. 200—144 R **12 Claims**

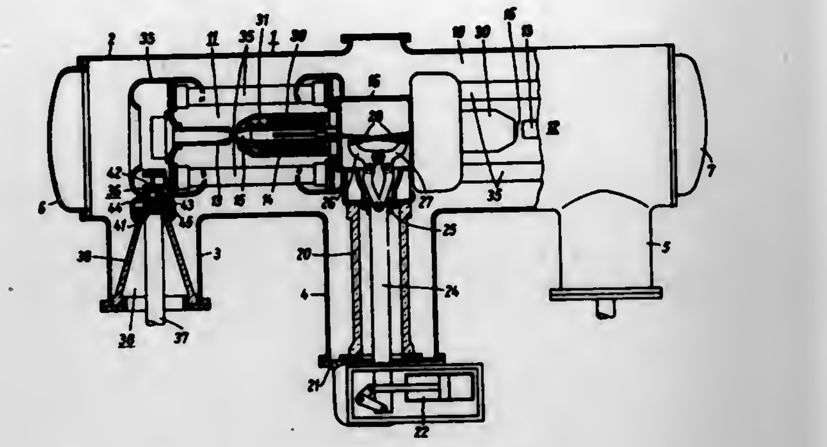


An arc chute is provided for use in high voltage circuits which uses a plurality of spaced metallic plates spaced by fiber spacers. The fiber spacer plates have alternately displaced, laterally extending slots, which extend above the tops of the metallic plates, to define a sinuous chamber above the top of the metal plates which encourages arc product turbulence between spaced metal plates and above the top of the metal plates. Each metal plate has a longitudinally extending series of spaced holes displaced from the center of the plate, with the series of holes of adjacent plates being alternately laterally displaced.

3,728,504
HIGH VOLTAGE CIRCUIT BREAKER

Helmut Beier, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 4, 1972, Ser. No. 223,637
Claims priority, application Germany, Feb. 17, 1971, P 21 08 265.5
Int. Cl. H01h *33/16*
U.S. Cl. 200—144 AP **7 Claims**

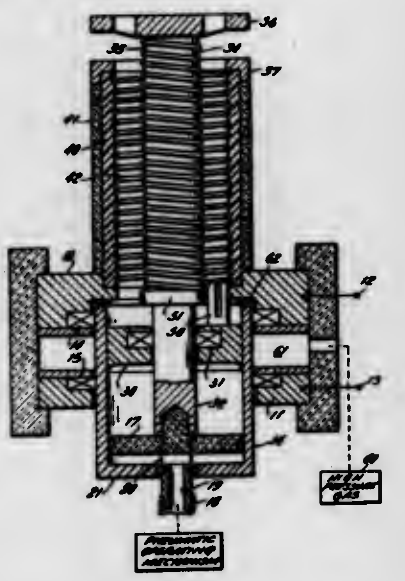


The invention proposes a high voltage circuit breaker, which contains a switching arrangement in a metal housing, which in the past included structural support for the switching arrangement in the housing. The present proposal does away with the structural support by including impedance elements into the housing which have sufficient rigidity so as to act as a mechanical support and thus obviate the use of other structural elements.

3,728,505
RESISTOR AND MEANS FOR GRADUALLY INSERTING RESISTOR IN PARALLEL WITH INTERRUPTER CONTACTS

Lorne D. McConnell, Radnor, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed July 26, 1971, Ser. No. 165,508
Int. Cl. H01h *33/16*
U.S. Cl. 200—144 AP **6 Claims**

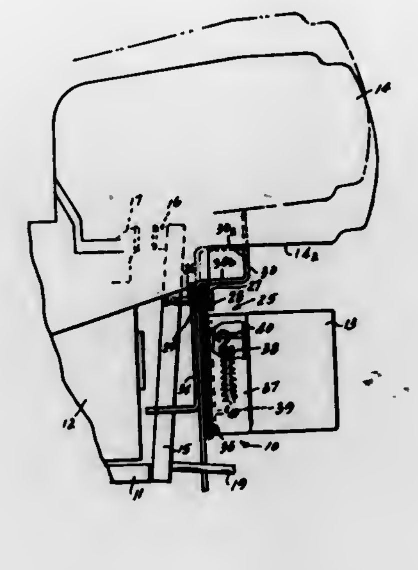


An opening resistor for a circuit interrupter consists of first and second concentric helically wound resistor sections normally spaced from one another, and are respectively connected to the cooperating contacts of a circuit interrupter. When the contacts open, an initial arc is transferred by a blast of gas to extend across the ends of the resistor sections. This gas blast and the magnetic field of the arc current exert a force on the arc causing the arc roots to rotate on the helical resistor sections so that the arc moves toward the other end of the helical resistor windings, thereby to insert increasing resistance in parallel with the contacts, and arc, in a non-step fashion.

3,728,506
CONTACTOR WITH A REMOVABLE ARC CHUTE

Arthur C. Hechler, Park Ridge, and George J. Taylor, Northbrook, both of Ill., assignors to Mercor Corporation, Franklin Park, Ill.

Filed Oct. 21, 1971, Ser. No. 191,529
Int. Cl. H01h *33/46*
U.S. Cl. 200—144 R **11 Claims**



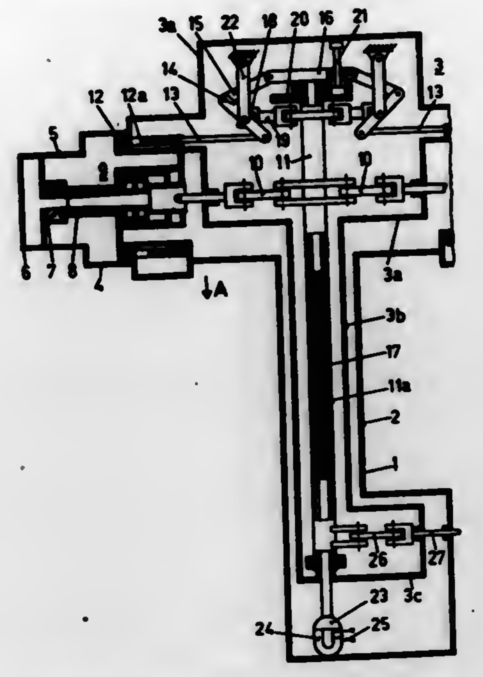
A contactor with a removable arc chute having a clapper plate carrying a movable contact to make and break contact with a fixed contact in accordance with a contact signal applied to an actuator characterized by a latch or safety mechanism for preventing movement of the clapper plate to a position to make contact when the arc chute is removed or displaced from the predetermined position with respect to the contacts. Preferably the latch mechanism also prevents breaking of contact should the arc chute be dislodged. The safety or latch mechanism comprises a pin attached to the clapper plate and having an end surface forming one abutment surface and a second abutment surface formed by a groove in the pin which abutment surfaces coact with edges of a keyhole slot of a slideable plate member carried on the housing of the switch assembly. The plate member with the keyhole slot is movable from a locking position for engaging either the end of the pin or the groove thereof to an unlocking position in which the pin can pass through the wide portion of the keyhole slot. When the arc chute is on the housing in the predetermined position, the chute will hold the sliding plate in the second position enabling free movement of the clapper plate in response to the actuator.

3,728,507
PRESSURE-GAS ACTUATED ELECTRICAL CIRCUIT BREAKER

Dieter Floessel, Fislisbach, and Henri Clerc, Zurich, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed March 27, 1972, Ser. No. 236,117
Claims priority, application Switzerland, April 2, 1971, 4816/71
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 D **4 Claims**

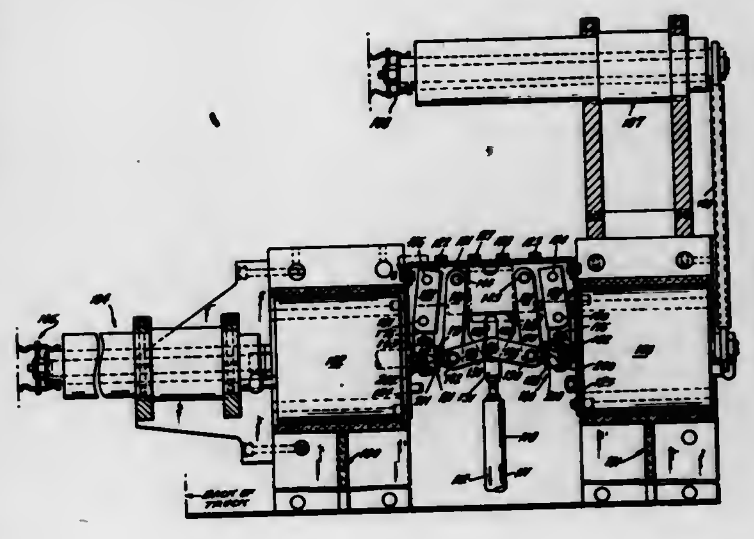
An electrical switch of the gas blast type in which the contacts and a reversible drive mechanism therefor are admitted with pressurized gas controlled through a blast valve. A control rod extending upwardly through a columnar support mounting a storage chamber for the pressurized gas, an arc extinguishing chamber within which the contacts are closed, the blast valve and drive mechanism, is coupled to the blast valve through a system of levers and other mechanism such that when the control rod is released for upward movement, the blast valve moves automatically to its open position, the contacts are actuated to a first limit position, either closed or open, by the drive mechanism which is then reset for movement in the opposite direction, the blast valve is re-closed in readiness for the next actuation of the contacts to the other limit position, and the control rod is returned downward to its starting position.



3,728,508
OPERATING MECHANISM FOR VACUUM CIRCUIT BREAKER INCLUDING CONTACT PRESSURE SPRINGS

Philip C. Netzel, Milmont Park, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Oct. 26, 1971, Ser. No. 192,029
Int. Cl. H01h *3/00*
U.S. Cl. 200—153 V **6 Claims**



A circuit breaker contains a pair of series-connected vacuum interrupter units which are coaxial with one another and spaced from one another. An operating mechanism is disposed between the vacuum interrupters, and is operated by an operating linkage moving along a line perpendicular to the axes of the vacuum interrupters. The operating linkage includes a toggle-type mechanism between the bottles which is expanded and contracted by the movement of the operating rod in order to operate the vacuum interrupter contacts simultaneously. A pair of conductive links used to connect the interrupters in series are used as parallelogram links for the operating toggle mechanism links. Contact loading springs are placed mechanically between the ends of the toggle links and the vacuum interrupter bottles. The contact spring forces are adjustable by the use of shims between the preloading springs and their spring carriers.

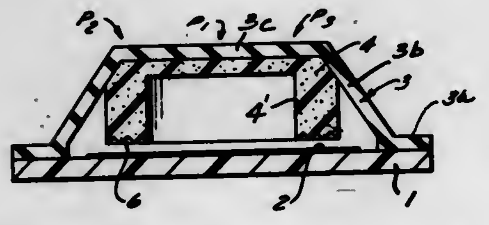
3,728,509
PUSH-BUTTON SWITCH WITH RESILIENT CONDUCTIVE CONTACT MEMBER WITH DOWNWARDLY PROJECTING RIDGES
Takemi Shimojo, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1971, Ser. No. 172,637

Claims priority, application Japan, Sept. 26, 1970, 45/95868; Sept. 26, 1970, 45/95869; Oct. 12, 1970, 45/101247

Int. Cl. H01h *13/52, 1/04, 1/06*

U.S. Cl. 200—159 B **12 Claims**



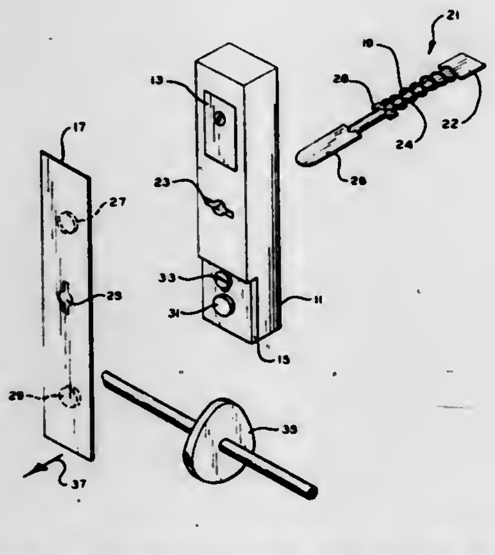
A push-button switch comprises a substrate on which two conductive networks are formed, those networks comprising adjacent but separated conductive paths, a push-button member with a contact member thereon being mounted on the substrate with the contact member normally above and in registration with the separated conductive paths. The contract member is formed of elastic and electrically conductive material and is adapted when it is pushed down via the push-button member to engage the substrate, and hence the separated conductive paths, over an appreciable area, thereby ensuring effective switch operation.

3,728,510
ELECTRICAL CONTACT RETAINING DEVICE
Richard M. Wallace, Kirkwood, and Michael D. Snyder, Chenango Bridge, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed July 14, 1972, Ser. No. 271,801

Int. Cl. H01h *1/50*

U.S. Cl. 200—166 BC **5 Claims**



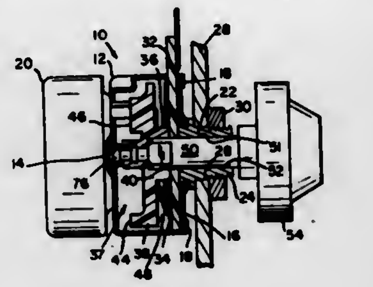
A switch having contacts which may be inspected, cleaned and replaced without the danger of removing and losing small hardware items. The switch contact arm is held in place by a spring loaded key keeper with the arm and switch block each keyed 90° apart. Rotation of the keeper to remove the arm orients it so that it will not slip through the block and become lost.

3,728,511
CONTROL WITH ROTOR AND SHAFT ASSEMBLY
Lee R. George, and Edgar F. Hauenstine, both of Frankfort, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Jan. 31, 1972, Ser. No. 222,057

Int. Cl. H01h *3/08*

U.S. Cl. 200—168 B **10 Claims**



A control having a rotor and shaft assembly anchored together to prevent axial separation and relative rotation between the shaft and the rotor.

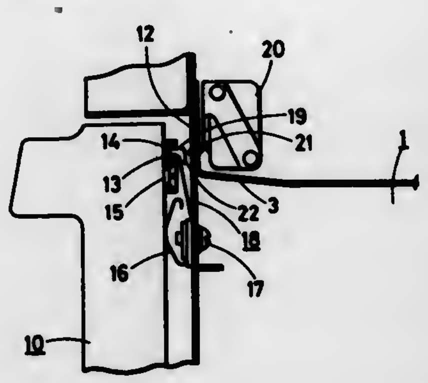
3,728,512
HIGH FREQUENCY HEATING APPARATUS
Yoshiaki Shirakami, Otsu, Japan, assignor to Sanyo Electric Co., Ltd., Osaka-fu, Japan

Filed March 1, 1971, Ser. No. 122,631

Claims priority, application Japan, Oct. 23, 1970, 45/93735

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **5 Claims**



In a high frequency heating apparatus including a cubiform cavity or oven of conductive material having an opening, a supply source for supplying high frequency energy into the cavity and a door for providing access to the cavity mounted so as to close the opening; a periphery of the door has a sash with a groove thereon extending along the periphery and a periphery surrounding the opening of the cavity has a sensing member with a protrusion for fitting in the groove when the door is closed.

The sensing member is urged away from the peripherel surface of the cavity by virtue of a spring and when the door is closed the protrusion of the member is fitted in the groove. However, if a door is inadvertently closed with an obstacle such as a dish-cloth sandwiched between both peripheries of the door and cavity, the obstacle depresses the protrusion and the sensing member is forced toward the peripheral surface of the cavity.

A safety switch is provided in engagement with the sensing member for turning off the supply source in response to the depression of the member caused by the obstacle. Therefore, leakage of the high frequency energy caused by the sandwiched obstacle is prevented.

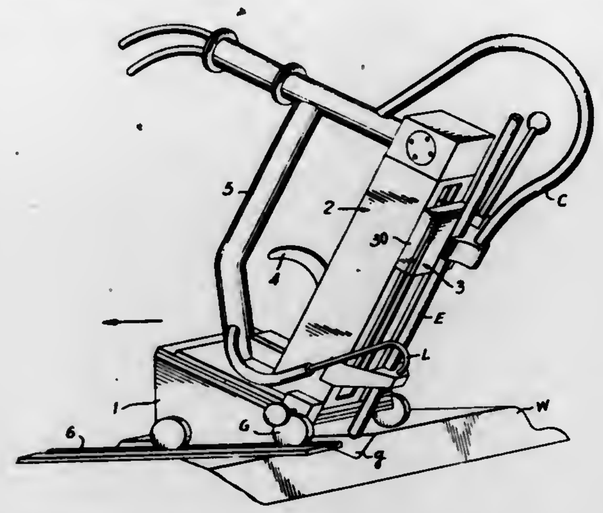
3,728,513
ELECTRIC ARC CUTTING APPARATUS
Paul Jean Raymond Charrier, Equeurdreville, and Gilbert Georges Costedoat, La Montagne, both of France, assignors to Etat Francais represents Bar le Ministre charge de la Defense National Delegation Ministerielle Pour l Armement, Paris, France

Filed May 20, 1971, Ser. No. 145,181

Claims priority, application France, May 21, 1970, 7018471

Int. Cl. B23p *1/08, 1/14*

U.S. Cl. 219—70 **9 Claims**



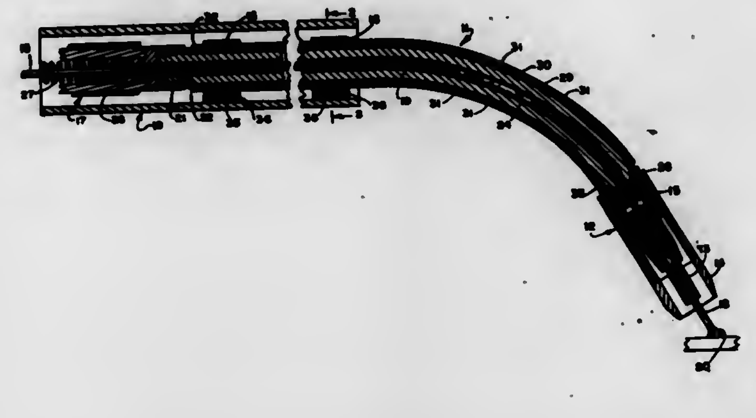
An electric arc cutting apparatus comprises a carriage having wheels, one of which is guided in a rail so that the carriage can travel along a given path with respect to a workpiece. The wheel in the rail is adjustable on the carriage in a direction perpendicular to the rail. A frame is fixed on the carriage and carries a slidable holder for an electrode. A trigger is connected to the holder via a wire passing on pulleys, and by displacing the trigger, the holder and electrode secured thereto are conjointly displaced. One of the pulleys is spring-loaded to return the holder and electrode to an initial inoperative position when the trigger is released.

3,728,514
THERMIONIC INSULATED ARC WELDING GUN
Arthur A. Bernard, Beecher, and Richard A. Bernard, Flossmoor, both of Ill., assignors to Bernard Welding Equipment Company, Beecher, Ill.

Division of Ser. No. 818,954, April 24, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,518

Int. Cl. B23k *9/00*

U.S. Cl. 219—130 **4 Claims**



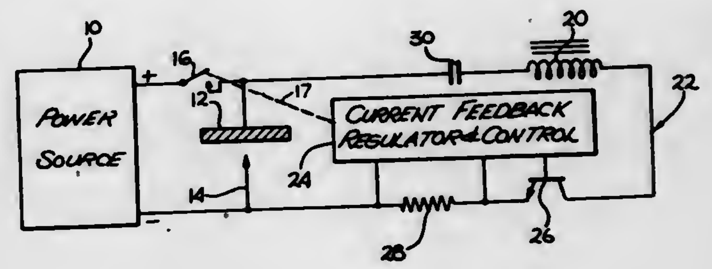
Improved means of insulating that portion of an air cooled arc welding gun which extends between the handle portion and the head portion to prevent thermionic emission dense enough to establish the conductance of welding current between it and the weldment, improved means for enclosing the welding current circuit suspended within the handle of the gun within a tube composed of insulating material to reduce the amount of heat radiated from the circuit within the handle, and improved means for suspending a highly heated welding current circuit within the handle to provide space between the wall of the handle bore and the suspended heated circuit for the circulation of cooling air therethrough. Also disclosed is the method of making the improved structure.

3,728,515
ARC WELDING APPARATUS
Mindaugas E. Gedgaudas, Valencia, Calif., assignor to Astro-Arc Co., Sun Valley, Calif.

Filed Sept. 25, 1970, Ser. No. 75,540

Int. Cl. B23k *9/10*

U.S. Cl. 219—131 R **3 Claims**



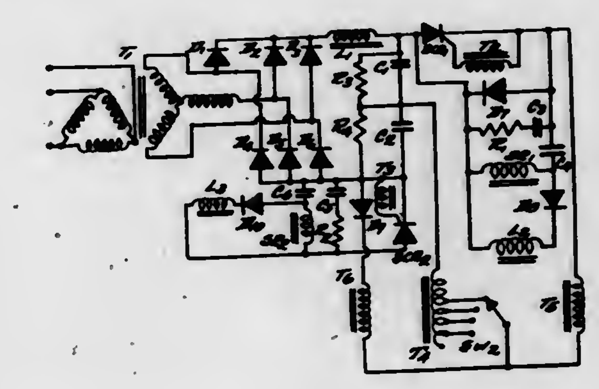
Herein described is electronic circuitry used in an arc welding apparatus which provides continuous melting and etching action for the duration of a weld. This is achieved by providing a polarity reversing circuit comprising an electric current storage medium such as an inductor and a current limiter attached across the welding arc electrode and the workpiece. The current limiter allows a certain amount of current to be drawn from the welding power supply to induce electromagnetic energy into the inductor. The current flowing into the inductor and the current limiter bypasses the welding arc and establishes a magnetic field in the inductor. At the termination of the current from the power supply to the electrode, the current induced in the inductor by its collapsing magnetic field flows through the current limiter and through the electrode in a reverse direction, thus causing periodic polarity reversal at the electrode to perform the etching cycle.

3,728,516
WELDING POWER SOURCE
Alex D. Daspit, 3633 Fulton Street, N.W., Washington, D.C.

Filed Oct. 16, 1970, Ser. No. 81,426

Int. Cl. B23k *9/10*

U.S. Cl. 219—131 R **19 Claims**



A power source for a welding machine wherein, in one embodiment, both the arc voltage and current are sensed and the frequency of a pulse train, which is integrated to produce the arc signal, is varied in accordance with the sensed voltage and current. In one embodiment, a capacitor is periodically semi-discharged through a switching device, such as an SCR. The resulting voltage pulse train is integrated to produce the welding signal. In another embodiment, two capacitors are alternately semi-discharged through separate current paths which each include a switching device, such as an SCR, and a common primary winding of a transformer by shifting the SCR's from their conductive to non-conductive states and vice versa. The transformer has two secondary windings one of which provides a high voltage, low current output and the other of which provides a high current output. Both outputs are integrated and combined to produce the welding signal.

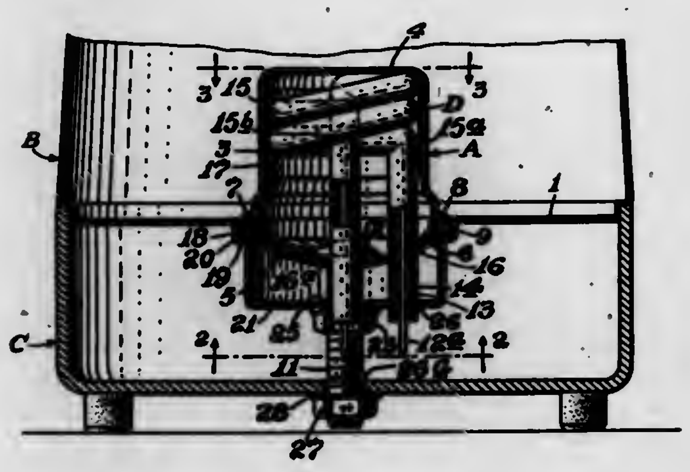
3,728,517
ELECTRIC HEATER AND MOUNTING THEREFOR

George E. Tilp, Short Hills, N.J., assignor to Adams Industries, Inc., Union, N.J.

Filed Aug. 26, 1971, Ser. No. 175,058

Int. Cl. H05b *1/00*

U.S. Cl. 219—316 **4 Claims**



A cup-shaped casing has a self-sustaining insulated wire coil therein whose ends project through holes in a cap plate which closes the open end of the casing and over whose edge is die-pressed the rim of the casing to secure the cap in the casing, and a bolt passes through a hole in said cap with its head abutting the inner side of the cap and with its shank and nut coacting with a retaining cup to clamp the wall of a container between the cup and a circumferential extension bead on the casing, thereby to mount the heater in the container.

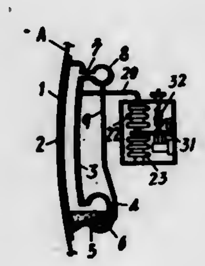
3,728,518
APPARATUS FOR HEAT TREATMENT OF SYNTHETIC YARN

Nobuhisa Kodaira, 7-1, 2-chome, Kamirenjaku, Mitaka-shi, Tokyo, Japan

Filed Sept. 15, 1971, Ser. No. 180,708

Int. Cl. H05b *1/02*

U.S. Cl. 219—326 **6 Claims**



In heat treatment apparatus for the treatment of synthetic yarns and the like, a plurality of heat-transfer jackets having replaceable heating plates thereon are connected to a common liquid heating chamber and a common header or condenser to form a closed heating system. The jacket and header are connected through a restricted orifice to provide a fluid-pressure resistance so that the heated liquid in the chamber when vaporized flows into the upper portion of the heating jacket, through the orifice and into the header where it condenses. The restricted orifice increases the velocity of the vapor flowing into the header preventing the condensation of the vapor at the upper portion of the jackets to thereby eliminate non-uniform temperature areas on the external surfaces of the heater plates. A pressure sensor is connected to at least one of the jackets and includes switching means to control a heating element to maintain a constant temperature and pressure.

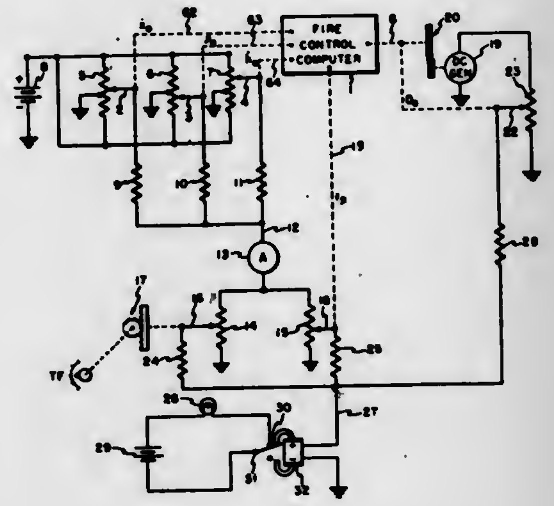
3,728,519
TIME-TO-FIRE COMPUTER

Peter M. Saint Germain, Montclair, N.J., and Joseph F. Nekola, Huntington Station, N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 6, 1956, Ser. No. 627,722

Int. Cl. G06g *7/80*; **F41g** *3/00*

U.S. Cl. 235—61.5 E **9 Claims**



1. In a gun fire control system for the interception of a target at a predetermined point in time prior to the time at which the target will arrive at the crossover point, apparatus comprising first means for generating a first signal proportional to target radial range, second means for generating a second signal proportional to target radial range rate, means coupled to said first and second means for multiplying said first and second signals and for producing a third signal having a first characteristic and having a value proportional to the product thereof, third means for generating a fourth signal proportional to the square of target absolute velocity, fourth means for generating a fifth signal proportional to the time of flight of a projectile to intercept said target, means coupled to said third and fourth means for multiplying said fourth and fifth signals to produce a sixth signal having a value proportional to the product thereof, multiplying means having two inputs one of which is adapted to receive said fourth signal and the other of which is adapted to receive a seventh signal, said seventh signal representing said predetermined time prior to the arrival of said target at said crossover point, said last means producing an eighth signal having a value proportional to the product of said fourth and seventh signals, means adapted to receive said sixth and eighth signals and operative to produce a ninth signal having a second characteristic and having a value proportional to the sum thereof, means for comparing the values of said third and ninth signals to produce a tenth signal having a value proportional to the difference therebetween and having the same characteristic as that one of said third and ninth signals having the greater value, and utilization means selectively responsive to a predetermined characteristic of said tenth signal, said tenth signal being applied to said utilization means.

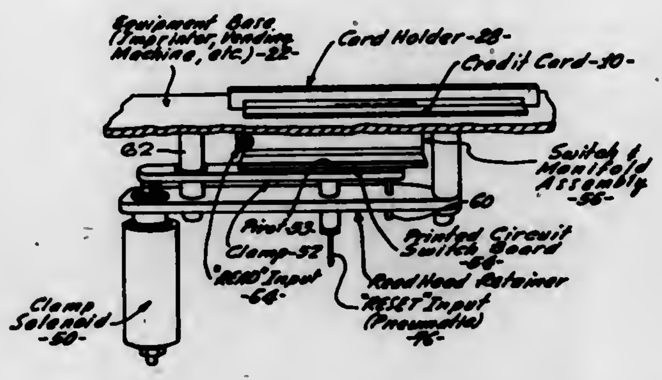
3,728,520
CREDIT CARD SENSING APPARATUS

Davies Allport, La Jolla, Calif., assignor to Cubic Corporation San Diego Calif.

Filed Nov. 10, 1971, Ser. No. 197,460

Int. Cl. G06k *7/02*; **H01h** *35/24*

U.S. Cl. 235—61.11 J **7 Claims**


Equipment Base (Imprinter, Vending Machine, etc.)-22-
Card Holder-28-
Credit Card-10-
62
Switch & Manifold Assembly -56-
60
Pivot-53
Clamp-52
"READ" Input -64-
Printed Circuit Switch Board -58-
Read Head Retainer
"RESET" Input (Pneumatic) -76-
Clamp Solenoid -50-

An improved sensing apparatus is provided for reading coded embossments on a credit card which represent the account number thereof, or other data. The apparatus is for use in a credit verification system. The sensing apparatus of the invention forms a component of the sales slip imprinter mechanism which is presently used in conjunction with credit card transactions, in order to provide a record of the transaction for billing purposes. The sensing apparatus of the invention includes a multiplicity of pneumatically actuated diaphragm switches which are operated in a pattern corresponding to the coded embossments on the credit card being sensed. The switches make selective electrical contact with a circuit board, and they cause binary coded decimal signals to be stored in a register which represent the account number of the card, or other relevant data, the signals being used in the system to verify the validity of the particular card; or for accounting purposes, or for storage of data for later use.

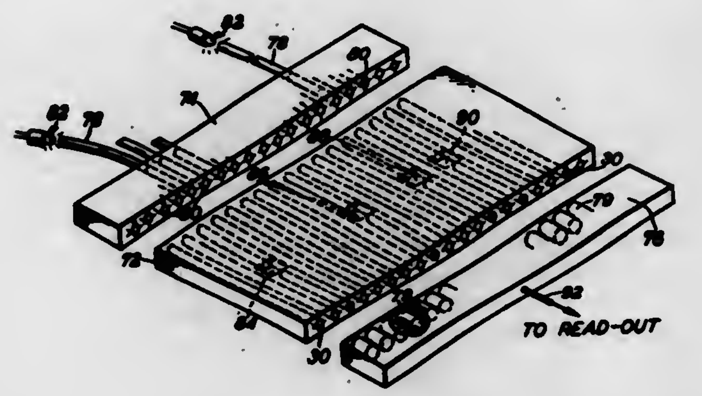
3,728,521
ENCODED CARD EMPLOYING FIBER OPTIC ELEMENTS

Howard C. Borough, Seattle, Wash., and Donald A. Pontarelli, Chicago, Ill., assignors to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.

Filed Sept. 29, 1970, Ser. No. 76,523

Int. Cl. G06b *5/16*; **G06k** *7/10, 19/06*

U.S. Cl. 235—61.12 N **8 Claims**



An encoded card having a layer of light-transmitting elements such as fibers extending between two edges, the fibers being individually capable of transmitting magnetic radiant energy, in the visible, ultraviolet or infrared spectral regions.

The ends of the energy-transmitting fibers along at least one edge of the card are irregularly arranged in a linear information-related pattern which is decoded into discrete information such as numbers, letters or words by transmitting electromagnetic radiation, such as visible or invisible light through the fibers and sensing and decoding the transmitted pattern. The card is encoded either by selectively placing the fibers; or by cutting, removing, or otherwise impairing the energy-transmitting ability of selected fibers.

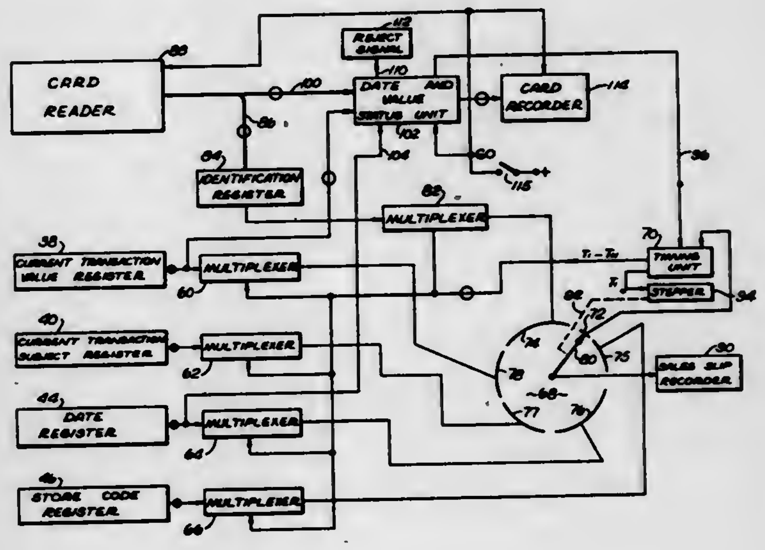
3,728,522
POINT-OF-SALE CREDIT TRANSACTION SYSTEM

Daniel Norwich, Beverly Hills, Calif., assignor to Telecredit, Inc., Los Angeles, Calif.

Filed Dec. 17, 1971, Ser. No. 209,264

Int. Cl. G05b *1/00*; **G06r** *5/00*

U.S. Cl. 235—61.7 B **3 Claims**



A credit transaction system is disclosed for use with cards (carrying machine-readable identification of the user) and sales records (bearing a recording medium). The system receives a card along with a blank sales record for processing an anticipated sale or other transaction. The value of the transaction, and identification of the subject thereof, the date, the location of the system, and so on are supplied to the system for the development of representative electrical signals. The signals representative of the transaction are processed to arrive at an approval or disapproval of the transaction and in that regard the card is updated. Additionally, if the transaction is approved, the system records data pertinent to the transaction on the sales record. As a consequence, point-of-sale information is captured in the form of source data and converted to a machine-readable form on the transaction record.

3,728,523
INFORMATION SYSTEM

Vilmos Torok, Vasteras, Sweden, assignor to Allmana Svenska Elektriska Aktiebolaget, Vasteras, Sweden

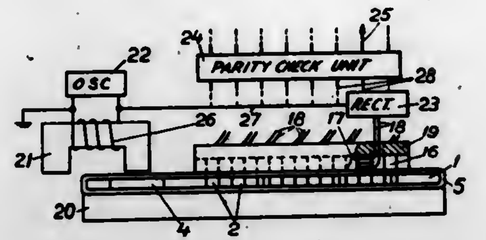
Filed Dec. 23, 1971, Ser. No. 211,248

Claims priority, application Sweden, Jan. 19, 1971, 565/71

Int. Cl. G06r *19/00, 7/08*

U.S. Cl. 235—61.11 H **3 Claims**

An information system includes an information carrier and a reading unit. The information carrier includes an inner and an outer layer, the outer layer constituting a protective casing surrounding the inner layer and hiding the information. The inner part is formed of at least one electrically conducting closed loop in which an electrical current is intended to be induced, this loop having a plurality of openings therein in the same plane. These openings are so positioned that at least two parallel current paths are produced partly in the loop. One of the current paths is decreased in its average area by at least one interruption so that the other current path will carry the main part of the current induced through the loops. A combination of these interruptions forms the information on the carrier. The reading units include an arrangement for detecting differences in the currents in said paths.



3,728,524

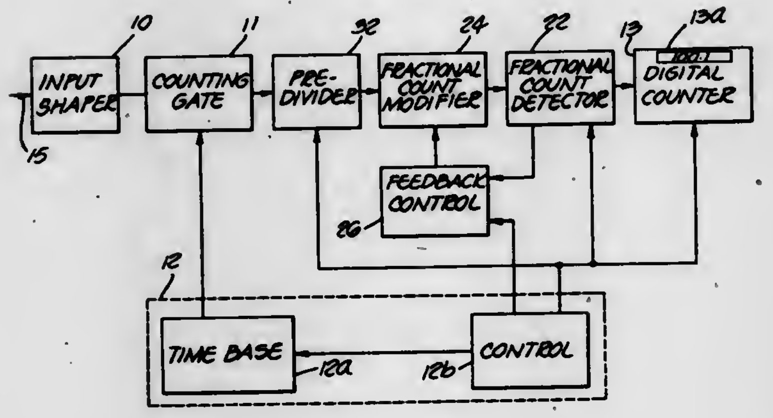
COUNTER ANTI-JITTER CIRCUIT

Norman E. Gray, La Habra, Calif., assignor to Newport Laboratories, Santa Ana, Calif.

Filed Nov. 18, 1971, Ser. No. 199,976

Int. Cl. H03k *21/34, 21/02*

U.S. Cl. 235—92 PL 16 Claims



A digital counter which incorporates a circuit to reduce or prevent jitter in output readings. During a time base signal, a fraction count circuit determines the fractional count of input signals. This fractional count information is combined with input signals prior to the time base signal by using a fractional count modifier circuit. The fractional count modifier circuit modifies the phase of the input signals prior to the start of the time base.

3,728,525

MAGNETIC NAVIGATION SYSTEM

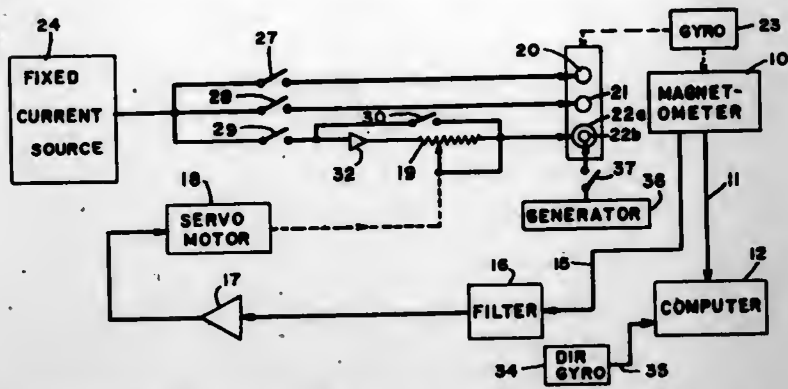
Chintamani K. Adkar, Pierrefonds, Canada, assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 19, 1971, Ser. No. 190,592

Int. Cl. G01c *21/08;* G01r *33/02;* G01v *3/14*

U.S. Cl. 235—150.271 10 Claims

A magnetometer mounted on a vehicle is used for sensing the earth's ambient magnetic field. Various magnetic fields in specified planes are generated and applied to the magnetometer in addition to the earth's field for obtaining fixed magnetic deviations in the specified planes. Various arithmetic operations to the measured values of the ambient and generated magnetic fields provide addition parameters that may be used for determining the geographic location of the vehicle.



3,728,526

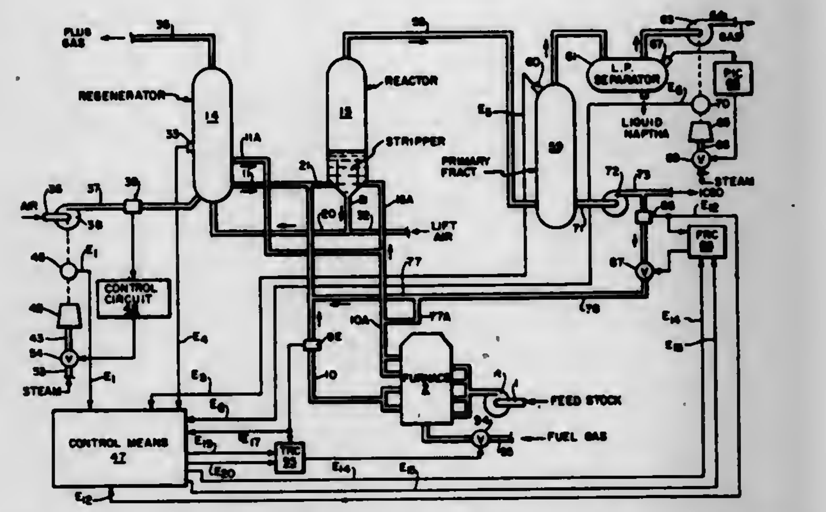
MEANS AND METHOD FOR CONTROLLING INDEPENDENT OPERATING PARAMETERS IN A PROCESS SYSTEM

Douglas J. Youngblood, Groves, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 8, 1971, Ser. No. 160,692

Int. Cl. G06f *15/46*

U.S. Cl. 235—151.1 14 Claims



A control system controls a process system for periodically changing the values of first and second independent operating parameters of the process by predetermined amounts when the system has determined that the increases will not cause any operating parameter of the process system to exceed a constraint value. Various variable operating parameters, including the first and second independent operating parameter, are sensed by sensors which provide corresponding signals. A pair of factors, related to resulting changes in the values of a dependent operating parameter due to changes in the independent operating parameters, is predetermined for each of the dependent operating parameters. Direct current voltages corresponding to the factors are multiplied by voltages corresponding to the predetermined changes in the independent operating parameters to provide outputs. Each output represents a resulting change in a different dependent operating parameter. Predicted signals for each dependent operating parameter are determined by summing an output with a signal from a corresponding sensor. The sensed values of the independent operating parameters are summed with the voltages corresponding to the predetermined increases to provide predicted value signals for the independent operating parameters. The predicted value of an operating parameter is compared with the operating parameter's constraint value. When the predicted values of the operating parameters associated with an independent operating parameter do not exceed the corresponding constraint values, the independent operating parameter is changed in value by the predetermined amount. When at least one predicted value of a dependent parameter associated with an independent operating parameter exceeds a corresponding constraint value, the independent operation parameter maintains its present value.

3,728,527

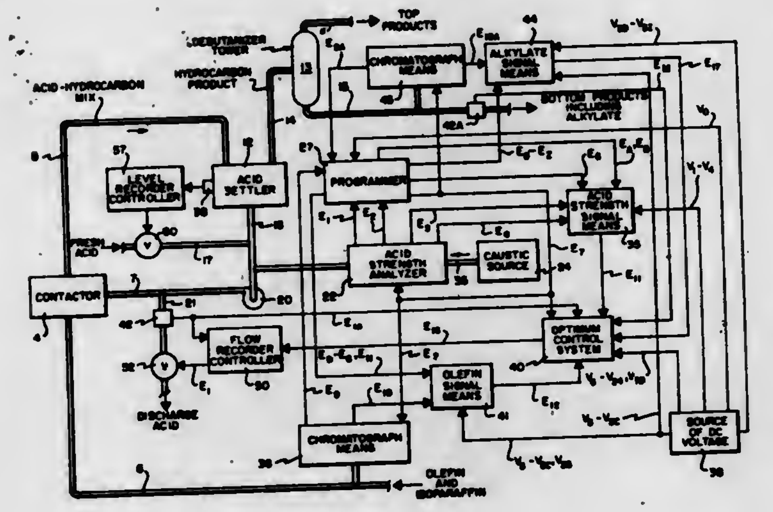
MEANS AND METHOD FOR ACHIEVING AN OPTIMUM ACID STRENGTH FOR AN ALKYLATION UNIT

Walter L. Hopkins, Houston; Donald E. Sweeney, Jr., Beaumont, and Herbert J. Pitman, Nederland, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Feb. 24, 1972, Ser. No. 228,826

Int. Cl. G06f *15/46;* C07c *3/52*

U.S. Cl. 235—151.12 14 Claims



A control system controls the acid strength of reaction acid in an alkylation unit reacting an olefin with an isoparaffin in the presence of the reaction acid to eventually produce an alkylate. The system senses the actual reaction acid strength, the discharge acid flow rate, the flow rate of discharge acid leaving the alkylation unit, the bottom products flow rate and the alkylate content of the bottoms product from a debutanizer tower and the propylene and butylene content of the olefin stream entering the alkylation unit. Using equations hereinafter disclosed, along with economic values associated with the acid and the alkylate, the control system periodically determines the optimum reaction acid strength. When the change in the reaction acid strength necessary to achieve the optimum reaction acid strength is less than a predetermined change, the necessary change is implemented. When the necessary change is greater than the predetermined change, the reaction acid strength is changed by an increment equal to the predetermined change. Where the reaction aicd strength is decreased to achieve an optimum reaction acid strength, a minimum limit is imposed on the reaction acid strength to prevent undesirable side reactions, such as olefin polymerization, from occurring.

3,728,528

CIRCULAR INTERPOLATION BY FINITE DIFFERENCES

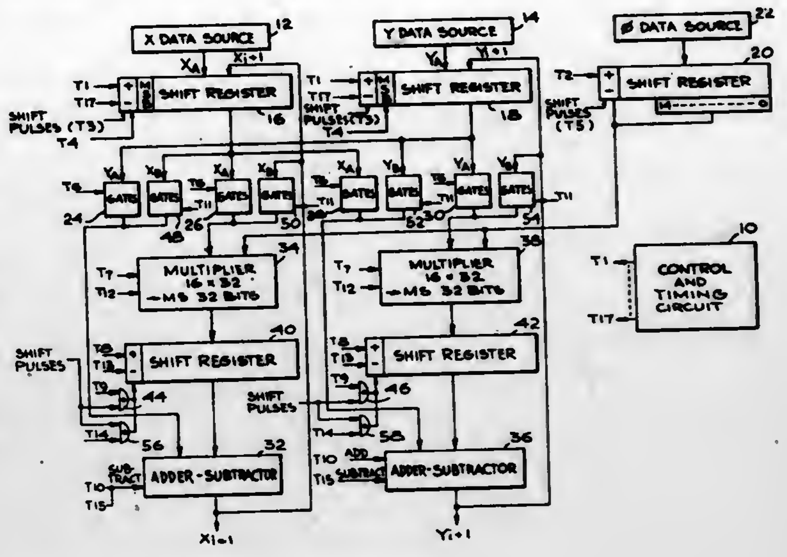
Ronnie G. Walters, Mayfield Heights, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed March 24, 1971, Ser. No. 127,657

Int. Cl. G06f *7/38*

U.S. Cl. 235—152 8 Claims

A sine cosine generator is described which can iteratively rotate an initial condition vector at a predetermined rate thus producing points which lie on a circle whose radius is determined by the initial condition vector.



3,728,529

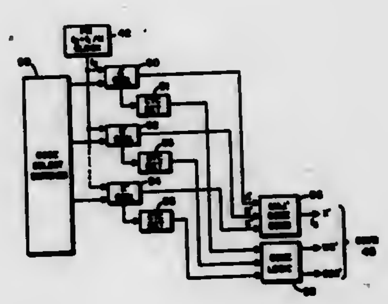
TWO-WAY COMMUNICATION SYSTEM EMPLOYING TWO-CLOCK FREQUENCY PSEUDO-NOISE SIGNAL MODULATION

Earl M. Kartchner, Salt Lake; Gary R. Van Horn, Granger, both of Utah, and Richard A. Wallace, Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 864,596, Oct. 8, 1969, Pat. No. 3,665,472. This application Dec. 17, 1971, Ser. No. 209,476

Int. Cl. H03b *29/00;* H04l *9/00*

U.S. Cl. 235—152 2 Claims



A digital two-way communication system utilizing RF transmissions that are phase-shift-keyed (PSK) by binary pseudo-noise (PN) code generators operating at different clock rates. Transmissions in the first and second directions are modulated by composite PN code generators operating at different first and second clock frequencies f_1 and f_2, respectively, where $f_1 = NF_2$, with N being a positive integer having no factors in common with the lengths of the component PN coder from which the composite is formed. The binary digital data signals that are to be transmitted in either direction modulate a binary PN code which is a composite code generated from a plurality of component PN codes. Each of these data-modulated composite PN codes, which are generated at clock frequencies f_1 and f_2, respectively, modulates, in turn, an RF carrier signal.

By having the two communication stations transmit and receive at different PN clock frequencies, equipment limitations that restrict transmitter performance in the second direction need not limit performance in the first direction, thereby allowing a higher clock frequency f_1, in the first direction and subsequent lower power required at the receiver at the other end for the same SNR out of the receiver.

3,728,530
BINARY TO DECIMAL CONVERTER CIRCUIT

George Sheppard Alexander, Tempe, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Continuation of Ser. No. 79,092, Oct. 8, 1970, abandoned. This application March 13, 1972, Ser. No. 234,386

Int. Cl. G08c *5/00*; **H03k** *19/08*

U.S. Cl. 235—155 **15 Claims**

A circuit for changing binary to decimal numbers is disclosed in which the driver transistor for the display device breaks down in an avalanche mode at a higher voltage than similar prior art circuits and in which threshold antinoise means and an improved transistor biasing means are included.

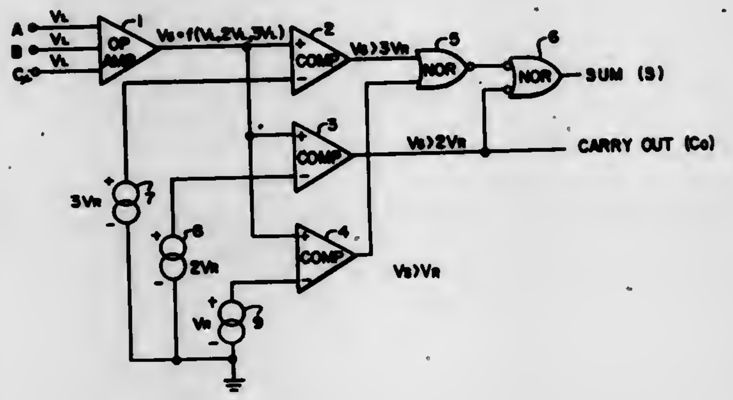
3,728,531
BINARY ARITHMETIC USING ANALOG COMPARATORS

J. Beverly Young, Jr., Carlisle, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed July 16, 1971, Ser. No. 163,225

Int. Cl. G06f *7/50, 7/385*

U.S. Cl. 235—175 **8 Claims**



A binary adder for performing binary arithmetic utilizing operational amplifiers and differential comparators. An operational amplifier provides an analog signal from logic level inputs representative of binary ones or zeroes. Differential comparators compare the analog voltage to reference voltages and provide output logic levels dependent on the result of the comparison. A single bit sum is defined as being "one" when there are an odd number of logic "ones" at the input. Carry-out is defined as being "one" whenever any two or more inputs are logic "ones."

3,728,532
CARRY SKIP-AHEAD NETWORK

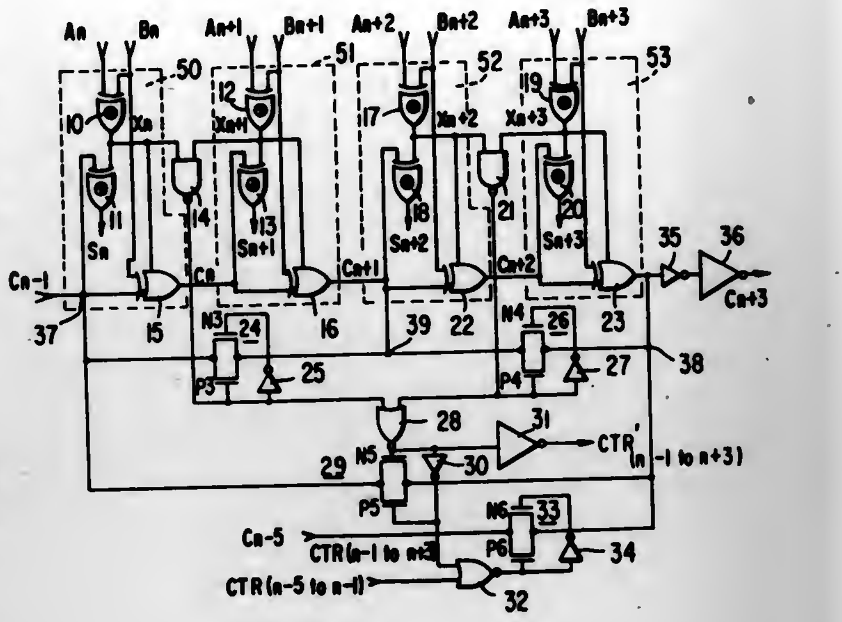
Richard Lee Pryor, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.J.

Filed Jan. 21, 1972, Ser. No. 219,719

Int. Cl. G06f *7/50*

U.S. Cl. 235—175 **6 Claims**

A network for use with arithmetic units such as adder circuits wherein a large number of bits are added together. Provision is made for evaluating the added bits in conjunction with the carry-in signal supplied to the adder so that the carry signal may be "skipped ahead," i.e. passed over, one or more adder circuit segments in order to avoid the delay of propagating a carry signal through each adder circuit segment in the arithmetic unit.



3,728,533
CIRCUIT FOR AVOIDING FALSE LOCK

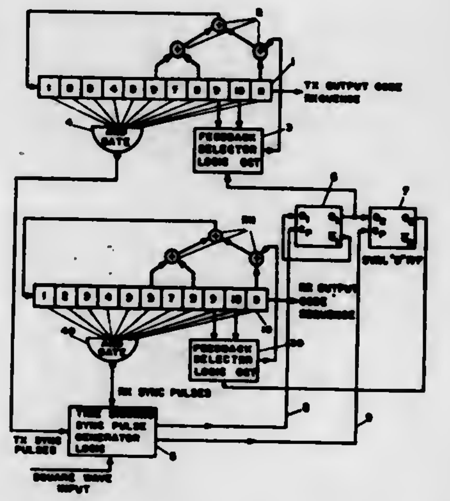
Solomon Bertram Matthews, Montreal, Quebec, Canada, assignor to Canadian Marconi Company, Montreal, Quebec, Canada

Filed Aug. 16, 1971, Ser. No. 171,971

Claims priority, application Canada, Sept. 23, 1970, 094,050

Int. Cl. G06f *15/34*; **G01s** *7/28*

U.S. Cl. 235—181 **4 Claims**



It is well known that the autocorrelation function of a psuedo-random sequence, multiplied by itself delayed, theoretically consists of one peak at zero delay and approximately zero amplitude at all other delays. It is also known that, in practice, there are second order effects which give rise to secondary peaks at delays other than zero. In a system such a pseudo-randomly phase modulated radar altimeter, which utilizes the autocorrelation peak to lock on and track, the appearance of secondary peaks may cause false locks. The instant invention is directed at means for avoiding false locks, and comprises means for altering the pseudo-random sequences of the modulating code generator and the tracking code generator at a predetermined rate. The timing of the alteration is such that the sequence of the modulating code generator will be altered only when there exists in the modulating code generator a predetermined word, e.g., the all ones

state. The sequence of the tracking code generator is altered the first time that the same predetermined word exists in the tracking code generator after the sequence of the modulating code generator has been altered.

3,728,534
CONSTRUCTABLE LOGIC SYSTEM

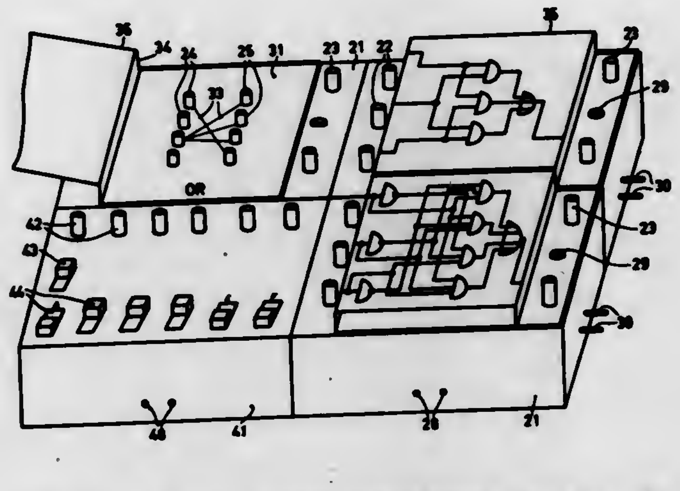
Uwe Bertram; Rolf Isernhagen, both of Hamburg; Hans Neuhaus, Norderstedt; Jurgen Schwandt, and Ludolf Stewen, both of Hamburg, all of Germany, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed July 30, 1971, Ser. No. 167,634

Claims priority, application Germany, Feb. 10, 1971, P 21 06 257.7

Int. Cl. G06f *7/48*; **H03k** *19/36*

U.S. Cl. 235—184 **6 Claims**



A constructable logic system comprising a plurality of connective circuit blocks. Each of said blocks having identical circuit logic elements. Each circuit can be individually programmed by uniquely connecting the logic elements to form an individual logical function for the circuit.

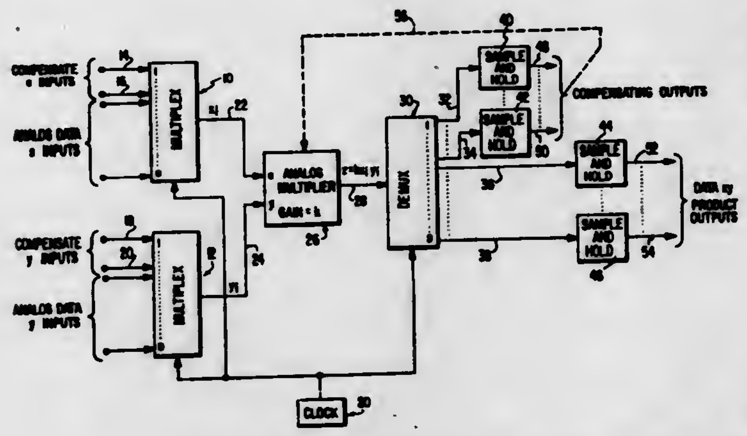
3,728,535
MULTI-CHANNEL ANALOG MULTIPLIER AND SYSTEMS

Allen C. Dickman, North Tonawanda; Theodore L. Roess, and George R. Mathewson, both of Williamsville, all of N.Y., assignors to Textron Inc., Providence, R.I.

Filed Aug. 19, 1971, Ser. No. 173,119

Int. Cl. G06g *7/16*; **G06j** *1/00*

U.S. Cl. 235—194 **11 Claims**



A single analog multiplier is used to obtain the products of many pairs of analog signals. The many pairs of analog signals are connected to the multiplier on a time-sharing basis by cyclically sampling the analog signals and applying them in repetitive sequence to the analog multiplier. Conventional multiplexing techniques are used for this purpose. The successive output signals of the multiplier are then demultiplexed and the amplitudes of the product signals are separately stored to provide the system output. The accuracy of the multiplication is constrained to be very high by repetitively correcting the output of the multiplier according to the product obtained from one or more pairs of analog signals whose products should be fixed and are known references. By suitably operating upon the multiplier outputs, many additional functions such as scaling, filtering, square root extraction, division, etc. may be obtained.

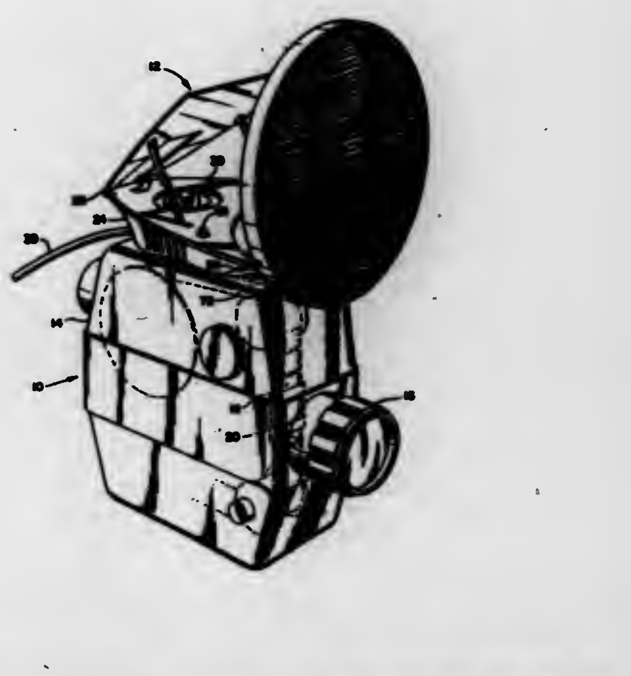
3,728,536
PHOTOGRAPHIC LIGHTING UNIT

Philip G. Baker, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 20, 1971, Ser. No. 145,268

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 **16 Claims**



A lighting unit, particularly adapted for use in motion picture photography, employing a reflector element and a screen-like lens displaceably mounted for movement between a storage position overlying and in close proximity to the source of illumination and an operable position spaced from the source. The reflector element and the lens are pivotally mounted on a platform-like base, which is adapted to receive an incandescent lamp, for pivotal motion from a first position overlying and in close proximity to the platform to a second position wherein at least a major portion of both are spaced from the platform so as to provide a suitable optical path between the source and the lens. A switch, mounted on the platform for engagement by the lens when it is in its closed position, is adapted to interrupt the electrical circuit and thereby prevent energization of the source of illumination when the unit is in its stored condition.

3,728,537
ARRANGEMENT OF FRONT AND/OR REAR LIGHTS OF MOTOR VEHICLES

Bela Barenyi, Maichingen; Hermann Renner, Boblingen, and Bruno Sacco, Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

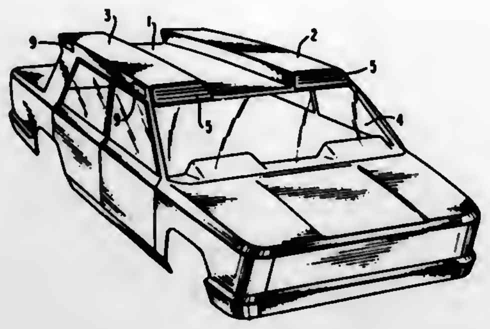
Filed Aug. 25, 1969, Ser. No. 852,751

Claims priority, application Germany, Aug. 28, 1968, P 17 80 299.2

Int. Cl. B60q *3/00*

U.S. Cl. 240—7.1 **24 Claims**

An arrangement for the front and/or rear lights of motor vehicles in which longitudinal bearers are provided within the area of the lateral edges of the roof which accommodate in the



front and rear end faces thereof the front and/or rear lights of the vehicle.

3,728,538
APPARATUS FOR CORRECTING THE EFFECT OF VARIATION IN LOAD ON THE DIRECTION OF HEADLIGHT BEAMS OF VEHICLES

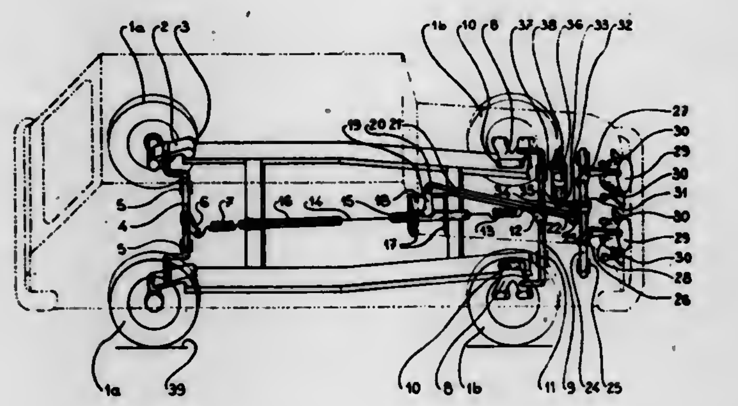
Francois Bailly, Neuilly-sur-Seine, France, assignor to Societe Anonyme Pour L'Equipment Electrique des Vehicules S.E.V. Marchal, Issy les Moulineaux, France

Filed July 27, 1971, Ser. No. 166,517

Claims priority, application France, July 31, 1970, 7028356; Feb. 26, 1971, 7106705

Int. Cl. B60q *1/10*

U.S. Cl. 240—7.1 LJ **7 Claims**



A system or apparatus for correcting the effect of variation in load on the direction of headlight beams of vehicles whereby the position of the headlights is automatically varied in response to changes in distribution of load when the vehicle is empty, lightly loaded or heavily loaded, or during braking or acceleration.

3,728,539
METHOD AND APPARATUS FOR CONTROLLING A VEHICLE CONTROL SIGNAL

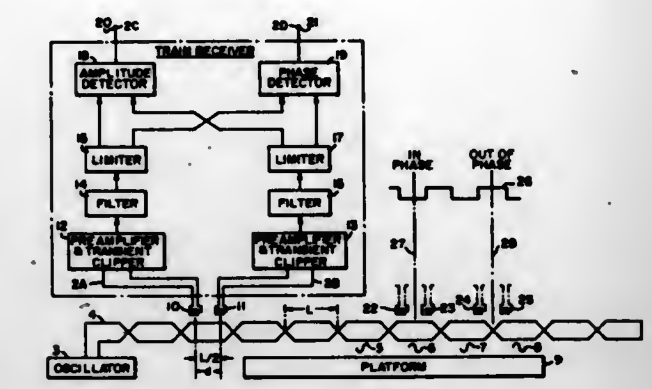
George M. Thorne-Booth, Tarzana, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 8, 1971, Ser. No. 132,379

Int. Cl. B61l *3/12*

U.S. Cl. 246—182 B **8 Claims**

A vehicle traveling along a vehicle travel path is provided a deceleration signal which is proportional to the quantity $K2/Dt^2$, where D is the distance the vehicle has to travel to a stopping position, t is a time reference relative to how long it takes the vehicle to travel the distance D, and K2 is an operational constant determined by system parameters. The quantity t^2 is computed by generating a predetermined number



progression grouping of pulses, the sum of which is equal to the quantity t^2.

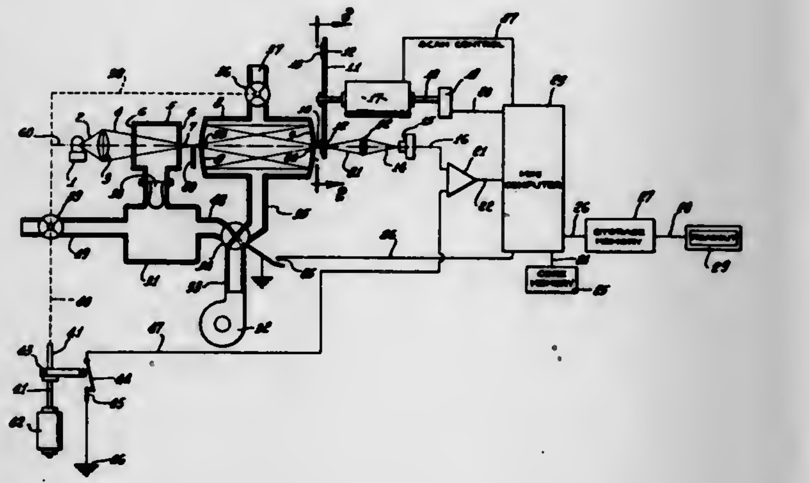
3,728,540
PRESSURE-MODULATED MULTIPLE GAS ANALYZER

Marion N. Todd, Glendora, and D. Michael Milder, Sierra Madre, both of Calif., assignors to Tetra-Tech Incorporated, Pasadena, Calif.

Filed Aug. 27, 1971, Ser. No. 175,657

Int. Cl. G01n *21/26*

U.S. Cl. 250—43.5 R **11 Claims**



Small, inexpensive apparatus is disclosed for precisely analyzing gas samples through radiation-absorption measurements, employing pressure modulation, a sealed calibration gas cell optically in series with the sample cell, synchronous demodulation, and preferably time-resolved spectral analysis and a captive computer for matrix inversion to read out gas constituent concentrations directly.

3,728,541
X-RAY DIFFRACTOMETER

Dov Rabinovich, Rehoveth, Israel, and Gerhard M. J. Schmidt, deceased, late of Rehoveth, Israel (by Ester Schmidt, administrator), assignors to Yale Research and Development Co., Ltd., Rehoveth, Israel

Continuation-in-part of Ser. No. 37,202, May 14, 1970, abandoned. This application Jan. 5, 1972, Ser. No. 215,486

Claims priority, application Israel, May 20, 1969, 32247

Int. Cl. G01n *23/20*

U.S. Cl. 250—51.5 **14 Claims**

An X-ray diffractometer has a yoke on which a crystal is mounted so that a particular rational axis thereof intersects the axis of the X-ray beam at a predetermined angle. A direct counting detector mounted on the yoke is selectively positionable in both azimuth and elevation with respect to the particular rational axis of the crystal. The yoke is constructed and

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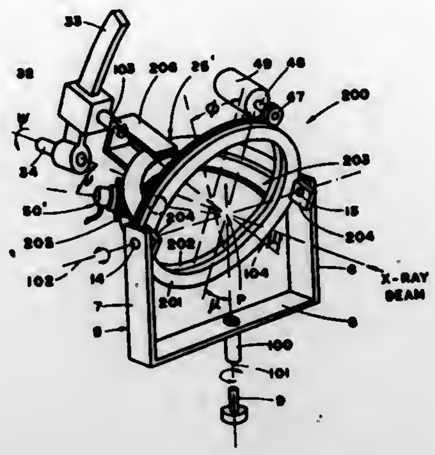


arranged to effect precession of both the particular rational axis of the crystal and the detector about the axis of the beam.

3,728,542
EQUIPMENT UNIT FOR X-RAY INSPECTION OF PNEUMATIC TIRES

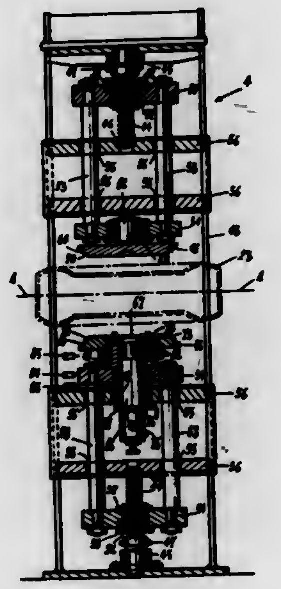
Leon Golfier, Soisy-sous-Montmorency, France, assignor to Societe dite: Jubin S.A., Pantin (Seine Saint-Denis, France

Filed March 8, 1972, Ser. No. 232,896

Claims priority, application France, March 11, 1971, 7108459

Int. Cl. G03b *41/16*

U.S. Cl. 250—52 **10 Claims**



A unit for the X-ray inspection of automotive vehicle tires which are inflated to their normal pressure, comprising a tire-gripping device having angularly spaced jaws adapted to slide radially with respect to the tire and mounted on a handling carriage for transferring tires from a feed conveyor to an inspection apparatus and then to a discharge conveyor.

The inspection apparatus comprises rotary discs mounted on a support for translational motion towards or away from the tire, annular shoulders being formed on the discs for pressure-tight engagement within the beads of tires of different sizes so as to define an enclosure which permits inflation with compressed air, an X-ray generating tube mounted within a sheath which is capable of passing through one disc in leak-tight manner, and a drive system for rotating the tire to be inspected.

3,728,543
THERMOLUMINESCIENCE OF SAPPHIRE

William Gordon Buckman; David C. Sutherland, and David W. Cooke, all of Bowling Green, Ky., assignors to The United States of America as represented by the Secretary of Department of Health, Education and Welfare

Filed Nov. 23, 1971, Ser. No. 201,458

Int. Cl. G01f *1/11*

U.S. Cl. 250—71 R **6 Claims**

A novel technique and dosimetric material is disclosed for the detection and measurement of ultraviolet radiation. Nominally pure sapphire containing trace impurities such as manganese, chromium, iron and titanium is ground into a powder form of approximately 200 mesh particle size. The sapphire is then excited with incident ultraviolet radiation and subsequently heated whereby the sapphire thermoluminesces. The intensity of the resulting luminescence is a measure of the ultraviolet radiation dosage to which the sapphire has been exposed.

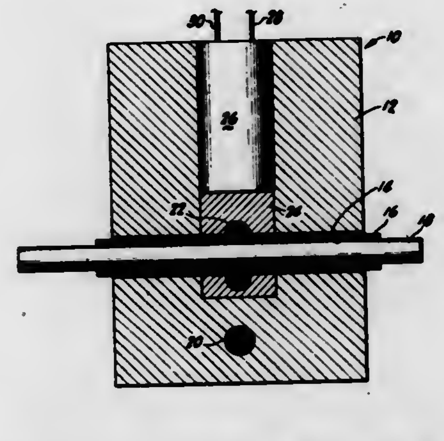
3,728,544
METHOD AND APPARATUS FOR MEASUREMENT OF CONCENTRATION OF THERMAL NEUTRON ABSORBER CONTAINED IN NUCLEAR FUEL

Samuel Untermyer, Portola Valley, Calif., assignor to National Nuclear Corporation, Palo Alto, Calif.

Filed July 24, 1970, Ser. No. 58,039

Int. Cl. G01t *3/00*

U.S. Cl. 250—83.1 **5 Claims**



Nuclear fuel samples containing burnable poisons are irradiated with epithermal neutrons and the neutron emission rate is counted to provide a measurement of fissile content through comparisons with the results of like steps performed on reference fuels. Where the fissile content is known, poison content is determined through irradiation of the sample with thermal neutrons. The presence of the poisons depresses the thermal neutron flux within the fuel and reduces the number of fission neutrons emitted. This emission rate is compared with the results of like steps performed on reference rods to indicate poison content. In another embodiment gamma emission by the fissile species is used in conjunction with thermal neutron interrogation to measure both fissile and absorber content.

3,728,545
INFRARED IMAGING APPARATUS

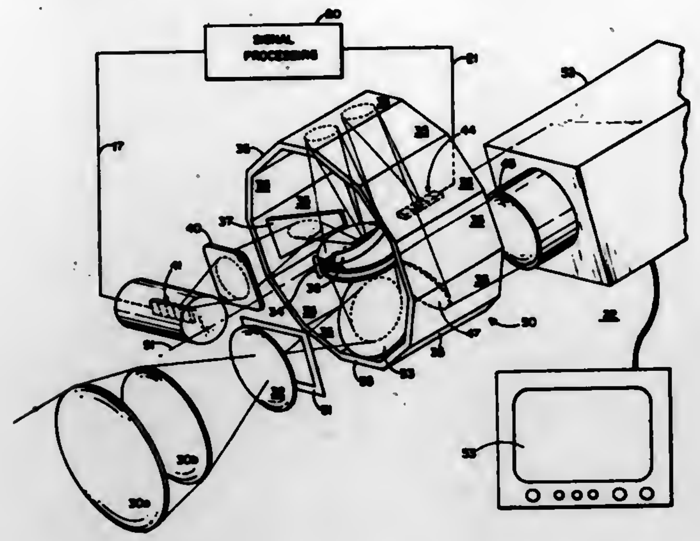
Irving R. Abel, Lexington, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed April 28, 1971, Ser. No. 138,085

Int. Cl. G01t *1/24*

U.S. Cl. 250—83.3 HP **16 Claims**

An infrared scanning system comprising input optics including objective and field lenses, output optics including a relay lens and a linear array of detectors, a scanner including a hollow inwardly reflecting polygonal prism rotated about its longitudinal axis, which is aligned with the axis of the input optics, and further optical components including a relay lens, a strip mirror, and first and second folding mirrors, which are



contained within the outline of the prism, and with respect to which the prism rotates.

3,728,546
COMPENSATING ARRANGEMENT FOR THERMAL DETECTORS

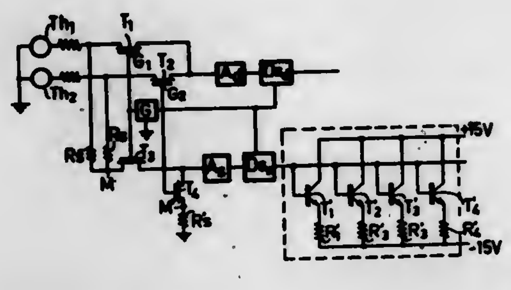
Francois Desvignes, Bourg-la-Reine, and Francois-Xavier Doittau, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed March 22, 1972, Ser. No. 237,178

Claims priority, application France, March 23, 1971, 7110179

Int. Cl. G01j *1/10*

U.S. Cl. 250—83.3 H 5 Claims



Compensation of radiation towards outer space for horizon sensor thermopiles.

Electronic circuit elements which form part of the device for controlling the compensating source are incorporated in a metallic material which consequently radiates to the thermopiles a thermal power which is proportional to the power which passes through these elements. Thus substantially all the power consumed is used in this source, so that the power consumption is reduced to a minimum. Applications for compensation of radiation towards outer space which gives rise to zero errors in the case of differences in sensitivity between the detectors in the attitude sensors.

3,728,547
AN X-RAY APPARATUS AND AN OPERATION LIGHTING

Sven Vilhelm Emanuel Lundin, Satravagen 25, Sweden, assignor to Humanteknik AB, Stockholm, Sweden

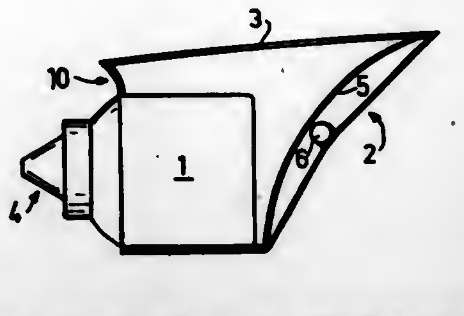
Filed April 6, 1970, Ser. No. 25,741

Claims priority, application Sweden, April 22, 1969, 5696/1969

Int. Cl. H01j *35/16*

U.S. Cl. 250—90 1 Claim

The invention concerns a device, especially for dentists, comprising an X-ray apparatus and an operation lighting. According to the invention these two means are mounted in a common casing. In this casing the two means are facing two different directions, so that each of them can be brought into



active position by turning the casing, which for this purpose is preferably pivotally mounted on a known supporting arm.

3,728,548
DEVICE FOR MEASURING THE INTENSITY OF A SCANNING LIGHT BEAM BY MEANS OF A LIGHT CONDUCTING ROD

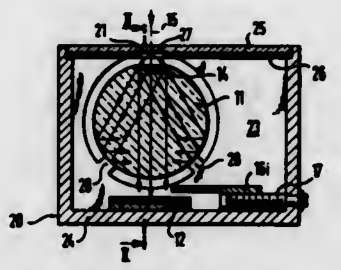
Gernot Pinior, 8034 Germering, Germany, assignor to Erwin Sick Optik-Elektronik, Waldkirch, Germany

Filed March 23, 1972, Ser. No. 237,363

Claims priority, application Germany, April 1, 1971, P 21 15 979.5; Oct. 11, 1971, P 21 50 634.3

Int. Cl. G02b *5/14*; H01j *5/16, 3/14*

U.S. Cl. 250—217 R 14 Claims



A device for measuring the intensity of a scanning light beam moving in a preferably plane face, having a transparent light-conducting rod having a front and back end and being mounted in said plane face substantially parallel to the direction of scanning of the light, the rod conducting at least one portion of the light which impinges thereupon and enters therein toward the front end by reflecting on the walls of said rod; a photoelectric receiver mounted adjacent the front end of the rod for transforming the light current reaching the front end of the rod into an electrical signal; a light-reflecting surface extending along the light-conducting rod in spaced relation on the side of the rod opposite the area of light impingement on the rod; a series of separate screens extending along the axis of the rod and interposed between the light reflecting surface and the rod, each screen being adjustable transversely of the longitudinal axis of the rod such that each screen influences in a different manner that portion of the light emerging laterally from the walls of the rod and reflected back into the rod by the light reflecting surface according to the adjustment of the respective screen as to the portion of the light reflecting surface exposed to the rod and not blocked by the screen according to the adjustment of the screen.

3,728,549
IN SITU DEVICE FOR MEASURING LIGHT SCATTERING

Peter L. Sachs, Falmouth, Mass., assignor to The United States of America as represented by the Secretary of the Navy

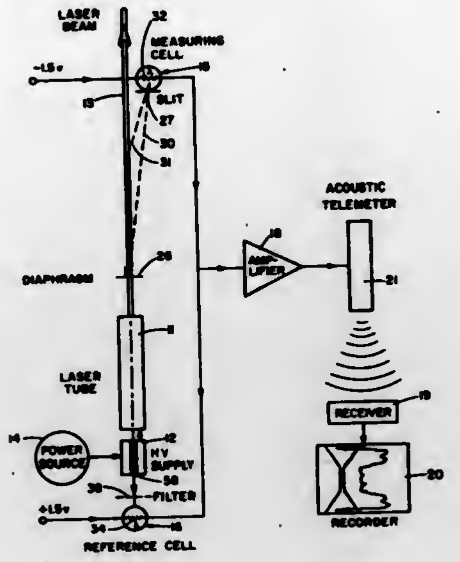
Filed April 12, 1972, Ser. No. 243,140

Int. Cl. G01n *21/26*

U.S. Cl. 250—218 7 Claims

A self-contained, telemetering, fixed small angle forward scatterance meter for furnishing real-time data on light scattering intensity is provided. Collimated light from a laser is directed through the water, scattered light reaching a photosensitive surface which is offset from the axis of the laser

beam a selected short distance. Variations in ambient temperature and laser intensity are compensated for by a reference photocell which is matched to the measuring cell. Data representative of light scattering is continuously telemetered and received and recorded at a remote location. This data provides a continuous profile of readings related to the concentration of matter in suspension as determined by gravimetric analysis of samples collected while the device is disposed in the medium.



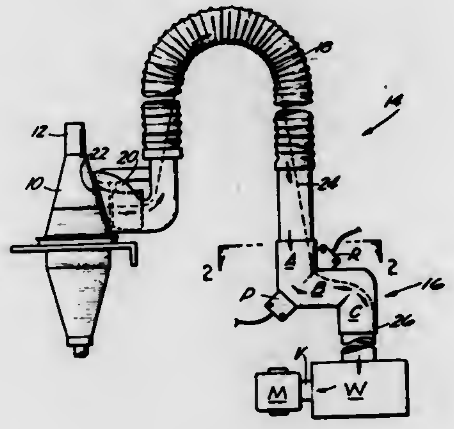
3,728,550
DEVICE AND METHOD FOR DETECTING AND WITHDRAWING A PREDETERMINED LENGTH OF YARN

Luther A. Cleland, Jr., Westminster, and Albert D. Harmon, Clemson, both of S.C., assignors to Maremont Corporation, Chicago, Ill.

Filed Oct. 20, 1971, Ser. No. 190,741

Int. Cl. B65h *69/04*; G01n *21/30*

U.S. Cl. 250—219 S 10 Claims



The device and method disclosed employ a conduit with a bend and preferably a double bend intermediate its ends through which yarn is moved, as by currents of air from a vacuum pump; adjacent the bend or the upstream bend of the double bend a photoprojector and photoreceiver switch detect the presence of yarn at the short-turn of that yarn being drawn thereacross and interrupting the beam of light therebetween to detect a predetermined length of yarn whereupon the photoreceiver switch deactivates the means used to draw yarn through the conduit and thereby establishes a predetermined length of yarn. The device and method are usefully employed with yarn piecers and knotters to avoid excessive yarn wastage and to insure that sufficient yarn is provided to effect piecing or knotting.

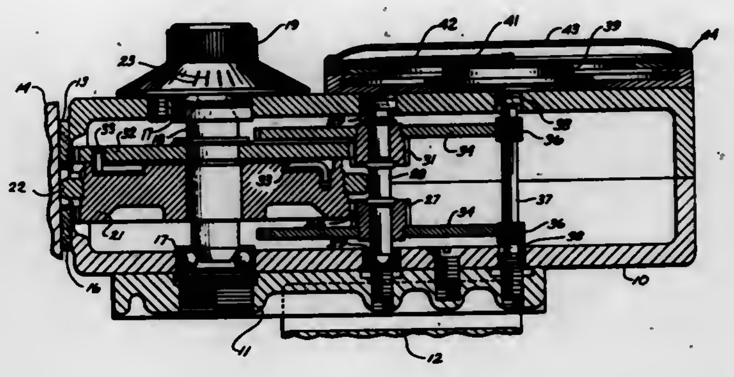
3,728,551
MASK ADJUSTMENT MECHANISM

Irven H. Culver, Playa del Rey, and Ronald C. Sheltra, West Los Angeles, both of Calif., assignors to Southwestern Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 868,436, Oct. 22, 1969, Pat. No. 3,628,038. This application May 19, 1971, Ser. No. 144,919

Int. Cl. G01d *5/34*

U.S. Cl. 250—231 SE 11 Claims



A distance measuring system is described in which a wheel is frictionally engaged with a surface along which measurements are made. The metering wheel is connected to a shaft which drives a portion of a photoelectric chopper which provides an indication of increments of metering wheel travel. The chopper includes a disk on the shaft with a plurality of windows alternating with opaque areas in a circular path near the periphery of the disk. A mask having an arc of somewhat similar windows is adjacent and spaced a short distance away from the disk. A pair of lights and a pair of photosensors are located on opposite sides of the mask-disk set. Each photosensor detects light passing through a different plurality of windows in the mask and disk and, as the disk rotates, a substantially symmetrical variation in light intensity occurs. A minimum area non-collimated light source is provided and the mask is located nearer the light source than is the disk. A greater number of windows per unit length is provided on the mask than on the disk so that successful chopping of a non-collimated light beam is obtained when the mask and disk are spaced apart. The mask is mounted on a ring movable by an eccentric and constrained to move only angularly about its center and along a direction normal to a chord between the two photosensors. This permits the phase relation between the photosensor inputs to be adjusted readily and with high precision. Precise adjustment of phase relation and proper mask and disk construction permit the chopper to give usable signals at very high slue rates.

3,728,552
CONTROL DEVICE FOR A SELECTIVE MATRIX OF A DATA MEMORY WITH SELECTIVE ACCESS

Hermann Kadow, Vaterstetten, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

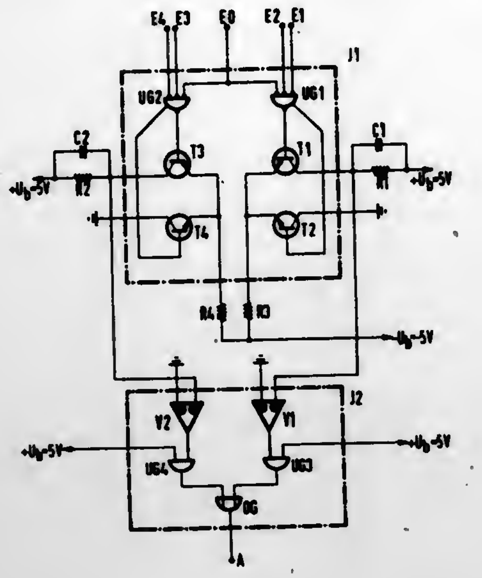
Filed March 7, 1972, Ser. No. 232,423

Claims priority, application Germany, March 30, 1971, P 21 15 453.0

Int. Cl. H03k *19/08, 19/22*

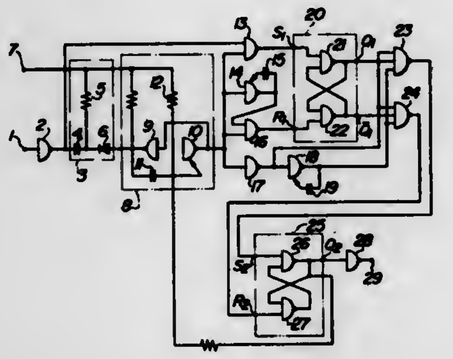
U.S. Cl. 307—208 1 Claim

A control device for a selective matrix of a data memory employs RC circuits to simulate the thermal behavior of the selection circuits, a threshold circuit for evaluating a thermal limit which is critical for the selection circuits, a first integrated circuit component designed as a potential converter which forms the input stage of two parallel connected control signal generators and a second integrated component which functions as a double difference comparing circuit, the arrangement being compatible on its input side with ECL techniques and on its output side with TTL techniques.



3,728,553
SPEED DETECTING SYSTEM UTILIZING DIGITAL LOGIC CIRCUITRY

Hisato Wakamatsu, and Shigeyuki Akita, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan
Filed July 29, 1971, Ser. No. 167,277
Claims priority, application Japan, Aug. 3, 1970, 45/67924
Int. Cl. H03k *5/20*; G01p *3/56*
U.S. Cl. 307—231 2 Claims

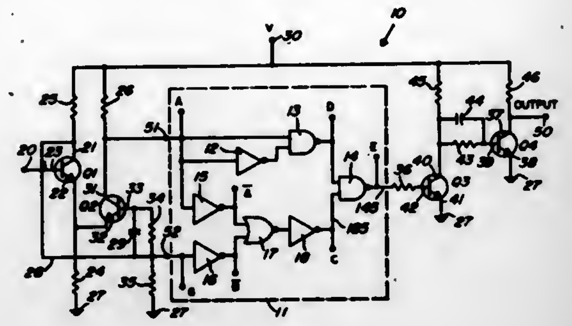


A speed detecting system for vehicles for detecting whether the instantaneous vehicle speed has reached a preset reference vehicle speed in terms of signals "1" and "0". In this system, the instantaneous vehicle speed is converted into a digital signal, and the entire operation is digitally performed.

3,728,554
MICROPOWER ZERO-CROSSING DETECTOR

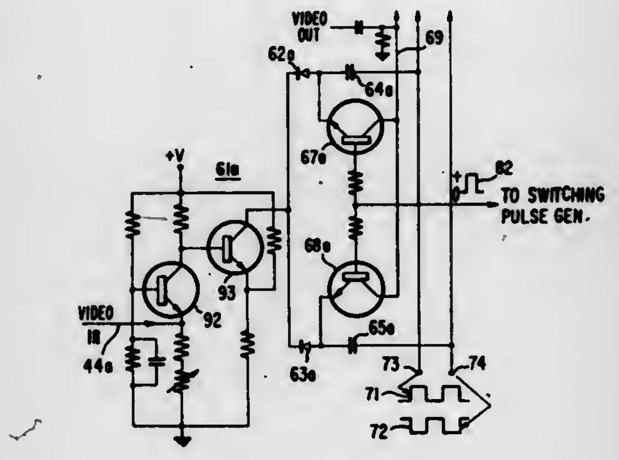
Harry A. Kuhn, Jr., Phoenix, and James W. Feltz, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed April 17, 1972, Ser. No. 244,489
Int. Cl. H03k *5/18*
U.S. Cl. 307—233 7 Claims

A pulse is produced at the output of a detector in response to the zero crossings of an analog electronic signal input up to a predetermined input frequency. When that frequency level is exceeded, an indicator voltage level is produced at the output. The apparatus for producing the output pulses and the indicator voltage level is comprised of complementary field effect transistors, requiring very little power. The input of the device is a bi-polar transistor type differential amplifier, the combination providing a zero crossing detector having a much higher frequency response than such a device comprised entirely of complementary field effect transistors, and requiring less power than such devices comprised of bi-polar transistors.



3,728,555
SIGNAL TRANSFER SYSTEM FOR PANEL IMAGE SENSOR

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.
Division of Ser. No. 72,944, Sept. 17, 1970. This application March 29, 1972, Ser. No. 239,080
Int. Cl. H03k *17/00*
U.S. Cl. 307—246 8 Claims

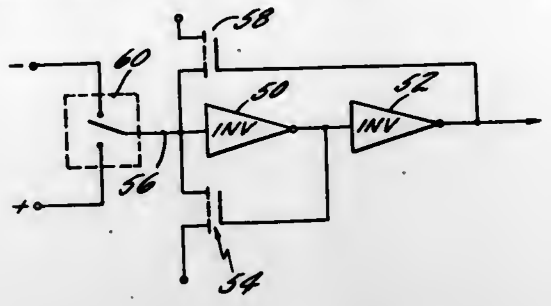


The image information producing photosensitive elements of the sensor, which are arranged in rows and columns, are addressed row-by-row and column group-by-column group to decode the information. The signal information from a group of elements in a row is impressed simultaneously upon a like group of signal processing circuits, with each of which is associated a pair of signal storage devices, each having an input gate and an output gate. The input gates for one set of corresponding storage devices are concurrently operated to impress a group of signals simultaneously upon these storage devices during a given time period while the output gates for the other set of corresponding storage devices are operated sequentially to transfer the signals stored in the other set of storage devices to the output circuit. The operation of the input and output gates is reversed in the succeeding time period and this alternating operation continues until the information from all of the sensor elements is transferred to the output circuit.

The invention herein was made in the course of or under contract or subcontract thereunder with the Department of the Air Force.

3,728,556
REGENERATIVE FET CONVERTER CIRCUITRY

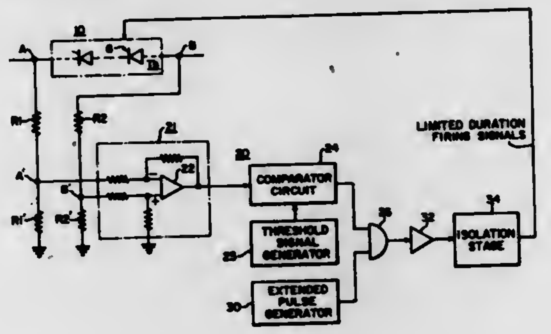
Clifford G. Arnell, Warminster, Pa., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Nov. 24, 1971, Ser. No. 201,678
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 6 Claims



A converter receiving low voltage signals, such as from bipolar transistor circuits and applying corresponding signals to higher voltage circuits, such as MOS transistor circuits, comprises a MOS inverter having regenerative feedback which drives the inverter with a greater voltage than that supplied thereto by the bipolar circuits. This results in positive switching which reduces switching time, avoids race conditions, and eliminates switching ambiguities which result from high noise/signal line conditions. In one embodiment, regeneration provides latching in either of two stable states.

3,728,557
CONTROL SCHEME FOR TIMING THE APPLICATION OF LIMITED DURATION FIRING SIGNALS TO POWER SWITCHING DEVICES

Brian R. Pelly, Murrysville, and Mario G. Tarjan, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 20, 1972, Ser. No. 219,461
Int. Cl. H03k *17/56*
U.S. Cl. 307—252 N 4 Claims

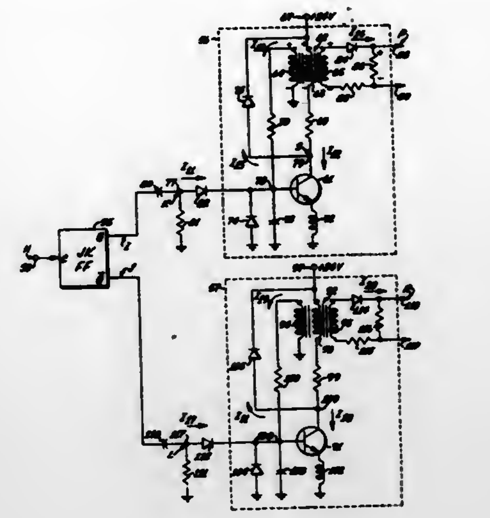


The invention relates to a technique for monitoring the forward and reverse voltage conditions across power switching devices and applying limited duration firing signals to the power switching devices during the forward blocking voltage conditions.

3,728,558
SYNCHRONIZED TRIGGER GENERATORS FOR USE WITH A SWITCHING REGULATOR

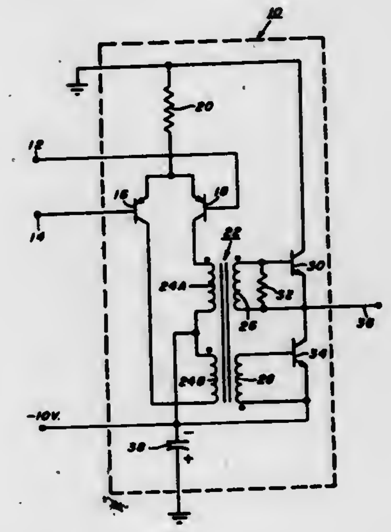
Luther L. Genuit, Scottsdale, and John R. Nowell, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Oct. 20, 1971, Ser. No. 190,860
Int. Cl. H03k *3/30*
U.S. Cl. 307—262 7 Claims

A JK flip-flop provides signals to alternately trigger first and second transistor blocking oscillators which supply trigger signals for a switching regulator. Each of the blocking oscillators uses a capacitor between the transistor base and ground to reduce the effects of noise signals and uses an inductor in the transistor emitter circuit to prevent high frequency oscillations.



3,728,559
HYBRID HIGH SPEED ECL TO P-CHANNEL MOS CLOCK DRIVER

John C. Spann, Baltimore, and James F. Gentry, Prince Georges, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 26, 1971, Ser. No. 202,437
Int. Cl. H03k *1/14*, *5/02*
U.S. Cl. 307—264 7 Claims



A voltage level shifting circuit which can be used as a high speed MOS clock driver, for example, driven by any emitter-coupled, non-saturated logic device. This is achieved, among other things, by the use of transformer coupling which offers isolation, minimal power requirements, and maximum efficiency. At the same time, the circuitry permits hybrid circuit packaging. The circuit has a broad frequency range and minimal rise and fall times for digital signals while feeding into a capacitive load.

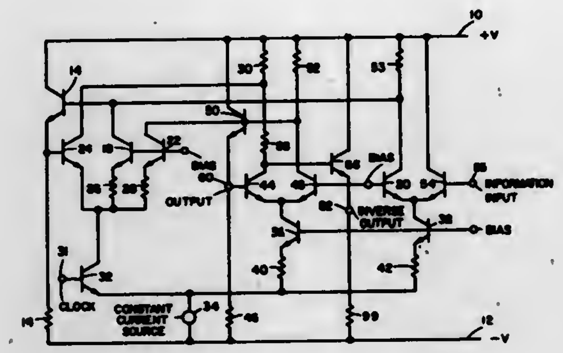
3,728,560
BISTABLE MULTIVIBRATOR CIRCUIT

Ronald L. Treadway, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of Ser. No. 110,863, Jan. 29, 1971, abandoned, Continuation-in-part of Ser. No. 110,932, Jan. 29, 1971, abandoned. This application Dec. 23, 1971, Ser. No. 211,508

Int. Cl. H03k *3/286, 21/06*

U.S. Cl. 307—289 **9 Claims**



A bistable multivibrator circuit which is readily adaptable to monolithic integrated circuit technology combines the master and slave portions, reducing the components needed to provide a master/slave circuit operation when the multivibrator is used either as a frequency divider or as a gated logic circuit.

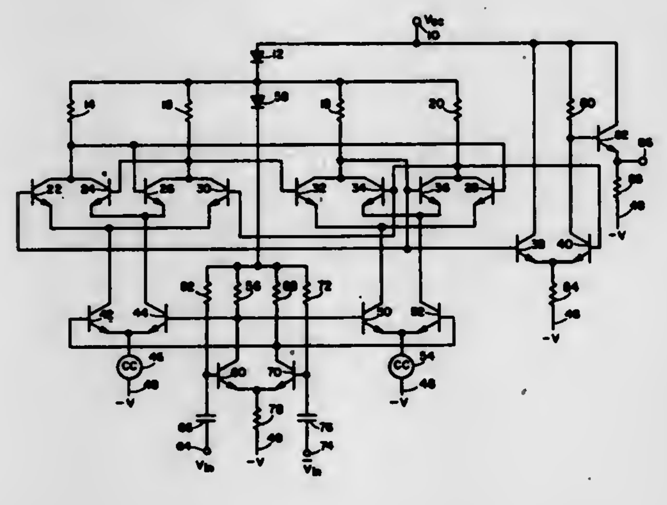
3,728,561
HIGH SPEED MASTER-SLAVE FLIP-FLOP FREQUENCY DIVIDER

Bernard D. Brecker, Jr., Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 111,869, Feb. 2, 1971, abandoned. This application Jan. 12, 1972, Ser. No. 217,396

Int. Cl. H03k *3/286*

U.S. Cl. 307—291 **9 Claims**



A frequency divider capable of operating at frequencies in the order of 1 gigaHertz has a master flip-flop and a slave flip-flop. Both the master and the slave flip-flops are provided with a transistor gate circuit, the master flip-flop being directly connected to the gate circuit associated with the slave flip-flop, and the slave flip-flop being directly connected to the gate circuit associated with the master flip-flop. A switching circuit, responsive to an input electronic waveform, permits the transfer of the contents of the master flip-flop to the slave flip-flop when the input waveform is of one polarity. When the input waveform is of the other polarity, the switching circuit permits a transfer of the inverse of the slave flip-flop contents.

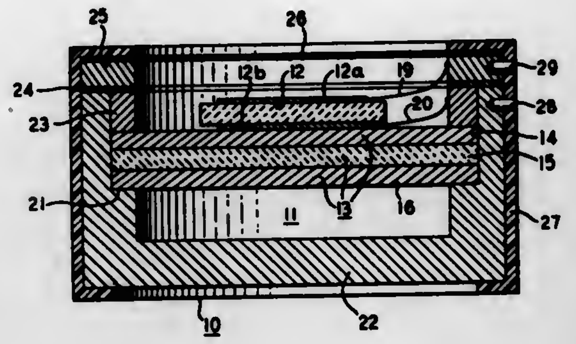
3,728,562
ELECTROACOUSTIC TRANSDUCER HAVING TRANSDUCING ELEMENT SUPPORTING MEANS

Robert Joseph Herson, Ocean Township, and Sotirios Constantine Kitsopoulos, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 18, 1971, Ser. No. 190,208

Int. Cl. H01v *7/00*

U.S. Cl. 310—9.1 **10 Claims**



An electromechanical transducer element is supported within a transducer housing by a trilaminar diaphragm comprising a layer of viscoelastic material sandwiched between a pair of rigid plates. By locating the neutral bending plane of the composite diaphragm-element structure in the center layer of viscoelastic material, where shear stresses are maximal, the resultant shear deformation in the viscoelastic material advantageously dissipates vibratory energy. This provides a means of reducing undesirable peaks in the transducer's frequency response and results in a more uniform response characteristic.

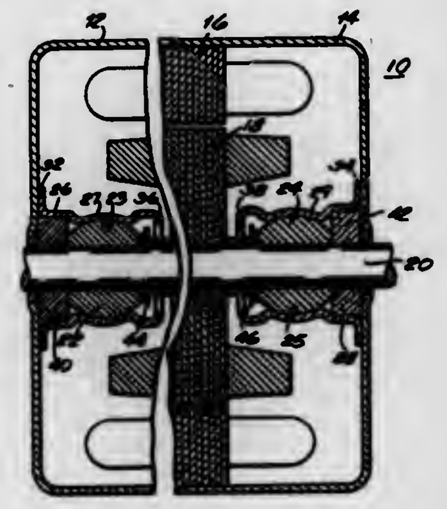
3,728,563
BEARING SUPPORT AND OIL RETAINER FOR DYNAMOELECTRIC MACHINES

Thomas W. Stone, Owosso, Mich., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Aug. 23, 1971, Ser. No. 173,807

Int. Cl. H02k *5/16*

U.S. Cl. 310—90 **7 Claims**



A tubular member has an elongated body with a flange at one end attached to the end frame of a dynamoelectric machine and its opposite end having an inturned lip. One or more spherical bearings are positioned within the tubular body and the tubular body is shaped to engage the outer spherical surfaces of the bearing, or bearings, to hold the bearing in place. The tubular body is preferably shaped to conform to the outer bearing spherical surfaces by pulse forming with a magnetic coil. An oil retaining body is also positioned within the tubular body. The bearing support arrangement is utilized with a through shaft construction and a unit bearing construction.

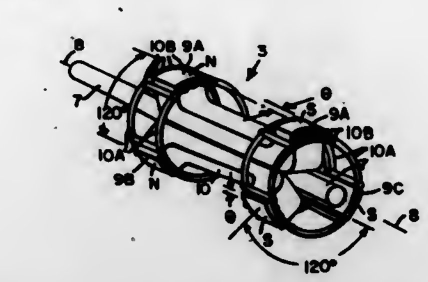
3,728,564
ELECTROMECHANICAL ENERGY CONVERSION DEVICE

John De Rugeris, 695 Kenneth Avenue, Campbell, Calif.

Filed Feb. 3, 1971, Ser. No. 153,462

Int. Cl. H02k *17/42*

U.S. Cl. 310—168 **17 Claims**



An electromechanical energy conversion device including a magnetic field source and armature structure movable relative to one another, said device being adapted to convert mechanical energy to electrical energy as the field and armature travel relative to one another along a given path and to simultaneously convert electrical energy to mechanical energy to facilitate said travel.

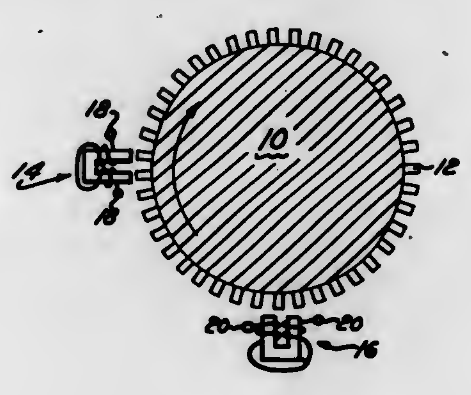
3,728,565
DEVICE FOR SENSING THE DIRECTION AND SPEED OF A SHAFT

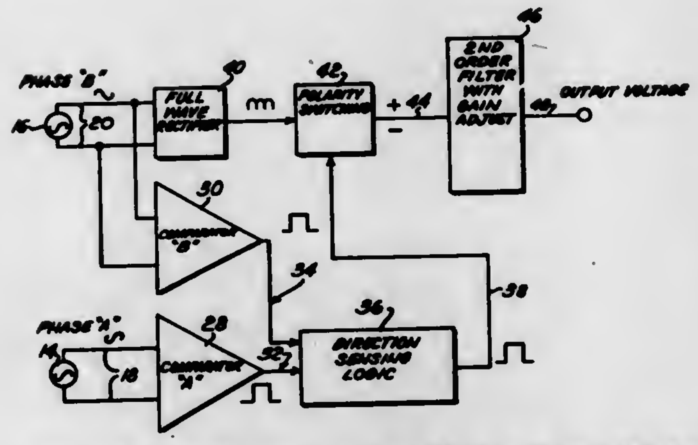
Gerald F. O'Callaghan, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed July 21, 1971, Ser. No. 164,685

Int. Cl. H02k *19/20;* **G08b** *21/00*

U.S. Cl. 310—168 **19 Claims**





A device for sensing the direction of rotation and the speed of a shaft includes a two-phase AC generator having a rotor attachable to the shaft and rotatable therewith and first and second spaced apart stator windings. The first and second stator windings are adapted to have first and second sinusoidal voltages established thereacross respectively, in response to rotation of the rotor with the shaft. The first sinusoidal voltage is adapted to lead the second sinusoidal voltage when the shaft rotates in a first direction and the second sinusoidal voltage is adapted to lead the first sinusoidal voltage when the shaft rotates in a direction opposite the first direction. A logic circuitry is provided for determining which of the first and second sinusoidal voltages is leading the other of the first and second sinusoidal voltages to thereby determine the direction of rotation of the shaft. The magnitude of the first and second sinusoidal voltages is dependent upon the speed of rotation of the shaft and means are provided for sensing the magnitude of one of the sinusoidal voltages to provide an output signal indicative of the speed of rotation of the shaft.

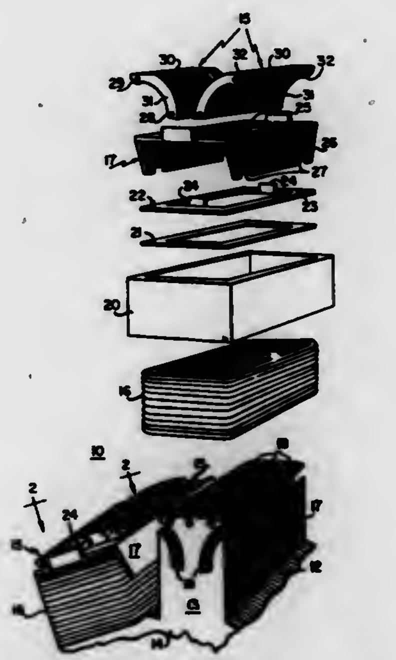
3,728,566
SALIENT POLE ROTOR CONSTRUCTION WITH REMOVABLE POLE TIPS

Charles Albert Costello, Erie, Pa., assignor to General Electric Company

Filed Oct. 4, 1971, Ser. No. 186,349

Int. Cl. H02k *1/24*

U.S. Cl. 310—194 **7 Claims**



A salient pole rotor construction which has removable pole tips to facilitate assembly and disassembly of the rotor. The removable pole tip is so constructed that centrifugal forces produced during rotation act to seat the pole tip more firmly to the rotor pole. The rotor pole bodies have an arcuate pole tip retaining slot extending along the length of the pole body. The removable pole tip consists of the pole tip portion having a surface which mates with that of the pole surface and an arcuate retaining stem which has the same curvature as the retaining slot in the pole shoe. The rotor is assembled by positioning a pre-formed field coil over the rotor core and then attaching the salient pole tips by inserting the arcuate stem in the retaining slot to lock the coil in place and retain it in position. By virtue of the arcuate configuration, the centrifugal forces generated by rotation force the arcuate stem of the pole tips firmly against the side of the slots thereby utilizing the centrifugal force to seat the salient pole tips firmly. By virtue of this construction, pre-formed field coils may be used simplifying the assembly of the rotor. Assembly time is reduced, while at the same time, scrap and rework losses are cut down producing highly desirable cost savings.

3,728,567
WINDINGS FOR MULTIPLE-MOTOR UNIT

Ernst Picmaus, 6710 Frankenthal/Pfalz, Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal/Pfalz, Germany

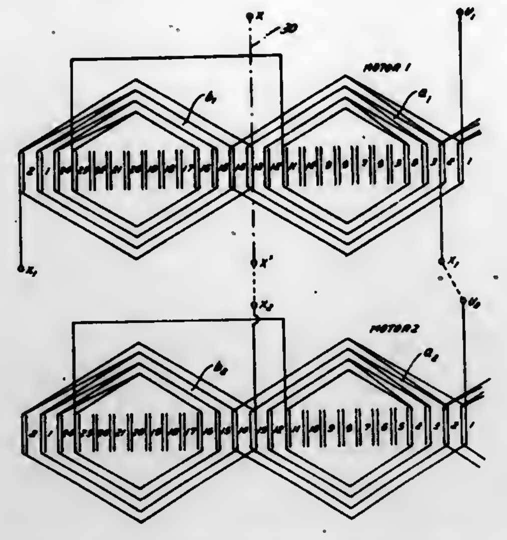
Filed Sept. 24, 1971, Ser. No. 183,506

Claims priority, application Germany, Sept. 30, 1970, P 20 48 063.1

Int. Cl. H02k *3/00*

U.S. Cl. 310—198 **5 Claims**

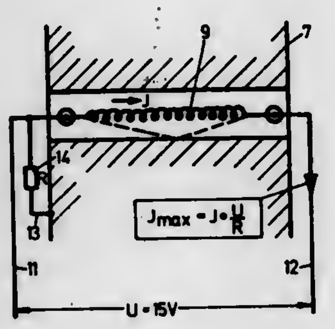
At least two electric motors are connected for operation in unison and each has a winding carrier provided with a plurality of grooves. A winding is provided on each of the carriers and comprises *n* conductors in at least one of the grooves of one of the carriers and *n*+1 conductors in the remaining ones



of the grooves. A separate conductor is located in the one groove of the one carrier and is electrically conductively connected with the windings of both carriers.

3,728,568
X-RAY TUBE

August Lenert, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
Filed March 16, 1972, Ser. No. 235,219
Claims priority, application Germany, April 24, 1971, P 21 20 160.5
Int. Cl. H01j *35/06*
U.S. Cl. 313—60 3 Claims

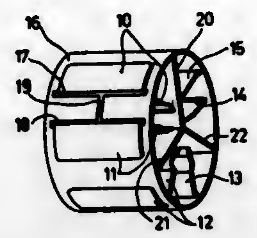


An X-ray tube has a glow cathode which is surrounded by a focussing device electrically connected therewith. The invention is particularly characterized in that the connection of the cathode with the Wehnelt cylinder serving as the focussing device includes a current limiting resistance.

3,728,569
CATHODE-RAY TUBE

Jan Gerritsen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 24, 1971, Ser. No. 183,586
Claims priority, application Netherlands, Sept. 17, 1970, 7013722
Int. Cl. H01j *29/76*
U.S. Cl. 313—79 5 Claims

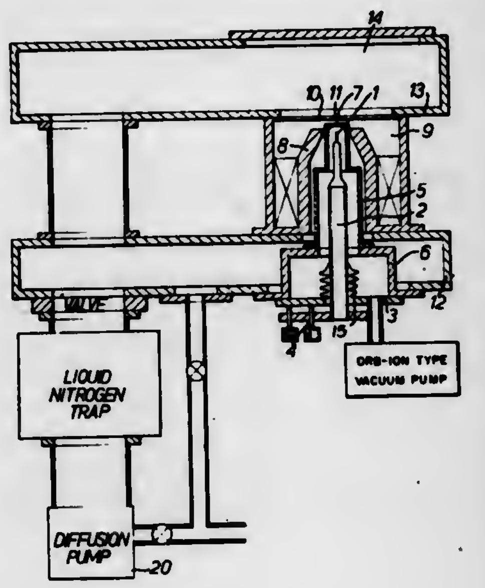
A cathode-ray tube in which a number of electron beams are produced. The tube comprises a luminescent screen and, at a short distance therefrom, a color selection electrode. The electron beams are converged by means of a magnetic convergence device. The part of the convergence device present inside the tube comprises for each electron beam a pair of plate-shaped pole shoes. Each pole shoe is provided in a cylindrical part of the convergence device through an axial gap. The cylindrical part of the convergence device furthermore comprises gaps in such manner that it holds for each axial gap that no closed electric connection exists around a single gap. As a



result of this the occurrence of circulating currents around the axial gaps is counteracted.

3,728,570
ELECTRON PROBE FORMING SYSTEM

Kenneth Charels Arthur Smith, and David John Swann, both of c/o The Department of Engineering, University of Cambridge, Trumpington St., Cambridge, England
Continuation of Ser. No. 866,317, Oct. 14, 1969, abandoned. This application Nov. 18, 1971, Ser. No. 199,899
Claims priority, application Great Britain, April 29, 1969, 21,770/69
Int. Cl. H01j *1/30*
U.S. Cl. 313—84 6 Claims

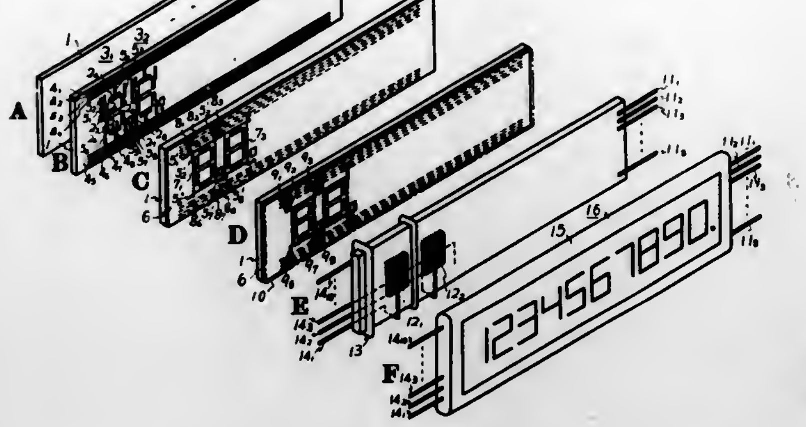


An electron gun comprising an electron source and an anode which together can produce a beam of electrons and which are both disposed substantially within a lens which serves to help focus the electron beam.

3,728,571
GASEOUS GLOW INDICATOR TUBE FORMED ON A SUBSTRATE WITH A PLURALITY OF INSULATING LAYERS

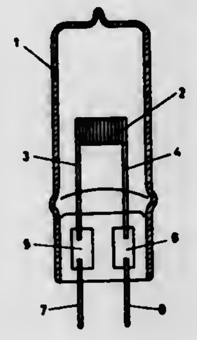
Saburo Uemura, Kanazawa-ku, Yokohama, and Yuzuru Yanagisawa, Fujisawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Division of Ser. No. 741,668, July 1, 1968, Pat. No. 3,588,571. This application June 22, 1971, Ser. No. 155,555
Int. Cl. H01j *61/66*
U.S. Cl. 313—109.5 9 Claims

A gaseous glow indicator tube including a method of manufacturing and aging in which the elements of the indicator electrodes are arranged in a single plane by plating conducting segments on a base insulating plate which also carries a plurality of element energizing electrodes. The various elements of the indicator elements are individually connected to the energizing electrodes. Anode electrodes are mounted adjacent the indicator electrodes and are connected to anode energizing leads so as to selectively energize various indications. A method for aging the gaseous glow indicator is also disclosed.



3,728,572
INCANDESCENT LAMP WITH REGENERATIVE CYCLE

Gerhard Maier, and Siegfried Henes, both of Herbrechtingen, Germany, assignors to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlamper mbH, Munich, Germany
Filed July 30, 1971, Ser. No. 167,631
Claims priority, application Germany, Sept. 18, 1970, P 20 46 186.3
Int. Cl. H01k *1/50*
U.S. Cl. 313—222 1 Claim

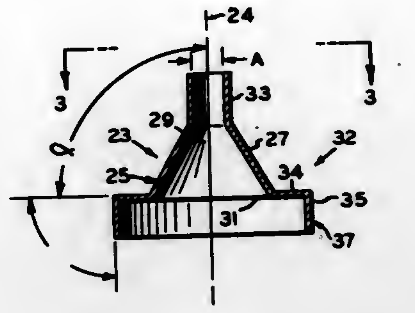


Halogen incandescent lamp with tungsten filament contains inert fill gas and has a partial bromine pressure sufficient for the regenerative cyclic process; the fill gas additionally contains an additive of from 0.05 to 0.5 vol. percent of carbon monoxide; due to the CO additive it is possible to reduce the quantity of bromine necessary for the regenerative cycle to less than 10 percent otherwise necessary under the same conditions.

3,728,573
LEAKAGE INHIBITING SHIELD

Henry W. Reeber, Waterloo, N.Y., assignor to GTE Sylvania Incorporated
Continuation-in-part of Ser. No. 216,111, Jan. 7, 1972. This application Aug. 3, 1972, Ser. No. 277,617
Int. Cl. H01j *1/52, 61/04*
U.S. Cl. 313—313 8 Claims

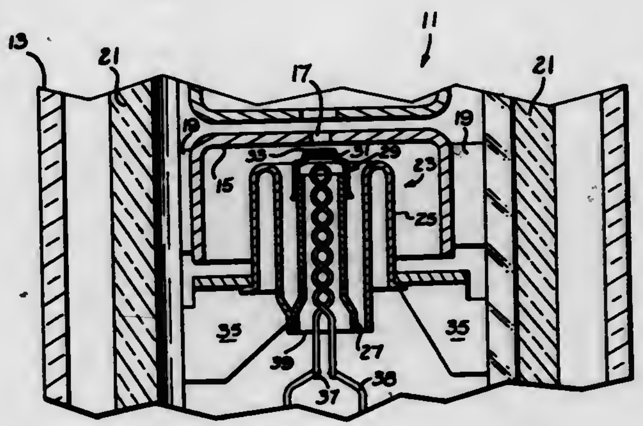
An improved shielding means, for inhibiting the formation of electrical leakage between the stem leads of an electron discharge device, is a substantially infundibular shaped member formed for umbrella-fashion-attachment to an individual lead to effect better shielding of the bead area surrounding the lead. A hollow conic section, extending below a tube-like attachment portion, has an annular basal-oriented projecting portion with a peripheral downturned portion therearound. The integral shaping of the downturned portion with the projection provides beneficial structural reinforce-



ment and rigidity to the structure and effects improved shielding characteristics.

3,728,574
CATHODE CAP

David Benda, Geneva, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.
Filed Oct. 19, 1971, Ser. No. 190,599
Int. Cl. H01j *1/20, 29/04, 29/48*
U.S. Cl. 313—337 1 Claim

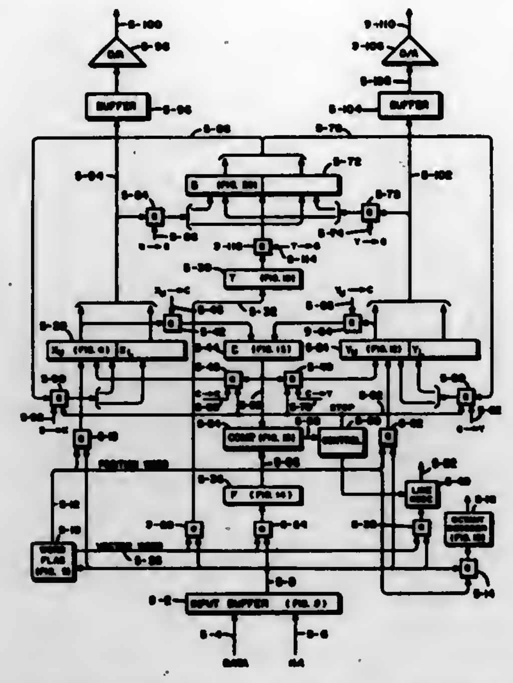


A closure cap, having improved dimensional stability, is provided for capping a terminal-emitting cathode ray tube cathode sleeve. The closure is diversely shaped to have a mesa-like terminal portion, with the planar end surface thereof formed to provide a flat substrate area to accommodate the deposition of electron emissive material thereon. A strengthening transition portion extends from the periphery of the mesa-like portion to form an annular shoulder therearound. A peripheral skirt portion, extending downward from the shoulder, is of a length and internal diameter to facilitate encompassment and affixation to the terminal portion of the sleeve.

3,728,575
DIGITAL VECTOR GENERATOR WHICH CAUSES THE ELECTRON BEAM TO MOVE IN THE LARGEST POSSIBLE INCREMENT BY SENSING IF THE LINE IS DIVISIBLE BY 2^n

Mauritz Granberg, Minneapolis, and Hubert W. Mueller, Jr., Hamburg, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Division of Ser. No. 569,481, Aug. 1, 1966, Pat. No. 3,510,634. This application July 17, 1969, Ser. No. 871,161
Int. Cl. H01j *29/70*
U.S. Cl. 315—18 2 Claims

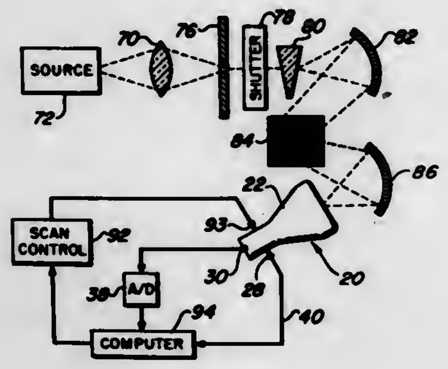
A circuit for use in a cathode ray tube vector display device for controlling the speed at which the electron beam is made to transverse the screen. The circuit senses whether the length of the line segment yet to be formed is evenly divisible by



2,4,8. . . 2^n and causes the electron beam to move in the largest possible increment.

3,728,576
SELECTIVELY READ ELECTRO-OPTICAL IMAGING SYSTEM

Richard L. Vogenthaler, Brookline, Mass., and Marvin Margoshes, Chevy Chase, Md., assignors to Block Engineering, Inc., Cambridge, Mass.
Filed Feb. 22, 1971, Ser. No. 117,446
Int. Cl. H01j *31/26*
U.S. Cl. 315—10 9 Claims



An electronic image-encoder with an SEC vidicon in which the electron beam is positioned according to a coordinate pair stored as digital signals and applied as analog signals to the deflection coils of the vidicon. This permits the beam to read selected points on the vidicon target and the beam is blanked until the desired deflection signals are applied.

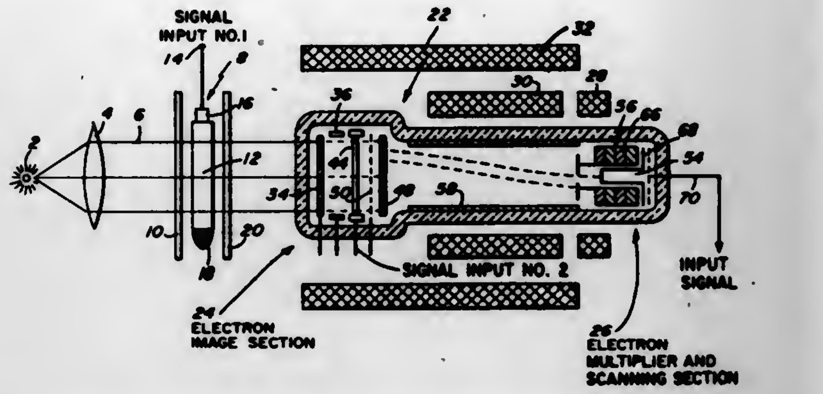
In one version of the device, the deflection signals are simply voltages corresponding to the values of the digital signals. In another version, one digital signal is converted to an analog deflection voltage and a standard ramp is used as the other deflection voltage, the beam being turned on to read only after a time interval following initiation of the ramp, which interval is proportional to the other digital signal.

A special application of the encoder incorporates a crossed-dispersion optical system for projecting several stacked spectral orders into the vidicon target.

In all cases, the electron beam actuation provides an output signal corresponding to the image intensity at the point selected by the digital signal pair, and this output signal is digitized for storage, manipulation or display.

3,728,577
IMAGE CORRELATOR TUBE WITH SECONDARY TRANSMISSION OF COLLIMATED RAYS

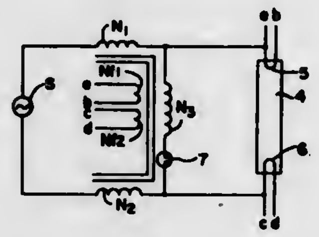
John M. Osepchuk, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Aug. 21, 1970, Ser. No. 65,874
Int. Cl. H01j *31/48*
U.S. Cl. 315—11 2 Claims


SIGNAL INPUT NO. 1
SIGNAL INPUT NO. 2
INPUT SIGNAL
24 ELECTRON IMAGE SECTION
26 ELECTRON MULTIPLIER AND SCANNING SECTION

An image orthicon type device is disclosed for electrooptical integration and correlation systems. A photoemissive cathode and a dynode electrode of an electron conductive dielectric material provide for direct emission of secondary electrons from collimated light input signals to impinge on an insulated target member. The normal photoelectric emission current is multiplied by a factor inherent in direct secondary electron emission by the dynode electrode and becomes a linear function of the accelerating potential between the photocathode and dynode for processing time variable modulating signals. An axial focusing magnetic field is utilized. The dynode electrode arrangement may be constructed as a separate sealed compartment in the overall device.

3,728,578
HIGH OUTPUT OPERATING APPARATUS FOR A FLUORESCENT LAMP

Shunichi Nozawa, Hyogo; Hisashi Kuroi; Masamichi Hatada, both of Kyoto, and Shunsaku Fukuyama, Hyogo, all of Japan, assignors to Blackwell Electronics Ind. Co., Ltd., Shimogyo-ku, Kyoto, Japan
Filed April 27, 1971, Ser. No. 137,781
Claims priority, application Japan, Nov. 30, 1970, 45/105644
Int. Cl. H05b *41/14*
U.S. Cl. 315—99 9 Claims

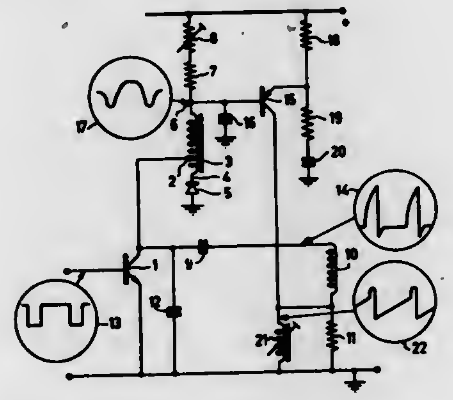


A high output operating circuit for a fluorescent lamp includes, in one embodiment, a magnetic circuit formed by confronting E-cores and having a pair of outer legs and a center leg. A pair of lamp current control windings are wound on the outer legs, and a cathode preheating compensation winding and a pair of cathode heating windings are wound on the center leg. The flux from the current control windings are in opposition in the center leg. The compensation winding is connected across the lamp between the cathodes by a glow starter. During preheating, the glow starter is closed, and the flux from the compensation winding superposed in the center leg provides optimum cathode preheating. When the lamp is operating, the glow starter is open, and the opposed flux in the center leg provides optimum cathode heating.

In a second embodiment, a lamp current control winding, a pair of cathode heating windings, and a preheating compensation winding are wound on a common magnetic circuit. A pair of manually operated switches connect the windings in series with the lamp cathodes to provide optimum cathode preheating. During operation, the switches remove the compensation winding from the circuit and connect the cathode heating windings across the cathodes to provide optimum cathode heating.

3,728,579
LINE SCANNING CIRCUIT ARRANGEMENTS HAVING LINEARIZING MEANS

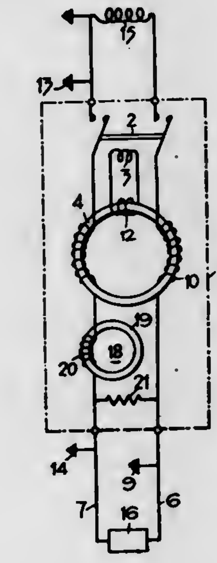
Stanislaw Rogowski, Cambridge, England, assignor to Pye Limited, London, England
Filed Nov. 4, 1971, Ser. No. 195,700
Claims priority, application Great Britain, Nov. 11, 1970, 53,643/70
Int. Cl. H01j *29/70*; H03k *4/08*
U.S. Cl. 315—27 TD 7 Claims



A line scanning circuit having its output circuit a-c coupled to a scanning coil employs linearizing means comprising a transistor to generate a parabolic waveform that is injected into the bottom of the scanning coil while the conventional sawtooth waveform is supplied to the top of the scanning coil.

3,728,580
CORE-BALANCE EARTH LEAKAGE PROTECTION

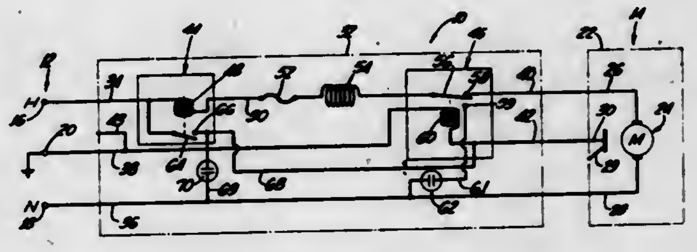
Maurice R. Marot, Transvaal, Republic of South Africa, assignor to Electrical Protection Company (Proprietary) Limited, Benoni, Transvaal, Republic of South Africa
Continuation of Ser. No. 819,900, April 28, 1969, abandoned. This application April 6, 1971, Ser. No. 131,798
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D 8 Claims



The core balance earth leakage protection device is improved by providing in combination with it a suitable saturable core reactor whose winding is connected in series with one primary winding of the device, usually that connected in series with the neutral conductor of the circuit. The saturable core reactor is adapted to provide an impedance of substantial value for currents below and near the rated threshold sensitivity of the device but to be saturated at the usual load current values for which the device is adapted, and to therefore offer negligible impedance to the flow of load currents. The core balance earth leakage protection device is advantageously further provided in combination with a preload impedance connected between a line conductor at a point on the load side of one winding of the device and the neutral conductor at a point on the load side of another winding of the device, adapted to draw sufficient additional current through the one winding of the device to overcome the balancing current that would flow in the other winding due to an earth short circuit. The effective impedance of the tripping core of the device must be low in comparison to the impedance of the saturable core reactor for values of current in the order of the threshold sensitivity of the device.

3,728,581
GROUND FAULT CIRCUIT INTERRUPTER

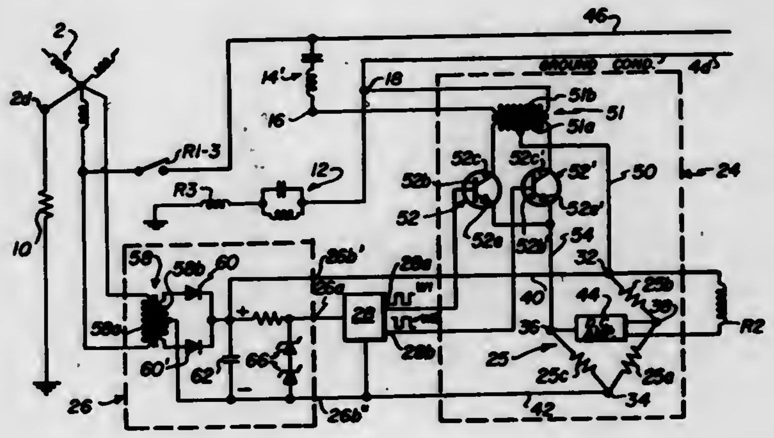
Daniel M. Adamo, 125 E. Crescent Avenue, Redlands, Calif.
Filed May 27, 1971, Ser. No. 147,516
Int. Cl. H02h *3/16*
U.S. Cl. 317—18 A 3 Claims



A ground fault circuit interrupter and/or indicator comprising a relay switch and/or indicator lamp connected on one side to the grounded frame of an appliance or other part, and on the other side to the neutral wire or to the grounding wire of the electrical service. Current leaking from the hot line to the appliance frame due to moisture or faulty insulation passes through the relay coil and/or indicator to the neutral line or grounding wire of the service, and this actuates the relay switch to open the hot line circuit to the appliance. In one embodiment, there is an additional circuit breaker in the hot line comprising a relay switch serially connected to the hot line, which is energized by excessive current flow, as in a line-to-line short.

3,728,582
GROUND CONTINUITY MONITORING SYSTEM

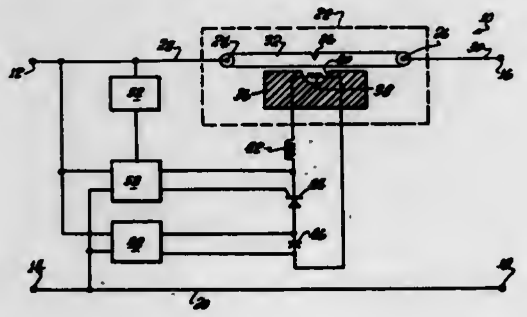
Thomas I. Agnew, Irwin, Pa., assignor to Gulton Industries Inc., Metuchen, N.J.
Filed Dec. 23, 1971, Ser. No. 211,449
Int. Cl. H02h *3/16*
U.S. Cl. 317—18 C 14 Claims



In a system which delivers electrical power to remotely located electrical equipment, such as mining equipment, through power conductors in a cable extending from a main source of power to the equipment, the cable including at least two power conductors connected to the electrical input terminals of the equipment and a ground conductor connected to the frame of the equipment, there is added a ground conductor monitoring circuit including power circuit isolating means connected to one of the power conductors of the cable and the ground conductor thereof to provide across a pair of connecting terminals a series circuit including the cable ground conductor isolated from the main power circuit at a given frequency substantially different from the main power source frequency. These connecting terminals are preferably connected across the secondary winding of a transformer having a center tapped primary winding driven by push-pull connected transistors or the like fed by the oppositely phased outputs of a signal generator circuit at said given frequency. The push-pull transistor circuit includes a load resistance on one side of the load terminals thereof constituting one arm of a D.C. bridge circuit, and the load terminals and the primary winding of the transformer constituting the adjacent arm of the D.C. bridge circuit. Control means at the output of the bridge circuit is responsive to the output of the bridge circuit indicating that the impedance reflected into the primary winding exceeds a given value by disconnecting the main power source from the cable power conductors.

3,728,583
ELECTRICAL FUSE SYSTEM

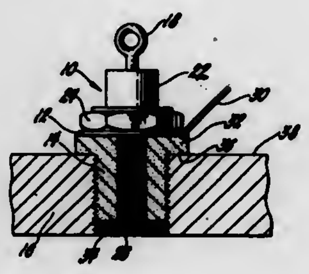
Arthur K. Wickson, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed July 10, 1972, Ser. No. 270,392
Int. Cl. H02h *3/08*
U.S. Cl. 317—33 SC 9 Claims



An electrical fuse has a link with a notch or reduced section portion, adjacent which is a source of mechanical energy which is arranged to be energized from the charge on a capacitor by the closure of a switch, preferably a thyristor which is gated by a circuit means sensing the current flowing in the link.

3,728,584
SEMICONDUCTOR DEVICE MOUNTING ADAPTER

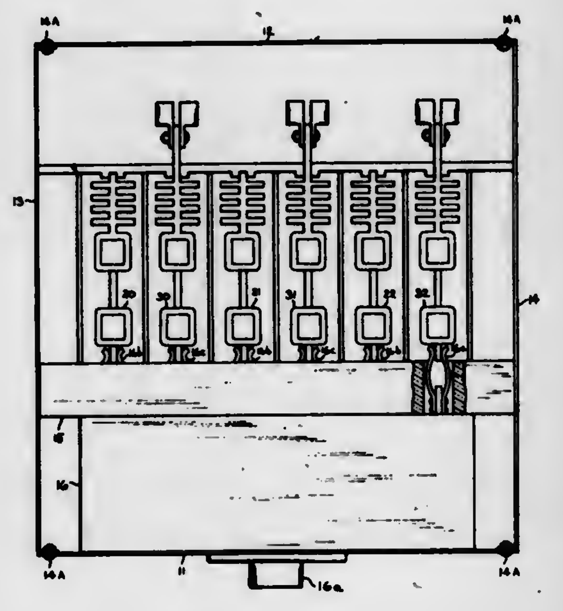
Robert J. Kuhlow, Brookfield, Wis., assignor to General Motors Corporation, Detroit, Mich.
Filed June 21, 1971, Ser. No. 155,058
Int. Cl. H01l *1/12*
U.S. Cl. 317—100 1 Claim



An adapter assembly is described for electrically insulating a stud mount semiconductor device from its supporting heat sink while maintaining good thermal communication between them. An externally and internally threaded boron nitride tubular adapter is threaded into a heat sink recess. The semiconductor device stud is threaded into the adapter.

3,728,585
ELECTRIC SWITCHBOARD ASSEMBLY WITH BUS BAR HEAT PIPE MEANS

William F. Olashaw, Plainville, Conn., assignor to General Electric Company
Filed June 12, 1972, Ser. No. 261,596
Int. Cl. H02b *1/20*; H01b *7/34*
U.S. Cl. 317—100 7 Claims



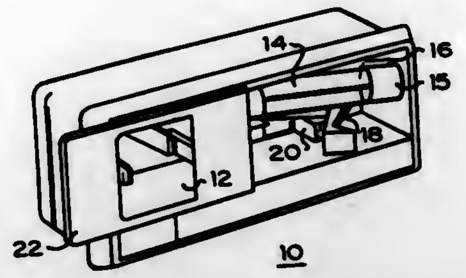
An electric switchboard assembly, including a main enclosure and a number of vertically extending main power supply busbars and electrical control devices having line terminals connected to the busbars. Heat dissipating means is provided operating on the "heat pipe" principle to dissipate heat generated in the electrical control devices and/or in the connections of such devices. The heat dissipating means operates by transporting the heat to a different location in the switchboard from that in which it is created and dissipating it to suitable heat receiving means such as a circulating heat receiving medium such as air. The vertically extending power supply busbars each comprise a pair of spaced tubular busbar members. The electrical control devices are connected to a first one of the pair of busbars, and the other one of the pair of busbars is provided with heat dissipating means, such as fins. The pair of busbars are spaced apart and are interconnected by tubular members adjacent the top and bottom ends to form a closed loop. This closed loop is evacuated and provided with a liquid and wicking means so that it acts as a heat pipe whereby heat which is transmitted to the first one of the members of the pair of busbars from the electrical control devices or by the flow of current therethrough is carried to the other member of the pair and dissipated to the circulating air around the fins.

3,728,586
AC POWER MODULE HAVING AN INTEGRAL MECHANICAL SAFETY DEVICE

Alan E. Inhelder, Mountain View, and Richard L. Hoegner, Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 046,406, June 15, 1970. This application Jan. 7, 1972, Ser. No. 216,310
Int. Cl. H02b *1/18*
U.S. Cl. 317—114 5 Claims

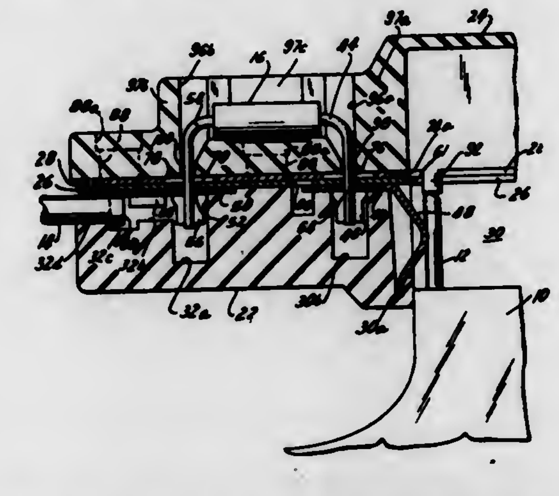
An A.C. power receptacle is contained in one compartment of a module and a fuse holder, fuse ejector and line voltage

switch are contained in the other compartment. A sliding door allows access to only one compartment at a time, and a safety interlock prevents the line voltage switch from being changed unless the fuse is ejected.



3,728,587
KINESCOPE TUBE SOCKET WITH COMPONENT RECEIVING MEANS

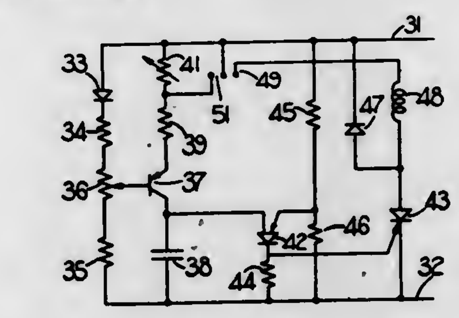
Seymour Offerman, New York, N.Y., assignor to Industrial Electronic Hardware Corp., New York, N.Y.
Filed Nov. 4, 1971, Ser. No. 195,754
Int. Cl. H02b *1/04*
U.S. Cl. 317—118 34 Claims



A socket for a tube having pins comprises a receiving means for said pins and pin contacts adapted to engage the pins. Wire contacts are spaced from the pin contacts and are adapted to be connected to lead wires. Each of the contacts has a means for receiving a component lead so that components can be inserted between the pin and wire contacts. Therefore, each of the components will be in series between the lead wires and the electrodes of the tube.

3,728,588
METHOD OF BEHAVIOR THERAPY

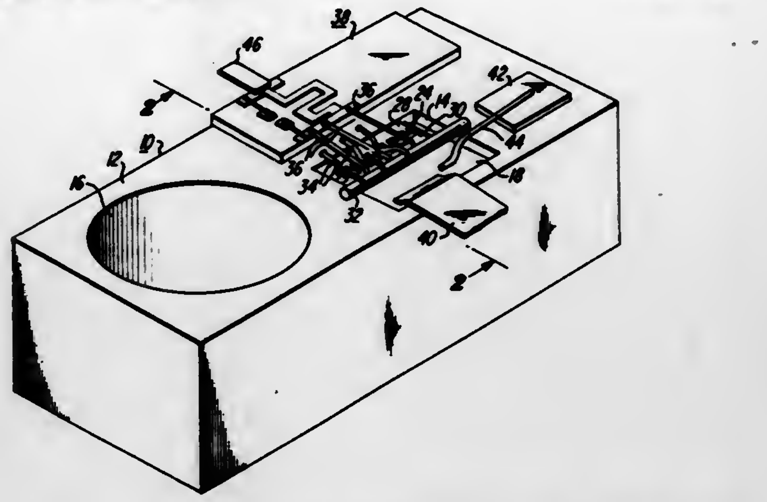
Christopher Robin Jones, 21 Newport Drive, Alcester, England
Filed July 22, 1971, Ser. No. 165,182
Claims priority, application Great Britain, July 31, 1970, 37,094/70
Int. Cl. H01h *47/18*
U.S. Cl. 317—141 S 4 Claims



A method of behavior therapy wherein a subsequent trial is automatically initiated after a variable time period determined by the duration of the previous trial.

3,728,589
SEMICONDUCTOR ASSEMBLY

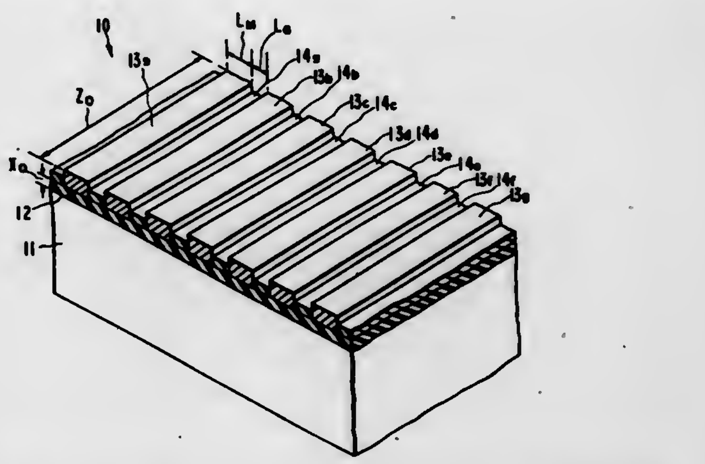
Martin Caulton, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed April 16, 1971, Ser. No. 134,769
Int. Cl. H01l *1/02*, *1/14*
U.S. Cl. 317—234 R 4 Claims



A semiconductor assembly for high frequency, high power operation includes a ground plane member of a block of an electrically and thermally conductive material having a cavity in the top surface thereof. A mounting block of an electrically insulating and thermally conductive material is mounted on the ground plane member in the cavity, and a transistor element is mounted on the mounting block. The transistor element has a collector electrode on one surface which is mechanically and electrically connected to a metal film on the mounting block, and emitter and base electrodes on its other surface which are substantially coplanar with top surface of the ground plane member. A ground bar extends across the cavity adjacent the transistor element and is mechanically and electrically connected to the top surface of the ground plane member. The base electrode of the transistor element is electrically connected to the ground plane member by wires extending from the base electrode to the top surface of the ground plane member and the ground bar. Input and output tuning circuits may be mounted on the top surface of the ground plane member and electrically connected to the base electrode and collector electrode respectively.

3,728,590
CHARGE COUPLED DEVICES WITH CONTINUOUS RESISTOR ELECTRODE

Cheong-Ki Kim, San Jose, and Edward H. Snow, Los Altos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed April 21, 1971, Ser. No. 136,087
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R 7 Claims

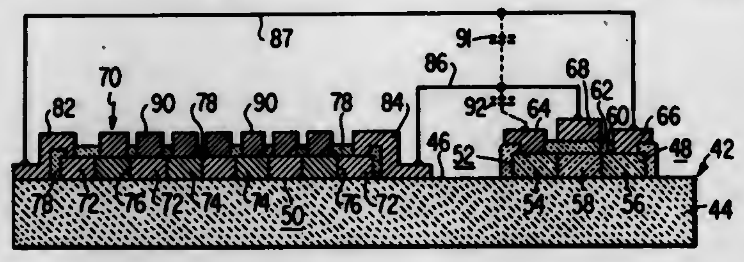


A charge coupled device comprises a semiconductor substrate containing on one surface an insulating layer together with a plurality of electrodes spaced from each other by resistive material. This resistive material prevents the formation of potential barriers between the electrodes and increases the speed of transfer of charge from beneath one electrode to beneath an adjacent electrode.

3,728,591
GATE PROTECTIVE DEVICE FOR INSULATED GATE FIELD-EFFECT TRANSISTORS

Richard Alan Sunshine, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 3, 1971, Ser. No. 177,790
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R **6 Claims**

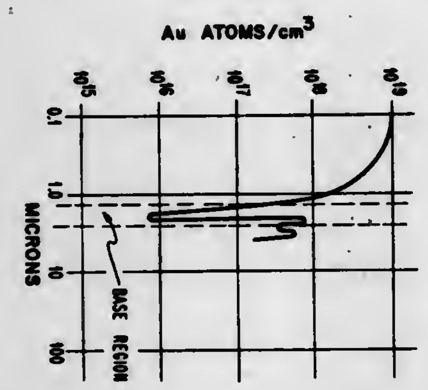


The protective device comprises a thin film of semiconductor material on an insulating substrate, contiguous regions of the film being of opposite conductivity type and providing a plurality of serially connected diodes in back-to-back relationship. Disposed on the surface of various different ones of the regions are layers of metal for reducing the electrical resistance of the device. The device is connected between the gate electrode of the transistor to be protected and either the source or drain electrode thereof.

3,728,592
SEMICONDUCTOR STRUCTURE HAVING REDUCED CARRIER LIFETIME

Madhukar Laxman Joshi, Essex Junction, Vt.; Burton Joseph Masters, Poughkeepsie, N.Y.; Osvaldo Raul Viva, Williston, Vt., and Tsu-Hsing Yeh, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 823,255, May 9, 1969, Pat. No. 3,625,781. This application Sept. 14, 1971, Ser. No. 180,488
Int. Cl. H01l *7/44, 9/12, 19/00*
U.S. Cl. 317—235 R **8 Claims**



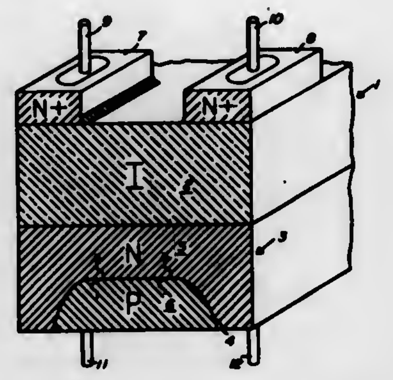
A method of fabricating high-speed planar transistor structures by reducing carrier lifetime through doping with carrier lifetime killers. Gold is diffused through the front surface of the silicon structure during transistor fabrication. The gold is introduced from the vapor phase in a controlled manner so that its solid solubility in silicon is not exceeded. A simultaneous gold and base diffusion is preferred.

Such a simultaneous diffusion produces a novel planar transistor structure having a gold distribution curve with an unexpected increased concentration peak in the region proximate to the base-collector junction.

3,728,593
ELECTRO OPTICAL DEVICE COMPRISING A UNITARY PHOTOEMITTING JUNCTION AND A PHOTOSENSITIVE BODY PORTION HAVING HIGHLY DOPED SEMICONDUCTOR ELECTRODES

Michael G. Coleman, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 6, 1971, Ser. No. 186,884
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R **5 Claims**

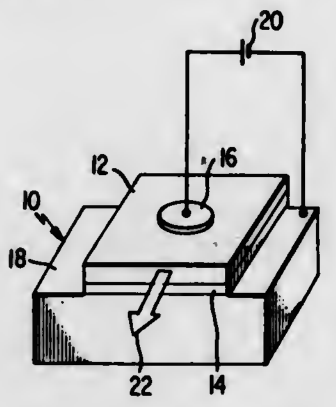


There is disclosed an electro optical device comprising a single body of semi insulating semiconductor material having a semi insulating semiconductivity of approximately 10^8 ohm-centimeters, preferably gallium arsenide. Gallium arsenide in this conductivity range exhibits a photo conductivity characteristic in which there is a relatively linear variance of resistivity with impinging photons. A PN junction is formed in one portion of the substrate and, responsive to electric signals applied across the junction, emits photons affecting the resistivity of the semi insulating layer. Contact to the photo resistive layer can be connected in a circuit as either a switch or a variable resistor, depending upon the level of signals applied across the PN junction.

3,728,594
ELECTROLUMINESCENT DEVICE COMPRISING A TRANSITION METAL OXIDE DOPED WITH A TRIVALENT RARE EARTH ELEMENT

Woongsoon Michael Yim, and Perry Niel Yocom, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,708
Int. Cl. H05b *33/00*
U.S. Cl. 317—235 R **6 Claims**

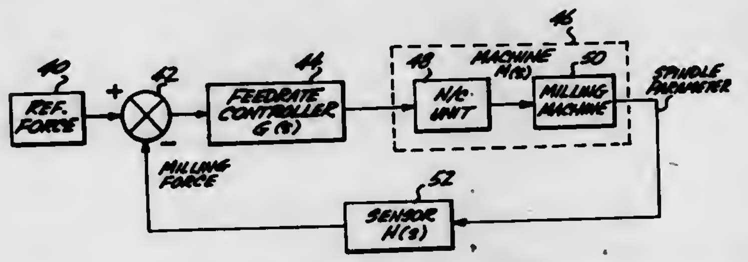


An electroluminescent device includes a layer including a transition metal oxide doped with a trivalent rare earth metal. The transition metal oxide has the general formula, $M_x^I(M^{II}O_y)_z$ where M^I is a Group IIA element or a group IIIB element, M^{II} is a transition metal, O is oxygen and the subscripts x, y and z denote the number of each of the elements depending on the valences of the particular elements used. The layer may be in the form of a single crystalline body of the doped transition metal oxide or particles of the transition metal oxide in a dielectric medium. A pair of spaced contacts are provided on the layer. For the single crystalline body one of the contacts is a blocking contact and the other is an ohmic contact. For the layer which includes the particles in a dielectric medium, both contacts are blocking contacts. Light is emitted from the layer when a current is applied through the layer between the contacts; DC current being used for the single crystalline body and AC current for the particles in a dielectric medium.

3,728,595
FEEDRATE CONTROL SYSTEM FOR MILLING MACHINES

Lyle C. Adams, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 27, 1970, Ser. No. 14,918
Int. Cl. G05b *19/24*
U.S. Cl. 318—39 **9 Claims**



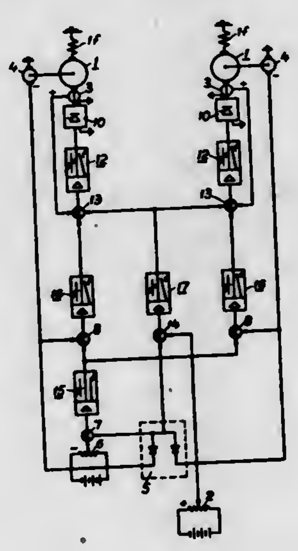
A system for automatically controlling the feedrate of a milling machine includes a sensor which measures the actual milling force exerted on the cutting element thereof during the milling process. If the actual milling force exceeds a pre-set reference force, a controller supplies a control signal to the feedrate control circuits within the milling machine to appropriately modify the feedrate. A sensor housing for cutter drawbar machines includes a spindle adapter which is interposed between the spindle and cutting element and which has disposed thereon a plurality of strain gauges disposed in a bridge arrangement. The outputs of the bridges correspond to either spindle deflection or spindle torque. The controller may include an integral control function which operates on an error signal obtained from the comparison of the pre-set reference and the actual milling forces.

3,728,596
PLURAL MOTOR SLIP-CONTROLLED DRIVING MEANS FOR TRACTION PURPOSES

Bo Hermansson, and Jorgen Gustafsson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed March 8, 1971, Ser. No. 121,977

Claims priority, application Sweden, March 6, 1970, 3001/70
Int. Cl. H02p *5/50*
U.S. Cl. 318—52 **5 Claims**

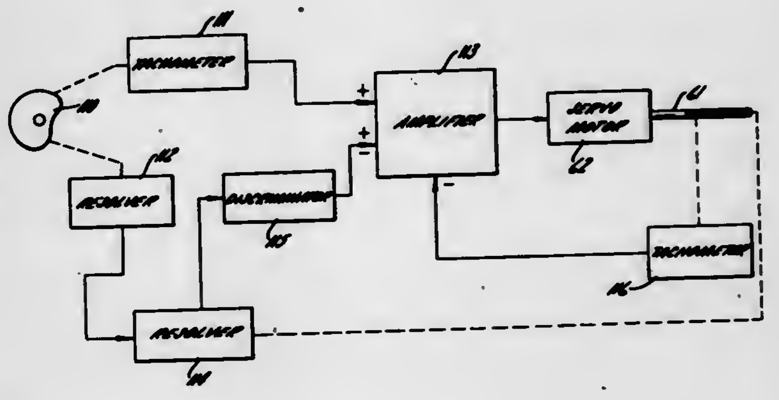


A slip controlled driving means for traction purposes includes a plurality of direct current motors connected to various wheel shafts. They are provided with control rectifiers forming valve control systems to control the motor current. The rectifiers respond to a first reference value supplied to the system by a first reference value transducer, a current transducer for the rotor current and a tachometer for each motor. A minimum selector is provided to compare the output values of all the tachometers and to pick out the lowest one. A reference value transducer can be set for the permissible difference between a certain motor speed and the speed of the motor rotating at the lowest speed. A summation device produces the sum of the lowest tachometer value and this difference reference, and a plurality of comparison devices are each connected to a tachometer and arranged to produce the positive difference between the output value of one tachometer and such sum. This positive difference is supplied to each of the control systems in such a way as to reduce the driving current of the motor.

3,728,597
SERVO MOTOR CONTROLLED TRANSFER SYSTEM FOR AUTOMATIC PRESS LINE

Joseph R. Cummens, and Francis E. Heiberger, both of Elmhurst, Ill., assignors to Danly Machine Corporation, Chicago, Ill.

Filed July 8, 1971, Ser. No. 160,799
Int. Cl. H02p *5/52*
U.S. Cl. 318—85 **5 Claims**



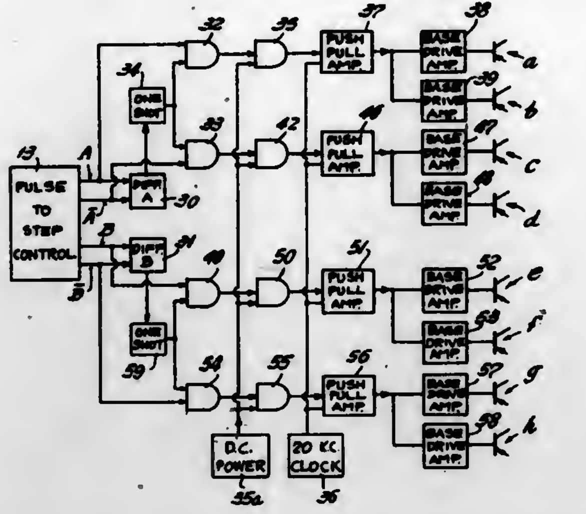
A transfer system for an automatic press line which includes a gripper for transferring workpieces between presses. The gripper is supported on the ends of a pair of transfer arms projecting from a corresponding pair of pantographs. The pantographs are manipulated by a pair of ball screw assemblies operated by a corresponding pair of servo motors. The servo motors are electrically connected to the press drive for synchronizing movement of the transfer assembly with the press line. A pair of cams connected to the press drive are associated with a tachometer and a resolver for generating electrical input signals for the control system associated with the servo motors.

3,728,598
BI-DIRECTIONAL ENERGIZING CIRCUIT FOR A STEPPING MOTOR WITH MEANS TO PREVENT CONDUCTION IN ONE COIL UNIT PREVIOUSLY ENERGIZED COIL CONDUCTION IS EXTINGUISHED

Joe Cyril May, Cheshire, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Nov. 2, 1970, Ser. No. 86,054
Int. Cl. H02k *29/00*
U.S. Cl. 318—696 **5 Claims**

A stepping motor having its stator windings connected into two phases is advanced one step by reversing the direction of current flow in one of the phases. Each phase is connected to a D.C. source by a pair of paths with each path directing current in a different direction through the phase. The paths are alternately shiftable from conducting to non-conducting with the shift of a path to being conducting being delayed until current flow from the path shifted to non-conducting is essentially zero to prevent short circuiting between the paths.

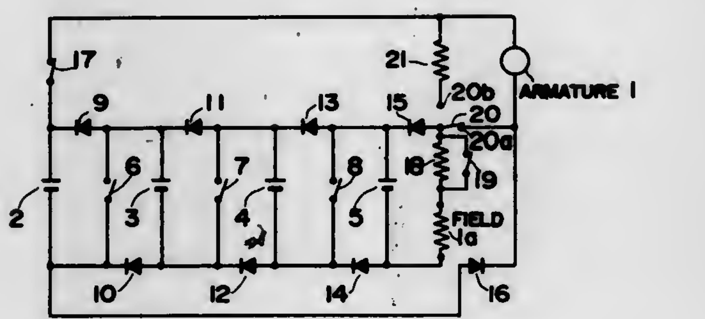


3,728,599
CONTROL SYSTEM FOR AN ELECTRIC AUTOMOTIVE VEHICLE

Hiroei Minami, Kawasaki-shi, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima-ken and Fuji Electric Co., Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed July 30, 1971, Ser. No. 167,569
Int. Cl. H02p *7/14*

U.S. Cl. 318—139 **3 Claims**



A control system for an electric automotive vehicle driven by a battery operated D.C. series motor, comprising a motor control circuit for controlling stepwisely D.C. voltage applied to a motor to regulate the speed of the motor and control means for charging batteries during regenerative braking operation of the vehicle. The motor control circuit is constituted of four batteries, six unidirectional devices and three switching means.

3,728,600
ARRANGEMENT FOR TRANSMITTING MECHANICAL POWER FROM A DRIVING MACHINE TO A LOAD

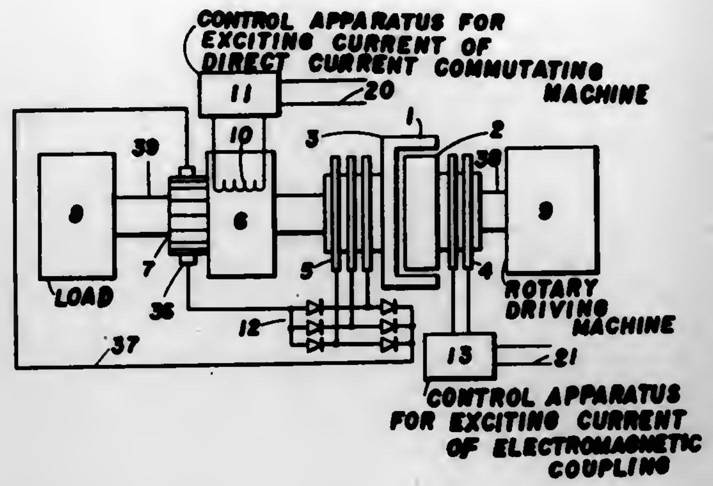
Fukuo Shibata, 3-22, Tokiwa-cho, Nishinomiya, Japan

Filed June 16, 1971, Ser. No. 153,708
Int. Cl. H02k *1/26*

U.S. Cl. 318—197 **7 Claims**

When an electromagnetic coupling having two rotors is connected mechanically with a direct current commutating machine, in such a way that a rotor is used in common as one of the two rotors of the electromagnetic coupling and as a rotor of the direct current commutating machine, the electric machine arrangement can be a power transmitting device which is of high efficiency and has a simple construction.

If the rotor shaft of the direct current commutating machine is connected mechanically with a load, and the other rotor of the electromagnetic coupling is driven by a driving machine such as a prime mover, further rectifiers are electrically connected between armature windings of the direct current commutating machine and the electromagnetic coupling, the load can be controlled over a wide speed range.

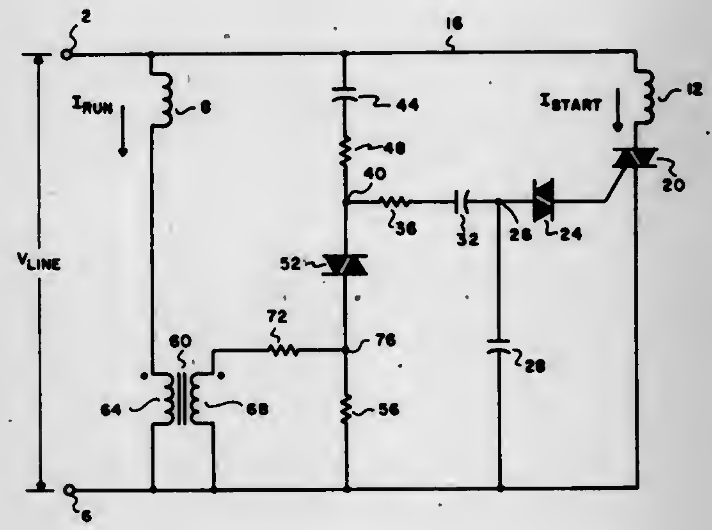

CONTROL APPARATUS FOR EXCITING CURRENT OF DIRECT CURRENT COMMUTATING MACHINE
LOAD
ROTARY DRIVING MACHINE
CONTROL APPARATUS FOR EXCITING CURRENT OF ELECTROMAGNETIC COUPLING

3,728,601
TRIGGER DIODE CONTROLLED MOTOR STARTING SYSTEM

David C. Fricker, Hurst, and Thomas F. Whittaker, Forth Worth, both of Tex., assignors to ECC Corporation, Euless, Tex.

Filed Sept. 3, 1971, Ser. No. 177,576
Int. Cl. H02p *1/44*

U.S. Cl. 318—221 E **9 Claims**



A speed responsive motor starting system includes a bilateral triode switch connected in series with the motor start winding for controlling the current flow therethrough. A first bilateral trigger diode is connected to the control electrode of the triode switch for supplying enabling current thereto. The first bilateral trigger diode is connected to a capacitor which provides the enabling current and to a second bilateral trigger diode connected to a voltage divider. A current-sensing transformer is coupled in circuit with the motor run winding and with the voltage divider for controlling the voltage applied to the voltage divider, and thus for controlling the voltage necessary to trigger the first bilateral trigger diode in accordance with the motor speed. Phase compensating capacitors are provided to advance the phase angle of the voltage which triggers the first bilateral trigger diode.

3,728,602
SYSTEM OF DRIVING A PULSE MOTOR

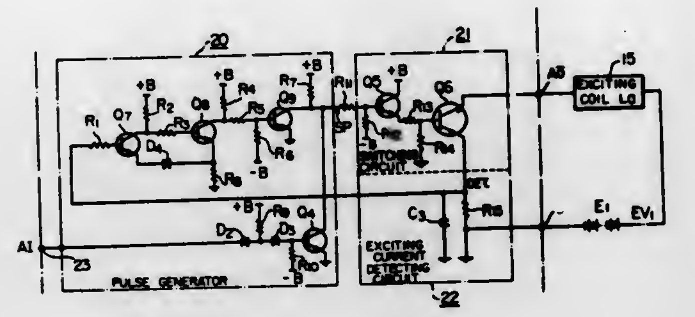
Mitsuo Mañabe, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki-shi, Kanagawa-ken, Japan

Filed March 8, 1971, Ser. No. 121,662

Claims priority, application Japan, March 23, 1970, 45/24201

Int. Cl. H02p *7/00*

U.S. Cl. 318—434 **6 Claims**



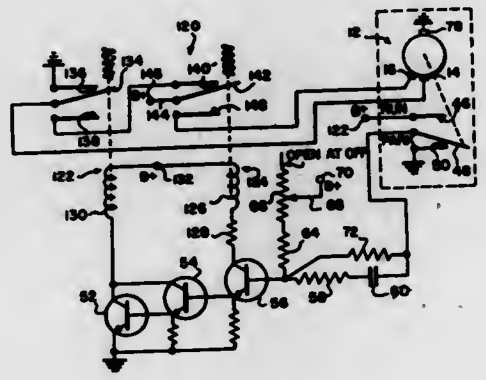
A high DC voltage is supplied to the exciting coil of a pulse motor and the current flowing in the exciting coil is detected and it is instantly cutoff when the above-mentioned current reaches a predetermined value. Accordingly, the pulse motor can be advantageously provided with a small power loss in a switching circuit as well as in the exciting circuit, because the value of a series resistor of the exciting coil can be decreased to a minimum or even to zero. Further, a quick response frequency characteristic and a simple and economical circuit capable of automatically adjusting the exciting current at all time can be expected, because the high voltage is impressed upon the exciting coil.

3,728,603
WINDSHIELD WIPER CONTROL

Robert W. Kearns, 20524 Rutherford Ave., Detroit, Mich.

Division of Ser. No. 815,060, April 10, 1969, Pat. No. 3,581,178. This application Oct. 27, 1970, Ser. No. 84,451
Int. Cl. B60s *1/08*

U.S. Cl. 318—443 **1 Claim**



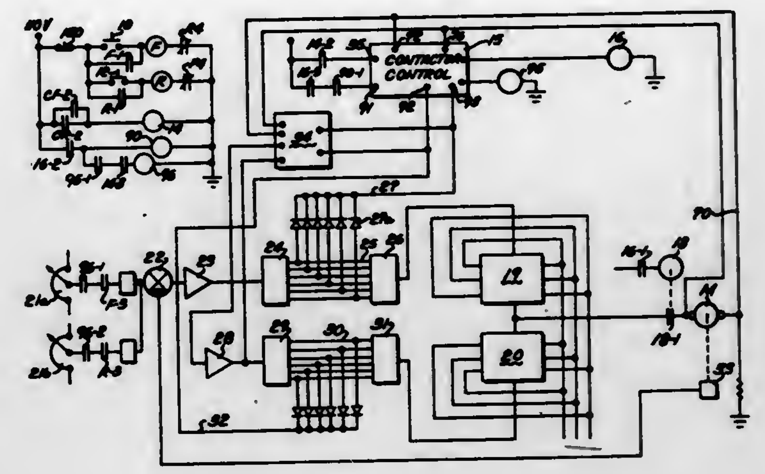
An electric control device controlling a wiper motor to operate windshield wiper blades intermittently with a dwell period between successive wiping cycles. The wiper motor current is carried by relay contacts and a solid state timing circuit controls the energization of the relay coil.

3,728,604
MOTOR CONTROL SYSTEM

James W. Grygera, Racine, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed July 26, 1971, Ser. No. 165,469
Int. Cl. H02p *5/04*

U.S. Cl. 318—459 **18 Claims**



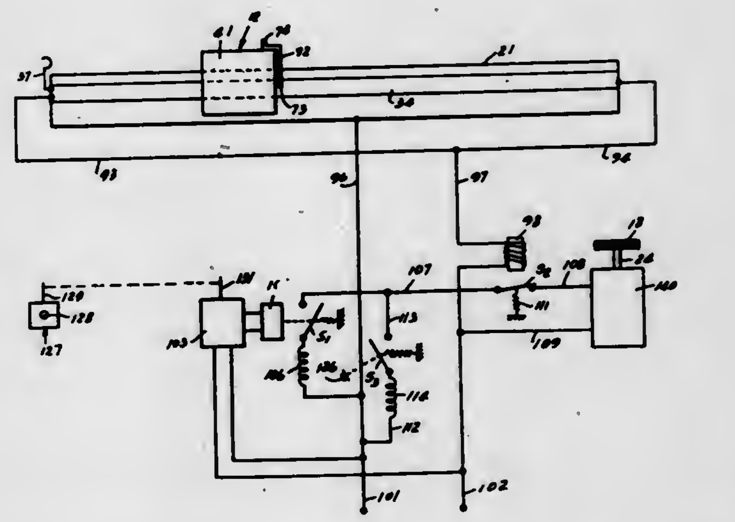
Motor control system in which the electromotive force generated by the motor and motor armature current is sensed on starting and stopping to inhibit operation of the motor contactor for making and breaking the armature circuit in the presence of the electromotive force or armature current.

3,728,605
AUTOMATIC MOTOR DRIVEN REVERSIBLE CLOSURE OPERATOR

Dennis L. Purtilo, Waterloo, Iowa, assignor to Chamberlain Manufacturing Corporation, Waterloo, Iowa

Filed Aug. 26, 1971, Ser. No. 175,046
Int. Cl. H02p *1/00*

U.S. Cl. 318—475 **16 Claims**



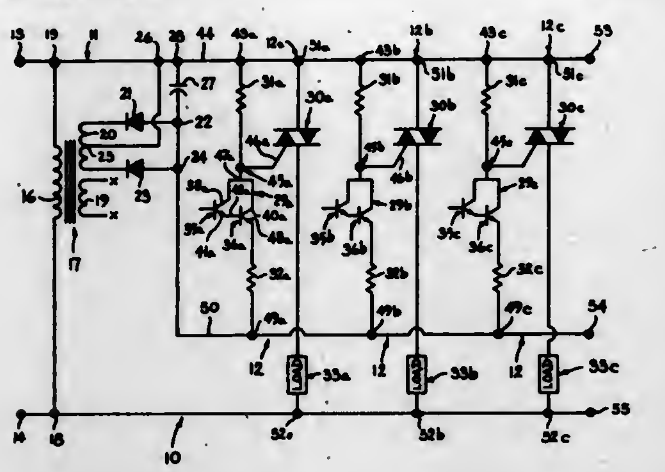
An overhead control for raising and lowering garage doors and other cyclically operated devices which utilizes a unidirectional electric motor which drives an endless chain in only one direction. A follower rides on a rail and is coupled to the endless chain by a gear which engages the chain on one side so as to move the follower in a first direction. When the follower reaches the end of the rail, the gear of the follower rotates 180° so as to engage the opposite side of the chain and thus move the follower in the opposite direction. The tension may be adjusted so that a door will stop or reverse when it meets resistance sufficiently firm to shift the gear of the follower.

3,728,606
SOLID STATE HOSPITAL BED POWER CONTROL UNIT

Cyril Owen Finnegan, Normal, and Art Lee, El Paso, both of Ill., assignors to General Electric Company, New York, N.Y.

Filed Sept. 3, 1971, Ser. No. 177,787
Int. Cl. H02p 7/74

U.S. Cl. 318—480 9 Claims



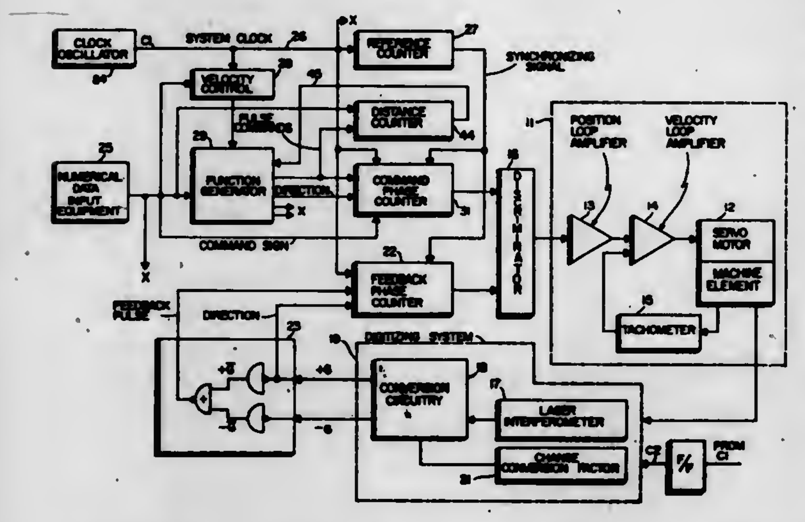
An electrical power control unit, preferably for use with hospital bed control handsets, including control circuitry comprising a first portion wherein the primary winding of a control power transformer is connected across AC power, the secondary winding of the transformer is connected to the handset, and the tertiary winding of the transformer is connected in circuit to form a full wave center tapped rectifier, said control circuitry further including one or more other circuit portions each comprising a load, a photo transistor amplifier, a Triac, and a pair of resistors connected in circuit wherein the photo transistor amplifier is activated when light falls upon its sensitive surface and wherein upon activation of the photo transistor the gate of the associated Triac changes polarity thus causing the Triac gate to conduct power to the associated load.

3,728,607
PHASE ANALOG NUMERICAL CONTROL SYSTEM EMPLOYING A LASER DIGITIZED POSITION FEEDBACK

Conrad J. Isak, Waynesboro, Va., assignor to General Electric Company, Lynn, Mass.

Filed Feb. 29, 1968, Ser. No. 709,405
Int. Cl. G05b *1/01*

U.S. Cl. 318—608 4 Claims



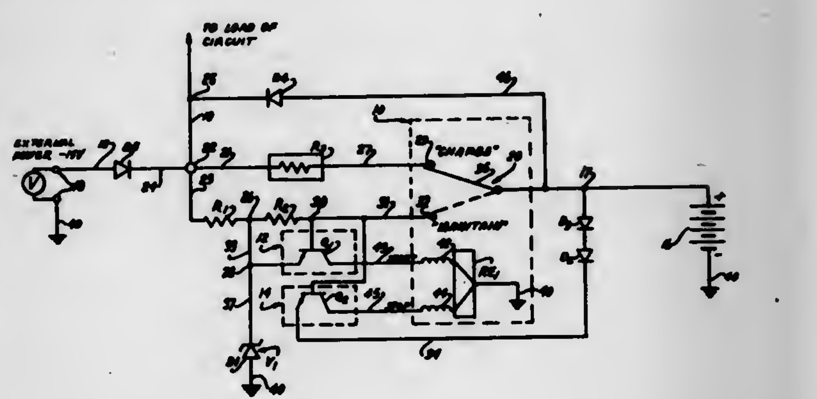
A digitally operable phase analog numerical control is described which comprises position measuring means for producing a train of pulses wherein the individual pulses represent increments of movement of apparatus being controlled and hence is representative of the position of the apparatus in standard measurement units. Variable rate feedback counter means are coupled to the output from the conversion circuit for producing a variably phase shifted, phase analog actual position output signal in accordance with the digitized position signal. Phase discriminator means are also provided having one input coupled to the output from the feedback phase counter and a digitally operable command phase counter means is provided for producing an output phase analog command signal of substantially the same base frequency and waveshape as the feedback phase counter. The output of the command phase counter is supplied to a second input of the phase discriminator and serves as a command phase analog signal against which the actual position phase analog signal represented by the output of the feedback phase counter, is compared. The output from the phase discriminator represents the difference between the actual and desired positions of the apparatus being controlled, and is utilized to control the position of such apparatus. In practice, the position measuring means preferably comprises an interferometer position gauging device and the predetermined conversion factor is a function of the space measured in microinches or micrometers between fringes of the fringe count produced by the interferometer.

3,728,608
BATTERY CHARGING CIRCUIT WITH TWO CHARGING SOURCES OF DIFFERENT VOLTAGE

Rudor M. Teich, 6040 Boulevard E., West New York, N.J.

Filed Feb. 9, 1970, Ser. No. 9,886
Int. Cl. H02j *7/04*

U.S. Cl. 320—23 14 Claims



A battery charging circuit is provided which automatically charges a battery, maintains a constant voltage across the battery after it is charged and during the period of its non-use, and again charges the battery after a sufficient current drain occurs such as when a load is placed across the battery terminals. The charging circuit includes control means which selects either a main charging source or a reduced voltage charging source according to the condition of the battery, connects the selected source to the battery, and continues the connection of that selected source until the condition of the battery is significantly altered. Circuit sensing means detects the battery condition and actuates the control means to select the proper charging source for connection to the battery.

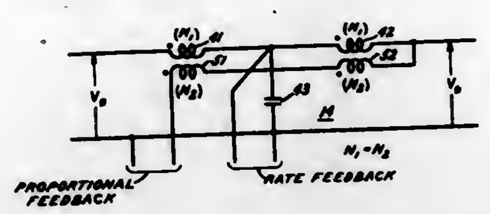
3,728,609
ELECTRIC POWER APPARATUS COMPRISING CONVERTER, LC FILTER, AND VOLTAGE REGULATOR ARRANGED FOR HIGHLY ACCURATE AND STABLE RESPONSE

Fred W. Kelley, Jr., Media, Pa., assignor to General Electric Company

Filed July 7, 1972, Ser. No. 269,787
Int. Cl. H02m *1/14*

U.S. Cl. 321—10 5 Claims

In electric power apparatus including a voltage-regulated converter and an LC filter supplying a load circuit with relatively smooth unipolarity voltage of desired magnitude, accuracy is promoted by using a novel proportional feedback arrangement which takes into account the IR drop across the series inductance of the filter while avoiding its dynamic transfer characteristic.

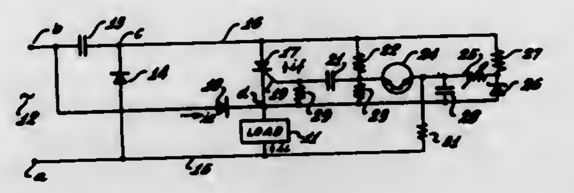


3,728,610
CONSTANT POWER REGULATOR FROM AC SOURCE

Henry N. Switsen, 11319 Vanowen St., North Hollywood, Calif.

Filed Sept. 21, 1970, Ser. No. 73,942
Int. Cl. H02m 7/20

U.S. Cl. 321—47 10 Claims



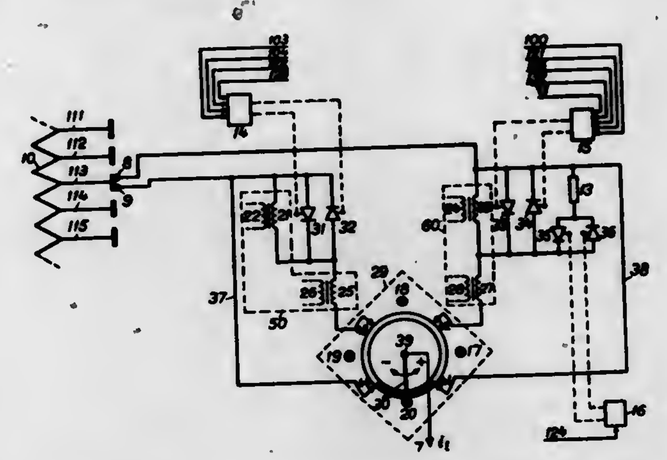
A circuit for supplying a consant power to a load from an AC source that may vary in voltage, including a diode connecting the AC source to the load to directly supply power during part of the positive half cycle, and a silicon controlled rectifier (SCR) that supplies power from a capacitor to the load during another part of each cycle. The capacitor is charged to a higher voltage than the AC source so that when it is connected to the load sometime during the positive half cycle it stops the direct flow of power to the load through the diode and the capacitor then supplies a fixed power. A circuit that senses the AC voltage will fire the SCR later in the positive half cycle when the AC source voltage rises, so that more power can flow to the load directly through the diode prior to connection of the capacitor.

3,728,611
TAP CHANGER

Sten Elvin, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 23, 1971, Ser. No. 211,329
Claims priority, application Sweden, Feb. 5, 1971, 1416/71
Int. Cl. G05f *1/20*

U.S. Cl. 323—43.5 S 1 Claim



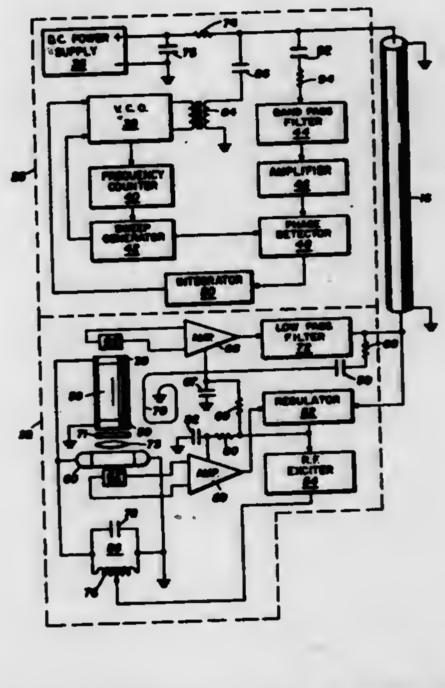
A tap changer for switching the load current of a transformer from a first winding output to a second winding output includes two pairs of anti-parallel connected semi-conductor rectifiers with a control device for each pair. A switch arrangement is provided for connecting each of the pairs between any of the outputs and a load current connection. The device includes a control arrangement for controlling and performing the switch between the outputs, which includes a device for transmitting the load current from the rectifier pair connected to one winding output to the pair connected to an adjacent winding output. This transfer is carried out partly by natural commutation except when there is a decrease in the turns of the winding and at the same time a resistive load and partly by means of switching when the load current passes through zero upon a decrease in the turns of the winding and at the same time a resistive load.

3,728,612
POWER SUPPLY AND TELEMETRY SYSTEM FOR OPTICAL MAGNETOMETERS

Daniel P. Hearn, and William D. Hetherington, both of Richardson, Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Aug. 27, 1971, Ser. No. 175,599
Int. Cl. G01r *33/08*

U.S. Cl. 324—.5 R 6 Claims



An optical magnetometer, e.g. helium magnetometer, power supply and telemetry system for aerial surveying. One or more magnetometers are placed in aerodynamic devices and pulled behind an airplane by tow cable. Power to operate the magnetometers is supplied over the cables from a primary source in the airplane. The cables also carry a depumping signal from the airplane to the magnetometers and output signals from the magnetometers to the airplane.

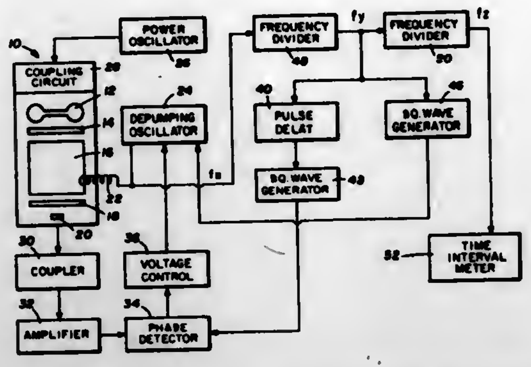
3,728,613
SYNCHRONIZED PERIOD MEASURING SYSTEM

Daniel P. Hearn, Richardson, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Feb. 2, 1971, Ser. No. 111,952
Int. Cl. G01r *33/08*

U.S. Cl. 324—.5 R 4 Claims

An improvement in optical magnetometers whereby the accuracy of the output signal is increased. The depumping



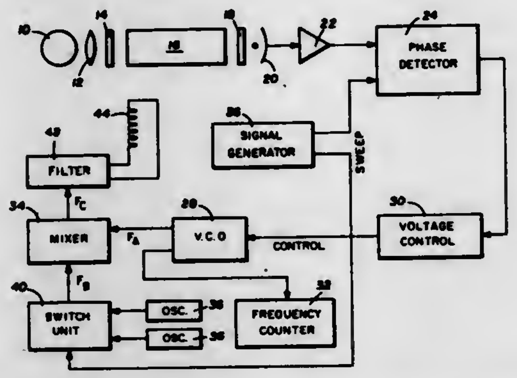
frequency is determined by measuring the time interval for a predetermined number of cycles to occur. Error due to sweeping the depumping frequency is prevented by making the sweep frequency a sub-multiple of the depumping frequency.

3,728,614
OPTICAL MAGNETOMETER USING A DEPUMPING SIGNAL FORMED BY FREQUENCY MODULATING THE OUTPUT OF A VARIABLE FREQUENCY OSCILLATOR WITH TWO ALTERNATING FIXED FREQUENCY OSCILLATORS

Daniel P. Hearn, Richardson, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed June 10, 1971, Ser. No. 151,791
Int. Cl. G01r *33/08*

U.S. Cl. 324—0.5 R **13 Claims**



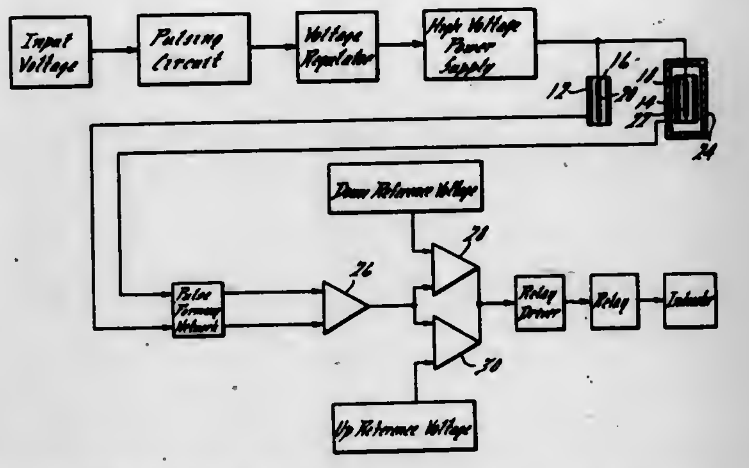
An optical magnetometer having a radiation source, an absorption cell, an RF signal generator, and a radiation detector. Radiation from said source is directed through the absorption cell to the radiation detector which measures the intensity. The generator is adjusted by feedback from the detector until the radiation absorbed by the cell is maximized. The RF signal generator comprises a voltage controlled oscillator having one output frequency modulated for depumping the cell and another output unmodulated for measuring the depumping frequency. The RF signal applied to the cell when maximum absorption is realized is a measure of the strength of the magnetic field in which the cell is positioned.

3,728,615
SMOKE, GAS, OR RAPID TEMPERATURE INCREASE DETECTOR UTILIZING A PERIODIC ELECTRIC FIELD TO CREATE A SELF-SUSTAINED AVALANCHE CURRENT

Warren R. Hill, Dearborn; I. Macit Gurel, Farmington, and Sharad M. Dave', Detroit, all of Mich., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Oct. 29, 1069, Ser. No. 872,210
Int. Cl. G01n *27/62*; **G08b** *21/00*

U.S. Cl. 324—33 **10 Claims**



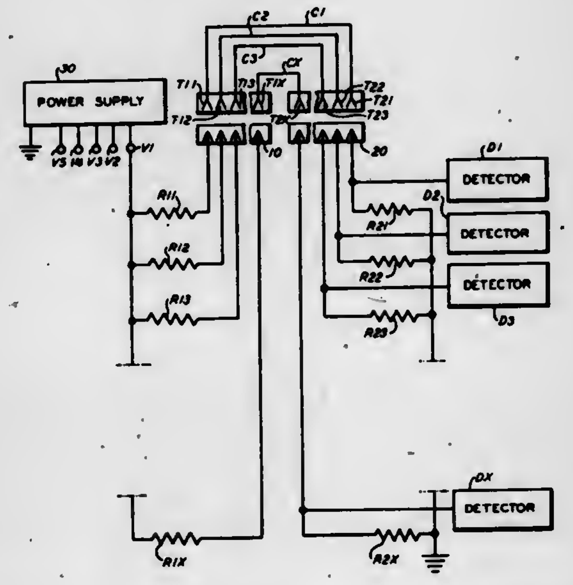
A method and apparatus for detecting smoke, gaseous products of combustion such as CO, CO_2, and a rapid temperature rise, the method including the steps of periodically forming, in a location exposed to the ambient atmosphere to bet tested, an electric field of sufficient intensity and of the proper configuration to produce a self-sustained Townsend avalanche, and comparing the resultant current flow with that produced in a similar such electric field created at the same time in an area shielded from the ambient atmosphere to be tested. When the current flow difference is of a sufficient magnitude due to the presence of smoke, gaseous products of combustion, or the occurrence of a sudden temperature rise, an alarm or fire control device is operated. In a second version, the current flow in an electric field formed earlier in time in the same location serves as the reference. The apparatus includes a pulsing circuit to periodically apply a high voltage to a pair of detector tubes having center electrodes, one tube being exposed to the ambient atmosphere, the other shielded. In the second version, a pulsing circuit periodically applies a voltage to a single detector tube and a holding and comparison circuit is provided to compare successive pairs of voltage pulses created by current flows caused by the periodic application of high voltages to the tube.

3,728,616
CONTINUITY TESTING APPARATUS UTILIZING A PLURALITY OF PAIRED RESISTORS

Howard L. Cheek, and Howard V. May, both of Winston-Salem, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 2, 1971, Ser. No. 111,960
Int. Cl. G01r *31/02*

U.S. Cl. 324—51 **6 Claims**



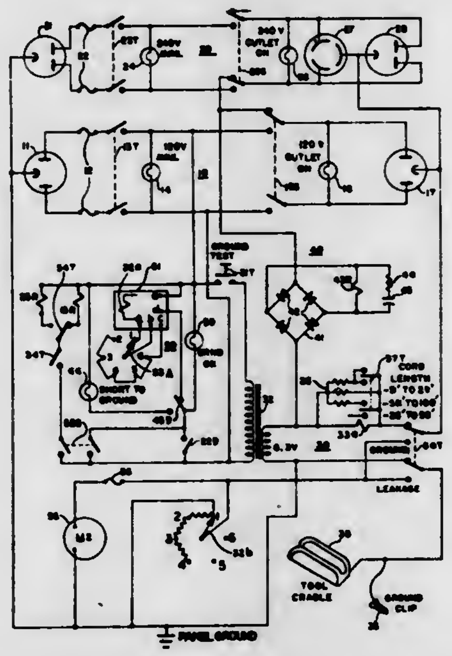
An apparatus tests for wiring errors in connections between a plurality of pairs of terminals. The apparatus includes a plurality of pairs of matched resistors with one pair of terminals connected between each respective pair of resistors across a voltage source. The voltage across one of each pair of resistors is sensed to determine a voltage above or below a predetermined range of voltages to indicate a defectively wired circuit. Each pair of resistors has matched resistors with values differing sufficiently from every other pair of resistors to operate the voltage sensing facilities in the event there are crossed or erroneous connections.

3,728,617
ELECTRICAL TOOL CIRCUIT CHECKER

William F. Potter, Mystic, Conn., assignor to General Dynamics Corporation, St. Louis, Mo.

Filed Aug. 25, 1971, Ser. No. 174,649
Int. Cl. G01r *31/02*, *15/12*

U.S. Cl. 324—51 **5 Claims**



An electrical tool circuit checker is provided which tests the connection of the tool case to ground, checks for a short circuit to ground, and checks the operation of the tool while power is applied to determine the running AC circuit leakage to ground. Circuits are also provided to require the tester in each case to test for ground connection first before conducting other tests.

3,728,618
GROUND PROTECTION APPARATUS FOR ELECTRICAL EQUIPMENT WITH Y-CONNECTED WINDINGS

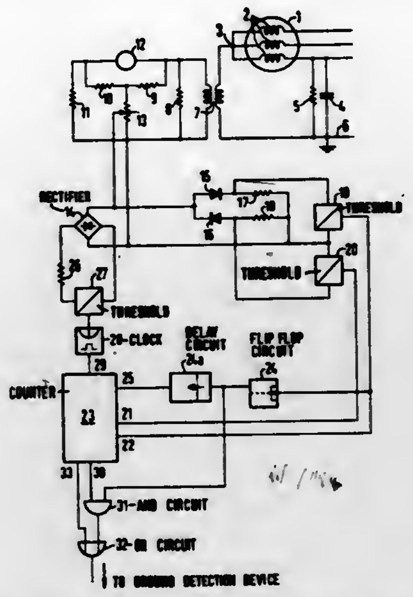
Karl Nimes, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed March 28, 1972, Ser. No. 238,847

Claims priority, application Germany, April 1, 1971, P 21 15 807.6

Int. Cl. G01r *31/02*; **H02h** *7/06*

U.S. Cl. 324—51 **7 Claims**



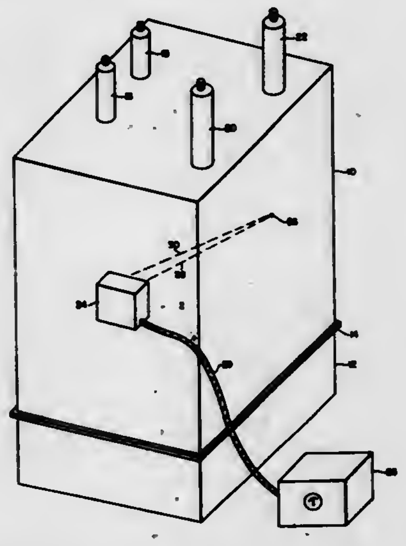
Apparatus for the detection of grounds occurring at or near the neutral point of Y-connected windings of electrical equipment is disclosed. Between the neutral point and ground a load resistor is connected as part of a bridge circuit. A bias voltage source having a frequency different from that of the system is connected to one diagonal of the bridge circuit. A potentiometer is connected across the second bridge diagonal and its voltage is evaluated by a time measuring device to determine the spacing between the zero voltage crossings of the potentiometer. The time measuring device transmits a signal indicating a ground if the time intervals between two successive zero crossings of the voltage in the potentiometer differ from each other by a predetermined amount or if a predetermined time interval between successive zero crossings is exceeded.

3,728,619
ACOUSTICAL CORONA LOCATOR HAVING ROTATABLE AND PIVOTABLE TRANSDUCERS

Ronald T. Harrold, Murrysville, Pa., and William J. Carter, Muncie, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 21, 1971, Ser. No. 155,096
Int. Cl. G01r *31/08*, *31/12*

U.S. Cl. 324—52 **4 Claims**



Acoustical corona locating apparatus for use in determining the position of a corona discharge within the casing of a power transformer. Transducer apparatus, which contains at least two transducers, is attached to the wall of the transformer casing at a position where the corona produced ultrasonic wave may be detected. The transducers are rotated and pivoted to determine the direction and distance from the transducers to the corona source.

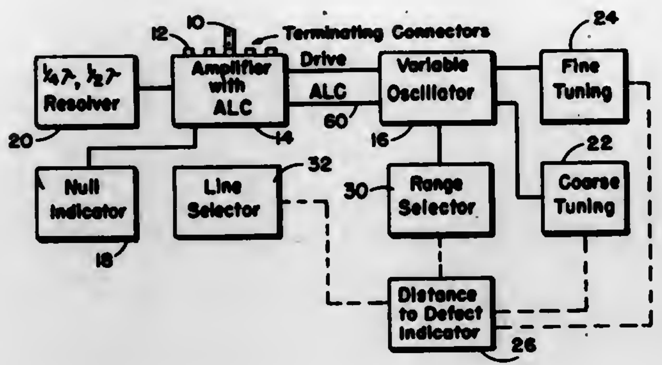
3,728,620
TRANSMISSION LINE FAULT INDICATOR AND LOCATOR UTILIZING VARIABLE FREQUENCY SOURCE COUPLED TO ONE END OF LINE

John L. Heins, 82 Harber Lane, Massapequa Park, N.Y.

Continuation-in-part of Ser. No. 878,779, Nov. 21, 1969, abandoned. This application July 14, 1971, Ser. No. 162,488
Int. Cl. G01r *31/08*

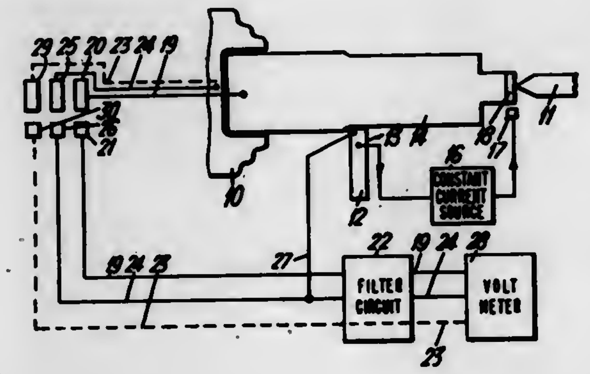
U.S. Cl. 324—52 **7 Claims**

A system is disclosed which locates open and short-circuit faults on a transmission line by sensing a minimum occuring at the input end of the line. The apparatus comprises a variable frequency test signal source coupled to the input of an amplifier the output of which is adapted for connection to the input end of the transmission line. The frequency of the test signal is varied until a minimum is sensed at the output of the amplifier



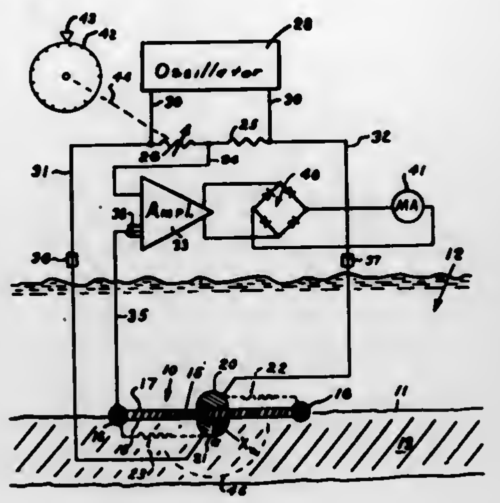
indicating the presence of a fault on the line. The location of the fault, that is, the distance from the input end of the line to the fault, is determined by the frequency of the source signal at which the minimum is produced. Means are provided in the system for resolving the ambiguity between an open-circuit fault and a short-circuit fault.

3,728,621
APPARATUS FOR MEASURING THE WEAR OF CUTTING EDGES OF CUTTING TOOLS
Edward Hilary Frost-Smith, Peubyn Ballylesson, Drumbo; Henry Richard Marten, 33 Cloverhill Park BT42JW, and Alfred John Wilkinson, 33 Glenholm Crescent BT84LT, both of Belfast, all of Northern Ireland
Filed May 13, 1969, Ser. No. 824,239
Int. Cl. G01r *27/02*
U.S. Cl. 324—65 R **1 Claim**



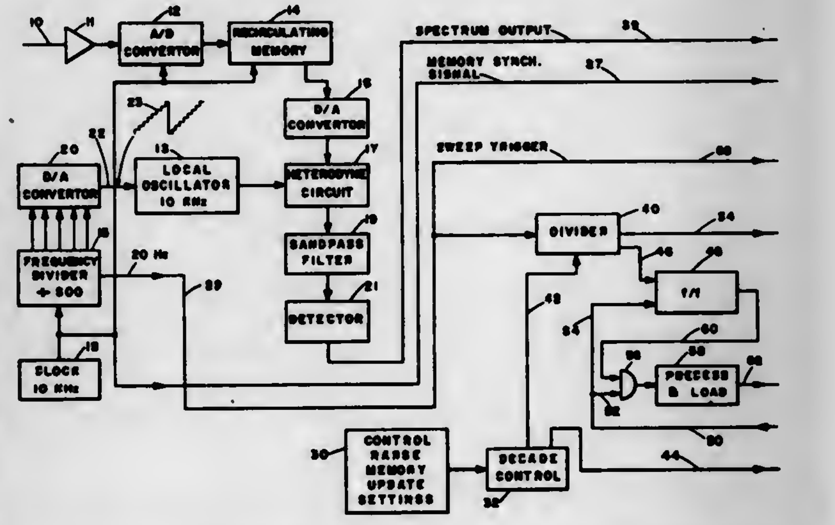
Method and apparatus for measuring a clearance face wear of cutting tools during the cutting action of a cutting tool on a workpiece comprising a first electrical circuit for feeding electric current through an interface between the workpiece secured in a clamping mechanism and a cutting tool, the workpiece and the tool being otherwise insulated from each other and adapted to be in relative motionary relationship one to the other, the first circuit also including a current source and a slip ring assembly, and a second electrical circuit containing at least one slip ring assembly, the workpiece, the tool and a voltmeter, where upon by feeding a constant current through the first circuit a value of voltage drop in the tool/workpiece interface is obtained from the voltmeter, thereby enabling the resistance between the workpiece and the tool to be calculated the value of resistance varying with the area of contact between the workpiece and the tool, this area depending on the amount of clearance face wear.

3,728,622
METHOD OF AND APPARATUS FOR MEASURING IN SITU THE FORMATION FACTOR
Cecil E. Williams, 2753 Peter St., Honolulu, Hawaii
Filed Sept. 28, 1971, Ser. No. 184,446
Int. Cl. G01v *3/06*
U.S. Cl. 324—9 **13 Claims**



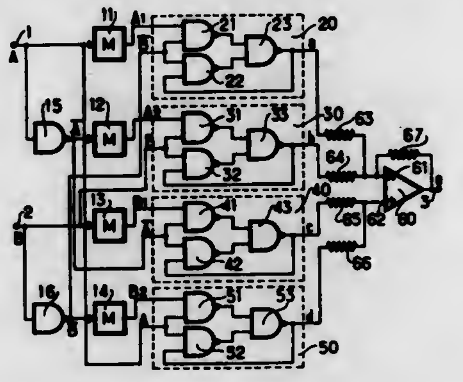
A method of and apparatus for measuring in situ the formation factor is disclosed. The formation factor is the ratio of the resistivity of a water saturated sediment to the resistivity of the interstitial water of the sediment. To this end the sediment is insulated from the water by an insulating sheet provided with a circumferential electrode and two opposed electrodes disposed on opposite surfaces of the sheet. By applying an alternating current between these three electrodes the ratio of the resistivity between the electrode in contact with the sediment and the circumferential or counter electrode on the one hand and the resistivity between the opposed electrode in contact with the water and the counter electrode may be measured. This may conveniently be effected by a Wheatstone bridge to which an alternating current is applied. The bridge may be balanced by adjusting one of the resistors thereby to measure the ratio of the resistance of the sediment to the resistance of the water. The electrode arrangement may be modified to form in essence a sled which may be moved by a boat or a ship across the water-sediment interface.

3,728,623
METHOD AND APPARATUS FOR SPECTROGRAM DISPLAY CONTROL
Carl E. Dubois, San Diego, Calif., assignor to Spectral Dynamics Corporation of San Diego, San Diego, Calif.
Filed March 15, 1972, Ser. No. 234,964
Int. Cl. G01r *23/16, 27/02*
U.S. Cl. 324—77 B **16 Claims**



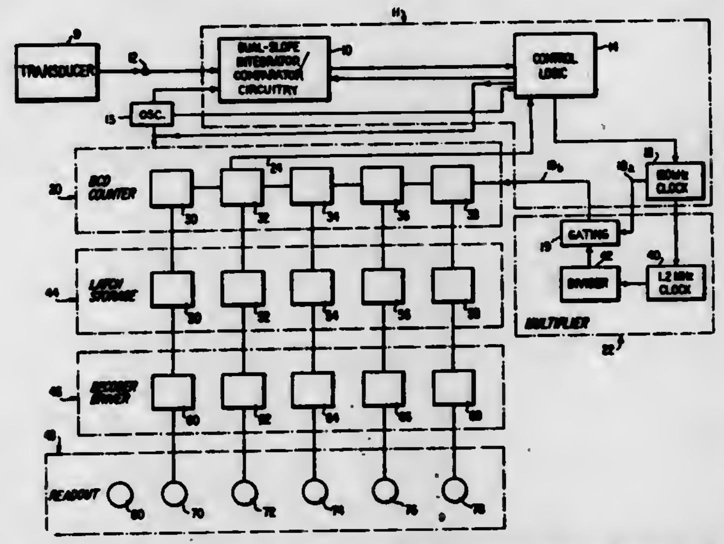
A spectrogram display control unit that provides control of the displaying of frequency spectrum data in a composite X-Y display having multiple spectra data displayed in line by line arrangement, with the line spectra data being updated and refreshed serially. The spectra data is restored in a circulating memory shift register that receives updated information in timed sequence from another memory unit, which other memory unit provides time-controlled, interrogation of frequency data. The other memory unit can also average spectra data stored therein and supplied to the circulating memory unit at selected time intervals, that prevents loss of data between updating times.

3,728,624
PHASE METER FOR COMPARING RECTANGULAR WAVES
Yves Salle, Boulogne, and Marcel Pincemin, Ris Orangis, both of France, assignors to Compagnie Industrial Des Telecommunications, Cit-Alcatel, Paris, France
Filed Feb. 25, 1972, Ser. No. 229,338
Int. Cl. G01r *25/00*
U.S. Cl. 324—83 A **7 Claims**



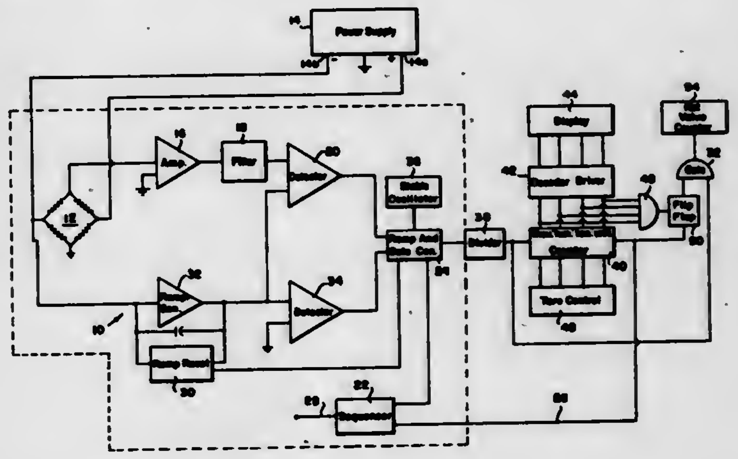
A large-band phase meter operating by the evaluation of displaced rectangular waves being applied to phase measurements, particularly between two waves having the same frequency but different cyclic ratios furnishing measurements independent of the cyclic ratio.

3,728,625
DIGITAL INDICATOR WITH PULSE MULTIPLIER FOR PROVIDING CONTINOUS FULL SCALE RESOLUTION
Donald A. Senour, Carlisle, and Janusz S. Kobel, Cambridge, both of Mass., assignors to BLH Electronics Inc., Waltham, Mass.
Filed Nov. 24, 1970, Ser. No. 92,412
Int. Cl. G01r *17/06, 15/08*; H03k *13/20*
U.S. Cl. 324—99 D **6 Claims**



An analog-to-digital converter of a dual-slope integrating voltage-to-proportional-count device cooperates with a pulse multiplier to control full-scale resolution of measurements for different transducer inputs, the fixed-rate pulse output of the converter alternately being coupled to a binary-coded decimal counter for a preselected count interval during first predetermined integrating periods while an unknown transducer input is sampled, and being in synchronized control of the supply of pulses to the same counter at selected multiplied rates during second periods while a reference potential is referred to; a visual readout operated by the counter indicates the measurements with a resolution improved by the pulse-multiplication.

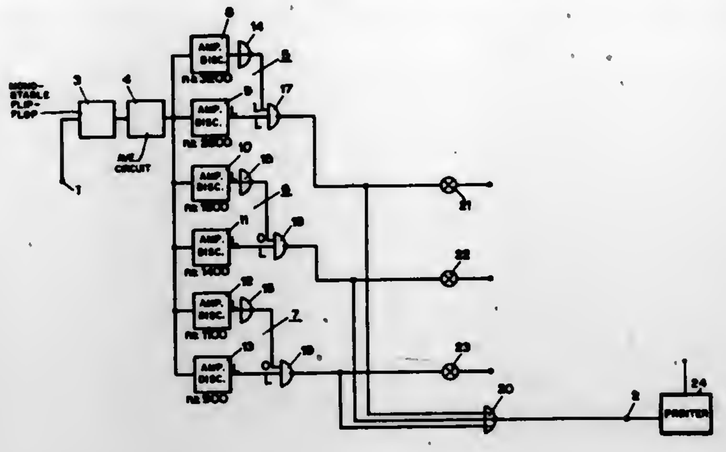
3,728,626
ELECTRONIC MEASURING SYSTEM
Alec T. Douglas; Hayden C. Thomas, both of St. Johnsbury, and Harry J. Keen, Waterford, all of Vt., assignors to Colt Industries Operating Corp., New York, N.Y.
Filed March 25, 1971, Ser. No. 128,065
Int. Cl. G01r *17/06, 27/02*
U.S. Cl. 324—99 D **18 Claims**



The electronic measuring system includes a transducer to develop an analog signal which is a function of a value to be measured, a reference signal generating unit, a first comparison unit to provide a start signal when a reference signal from the reference generating unit reaches a coincidence point with the system ground potential and a second comparison unit to provide a stop signal when the reference and analog signals reach a coincidence point. All of these units are powered from a single power source and referenced to ground potential. A counter system receives and registers pulses in the interval between the start and stop signals and includes a first counter which is preset below zero and a net counter which is activated to count pulses after the first counter reaches zero. A ramp reset circuit is provided to actively drive the reference signal from the reference generating unit to a quiescent state when the stop signal is provided.

3,728,627
APPARATUS FOR SELECTING DIFFERENT GENERATOR OUTPUT RANGES IN ACCORDANCE WITH THE SPEED OF A MOTOR DRIVING THE GENERATOR
Hans-Gunther Petersen, 318 Wolfsburg, and Heiko Requardt, 317 Gifhorn, both of Germany, assignors to Volkswagenwerk AKT, Wolfsburg, Germany
Filed Jan. 26, 1971, Ser. No. 109,900
Claims priority, application Germany, Jan. 30, 1970, P 20 04 100.3
Int. Cl. G01r
U.S. Cl. 324—158 R **5 Claims**

Apparatus comprising a plurality of voltage discriminator circuits selects different amplitude ranges of the electrical output of a generator in accordance with the rotational speed of the motor driving the generator. Each of the voltage discriminator circuits includes a first and a second voltage amplitude discriminator which are respectively actuated by an electrical signal representing the speed of said motor above and below a given amplitude. Each voltage discriminator circuit also includes gating circuitry for producing an output when one of the first and second amplitude discriminators is actuated so that each voltage discriminator circuit determines an electrical signal representative of a different rotational speed of the motor. The outputs of the plurality of voltage discriminators are fed to a common output terminal to trigger a recording apparatus.



3,728,628
NUMBER-OF-ROTATION DETECTION DEVICE

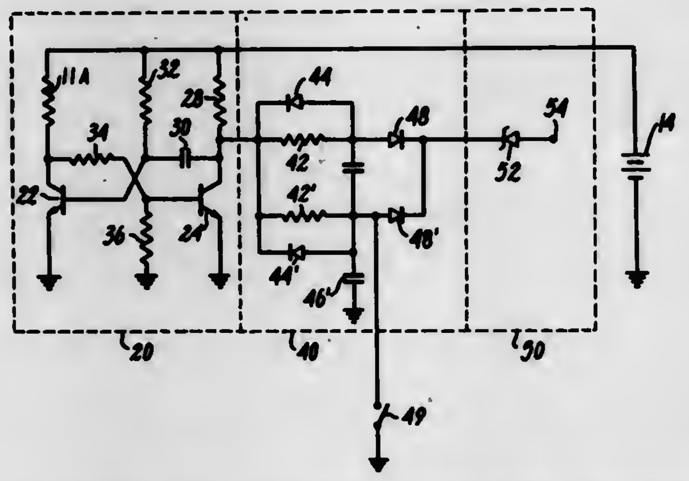
Toshikazu Saita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed April 26, 1971, Ser. No. 137,360

Claims priority, application Japan, Aug. 1, 1969, 44/60868; April 28, 1970, 45/36560; Aug. 21, 1970, 45/83321

Int. Cl. G01p *3/48*

U.S. Cl. 324—169 **3 Claims**



The disclosed devices comprise a monostable multivibrator applied with periodic trigger pulses resulting from the rotation of the engine. If the engine has a speed of rotation less than a predetermined speed a voltage charged on a capacitor within the pulse period in the stable state of the multivibrator reaches a breakdown voltage of a Zener diode to produce an output from the latter. Otherwise the voltage across the capacitor does not reach the breakdown voltage to produce no output from the diode.

Two capacitors may charge or discharge with different time constants in the stable state of the multivibrator while one of the capacitors is disabled in accordance with whether the actual speed is higher or lower than the predetermined speed.

3,728,629
AUTOMATIC TIME INTERVAL RANGING CIRCUIT FOR DELAY INTERVAL MEASUREMENTS

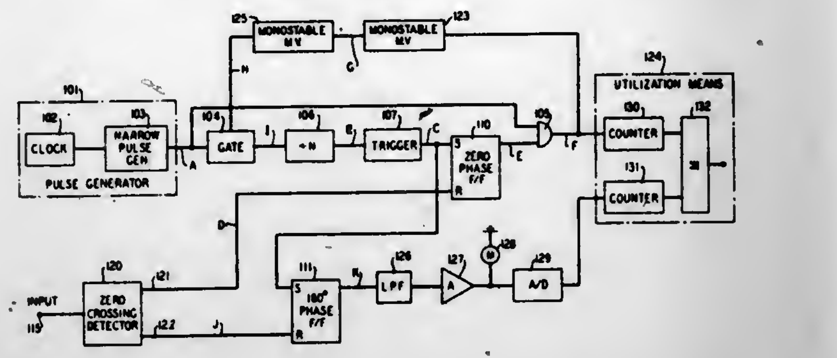
David Leonard Favin, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 10, 1971, Ser. No. 197,411

Int. Cl. G04f *9/00, 11/06*

U.S. Cl. 324—186 **12 Claims**

Delay time intervals are measured by employing a flip-flop circuit which is SET by a reference pulsating signal and RESET by a test signal. A desired measurement precision is obtained by causing the flip-flop to be SET and RESET within the interval between adjacent pulses developed by a reference clock. This is achieved automatically by selectively shifting the phase of the reference pulsating signal waveform to delay SETTING of the flip-flop. The incremental shift in the reference signal waveform is directly related to the number of reference pulses occurring during the initial interval in which the flip-flip is SET and RESET.



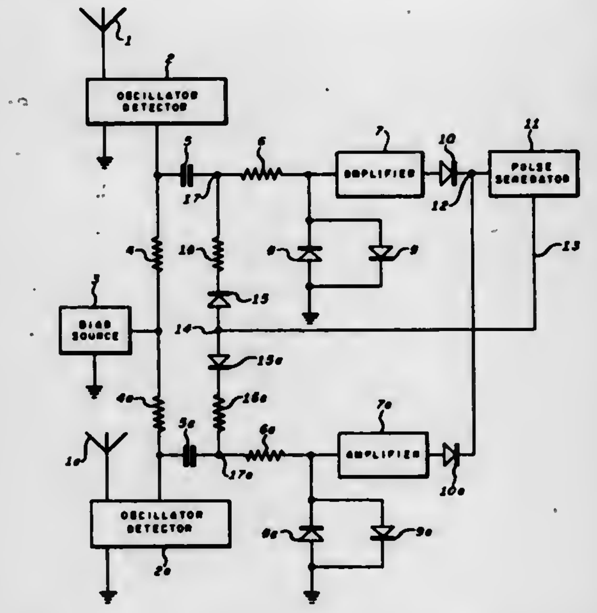
3,728,630
WIDE BAND TRANSPONDER

Harry F. Strenglein, Clearwater, Fla., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,508

Int. Cl. G01s *9/56;* **H04b** *7/14*

U.S. Cl. 325—8 **11 Claims**



A simple low-power transponder adapted for rescue purposes employs high frequency diode oscillator-detector devices each serving the dual role of receiver and transmitter in response to illumination by energy transmitted by a conventional search radar system.

3,728,631
APPARATUS FOR DETECTING NATURAL NONLINEARITIES IN ANTENNAS

Raymond F. Elsner, Lombard; James J. Husty, Claredon Hills, and Sam Tymarkin, Country Club Hills, all of Ill., assignors to The United States of America as represented by the Secretary of the Navy

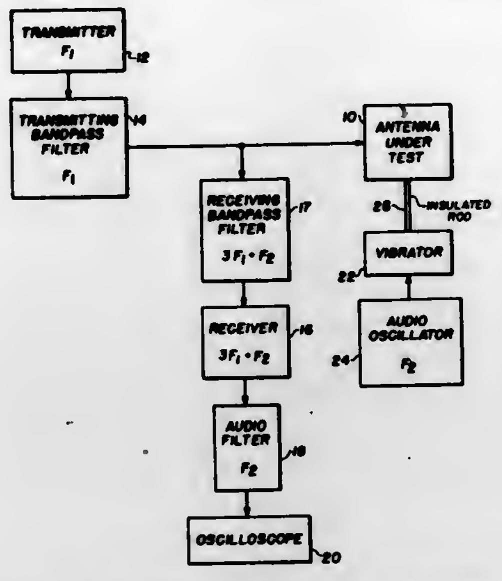
Filed March 29, 1972, Ser. No. 239,066

Int. Cl. H04b *1/00*

U.S. Cl. 325—67 **3 Claims**

A method for determining whether an antenna possesses natural nonlinearities by detecting and classifying radio frequency interference sources existing in the antenna. An alternating current at frequency F_1 is passed through a suspected nonlinearity to thereby create F_1 harmonic signals. The suspected nonlinearity is then exposed to mechanical

forces at frequency F_2 by means of a vibrator to cause F_1 and F_2 to interact and generate intermodulation product signals.



Detection of these intermodulation product signals indicates the presence of natural nonlinearities in the antenna.

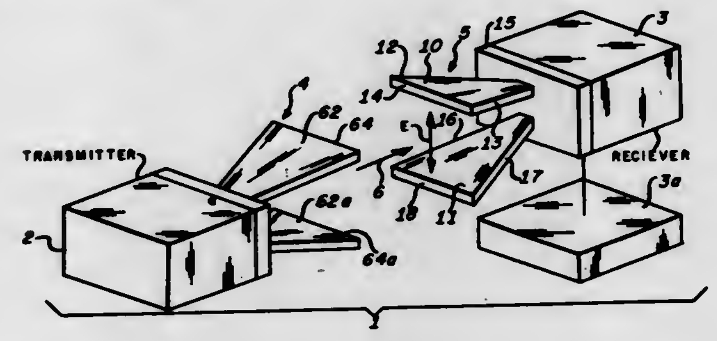
3,728,632
TRANSMISSION AND RECEPTION SYSTEM FOR GENERATING AND RECEIVING BASE-BAND DURATION PULSE SIGNALS WITHOUT DISTORTION FOR SHORT BASE-BAND PULSE COMMUNICATION SYSTEM

Gerald F. Ross, Lexington, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed March 12, 1971, Ser. No. 123,533

Int. Cl. H04b *1/00*

U.S. Cl. 325—38 R **8 Claims**



An electromagnetic signal communication system utilizing short base-band pulse signals of sub-nanosecond duration employs dispersionless, broad band antenna transmission line elements for generating and preserving the character of the short base-band pulses in respective transmitter and receiver subsystems.

3,728,633
RADIO RECEIVER WITH WIDE DYNAMIC RANGE

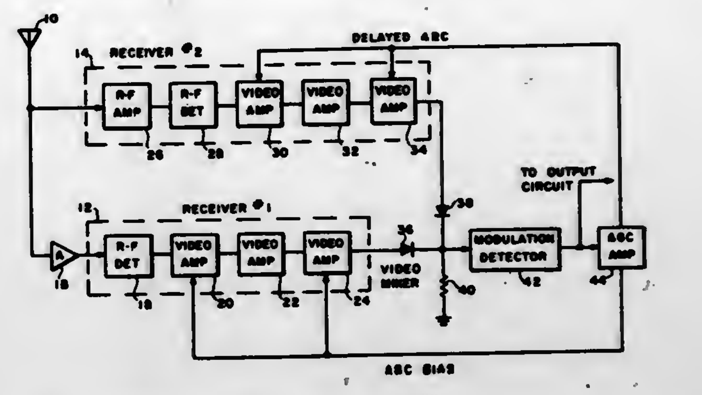
Charles J. Krebs, Williamsville, N.Y., assignor to GTE Sylvania Incorporated, New York, N.Y.

Filed Nov. 22, 1961, Ser. No. 154,302

Int. Cl. H04b *1/06*

U.S. Cl. 325—303 **4 Claims**

4. A radio frequency receiving system comprising, first and second signal processing channels, said first channel having a lower threshold sensitivity than said second channel and a dynamic range extending from its signal threshold level beyond the threshold level of said second channel, means connecting the input of each of said channels to a common source of modulated signals, a circuit connected to the output of each channel for combining the signals processed thereby, a demodulator connected to said combining circuit, and an automatic gain control circuit connected to the output of said demodulator and to said channels and operative in response to input signals of magnitude within the dynamic range of said first channel to apply a gain control voltage only to said first channel and operative in response to input signals of magnitude within the dynamic range of said second channel to



apply a gain control voltage to said first channel of a magnitude sufficient to reduce the channel gain to substantially zero and to apply a gain control voltage to said second channel of a magnitude proportional to the amplitude of the input signal.

3,728,634
MUTING ARRANGEMENT FOR COMMUNICATION RECEIVERS EMPLOYING COUNTERS TO PRODUCE CONTROL SIGNALS FROM INTERFERING BEAT FREQUENCIES OF THE RECEIVED SIGNALS

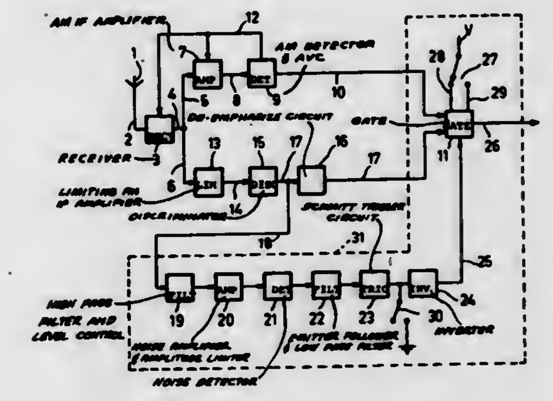
Stephen William Watkinson, Cambridge, England, assignor to Pye Limited, London, England

Filed Jan. 28, 1971, Ser. No. 110,453

Claims priority, application Great Britain, Feb. 5, 1970, 5,515/70

Int. Cl. H04b *1/10*

U.S. Cl. 325—478 **16 Claims**



A squelching arrangement for muting a receiver in the absence of signals received from a plurality of transmitters operating at frequencies offset from the mean frequency to which the receiver is tuned. Interfering beat frequencies of the received signals in either a communication or auxiliary channel are counted to produce a squelch control signal. This control signal then operates a gating circuit that passes the received signals if the interfering beats are of a predetermined amplitude and frequency.

3,728,635
PULSED SELECTABLE DELAY SYSTEM

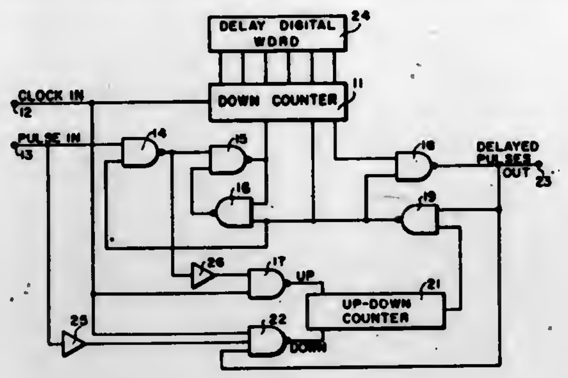
Robert M. Eisenberg, Derwood, Md., assignor to The Singer Company, Binghampton, N.Y.

Filed Sept. 8, 1971, Ser. No. 178,757

Int. Cl. H03k *5/13*

U.S. Cl. 328—55 **4 Claims**

This is a system which provides a train of output pulses that duplicate a train of input pulses but which output pulses are delayed a selective amount in time. A first counter receives a digital word which represents the amount of time that the output is to be delayed after the input. A clock supplies the counter with timed pulses, and when the capacity of the counter has been reached, its output initiates the output pulse. A second counter counts upwardly during the period of time that an input pulse exists. Upon decay of the input pulse, the second counter is inhibited from further counting until the output from the first counter is generated. At that time, the second counter begins counting down, and when it reaches zero, an output signal is generated which terminates the output pulse.

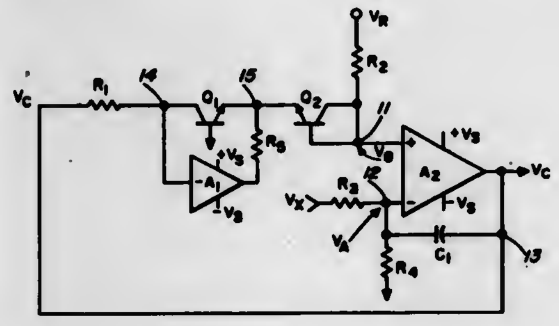


3,728,636
INVERSE LOGARITHMIC FUNCTION GENERATOR

Charles W. Hill, Linthicum Heights, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 28, 1971, Ser. No. 212,924
Int. Cl. H03k *17/00*

U.S. Cl. 328—145 8 Claims



An inverse or anti-logarithmic function generator wherein the systems input is one input of a differential amplifier whose output is integrated and fed into the input of a log generator, whose output is the other input to the differential amplifier. The integrated output of the differential amplifier is the inverse log of the systems input.

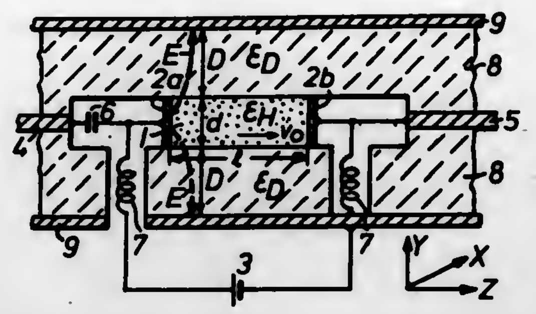
3,728,637
SEMICONDUCTOR ARRANGEMENT FOR NONRECIPROCAL AMPLIFICATION OR GENERATION OF OSCILLATIONS IN THE MICROWAVE RANGE

Reinhart Engelmann, Ulm/Donau, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Aug. 27, 1970, Ser. No. 67,500
Claims priority, application Germany, Aug. 28, 1969, P 19 43 676.1; Feb. 27, 1970, P 20 09 142.3
Int. Cl. H03f *3/04*

U.S. Cl. 330—5 13 Claims

A semiconductor arrangement for nonreciprocal amplification or for the generation of high frequency oscillations in which high frequency electromagnetic energy is coupled into a semiconductor layer which exhibits a negative differential charge carrier mobility in a direction perpendicular to the applied drift field and has a predetermined layer thickness in this perpendicular direction thereby exciting properly growing space charge waves. The arrangement may be geometrically symmetrical in this perpendicular direction and may have either symmetrical or antisymmetrical coupling and decoupling means for the high frequency electromagnetic energy thereby exciting and removing space charge waves of the symmetrical or antisymmetrical type, respectively.

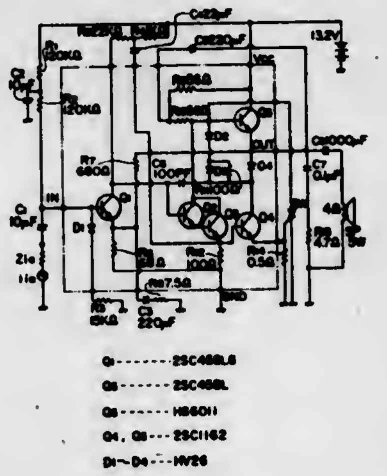


3,728,638
TRANSISTORIZED POWER AMPLIFIER CIRCUIT

Kunio Seki, and Seiji Okuda, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 13, 1971, Ser. No. 162,142
Claims priority, application Japan, July 13, 1970, 45/60626
Int. Cl. H03f *3/42*

U.S. Cl. 330—18 3 Claims



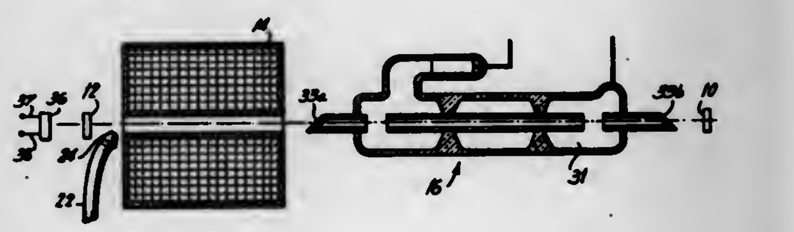
A transistorized power amplifier circuit comprises an input transistor circuit capable of class-A amplifier operation according to base input and collector output, a first and a second output transistor, and a diode coupling circuit receiving the collector output from the input transistor circuit as an input signal thereof for alternatively driving the output transistor: into conduction at each successive half cycle of the input signal. A DC negative feedback circuit is connected between the output terminal of the output transistors and the emitter of the input transistor, and all the transistors are of the same conduction characteristic.

3,728,639
ELECTROMAGNETIC INTENSIFIER

Harold W. Scott, Ridgefield, and Monroe R. Kelemencky, Woodbury, both of Conn., assignors to Basic Sciences Corp., Bethel, Conn.

Filed Aug. 4, 1970, Ser. No. 60,789
Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 10 Claims



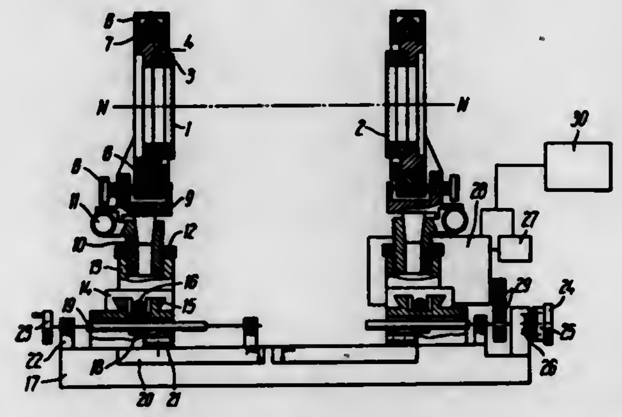
An apparatus for varying the intensity of electromagnetic radiation, having a soure of polarized electromagnetic radiation, a cavity for receiving the radiation from the source and reflecting said radiation in the cavity, and means associated with the cavity for adjustably varying the angular rotation of the electromagnetic radiation in the cavity and thereby varying the intensity of the radiation. The invention also provides a method of varying the intensity of a beam of polarized electromagnetic radiation by varying the angular rotation in the plane of polarization of said radiation.

3,728,640
OPEN-TYPE RESONATOR

Nikolai Vladimirovich Bulygin, B. Cherkizovskaya, kvartal 8-11, korpus 21, kv. 60; Evgeny Alexandrovich Vinogradov, Kozhevnicheskaya ulitsa, 1b, kv. 33; Lev Genrikhovich Gugel, ulitsa Medvedeva, 14, kv. 33; Evgeny Mikhailovich Dianov, Michurinsky prospekt, 12, korpus 1, kv. 47, and Natalia Alexandrovna Irisova, ulitsa Vavilova, 44, korpus 3, kv. 74, all of Moscow, U.S.S.R.

Filed March 29, 1972, Ser. No. 239,169
Int. Cl. H01s *3/08*

U.S. Cl. 331—94.5 1 Claim



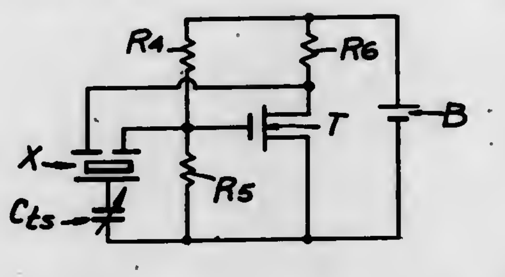
An open-type resonator, substantially, for quasi optical channels, formed by two reflectors which by means of permanent magnets are secured on adjusting devices mounted on movable supports. The supports themselves are mounted on guides with a possibility of movement with the aid of micrometer screws, the micrometer screw of the rear reflector can be rotated either manually or with an electric motor through a speed reducer having a variable reduction ratio, while the use of the guides provides for displacement of the reflectors through distances which considerably overcome the operating wavelength.

3,728,641
VARIABLE TEMPERATURE COMPENSATING CAPACITOR FOR CRYSTAL OSCILLATORS

Kinji Fujita, and Hiromitsu Mitsui, both of Nagano, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Aug. 3, 1971, Ser. No. 168,656
Claims priority, application Japan, Aug. 6, 1970, 45/68321; Aug. 6, 1970, 45/68322
Int. Cl. H03b *5/30*

U.S. Cl. 331—116 R 6 Claims



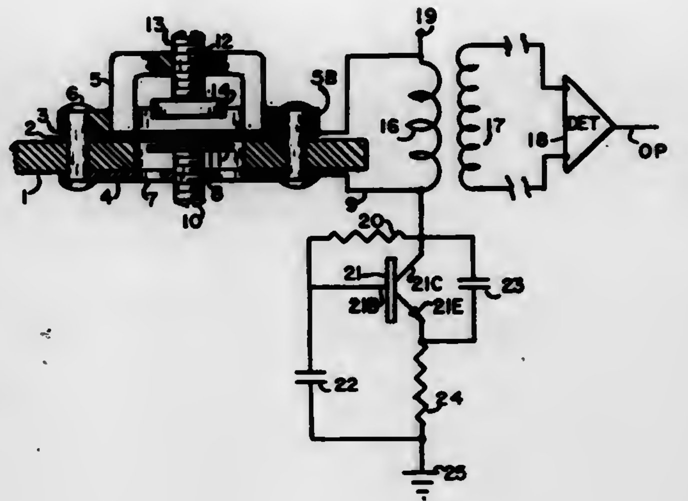
A temperature sensitive capacitor having a dielectric such as $BaTiO_3$, wherein capacitance varies in response to temperature, is provided with means for manually changing the capacitance thereof either in a stepwise manner or continuously.

3,728,642
CAPACITOR MICROPHONE

James P. Campman, Silver Spring, Md., assignor to Vidar Laboratories, Inc., Kensington, Md.

Filed Nov. 23, 1971, Ser. No. 201,552
Int. Cl. H03c *1/46, 3/28*

U.S. Cl. 332—2 6 Claims



The invention concerns improvements in a capacitor type microphone, comprising a printed circuit board having an aperture therethrough at one end thereof, a fixed but specially adjustable plate member mounted in said aperture, a plastic membrane coated on one side with a magnetic conductive material stretched across said aperture, a magnet mounted adjacent said membrane and adjustable relative thereto for attracting the membrane thereto, means for directing sound waves through said aperture against said membrane to variably displace said membrane relative to said fixed plate, a tank circuit including an inductance and said capacitor formed by said membrane and said fixed plate having its resonant frequency varied in response to the displacement of said membrane, a frequency generating circuitry for feeding energy to said tank circuit and an output means for coupling the variable frequency output from said tank circuit to a point of utilization.

ERRATUM

For Class 332—26 see:
Patent No. 3,728,645

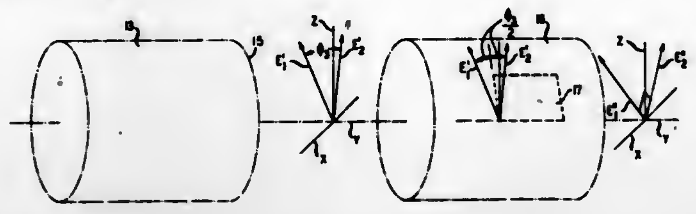
3,728,643
APPARATUS FOR TRANSFORMING NONORTHOGONAL ELLIPTICALLY POLARIZED WAVES INTO ORTHOGONAL LINEARLY POLARIZED WAVES

Ta-Shing Chu, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 1, 1971, Ser. No. 194,361
Int. Cl. H01p *1/16, 1/18*

U.S. Cl. 333—21 A 13 Claims

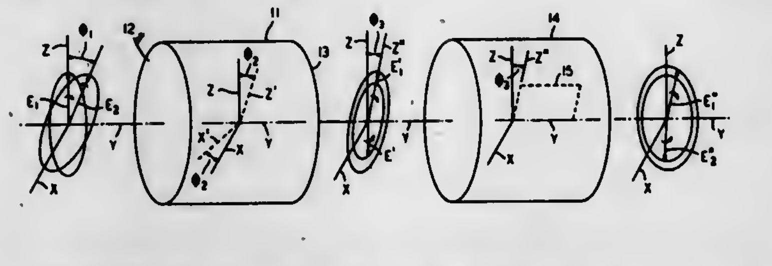
Apparatus for transforming first and second nonorthogonal elliptically polarized waves into orthogonal linearly polarized waves is disclosed. Linearization of the elliptical waves is achieved by applying a phase shift along at least one of two orthogonal directions, the latter directions being those for which the components of the first wave therealong and the components of the second wave therealong have the same phase difference. The resultant linear waves are then orthogonalized by applying attenuation along an appropriate direction.



3,728,644
POLARIZATION TRANSFORMATION APPARATUS

Ta-Shing Chu, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 1, 1971, Ser. No. 194,436
Int. Cl. H01p *1/16, 1/18*
U.S. Cl. 333—21 A **7 Claims**

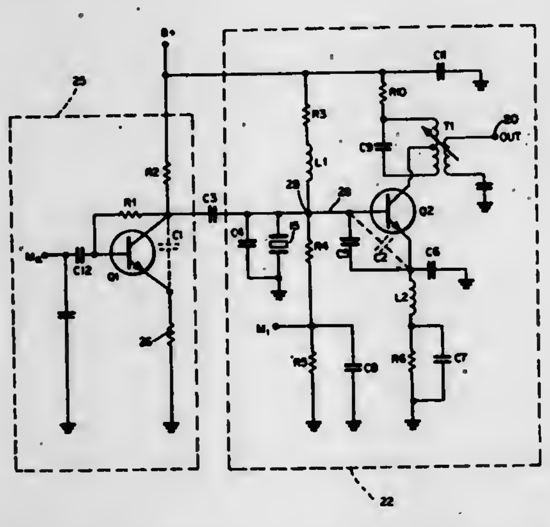


Apparatus for transforming two elliptically polarized waves into two oppositely rotating circularly polarized waves. The two elliptically polarized waves are first transformed by a phase-shifter into two other oppositely rotating elliptically polarized waves having parallel major and minor axes and equal axial ratios. Attenuation equal to the reciprocal of the axial ratio is then applied to both the transformed elliptical waves thereby simultaneously converting the oppositely rotating elliptical waves into two oppositely rotating circular waves.

3,728,645
HIGH MODULATION INDEX OSCILLATOR-MODULATOR CIRCUIT

Charles Rosen, Philadelphia, and Martin J. Arcaro, Penndel, both of Pa., assignors to Microcom Corporation, Horsham, Pa.

Filed May 20, 1971, Ser. No. 145,185
Int. Cl. H03c *3/28*
U.S. Cl. 332—26 **2 Claims**



An oscillator-modulator circuit is disclosed wherein a high modulation index is obtained by shunting across the crystal of an oscillator a first capacitance derived across the output terminals of a modulation amplifier transistor and a second capacitance derived across the input terminals of the oscillator transistor, such first and second capacitances being time varied by the modulation signal. Oscillator startup under low temperature conditions is aided by circuit delay in coupling the effective capacitance of the modulator amplifier transistor in shunt with the crystal, thereby providing higher closed loop gain of the oscillator during the initial start-up time period.

3,728,646
ACOUSTIC DELAY LINE

Anthonie Louis Zijlstra, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

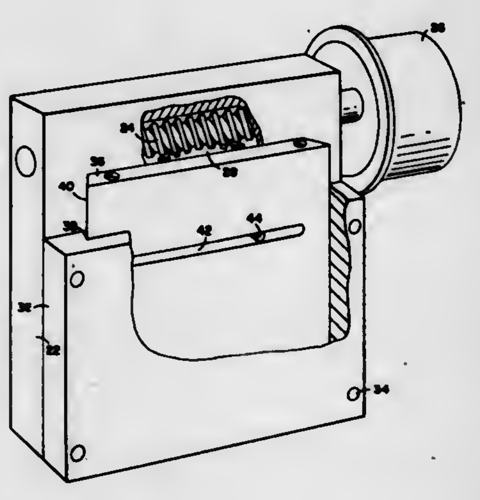
Continuation of Ser. No. 738,394, June 20, 1968, abandoned. This application Feb. 25, 1971, Ser. No. 119,004
Int. Cl. C03c *3/30, 3/04;* **H03h** *7/30*
U.S. Cl. 333—30 R **2 Claims**

A glass for an acoustic delay line which consists of SiO_2, Al_2O_3, B_2O_3 and an oxide of a bivalent metal and satisfies the requirement that $-5\times10^{-6} < \Sigma_i \alpha_i x_i < +5\times10^{-6}$ where α_i is the temperature coefficient of the rate of propagation in the range of 20°-70° C for the oxide component i and x_i is the molar fraction of that component.

3,728,647
WAVEGUIDE PHASE SHIFT ACTUATOR

William H. Bushnell, Liverpool, N.Y., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 4, 1971, Ser. No. 195,765
Int. Cl. H01p *1/00;* **F16h** *21/24*
U.S. Cl. 333—98 R **1 Claim**



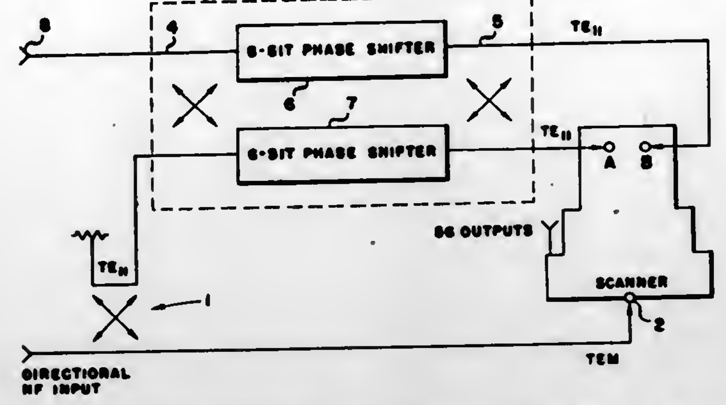
An actuator for shifting the phase of an electromagnetic wave inside a waveguide. A worm gear connection controls the input to the actuator and drives a slide in a bi-directional movement. This slide is connected to a platform that controls the position of rods inside the waveguide. The position change of the rods in the waveguide causes a shift in the phase of the electromagnetic wave in the waveguide.

3,728,648
POWER DISTRIBUTION NETWORK

David S. Lerner, Fanwood, N.J., assignor to Lockheed Electronics Company, Inc., Plainfield, N.J.

Filed June 28, 1971, Ser. No. 157,222
Int. Cl. H01p *5/12*
U.S. Cl. 333—6 **5 Claims**

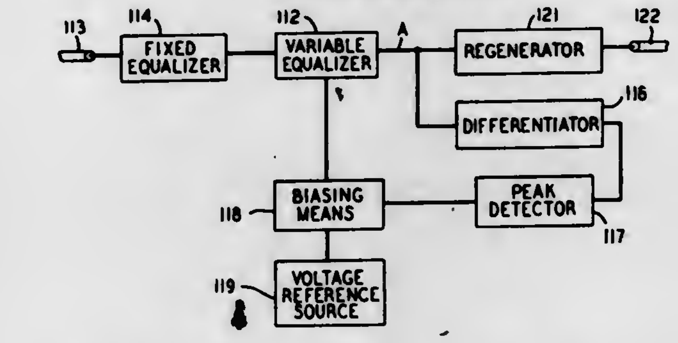
A power distribution and control network wherein two crossed TE_{11} modes and a TEM mode are derived and then combined in a radial transmission line. The relative amplitudes and phases are adjusted to yield a "cosine-on-a-pedestal" amplitude distribution. Then, preserving phase of the two TE_{11} modes, the pair is shifted in amplitude with respect to the TEM mode, and the "cosine-on-a-pedestal" distribution is made to rotate. The resulting signal is applied to the radiators of a phased array.



3,728,649
AUTOMATIC EQUALIZER FOR DIGITAL CABLE TRANSMISSION SYSTEMS

Frederick Donald Waldhauer, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed April 24, 1972, Ser. No. 247,147
Int. Cl. H04b *3/04;* **H03h** *7/16*
U.S. Cl. 333—18 **5 Claims**



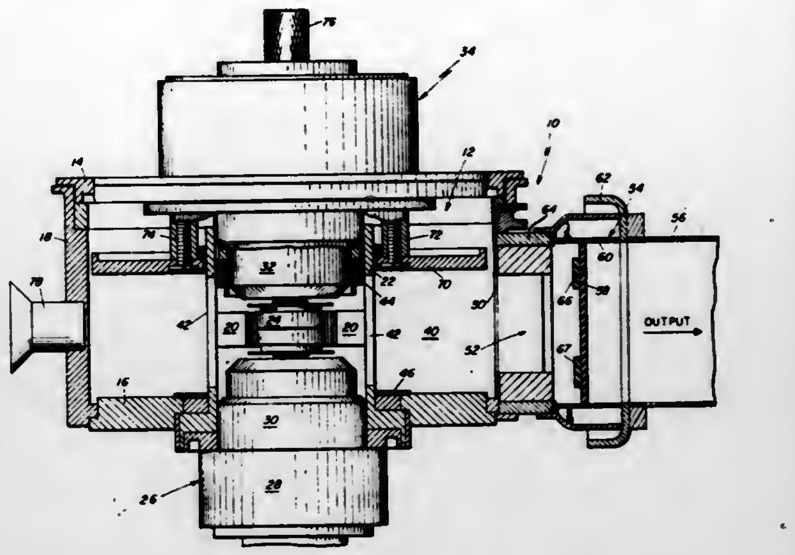
An automatic equalizer for digital cable transmission systems compares the differentiated and peak detected pulse output of a variable equalizer to an output level of a voltage reference source to produce a first control signal. A second control signal is derived from the first control signal and both control signals vary the amount of equalization provided by the variable equalizer to equalize the incoming pulses from a remote station. The relationship of the two control signals enables one signal path of the variable equalizer, which contains three signal paths, to be used alone or in combination with one of the other two signal paths. The other two signal paths provide transfer characteristics which alter the transfer characteristic of the transmission cable such that the effective electrical length of the cable is either increased or decreased and an appropriately equalized pulse output is available from the variable equalizer.

3,728,650
GHOST-MODE SHIFTED DIELECTRIC WINDOW

Robert J. Forman, Southboro, and Robert R. Dame, Needham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed July 23, 1971, Ser. No. 165,548
Int. Cl. H01p *1/00*
U.S. Cl. 333—98 P **16 Claims**

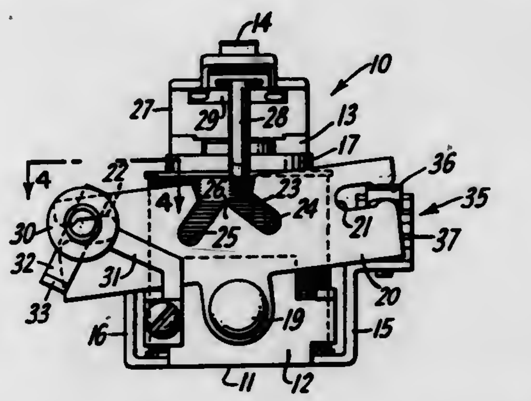
The invention discloses a dielectric window serving as an interface between different atmospheric media and/or propagating structures incorporating means for detuning ghost-modes to frequencies outside of a desired tuning range. The window is provided with a thicker cross-sectional interface of a compatible dielectric material principally disposed in the diametrically spaced regions of zero electric field intensity of the normal resonant frequency resonant mode. Crossed field devices having tunable coaxial cavity resonators employ the applicable structures in the output energy coupling section. Dielectric materials such as alumina ceramic or beryllium oxide provide high peak power handling capability for devices employing the disclosed window.



3,728,651
BISTABLE RELAY

Jack V. Foster, Fort Branch, Ind., assignor to AMF Incorporated, New York, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,374
Int. Cl. H01h *9/20*
U.S. Cl. 335—170 **11 Claims**



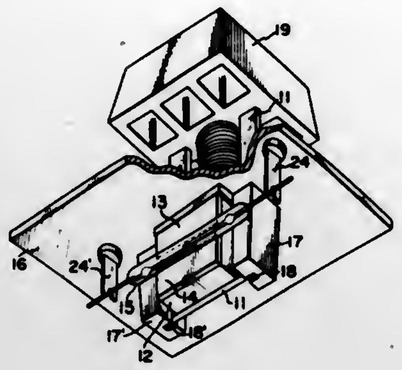
A bistable impulse relay having a rocker member pivotally mounted to move back and forth between two terminal positions. A switch means with leaf spring contact arms is actuated by the rocker member. The rocker member being provided with permanent magnet means releasably retaining the rocker member in at least one terminal position.

3,728,652
KEY APPARATUS AND ARRANGEMENT THEREOF

Tatsuo Nishikawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed , Ser. No. 54,898
Claims priority, application Japan, July 18, 1969, 44/57133
Int. Cl. H01h *41/08, 3/12*
U.S. Cl. 335—207 **6 Claims**

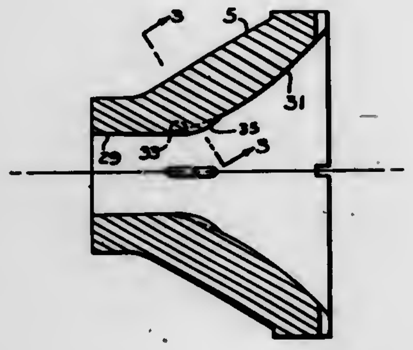
A key apparatus includes a magnetic reed switch and at least one magnet forming a magnetic portions for energizing the reed switch. the magnetic portion having a plurality of magnetic poles disposed to produce substantially parallel magnetic fluxes opposite in sense so that the reed switch is maintained open under the influence of both of said substantially parallel magnetic fluxes opposite in sense when the key is in normal position and that the reed switch is closed under the influence of one of said magnetic fluxes. A plurality of such key apparatuses are arranged so as to form columns and rows and in such a manner that all the magnetic portions in any common column or row faces in the same direction but that



the adjacent magnetic portions in any common row or column face in opposite directions, whereby the key board can be compact.

3,728,653
CONTOURED CORE FOR TOROIDAL YOKES

Charles Edward Torsch, Emporium, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.
Filed Jan. 25, 1971, Ser. No. 109,378
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **10 Claims**

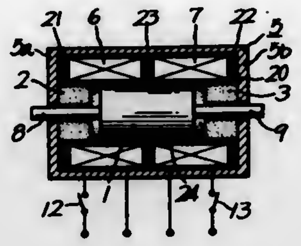


A deflection yoke for a cathode ray tube includes a core member having at least one inwardly protruding ridge member and winding of wires toroidally wrapped about the core member and including a flux altering means in the form of a winding gap centrally disposed about the ridge member.

3,728,654
SOLENOID OPERATED PLUNGER DEVICE

Kiichiro Tada, Yao-shi, Osaka, Japan, assignor to Hoshidenki-Seizo Kabushiki-Kaisha, Yao-shi, Osaka-fu, Japan
Filed Sept. 20, 1971, Ser. No. 181,727
Claims priority, application Japan, Sept. 26, 1970, 45/95447
Int. Cl. H01f *7/08*
U.S. Cl. 335—234 **6 Claims**

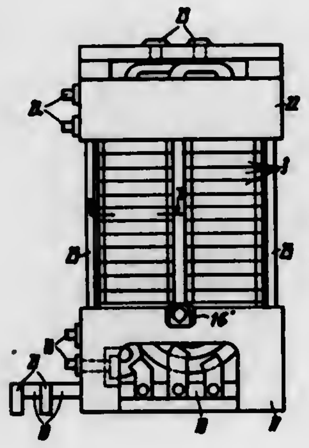
Within a cylindrical yoke of magnetic material are disposed first and second axially spaced coils in concentric relationship therewith. A first permanent magnet is arranged inside the first coil in abutting relation with one of the end plates of the yoke, and a second permanent magnet is arranged inside the second coil in abutting relation with the other end plate. A movable magnetic body is located inside the first and second coils for movement between the first and second permanent magnets. A plunger extends from one end of the movable



magnetic body through a permanent magnet and the yoke to the exterior thereof. A current pulse supplied to the first coil causes the movable body to be attracted to the first permanent magnet, and a current pulse supplied to the second coil causes the movable body to be attracted to the second permanent magnet.

3,728,655
MEDIUM FREQUENCY TRANSFORMER

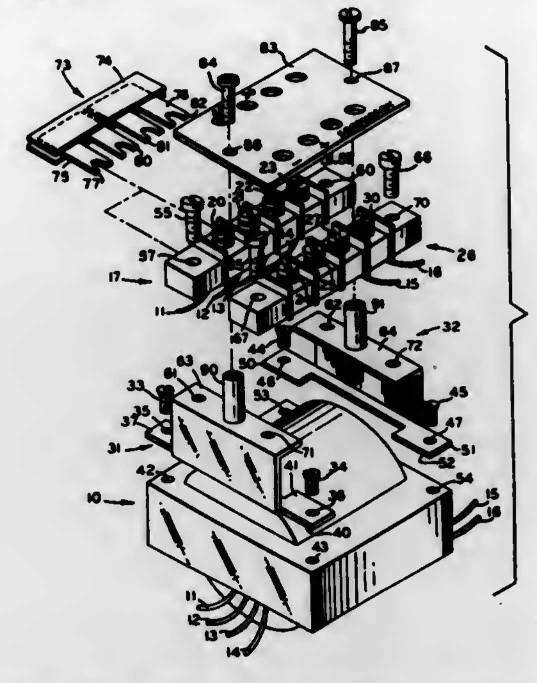
Friedheim Reinke, Remscheid, Germany, assignor to AEG-Elotherm GmbH, Remscheid-Hasten, Germany
Filed June 20, 1972, Ser. No. 264,456
Claims priority, application Germany, July 8, 1971, P 21 33 987.7
Int. Cl. H01f *27/08, 27/30*
U.S. Cl. 336—62 **9 Claims**



A medium frequency transformer having a single layer flat secondary winding, two flat layers forming a primary winding, and placed face to face, and a plurality of ferrite core members. According to this invention the faces of the secondary winding and of the primary winding layers each include two band shaped zones which are connected at their ends by U-shaped zones. The core members are stacked to form hollow columns embracing the parallel band-shaped zones. A clamping member is mounted at each end of the core stack columns.

3,728,656
TRANSORMER AND TERMINAL ASSEMBLY

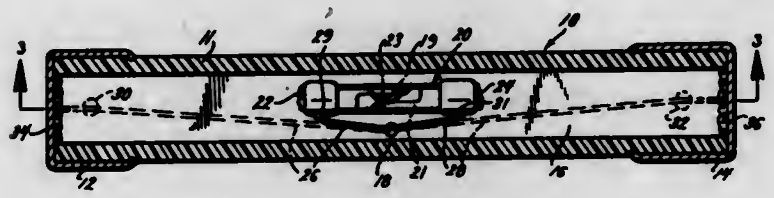
Ralph E. Neuber, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.
Division of Ser. No. 112,863, Feb. 5, 1971, abandoned. This application June 26, 1972, Ser. No. 266,438
Int. Cl. H01f *21/12*
U.S. Cl. 336—147 **10 Claims**



A terminal assembly is shown wherein connections between selected terminals of a terminal block are made by a jumper strip. The terminal assembly is utilized to change the winding arrangement of a power transformer.

3,728,657
PROTECTOR FOR ELECTRIC CIRCUITS

Craig L. McAlister, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.
Filed July 26, 1971, Ser. No. 165,972
Int. Cl. H01h *85/08*
U.S. Cl. 337—17 **20 Claims**

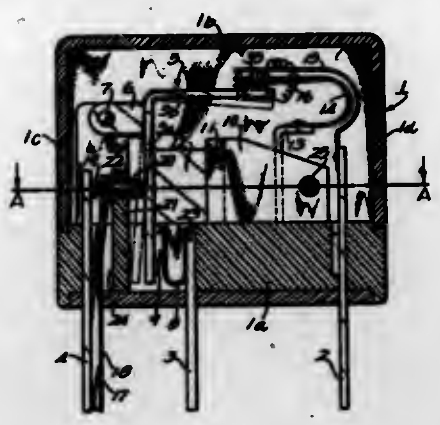


An electric fuse has a current-sensing section and an arc-quenching section. The current-sensing section will respond to potentially hurtful overloads and to short circuits to initiate circuit-opening action, but the arc-quenching section will immediately take over and instantly complete that circuit-opening action. Because it does not have to complete the circuit-opening action, the current-sensing section can be made much smaller and much less expensively than can the current-sensing section of an electric fuse which must initiate and then complete the circuit-opening action.

3,728,658
AUTOMATICALLY RESETTING RELAY

Yasuo Kasahara, Tokyo, Japan, assignor to Kabushiki-Kaisha Nakatani, Tokyo, Japan; a part interest
Filed Jan. 13, 1972, Ser. No. 217,603
Claims priority, application Japan, Jan. 19, 1971, 46/1782 (utility model)
Int. Cl. H01h *61/01*
U.S. Cl. 337—90 **5 Claims**

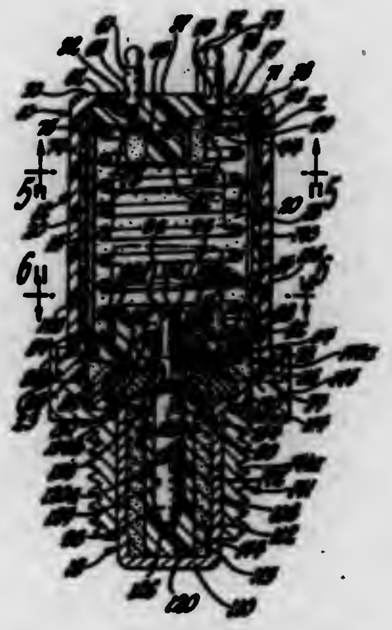
A permanent magnet is secured within an insulating casing, and on opposite sides thereof, first and second terminals are mounted in the bottom plate of the casing. An L-shaped body of magnetic and electrically conductive material is pivotally mounted within the casing with its one limb being adapted to be attracted by the magnet and having a contact for circuit-opening and-closing purpose interposed in the path to the second terminal. Bimetal is connected between the other limb of the body and the first terminal. When current flow across the first and second terminals exceeds a given value, a distor-



tion of the bimetal due to Joule heat and a reduction in the magnetic permeability of the body due to Joule heat effect in combination a movement of the body away from the magnet, whereby the contact is opened. The body is automatically reset, i.e., attracted by the magnet upon recovery of the bimetal from distortion and increase of the permeability of the body.

3,728,659
THERMOELECTRICAL SWITCH

Lynn S. Brock, Williamsville, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 21, 1972, Ser. No. 219,708
Int. Cl. H01h *37/44*
U.S. Cl. 337—315 **4 Claims**



In a preferred form, this disclosure relates to a thermoelectrical switch having a housing means with terminal means adapted to be connected with electric circuit means, printed circuit means disposed within said housing means and adapted to be connected with said terminal means of said housing means, a piston-like contact carrier which is supported for movement adjacent said printed circuit means between circuit energized and circuit deenergized positions and having a grounded contact means disposed to engage said printed circuit means when said contact carrier is in its circuit energized position, spring means which biases the contact carrier in one direction within said housing, and thermally expansible means which acts in opposition to the bias of said spring means and effects movement of the contact carrier in the opposite direction within said housing means when its temperature is increasing from a first predetermined temperature toward a second predetermined temperature.

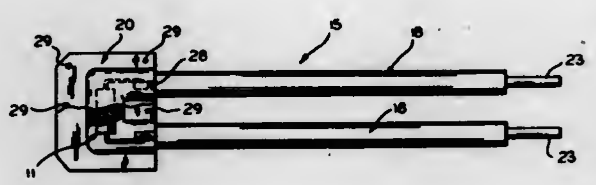
3,728,660
TEMPERATURE RESPONSIVE RESISTANCE ELEMENT FOR A TEMPERATURE SENSITIVE CONTROL SENSOR

Philip F. Finney, Villa Park, Ill., assignor to Thermo-Couple Products Company, Inc., Winfield, Ill.

Division of Ser. No. 878,832, Nov. 21, 1969, Pat. No. 3,650,024. This application July 16, 1971, Ser. No. 163,314

Int. Cl. H01c *7/04*

U.S. Cl. 338—22 R 7 Claims



A temperature responsive resistance element for a sensor used in controlling the temperature of a metal, gas or liquid mass wherein the element includes a ceramic core, a temperature sensitive resistance wire wound on the core, wherein the wire has a high coefficient of resistance change with temperature increase, a lead connected to each end of the wire having a low coefficient of resistance change with temperature change, and ceramic insulating means encapsulating the entire element except for end portions of the leads.

3,728,661
MODULAR CABLING SYSTEM

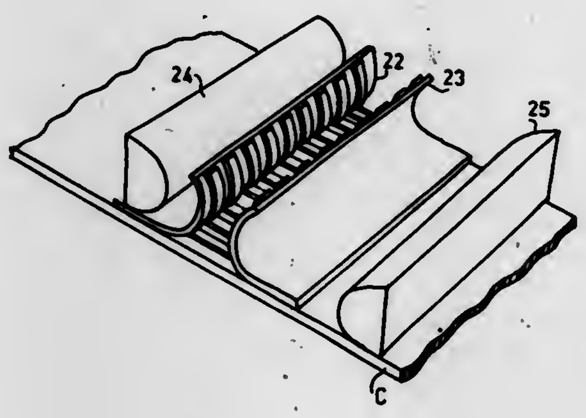
Georges Kassabgi, Paris, France, assignor to Honeywell Information Systems, Italia, Caluso, Italy

Filed March 10, 1971, Ser. No. 122,716

Claims priority, application Italy, March 12, 1970, 21815 A/70

Int. Cl. H01r *11/20*; H05k *1/02*

U.S. Cl. 339—17 F 2 Claims



A flexible flat cable having a plurality of parallel conductors arranged on an insulating support and covered by an insulating layer is provided with openings formed in the insulating layer located at regular intervals along the cable length. The portions of the cable having the openings are formed into connectors at the user's site, or connectors are provided, one at each of the openings, to produce a modular cable which may be separated into usable lengths.

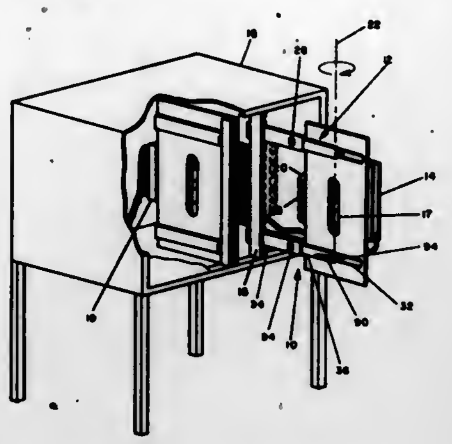
3,728,662
HINGED SLIDE MECHANISM

Jagdish M. Puri, Azusa, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 7, 1972, Ser. No. 223,881

Int. Cl. H02b *1/04*; H05k *7/16*

U.S. Cl. 339—17 LM 9 Claims



A mechanism is disclosed for mounting a circuit card cage with ready access to easily insertable and removable cards. A card cage is mounted on one side of and parallel to a support plate which may include an access aperture through which test pins and adjustment controls on the closest adjacent card may be reached. The support plate is mounted on the extending ends of a pair of telescoping slide members, the base ends of which are mounted in an electronics enclosure, adjacent one or more fixed female connector blocks into which male connector means on at least one of the circuit cards is received when the slide members are fully telescoped inwardly. The telescoping slide members have elongated transverse dimensions lying in substantially the same plane, and the terminal sections of the slide members are divided about colinear hinge axes lying in the plane, so that the coupled support plate and card cages can be rotated through a substantial angle when the slide members are fully extended.

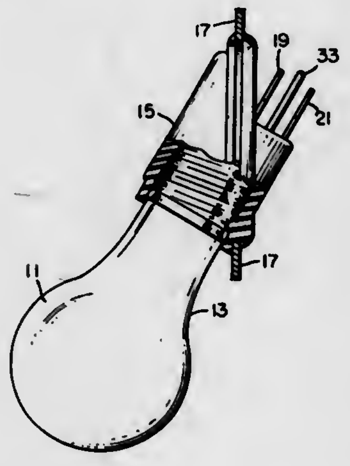
3,728,663
FLEXIBLE LAMPHOLDER

Robert Alvin Kitt, Albion, Ind., assignor to Lyall Electric, Inc., Albion, Ind.

Filed Aug. 3, 1971, Ser. No. 168,578

Int. Cl. H01r *13/52*

U.S. Cl. 339—60 R 4 Claims



An improved method and apparatus for providing a sealed lamp and thermoplastic lampholder for an appliance (for example in a refrigerator) is disclosed which employs a low heat conductivity moisture seal between the lamp envelope and the lampholder in conjunction with an integral insulating flap or barrier which separates the external lampholder terminals allowing those terminals to be first individually connected to leads from a source of electrical energy and then encapsulated

in an insulating medium without the danger that the terminals may become inadvertently shorted during the connecting and encapsulating process.

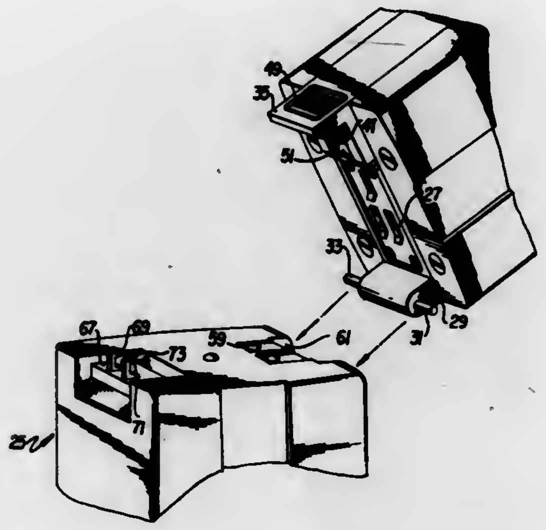
3,728,664
BATTERY LATCHING MECHANISM

David T. Hurst, Winter Park, Fla., assignor to Repco Incorporated, Orlando, Fla.

Filed Dec. 21, 1971, Ser. No. 210,397

Int. Cl. H01r *13/54*

U.S. Cl. 339—91 R 6 Claims



A transceiver radio unit having a detachable battery contained in its own housing. A battery latching mechanism comprising a rigid finger extending downwardly from the lower end of the transceiver housing which mates with a notch in the battery housing. On the opposite side of the transceiver housing is a spring biased button member. Curved posts with camming surfaces are mounted on the battery housing to mate with the button member. Terminals and mating contacts are located on the battery and transceiver housings respectively.

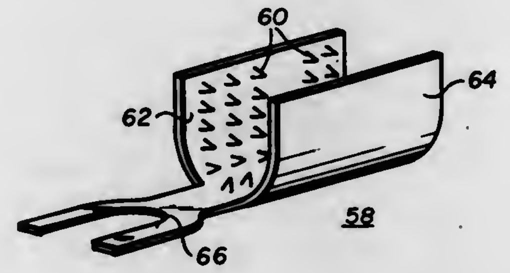
3,728,665
ELECTRICAL CONNECTOR

William G. Frey, Union Township, Union County, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Oct. 26, 1970, Ser. No. 83,986

Int. Cl. H01r *11/20*

U.S. Cl. 339—97 C 12 Claims



The invention is directed to an improved electrical connector having a calculably determinable number of suitably formed generally upstanding piercing members selectively disposed on at least one surface of a base member and selectively proportioned to provide a predetermined, sufficiently extensive area of contact between the conductor contacting portion of each piercing member and the conductive portion of an adjacently disposed insulated or noninsulated conductor.

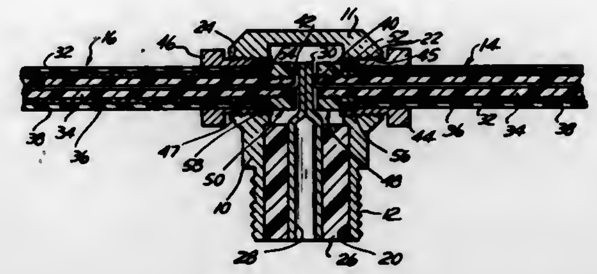
3,728,666
SOLDERLESS CONNECTORS OF THE T TYPE

James W. Shirey, Lakeland, Mich., assignor to John Schroeder, Howell, Mich., a part interest

Filed Sept. 20, 1971, Ser. No. 182,078

Int. Cl. H01r *17/04*

U.S. Cl. 339—177 R 11 Claims



Solderless plug and union connectors for a pair of coaxial shielded cables having a "T" type body provided with pin bearings or socket bearing junctions for contacting the exposed end of an inner conductor from each of a pair of cables disposed in a transverse plane to the body of the connector. The connector body includes a pair of dielectric material washers, each disposed about the dielectric material sleeve surrounding the inner conductor of one of the cables and having a mating step portion formed thereon for engagement with a similar step portion formed on an abutting metallic sleeve member similarly extending through the connector body. The connector assembly includes a threaded cup member slidably fixed to a second connector member for coupling the "T" connector and for drawing the "T" connector and the second connector into tight sealing engagement through the operation of the cup member.

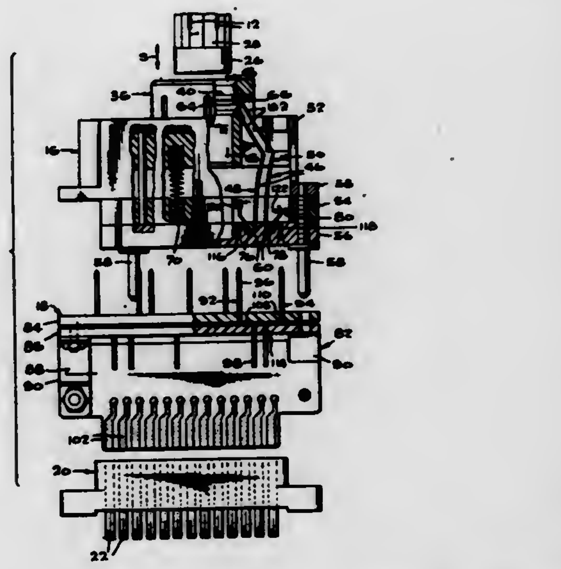
3,728,667
CONTACTOR FOR TESTING CIRCUIT MODULES WITH AXIAL LEADS

Bernd H. Richelmann, San Diego, Calif., assignor to Republic Corporation, Beverly Hills, Calif.

Filed March 3, 1971, Ser. No. 120,483

Int. Cl. H01r *13/10*

U.S. Cl. 339—193 P 6 Claims



A contactor head for rapidly making connection with circuit modules which have axially-extending leads that are normally held by a carrier with V-shaped recesses. The head includes a ring-shaped holder with a large aperture for receiving the circle of module leads, and pairs of resilient contactor members spaced about the holder for deflection against the module leads. The contactor members extend through slots in the holder, each slot having an outer wall portion to forcefully deflect the contactor member as the holder is pushed into a housing. The slots are arranged in pairs, with each slot of a pair spaced from the other slot in the direction of sliding of the holder into the housing. The contactor members are in the form of strips, with tapered outer ends for reception in the V-shaped carrier recesses. A compensating board is provided which has a circle of pins for contacting the contactor members, a row of conductors for receiving a standard plug, and jumpers for connecting the pins to the conductors.

3,728,668

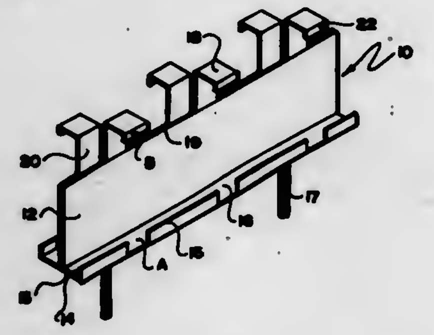
SNAP-ON ONE PAIR BLOCK AND FRAMES THEREFOR

Frederick Frank Reinisch, 475 Scotia St., Winnipeg 17, Manitoba, Canada

Filed July 15, 1971, Ser. No. 162,845

Int. Cl. H01r *9/00*

U.S. Cl. 339—198 G 1 Claim



A stainless steel frame is installed and any number required up to six one-pair blocks can be snapped into place and connected.

3,728,669

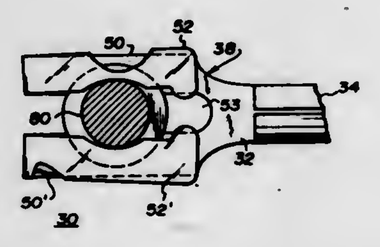
WIRE TERMINATING DEVICE

John J. Churla, Raritan, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed May 4, 1971, Ser. No. 140,214

Int. Cl. H01r *11/22*

U.S. Cl. 339—257 21 Claims



A mountable wire terminating device adapted to engagingly receive a range of mounting fasteners comprising a dimensionally variable mounting orifice defined, in one embodiment, by a series of interconnected, overlying, spaced, individually deflectable members resiliently responsive to a wide range of fasteners inserted therebetween. Other embodiments include either slidably or deflectably adjustable, selectively contoured frame-like members defining an enclosed variable mounting orifice. The deflectable members of the first mentioned embodiment may be selectively recessed to provide a series of overlapping, differently sized article receiving cavities each suitably proportioned for disposition about a particularly sized fastener.

3,728,670

ULTRASONIC DOPPLER DEVICE

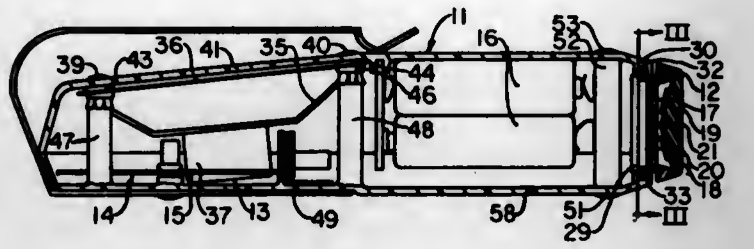
Peter J. Rosauer, Prospect, and Richard C. Sukoski, Norridge, both of Ill., assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Feb. 11, 1971, Ser. No. 114,525

Int. Cl. G01s *9/66*

U.S. Cl. 340—1 R 7 Claims

Portable self-contained ultrasonic doppler device including transmitting and receiving transducer means carried by a support structure, speaker means and electronic doppler circuitry connected to the transducer means and the speaker means, all mounted in a common housing. Attenuation means are provided between the housing and the speaker means and the support structure for attenuating transmission of audio frequency waves from the speaker to the transducer means and to minimize feedback effects.



3,728,671

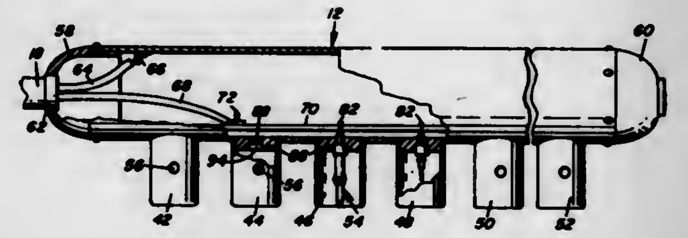
MULTIPLE-ELECTRODE, DIRECTIONAL, ACOUSTIC SOURCE

Adolph M. Poston, Jr., Petaluma, Calif., assignor to The United States of America as represented by the Secretary of the Interior

Filed April 30, 1970, Ser. No. 33,453

Int. Cl. G01v *1/00*

U.S. Cl. 340—12 SD 1 Claim



Concentric electrode pairs of opposite polarity improve the efficiency of a spark-gap acoustic source for marine seismic profiling. One electrode of a pair is tubular; the other is rod-like and positioned axially within the tubular electrode. Among the benefits resulting from the concentric electrode configuration are constant output, directional control, high frequency, efficiency, and a high repetition rate.

3,728,672

METHOD AND APPARATUS FOR LOGGING THE CHARACTERISTICS OF MATERIALS FORMING THE WALLS OF A BOREHOLE

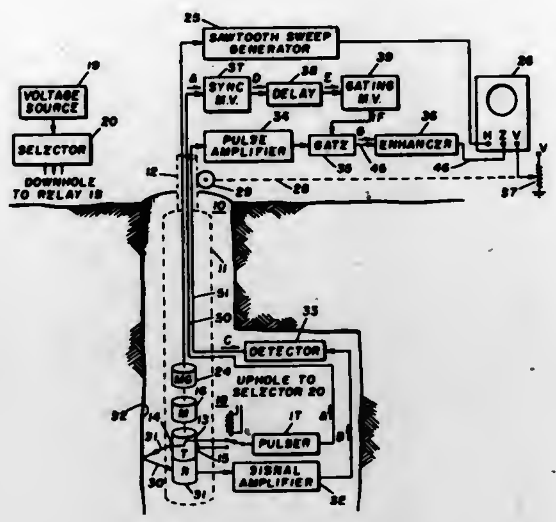
Charles L. Dennis, and Joseph Zemanek, Jr., both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 9, 1971, Ser. No. 169,959

Int. Cl. G01v *1/34, 1/40*

U.S. Cl. 340—15.5 DS 22 Claims

A method and apparatus for obtaining the log of a borehole employing a transducer assembly which is rotated about and advanced along the axis of a borehole. The transducer assembly includes one or more transmitters of acoustic energy. An excitation pulser is selectively coupled through a relay to the transducer assembly, the relay being energized by surface instrumentation to select the transmitter which is to be operative. Reflections of acoustic energy pulses are converted to electrical reflection signals by the transducer assembly and coupled by signal-enhancing circuitry to the Z-axis of an electron beam display device for intensity modulating the electron beam as it is swept across the face of the display device in accordance with the rotation of the transducer assembly. The signal-enhancing circuitry is selectively operated to nonlinearly change the amplitudes of the reflection signals received from the transducer assembly to either increase or decrease the contrast of the picture of the borehole as displayed on the face of the display device.



3,728,673

FAULT DISPLAY UNIT FOR A VEHICLE

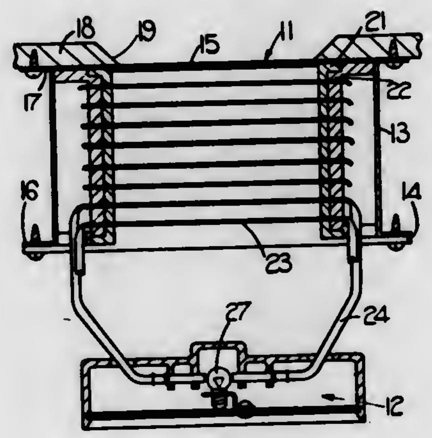
Konrad Werda, 34 Peel Park Avenue, Clitheroe, England

Filed July 27, 1971, Ser. No. 166,440

Claims priority, application Great Britain, Aug. 8, 1970, 38,346/70

Int. Cl. B60q *1/00*

U.S. Cl. 340—52 F 7 Claims



A fault display unit for a vehicle includes a casing having an aperture at one end thereof and a plurality of translucent display panels mounted in the casing in parallel, spaced relationship with said one end of the casing. A plurality of optical cables are associated with said display panels respectively, one end of each optical cable being positioned adjacent a respective display panel so that light from the optical cable, in use, illuminates the display panel. Each of the display panels is formed with a plurality of indentations in the surface thereof remote from the aperture in the casing, and each of the indentations includes a surface for reflecting some of the light from a respective optical cable, in use, towards the aperture in the casing. The indentations in each display panel are arranged to define a legend so that when a display panel is illuminated an image of the respective legend is produced in the aperture.

3,728,674

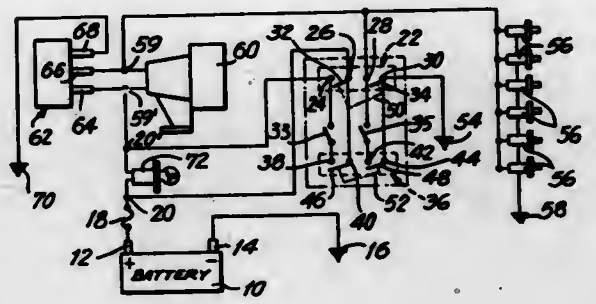
BURGLAR AND PERSONAL PROTECTION ALARM SYSTEM FOR VEHICLES

Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.

Filed May 3, 1971, Ser. No. 139,508

Int. Cl. B60r *25/10*

U.S. Cl. 340—63 6 Claims



An alarm system includes a signaling device and means for actuation thereof by any one of three methods: firstly, activation by means of removing a plunger switch, which, when removed, closes a normally open circuit; secondly, by means of a push switch which closes a circuit when depressed and opens a circuit when released; and thirdly, by means of an alarm switch. The system is intended for use in an automobile or the like wherein the plunger and push switches are located to be accessible to the driver of the automobile and the alarm switch is located, for instance, to be activated upon undesired opening of a door. Relay means are included in the circuits such that, particularly in the circuit associated with the alarm switch, the signaling device will continue to sound even after the door is closed.

3,728,675

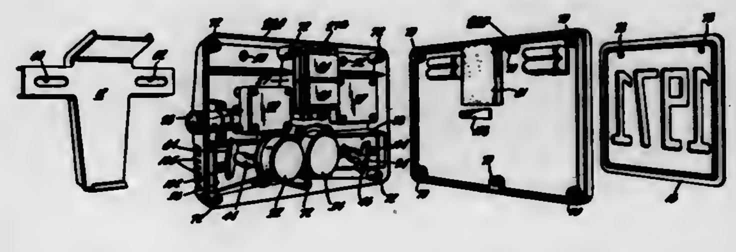
CYCLE ALARM APPARATUS

Raymond W. Horn, Moorestown, N.J., and Ignatius F. Bash, Huntingdon Valley, Pa., assignors to DVA Corporation, Mt. Laurel Township, N.J.

Filed May 17, 1971, Ser. No. 144,014

Int. Cl. B60r *25/10*

U.S. Cl. 340—65 11 Claims



Alarm apparatus suitable for attachment to a motor-cycle for producing an audible alarm when an unauthorized person tilts the cycle from the rest position in which it was left. The apparatus comprises a casing containing the alarm circuit and a self-contained power supply, the casing being mountable in a fixed angular position on the motorcycle, preferably at the rear of the cycle so that the license plate can then be mounted over the rear of the casing. The casing is held to the cycle by fastening means which are accessible only when a removable portion of the casing is removed, and the alarm circuit is responsive to the removal of the closure portion of the casing to produce an electrical alarm signal when the closure portion is removed so that one cannot remove the entire casing or open the casing to disable it without sounding the alarm. The angle of the cycle is sensed by a pair of mercury switches within the casing, one for sensing tilt in one angular direction and the other for sensing tilt in the other direction from a reference angular position normally defined by the position in which the cycle is held by its stand. The two mercury switches are preferably independently adjustable in angular position so as to accommodate any stand angle. The battery within the casing energizes an alarm circuit whenever either one of the mercury switches is closed by tilting of the cycle or when the closure for the casing is removed, provideded also that a key-operated line switch has also been closed by the operator upon leaving the cycle. The alarm circuit includes a timing circuit such that when one of the switches has been closed and is then reopened, the alarm signal will continue for a predetermined length of time and will then terminate, thereby providing an adequate alarm in case of tampering with the cycle yet preventing continued operation of the alarm which will unduly deplete the battery supply.

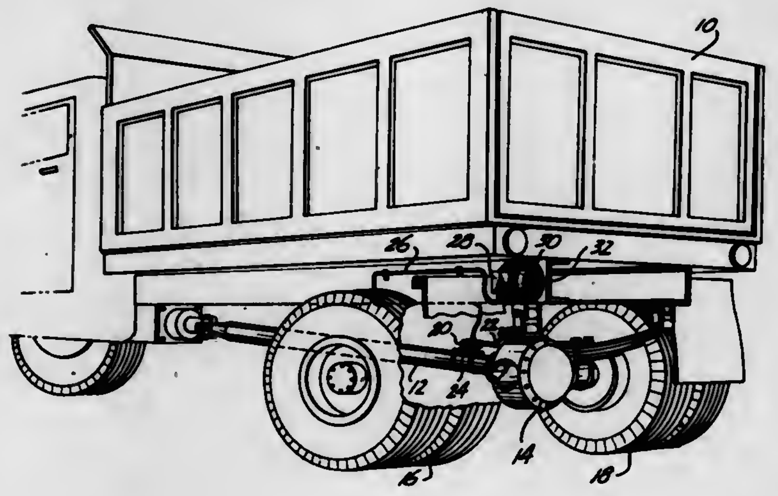
3,728,676
REVERSE MOTION DETECTOR

Robert A. Brown, Seattle, Wash., assignor to Electro Development Corporation, Lynwood, Wash.

Filed Dec. 2, 1970, Ser. No. 94,424

Int. Cl. B60q *5/00*

U.S. Cl. 340—70 **8 Claims**



To detect when an object begins to move in a direction opposite or reverse to its normal direction of movement, a magnetic actuator is disposed on the object and a sensor including first and second reed switches is disclosed adjacent to the object. The reed switches are co-planar in the sensor and disposed such that the first reed switch closes before the second reed switch upon relative movement of the object therepast in its reverse direction. In one embodiment, a logic circuit provides an output signal if, and only if, the second reed switch closes in response to this actuator movement after the first reed switch closes and while the first reed switch remains closed. The output signal initiates operation of a timing circuit which provides a timing signal that inhibits further operation of the logic circuit and is applied through an audio oscillator to drive an amplifier and a loud speaker for a short time period. When the timing signal ceases, the logic circuit is automatically reset to detect subsequent reverse object movements. In a preferred embodiment, the apparatus is used as a vehicle back-up alarm in which the magnetic actuator is attached to the vehicle's drive shaft and the sensor is disposed in proximity thereto.

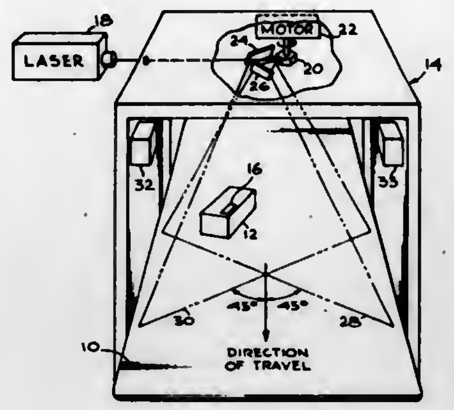
3,728,677
ROTATION-INDEPENDENT READING OF RECTANGULAR INSIGNIA

John H. Munson, Menlo Park, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed May 10, 1971, Ser. No. 141,717

Int. Cl. G06k *7/015, 5/00*

U.S. Cl. 340—146.3 F **10 Claims**



A system is provided for scanning remotely encoded indicia, which may be in the form of a label on a package, and decoding same, regardless of the orientation, within wide limits of said indicia relative to a reader.

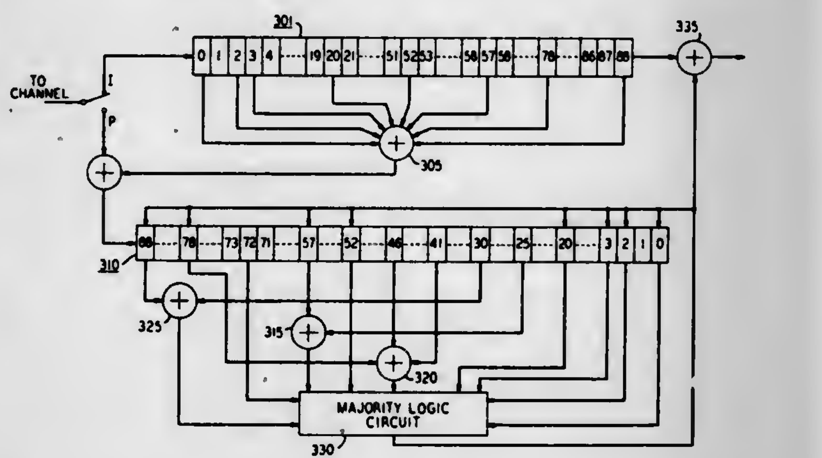
3,728,678
ERROR-CORRECTING SYSTEMS UTILIZING RATE ½ DIFFUSE CODES

Shih Yung Tong, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 3, 1971, Ser. No. 177,686

Int. Cl. G06f *11/12*; **G08c** *25/00*

U.S. Cl. 340—146.1 AQ **12 Claims**



Sequences of information bits, encoded in an orthogonalizable convolutional code of rate 1/2 and transmitted via a communication channel, are decoded to correct *t* random errors and bursts of B blocks where each block is 2 bits in length. The interconnections between an information bit shift register in the encoder and decoder and their respective parity check bit generating circuits and between a syndrome register and a majority logic circuit in the decoder are specified by relatively simple formulas which are functions of *t* and B.

3,728,679
SKEW DEVICE

Billy L. McIntosh, Houston, Tex., assignor to Weston Instruments Inc., Newark, N.J.

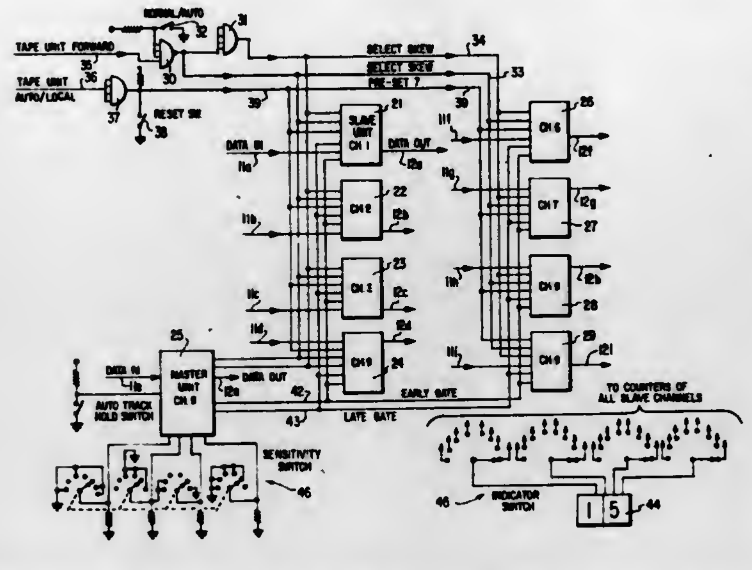
Filed Oct. 21, 1971, Ser. No. 191,324

Int. Cl. G06k *5/04*

U.S. Cl. 340—146.1 F **10 Claims**

A device for correcting the time relationship of parallel data bits to eliminate the effect of certain forms of static skew. The apparatus accepts the data bits on parallel channels, one of

which is arbitrarily designated as the "master channel," the others being slave channels. Logic associated with the master channel generates an early gate signal upon arrival of a master channel data bit, and a late gate signal is generated, also as a result of the data bit arrival. An interval between the early gate and the late gate defines a "window" in time within which the apparatus produces a master channel data bit out, delayed by a predetermined amount, and within which the slave channel data bits should occur. If the slave channel data bits do not occur within this window, delay means in each slave channel is altered to readjust the occurence of the data bit out. Each slave channel is adjusted individually in accordance with the gate signal so that, after cyclic adjustment, the data bits are in essential coincidence. The interval between the early and late gate is adjustable by a sensitivity control to determine the accuracy of coincider :e desired.



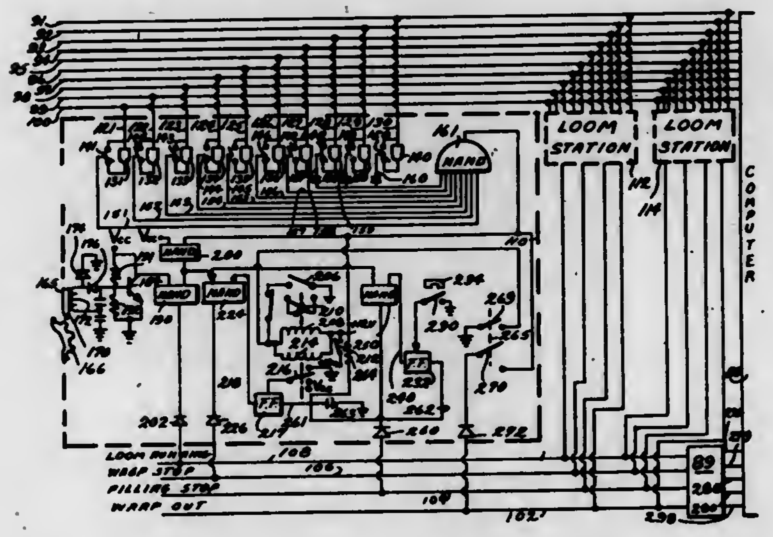
3,728,680
LOOM STOP DATA COLLECTION SYSTEM

Littleton Upshur, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 746,962, July 23, 1968, abandoned. This application March 30, 1970, Ser. No. 23,943

Int. Cl. H04q *9/00*

U.S. Cl. 340—147 R **24 Claims**



The invention relates to a system for conveying information from a plurality of stations, particularly stations associated with textile machines such as looms, to a recorder such as a human operator or a computer. A plurality of address lines connect each textile machine station to each other textile machine station and carry coded address signals, each address line carrying a digit of a binary number representing the particular station chosen for interrogation, and at least a single return line connects each station to each other station and to the recorder to convey information gathered at the station to the recorder. In one embodiment, address signals designating a particular loom station are sent by an interrogator to each loom and the loom so chosen by the address signals responds by applying electrical information signals containing information on the condition of the chosen loom to the return line or lines. The information signals on the return line or lines are sequentially examined and the interrogation ended if certain information is present.

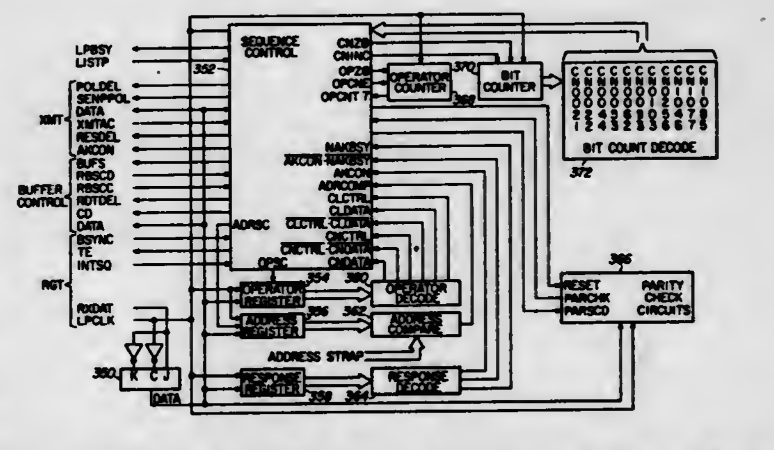
3,728,681
DATA LOOP COMMUNICATION PRIORITY ESTABLISHING APPARATUS

Ray C. Fuller, Cedar Rapids; Gary D. Phillips, and Richard B. Simone, both of Marion, all of Iowa, assignors to Collins Radio Company, Dallas, Tex.

Filed Jan. 6, 1972, Ser. No. 215,808

Int. Cl. H04q *5/00*

U.S. Cl. 340—147 R **7 Claims**



The method of configuring communication units, all of which are connected in series on a loop such that some units may take priority and communicate out of the logical sequential order. This is accomplished using a master unit and first and second sets of slave units. The slave units respond to poll requests. These polls may come either from the master or the previously responding slave unit. The master unit always sends a prepoll before a poll. The first set of slave units will respond to a prepoll or a poll and thus can take priority in transmitting messages. The second set of slaves will respond only to a poll, internally set a flag, and then transmit a poll to further slave units upon receipt of the next prepoll.

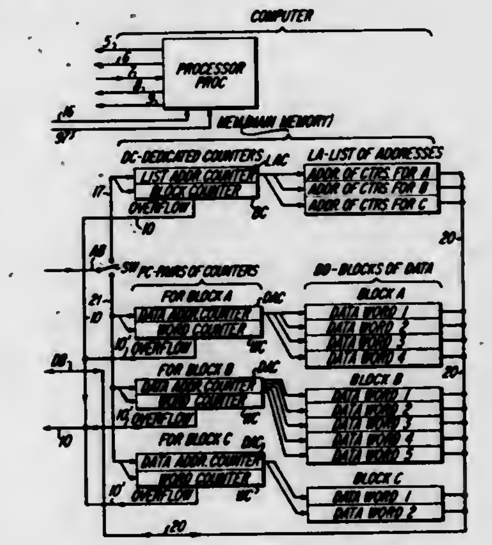
3,728,682
COMPUTER INPUT-OUTPUT CHAINING SYSTEM

Walter Allen Helbig, Sr., Medford Lakes, N.J., assignor to RCA Corporation, New York, N.Y.

Filed March 11, 1971, Ser. No. 123,281

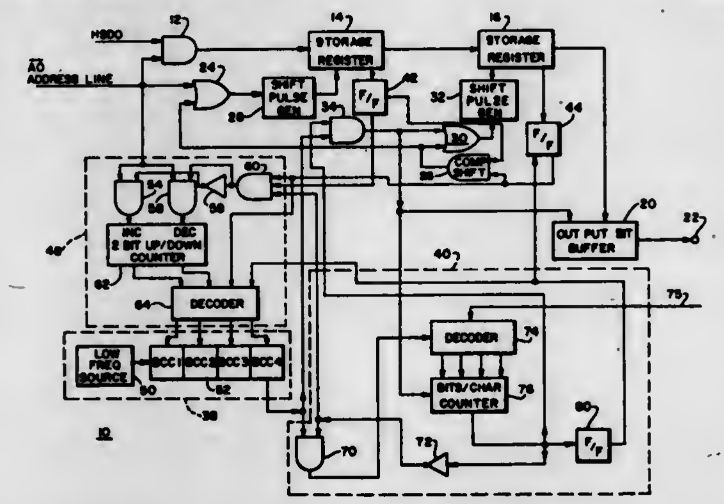
Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **15 Claims**



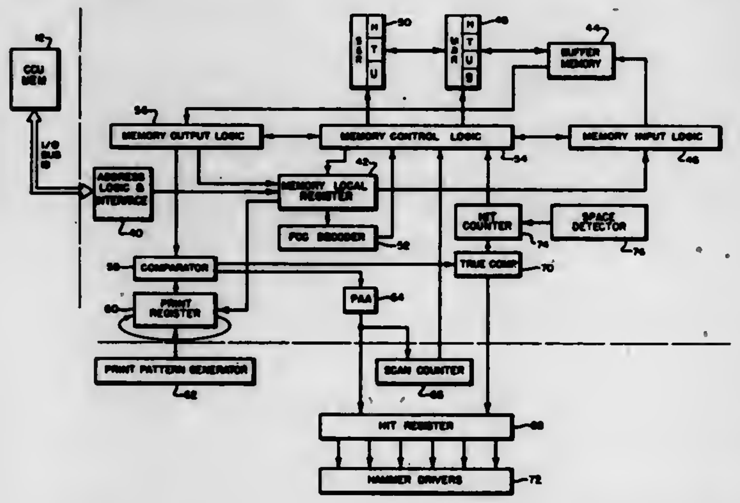
A computer input-output (I/O) system is disclosed which is particularly useful in the performance of text editing functions and the like, wherein it is desired to transfer scattered units or blocks of information in a particular desired order between a processor main memory and at least one I/O controller connected with an I/O device. A data word counter is provided in memory for the sequential addressing of the data words in each block of data. The addresses of the data word counters are stored in memory as a list of addresses in the order in which the blocks of data are to be transferred. A dedicated counter location is provided in memory for the sequential addressing of the list of addresses. The I/O controller is constructed to initially address the dedicated counter location in the memory and to cooperate with the processor in performing a sequence of steps which results in a transfer of all of the desired data in the desired sequence.

3,728,683
APPARATUS FOR CONTROLLING OUTPUT DATA RATE
Karl E. Biegert, Moorestown, and Robert M. Tice, Glassboro, both of N.J., assignors to Ultronic Systems Corp., Moorestown, N.J.
Filed July 30, 1971, Ser. No. 167,662
Int. Cl. G06f *5/06*
U.S. Cl. 340—172.5 14 Claims



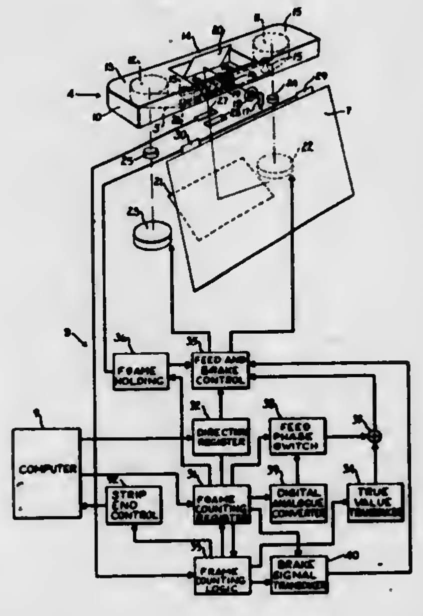
Apparatus for controlling the output data rate in a time division multiplexing system (TDM) for generating data including a stop bit employs a means for automatically sensing a buildup of input data in an input buffer and a means for automatically adjusting the time interval of the stop bit inversely with the data buildup in the buffer.

3,728,684
DYNAMIC SCANNING ALGORITHM FOR A BUFFERED PRINTER
Victor M. Morganti, Arlington, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 5, 1970, Ser. No. 61,204
Int. Cl. G06f *3/12*
U.S. Cl. 340—172.5 12 Claims



A buffered line printer adapter capable of accepting multiple lines of data and control characters from a central processor memory, and dynamically expanding the data during a print scan cycle, by means of a hardware algorithm which operates on the control characters contained in the buffer memory.

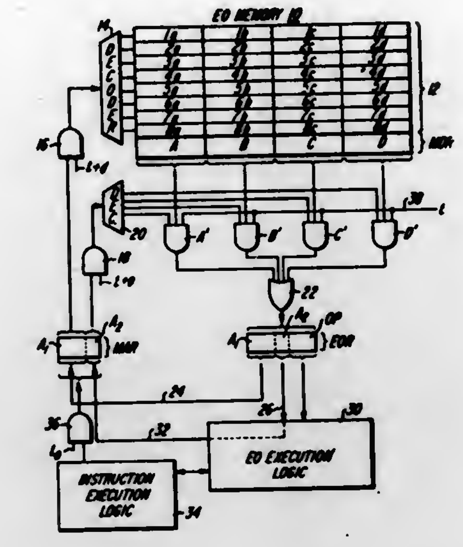
3,728,685
RAPID ACCESS TO A SELECTED SEGMENT OF A STRIP INFORMATION CARRIER
Jan-Christer Stalnert, Linkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden
Filed Dec. 21, 1970, Ser. No. 99,849
Claims priority, application Sweden, Dec. 22, 1969, 17680
Int. Cl. G11b *15/48*
U.S. Cl. 340—172.5 12 Claims



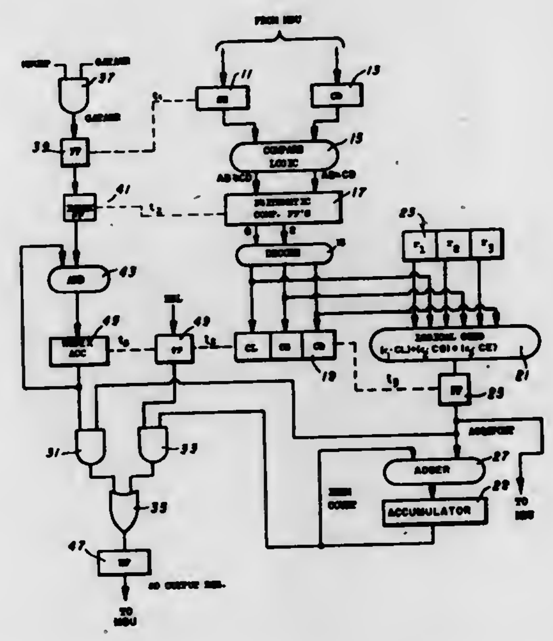
For lengthwise transit of a film strip from one frame at a fixed station, to bring any other selected frame thereto, a counter is charged with the initial number of frames that must pass the station. A pulse is produced as each frame passes the station, to count down the counter. The pulses are also integrated to produce a true strip speed signal. With the use of the charge on the counter, a demand value signal is produced, corresponding to a constant fast velocity for all frames that must pass the station in excess of a predetermined number, and therebelow, to a decreasing velocity proportional to number of frames still to pass. The strip drive is energized according to the difference between true and demand values, in a manner tending to maintain that difference at zero.

3,728,686
COMPUTER MEMORY WITH IMPROVED NEXT WORD ACCESSING
Joseph A. Weisbecker, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.
Filed June 7, 1971, Ser. No. 150,437
Int. Cl. G06f *9/16*
U.S. Cl. 340—172.5 2 Claims

A computer elementary operation (EO) control memory has memory word storage locations each containing a plurality of EO words. Each EO word contains an operation code, memory word address bits of a next memory word to be accessed, and information identifying a particular EO word in the next memory word. Each EO word which contains a conditional branch operation code includes information identifying an alternate EO word in the next memory word, to be utilized in dependence on a machine condition then existing. The memory word address bits in an EO register are used to read a next memory word from the memory to a memory word data register. Concurrently therewith, the operation code present in the EO register is decoded and used to test a machine condition, and thereafter transfer the selected original or alternate next EO word from the memory word data register to the EO register.

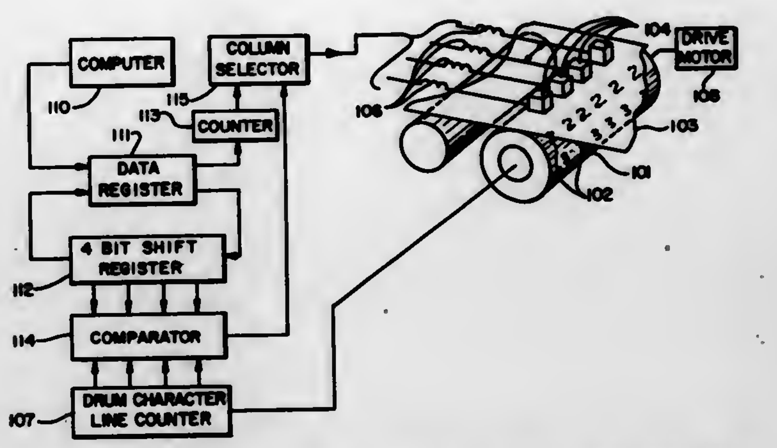


3,728,687
VECTOR COMPARE COMPUTING SYSTEM
William J. Watson, and William D. Kastner, both of Austin, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 4, 1971, Ser. No. 103,540
Int. Cl. G06f *7/00*
U.S. Cl. 340—172.5 4 Claims



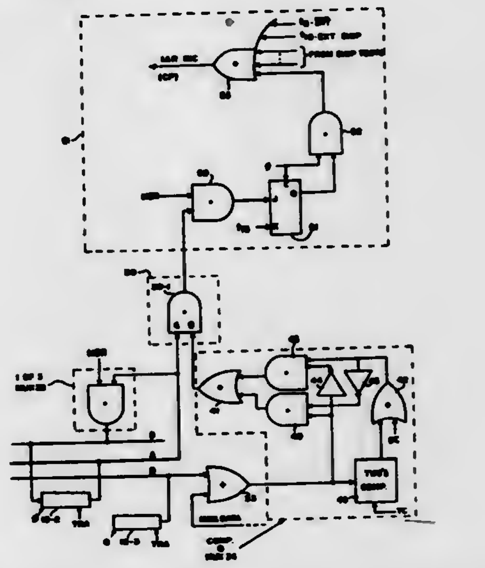
A computing system is shown specifically adapted for processing vectors. Two vector streams, each vector stream having an ordered array of elements, are compared and the relationship between the elements in the two vector streams are determined. The computing system may determine when specific elements of the two vector traces are equal to each other, when an element in the first is greater than an element in the second, when an element in the first is greater than or equal to an element in the second, when an element in the first is less than an element in the second, when an element in the first is less than or equal to an element in the second, when an element in the first is unequal to an element in the second and when for each element in vector trace A there is a corresponding element in vector trace B.

3,728,688
LINE PRINTER TIME SHARED ELECTRONICS
Richard F. Elmhurst, Largo; John S. Farina; David C. Davis, Jr., both of Clearwater, and William A. Elmhurst, Largo, all of Fla., assignors to Honeywell Information Systems, Inc., Waltham, Mass.
Filed May 24, 1971, Ser. No. 146,215
Int. Cl. G06f *3/12*
U.S. Cl. 340—172.5 19 Claims



A time-shared electronic control system for use with hammer-actuated continuously rotating-type drum-printers, for selectively driving print hammers to impact intermediate recording media upon the drum. Information indicative of the position of the drum is serially compared with information available for printing during a print-cycle equivalent to the travel-time of the drum from one row of characters to an adjacent row, and upon attaining correspondence of information, emitting and storing an electronic signal indicative of the column for printing during that print-cycle.

3,728,689
PROGRAM BRANCHING AND REGISTER ADDRESSING PROCEDURES AND APPARATUS
Howard W. Edwards, Jr., Dracut, Mass., assignor to Sanders Associates Inc., Nashua, N.H.
Filed June 21, 1971, Ser. No. 155,068
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 9 Claims



A serial buss processor with detailed description of program branching and register addressing. A mask and branch instruction is utilized to effect a relative program branch of up to $N+1$ address locations away from the address of the current or masking branch instruction, where N is the number of bits in the data operand. Register addressing is partly direct and partly indirect. The indirect register address scheme employs a directly addressable register, the contents of which are interpreted by an indirect address generator unit which itself is directly addressable such that a single value in the directly addressable register may be used to point to different registers.

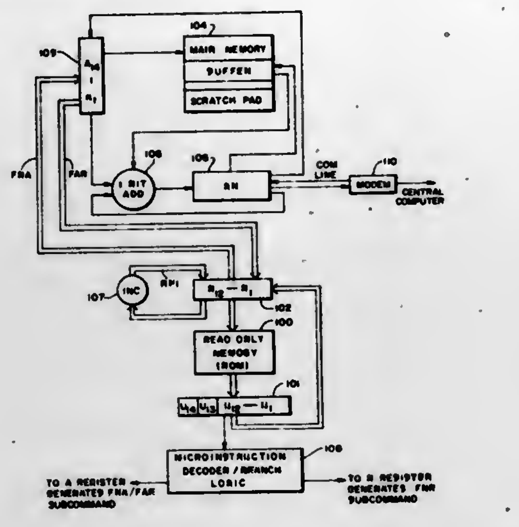
3,728,690
BRANCH FACILITY DIAGNOSTICS

Thomas O. Holtey, Newton Lower Falls, and Donald J. Greenwald, Brookline, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 26, 1971, Ser. No. 175,266

Int. Cl. G06f ***11/04***

U.S. Cl. 340—172.5 **21 Claims**


MAIN MEMORY
BUFFER
SCRATCH PAD
104
109
106
108
110
MODEM
CENTRAL COMPUTER
1 BIT ADD
READ ONLY MEMORY (ROM)
MICROINSTRUCTION DECODER / BRANCH LOGIC
TO A REGISTER GENERATES FNA/FAR SUBCOMMAND
TO B REGISTER GENERATES FNR SUBCOMMAND

Diagnostic hardware and a method for diagnosis and confidence testing of ROM branching capabilities. Logical circuitry including an RIT flip-flop, which when set modifies the operation of a halt "HLT" micro-op which normally stops the clock, so that the halt "HLT" micro-op will not stop the clock and its absence or the presence of any other micro-op will stop the clock. Execution of any of a predetermined set of branch micro-instructions to predetermined memory locations, sets the RIT flip-flop and causes a branch to a location containing a "HLT." If branching operates properly, the program continues; if not the machine halts, thus identifying the error and avoiding loss of control of the machine.

3,728,691
INTEGRATED CIRCUITS FOR MULTIPLEXING

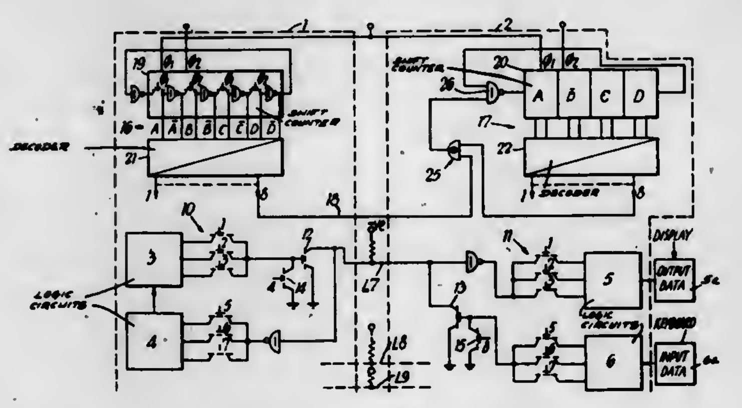
George Earley Stevenson, 15, Townsend Crescent, Kircaldy, Scotland

Filed June 3, 1971, Ser. No. 149,455

Claims priority, application Great Britain, Feb. 9, 1970, 6,166/70

Int. Cl. G06f ***1/00***

U.S. Cl. 340—172.5 **25 Claims**



Integrated circuits comprising arrays of digital logic elements interconnected amongst the circuits by data transmission conductors which are fewer in number than the digital data channels of the arrays, the digital data channels being connected to the data transmission conductors by semiconductor switching elements which are so switched as to produce a multiplexed transmission of digital data between the channels and conductors, the switching of the switching elements of the circuits being synchronised by one of said data transmission conductors or a further conductor.

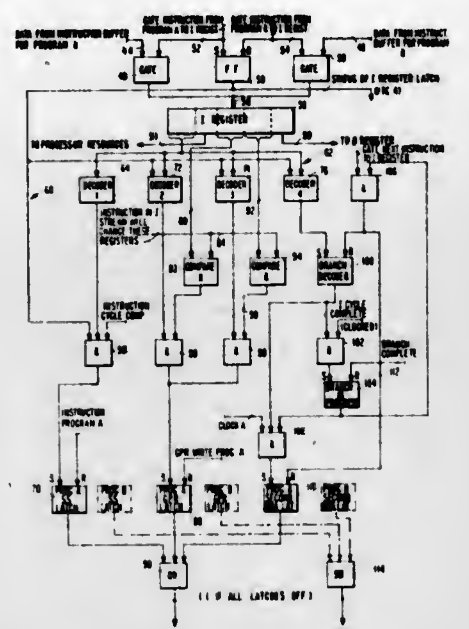
3,728,692
INSTRUCTION SELECTION IN A TWO-PROGRAM COUNTER INSTRUCTION UNIT

John Wenard Fennel, Jr., Beltsville, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,494

Int. Cl. G06f ***9/18***

U.S. Cl. 340—172.5 **5 Claims**



In an instruction handling unit specifically designed for pipeline processing of instructions an apparatus is disclosed which allows the instruction handling unit to process simultaneously computer instructions from two different programs. The apparatus employed for sharing the instruction unit processing capabilities among two programs performs certain checks upon the specific instructions of the two different instruction streams and determines from various machine conditions and variable program conditions which instruction will be executed within the instruction handling unit. The selection algorithm involved is designed to make maximum utilization of the instruction handling unit while preventing any one instruction stream from monopolizing the instruction handling capabilities of the instruction unit.

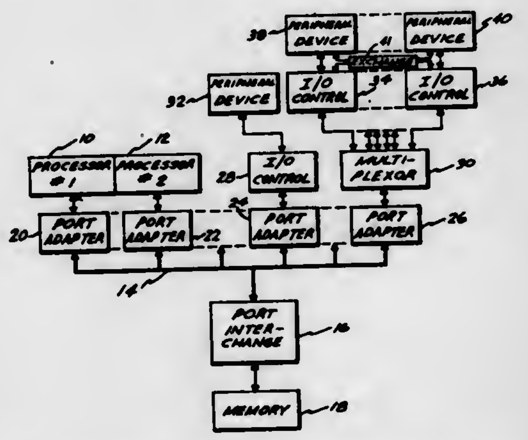
3,728,693
PROGRAMMATICALLY CONTROLLED INTERRUPT SYSTEM FOR CONTROLLING INPUT/OUTPUT OPERATIONS IN A DIGITAL COMPUTER

John Arthur Macker, and William Francis Keenan, both of Goleta, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed April 28, 1972, Ser. No. 248,500

Int. Cl. G06f ***3/00***

U.S. Cl. 340—172.5 **23 Claims**



A digital computer system in which each input/output operation for transferring data between main memory and any one of a plurality of peripheral devices is initiated by a processor executing a Dispatch operation through an exchange associated with the main memory. In response to a Dispatch operation a designated input/output control unit examines a Result Status field of an associated input/output descriptor stored in main memory. The Result Status field defined by the descriptor indicates the current status of the input/output operation, namely, whether it has been completed or not. If not completed, the control unit performs the operation defined by the descriptor. When the input/output operation defined by the descriptor is completed, the Result Status field of the descriptor is again read out of main memory to the control unit and a new Result Status field written into the same location in memory, the new Result Status field indicating the operation has been completed and indicating whether or not there has been an exception condition, errors, etc. The control unit examines the prior Result Status field received from memory to determine if an interrupt of the processor is indicated. Only if an interrupt condition has been set in the prior Result Status field by the processor, the control unit initiates a Dispatch operation to the processor, signaling the processor that the operation is completed. If the interrupt condition is not set or if the interrupt condition has been set after the Dispatch operation is initiated, the control unit reads out a link address from the descriptor, and using the link address, reads out the Result Status field of another descriptor from memory. If the Result Status field of a descriptor, when first examined, indicates that the input/output descriptor has already been completed, the control unit continues to inspect the Result Status field at timed intervals until the Operation Complete condition is reset, in which case the input/output descriptor operation is again executed by the control unit.

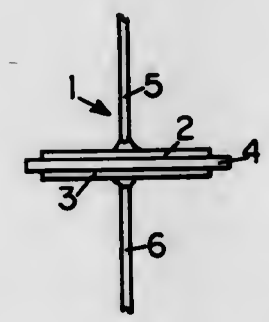
3,728,694
THIN FILM FERROELECTRIC DEVICE

George Andrew Rohrer, Dallas, Tex., assignor to Technovation, Inc., Grosse Ile, Mich.

Filed Sept. 28, 1970, Ser. No. 76,059

Int. Cl. G11c ***11/22***

U.S. Cl. 340—173.2 **5 Claims**



A ferroelectric device having a layer of stable ferroelectric potassium nitrate disposed between electrical contacts positioned on opposite surfaces of the ferroelectric layer. The ferroelectric layer has a thickness of less than 110 microns, and preferably falling within a range of from 100 angstrom units to 1000 angstrom units. The process of manufacturing the ferroelectric device includes the cooling of a layer of potassium nitrate by exposing the layer to a cold dry gas without quenching to form a stable ferroelectric layer.

3,728,695
RANDOM-ACCESS FLOATING GATE MOS MEMORY ARRAY

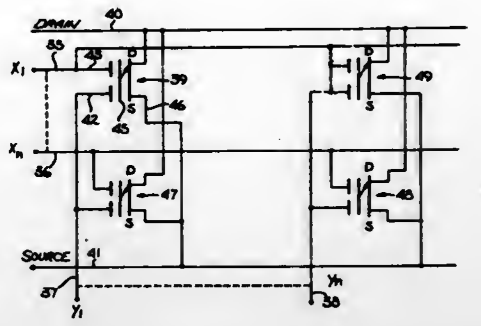
Dov Frohman-Bentchkowsky, Los Altos, Calif., assignor to Intel Corporation, Mountain View, Calif.

Filed Oct. 6, 1971, Ser. No. 186,995

Int. Cl. G11c ***11/40;*** **H01l** ***11/00, 15/00***

U.S. Cl. 340—173 R **18 Claims**

A random-access memory array which utilizes a metal-oxide-semiconductor MOS device as a storage element is disclosed. The device includes a floating gate which may be selectively charged and discharged in order to program the device with a "0" or a "1." The memory array which utilizes a plurality of these devices may be produced as an integrated circuit on a single substrate.



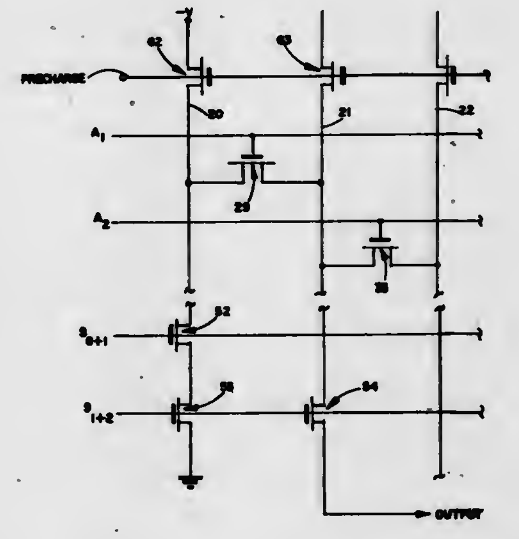
3,728,696
HIGH DENSITY READ-ONLY MEMORY

Robert W. Polkinghorn, Huntington Beach, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 23, 1971, Ser. No. 211,311

Int. Cl. G11c ***17/00, 11/40***

U.S. Cl. 340—173 SP **6 Claims**



A read-only memory (ROM) has a plurality of address input lines and selection lines forming a matrix with regions of a semiconductor substrate. Binary information is stored at locations between adjacent semiconductor regions by the presence or absence of field effect transistors thereat. Alternate semiconductor regions are selectively connected to a voltage reference, and the remaining regions there-between are selectively connected to a common output point by means of selection field effect transistors in series with each region. Selection signals applied to the selection transistors of an adjacent pair of regions connect one region to the voltage reference and the other region to output to provide an output signal as a function of data stored at a particular addressed storage location.

3,728,697
BUBBLE DOMAIN SYSTEM

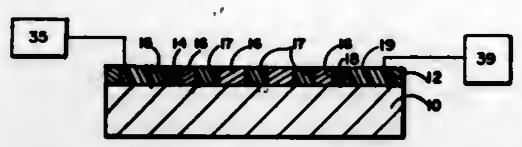
David M. Heinz, Orange, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 21, 1970, Ser. No. 99,937

Int. Cl. G11c ***11/14***

U.S. Cl. 340—174 TF **7 Claims**

A bubble domain system of magnetic material having a portion containing small diameter bubble domains and an adjacent portion having larger diameter bubble domains. A method for forming large diameter bubble domains in a magnetic material containing small diameter bubble domains is also included.



3,728,698
MAGNETIC THIN FILM PLATED WIRE MEMORY

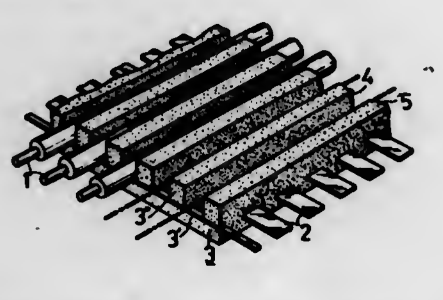
Seihin Kobayashi; Michihiro Torii; Takehiko Jojima, and Masanao Okuda, all of Hamana-gun, Shizuoka-ken, Japan, assignors to Fuji Denki Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1971, Ser. No. 174,358

Claims priority, application Japan, Aug. 29, 1970, 45/86434; Sept. 29, 1970, 45/96590

Int. Cl. G11c *11/14, 11/04*

U.S. Cl. 340—174 BC 6 Claims



In a magnetic thin film plated wire memory, a magnetic keeper comprises a base portion and a number of elongated protrusions spaced with each other at fixed spaces to form grooves therebetween, the base portions and the protrusions being integral with each other. Within the magnetic keeper, a number of driving wires are embedded to intersect at right angles with the elongated protrusions with their upper surface exposing to the outside of the base portion of the magnetic keeper at the grooves between the elongated protrusions. Each groove snugly contains therein a magnetic wire.

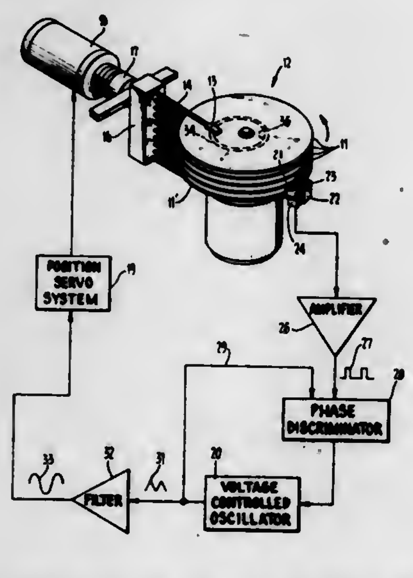
3,728,699
APPARATUS FOR SYNCHRONIZING OSCILLATION OF READ/WRITE HEADS WITH THE ROTATION OF A DATA STORAGE DISC PACK

Frank J. Sordello, San Jose, Calif., assignor to Information Storage System, Inc., Cupertino, Calif.

Filed Aug. 16, 1971, Ser. No. 172,141

Int. Cl. G11b *5/00*

U.S. Cl. 340—174.1 C 6 Claims



Apparatus is described for oscillating the read/write head carriage of a rotary drive mechanism for data storage disc pack. An optical sensing device is employed to determine the angular phase and frequency of rotation of the disc pack, and a phase discriminator compares the sensed frequency with the output of an oscillator to phase-lock the oscillator thereto. The resulting oscillation signal is fed to an electromagnetic actuator to cause oscillation of the read/write head in synchronism with the rotation of the disc pack.

3,728,700
ALARM MEANS FOR COBALT THERAPY MACHINE

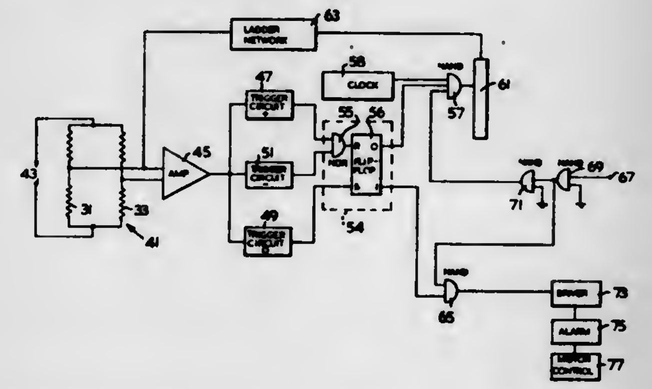
Francois Duval, Lucerne, Quebec, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Feb. 17, 1970, Ser. No. 12,019

Claims priority, application Canada, May 21, 1969, 052049

Int. Cl. G08b *21/00*

U.S. Cl. 340—181 7 Claims



An alarm means on a cobalt therapy machine of the type in which the patient rests on a stretcher and a moving rotating head of a cobalt irradiation device moves relative to the stretcher. Transducers measure changes in the forces on the stretcher, and so provide an alarm upon any interference between the moving parts and the stretcher by measuring the difference between an output signal and a reference signal.

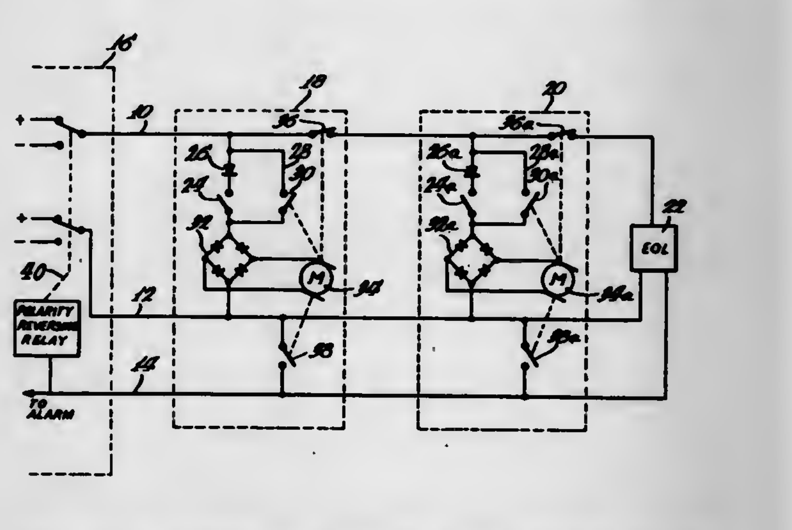
3,728,701
POSITIVE NON-INTERFERING TRANSMITTER

Joe D. Reynolds, and Kenneth V. Cannon, Shelby, Ohio, assignors to Federal Sign and Signal Corporation, Chicago, Ill.

Filed Oct. 19, 1971, Ser. No. 190,543

Int. Cl. G08b *17/06, 25/00*

U.S. Cl. 340—217 8 Claims



A plurality of transmitters utilizing common wiring are connected to a control unit having a power reversal relay. The transmitters each incorporate a diode and a rectifier protected motor that activates a coded signal on a separate signal line. Activation of any one of the transmitters causes a reversal of polarity and shunts the diode therein, thereby allowing operation of the one transmitter while power is blocked from the other transmitters until the complete signal has been transmitted.

3,728,702
TEMPERATURE ALARM UTILIZING PAIRED POSITIVE AND NEGATIVE COEFFICIENT THERMISTORS

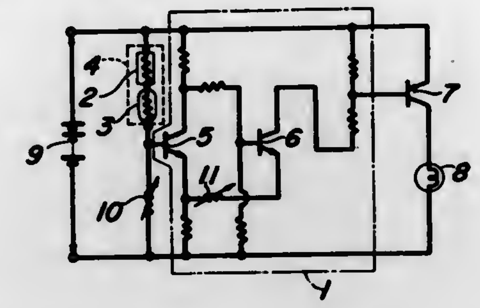
Mamoru Miyamoto, Neyagawa, and Minoru Takaichi, Suita, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Dec. 7, 1970, Ser. No. 95,635

Claims priority, application Japan, Dec. 11, 1969, 44/118195

Int. Cl. G08b *21/00*

U.S. Cl. 340—228 R 1 Claim



An engine temperature warning device which detects the temperature of an engine by means of a thermosensitive element comprising the combination of a negative characteristic thermistor and a positive characteristic thermistor which are thermosensitive semiconductor resistors to operate a contactless electronic solid state switching circuit to energize and deenergize a warning lamp.

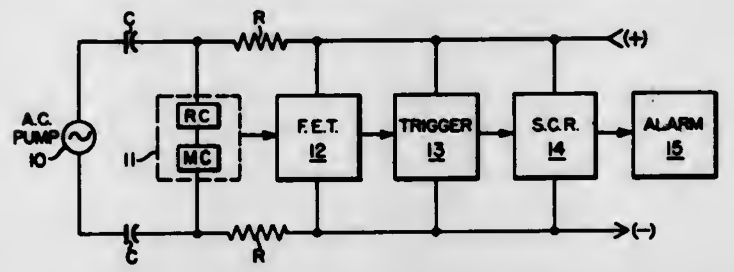
3,728,703
FIRE DETECTOR STABILIZER CIRCUIT

James H. Burnett, Wilton, Conn., assignor to Edward Company, Inc., Norwalk, Conn.

Filed Oct. 12, 1970, Ser. No. 79,972

Int. Cl. G08b *17/10*; H01j *39/28*

U.S. Cl. 340—237 S 9 Claims



A fire detector has been provided including an ionization sensing means which changes the level of an output signal in accordance with the sensing of the presence of smoke particles in the atmosphere. A detecting means including a semiconductor device selectively responds to the output signal and generates an alarm control signal. The improvement includes a very high frequency pump source coupled across the sensing and detecting means for stabilizing the ionization and to quench areas of intense ionization within the sensing means and the semi-conductor.

3,728,704
AUTOMATIC TRANSMISSION FLUID LEVEL INDICATOR

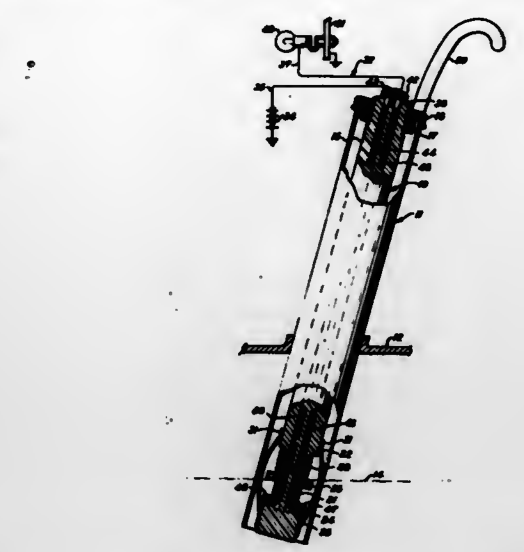
Thomas Moore, 3440 Kenyon Avenue, Baltimore, Md.

Filed April 19, 1971, Ser. No. 134,981

Int. Cl. G08b *23/00*

U.S. Cl. 340—244 A 9 Claims

An automatic transmission fluid level indicator having a removable rod with an area of reduced diameter at and extending below the desired fluid level, a float including a conductive ring surrounding the reduced area, a circuit received in the rod connects a battery with a lamp or other indicator through the conductive ring upon sufficient descent of the float to indicate a significant decline in the fluid level. The float with the conductive ring is urged downwardly by a compression spring which, however, is insufficient in force to overcome the buoyance effect of the fluid upon the float, but when



the rod is drawn out of the fluid, the circuit is automatically closed. A plug on top of the shaft provides for removal of the rod from the circuit. The amount of extension of the rod into the automatic transmission casing is adjustable whereby the amount of fluid loss to energize the indicator is also adjustable.

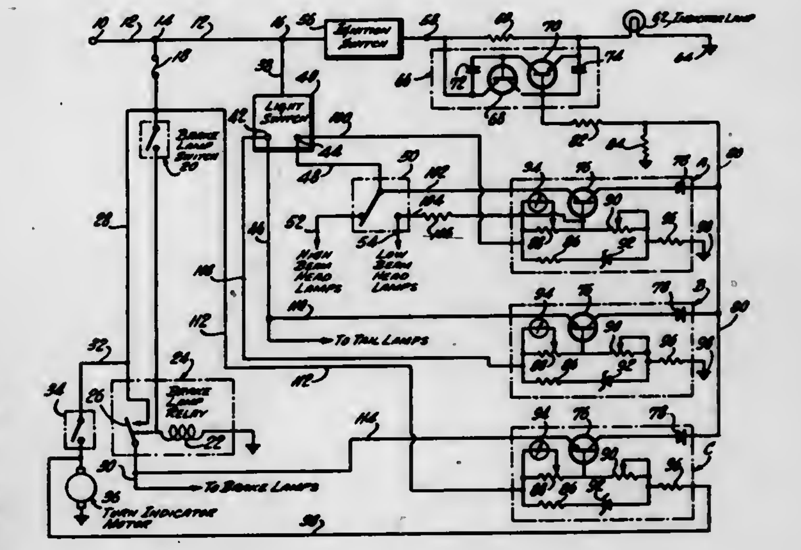
3,728,705
LAMP OUTAGE INDICATOR

Carl E. Atkins, Montclair, N.J., assignor to Wagner Electric Corporation

Continuation-in-part of Ser. No. 591,529, Dec. 12, 1966, abandoned. This application May 4, 1970, Ser. No. 34,497

Int. Cl. G08b *21/00*

U.S. Cl. 340—251 8 Claims



A monitoring circuit wherein a change in the electrical load in an automobile lamp circuit causes the output of a sensing amplifier to increase and actuate a control switch that lights an indicator to show the change in load.

3,728,706
SYSTEM FOR INDICATING AEROSOLS IN THE ATMOSPHERE

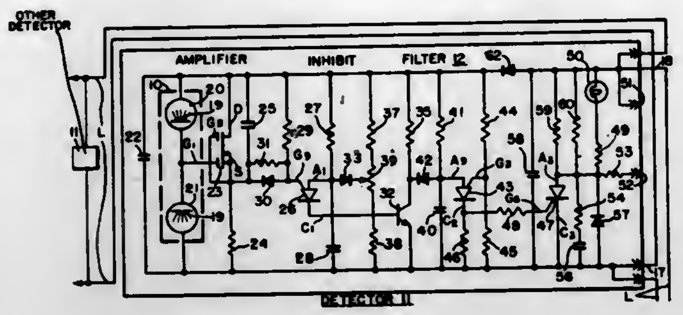
William C. Tipton, Newark, and Michael Suchomel, Mountainside, both of N.J., assignors to General Signal Corporation, Rochester, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,149

Int. Cl. G08b *17/10*; H01j *39/28*

U.S. Cl. 340—237 S 15 Claims

A fire detector having an ionization sensing means which changes the level of an output signal in accordance with sensing the presence of smoke in the atmosphere has been provided. A detecting means selectively responsive to the output signal generates an alarm control signal and the improvement includes a filter means for rendering a detecting means operable if uninhibited to generate the alarm signal irrespective of an output signal from the sensing means. Inhibiting means normally operable to inhibit the filter is rendered ineffective in response to the output signal of the sensing means and the inhibiting means therefore checks the operability of the detecting means.



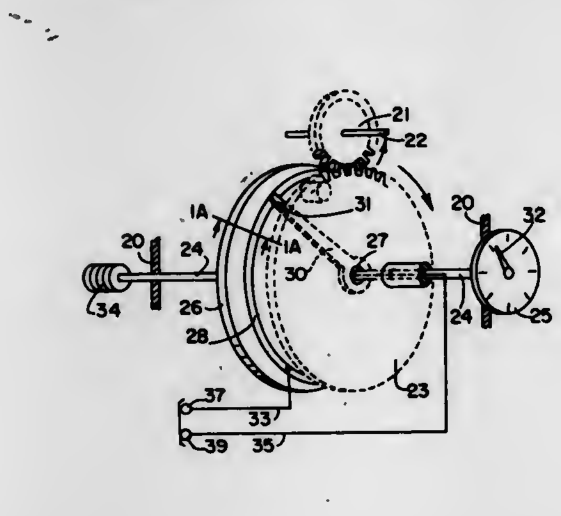
3,728,707
AUTOMATIC ALARM SETTING SYSTEM

Siegfried Herrareiter, 2840 West Montrose, Chicago, Ill.

Filed May 10, 1971, Ser. No. 141,803

Int. Cl. H01h *43/10*

U.S. Cl. 340—309.1 **8 Claims**



An automatically resetting alarm system operatively joined to contacts of a timer. The timer contacts having been set to sound an alarm at a desired point of time, are automatically reset after the alarm for sounding the next alarm.

3,728,708
ILLUMINATED MARKER

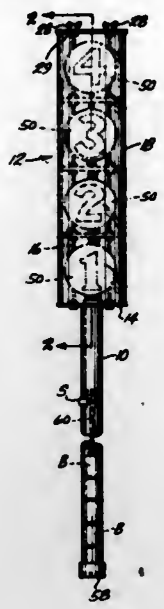
Fred J. Culbertson, Route 1, P. O. Box 225, Concrete, Wash.

Filed June 21, 1971, Ser. No. 155,021

Int. Cl. A63b *71/06*

U.S. Cl. 340—323 **10 Claims**

A vertical tier of lights are supported by brackets on a pair of elongated connector rods. Intermediate walls are located vertically between the lights and are supported by the connector rods. The lower ends of the connector rods are attached to a base plate which serves as a base support for a transparent plastic tubular body. The intermediate walls are snugly received within the body. The connector rods project upwardly through openings in a cover plate which rests on the upper end of the body. Wing nuts or the like are threaded onto the connector rods and used for securing the assembly together. The lights carry separate indicia and are separately controlled by a multi-position switch.



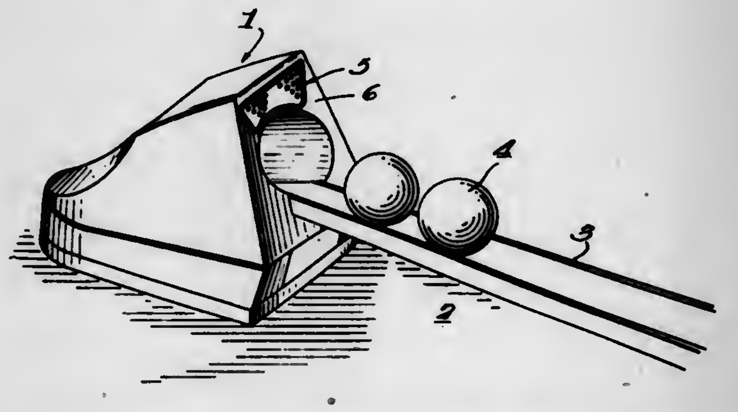
3,728,709
PIN FALL DISPLAY ON BALL LIFT HOOD

David Peter McLeod, and Patrick J. Murphy, both of Muskegon, Mich., assignors to The Brunswick Corporation, Skokie, Ill.

Filed July 12, 1971, Ser. No. 161,700

Int. Cl. G08b *5/36*

U.S. Cl. 340—323 **9 Claims**



The invention is a lighted bowling pinfall display panel located on the face of a ball return lift hood for indicating to a bowler through the means of a light pattern which bowling pins remain standing after a ball has been delivered. Indicator lights arranged to simulate pin spots are powered by a low voltage DC source mounted beneath the lift hood. Solid state circuitry mounted adjacent the indicator light brackets controls the lighting of the panel lamps and is actuated by pin detection means associated with an automatic pinsetter, or by pinfall signals from an automatic scorer.

3,728,710
CHARACTER DISPLAY TERMINAL

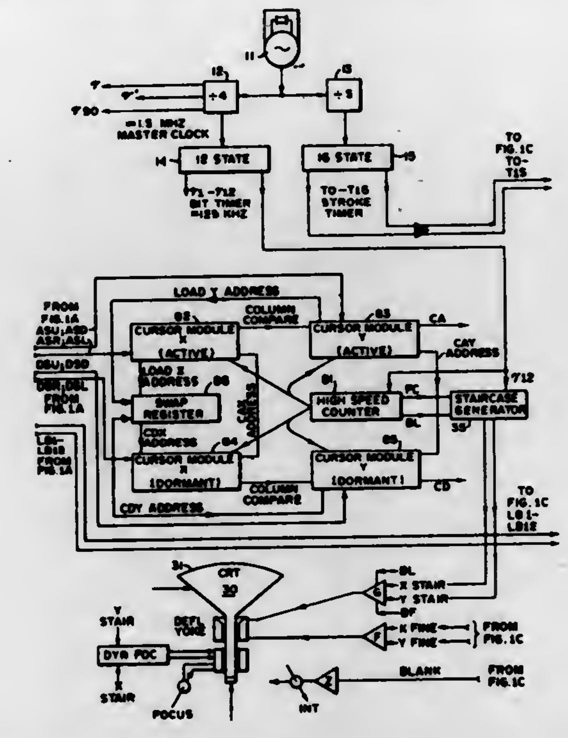
Nephi Edward Berg, Bedford, N.H., assignor to Hendrix Wire & Cable Corp., Milford, N.H.

Continuation-in-part of Ser. Nos. 587,583, Oct. 18, 1966, and Ser. No. 835,591, June 23, 1969. This application Dec. 1, 1969, Ser. No. 881,105

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 A **22 Claims**

A synchronous refresh memory CRT Display Terminal continuously generates the individual deflection waveforms for the complete repetoire of characters and symbols which it is desired to display. The recirculating memory provides storage for the identity code and editing tags for each character position on the CRT display and recirculation in the memory loop is synchronized with a character by character beam deflection of the CRT to provide a page format indication. Provision is made for reading into the memory loop the character identity code at a preselected position corresponding to the screen character location at which the character is to be displayed and once in memory the refresh rate will continually display the character sequence in the memory loop in the corresponding sequence of character positions on the screen format with only the code address for each character being read from memory and upon decoding selecting from the repetoire character generator each so identified character for display by the continuously generated fine waveform deflection signals. An active and dormant cursor are presented on the screen generated in the same manner as any character or symbol but controllable as to position at will to identify the screen location for insertion and deletions. Editing controls for the cursors and the insertion and deletion operations independent of memory permit a full range of editing functions to be performed on the character content of the memory and display screen.



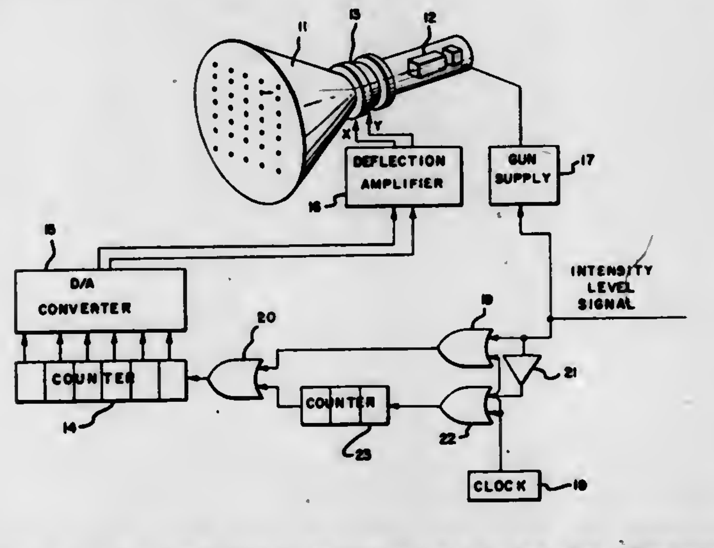
3,728,711
DOT MATRIX GRAPHIC CHARACTER GENERATOR

William J. Adkins, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed July 16, 1970, Ser. No. 55,474

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **4 Claims**



In a dot matrix type character generator for displaying graphic information the cathode ray beam dwells on a dot location only if that dot is intensified. The matrix generator has a plurality of dot locations on a phosphor screen which are selectively energized by a cathode ray beam. The intensity of the beam is modulated with an on-off intensity level signal. The beam indexes from dot to dot in a fixed pattern. Logic circuitry senses when a dot is to be intensified by the beam. In this case the beam dwells on the dot. Otherwise the beam is indexed from dot to dot by high speed clock pulses.

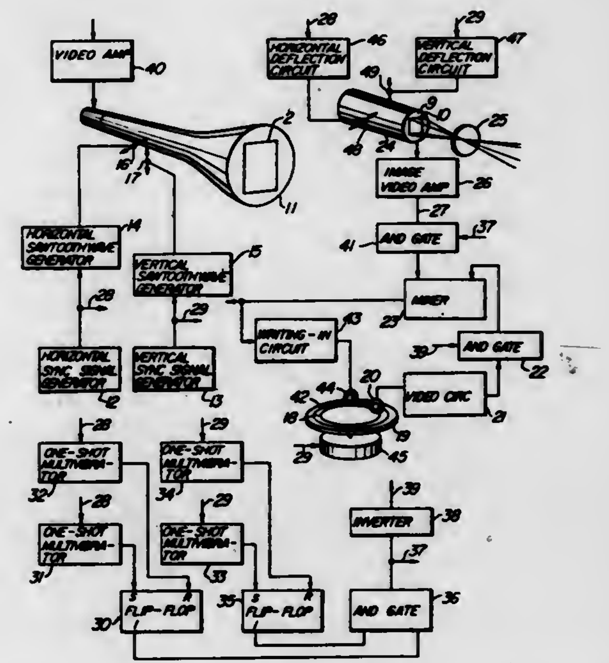
3,728,712
VIDEO FILE APPARATUS FOR DISPLAYING AND STORING DATA FROM PLURAL DOCUMENTS IN SUPERPOSITION

Hiroshi Nagai, Chigasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 31, 1970, Ser. No. 103,071

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 A **4 Claims**



A video file apparatus includes a recycling type of video-signal storage device, a video-signal generating source, a display device, and a synchronizing-signal generator circuit for causing each of said video-signal storage device, said video-signal generating source and said display device to operate in synchronism with each other, wherein a video signal being supplied from said video-signal storage device to said display device is displayed, replaced by and superposed on a video signal from said video-signal generating source at a predetermined time and the video signal in superposed form is stored in said video-signal storage device.

3,728,713
TRANSISTORIZED FLASHER CIRCUIT

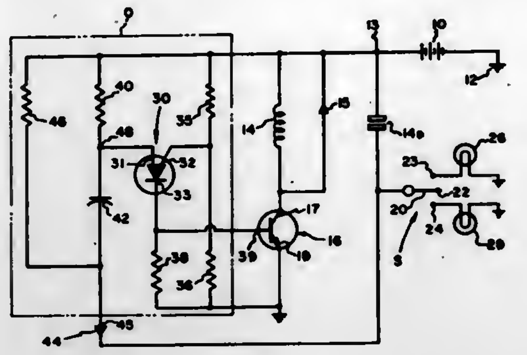
Ralph W. Alten, East Detroit, Mich., assignor to Essex International, Inc., Fort Wayne, Ind.

Filed July 28, 1970, Ser. No. 58,919

Int. Cl. B60q *1/38*; **H05b** *39/09*

U.S. Cl. 340—331 **2 Claims**

A transistorized flasher circuit for vehicle signal lamps comprising a free running multivibrator, incorporating a capacitor and a programmable unijunction transistor, for cyclically and intermittently driving an output transistor into a conductive state as the capacitor is alternately charged and discharged. A relay is provided and includes a coil connected in series with the output circuit of the output transistor and a set of normally open contacts which are connected in series with a lamp load and a start switch and which are closed in response to the energization of the coil. A charging circuit including the capacitor and a diode connected in series therewith is connected in parallel with the set of relay contacts for charging the capacitor along a first path when the set of relays contacts open. A discharging circuit is provided for discharging the capacitor along a second path, which does not include the diode, when the relay contacts close.



3,728,714

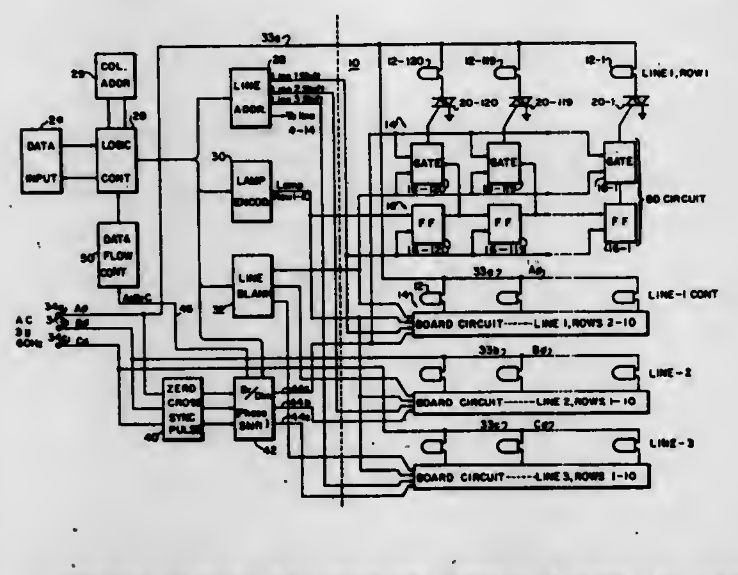
NON-FLICKERING DISPLAY SYSTEM HAVING MULTI-PHASE POWER SOURCE

Paul M. Kolesar, Hanover Park, and Robert A. Payne, Des Plaines, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed March 11, 1971, Ser. No. 123,341

Int. Cl. G09f *9/34*

U.S. Cl. 340—334 4 Claims



A display system for showing display frames in rapid sequence to form an animated portrayal or the like. A multiphase alternating-current power source is employed to energize a display board which has a matrix of electric lamps arranged in separate groups each associated with one of said alternating-current power phases. A triac is associated with each lamp to connect the lamp to said power source. The triacs are appropriately gated to energize the individual lamps of the matrix as required by the input information.

3,728,715

DIGITAL SUN SENSOR HAVING SUB-IMAGE RESOLUTION

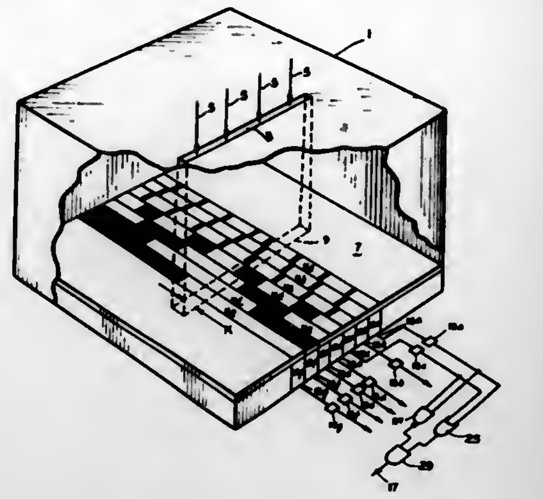
William A. Shapiro, Hackensack, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed April 20, 1970, Ser. No. 29,819

Int. Cl. G08c *9/06*

U.S. Cl. 340—347 P 28 Claims

A sun sensor having an aperture for receiving sunlight and forming an image of the aperture on an encoder mask, the position of the image corresponding to the angle of the sun relative to the sensor. The mask has a plurality of tracks having alternate opaque and clear segments for passing sunlight to associated photo cells which provide in response thereto a coded digital output corresponding to the image position and having sub-image resolution, that is, resolution smaller than the image. Circuit means combines certain bits of the coded output to provide a Gray Code output having the minimum number of bits required for the desired resolution and maximum angle measurement.



3,728,716

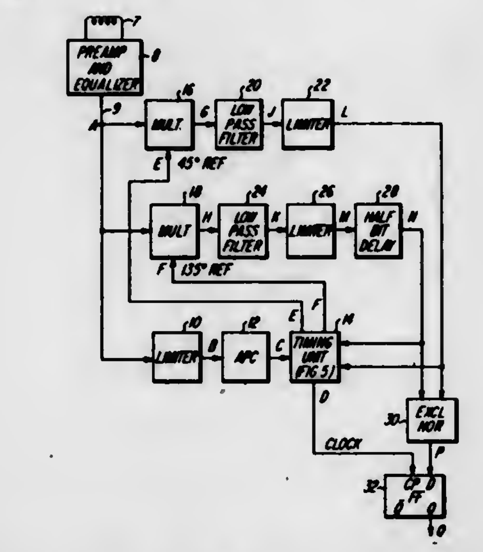
DIGITAL SIGNAL DECODER USING TWO REFERENCE WAVES

George Victor Jacoby, Holden, and George John Meslener, Acton, both of Mass., assignors to RCA Corporation, New York, N.Y.

Filed July 29, 1971, Ser. No. 167,169

Int. Cl. H04l *3/00*

U.S. Cl. 340—347 DD 9 Claims



A decoder is described for a magnetically recorded information signal in which a transition occurs at the center of a bit cell containing a "1," and a transition may occur at the boundary between two successive bit cells containing "0"s. A first synchronous demodulator is receptive to the information signal and a reference wave having a 45° phase. A second synchronous demodulator is receptive to the information signal and a reference wave having a 135° phase. Means responsive to the outputs of the demodulators generate an NRZ output signal having a "1" level when the outputs of the two demodulators have the same polarity, and having a "0" level when the outputs have different polarities.

3,728,717

DIGITAL TO TIME INTERVAL CONVERTER

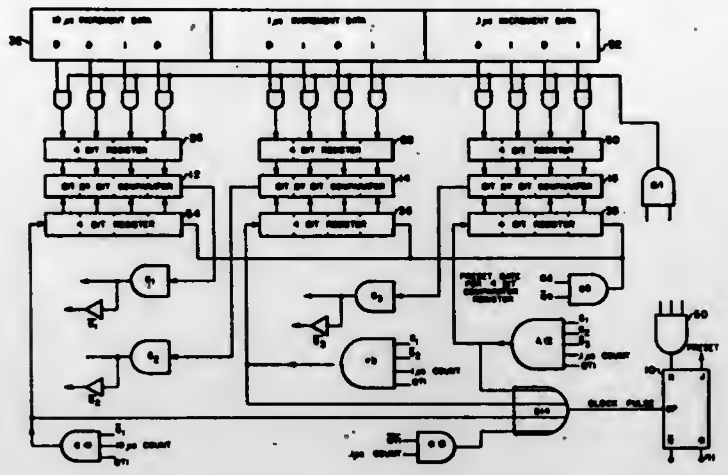
Richard L. Gowan, Bonita, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 27, 1971, Ser. No. 212,084

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 DA 6 Claims

A device for producing a range of precisely known pulse widths by digital decoding. A coded signal representative of the duration of a desired pulse is stored in a register and its leading edge is used to turn on a flip-flop. A stable high frequency pulse source supplies the input to a counter which provides output pulses representative of ten microseconds, one microsecond, and one tenth microseconds. These output pulses are fed into a second register whose output is compared to the output of the first register. When the contents of the two registers are equal the flip-flop is turned off, thereby terminating the pulse.



3,728,718

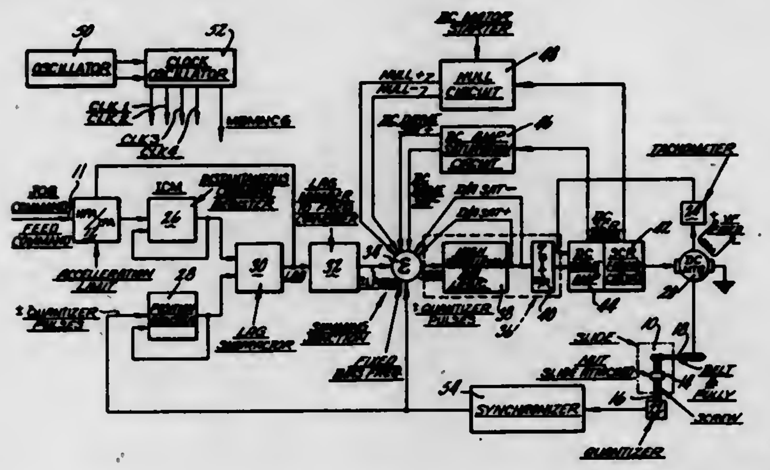
SERVO SYSTEM HAVING HIGH RESOLUTION D/A

Allan W. Dresser, Newington, and Johann F. Reuteler, Elmwood, both of Conn., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Jan. 18, 1972, Ser. No. 218,745

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 DA 4 Claims



A numerical control system for moving a controlled member along a given axis includes a digital to analog converter and a logic circuit to increase the resolution of the digital to analog converter. The logic circuit subdivides adjacent counts retained in the logic circuit by varying the amount of time during which the respective counts are directed to the digital to analog converter. The counts retained in the logic circuit differ by a fixed amount, and the magnitude of these counts is dependent upon the input pulse frequency applied to the logic circuit.

3,728,719

R-2R RESISTIVE LADDER, DIGITAL-TO-ANALOG CONVERTER

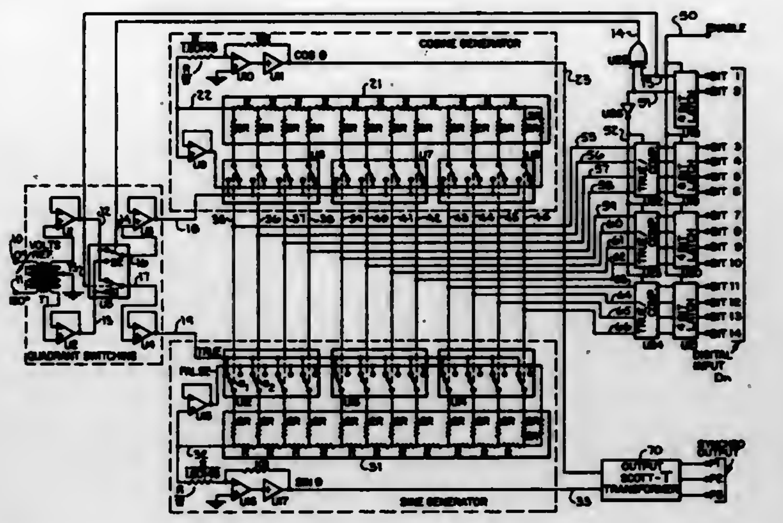
Franklin H. Fish, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 20, 1972, Ser. No. 236,418

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 DA 8 Claims

A digital-to-analog converter having digital angular data inputs applied to integrated switches to cause predetermined switching in circuit with resistance ladder networks of R and 2R values providing sine and cosine approximation analog voltage functions representing the digital input signals some of which digital signals control quadrant switches to produce quadrant reference phase relationships and the remainder of such control analog signals to provide amplitude scaling to drive a synchro mechanism in angular correspondence with the digital angular data inputs.



3,728,720

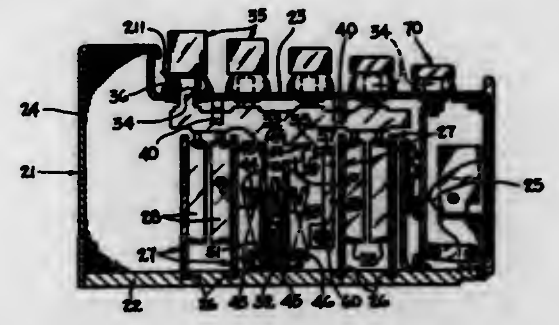
KEYBOARD TRANSMITTER

Charles R. Kovacic, Mundeline; Robert M. Schildgen, Northbrook, and Hilding A. Anderson, Lake Zurich, all of Ill., assignors to SCM Corporation, New York, N.Y.

Filed Feb. 14, 1969, Ser. No. 799,287

Int. Cl. G08c *9/08*

U.S. Cl. 340—365 2 Claims



There is disclosed a keyboard transmitter having symbol keys, shift and shift-lock keys, a symbol key interlock for preventing more than one symbol key from being depressed at a time, a keyboard lock for locking up the keyboard, a weatherseal forming a seal between each key and the keyboard housing, a plurality of printed circuit boards extending transversely with respect to the symbol keys, a plurality of switches mounted by each printed circuit board, each symbol key being aligned with one of said switches, and code means mounted by each printed circuit board adjacent its respective switch.

3,728,721

DIFFERENTIAL DOPPLER DETECTION FOR RF INTRUDER ALARM SYSTEMS

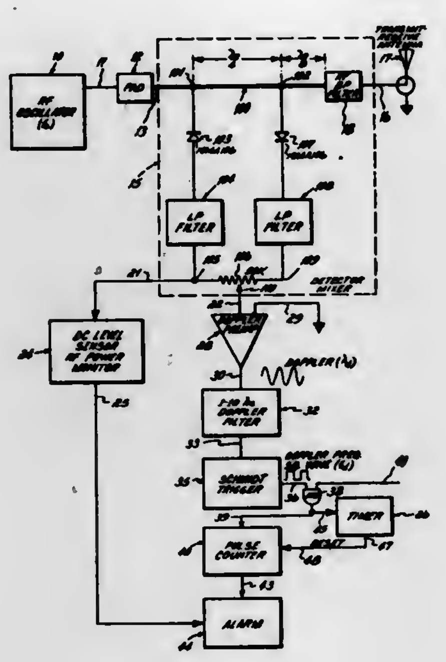
Alex Y. Lee, Arlington, Va., and David N. Gershberg, Rockville, Md., assignors to The Mosler Safe Company, Hamilton, Ohio

Filed Jan. 28, 1971, Ser. No. 110,732

Int. Cl. G01s *9/42*

U.S. Cl. 343—5 PD 11 Claims

An intruder detection system in which an RF transmitter is connected through a length of transmission line to a transmit/receive antenna, both transmitter and antenna are matched to the line. Diode detectors are connected in opposite directions to the line at points spaced a quarter wave length apart. The diodes connect through low-pass filters to the balanced inputs of an AC coupled amplifier which extracts the doppler sine wave from the oppositely traveling transmitted and received waves on the line. The doppler sine wave is squared and the pulses are integrated to trigger an alarm. A band pass filter is so positioned in the line to reduce false alarms by defining a specific radio frequency bandwidth and also allows the detectors to be used to time the transmitter oscillator.



3,728,722

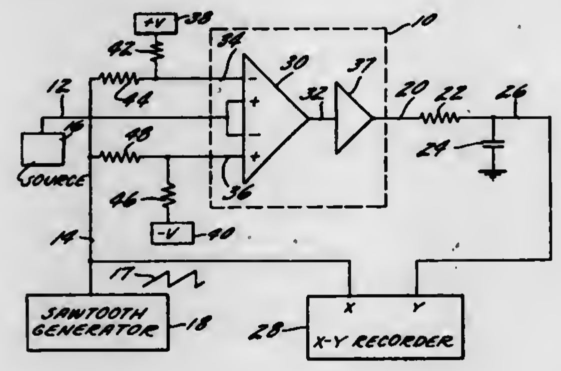
PROBABILITY DENSITY FUNCTION GENERATOR

Joseph F. Sparacio, Monroe, Conn., and Richard S. Pierro, Bronx, N.Y., assignors to United Aircraft Corporation, Hartford, Conn.

Filed Oct. 22, 1971, Ser. No. 191,687

Int. Cl. G01s ***9/02***

U.S. Cl. 343—5 **11 Claims**



Apparatus for generating a curve of a probability density function of sampled voltage provides an averaged signal which is proportional to the average portion of time that the sampled voltage is within a predetermined increment of a voltage level within a range of interest. An X-Y recorder provides a curve of the averaged voltage for each level within the range of interest.

3,728,723

MONOPULSE RADAR APPARATUS

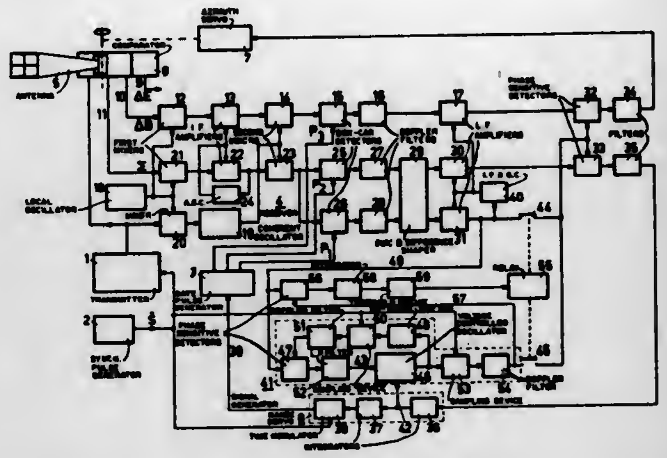
Bernard Gellekink, Hengelo (0), Netherlands, assignor to N.V. Hollandse Signaalapparaten, Hengelo (O), Netherlands

Filed July 30, 1970, Ser. No. 59,417

Claims priority, application Netherlands, Aug. 12, 1969, 6912229

Int. Cl. G01s ***9/02***

U.S. Cl. 343—7.4 **5 Claims**



A monopulse radar apparatus for the automatic tracking of a moving target comprising a receiver for the coherent detection and filtering of received echo signals without undesired noise signals and undesired signals that are caused by signal and noise components falling within the passband of the filter due to the internal clutter movement of fixed targets. The receiver comprises a signal generator that provides only desired narrow-band signals to track the target when the frequency and phase of the signal generator matches that of the detected doppler signal, thereby resulting in optimum sub-clutter tracking.

3,728,724

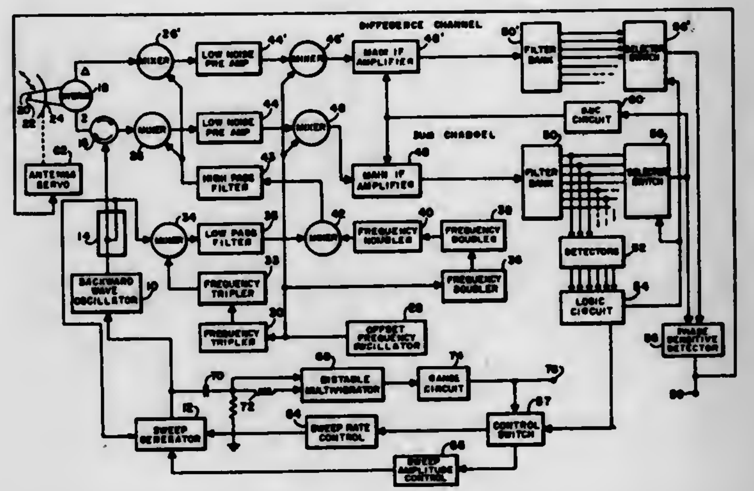
ADAPTIVE SWEPT-FREQUENCY ACTIVE RADAR SEEKER

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 12, 1971, Ser. No. 115,117

Int. Cl. G01s ***9/02***

U.S. Cl. 343—7.5 **6 Claims**



An adaptive swept frequency active radar seeker comprising an antenna, microwave components, and signal processing circuits arranged to provide guidance of a missile against a ship or prominant land target under all weather conditions. Microwave CW transmitter signals of moderate power are generated by one microwave tube. The frequency of the signals is controlled by a swept generator. The microwave signal is passed through a sidewall coupler, where a small portion is bled off for use in synthesizing a local oscillator signal for heterdyne reception. Means are provided to control the swept generator by controlling the sweep rate and by controlling the sweep amplitude.

3,728,725

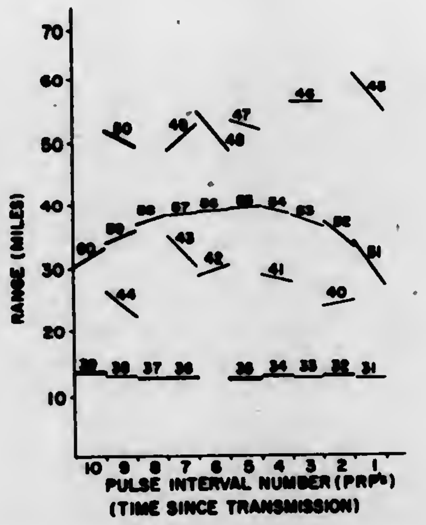
TARGET DISPLAY FOR PULSE-ECHO RETURN SYSTEM

Lowell W. Bauer, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed April 23, 1971, Ser. No. 136,897

Int. Cl. G01s 9/44

U.S. Cl. 343—9 **7 Claims**



This invention relates to target displays for use in pulse-echo return systems such as radar and sonar systems. In this display a plurality of echo return or target signals are simultaneously displayed with each signal represented as a short straight directed line segment, the center or one end point of such line segment being positioned on the display screen with one coordinate determined by target range (pulse transit time) and the other coordinate determined in accordance with total elapsed time since transmission of the pulse resulting in that particular target return signal. The slope of each directed line segment is made proportional to target radial velocity (range rate) as determined by doppler shift of the return signal, and the intensity of display of the line segment is made proportional to the return signal amplitude. Return signals which correlate in range, in range rate and in signal amplitude then appear as a series of directed line segments connecting or very nearly connecting with each other to form a substantially continuous and readily identifiable target track while noise signals appear as unconnected lines of random orientation.

3,728,726

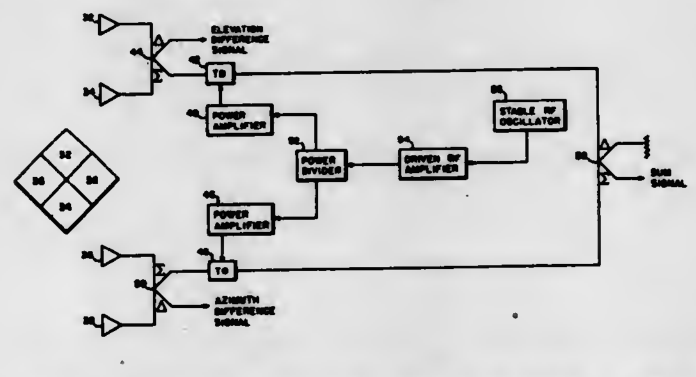
TRACKING RADAR FEED CIRCUITRY

Dean D. Howard, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 12, 1969, Ser. No. 870,565

Int. Cl. G01s 9/22

U.S. Cl. 343—16 M **6 Claims**



A monopulse tracking radar which includes a four-horn diamond feed and wherein the radiated power is doubled by the use of two separate feed lines.

3,728,727

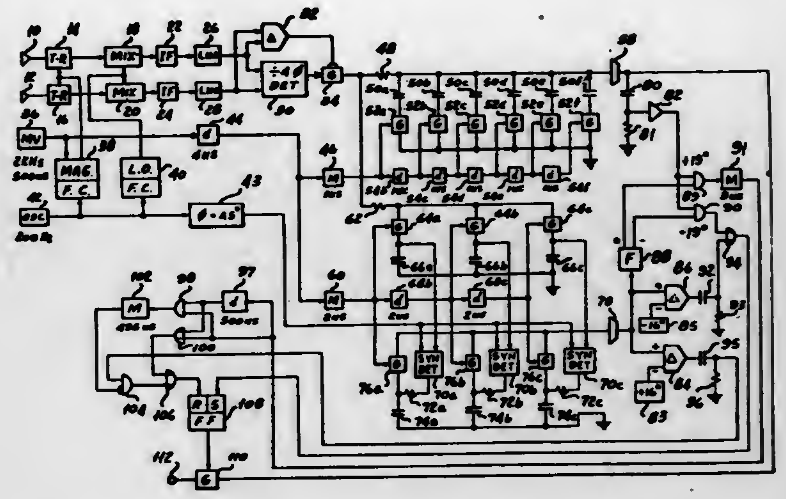
PHASE INTERFEROMETER RADAR

Leo Botwin, Westport; Lawrence Chanzit, Stamford, both of Conn., and Kenneth A. Ruttenberg, Peabody, Mass., assignors to United Aircraft Corporation, Hartford, Conn.

Filed March 13, 1970, Ser. No. 19,332

Int. Cl. G01s ***9/02***

U.S. Cl. 343—16 R **17 Claims**



An improved phase interferometer radar provides a high-sensitivity output in accordance with the elevation angle of terrain as a function of range. The transmitted frequency is cyclically varied to produce corresponding variations in the apparent elevation angles. A plurality of synchronous detectors are employed which respond to such cyclic variations and provide a low-sensitivity signal indicating the elevation angle of terrain as a function of range. The high-sensitivity signal exhibits a plurality of ambiguities which are eliminated by employing the low-sensitivity signal to control the gating of the high-sensitivity signal to a display device.

3,728,728

METHOD AND APPARATUS FOR AUTOMATIC TRANSPONDER DELAY CORRECTION

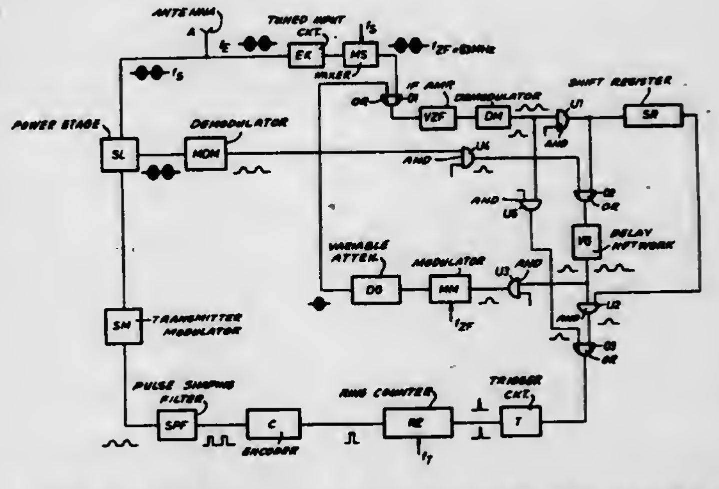
Horst Vogel, Kornwestheim, and Herbert Kleiber, Ludwigsburg, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 5, 1970, Ser. No. 43,873

Claims priority, application Germany, June 7, 1969, P 19 29 042.7

Int. Cl. G01s ***7/40***

U.S. Cl. 343—17.7 **9 Claims**

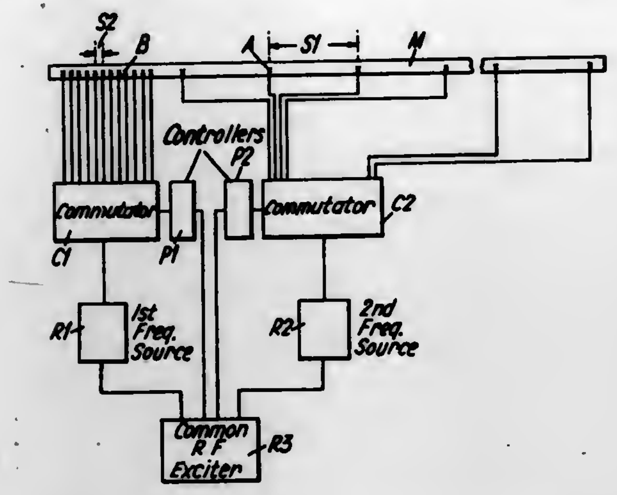


A method and apparatus is provided for determining the varying delays in a pulse interrogation system wherein a reply pulse is transmitted after a predetermined time following reception of an interrogation pulse. Transmitter and receiver delays are measured in a ring counter with the aid of a measuring pulse taken from the transmitter. This measured delay is subtracted from the predetermined time between the next pulse received and the following transmitted pulse thereby providing automatic transponder delay correction.

3,728,729
RADIO NAVIGATION BEACON INCLUDING ANTENNA ELEMENT COMMUTATION

Francis Giles Overbury, Hertfordshire, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,699
Int. Cl. G01s *1/16*
U.S. Cl. 343—108 **10 Claims**

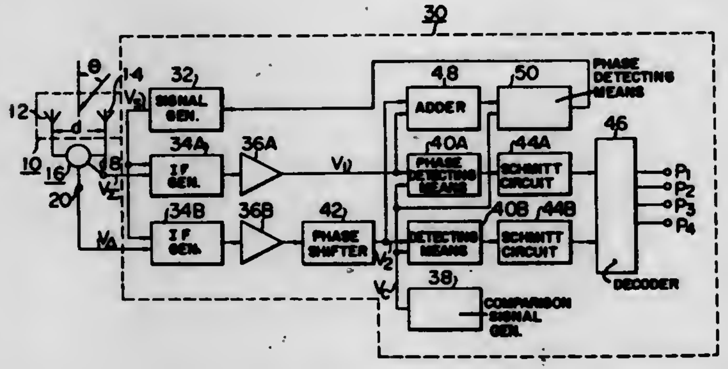


A radio navigation beacon system of the Doppler type having a simplified antenna arrangement. A main array employing 30 array elements spaced at four wavelengths and an auxiliary or reference array comprising 12 reference antenna elements spaced at one-third wavelength, are employed. A source of radio frequency energy is commutated to the separate radiator elements in order to simulate unidirectional or bidirectional constant velocity motion of the source. Navigational information is derived from this ground beacon arrangement by a receiving station as, for example, in an approaching aircraft on the basis that the Doppler shift of frequency observed at the receiving station is proportional to the cosine of the angle of reception with respect to the operating centerline of the system. Means are included for commutating the reference frequency to each reference antenna element, in turn, during the period that each main array element is radiating.

3,728,730
APPARATUS FOR DETECTING INCIDENT ANGLE OF RADIO WAVE

Kazuaki Takao, Kyoto, and Masakazu Takeuchi, Amagasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 16, 1970, Ser. No. 72,564
Claims priority, application Japan, Sept. 22, 1969, 44/75434
Int. Cl. G01s *3/46*
U.S. Cl. 343—113 R **8 Claims**

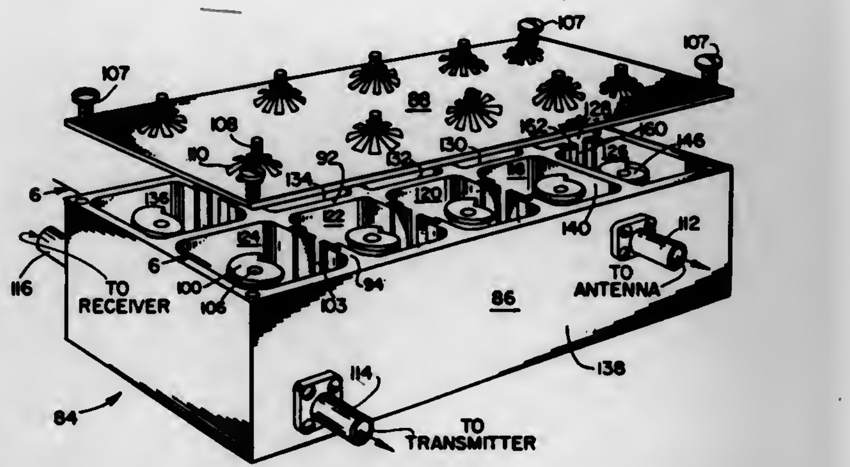


An apparatus for detecting an incident angle of radio wave can find the incident angle of radio signal without mechanical motion of any of antennas or radiator elements. The radio signals received by the paired radiator elements are utilized to produce a sum and a difference signals, with the phase relationship between them changing with a magnitude of the incident angle. By using a combination of polarities of the sum and the difference signals, the incident angle can be detected in digital form.

3,728,731
MULTI-FUNCTION ANTENNA COUPLER

Charles Choi, Hoffman Estates, and Maynard H. McGhay, Schaumburg, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed July 2, 1971, Ser. No. 159,194
Int. Cl. H04b *1/50*
U.S. Cl. 343—180 **7 Claims**

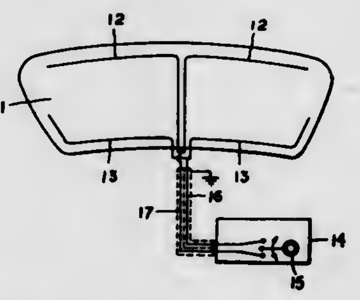


The antenna coupling circuit facilitates simultaneous reception and transmission of information carrying radio signals through a common antenna. A single filter having a plurality of helical resonator sections forms the harmonic filter of the transmitter, the preselector of the receiver, and a duplexer for connecting both the transmitter and receiver to a single antenna. A first plurality of the helical resonator sections are connected between the antenna and the input stage of a receiver which passes the band of frequencies to be received while reflecting the frequencies to be transmitted. A second plurality of helical resonator sections are connected between the output of a transmitter and the antenna which passes the frequencies to be transmitted while reflecting the frequencies to be received. The coupling between individual helical resonators is arranged to discriminate against frequencies higher than the passband. All of the cells of the filter circuit are mechanically connected together to form an integral compact structure.

3,728,732
WINDOW GLASS ANTENNA

Tsuyoshi Igarashi, Chiyoda-ku, Tokyo, Japan, assignor to Asahi Glass Company, Tokyo, Japan

Filed Dec. 2, 1970, Ser. No. 94,325
Claims priority, application Japan, Dec. 9, 1969, 44/116410
Int. Cl. H01q *1/32*
U.S. Cl. 343—713 **4 Claims**

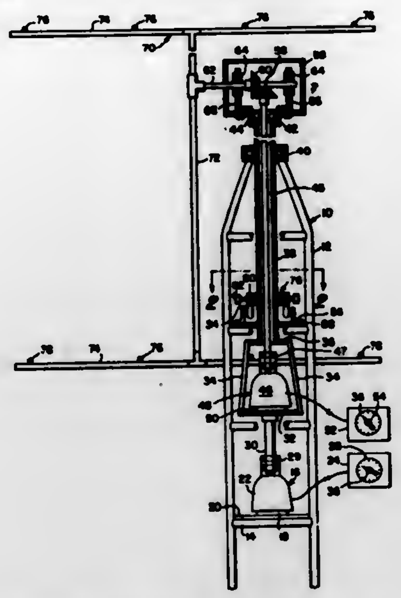


A window glass antenna having separate antenna elements for AM and FM radio reception. The antenna elements are connected to a radio receiver through a selector switch, permitting either the FM or AM antenna to be coupled to the radio receiver.

3,728,733
BEAM ANTENNA SELECTIVELY ORIENTED TO VERTICAL OR HORIZONTAL POSITION

James O. Robinson, 1297 Leonora Street, Akron, Ohio

Filed Feb. 24, 1972, Ser. No. 229,134
Int. Cl. H01q *3/00*
U.S. Cl. 343—765 **12 Claims**



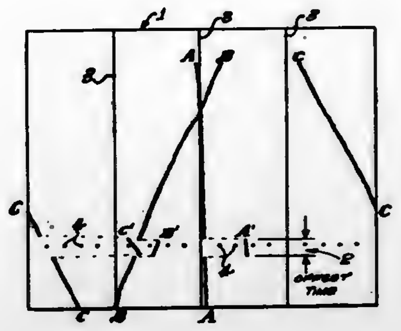
An antenna system particularly adapted for use in citizen band transmission and reception utilizing a beam antenna wherein means are provided for selectively orienting the beam horizontally or vertically from a remote control point.

3,728,734
METHOD OF RESOLVING MULTIPLE SWEEP AMBIGUITIES ENCOUNTERED IN HIGH RESOLUTION GRAPHIC RECORDERS AND THE LIKE

Dwight E. Boegeman, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 23, 1971, Ser. No. 136,807
Int. Cl. G01d *18/00*
U.S. Cl. 346—1 **6 Claims**

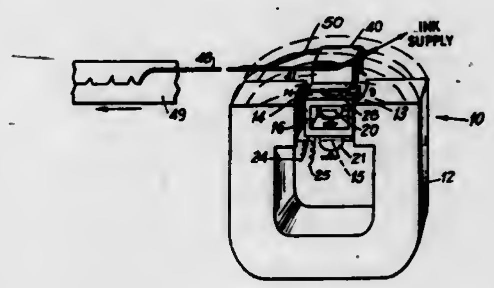
A high resolution recording system is one in which the signal transit time significantly exceeds the recorder sweep so that N sweeps occur before the first recorded return. Thus, it becomes a problem to determine which sweep from time zero is represented by a recorded mark. This problem is referred to as the multiple sweep ambiguity. To resolve the ambiguity, the recorder sweep speed (stylus velocity) can be varied a small amount, such as 5 percent, and a series of marks made at this increased sweep speed. These marks will be offset a distance equal to N/20 of a sweep where N is the unknown number of elapsed sweeps. A measurement of the offset distance provides a permanent index representative of the total elapsed time.



3,728,735
WRITING APPARATUS FOR USE WITH GALVANOMETER DEVICES

James A. Burton, Houston, Tex., assignor to AMF Incorporated

Filed May 3, 1971, Ser. No. 139,405
Int. Cl. G01d *15/24*
U.S. Cl. 346—139 C **9 Claims**

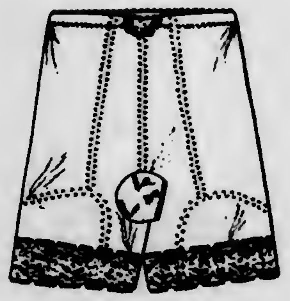


A stylus for use with a recording galvanometer instrument wherein desired stylus pressure on a writing surface is obtained by providing magnetic material in association with the stylus. The fringing magnetic flux field of the galvanometer attracts the magnetic material and the attractive force is transferred to the stylus to provide the desired stylus pressure.

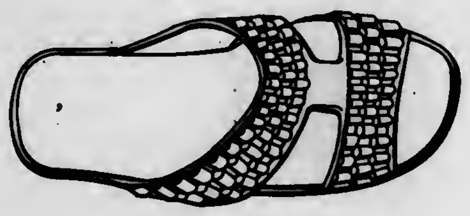
DESIGNS

APRIL 17, 1973

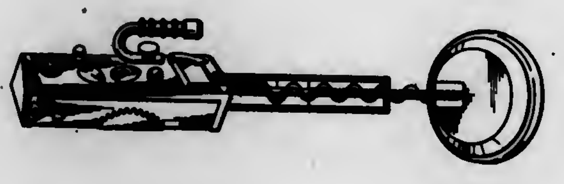
226,695
PANTY GIRDLE
Herbert Barg, Merion, Pa., assignor to True Form
Foundations, Inc., Darby, Pa.
Filed Oct. 5, 1970, Ser. No. 25,833
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—4



226,696
SANDAL
Tatsuo Fukuoka, 3, 3-Ban, 2-chome, Shin-Minami-
Fukushima, Tokushima, Japan
Filed Dec. 23, 1971, Ser. No. 211,848
Claims priority, application Japan Dec. 7, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—283

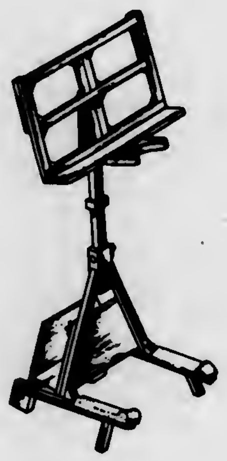


226,697
TIE CLIP OR SIMILAR ARTICLE
Robert Matas, 9810 Continental Ave.,
Forest Hills, N.Y. 11375
Filed July 12, 1971, Ser. No. 164,157
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—430

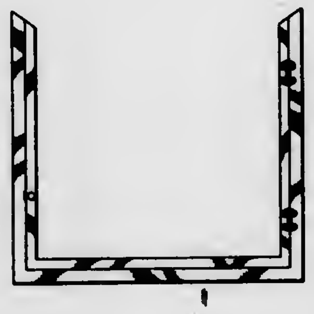


226,698
WITHDRAWN

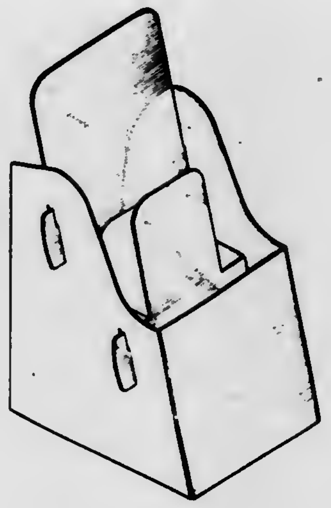
226,699
COMBINED MUSIC HOLDER AND
GUITAR STAND
Rolando Valdes Blain, 72 Barrow St.,
New York, N.Y. 10014
Filed Mar. 29, 1971, Ser. No. 129,311
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—18



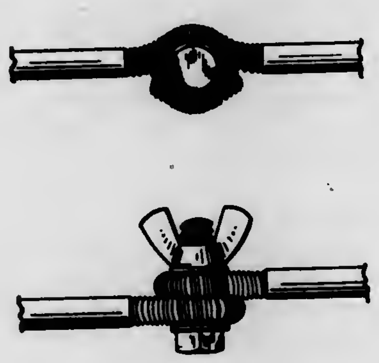
226,700
WALL HUNG HOLDER FOR RECORD ALBUMS
Robert J. Pratt, 70 Le Mans Drive, Apt. 1,
Youngstown, Ohio 44512
Filed Apr. 21, 1971, Ser. No. 136,294
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



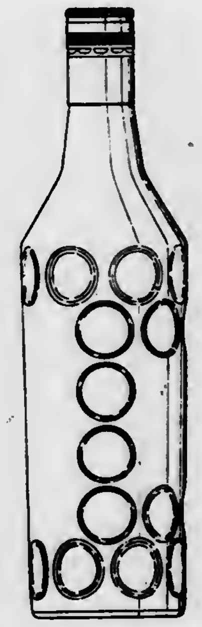
226,701
RETAINER FOR BROCHURES AND THE LIKE
Paul N. Gallat, 4333 E. 10th Lane,
Hialeah, Fla. 33013
Filed Feb. 24, 1972, Ser. No. 229,247
Term of patent 14 years
Int. Cl. D6—*99*; D20—*03*
U.S. Cl. D6—184



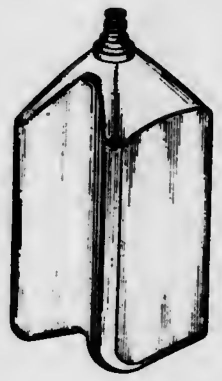
226,702
THREADED CONNECTOR
Ivan H. Moore, 345 W. 6th St.,
Garnett, Kans. 66032
Filed Nov. 27, 1970, Ser. No. 26,198
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—236



226,703
COMBINED BOTTLE AND CAP THEREFOR
Reginald Malcolm Broadhead, Maidenhead, England, assignor to Drum Horse Distillers Limited, London, England
Filed Nov. 30, 1971, Ser. No. 203,951
Claims priority, application Great Britain Sept. 13, 1971
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—72

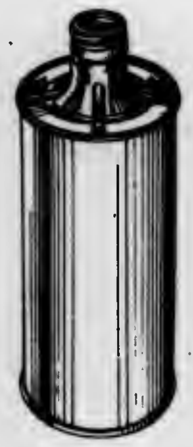


226,704
BOTTLE
James Campbell Cobb, 16 Cowdroy Ave., Cammeray,
New South Wales, Australia
Filed Dec. 31, 1970, Ser. No. 26,723
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—158



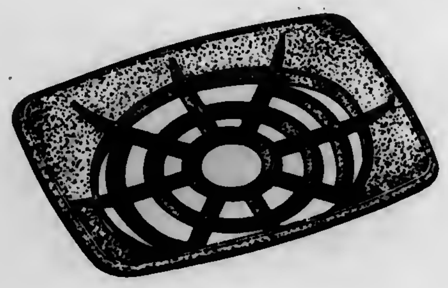
226,705
CAN OR THE LIKE

Arthur P. Zandel, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.
Filed Nov. 23, 1971, Ser. No. 201,607
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—218



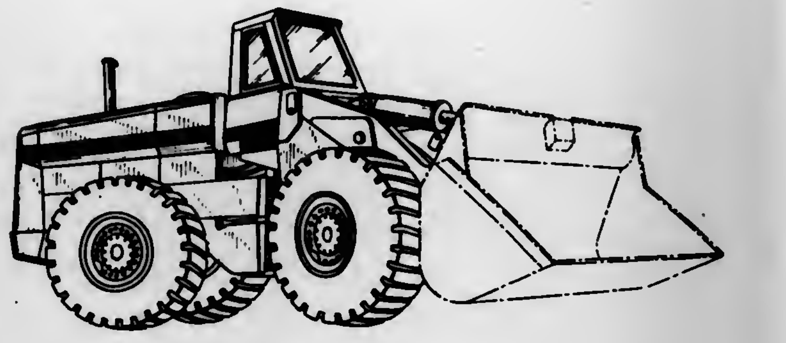
226,706
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE

Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Continuation-in-part of design application Ser. No. 110,373, Jan. 27, 1971. This application Mar. 29, 1972, Ser. No. 239,410
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



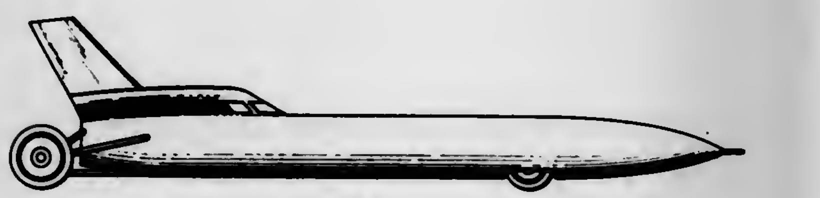
226,707
TRACTOR

Robert A. Skyer and Mitchell E. Kolak, Palatine, and Harry R. Wilson and Joseph H. Konefes, Libertyville, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Apr. 16, 1971, Ser. No. 134,912
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3 A



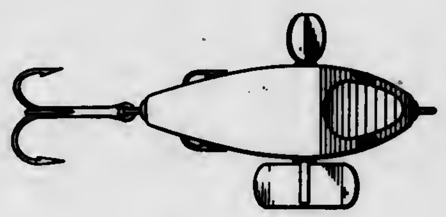
226,708
RACING CAR

Thor Paul Torda, Glencoe, and Sarunas C. Uzgiris, Chicago, Ill., assignors to The Institute of Gas Technology, Chicago, Ill.
Filed Apr. 28, 1971, Ser. No. 138,394
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3 G



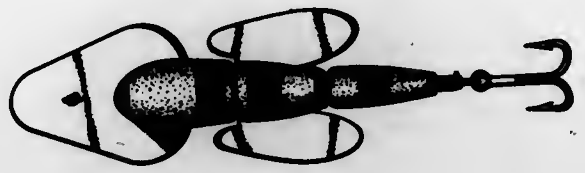
226,709
FISHING PLUG

George E. Ross, St. Paul, Minn., assignor of a fractional part interest to Francis R. Drake, Minnetonka, Minn.
Filed May 24, 1971, Ser. No. 146,598
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



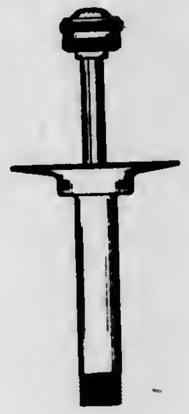
226,710
FISH LURE

Ewell J. Harris, Rte. 3, Box 135A, Adrian, Mich. 49221
Continuation-in-part of design application Ser. No. 23,537, June 19, 1970. This application Mar. 16, 1972, Ser. No. 235,475
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28



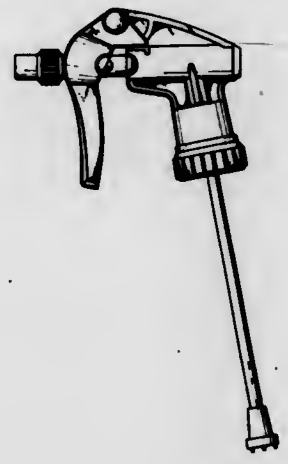
226,711
SPRINKLER HEAD

George E. Kunkle, Jr., Dallas, Tex. (P.O. Box 8056, Fort Worth, Tex. 76112)
Filed Mar. 29, 1971, Ser. No. 129,309
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—7



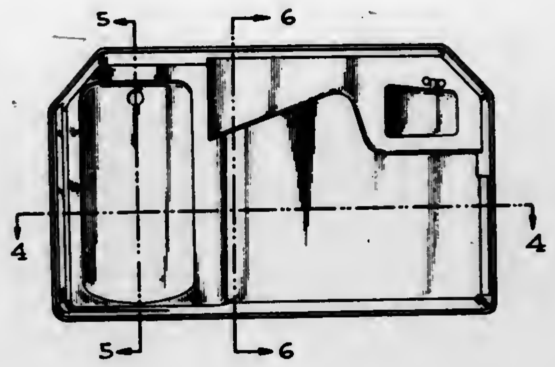
226,712
SPRAYER

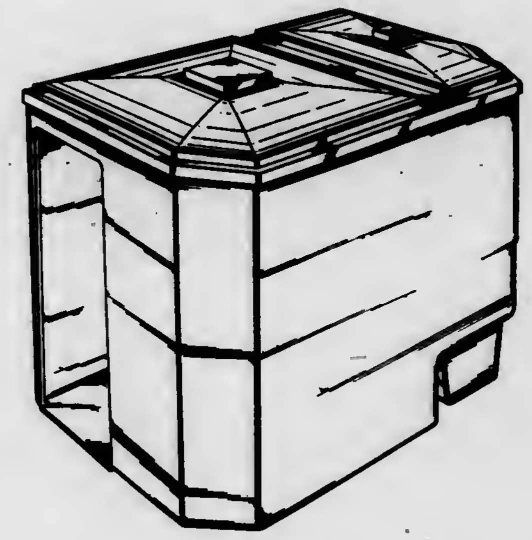
Tetsuya Tada, 2–6, 3-chome, Nishi-Nakanobu, Shinagawa-ku, Tokyo, Japan
Filed Apr. 22, 1971, Ser. No. 136,629
Claims priority, application Japan Feb. 13, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—17



226,713
MODULAR BATHROOM

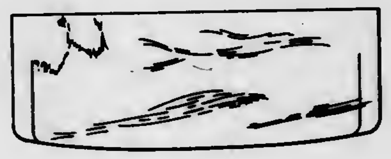
Levert Ray Johnson, Milton, Fla., assignor to Holiday-Hut Manufacturing Co., Inc., Milton, Fla.
Filed Jan. 15, 1971, Ser. No. 106,949
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49

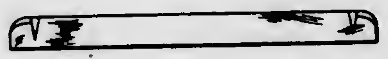




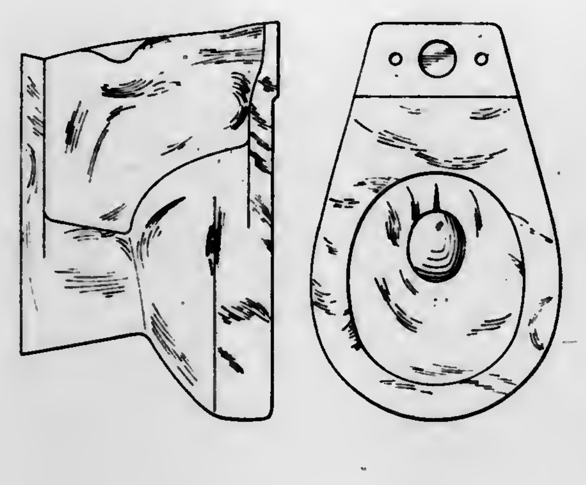
226,714
TOILET TANK COVER

Warren Gregory Anderson, Morganton, N.C., assignor to American Standard Inc., New York, N.Y.
Original design application Jan. 16, 1970, Ser. No. 20,960. Divided and this application Aug. 20, 1971, Ser. No. 173,717
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—66

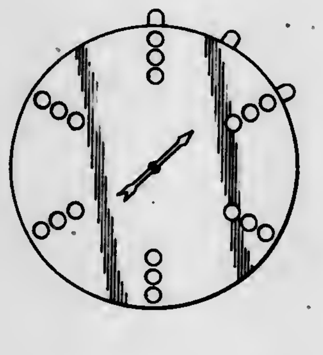




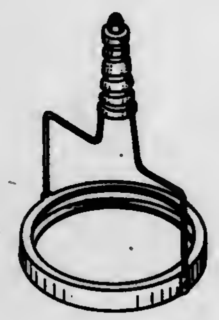
226,715
WATER CLOSET BOWL
Warren Gregory Anderson, Morganton, N.C., assignor to American Standard Inc., New York, N.Y.
Original design application Jan. 16, 1970, Ser. No. 20,960. Divided and this application Aug. 20, 1971, Ser. No. 173,718
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—67



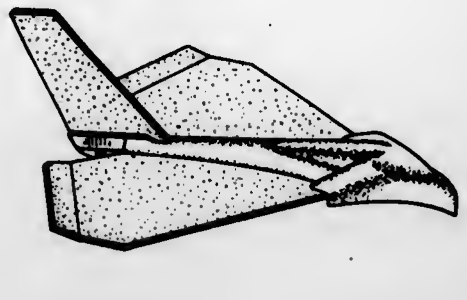
226,716
GAME BOARD INDICATOR DEVICE
Thomas D. Ledgerwood, 823 Mockingbird Lane, Norman, Okla. 73069
Filed Jan. 25, 1971, Ser. No. 109,753
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



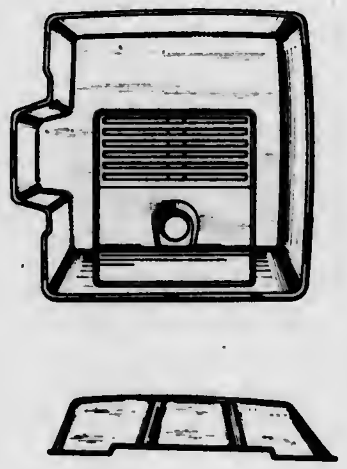
226,717
BALL WHIRLING TOY
Melvin L. Vincent, 17535 St. Aubin, Detroit, Mich. 48215
Filed Apr. 26, 1971, Ser. No. 137,723
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 K



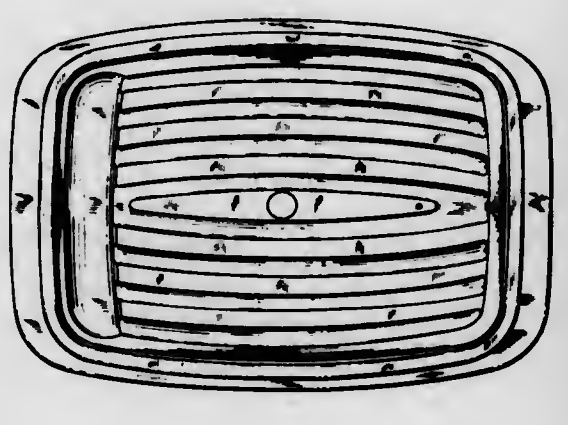
226,718
TOY AIRPLANE
Jack G. McAllister, Minneapolis, Minn., assignor to General Mills Fun Group, Inc.
Filed Sept. 8, 1971, Ser. No. 178,576
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



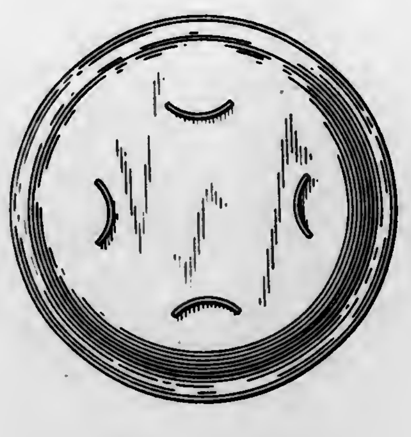
226,719
SHROUD FOR ROTARY MOWERS AND THE LIKE
John A. Gale, Wayzata, and Robert E. Haueter, Minneapolis, Minn., assignors to Toro Manufacturing Company, Minneapolis, Minn.
Filed Jan. 25, 1971, Ser. No. 109,751
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 B



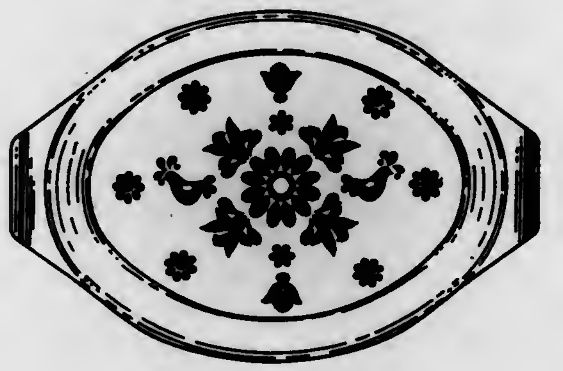
226,720
TRAY OR THE LIKE
James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Nov. 2, 1971, Ser. No. 195,070
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—1 B



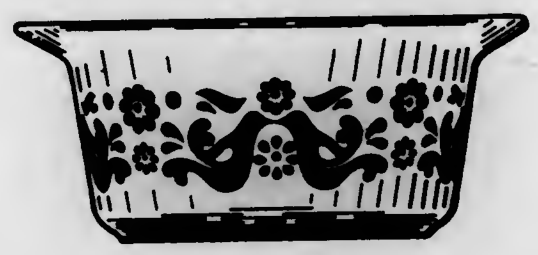
226,721
PLATE
John T. Dolby, Winnetka, and James S. Adler, Chicago, Ill., assignors to Standard Oil Company, Chicago, Ill.
Filed Dec. 14, 1970, Ser. No. 26,471
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10 A



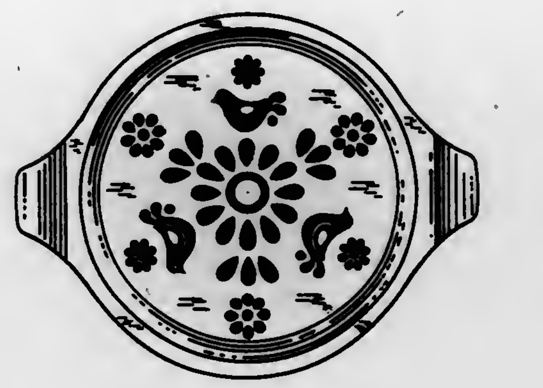
226,722
CASSEROLE COVER
Gregory Mirow, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed June 14, 1971, Ser. No. 153,152
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 A



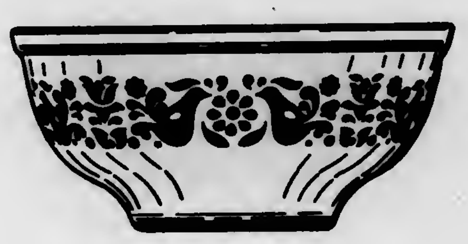
226,723
CASSEROLE DISH OR THE LIKE
Gregory Mirow, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed June 14, 1971, Ser. No. 153,157
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 A



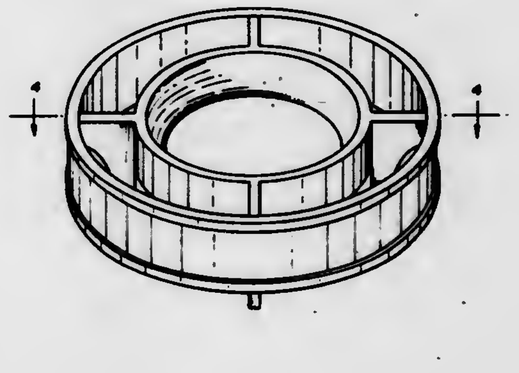
226,724
CASSEROLE COVER OR THE LIKE
Gregory Mirow, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed June 14, 1971, Ser. No. 153,158
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 A



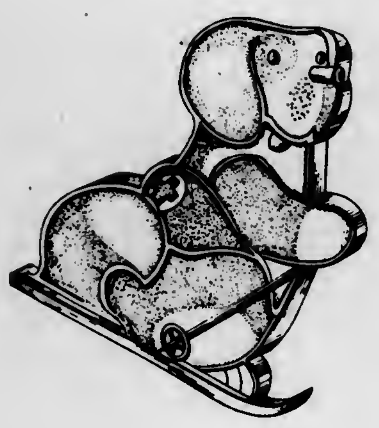
226,725
BOWL OR THE LIKE
Gregory Mirow, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed June 14, 1971, Ser. No. 153,159
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 A



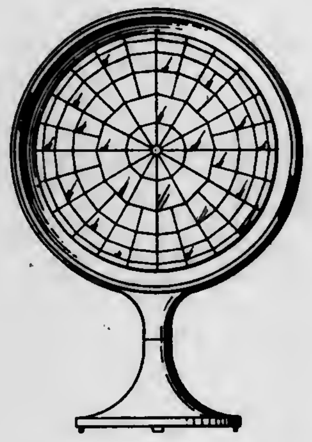
226,726
BEVERAGE WARMING STAND
Arthur Eckstein, Roslyn Heights, N.Y., assignor to Chemex Corporation, New York, N.Y.
Filed Jan. 11, 1971, Ser. No. 105,758
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—10 C



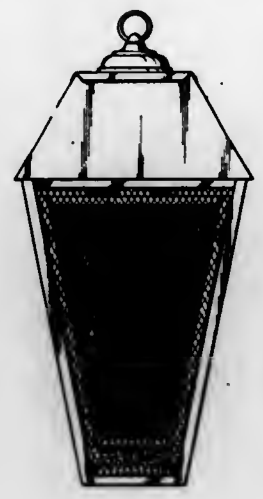
226,727
JEWELRY FINDING
Richard Charles, Townhouse East, Apt. K5,
Manlius, N.Y. 13104
Filed Dec. 9, 1970, Ser. No. 26,374
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—1



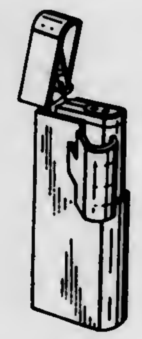
226,728
LAMP
Victor V. Nyssen, Los Alamitos, Calif., assignor to Brightco Electronics Corporation, Westminster, Calif.
Filed Dec. 6, 1971, Ser. No. 205,468
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 E



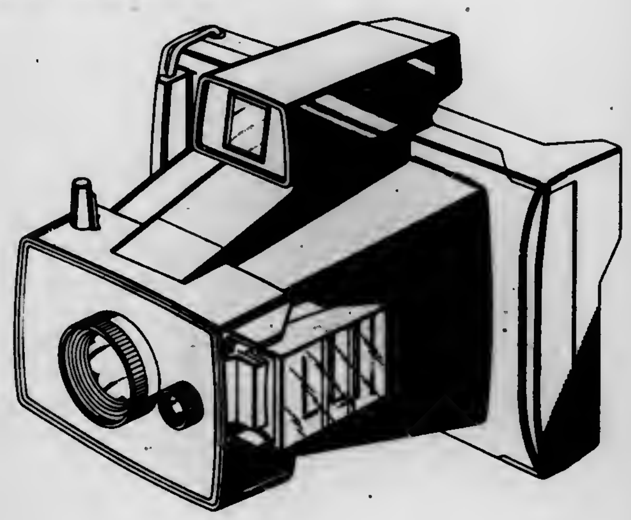
226,729
COMBINED LANTERN AND INSECT KILLER
Robert E. Iannini, Milford, N.H., assignor to
Rid-O-Ray Inc., Milford, N.H.
Filed May 17, 1971, Ser. No. 144,396
Term of patent 14 years
Int. Cl. D26—*03;* D22—*06*
U.S. Cl. D48—24



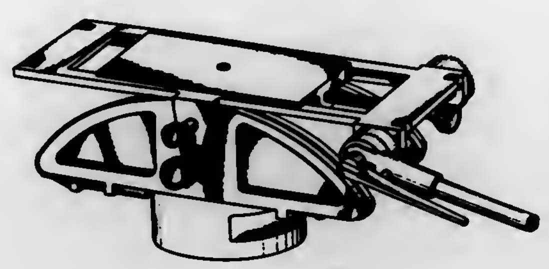
226,730
CIGARETTE LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitama, Japan
Filed Dec. 27, 1971, Ser. No. 212,850
Term of patent 14 years
Int. Cl. D48—*27*
U.S. Cl. D27—5



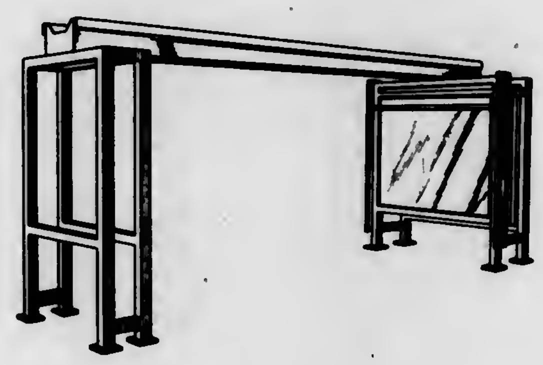
226,731
PHOTOGRAPHIC CAMERA OR SIMILAR ARTICLE
James M. Conner, Mamaroneck, N.Y., and Milton S. Dietz, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Mar. 15, 1971, Ser. No. 124,616
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



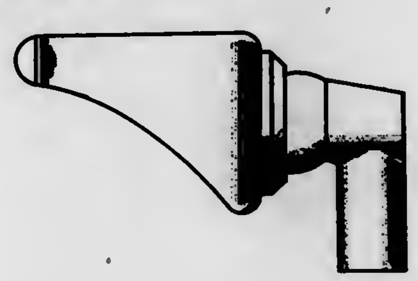
226,732
CAMERA TRIPOD HEAD
Melville R. Pollard, Jr., Woodland Hills, Calif., assignor to Cintel Corporation, Los Angeles, Calif.
Filed Apr. 12, 1971, Ser. No. 133,485
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 G



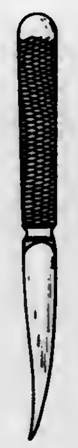
226,733
OVERHEAD OPTICAL HEAD SUPPORT TRACK FOR A PHOTOREPRODUCTION UNIT
Joseph H. Wally, Jr., and Samuel E. Wilson, Shawnee Mission, Kans., assignors to Western Blue Print Co., Kansas City, Mo.
Filed May 28, 1971, Ser. No. 148,279
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



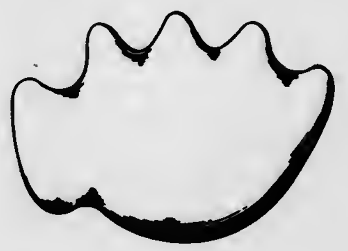
226,734
TRACHEOTOMY MASK
William R. King, Denver, Colo., assignor to Sandoz-Wander, Inc., Hanover, N.J.
Continuation-in-part of abandoned design application Ser. No. 149,403, May 28, 1971. This application Nov. 10, 1971, Ser. No. 197,645
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 K



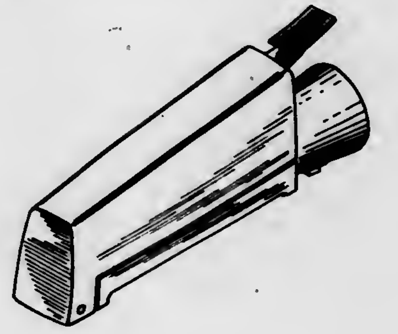
226,735
SURGICAL KNIFE
Joseph Navara, 2105 W. Walton St.,
Chicago, Ill. 60622
Filed Jan. 7, 1971, Ser. No. 104,844
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



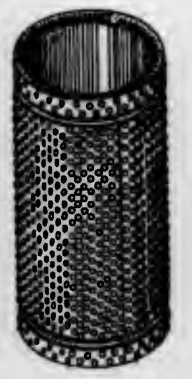
226,736
FINGER MANICURING GRIP
Isak Benis, 2165 Matthews Ave., Bronx, N.Y. 10462
Filed May 6, 1971, Ser. No. 141,068
Term of patent 7 years
Int. Cl. D28—*03*
U.S, Cl. D86—10 C



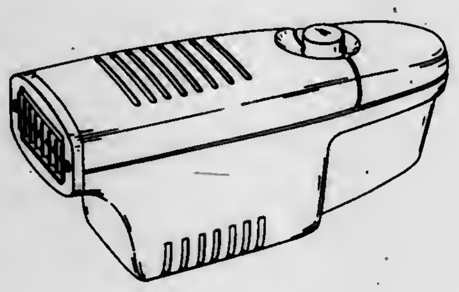
226,737
HAIR GROOMING IMPLEMENT HOLDER
Martin J. Wolff, West Haven, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed May 12, 1971, Ser. No. 142,862
Term of patent 14 years
Int. Cl. D4—*03;* D28—*03*
U.S. Cl. D86—10 F



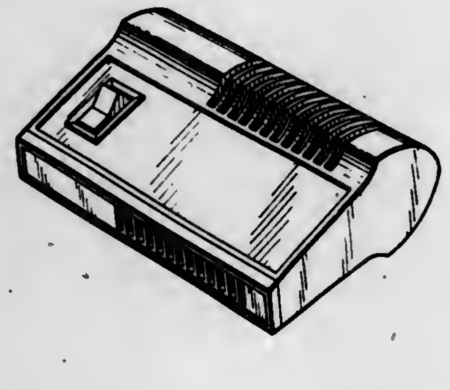
226,738
HAIR ROLLER
Nai-Keung Chen, Fairfield, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Sept. 20, 1971, Ser. No. 182,303
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



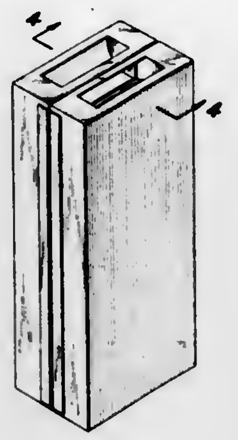
226,739
HAIR STEAMER
Jay Dobyin, Chicago, Ill., assignor to The Gillette Company, Boston, Mass.
Filed Nov. 19, 1971, Ser. No. 200,657
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



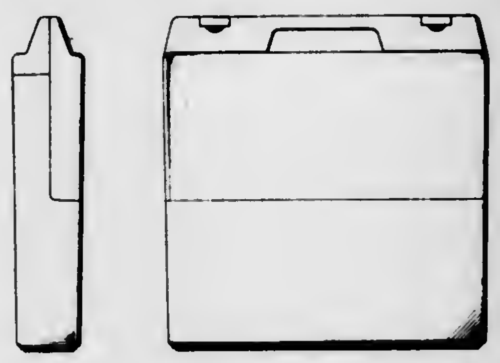
226,740
HAIR DRYER
Norman A. Steinkamp, Chicago Heights, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Dec. 29, 1971, Ser. No. 213,804
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



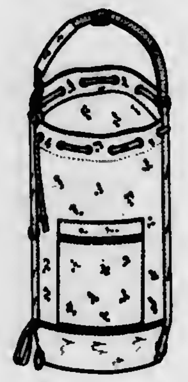
226,741
COMBINED STORAGE AND CARRYING CONTAINER
Everett R. Yonce, 464 42nd St., Oakland, Calif. 94609
Filed Apr. 16, 1971, Ser. No. 134,926
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1



226,742
CARRYING CASE
Robert E. Dustin, Brookline, Mass., assignor to Dustin & Davenport Incorporated, Brookline, Mass.
Filed May 28, 1971, Ser. No. 148,273
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



226,743
TOTE BAG
Robert M. Lee, New York, N.Y., assignor to Hunting World Incorporated, New York, N.Y.
Filed Jan. 10, 1972, Ser. No. 216,868
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



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TO WHOM
PATENTS WERE ISSUED ON THE 17TH DAY OF APRIL, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Abel, Martin L. Method of making a package sleeve bearing. 3,727,279, Cl. 29-149.50r.
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  Aslanbayrak, Ali R.; and Woods, Ovid W., 3,728,498.
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Abrams, Martin; and Tafel, Kenneth B., to AES Technology Systems, Inc., mesne. Apparatus and method of copying on a plurality of diverse copy media. 3,728,020, Cl. 355-66.000.
Accles & Shelvoke Limited: *See*—
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  Zacks, Leo L., 3,728,002.
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Adams Industries, Inc.: *See*—
  Tilp, George E., 3,728,517.
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  Stevko, Phillip J.; Petrella, Joseph L.; and Dissauer, Gerald A., 3,728,023.
Adicoff, Arnold, to United States of America, Navy. Method of preparing ammonium perchlorate crystals of controlled size. 3,728,086, Cl. 23-302.000.
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Ahrenberg, Kurt. Apparatus for moistening mixable materials. 3,727,894, Cl. 259-154.000.
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Alexandrov, Albert Ivanovich; Levin, Solomon Isaakovich; Chestnov, Valery Fedorovich; Kovaleva, Raisa Markovna; Birjukova, Tatyana Semenovna; Burko, Albert Ivanovich; and Naumov, Mikhail Grigorievich, to Vsesojuzny nauchno-issledovatelsky Institut Istochniov sveta. Automatic apparatus for welding up and evacuation of electrovacuum devices. 3,728,005, Cl. 316-31.000.
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  Walters, Ronnie G., 3,728,528.
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  Lee, Lester T. C.; Pearce, Eli M.; and Litt, Morton H., 3,728,348.
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Alps Electric Co., Ltd.: *See*—
  Shimojo, Takemi, 3,728,509.

- Alten, Ralph W., to Essex International, Inc. Transistorized flasher circuit. 3,728,713, Cl. 340-331.000.
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- Amano, Genichi: *See—*
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- Andreeva, Maria Kuzminicha: *See—*
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- Bagge, Nils Olof, to AB Volvo Penta. Outboard drive for a boat. 3,727,574, Cl. 115-34.00r.
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- Bailey, Joseph T., to American Lava Corporation. Leachable ceramic cores. 3,727,670, Cl. 164-132.000.
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- Baker, Donald C.; and Yessayan, Krikor, to Case, J. I., Company. Support means for cylinder conduits. 3,727,699, Cl. 172-809.000.
- Baker, Gary, 1/3 each to Patton, Don A. and Brauer, James S. Four-way dental syringe. 3,727,310, Cl. 32-22.000.
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- Bardell, Paul H., Jr.; Barson, Fred; Benjamin, Charles E.; and Pecoraro, Raymond P., to International Business Machines Corporation. Semiconductor device fabrication method and product thereby. 3,728,166, Cl. 148-175.000.
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- Barie, Walter P., Jr.; Franke, Norman W.; and Singerman, Gary M., to Gulf Research & Development Company. Liquid stabilizers for vinyl chloride polymers. 3,728,282, Cl. 252-400.000.
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- Bauer, William Valentine, to Lummus Company, The. Three-stage combustion. 3,727,562, Cl. 110-1.00p.
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- Bazouin, Andre; and Lefort, Marcel, to Rhone-Poulenc SA. Process for the preparation of aryldimethylchlorosilane. 3,728,368, Cl. 260-448.20p.
- Beacham, Walter Gary, to BTI Ltd. Telephone answering apparatus. 3,728,489, Cl. 179-6.00r.
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- Beazley, Aubrey G., to Farah Manufacturing Company, Inc. Pickup and transfer device. 3,727,775, Cl. 210-1.0bc.
- Beck, Henry H. Air cushion conveyor lift cells. 3,727,984, Cl. 302-29.000.
- Beck, James R., to Lilly, Eli, and Company. 1-(2-Carboxyphenyl)-5,7-dimethoxy-3,4-dihydrocarbostyril intemediates for acronyces. 3,728,350, Cl. 260-287.00r.
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Biegert, Karl E.; and Tice, Robert M., to Ultronic Systems Corporation. Apparatus for controlling output data rate. 3,728,683, Cl. 340-172.500.
Biever, Robert E. Portable high volume gas supply system. 3,727,651, Cl. 141-231.000.
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- Clarke, Clarence C.: *See—*
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- Clausing, Challiss I.; and Pokorny, Frank J., to I-T-E Imperial Corporation. Shock-proof arc chute for high voltage circuit breaker with metallic arc plates having off-set lines of openings. 3,728,503, Cl. 200-144.00r.
- Clay, Robert E. Method of preparing architectural and engineering drawings. 3,728,190, Cl. 156-235.000.
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  - Bijleveld, Eduard; and Cleij, Jan, 3,727,379.
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- Cleland, William Pettigrew, to British Steel Corporation. Magnetic sorting and piling bank. 3,727,758, Cl. 209-74.000.
- Clemens, David H.: *See—*
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- Clerc, Henri: *See—*
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- Clermont Vinas, Maria Teresa. Device for the wet treatment of packed and similar textile materials. 3,727,436, Cl. 68-189.000.
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- Coffield, Thomas Hunter, to Ethyl Corporation. Cobalt recovery. 3,728,104, Cl. 75-101.0be.
- Cofield, William W., to Transcontinental Gas Pipe Line Corporation. Production of synthetic pipeline gas. 3,728,093, Cl. 48-190.000.
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  - McFarlane, Richard H., 3,727,285.
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  - Preis, William R.; and Cole, William, 3,728,245.
- Cole, William: *See—*
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- Colgate-Palmolive Company: *See—*
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  - Sundby, Bjorn; Kenney, Edward J.; and Wixon, Harold E., 3,728,385.
- Coller, James Ray, to AMP Incorporated. Method and machine for forming and inserting workpieces in an apertured workpiece holder. 3,727,294, Cl. 29-429.000.
- Collins, Delmas E., to Jones-Zylon, Inc. Dry closet urinal. 3,727,244, Cl. 4-110.000.
- Collins Radio Company: *See—*
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- Colloids, Inc.: *See—*
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- Colt Industries Operating Corp., mesne: *See—*
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- Colt Industries Operating Corporation: *See—*
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Dudzik, Leonard J., to Unarco Industries, Inc. Sprinkler attachment for racks. 3,727,694, Cl. 169-2.00r.
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- Grundmann, Volker R.; and Floyd, Larry K., to New Britain Machine Company, The. Plastic injection molding machine safety mechanism. 3,728,057, Cl. 425-136.000.
- Gruneberg, Helmut, to Aviatest GmbH. Apparatus for the strength-and life-test of hydraulic structural elements. 3,727,456, Cl. 73-168.000.
- Gruss, Thomas J., to Zager, Inc. Nut loading means. 3,727,255, Cl. 10-162.000.
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  - Swenson, Richard F.; and Gryga, John J., Jr., 3,727,974.
- Grygera, James W., to Eaton Corporation. Motor control system. 3,728,604, Cl. 318-459.000.
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  - Benda, David, 3,728,574.
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  - Kramer, W. Edward, 3,727,346.
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- Gulick, Ronald A., to Research Engineering Company. Spring return cartridge. 3,727,523, Cl. 92-130.000.
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  - Yumiyama, Seisuke; Kinoshita, Yoshitsugu; Kusunoki, Tadashi; Okada, Toshihiko; and Shimizu, Susumu, 3,727,580.
- Gurev, Harold Samuel, to Motorola, Inc. Method of forming an ultra fine aperture mask. 3,728,231, Cl. 204-15.000.
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- Haber, Raphael G.; and Schoenberger, Eva, to Abic Ltd. Water-soluble composition comprising sulfadimidine and pyrimethamine. 3,728,452, Cl. 424-229.000.
- Habiger, Cyril W.; Hopkins, Donald L.; Johnson, Gordon W.; Norick, William B.; Van Zandt, Rollin P.; and Winters, Frank H., to Caterpillar Tractor Co. Underspeed valve hydrostatic control system. 3,727,628, Cl. 137-101.000.
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- Hagenuk vormals Neufeldt & Kuhnke GmbH: *See—*
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- Hall, Charles Thomas, to Molin's Machine Company Limited. Foil over-lapped slits. 3,727,828, Cl. 229-51.00c.
- Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., to Ciba-Geigy Corporation. Polysubstituted dihydropyrenes. 3,728,394, Cl. 260-591.000.
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- Hamano, Hisashi, to International Knitlok Corporation. Method and apparatus for warp knitting hook and loop fasteners. 3,727,433, Cl. 66-84.000.
- Hamblin, Robert J.J., to Universal Oil Products Company. Continuous process for scrubbing H_2S from a gas stream and selectively producing elemental sulfur while minimizing thiosulfate make. 3,728,440, Cl. 423-573.000.
- Hamblin, Robert J.J., to Universal Oil Products Company. Removal and recovery of sulfur from a gas stream containing H_2S. 3,728,441, Cl. 423-573.000.
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- Hansen, Robert O. Oscillating plow and trencher combination. 3,727,331, Cl. 37-86.000.
- Hansen, Robert O. Vibrating plow to bury cable and the like. 3,727,696, Cl. 172-40.000.
- Hanson, Douglas R. Loader for trucks. 3,727,777, Cl. 214-41.000.
- Hanson, Kent W. Bidirectional lever arm clutch. 3,727,734, Cl. 192-48.920.
- Hanson, Melvin A.; and Zunich, Alexander, to N L Industries, Inc. Gear casing. 3,727,483, Cl. 74-609.000.
- Harbour, Wilmer P., Jr.; and Queener, Carl A., to International Business Machines Corporation. Cleaning apparatus for electrostatic copying devices. 3,728,016, Cl. 355-15.000.
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- Harper, Henry J. Seat-height adjustment device. 3,727,871, Cl. 248-406.000.
- Harris, Raymond. Snagless fishing hook. 3,727,340, Cl. 43-43.200.
- Harris, Richard William; and Handley, John, to Molins Machine Company Limited. Splicing apparatus for splicing the adhesive leading end of a waiting web onto a running web. 3,728,197, Cl. 156-506.000.
- Harris-Intertype Corporation: *See—*
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Harrison, Robert E., to Hoerner-Waldorf Corporation. Carrying handle. 3,727,830, Cl. 229-54.000.

Harrold, Ronald T.; and Carter, William J., to Westinghouse Electric Corporation. Acoustical corona locator having rotatable and pivotable tranducers. 3,728,619, Cl. 324-52.000.

Harschel, Jonas C. Plastic container for dispensing measured quantities and reducing height of container as contents dispensed. 3,727,798, Cl. 222-87.000.

Hart, Don Rex, to Harpad Company. Cow parlor safety adjustment. 3,727,585, Cl. 119-96.000.

Hart, Frederick Harry; and McFegan, William, to Pilkington Brothers Limited. Method and apparatus for electrically welding a double walled glazing unit. 3,728,096, Cl. 65-40.000.

Hartley, Ezra Dale. Accelerometer. 3,727,465, Cl. 73-492.000.

Hartmann, George. Polyurethane printing ink and method of using same. 3,728,298, Cl. 260-31.40r.

Harty, Millard Fillmore, Jr., to Motor Wheel Corporation. Air distribution unit. 3,727,537, Cl. 98-32.000.

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Hawkins, Harold V.; Dick, Ralph A.; and Eldridge, Allan E. Electric hoist overload protection device. 3,728,502, Cl. 200-85.00r.

Haworth, Lionel; Blea, Cyril; and Poucher, Michael, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Gas turbine engine. 3,727,998, Cl. 308-184.00r.

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Hearn, Daniel P., to Atlantic Richfield Company. Synchronized period measuring system. 3,728,613, Cl. 324-.50r.

Hearn, Daniel P., to Atlantic Richfield Company. Optical magnetometer using a depumping signal formed by frequency modulating the output of a variable frequency oscillator with two alternating fixed frequency oscillators. 3,728,614, Cl. 324-.50r.

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Heijenbrok, Martinus Gerard Jens; and Van Herwijnen, Arend, to U.S. Philips Corporation. Method of manufacturing aluminum electrode foil for electrolytic capacitors. 3,728,237, Cl. 204-129.750.

Heinert, Dietrich H., to Dow Chemical Company, The. Stabilization of vinyl isocyanates. 3,728,369, Cl. 260-453.0ap.

Heins, John L. Transmission line fault indicator and locator utilizing variable frequency source coupled to one end of line. 3,728,620, Cl. 324-52.000.

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Heinz, David M., to North American Rockwell Corporation. Bubble domain system. 3,728,697, Cl. 340-174.0tf.

Helbig, Walter Allen, Sr., to RCA Corporation. Computer input-output chaining system. 3,728,682, Cl. 340-172.500.

Helden, Robert Van; Kohll, Charles F.; and Verbrugge, Pieter A., to Shell Oil Company. Olefin disproportionation. 3,728,414, Cl. 260-683.00d.

Heling, Wilhelm, to Freudenberg, Carl. Non-woven fabric. 3,728,207, Cl. 161-151.000.

Helm, Dietrich, to Schering AG. Heat hardenable thickened epoxy resin masses. 3,728,302, Cl. 260-37.0ep.

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Hengesbach, Robert W. Multiple jet fluid sprinkling, spraying and diffusing device. 3,727,841, Cl. 239-145.000.

Henkle, Theodore. Violin shoulder rest. 3,727,509, Cl. 84-278.000.

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Henry, Russell Alger, Jr., to Deere & Company. Apparatus for finishing patterns and core boxes. 3,727,680, Cl. 165-119.000.

Hensler, Paul, to Porsche, Dr. h.c.F., K.G., Firma. Device for precipitating fuel the vapor discharging from the fuel supply of an internal combustion engine. 3,727,597, Cl. 123-136.000.

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Hill, John H. Adjustable crane seat. 3,727,873, Cl. 248-418.000.

Hill, Warren R.; Gurol, I. Macit; and Dave, Sharad M., to Eaton Yale & Towne Inc. Smoke, gas, or rapid temperature increase detector utilizing a periodic electric field to create a self-sustained avalanche current. 3,728,615, Cl. 324-33.000.

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Hirschfeld, Tomas, to Block Engineering Inc. Electro-optical spectrometer. 3,728,029, Cl. 356-83.000.

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Hoffman, John T. Drill dispensing container. 3,727,771, Cl. 211-69.000.

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Kassabgi, Georges, to Honeywell Information Systems Italia Caluso. Modular cabling system. 3,728,661, Cl. 339-17.00f.

Kassler, Holger: *See—*
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Kastner, William D.: *See—*
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Kato, Fumio; Yamaguchi, Akira; Tatano, Toshio; and Shimizu, Yoshiaki, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for preparing nicotinamide adenine dinucleotide phosphate. 3,728,222, Cl. 195-28.00n.

Kato, Mahiko: *See—*
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Kato, Saburo, to Ricoh Co., Ltd. Magnetic recording and reproducing apparatus of the spiral track type. 3,727,921, Cl. 274-4.00j.

Kaufhold, Norbert; Konig, Klaus; Keller, Heinrich; De Graaf, Jan G.; Blankenzee, Johan; Bakker, Hans; and Plettenburg, Carolus, to Vereinigte Flugtechnische Werke-Fokker GmbH. Aircraft power-unit suspension system. 3,727,862, Cl. 244-54.000.

Kaufman, Warren J., to University of California, The Regents of the. Accelerated biological-chemical wastewater treatment. 3,728,253, Cl. 210-5.000.

Kawabata, Nariyoshi: *See—*
Furukawa, Junji; Kawabata, Nariyoshi; Nakaniwa, Mikio; and Kanbara, Saburo, 3,728,285.

Kawai, Kiyomitsu, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Pattern assembly for a foundry core unit for casting a cylinder block of a multi-cylinder internal combustion engine. 3,727,671, Cl. 164-230.000.

Kawamura, Masatada: *See—*
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Kay, Nicholas L.: *See—*
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Keady, Frederick D., to Weatherhead Company, The. Emergency bypass for brake pressure control. 3,727,989, Cl. 303-6.00c.

Kearns, Robert W., to Windshield wiper control. . 3,728,603, Cl. 318-443.000.

Keen, Harry J.: *See—*
Douglas, Alec T.; Thomas, Haydon C.; and Keen, Harry J., 3,728,626.

Keenan, William Francis: *See—*
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Keith, Errol W.; Watson, Jack; and Bojas, Edward J., to Eaton Corporation, Hydrostatic transmission speed and steering control system. 3,727,402, Cl. 60-444.000.

Kelemencky, Monroe R.: *See—*
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Keller, Frederick C.: *See—*
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Keller, Heinrich: *See—*
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Keller, Siegfried, to Werkzeuzmaschinenfabrik Oerlikon-Buhrle AG. Automatic load dependent compressed air brake system. 3,727,994, Cl. 303-23.000.

Kelley, Archibald P.; Norman, Leslie W.; and Thompson, Walter H., Jr., to Garrett Corporation, The. Hypersonic aircraft engine and fuel injection system therefor. 3,727,409, Cl. 60-270.000.

Kelley, Arnold E.; Reeg, Cloyd P.; Wood, Frederick C.; and Cheadle, George D., to Union Oil Company of California. Gasoline manufacture by hydrofining, hydrocracking and catalytic cracking of heavy feedstock. 3,728,251, Cl. 208-89.000.

Kelley, Fred W., Jr., to General Electric Company. Electric power apparatus comprising converter, LC filter, and voltage regulator arranged for highly accurate and stable response. 3,728,609, Cl. 321-10.000.

Kelly, Charles A.; and Pacifici, James G., to Eastman Kodak Company. 4,4-Bis(alkoxycarbonyl)benzoin ethers. 3,728,377, Cl. 260-473.00r.

Kemmethmueller, Roland, to American Waagner-Biro Company, Inc. Indirectly heat exchanging plural gas streams for dry quenching hot coke and drying coal. 3,728,230, Cl. 201-39.000.

Kendall Company, The: *See—*
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Kennametal Inc.: *See—*
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Kenney, Edward J.: *See—*
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Kenyon, Nazar P., to Parke, Davis & Company. Vapor guard viscometer. 3,727,452, Cl. 73-59.000.

Kershaw, Samuel L.: *See—*
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Kesling, Keith K., to General Motors Corporation. Ice flaking machine for domestic refrigerators. 3,727,425, Cl. 62-346.000.

Kesling, Keith K., to General Motors Corporation. Ice making device. 3,727,426, Cl. 62-346.000.

Keyser, Lewis R., to Price Brothers Company. Core device for void forming and gasket support in a mold wall. 3,727,876, Cl. 249-184.000.

Kidd, Earl H.: *See—*
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Kienast, Gerhard; Stutgens, Heribert; and Zander, Hans-Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Production of titanyl sulfate solutions. 3,728,431, Cl. 423-69.000.

Kienzle Apparate G.m.b.H.: *See—*
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Kiesel, Robert J.; Randall, David I.; Field, Nathan D.; and Rudoff, Stanley, to GAF Corporation. Reaction products of poly n-vinylpyrrolidone or poly n-vinyl pyrrolidones with alkyl side chains and organic secondary or tertiary amines. 3,728,319, Cl. 260-8.10r.

Kieserling, Th., & Albrecht: *See—*
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Kigasawa, Kazuo; Hiiragi, Mineharu; and Wagatsuma, Nagatoshi, to Takeda Chemical Industries, Ltd., mesne. Azamorphinan compounds. 3,728,347, Cl. 260-250.00a.

Kim, Choong-Ki; and Snow, Edward H., to Fairchild Camera and Instrument Corporation. Charge coupled devices with continuous resistor electrode. 3,728,590, Cl. 317-235.00r.

Kimberly-Clark Corporation: *See—*
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Kimmett, James P. Electrical servicing tool. 3,727,286, Cl. 29-203.00h.

Kindle, Robert W.; Barnhart, Robert R.; and Paul, Philip T., to Uniroyal, Inc. Rubber-metal adhesion using halogenated quinone and resorcinol-aldehyde condensation product. 3,728,192, Cl. 156-306.000.

Kinley, John C.: *See—*
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Kinley, John C.; and Jefferson, Walter C., said Jefferson assor. to said Kinley, John C. Liner removal apparatus. 3,727,692, Cl. 166-297.000.

Kinoshita, Hisashi, to Kabushiki Kaisha Fuji Tekkosho. Film winding machine. 3,727,853, Cl. 242-56.00a.

Kinoshita, Yoshitsugu: *See—*
Yumiyama, Seisuke; Kinoshita, Yoshitsugu; Kusunoki, Tadashi; Okada, Toshihiko; and Shimizu, Susumu, 3,727,580.

Kinsey, Lewis R. Prefabricated tapered columns. 3,727,363, Cl. 52-731.000.

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Kitch, Paul E., to Scott Paper Company. Torque control method and apparatus. 3,727,856, Cl. 242-75.500.

Kitsopoulos, Sotirios Constantine: *See—*
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Kitt, Robert Alvin, to Lyall Electric, Inc. Flexible lampholder. 3,728,663, Cl. 339-60.00r.

Kjos, David M.; and Rowland, Chester A., Jr., to Allis-Chalmers Corporation. Apparatus for the method of liberating and removing fibrous material from a mineral ore. 3,727,849, Cl. 241-4.000.

Klar, Erhard; Petrosh, Algirdas E.; and Michael, Arthur B., to SCM Corporation. Process for forming a sintered briquette. 3,728,110, Cl. 75-211.000.

Klayum, Milton A.; and Pierzchala, Chester E., to Reliable Electric Company. Buried-type splice case. 3,728,467, Cl. 174-38.000.

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Kleimeyer, Vernon T.; and Schinner, Thomas J., to Cincinnati Time Recorder Company, Inc., The. Print hammer with integral pivotal print anvil. 3,727,548, Cl. 101-93.00c.

Klein, Harold C. Laryngoscope. 3,727,605, Cl. 128-11.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
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Kleiner, Gersh Izrailevich: *See—*
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Kleykamp, Donald L.; Neroni, Peter J.; and Holden, Homer N., to Dayco Corporation. Hose construction. 3,727,949, Cl. 285-7.000.

Klinger, Karl Heinz, to Deutsche Gold- und Silber-Scheideanstaet vormals Roessler. Hydroxyphenylhydroxyalkylaminoalkyltheophyllines. 3,728,346, Cl. 260-256.000.

Klingler, Josef F., to Thermex, Inc., mesne. Disposable plastic thermometer. 3,727,461, Cl. 73-371.000.

Klir, Jiri; Svoboda, Bohumil; and Jaroslav, Bohac, to Vyzkumny ustav Strojirenske technologie a ekonomiky. Ski of shaped laminated material and method for its manufacture. 3,727,936, Cl. 280-11.131.

Knaack, Donald F., to Avisum Corporation. Perester free radical initiator for graft polymerization. 3,728,417, Cl. 260-878.000.

Knaack, Howard L., to Knaack Manufacturing Company. Padlock protection system. 3,727,438, Cl. 70-63.000.

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Knapp, Heinrich, to Bosch, Robert, G.m.b.H. Temperature-responsive system for regulating the fuel mixture in air-cooled internal combustion engines. 3,727,598, Cl. 123-140.0mc.

Knecht, John E.: *See—*
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Kobayashi, Akira: *See—*
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Koehn, James P.; and Bethune, Edwin M., to Under Sea Industries, Inc. Vest inflation/exhaust valve assembly. 3,727,250, Cl. 9-313.000.

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Kolesar, Paul M.; and Payne, Robert A., to Stewart-Warner Corporation. Non-flickering display system having multi-phase power source. 3,728,714, Cl. 340-334.000.

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Komatsu, Akira. Dynamic loudspeaker using wall as diaphragm. 3,728,497, Cl. 179-181.00w.

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Kostas, Evans; and Schwarz, Robert E., to North American Rockwell Corporation. Reversible lockup for flexible printing plate. 3,727,551, Cl. 101-415.100.

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Kovacic, Charles R.; Schildgen, Robert M.; and Anderson, Hilding A., to SCM Corporation. Keyboard transmitter. 3,728,720, Cl. 340-365.000.

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Kraus, Constantine Raymond. Voicegram service. 3,728,486, Cl. 179-2.00r.

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Kreimann, Herbert H., to Combustion Engineering Inc. Agitator for marble bed gas scrubber. 3,727,381, Cl. 55-233.000.

Krigbaum, Clarence A. Scrap rubber shredding device. 3,727,850, Cl. 241-159.000.

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Kronenwetter, Richard P.: *See—*
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Kubicek, Donald H., to Phillips Petroleum Company. Spiro compounds. 3,728,404, Cl. 260-648.00d.

Kubicek, Donald H., to Phillips Petroleum Company. Process for the preparation of 1,2-bis(3-cyclohexen-1-yl)ethylene using base-treated olefin disproportionation catalysts. 3,728,407, Cl. 260-666.0py.

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Kuehn, Erich, to Atlas Chemical Industries, Inc. Flame retardant and intumescent compositions. 3,728,138, Cl. 106-15.0fp.

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Kukolja, Stjepan, to Lilly, Eli, and Company. 3-Acyloxymethyl cephalosporins and method of preparation. 3,728,342, Cl. 260-243.00c.

Kulesa, Walter. Collapsible window scaffold. 3,727,721, Cl. 182-62.000.

Kullmann, Dieter; and Schmidt, Fritz, to Siemens Aktiengesellschaft. Expansion and contraction compensation arrangement for superconducting cables. 3,728,463, Cl. 174-12.00r.

Kumagai, Kiyoshi: *See—*

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Kumakura, Toshimi; and Hosoyama, Takashi, to Kabushikikaisha Itoya. Manually operable roller type printing device. 3,727,549, Cl. 101-330.000.

Kuncic, Robert John, to CPC International Inc. Process for incubating Salmonella. 3,728,225, Cl. 195-96.000.

Kunstmann, Martin Paul; Williamson, Charles Brainerd, III; and Porter, John Norman, to American Cyanamid Company. Antibiotic BL617 and process for producing same. 3,728,448, Cl. 424-121.000.

Kuo, Lai Che, to Thomas & Betts Corporation. Multi-orificed electrical connector. 3,728,473, Cl. 174-84.00c.

Kupfer, David; Roscoe, Henry George; and Blickens, Donald Arthur, to American Cyanamid Company. Novel compositions of matter. 3,728,455, Cl. 424-270.000.

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Langecker, Erhard. Blowing machine for producing hollow bodies, particularly bottles. 3,728,063, Cl. 425-326.00b.

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Langer, Karl: *See—*

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Langlands, Ian H., to National Sea Products Limited. Process and apparatus for shaping frozen flesh. 3,728,136, Cl. 99-194.000.

Lard, Edwin W., to Grace, W. R., & Co. Curable liquid polyene-polythiol compositions containing acrylic acid copolymers. 3,728,240, Cl. 204-159.160.

Lares, Joseph P.: *See—*

Burris, Glenn A.; and Lares, Joseph P., 3,727,882.

Larribaut, Rene: *See—*

Maxime, Jacques; and Larribaut, Rene, 3,727,514.

Larson, Willis A.; and Tell, Stephen R., to Magic Dot, Inc. Touch sensitive electronic switch. 3,728,501, Cl. 200-52.000.

Larsson, Sune Torsten: *See—*

Hyden, Victor Holger; and Larsson, Sune Torsten, 3,727,602.

Lassig, Harry. Fully automatic apparatus for loading containers with single pieces assembled in sheet-wrapper stacks, such as sacks or the like. 3,727,369, Cl. 53-159.000.

Lassig, Harry. Apparatus for loading containers. 3,727,370, Cl. 53-159.000.

Laval, Claude, to Lebocey Industrie, Societe Anonyme. Weft thread selecting and handling means for gripper shuttle loom. 3,727,647, Cl. 139-122.00w.

Layman, Lee R., to Monsanto Company. Forming articles from sheet material. 3,728,062, Cl. 425-291.000.

Le Master, Harold A. Adjustable fishing lure. 3,727,339, Cl. 43-42.220.

Le Voy's Inc.: *See—*

Sorenson, James L.; Pannier, Karl A., Jr.; and Reynolds, Gordon S., 3,727,613.

Leach, Raymond B., to Miracle Hub and Wheel, Inc. Wheel with resilient hub. 3,727,983, Cl. 301-136.000.

Lebocey Industrie, Societe Anonyme: *See—*

Laval, Claude, 3,727,647.

Lee, Alex Y.; and Gershberg, David N., to Mosler Safe Company, The. Differential doppler detection for RF intruder alarm systems. 3,728,721, Cl. 343-5.0pd.

Lee, Art: *See—*

Finnegan, Cyril Owen; and Lee, Art, 3,728,606.

Lee, James O., to Olsen, Olaf M. and McCarthy, John L. Lobster preservation system. 3,727,579, Cl. 119-2.000.

Lee, Lester T. C.; Pearce, Eli M.; and Litt, Morton H., to Allied Chemical Corporation. Dicarboxylic acids containing diketopiperazine groups and polymers prepared therefrom. 3,728,348, Cl. 260-268.0dk.

Lee, Raymond, Organization, Inc., The: *See—*

Blinkhorn, Harold L., 3,728,471.

Leesona Corporation: *See—*

Nelson, John; and Stoppard, William E., 3,727,852.

Richter, Hans H., 3,727,855.

Lefebvre, Jean Henri: *See—*

Chatourel, Pierre Rene; and Lefebvre, Jean Henri, 3,727,674.

LeFeuvre, Thomas, to Thermo Electron Corporation. Throttle valve. 3,727,406, Cl. 60-108.000.

Lefort, Marcel: *See—*

Bazouin, Andre; and Lefort, Marcel, 3,728,368.

Lehmann, Joachim: *See—*

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Leigh Systems, Inc.: *See—*

Tibavido, Raymond S., 3,727,817.

Leland, Dannals, E.: *See—*

Brindell, Gordon D.; and Leland, Dannals, E., 3,728,205.

Lemmen, Hendrikus Johannes; Van Ruler, Johannes; and Scholten, Pieter Cornelis, to U.S. Philips Corporation. Method of manufacturing a magnetic tape lacquer. 3,728,262, Cl. 252-62.540.

Lenert, August, to Siemens Aktiengesellschaft. X-ray tube. 3,728,568, Cl. 313-60.000.

Lenzkes, Herbert H., to General Dynamics Corporation. Electronic system for the stimulation of biological systems. 3,727,616, Cl. 128-422.000.

Leonard, Verna M. Holder and guide for writing and reading music. 3,728,462, Cl. 84-471.000.

Leonov, Gennady Mikhailovich: *See—*

Krikorov, Vadim Sergeevich; Krasov, Vladimir Grigorievich; Sukhodaev, Boris Alexandrovich; Kokin, Vitaly Kazimirovich; Zhelninsky, Valentin Danilovich; Sukhanov, Nikolai Mefodievich; Leonov, Gennady Mikhailovich; Likholetov, Nikolai Ivanovich; Kovalev, Igo Tikhonovich; Gusev, Vladimir Vladimirovich; and Medvedev, Andrei Petrovich, 3,728,436.

Lerner, David S., to Lockheed Electronics Company, Inc. Power distribution network. 3,728,648, Cl. 333-6.000.

Les Forges de Zeebrugge S.A.: *See—*

Berger, Curt, 3,727,512.

Leuteritz, Raoul H.; and Dima, Attila, to General Cable Corporation. Mechanical pressure type electrical connections for terminating and connecting metallic cable shields. 3,728,472, Cl. 174-78.000.

Levin, Myron M., to E-Z POR Corporation. Attachment to rim of a paint can or the like. 3,727,792, Cl. 220-90.000.

Levin, Solomon Isaakovich: *See—*

Alexandrov, Albert Ivanovich; Levin, Solomon Isaakovich; Chestnov, Valery Fedorovich; Kovaleva, Raisa Markovna; Birjukova, Tatyana Semenovna; Burko, Albert Ivanovich; and Naumov, Mikhail Grigorievich, 3,728,005.

Levine, Aaron J. Plumbing tool. 3,727,261, Cl. 15-104.3sn.

Levine, Marvin S., to General American Transportation Corporation. Method of blending reinforcing fibers and molding resins and product thereof. 3,728,294, Cl. 260-29.10b.

Levolor Lorentzen, Inc.: *See—*

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Levy, Joseph; and Walker, William, to Universal Oil Products Company. Catalytic reduction process. 3,728,376, Cl. 260-472.000.

Levy, Joseph; and Seif, Louis, to Universal Oil Products Company. Preparation of p-nitrosodiphenylamine. 3,728,392, Cl. 260-576.000.

Lewis, Charles B.: *See—*

Cranston, Albert E., III; and Lewis, Charles B., 3,727,965.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*

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Licentia Peter: *See—*

Mattern, Jean; Licentia Peter; and Zeitzschel, Gunter, 3,728,219.

Lieberman, George; Pierce, Victor J.; and Prussin, Samuel B. Pressurized foam-producing composition and process therefor. 3,728,276, Cl. 252-305.000.

Liedtke, Ronald R.: *See—*

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Lienhard, Paul; Beffa, Fabio; and Soiron, Charles, to Geigy, J. R., A.G. Cobalt complexes of an azo compound and a tridentate organic ligand. 3,728,328, Cl. 260-147.000.

Liepelt, Donald W.: *See—*

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Likholetov, Nikolai Ivanovich: *See—*

Krikorov, Vadim Sergeevich; Krasov, Vladimir Grigorievich; Sukhodaev, Boris Alexandrovich; Kokin, Vitaly Kazimirovich; Zhelninsky, Valentin Danilovich; Sukhanov, Nikolai Mefodievich; Leonov, Gennady Mikhailovich; Likholetov, Nikolai Ivanovich; Kovalev, Igo Tikhonovich; Gusev, Vladimir Vladimirovich; and Medvedev, Andrei Petrovich, 3,728,436.

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Kukolja, Stjepan, 3,728,342.

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Lindsey, John L., Jr. Ice fishing tip-up apparatus. 3,727,342, Cl. 43-17.000.

Ling, Bernt: *See—*

Idestrom, Erik; Ling, Bernt; and Persson, Anders, 3,728,026.

Links, Heinz, to Bosch, Robert, GmbH. Control device for hydraulically operated tappet valves of internal combustion engines. 3,727,595, Cl. 123-90.120.

Linstromberg, William J., to Whirlpool Corporation. Twist tray ice maker with removable tray. 3,727,428, Cl. 62-300.000.

Lishevskaya, Marina Osipovna; Virnik, Alexandr Davidovich; Gabrielian, Genrikh Aramaisovich; Rogovin, Zakhar Alexandrovich; Borbat, Vladimir Fedorovich; Orlov, Alexandr Mikhailovich; Ferberg, Mirriam Borisovna; and Markelova, Nina Ivanovna, to Moskovsky tetilny Institut. Method of removing metal values from solution. 3,728,103, Cl. 75-101.0be.

Litt, Morton H.: *See—*

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Little, Arthur D., Inc.: *See—*

Pars, Harry G.; Razdan, Raj K.; and Weinhardt, Klaus K., 3,728,360.

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Liu, Han: *See—*

Anderson, William M.; Liu, Han; and Stockman, Richard F., 3,727,564.

Livingston, William L., to Factory Mutual Research Corporation. Self-extinguishing flammable mixtures. 3,728,258, Cl. 252-8.100.

Lloyd, Kenneth F.; and Strak, Michael G. Disposable apron. 3,727,236, Cl. 2-51.000.

Loase, Raymond M.: *See—*

Whitesell, Lloyd M.; Schriber, Louis; and Loase, Raymond M., 3,727,908.

Lockheed Aircraft Corporation: *See—*

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Lockheed Electronics Company, Inc.: *See—*

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Loom stop data collection system: *See—*

Upshur, Littleton; and Burlington Industries, Inc., 3,728,680.

Loop, Frederick M.; and Smith, Boyd J., to PPG Industries, Inc. Continuous electrodeposition process. 3,728,242, Cl. 204-181.000.

Loos, John H.: *See—*

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Lorenzini, Raymond; Vieira, Thomas L.; and Wallace, Robert G., to Eastman Kodak Company. Tray loading and indexing mechanism. 3,727,371, Cl. 53-246.000.

Loricchio, Domingos, to Carborundum Company, The. Additives for production of cast irons. 3,728,107, Cl. 75-130.00r.

Louderback, Allan L., to Baxter Laboratories, Inc. Blood serum analytical control standard. 3,728,226, Cl. 195-103.50r.

Louton, James C., Jr.: *See—*

Augunas, Algis G.; Louton, James C., Jr.; and Rafalik, Roman, 3,727,943.

Love, John J.: *See—*

Visos, Charles D.; Love, John J.; Smith, Carl A.; and Banes, Ralph E., 3,727,836.

Low, William H., Jr.; and Schaller, David R., to Horizons Incorporated; a division of Horizons Research Incorporated. Apparatus for thermally fixing a non-silver free radical photosensitive composition. 3,727,534, Cl. 95-89.00r.

Luckers, John, to Centre National de Recherches Metallurgiques. Gas composition analysis. 3,727,450, Cl. 73-23.000.

Lucky Stores, Inc.: *See—*

Ross, Joseph H., 3,727,308.

Luders, Davis John. Grain storage. 3,727,656, Cl. 150-1.000.

Luksas, Anthony J., to Beatrice Foods Co. Preparation of a bland whey product. 3,728,128, Cl. 99-57.000.

Lummus Company, The: *See—*

Bauer, William Valentine, 3,727,562.

Lumoprint Zindler KG: *See—*

Opravil, Egon, 3,728,015.

Lumpp, Gunther: *See—*

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Lundin, Sven Vilhelm Emanuel, to Humanteknik AB. X-ray apparatus and an operation lighting. 3,728,547, Cl. 250-90.000.

Lushkov, Evgeny Natanovich: *See—*

Gaisenok, Arseny Alexandrovich; Belyavin, Yury Pavolovich; Glozman, Moisei Kalmanovich; Rakovsky, Boris Albertovich; Rakovsky, Emmanuil Albertovich; Chikov, Gennady Mikhailovich; Maslovsky, Valery Georgievich; Lushkov, Evgeny Natanovich; and Veisman, Rix Rcovich, 3,727,416.

Lutz, David E., to Minicube System, Inc. Mobile cargo storage unit. 3,727,785, Cl. 217-12.00r.

Lyall Electric, Inc.: *See—*

Kitt, Robert Alvin, 3,728,663.

Lynch, Frederick W.: *See—*

McKown, Gary C.; Simons, Gerald F.; and Lynch, Frederick W., 3,727,520.

Lyons, Sanford C., to Georgia Kaolin Company. Method and apparatus for classifying fine particle materials. 3,727,831, Cl. 233-7.000.

Lystad, Leonard A., to General Motors Corporation. Vehicle seat. 3,727,976, Cl. 297-340.000.

Lytle, Clara A.: *See—*

Lytle, George F., 3,727,887.

Lytle, George F.; deceased (by Lytle, Clara A.; executrix), to Eaton Corporation, mesne. Power hoist with load brake. 3,727,887, Cl. 254-168.000.

Maagdenberg, Ronald R., mesne: *See—*

Suzuki, Clarence K., 3,728,154.

Mac Donald, Ira A.: *See—*

Egan, Richard R.; and Mac Donald, Ira A., 3,728,130.

Mac Lean, George D. Variable contour golf putting device. 3,727,917, Cl. 273-176.00h.

Machacek, Jiri: *See—*

Casensky, Bohuslav; Machacek, Jiri; and Vit, Jaroslav, 3,728,272.

Machala, John M. Concrete pit and deck construction for platform scales and method of making the same. 3,727,707, Cl. 177-134.000.

Macker, John Arthur; and Keenan, William Francis, to Burroughs Corporation. Programmatically controlled interrupt system for controlling input/output operations in a digital computer. 3,728,693, Cl. 340-172.500.

MacLeod, Norman M. Bag forming filling, and sealing apparatus. 3,727,373, Cl. 53-183.000.

Maclin, Ernest; and Perle, Abe J., to Electro-Nucleonics Inc. Temperature control for centrifugal analyzer. 3,727,832, Cl. 233-11.000.

Madigan, Thomas S.; Stone, Richard F.; Dunn, David C.; Holzer, William F.; and Sweet, Robert H., to Cubic Corporation. Optical distance measuring equipment. 3,728,025, Cl. 356-5.000.

Madono, Osamu, to Riken Piston Ring Kogyo Kabushiki Kaisha. Method of joining consumable electrode in electroslag melting. 3,727,300, Cl. 29-483.000.

Madsen, Ditlev P.; and Rybicki, Norman, to Chemetron Corporation. Press with semi-automatic cycle. 3,727,545, Cl. 100-53.000.

Maekawa, Mitugi. Motor-driven actuator. 3,727,472, Cl. 74-89.150.

Magic Dot, Inc.: *See—*

Larson, Willis A.; and Tell, Stephen R., 3,728,501.

Maier, Gerhard; and Henes, Siegfried, to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH. Incandescent lamp with regenerative cycle. 3,728,572, Cl. 313-222.000.

Maier, William. Electrical outlet box with cable connectors. 3,728,470, Cl. 174-58.000.

Maki, Earl G., Jr. Snowmobile towing hitch. 3,727,937, Cl. 280-24.000.

Malen, Charles; Danree, Bernard; and Desnoyers, Pierre, to Societe en nom Collectiv "Science Union et Cie," Societe Francaise de Recherche Medicale-Suresnes. α(M-Alkoxyphenoxy) and α(M-trifluoromethylphenoxy) M-toluic acids. 3,728,383, Cl. 260-520.000.

Mallory, P. R., & Co., Inc.: *See—*

George, Lee R.; and Hauenstine, Edgar F., 3,728,511.

Griffiths, Leonard B., 3,728,162.

Maloney-Crawford Tank Corporation: *See—*

Jackson, Morden A., 3,727,382.

Manabe, Mitsuo, to Fujitsu Limited. System of driving a pulse motor. 3,728,602, Cl. 318-434.000.

Mangialardi, John K., to United States of America, Atomic Energy Commission. Solids accumulator pump system. 3,728,047, Cl. 417-488.000.

Mankowich, Ivan: *See—*

Sundholm, Norman K.; and Mankowich, Ivan, 3,728,310.

Mann, Alfred W., to Tex Aluminum Company, Inc. Indirect extrusion. 3,727,448, Cl. 72-255.000.

Mansfield Sanitary, Inc.: *See—*

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Manus, Donald J.: *See—*

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Manutar S.A.: *See—*
  Matthey, Maurice L., 3,727,469.

Maravetz, Lester L., to Esso Research and Engineering Company. N-Cycloalkylalkyl and N-cycloalkyl substituted phenyl ureas and halo acetamides. 3,728,386, Cl. 260-553.00a.

Maremont Corporation: *See—*
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Mares, Milos; Nosek, Stanislav; Martinek, Lumir; and Rohlena, Vaclan, to Vyskumny Ustav Bavlnarsky. Apparatus for compensating the deviations of warp tension in weaving looms. 3,727,646, Cl. 139-97.000.

Margoshes, Marvin: *See—*
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Markelova, Nina Ivanovna: *See—*
  Lishevskaya, Marina Osipovna; Virnik, Alexandr Davidovich; Gabrielian, Genrikh Aramaisovich; Rogovin, Zakhar Alexandrovich; Borbat, Vladimir Fedorovich; Orlov, Alexandr Mikhailovich; Ferberg, Mirriam Borisovna; and Markelova, Nina Ivanovna, 3,728,103.

Markos, Charles S., to Searle, G. D., & Co. 6-Alkyl-3-hydrocarbonaceous-16 alpha, 17 alpha-dihydroxypregna-3,5-dien-20-one cyclic 16,17-acetals and congeners. 3,728,338, Cl. 260-239.55d.

Markovitz, Mark; and Kohn, Leo S., to General Electric Company. Composition comprising an epoxy resin with an organostannois and carboxylic acid anhydride reaction product. 3,728,306, Cl. 260-47.0ec.

Marks, Colin Elliott; and Miller, John, to Fisons Limited. Corrosion inhibiting composition containing hydrazine and a pyrazolidone or an aminophenol. 3,728,281, Cl. 252-392.000.

Marlin Firearms Company, The: *See—*
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Marlow, Jerry R.: *See—*
  Sanders, Robert K.; Marlow, Jerry R.; and Dornfeld, Kenneth A., 3,727,710.

Marot, Maurice R., to Electrical Protection Company (Proprietary) Limited. Core-balance earth leakage protection. 3,728,580, Cl. 317-18.00d.

Marra, Dorothea: *See—*
  Osipow, Lloyd; and Marra, Dorothea, 3,728,447.

Marsh, William Cornelius, to Societe d'Assistance Technique pour Produits Nestle S.A. Agglomerating powdered products. 3,727,839, Cl. 239-8.000.

Marshall, Preston F.; and Kendall Company, The, to Vacuum drafting of fibrous strands. . 3,727,270, Cl. 19-156.300.

Marten, Henry Richard: *See—*
  Frost-Smith, Edward Hilary; Marten, Henry Richard; and Wilkinson, Alfred John, 3,728,621.

Martin, Andrew R. Method of applying alternate layers of plastic foam and glass fibers to a metal tube. 3,728,187, Cl. 156-162.000.

Martin, Francis J.: *See—*
  Stone, Allan U.; and Martin, Francis J., 3,727,633.

Martin, Harold B., to Graber-Rogg, Inc. Tamper-proof container. 3,727,749, Cl. 206-17.500.

Martin, Ronald C.; and Sixt, Marty E., to Advanced Drainage Systems, Inc. Tube coupling. 3,727,953, Cl. 285-177.000.

Martin, Stephen A., to United Aircraft Corporation. Universal joint employing a fluid bearing. 3,727,408, Cl. 60-232.000.

Martin, Thomas W., Jr.: *See—*
  Martin, Thomas W., Sr.; and Martin, Thomas W., Jr., 3,727,907.

Martin, Thomas W., Sr.; and Martin, Thomas W., Jr., to Cutters Machine Company, Inc. Cloth feeding and spreading mechanism for cloth spreading machine. 3,727,907, Cl. 270-31.000.

Martinek, Lumir: *See—*
  Mares, Milos; Nosek, Stanislav; Martinek, Lumir; and Rohlena, Vaclan, 3,727,646.

Marunaka Tekkosho Inc.: *See—*
  Mochizuki, Nakataro, 3,727,654.

Maruzen Petrochemical Company Limited: *See—*
  Furukawa, Junji; Kawabata, Nariyoshi; Nakaniwa, Mikio; and Kanbara, Saburo, 3,728,285.

Marx, John W.; and Bowman, Mark M., Jr., to Phillips Petroleum Company. Process for the in situ sealing of soil surrounding underground conduit breaks. 3,727,412, Cl. 61-36.00r.

Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,728,146, Cl. 117-72.000.

Maschinenfabrik Benninger A.G.: *See—*
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Maslovsky, Valery Georgievich: *See—*
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Mason, Donald R.: *See—*
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Massey-Ferguson Industries Limited: *See—*
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Masters, Burton Joseph: *See—*
  Joshi, Madhukar Laxman; Masters, Burton Joseph; Viva, Osvaldo Raul; and Yeh, Tsu-Hsing, 3,728,592.

Mathewson, George R.: *See—*
  Dickman, Allen C.; Roess, Theodore L.; and Mathewson, George R., 3,728,535.

Mathieu, Francois Joseph Henri Hubert; and Mathieu, Odile Jeanne Marie. Apparatus for liquid-liquid extraction. 3,728,082, Cl. 23-269.000.

Mathieu, Odile Jeanne Marie: *See—*
  Mathieu, Francois Joseph Henri Hubert; and Mathieu, Odile Jeanne Marie, 3,728,082.

Matsuka, Keisuke: *See—*
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Matsunaga, Douglas S.: *See—*
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Matsuoka, James T., to Intercole Automation, Inc. Apparatus for processing rubber, plastic and the like and parts thereof. 3,727,893, Cl. 259-109.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
  Miyamoto, Mamoru; and Takaichi, Minoru, 3,728,702.
  Nishida, Masamitsu; and Ouchi, Hirumu, 3,728,263.

Matsushita, Tsutomu: *See—*
  Hirota, Nobuyoshi; and Matsushita, Tsutomu, 3,728,267.

Mattern, Jean; Licentia Peter; and Zeitzschel, Gunter, to Licentia, Patent-Verwaltungs-G.m.b.H. Control rod drive in the interior of a pressure vessel. 3,728,219, Cl. 176-36.00r.

Matthews, Solomon Bertram, to Canadian Marconi Company. Circuit for avoiding false lock. 3,728,533, Cl. 235-181.000.

Matthey, Maurice L., to Manutar S.A. Tap-carrier. 3,727,469, Cl. 74-89.000.

Mauvernay, Roland Yves; and Busch, Norbert, to Societe Anonyme dite: Centre Europeen de Recherches Mauvernay-Cerm. Medicament with an anti-inflammatory and anti-ulcerous action. 3,728,457, Cl. 424-274.000.

Maux, Raymond, to Societe Chimique des Charbonnages. Preparation of formaldehyde. 3,728,398, Cl. 260-603.0hf.

Maxime, Jacques; and Larribaut, Rene, to French State, represented by the Minister of Armed Forces, Ministerial Delegation for Weapons Technical Direction of Land Weapons Manufacturing Workshop of Tarbes. Means for controlling the firing of a gun against amovable target. 3,727,514, Cl. 89-41.00e.

Maxion, Emil J., to Mobil Oil Corporation. Progressive heating in polyester condensations. 3,728,309, Cl. 260-75.00m.

May, Howard V.: *See—*
  Cheek, Howard L.; and May, Howard V., 3,728,616.

May, Joe Cyril, to Superior Electric Company, The. Bi-directional energizing circuit for a stepping motor with means to prevent conduction in one coil until previously energized coil conduction is extinguished. 3,728,598, Cl. 318-696.000.

Mazereau, Michel Claude Jean: *See—*
  Christian, Huni, 3,727,829.

McAlister, Craig L., to McGraw-Edison Company. Protector for electric circuits. 3,728,657, Cl. 337-17.000.

McCabe, Francis J. Device for mounting fire damper. 3,727,663, Cl. 160-84.00r.

McCarthy, James A.: *See—*
  Morrow, Jack H.; and McCarthy, James A., 3,727,543.

McCarthy, John L.: *See—*
  Lee, James O., 3,727,579.

McCord Corporation, mesne: *See—*
  Colby, Daniel E.; Rogers, Philip E.; and Sliwinski, Frederick J., 3,728,429.

McCornnell, Lorne D., to I-T-E Imperial Corporation. Resistor and means for gradually inserting resistor in parallel with interrupter contacts. 3,728,505, Cl. 200-144.0ap.

McCune, Robert B.; and Koment, Edward J., to Abex Corporation. Cross-over control for classification yard having two hump tracks. 3,727,559, Cl. 104-26.00r.

McDermott, J. Ray, & Co.: *See—*
  Shaw, Clarence W., 3,727,417.

McDonald, Gerald W.G., to Commonwealth Oil Refining Company, Inc. Catalyst stripping in a baffled vertical vessel. 3,728,239, Cl. 208-150.000.

McDonnell Douglas Electronics Company: *See—*
  Hawkey, Lynn J.; Landers, William A.; and Nesbitt, Frank E., 3,728,484.

McEwan, William S.; Jonassen, Hans B.; and Morley, Carl H., to United States of America, Navy. Chemiluminescent formulation. 3,728,271, Cl. 252-188.3cl.

McEwen, John C., to General Motors Corporation. Double life shaft seal. 3,727,923, Cl. 277-9.000.

McFarland, Frederick R.: *See—*
  Diffenderfer, Walter L.; and McFarland, Frederick R., 3,727,490.

McFarlane, Richard H., to Coilform Company. Lugging machie. 3,727,285, Cl. 29-203.00d.

McFegan, William: *See—*
  Hart, Frederick Harry; and McFegan, William, 3,728,096.

McGarr, John Joseph; and Vorhauer, Bruce Ward, to USM Corporation. Machines for coating sheet material. 3,727,577, Cl. 118-630.000.

McGee, Paul D.; and Artner, Marcus M., to Motorola, Inc. Door assembly for cartridge tape player. 3,728,600, Cl. 312-9.000.

McGhay, Maynard H.: *See—*
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Netzel, Philip C., to I-T-E Imperial Corporation. Operating mechanism for vacuum circuit breaker including contact pressure springs. 3,728,508, Cl. 200-153.00v.
Neuber, Ralph E., to GTE Sylvania Incorporated. Transformer and terminal assembly. 3,728,656, Cl. 336-147.000.
Neuhaus, Hans: *See*—
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Newman, Elmer F., to Hughes Tool Company. Drill bit with improved gage compact arrangement. 3,727,705, Cl. 175-374.000.
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Nicely, Doyle C., to Monsanto Comapny. Method of fabricating a non-woven sheet from extruded metal filaments. 3,727,292, Cl. 29-419.000.
Nicholson, John A. Variable ratio control lever. 3,727,481, Cl. 74-491.000.
Nickolas, Arthur J., to Ice Crafts, Inc. Hockey rink board. 3,727,888, Cl. 256-24.000.
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Nielson, Gary E., to Jackes-Evans Manufacturing Company. Temperature responsive capacity control device. 3,727,423, Cl. 62-205.000.
Nigro, Louis V., to Gillette Company, The. Dispersant container and dispenser. 3,727,840, Cl. 239-43.000.
Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Press for hydrostatic extrusion of tubing. 3,727,444, Cl. 72-60.000.
Nimes, Karl, to Siemens Aktiengesellschaft. Ground protection apparatus for electrical equipment with Y-connected windings. 3,728,618, Cl. 324-51.000.
Ninomiya, Satoshi: *See*—
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Nishikawa, Tatsuo, to Canon Kabushiki Kaisha. Key apparatus and arrangement thereof. 3,728,652, Cl. 335-207.000.
Nishiyama, Keizo; Takaoka, Hikaru; and Nakayama, Shozo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Gas compressor. 3,727,524, Cl. 92-169.000.
Nishizawa, Mitsunori; and Kato, Mahiko, to Tokico Ltd. Flow quantity controlling apparatus. 3,727,634, Cl. 137-486.000.
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Ogden, Hubert S. Filtering apparatus having an integrally removable filter cartridge. 3,727,764, Cl. 210-232.000.
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Osipow, Lloyd; and Marra, Dorothea, to Patterson, C. J., Company. Fatty acid lactylates and glycolates for conditioning hair. 3,728,447, Cl. 424-70.000.
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Peters, Ralph, to Hobson, H. M., Limited. Self-locking coupling. 3,727,958, Cl. 287-95.000.
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Peterson, Roy L. Ski boot. 3,727,329, Cl. 36-2.5al.
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Rifkin, Ernest; and Clark, William E., to Carrier Corporation. Ceiling air terminal. 3,727,835, Cl. 236-49.000.
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Robbins, James F., to Sybron Corporation. Diaphragm valve. 3,727,623, Cl. 137-1.000.
Roberts, Francis D.; and Norfleet, James, to Colgate-Palmolive Company. Speckled dentrifrice gel. 3,728,446, Cl. 424-49.000.
Roberts, John T.; and Reid, Philip L., to Grace, W. R., & Co. Clipping system. 3,727,288, Cl. 29-211.00d.
Roberts, John T., to Grace, W. R., & Co. Bag packaging system. 3,727,372, Cl. 53-59.00w.
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Rocton, Lucien; and Belisaire, Robert, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Coaxial cable having a fluid stop therein and method for producing a coaxial cable which is impervious to the passage of air therethrough. 3,728,466, Cl. 14-23.00r.
Rodriguez, Juan Antonio, to Eastman Kodak Company. Dodging circuitry for photographic printing apparatus. 3,728,022, Cl. 355-80.000.
Roeber, Henry W., to GTE Sylvania Incorporated. Leakage inhibiting shield. 3,728,573, Cl. 313-313.000.
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Ross, Frank, to Velsicol Chemical Corporation. Process for preparing 2,5-dichloro-4-bromophenol. 3,728,403, Cl. 260-623.00h.
Ross, Gerald F., to Sperry Rand Corporation. Transmission and reception system for generating and receiving base-band duration pulse signals without distortion for short base-band pulse communication system. 3,728,632, Cl. 325-38.00r.
Ross, Joseph H., to Lucky Stores, Inc. Apparatus for processing cheese. 3,727,308, Cl. 99-115.000.
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Roy, John R. Smokestack with vibration damper. 3,727,566, Cl. 110-184.000.
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Sakai, Hidetami; and Arita, Muneyoshi, to Daiki Engineering Co., Ltd. Method of and apparatus for circulating liquid metals in fused salt electrolysis. 3,728,234, Cl. 204-68.000.
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Salle, Yves; and Pincemin, Marcel, to Compagnie Industrial des Telecommunications Cit-Alcatel. Phase meter for comparing rectangular waves. 3,728,624, Cl. 324-83.00a.
Salomone, Georges Henri. Method and composition for the emulsification and the degradation of petroleum products and fertilizers thus obtained. 3,728,279, Cl. 252-312.000.
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Sanders, Robert K.; Marlow, Jerry R.; and Dornfeld, Kenneth A., to General Motors Corporation. Steer control for a track-laying vehicle. 3,727,710, Cl. 180-6.700.
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Santos, Richard A. Drink dispenser and measuring device. 3,727,800, Cl. 222-129.000.
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Sargeant, Ralph G. Apparatus for preparing and dispensing drinks. 3,727,640, Cl. 137-604.000.
Sargeant, Ralph G. Method for preparing and dispensing aerated drinks. 3,728,129, Cl. 99-78.000.
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Sato, Masanobu, to Olympus Optical Co., Ltd. Photographic camera having automatic exposure control. 3,727,528, Cl. 95-10.00c.
Sauer, Theo; and Schulz, Gunter, Dr., to Agfa-Gevaert Aktiengesellschaft. Process and a device for the continuous preparation of emulsions. 3,728,280, Cl. 252-314.000.
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Schaumburg, Georges. Method for processing hot-rolled metal bodies and the like. 3,727,290, Cl. 29-407.000.
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Scott, John Wright Martin. Golf club attachment. 3,727,920, Cl. 273-186.00a.
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Selig, Hans, to Gebruder Ortlinghius Ohg., Firma. Fluid operated clutch and spring operated brake. 3,727,731, Cl. 192-18.00a.
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Senour, Donald A.; and Kobel, Janusz S., to BLH Electronics Inc. Digital indicator with pulse multiplier for providing continuous full scale resolution. 3,728,625, Cl. 324-99.00d.
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Shapland, James T., to United States Steel Corporation. Mechanism for supporting a submerged pouring tube on a bottom-pour vessel and method of replacing tubes. 3,727,805, Cl. 222-512.000.
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Shaw, Clarence W., to McDermott, J. Ray, & Co. Submarine pipeline laying apparatus. 3,727,417, Cl. 61-72.300.
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- Terral, Ben D.; and Hewitt, J. Paul, to Camco, Incorporated. Duplex mandrel for a crossover system. 3,727,684, Cl. 166-242.000.
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- Todd, Marion N.; and Milder, D. Michael, to Tetra-Tech Incorporated. Pressure-modulated multiple gas analyzer. 3,728,540, Cl. 250-43.50r.
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Jordan, John E., and G. M. Newcombe. Sulfur dioxide removal from stack gases. T909,017, 4–17–73, Cl. 423—242.
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LIST OF REISSUE PATENTEES

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Johnston, Mack S., to Draft Systems, Inc. Beer tapping device. Re. 27,627, 4–17–73, Cl. 222—400.7.
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Charles, Richard. Jewelry finding. 226,727, 4–17–73, Cl. D45—1.
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  Eckstein, Arthur. 226,726.

- Chen, Nai-Keung, to Sperry Rand Corp. Hair roller. 226,738, 4-17-73, Cl. D86—10.
- Cintel Corp. : *See—*
  - Pollard, Melville R., Jr. 226,732.
- Cobb, James C. A bottle. 226,704, 4-17-73, Cl. D9—158.
- Conner, James M., and M. S. Dietz, to Polaroid Corp. Photographic camera or similar article. 226,731, 4-17-73, Cl. D61—1.
- Corning Glass Works : *See—*
  - Mirow, Gregory. 226,722.
  - Mirow, Gregory. 226,723.
  - Mirow, Gregory. 226,724.
  - Mirow, Gregory. 226,725.
- Dart Industries, Inc. : *See—*
  - Sweet, James B. 226,720.
- Diamond International Corp. : *See—*
  - Reifers, Richard F., and Bixler. 226,706.
- Dietz, Milton S. : *See—*
  - Conner, James M., and Dietz. 226,731.
- Doblin, Jay, to The Gillette Co. Hair steamer. 226,739, 4-17-73, Cl. D86—10.
- Dolby, John T., and J. S. Adler, to Standard Oil Co. Plate. 226,721, 4-17-73, Cl. D44—10.
- Drum Horse Distillers Ltd. : *See—*
  - Broadhead, Reginald M. 226,703.
- Dustin & Davenport Inc. : *See—*
  - Dustin, Robert E. 226,742.
- Dustin, Robert E., to Dustin & Davenport Inc. Cary case. 226,742, 4-17-73, Cl. D87—1.
- Eckstein, Arthur, to Chemex Corp. Beverage warming stand. 226,726, 4-17-73, Cl. D44—10.
- Fukuoka, Tatsuo. Sandal. 226,696, 4-17-73, Cl. D2—283.
- Gale, John A., and R. E. Haueter, to Toro Manufacturing Co. Shroud for rotary mowers and the like. 226,719, 4-17-73, Cl. D40—1.
- Gallat, Paul N. Retainer for brochures and the like. 226,701, 4-17-73, Cl. D6—184.
- General Mills Fun Group, Inc. : *See—*
  - McAlicter, Jack G. 226,718.
- Gillette Co., The : *See—*
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- Goto, Kenjiro, to Mansei Kogyo Kabushiki Kaisha. Cigarette lighter. 226,730, 4-17-73, Cl. D48—27.
- Harris, Ewell J. Fish lure. 226,710, 4-17-73, Cl. D22—28.
- Haueter, Robert E. : *See—*
  - Gale, John A., and Haueter. 226,719.
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- Iannini, Robert E., to Rid-O-Ray Inc. Combined lantern and insect killer. 226,729, 4-17-73, Cl. D48—24.
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- International Harvester Co. : *See—*
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- Kenkle, George E. Jr. Sprinkler head. 226,711, 4-17-73, Cl. D23—7.
- King, William R., to Sandoz-Wander, Inc. Tracheotomy mask. 226,734, 4-17-73, Cl. D83—7.
- Kolak, Mitchell E. : *See—*
  - Skyer, Robert A., and Kolak, Wilson, and Konefef. 226,707.
- Konefef, Joseph T. : *See—*
  - Skyer, Robert A., and Kolak, Wilson, and Konefef. 226,707.
- Ledgerwood, Thomas D. Game board indicator device. 226,716, 4-17-73, Cl. D34—5.
- Lee, Robert M., to Hunting World Inc. Tote bag. 226,743, 4-17-73, Cl. D87—3.
- Lynn, David. All-around utility brush. 226,698, 4-17-73, Cl. D4—3.
- Mansei Kogyo Kabushiki Kaisha : *See—*
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- Matas, Robert. Tie clip or similar article. 226,697, 4-17-73, Cl. D2—430.
- McAllister, Jack G., to General Mills Fun Group, Inc. Toy airplane. 226,718, 4-17-73, Cl. D34—15.
- Mirow, Gregory, to Corning Glass Works. Casserole cover. 226,722, 4-17-73, Cl. D44—15.
- Mirow, Gregory, to Corning Glass Works. Casserole dish or the like. 226,723, 4-17-73, Cl. D44—15.
- Mirow, Gregory, to Corning Glass Works. Casserole cover or the like. 226,724, 4-17-73, Cl. D44—15.
- Mirow, Gregory, to Corning Glass Works. Bowl or the like. 226,725, 4-17-73, Cl. D44—15.
- Moore, Ivan H. Threaded connector. 226,702, 4-17-73, Cl. D8—236.
- National Can Corp. : *See—*
  - Zundel, Arthur P. 226,705.
- Navara, Joseph. Surgical knife. 226,735, 4-17-73, Cl. D83—12.
- Nyssen, Victor V., to Brightco Electronics Corp. Lamp. 226,728, 4-17-73, Cl. D48—20.
- Polaroid Corp. : *See—*
  - Conner, James M., and Dietz. 226,731.
- Pollard, Melville R., Jr., to Cintel Corp. Camera tripod head. 226,732, 4-17-73, Cl. D61—1.
- Pratt, Robert J. Wall hung holder for record albums. 226,700, 4-17-73, Cl. D6—130.
- Reifers, Richard F., and K. D. Bixler, to Diamond International Corp. Molded packaging tray for meat or the like. 226,706, 4-17-73, Cl. D9—219.
- Rid-O-Ray Inc. : *See—*
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- Ross, George E., of ½ to Francis R. Drake. Fishing plug. 226,709, 4-17-73, Cl. D22—27.
- Sandoz-Wander, Inc. : *See—*
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- Skyer, Robert A., M. E. Kolak, H. R. Wilson, and J. H. Konefef, to International Harvester Co. Tractor. 226,707, 4-17-73, Cl. D14—3.
- Sperry Rand Corp. : *See—*
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- Standard Oil Co. : *See—*
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- Steinkamp, Norman A., to Sunbeam Corp. Hair dryer. 226,740, 4-17-73, Cl. D86—10.
- Sunbeam Corp. : *See—*
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- Sweet, James B., to Dart Industries, Inc. Tray or the like. 226,720, 4-17-73, Cl. D44—1.
- Tada, Tetsuya. Sprayer. 226,712, 4-17-73, Cl. D23—17.
- Torda, Thor P., and S. C. Uzgiris, to The Institute of Gas Technology. Racing car. 226,708, 4-17-73, Cl. D14—3.
- Toro Manufacturing Co. : *See—*
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- Vincent, Melvin L. Ball whirling toy. 226,717, 4-17-73, Cl. D34—15.
- Western Blue Print Co. : *See—*
  - Wally, Joseph H., Jr., and Wilson. 226,733.
- Wilson, Samuel E. : *See—*
  - Wally, Joseph H., Jr., and Wilson. 226,733.
- Wally, Joseph H., Jr., and S. E. Wilson, to Western Blue Print Co. Overhead optical head support track for a photoreproduction unit. 226,733, 4-17-73, Cl. D61—1.
- Wolff, Martin J., to Sperry Rand Corp. Hair grooming implement holder. 226,737, 4-17-73, Cl. D86—10.
- Yonce, Everett R. Combined storage and carrying container. 226,741, 4-17-73, Cl. D87—1.
- Zundel, Arthur P., to National Can Corp. Can or the like. 226,705, 4-17-73, Cl. D9—218.

CLASSIFICATION OF PATENTS

ISSUED APRIL 17, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

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	3,728,073
142	3,728,074
147	3,728,075
149.1	3,728,076
155.1	3,728,077
174	3,728,078
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3	3,727,251
8R	3,727,248
312	3,727,249
313	3,727,250
344	3,727,252
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373	3,727,263
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35	3,727,268
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253PC	3,728,084
253R	3,728,079
259	3,728,080
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269	3,728,082
284	3,728,085
285	3,728,083
302	3,728,086
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73P	3,727,271
81T	3,727,272
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57R	3,727,273
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1.4	3,727,274
	3,727,275
4N	3,727,276
4R	3,727,277
CLASS 29	
25.16	3,727,278
149.5B	3,727,280
149.5R	3,727,279
182.1	3,728,089
182.5	3,728,088
195	3,728,090
200B	3,727,281
200D	3,727,282
200J	3,727,283
203B	3,727,284
203D	3,727,285
203H	3,727,286
205E	3,727,287
211D	3,727,288
237	3,727,289
251	3,727,291
407	3,727,290
419	3,727,292
427	3,727,293
429	3,727,294
455	3,727,295
470.1	3,727,296
470.3	3,727,298
472.7	3,727,299
480	3,727,297
483	3,727,300
568	3,727,301
596	3,727,302
603	3,727,303
604	3,727,304
625	3,727,305
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149	3,727,306
304	3,727,307
CLASS 32	
2	3,727,309
22	3,727,310
27	3,727,312
	3,727,313
32	3,727,311
41	3,727,314
59	3,727,315
66	3,727,316
CLASS 33	
76R	3,727,317
170	3,727,318
233	3,727,319
CLASS 34	
70	3,727,320
99	3,727,321
	3,727,322
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115	3,727,325
170	3,727,323
216	3,727,324
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9A	3,727,326
24R	3,727,327
60	3,727,328
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2.5AL	3,727,329
32R	3,727,330
CLASS 37	
86	3,727,331
97	3,727,332
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10R	3,727,333
104.18	3,727,334
156	3,727,335
305	3,727,336
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1M	3,727,337
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18R	3,727,338
42.22	3,727,339
43.13	3,727,341
43.2	3,727,340
CLASS 44	
63	3,728,091
CLASS 46	
161	3,727,343
175	3,727,344
CLASS 47	
1.44	3,727,346
2	3,727,345
32	3,727,347
CLASS 48	
102R	3,728,092
190	3,728,093
CLASS 49	
28	3,727,348
411	3,727,349
CLASS 51	
141	3,727,350
338	3,727,352
361	3,727,351
376	3,727,353
CLASS 52	
71	3,727,354
81	3,727,356
82	3,727,355
121	3,727,359
154	3,727,357
169	3,727,358
187	3,727,360
473	3,727,361
648	3,727,362
731	3,727,363
CLASS 53	
3	3,727,364
33	3,727,365
59W	3,727,372
61	3,727,366
135	3,727,368
159	3,727,369
	3,727,370
183	3,727,373
189	3,727,374
246	3,727,371
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2	3,727,375
60	3,727,376
72	3,727,378
73	3,727,379
89	3,727,377
138	3,727,380
160	3,727,382
233	3,727,381
337	3,727,383
484	3,727,384
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208	3,727,385
320.1	3,727,386
328R	3,727,387
330	3,727,388
400.18	3,727,389
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13	3,727,390
36	3,727,391
77.3	3,727,392
81	3,727,393
106	3,727,394
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19C	3,727,395
23D	3,727,396
56	3,727,397
74	3,727,398
88C	3,727,367
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85	Re.27,620
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13	3,727,399
39.29	3,727,400
39.35	3,727,401
54.5P	3,727,405
108	3,727,406
220	3,727,407
232	3,727,408
270	3,727,409
322	3,727,410
427	3,727,403
430	3,727,404
444	3,727,402
CLASS 61	
3	3,727,411
36R	3,727,412
41A	3,727,413
46.5	3,727,414
65	3,727,415
67	3,727,416
72.3	3,727,417
CLASS 62	
45	3,727,418
155	3,727,419
196	3,727,420
205	3,727,423
262	3,727,421
	3,727,424
282	3,727,422
300	3,727,428
346	3,727,425
	3,727,426
353	3,727,427
CLASS 64	
11R	3,727,429
21	3,727,430
27NM	3,727,431
29	3,727,432
CLASS 65	
27	3,728,094
30	3,728,095
40	3,728,096
102	3,728,097
361	3,728,098
CLASS 66	
84	3,727,433
CLASS 68	
17R	3,727,434
18F	3,727,435
189	3,727,436
CLASS 69	
48	3,727,437
CLASS 70	
63	3,727,438
355	3,727,439
411	3,727,440
CLASS 71	
77	3,728,099
CLASS 72	
6	3,727,441
7	3,727,442
35	3,727,443
60	3,727,444
75	3,727,445
161	3,727,446
255	3,727,448
270	3,727,447
389	3,727,449
CLASS 73	
23	3,727,450
23.1	3,727,451
39	3,727,453
59	3,727,452
167	3,727,455
168	3,727,456
188	3,727,457
194A	3,727,454
	3,727,458
205R	3,727,459
343R	3,727,460
371	3,727,461
382	3,727,462
398R	3,727,463
421B	3,727,464
492	3,727,465
CLASS 74	
5R	3,727,466
5.41	3,727,467
63	3,727,468
87	3,727,470
89	3,727,469
89.15	3,727,471
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198	3,727,473
200	3,727,474
230.17A	3,727,477
230.17E	3,727,476
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230.3	3,727,475
333	3,727,479
470	3,727,480
491	3,727,481
531	3,727,482
609	3,727,483
768	3,727,484
782	3,727,485
860	3,727,486
865	3,727,487
866	3,727,488
CLASS 75	
10	3,728,100
11	3,728,101
51	3,728,109
94	3,728,102
101BE	3,728,103
	3,728,104
103	3,728,105
130R	3,728,107
135	3,728,108
159	3,728,106
211	3,728,110
214	3,728,111
CLASS 76	
107R	3,727,489
CLASS 81	
3K	3,727,490
9.5A	3,727,492
53.2	3,727,491
CLASS 82	
1C	3,727,493
2.5	3,727,494
CLASS 83	
35	3,727,495
56	3,727,496
106	3,727,498
167	3,727,497
205	3,727,499
375	3,727,500
438	3,727,501
471.3	3,727,502
479	3,727,503
483	3,727,504
526	3,727,505
698	3,727,506
831	3,727,507
859	3,727,508
CLASS 84	
278	3,727,509
453	3,727,510
471	3,727,511
	3,728,462
CLASS 86	
20	3,727,512
CLASS 89	
14A	3,727,513
41E	3,727,514
47	3,727,515
CLASS 91	
361	3,727,517
376	3,727,516
396	3,727,518
417R	3,727,519
433	3,727,520
475	3,727,521
505	3,727,522
CLASS 92	
130	3,727,523
169	3,727,524
CLASS 95	
1R	3,727,525
10CT	3,727,526
10C	3,727,528
10R	3,727,527
42	3,727,529
44R	3,727,530
64R	3,727,531
86	3,727,532
89R	3,727,533
	3,727,534
93	3,727,535
98	3,727,536
CLASS 96	
1.2	3,728,112
3	3,728,113
29D	3,728,115
	3,728,116
29L	3,728,114
36	3,728,117
48R	3,728,118
	3,728,119
	3,728,120
74	3,728,121
75	3,728,122
	3,728,123
84R	3,728,124
99	3,728,125
109	3,728,126
CLASS 98	
32	3,727,537
33	3,727,538
41	3,727,539
115LH	3,727,540
CLASS 99	
20	3,728,127
57	3,728,128
78	3,728,129
85	3,728,130
103	3,728,131
115	3,727,308
141R	3,728,132
144	3,728,133
156	3,728,134
174	3,728,135
194	3,728,136
307	3,727,541
637	3,727,542
CLASS 100	
1	3,727,543
53	3,727,545
229A	3,727,546
CLASS 101	
35	3,727,547
93C	3,727,548
330	3,727,549
365	3,727,550
415.1	3,727,551
CLASS 102	
27R	3,727,552
70.2P	3,727,553
	3,727,554
70.2R	3,727,555
95	3,727,557
CLASS 104	
21	3,727,558
26R	3,727,559
147R	3,727,560
CLASS 105	
369BA	Re.27,615
CLASS 106	
1	3,728,137
15FP	3,728,138
54	3,728,139
65R	3,727,753
210	3,728,140
213	3,728,141
300	3,728,142
308N	3,728,143
CLASS 108	
42	3,727,544
CLASS 109	
44	3,727,561
CLASS 110	
1P	3,727,562
8R	3,727,563
	3,727,564
14	3,727,565
184	3,727,566
CLASS 112	
121.11	3,727,567
221	3,727,568
CLASS 114	
20P	3,727,569
	3,727,570
41	3,727,571
122	3,727,573
126	3,727,572
CLASS 115	
34R	3,727,574
CLASS 116	
114AH	3,727,575
CLASS 117	
51	3,728,144
54	3,728,145
72	3,728,146
93.31	3,728,147
	3,728,148
107.2P	3,728,149
138.8A	3,728,150
	3,728,151
235	3,728,152
239	3,728,153
CLASS 118	
211	3,727,576

630	3,727,577
637	3,727,578
CLASS 119	
2	3,727,579
6	3,727,580
17	3,727,581
18	3,727,582
29	3,727,583
56R	3,727,584
96	3,727,585
157	3,727,586
CLASS 122	
7A	3,727,587
487	3,727,588
CLASS 123	
8.43	3,727,589
23C	3,727,600
32EA	3,727,591
	3,727,592
32G	3,727,590
41.12	3,727,593
58BB	3,727,594
90.12	3,727,595
117A	3,727,596
136	3,727,597
140MC	3,727,598
CLASS 125	
23R	3,727,599
CLASS 126	
21A	3,727,601
CLASS 128	
2B	3,727,602
2F	3,727,603
2S	3,727,606
2.1Z	3,727,604
11	3,727,605
33	3,727,607
63	3,727,608
76B	3,727,609
92EB	3,727,611
92A	3,727,610
214R	3,727,612
214.4	3,727,613
218A	3,727,614
290W	3,727,615
422	3,727,616
CLASS 130	
5B	3,727,617
CLASS 131	
256	3,727,618
CLASS 132	
56	3,727,619
CLASS 134	
3	3,728,154
	3,728,155
10	3,728,156
22R	3,728,157
95	3,727,620
104	3,727,621
183	3,727,622
CLASS 136	
10	3,728,158
86D	3,728,159
202	3,728,160
CLASS 137	
1	3,727,623
86	3,727,625
88	3,727,626
100	3,727,627
101	3,727,628
205	3,727,629
218	3,727,630
243.2	3,727,631
268	3,727,632
382	3,727,633
382.5	Re.27,616
486	3,727,634
513.5	3,727,635
541	3,727,636
561	3,727,637
572	3,727,638
596.16	3,727,639
604	3,727,640
615	3,727,641
815	3,727,624
CLASS 138	
30	3,727,642
41	3,727,643
155	3,727,644
CLASS 139	
40	3,727,645
97	3,727,646
122W	3,727,647
291	3,727,648
CLASS 140	
93.2	3,727,649
CLASS 141	
98	3,727,650
231	3,727,651
387	3,727,652

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34E	3,727,653
120	3,727,654
CLASS 145	
35R	3,727,655
CLASS 148	
1.5	3,728,161
3	3,728,162
6.15Z	3,728,163
6.2	3,728,164
11.5R	3,728,165
20.3	3,728,168
175	3,728,166
187	3,728,167
CLASS 149	
5	3,728,169
19	3,728,170
	3,728,171
	3,728,172
21	Re.27,619
	3,728,173
	3,728,174
29	3,728,175
CLASS 150	
1	3,727,656
35	3,727,657
52G	3,727,659
52R	3,727,658
CLASS 151	
69	3,727,660
CLASS 152	
209	3,727,661
222	3,727,662
CLASS 156	
3	3,728,176
	3,728,177
	3,728,178
8	3,728,179
14	3,728,180
72	3,728,182
73	3,728,183
	3,728,184
89	3,728,185
96	3,728,181
153	3,728,186
162	3,728,187
172	3,728,188
173	3,728,189
235	3,728,190
265	3,728,191
306	3,728,192
334	3,728,193
400	3,728,194
441	3,728,195
443	3,728,196
506	3,728,197
552	3,728,198
554	3,728,199
583	3,728,200
CLASS 160	
84R	3,727,663
90	3,727,664
178C	3,727,665
CLASS 161	
6	Re.27,617
14	3,728,201
24	3,728,202
39	3,728,203
66	3,728,204
67	3,728,205
112	3,728,206
151	3,728,207
159	3,728,208
160	3,728,209
162	3,728,210
170	3,728,211
182	3,728,212
CLASS 162	
161	3,728,213
167	3,728,214
	3,728,215
	3,728,216
CLASS 164	
72	3,727,666
80	3,727,667
82	3,727,668
89	3,727,669
132	3,727,670
230	3,727,671
281	3,727,672
282	3,727,673
306	3,727,674
316	3,727,675
339	3,727,676
344	3,727,677
CLASS 165	
64	3,727,678
111	3,727,679
119	3,727,680
158	3,727,681
183	3,727,682

CLASS 166	
117.5	3,727,683
242	3,727,684
255	3,727,685
261	3,727,686
274	3,727,687
283	3,727,688
	3,727,689
295	3,727,691
297	3,727,690
	3,727,692
315	3,727,693
CLASS 169	
2R	3,727,694
37	3,727,695
CLASS 172	
40	3,727,696
313	3,727,697
439	3,727,698
809	3,727,699
CLASS 173	
18	3,727,700
91	3,727,701
163	3,727,702
CLASS 174	
12R	3,728,463
12	3,727,740
16R	3,728,464
17LF	3,728,465
23R	3,728,466
38	3,728,467
51	3,728,468
52S	3,728,469
58	3,728,470
68.5	3,728,471
78	3,728,472
84C	3,728,473
115	3,728,474
CLASS 175	
69	3,727,703
329	3,727,704
374	3,727,705
CLASS 176	
3	3,728,217
36R	3,728,218
	3,728,219
58	3,728,220
84	3,728,221
CLASS 177	
1	3,727,706
134	3,727,707
178	3,727,708
CLASS 178	
5.2R	3,728,475
5.4CD	3,728,477
5.4	3,728,476
6.8	3,728,478
	3,728,479
	3,728,480
7.1	3,728,481
7.2	3,728,482
7.3D	3,728,483
68	3,728,484
69.5R	3,728,485
CLASS 179	
2R	3,728,486
6R	3,728,487
	3,728,488
	3,728,489
6.3	3,728,490
15BT	3,728,491
18FC	3,728,492
37	3,728,493
100.2S	3,728,494
100.3P	3,728,495
100.4A	3,728,496
181W	3,728,497
CLASS 180	
5R	3,727,709
6.7	3,727,710
24.05	3,727,711
66R	3,727,712
73R	3,727,713
108	3,727,714
118	3,727,715
124	3,727,716
CLASS 181	
.5AP	3,727,718
.5VM	3,727,717
31B	3,727,719
CLASS 182	
38	3,727,720
62	3,727,721
129	3,727,722
133	3,727,723
198	3,727,724
CLASS 184	
6.24	3,727,725
CLASS 185	
39	3,727,726

CLASS 188	
72.9	3,727,727
79.5K	3,727,728
CLASS 191	
45R	3,727,729
CLASS 192	
.098	3,727,737
3R	3,727,730
18A	3,727,731
26	3,727,732
42	3,727,733
48.92	3,727,734
58B	3,727,735
84C	3,727,736
105CE	3,727,738
131R	3,728,498
CLASS 193	
31	3,727,739
CLASS 195	
28N	3,728,222
62	3,728,223
66R	3,728,224
96	3,728,225
103.5R	3,728,226
127	3,728,227
	3,728,228
CLASS 197	
18	3,727,741
107	3,727,742
159	3,727,743
CLASS 198	
33AD	3,727,744
181	3,727,745
213	3,727,746
221	3,727,747
CLASS 200	
16F	3,728,499
38FB	3,728,500
52	3,728,501
85R	3,728,502
144AP	3,728,504
	3,728,505
144R	3,728,503
	3,728,506
148D	3,728,507
153V	3,728,508
159B	3,728,509
166BC	3,728,510
168B	3,728,511
485B	Re.27,625
CLASS 201	
6	3,728,229
39	3,728,230
CLASS 204	
15	3,728,231
30	3,728,232
59R	3,728,233
68	3,728,234
109	3,728,235
129.1	3,728,236
129.75	3,728,237
149	3,728,238
159.16	3,728,240
164	3,728,241
181	3,728,242
243R	3,728,243
269	3,728,244
275	3,728,245
298	3,728,246
300	3,728,247
301	3,728,248
CLASS 206	
15.1C	3,727,748
17.5	3,727,749
50	3,727,751
63.2R	3,727,750
65CT	3,727,752
65E	3,727,754
CLASS 208	
57	3,728,249
89	3,728,250
	3,728,251
150	3,728,239
243	3,728,252
CLASS 209	
45	3,727,755
73	3,727,756
	3,727,757
74	3,727,758
283	3,727,759
CLASS 210	
1BC	3,727,775
5	3,728,253
7	3,728,254
15	3,728,255
22	3,728,256
36	3,728,257
101	3,727,760
130	3,727,761
136	3,727,762
163	3,727,763

232	3,727,764
242	3,727,765
	3,727,766
247	3,727,767
377	3,727,768
484	3,727,769
522	3,727,770
CLASS 211	
69	3,727,771
CLASS 212	
84	Re.27,621
CLASS 214	
1D	3,727,773
	3,727,774
1P	3,727,772
14	3,727,776
41	3,727,777
75R	3,727,778
83.3	3,727,779
95R	3,727,780
701P	3,727,781
CLASS 215	
1C	3,727,782
	3,727,783
40	3,727,784
CLASS 217	
12R	3,727,785
16	3,727,786
CLASS 219	
10.55	3,728,512
70	3,728,513
130	3,728,514
131R	3,728,515
	3,728,516
316	3,728,517
326	3,728,518
CLASS 220	
22	3,727,795
25	3,727,787
44R	3,727,788
	3,727,789
54	3,727,790
66	3,727,791
90	3,727,792
93	3,727,793
CLASS 221	
3	3,727,794
CLASS 222	
26	3,727,796
80	3,727,797
87	3,727,798
129	3,727,800
129.4	3,727,799
196	3,727,801
205	3,727,802
215	3,727,803
318	3,727,804
400.7	Re.27,626
	Re.27,627
402.2	3,727,806
469	3,727,807
482	3,727,808
512	3,727,805
541	3,727,809
	3,727,810
CLASS 223	
70	3,727,811
111	3,727,812
CLASS 224	
42.42R	3,727,813
CLASS 225	
100	3,727,814
CLASS 226	
5	3,727,815
19	3,727,816
	3,727,817
44	3,727,818
46	3,727,819
113	3,727,820
CLASS 227	
120	3,727,821
CLASS 228	
1	3,727,822
CLASS 229	
16R	3,727,823
	3,727,824
32	3,727,825
34R	3,727,826
37R	Re.27,624
	3,727,827
51C	3,727,828
54R	3,727,829
54	3,727,830
CLASS 233	
7	3,727,831
11	3,727,832
CLASS 235	
61.11H	3,728,523
61.11J	3,728,520
61.12N	3,728,521

61.5E	3,728,519
61.7B	3,728,522
92PL	3,728,524
117R	3,727,833
150.271	3,728,525
151.1	3,728,526
151.12	3,728,527
152	3,728,528
	3,728,529
155	3,728,530
175	3,728,531
	3,728,532
181	3,728,533
184	3,728,534
194	3,728,535
CLASS 236	
9	3,727,834
49	3,727,835
80	3,727,836
87	3,727,837
CLASS 238	
152	3,727,838
CLASS 239	
8	3,727,839
43	3,727,840
145	3,727,841
232	3,727,842
265.35	3,727,843
414	3,727,844
534	3,727,845
CLASS 240	
1.3	3,728,536
7.1LJ	3,728,538
7.1	3,728,537
CLASS 241	
4	3,727,849
47	3,727,846
101B	3,727,847
159	3,727,850
194	3,727,848
CLASS 242	
7.23	3,727,851
18.1	3,727,855
35.6R	3,727,852
56A	3,727,853
66	3,727,854
75.5	3,727,856
84.2B	3,727,857
129	3,727,858
182	3,727,859
208	3,727,860
CLASS 244	
3.15	3,727,861
54	3,727,862
145	3,727,863
154	3,727,864
CLASS 246	
182B	3,728,539
CLASS 248	
15	3,727,865
16	3,727,866
	3,727,867
309	3,727,868
339	3,727,869
350	3,727,870
406	3,727,871
412	3,727,872
418	3,727,873
459	3,727,874
CLASS 249	
121	3,727,875
184	3,727,876
CLASS 250	
43.5R	3,728,540
51.5	3,728,541
52	3,728,542
71R	3,728,543
83.1	3,728,544
83.3HP	3,728,545
83.3H	3,728,546
90	3,728,547
217R	3,728,548
218	3,728,549
219S	3,728,550
231SE	3,728,551
CLASS 251	
30	3,727,877
57	3,727,878
84	3,727,879
85	3,727,880
129	3,727,881
209	3,727,882
306	3,727,883
CLASS 252	
8.1	3,728,258
8.5C	3,728,259
32.5	3,728,260
41	3,728,261
62.54	3,728,262
62.9	3,728,263
83	3,728,264
90	3,728,265

95	3,728,266
142	3,728,267
170	3,728,268
171	3,728,269
182	3,728,273
188	3,728,272
188.3CL	3,728,271
188.3	3,728,270
301.1	3,728,274
301.2W	3,728,275
305	3,728,276
309	3,728,277
311.5	3,728,278
312	3,728,279
314	3,728,280
392	3,728,281
400	3,728,282
429B	3,728,283
459	3,728,284
CLASS 254	
67	3,727,884
133	3,727,885
164	3,727,886
168	3,727,887
CLASS 256	
24	3,727,888
CLASS 259	
1R	3,727,889
	3,727,890
4	3,727,891
10	3,727,892
109	3,727,893
154	3,727,894
CLASS 260	
2A	3,728,285
2.2R	3,728,286
2.3	3,728,287
2.5AC	3,728,291
2.5BD	3,728,288
2.5BF	3,728,289
2.5N	3,728,290
	3,728,292
17.2	3,728,293
29.1B	3,728,294
29.6TA	3,728,295
30.4N	3,728,296
31.4R	3,728,298
33.6AQ	3,728,300
33.6R	3,728,301
33.8UA	3,728,299
37EP	3,728,302
45.7R	3,728,303
45.75K	3,728,304
45.85	3,728,305
47EC	3,728,306
51R	3,728,307
75NH	3,728,310
75M	3,728,309
77.5AB	3,728,308
77.5C	3,728,311
78R	3,728,312
79	3,728,313
80.75	3,728,315
80.77	3,728,316
80.8	3,728,314
86.1R	3,728,317
86.7	3,728,318
88.1R	3,728,319
88.3A	3,728,320
	3,728,321
91.3VA	3,728,322
94.2T	3,728,323
	3,728,324
94.3	3,728,325
112T	3,728,326
123.5	3,728,327
147	3,728,328
211.5R	3,728,329
217	3,728,330
231R	3,728,331
233.5	3,728,332
239D	Re.27,622
239.1	3,728,333
	3,728,334
239.55D	3,728,335
	3,728,337
	3,728,338
239.55R	3,728,336
240D	3,728,339
240R	3,728,340
243C	3,728,341
	3,728,342
243R	3,728,343
248CS	3,728,344
250A	3,728,347
250R	3,728,345
256	3,728,346
268DK	3,728,348
287R	3,728,350
	3,728,352
288A	3,728,351
293.52	3,728,353
306.8D	3,728,354
309	3,728,356
309.7	3,728,355

310R	3,728,297
327P	3,728,357
343	3,728,358
	3,728,359
345.3	3,728,360
396R	3,728,361
	3,728,362
	3,728,363
397.4	3,728,364
429.5	3,728,365
439R	3,728,366
446	3,728,367
448.2P	3,728,368
453PC	3,728,370
453SP	3,728,369
455A	3,728,371
456R	3,728,372
464	3,728,373
465D	3,728,374
465.4	3,728,375
472	3,728,376
473R	3,728,377
476R	3,728,378
490	3,728,379
500.5H	3,728,380
502.4R	3,728,381
514D	3,728,382
520	3,728,383
523R	3,728,384
534E	3,728,385
553A	3,728,386
561H	3,728,387
563P	3,728,388
564R	3,728,389
566B	3,728,390
570R	3,728,391
576	3,728,392
585A	3,728,393
591	3,728,394
593R	3,728,396
594	3,728,395
	3,728,397
603HF	3,728,398
609A	3,728,400
609F	3,728,399
610D	3,728,401
	3,728,402
623H	3,728,403
648D	3,728,404
648F	3,728,405
666PY	3,728,406
	3,728,407
668B	3,728,410
668C	3,728,408
	3,728,409
668R	3,728,411
677A	3,728,412
680D	3,728,413
683D	3,728,414
683.15R	3,728,415
860	3,728,416
878	3,728,417
898	3,728,418
928	3,728,419
950	3,728,420
CLASS 264	
.5	3,728,421
1	3,728,422
29	3,728,423
40	3,728,424
49	3,728,425
97	3,728,426
101	3,728,427
177F	3,728,428
302	3,728,429
CLASS 266	
3R	3,727,895
4R	3,727,896
34LM	3,727,897
41	3,727,898
CLASS 267	
34	3,727,899
160	3,727,900
168	3,727,901
180	3,727,902
CLASS 269	
17	3,727,903
52	3,727,904
224	3,727,905
287	3,727,906
CLASS 270	
31	3,727,907
53	3,727,908
71	3,727,909
CLASS 271	
19	3,727,910
51	3,727,912
71	3,727,911
CLASS 272	
73	3,727,913
CLASS 273	
11R	3,727,914
94R	3,727,915
153S	3,727,916

176FB	3,727,918
176H	3,727,917
186A	3,727,919
	3,727,920
CLASS 274	
4J	3,727,921
15R	3,727,922
CLASS 277	
9	3,727,923
23	3,727,924
165	3,727,925
212F	3,727,926
216	3,727,927
CLASS 279	
1L	3,727,928
4	3,727,929
50	3,727,930
62	3,727,931
CLASS 280	
11.13L	3,727,936
11.35K	3,727,932
11.35T	3,727,933
	3,727,935
11.37K	3,727,934
24	3,727,937
96.2	3,727,938
124A	Re.27,623
	3,727,940
124F	3,727,941
	3,727,947
124R	3,727,939
150AB	3,727,942
150SB	3,727,943
	3,727,944
408	3,727,945
	3,727,946
CLASS 285	
3	3,727,948
7	3,727,949
13	3,727,950
93	3,727,951
101	3,727,952
168	3,727,954
177	3,727,953
223	3,727,955
CLASS 287	
2	3,727,956
53R	3,727,957
95	3,727,958
CLASS 289	
15	3,727,959
CLASS 292	
216	3,727,960
CLASS 293	
68	3,727,961
CLASS 294	
16	3,727,962
23	3,727,963
54	3,727,964
67R	3,727,965
82R	3,727,966
86.31	3,727,967
88	3,727,968
CLASS 295	
36R	3,727,969
CLASS 296	
23R	3,727,970
37R	3,727,971
137E	3,727,973
137R	3,727,972
CLASS 297	
300	3,727,974
332	3,727,975
340	3,727,976
344	3,727,977
369	3,727,978
440	3,727,979
	3,727,981
452	3,727,980
CLASS 299	
14	3,727,982
CLASS 301	
136	3,727,983
CLASS 302	
29	3,727,984
53	3,727,985
CLASS 303	
2	3,727,986
6C	3,727,987
	3,727,988
	3,727,989
	3,727,990
	3,727,991
21F	3,727,993
21P	3,727,992
23	3,727,994
CLASS 307	
208	3,728,552
231	3,728,553
233	3,728,554

246	3,728,555
251	3,728,556
252N	3,728,557
262	3,728,558
264	3,728,559
289	3,728,560
291	3,728,561
CLASS 308	
2R	3,727,995
132	3,727,996
160	3,727,997
184R	3,727,998
216	3,727,999
CLASS 310	
9.1	3,728,562
90	3,728,563
168	3,728,564
	3,728,565
194	3,728,566
198	3,728,567
CLASS 312	
9	3,728,000
38	3,728,001
259	3,728,002
285	3,728,003
CLASS 313	
60	3,728,568
79	3,728,569
84	3,728,570
109.5	3,728,571
222	3,728,572
313	3,728,573
337	3,728,574
CLASS 315	
10	3,728,576
11	3,728,577
18	3,728,575
27TD	3,728,579
99	3,728,578
CLASS 316	
4	3,728,004
31	3,728,005
CLASS 317	
18A	3,728,581
18C	3,728,582
18D	3,728,580
33SC	3,728,583
100	3,728,584
	3,728,585
114	3,728,586
118	3,728,587
141S	3,728,588
234R	3,728,589
235R	3,728,590
	3,728,591
	3,728,592
	3,728,593
	3,728,594
CLASS 318	
39	3,728,595
52	3,728,596
85	3,728,597
139	3,728,599
197	3,728,600
221E	3,728,601
434	3,728,602
443	3,728,603
459	3,728,604
475	3,728,605
480	3,728,606
608	3,728,607
696	3,728,598
CLASS 320	
23	3,728,608
CLASS 321	
10	3,728,609
47	3,728,610
CLASS 323	
43.5S	3,728,611
CLASS 324	
.5R	3,728,612
	3,728,613
	3,728,614
9	3,728,622
33	3,728,615
51	3,728,616
	3,728,617
	3,728,618
52	3,728,619
	3,728,620
65R	3,728,621
77B	3,728,623
83A	3,728,624
99D	3,728,625
	3,728,626
158R	3,728,627
169	3,728,628
186	3,728,629
CLASS 325	
8	3,728,630
38R	3,728,632
67	3,728,631

303	3,728,633
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	3,728,461	315	3,728,444	78	3,728,054	155	3,728,059	376	3,728,064	95	3,728,067
270	3,728,455	324	3,728,459	84	3,728,055	191	3,728,060	392	3,728,065		3,728,068
274	3,728,456	330	3,728,460	136	3,728,057	198	3,728,061	471	3,728,066	124	3,728,070
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285	3,728,349	CLASS 425		142	3,728,056	291	3,728,062	CLASS 431		352	3,728,071

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D 2—	4	226,695		158	226,704		17	226,712	D44—		226,720	D48—	20	226,728	D86—	10	226,736
	283	226,696		218	226,705		49	226,713		10	226,721		24	226,729			226,737
	430	226,697		219	226,706		66	226,714			226,726		27	226,730			226,738
D 4—	3	226,698	D14—	3	226,707		67	226,715		15	226,722	D61—	1	226,731			226,739
D 6—	18	226,699			226,708	D34—	5	226,716			226,723			226,732			226,740
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D 8—	236	226,702		28	226,710			226,718			226,725	D83—		226,734			226,742
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U. S. GOVERNMENT PRINTING OFFICE : O - 1973

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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GSA PATENT LICENSING REGULATIONS FOR GOVERNMENT-OWNED INVENTIONS

The General Services Administration issued on January 29, 1973, regulations that will govern the granting of licenses, both exclusive and nonexclusive, under government-owned patents and patent applications. The regulations were promulgated pursuant to Section 2 of the August 23, 1971, Memorandum and Statement of Government Patent Policy issued by President Nixon, and will form new Subpart 101–4.1, Title 41, of the Code of Federal Regulations.

Each government agency is required by Section 101–4.104–1 of the regulations to cause lists of their inventions that are available for licensing to be published in the Federal Register, the Patent Office OFFICIAL GAZETTE, *and at least one other publication. In response to this requirement, the* OFFICIAL GAZETTE *will republish all such lists published in the Federal Register. Copies of listed patents are available from the Commissioner of Patents, Washington, D.C., 20231, for 50¢ each. Copies of patent applications, however, must be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22152. Also available from NTIS are two publications that include all patents and patent applications of the National Aeronautics and Space Administration that are available for licensing. These publications include abstracts of inventions which are listed by field of technology. The publications are entitled "NASA Patent Abstracts Bibliography," dated January 1972 and July 1972, and are identified as NASA SP–7039, Section 1, and NASA SP–7039(01), Section 1. Section 2 of both documents, representing a continuous indexing system, is also available.*

The GSA licensing regulations are republished below. Also republished are the various listings of government-owned patents and patent applications that have previously appeared in the Federal Register as available for licensing under these regulations. As additional listings are published in the Federal Register, they will be included in future issues of the OFFICIAL GAZETTE.

WILLIAM I. MERKIN,
Apr. 2, 1973. *Assistant Commissioner for Administration.*

Title 41—Public Contracts and Property Management

CHAPTER 101—FEDERAL PROPERTY MANAGEMENT REGULATIONS

SUBCHAPTER A—GENERAL

PART 101–4—PATENTS

Licensing of Government-Owned Inventions

This amendment of the Federal Property Management Regulations adds new Part 101–4, Patents, and new Subpart 101–4.1, Licensing of Government-Owned Inventions. The amendment sets forth regulations which implement the Presidential Statement of Government Patent Policy dated August 23, 1971. The statement specifically directs the General Services Administration to issue regulations which provide for the licensing and dedication of Government-owned inventions for the purpose of enhancing the utilization of such inventions. Development of the regulation was accomplished in cooperation with the Committee on Government Patent Policy, Federal Council for Science and Technology. Agency and industry comments were considered.

The table of contents for Subchapter A is amended to add new entries, as follows:

Subpart 101–4.1—Licensing of Government-Owned Inventions

Sec.
101–4.100 Scope of subpart.
101–4.101 Policy.
101–4.102 Definitions.
101–4.103 Types of licenses and conditions for licensing.
101–4.103–1 Government inventions available for licensing.
101–4.103–2 Nonexclusive license.
101–4.103–3 Limited exclusive license.
101–4.103–4 Additional licenses.
101–4.103–5 Royalties.
101–4.103–6 Reports.
101–4.104 Procedures.
101–4.104–1 Government agency publication requirements.
101–4.104–2 Contents of a nonexclusive license application.
101–4.104–3 Contents of an exclusive license application.
101–4.104–4 Published notices.
101–4.104–5 Modification or revocation.
101–4.104–6 Appeals.
101–4.105 Litigation.
101–4.106 Transfer of custody of Government inventions.

AUTHORITY: Sec. 205(c), 63 Stat. 390; 40 U.S.C. 486(c).

Part 101–4 is added as follows:

§ 101–4.100 Scope of subpart.

This subpart prescribes the terms, conditions, and procedures for the licensing of rights in domestic patents and patent applications vested in the United States of America, and for dedication of Government-owned inventions by a Government agency.

§ 101–4.101 Policy.

(a) A major premise of the Presidential Statement of Government Patent Policy, August 23, 1971 (36 FR 16887, August 26, 1971), is that Government-owned inventions normally will best serve the public interest when they are developed to the point of practical application and made available to the public in the shortest possible time. The granting of express nonexclusive or exclusive licenses for the practice of these inventions may assist in the accomplishment of the national objective to achieve a dynamic and efficient economy. However, it is recognized that there may be inventions as to which a Government agency deems dedication preferable to accomplish these objectives.

(b) The granting of nonexclusive licenses generally is preferable since the invention is thereby laid open to all interested parties and serves to promote competition in industry, if the invention is in fact promoted commercially. However, to obtain commercial utilization of the invention, it may be necessary to grant an exclusive license for a limited period of time as an incentive for the investment of risk capital to achieve practical application of an invention.

(c) Whenever the grant of an exclusive license is deemed appropriate, it shall be negotiated on terms and conditions most favorable to the public interest. In selecting an exclusive licensee, consideration shall be given to the capabilities of the prospective licensee to further the technical and market development of the invention, his plan to undertake the development, the projected impact on competition, and the benefit to the Government and the public. Consideration shall be given also assisting small business and minority business enterprises, as well as economically depressed, low income, and labor surplus areas, and whether each or any applicant is a U.S. citizen or corporation. Where there is more than one applicant for an exclusive license, that applicant shall be selected who is determined to be most capable of satisfying the criteria and achieving the goals set forth in this subpart.

(d) Subject to the following: (1) Specific statutes governing the utilization of patent rights of certain Government agencies, or (2) any existing or future treaty or agreement between the United States and any foreign government or intergovernmental organization, or (3) licenses under or other rights to inventions made or conceived in the course of or under Government research and development contracts where such licenses or other rights to such inventions are granted to or provided for in the contract and acquired by the party contracting with the Government agency, no license shall be granted or implied in a Government-owned invention except as provided for in this subpart.

(e) No grant of a license under this subpart shall be construed to confer upon any licensee any immunity from the antitrust laws or from a charge of patent misuse, and the acquisition and use of rights pursuant to this subpart shall not be immunized from the operation of State or Federal law by reason of the source of the grant.

§ 101–4.102 Definitions.

(a) "Government invention" means an invention covered by a domestic patent or patent application that is vested in the United States and is designated by the Government agency having custody of the invention as appropriate for the grant of an express nonexclusive or exclusive license.

(b) "To the point of practical application" means to manufacture in the case of a composition or product, to practice in the case of a process, or to operate in the case of a machine under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

(c) "Government agency" means any executive department, independent commission, board, office, agency, administration, authority, wholly owned corporation, or other independent establishment of the executive branch of the Government of the United States of America.

(d) "The head of the Government agency" means the head of the agency or his designee.

§ 101–4.103 Types of licenses and conditions for licensing.

§ 101–4.103–1 Government inventions available for licensing.

Government inventions normally will be made available for the granting of express nonexclusive or limited exclusive licenses to responsible applicants according to the factors and conditions set forth in §§ 101–4.103–2 and 101–4.103–3, subject to the applicable procedures of § 101–4.104.

§ 101–4.103–2 Nonexclusive license.

(a) *Availability of licenses*. Each Government invention normally shall be made available for the granting of nonexclusive revocable licenses, subject to the provisions of any other licenses, including those under § 101–4.103–4.

(b) *Terms of grant*. (1) The duration of the license shall be for a period as specified in the license agreement, provided that the licensee complies with all the terms of the license.

(2) The license shall require the licensee to bring the invention to the point of practical appplication within a period specified in the license, or such extended period as may be agreed upon, and to continue to make the benefits of the invention reasonably accessible to the public.

(3) The license may be granted for all or less than all fields of use of the invention, and throughout the United States of America, its territories and possessions, the Commonwealth of Puerto Rico, and the District of Columbia, or in any lesser geographic portion thereof.

(4) After termination of a period specified in the license agreement, the Government agency may restrict the license to the fields of use and/or geographic areas in which the licensee has brought the invention to the point of practical application and continues to make the benefits of the invention reasonably accessible to the public.

(5) The license may extend to subsidiaries and affiliates of the licensee but shall be nonassignable without approval of the Government agency, except to the successor of that part of the licensee's business to which the invention pertains.

§ 101–4.103–3 Limited exclusive license.

(a) *Availability of licenses*. Each Government invention may be made available for the granting of a limited exclusive license provided that:

(1) The invention has been published as available for licensing pursuant to § 101–4.104–1 for a period of at least 6 months;

(2) The head of the Government agency has determined that (i) the invention may be brought to the point of practical application in certain fields of use and/or in certain geographical locations by exclusive licensing, (ii) the desired practical application has not been achieved under any nonexclusive license granted on the invention, and (iii) the desired practical application is not likely to be achieved expeditiously in the

public interest under a nonexclusive license or as a result of further Government-funded research or development;

(3) The notice of the prospective licensee has been published, pursuant to § 101–4.104–4(a) for at least 60 days; and

(4) After termination of the period set forth in § 101–4.103–3(a)(3), the Government agency has determined that no applicant for a nonexclusive license has brought or will bring, within a reasonable period, the invention to the point of practical application as specified in the exclusive license, and that to grant the exclusive license would be in the public interest.

(b) *Selection of exclusive licensee*. An exclusive licensee shall be selected on bases consistent with the policy set forth in § 101–4.101 and in accordance with the procedures set forth in § 101–4.104.

(c) *Terms of grant*. (1) The license may be granted for all or less than all fields of use of the Government invention and throughout the United States of America, its territories and possessions, the Commonwealth of Puerto Rico, and the District of Columbia, or in any lesser geographic portion thereof.

(2) Subject to the rights reserved to the Government in §§ 101–4.103–3(c)(6) and 101–4.103–3(c)(7), the licensee shall be granted the exclusive right to practice the invention in accordance with the terms and conditions specified in the license.

(3) The duration of the license shall be negotiated but shall be for a period less than the terminal portion of the patent, the period remaining being sufficient to make the invention reasonably available for the grant of a nonexclusive license; and such period of exclusivity shall not exceed 5 years unless the head of the Government agency determines on the basis of a written submission supported by a factual showing that a longer period is reasonably necessary to permit the licensee to enter the market and recoup his reasonable costs in so doing.

(4) The license shall require the licensee to bring the invention to the point of practical application within a period specified in the license, or within a longer period as approved by the Government agency, and to continue to make the benefits of the invention reasonably accessible to the public.

(5) The license shall require the licensee to expend a specified minimum amount of money and/or to take other specified actions, within a specified period of time after the effective date of the license, in an effort to bring the invention to the point of practical application.

(6) The license shall be subject to the irrevocable royalty-free right of the Government of the United States to practice and have practiced the invention by or on behalf of the government of the United States and on behalf of any foreign government or intergovernmental organization pursuant to any existing or future treaty or agreement with the United States.

(7) The license shall reserve to the Government agency the right to require the licensee to grant sublicenses to responsible applicants on terms that are reasonable in the circumstances (i) to the extent that the invention is required for public use by Government regulations, or (ii) as may be necessary to fulfill health or safety needs, or (iii) for other public purposes stipulated in the license.

(8) The license may extend to subsidiaries and affiliates of the licensee but shall be nonassignable without approval of the Government agency, except to successors of that part of the licensee's business to which the invention pertains.

(9) An exclusive licensee may grant sublicenses under his license, subject to the approval of the Government agency. Each sublicense granted by an exclusive licensee shall make reference to the exclusive license, including the rights retained by the Government under the exclusive license, and a copy of such sublicense shall be furnished to the Government agency.

(10) The license may be subject to such other terms as may be in the public interest.

§ 101–4.103–4 Additional licenses.

Subject to any outstanding licenses, nothing in this subpart shall preclude a Government agency from granting additional nonexclusive or limited exclusive licenses for Government-owned inventions when the Government agency determines that to do so would provide for an equitable exchange of patent rights. The following exemplify circumstances wherein such licenses may be granted:

(a) In consideration of the settlement of an interference;

(b) In consideration of a release of a claim of infringement; or

(c) In exchange for or as part of the consideration for a license under adversely held patents.

§ 101–4.103–5 Royalties.

(a) Normally, royalties shall not be charged under nonexclusive licenses granted to U.S. citizens and U.S. corporations on Government inventions; however, the Government agency may require other considerations.

(b) An exclusive license on a Government invention may require the payment of royalties, and/or other considerations, when the licensing situation and the policy in § 101–4.101 considered together, indicate that it is in the public interest to do so.

§ 101–4.103–6 Reports.

A license shall require the licensee to submit periodic reports on his efforts to achieve practical application of the invention. The reports shall contain information within his knowledge, or which he may acquire under normal business practices, pertaining to the commercial use being made of the invention and other information which the Government agency may determine is pertinent to its licensing activities and is specified in the license.

§ 101–4.104 Procedures.

§ 101–4.104–1 Government agency publication requirements.

Each Government agency shall cause to be published in the Federal Register, the Official Gazette of the U.S. Patent Office, and at least one other publication that the Government agency deems would best serve the public interest, a list of the Government inventions in its custody available for licensing under the conditions specified in § 101–4.103. The list shall be revised periodically to include directly, or by reference to a previously published list, all inventions currently available for licensing. Other publications on inventions available for licensing are encouraged and may include abstracts, when appropriate, as well as information on the design, construction, use, and potential market for the inventions.

§ 101–4.104–2 Contents of a nonexclusive license application.

An application for a nonexclusive license under a Government invention should be addressed to the head of the Government agency having custody of the invention, and shall include:

(a) Identification of invention for which license is desired, including the patent application serial number or patent number, title and date, if known, and any other identification of invention;

(b) Name and address of the person, company, or organization applying for license and whether the applicant is a U.S. citizen or a U.S. corporation;

(c) Name and address of representative of applicant to whom correspondence should be sent;

(d) Nature and type of applicant's business;

(e) Source of information concerning the availability of a license on this invention;

(f) Purpose for which license is desired and a brief description of applicant's plan to achieve that purpose;

(g) A statement of the fields of use for which applicant intends to practice the invention; and

(h) A statement as to the geographic areas in which the applicant would practice the invention.

§ 101–4.104–3 Contents of an exclusive license application.

In addition to the information indicated in § 101–4.104–2, an application for an exclusive license shall include:

(a) Applicant's status, if any, in any one or more of the following categories: (1) Small business firm, (2) minority business enterprise, (3) location in a surplus labor area, (4) location in a low-income area, and (5) location in an economically depressed area;

(b) A statement of applicant's capability to undertake the development and marketing required to achieve the practical application of the invention;

(c) A statement describing the time, expenditure, and other acts which the applicant considers necessary to achieve practical application of the invention and the applicant's offer to invest that sum to perform such acts if the license is granted;

(d) A statement that contains the applicant's best knowledge of the extent to which the Government invention is being practiced by private industry and the Government; and

(e) Any other facts which the applicant believes are evidence that it is in the public interest for the Government agency to grant an exclusive license rather than a nonexclusive license and that such exclusive license should be granted to the applicant.

§ 101–4.104–4 Published notices.

(a) A notice that a prospective exclusive licensee has been selected shall be published in the Federal Register, and a copy of the notice shall be sent to the Attorney General. The notice shall include:

(1) Identification of the invention;

(2) Identification of the selected licensee;

(3) Duration and scope of the contemplated license; and

(4) A statement to the effect that the license will be granted unless:

(i) An application for a nonexclusive license, submitted by a responsible applicant pursuant to § 101–4.104–2, is received by the Government agency having custody of the invention within 60 days from the publication of the notice in the Federal Register, and the Government agency determines in accordance with its prescribed procedures under which procedures the Government agency shall record and make available for public inspection all decisions made pursuant thereto and the basis therefor, that the applicant has established that he has already achieved or is likely to bring the invention to the point of practical application within a reasonable period under a nonexclusive license; or

(ii) The Government agency determines that a third party has presented evidence and argument which has established that it would not be in the public interest to grant the exclusive license.

(b) If an exclusive license has been granted pursuant to this Subpart 101–4.1, notice thereof shall be published in the Federal Register. Such notice shall include:

(1) Identification of the invention;

(2) Identification of the licensee; and

(3) Duration and scope of the license.

(c) If an exclusive license has been modified or revoked pursuant to § 101–4.104–5, notice thereof shall be published in the Federal Register. Such notice shall include:

(1) Identification of the invention;

(2) Identification of the licensee; and

(3) Effective date of the modification or revocation.

§ 101–4.104–5 Modification or revocation.

(a) Any license granted pursuant to this Subpart 101–4. 1 may be modified or revoked by the Government agency granting the license if the licensee at any time defaults in making any report required by the license or commits any breach of any covenant or agreement therein contained.

(b) A license may also be revoked by the Government agency granting the license if the licensee willfully makes a false statement of a material fact or willfully omits a material fact in the license application or any report required in the license agreement.

(c) Before modifying or revoking any license granted pursuant to this subpart for any cause, the Government agency shall furnish the licensee and any sublicensee of record a written notice of intention to modify or revoke the license, and the licensee and any sublicensee shall be allowed 30 days after such notice to remedy any breach of any covenant or agreement as referred to in (a) of this section or to show cause why the license should not be modified or revoked.

§ 101–4.104–6 Appeals.

An applicant for a license, a licensee, or such other third party who has participated under § 101–4.104–4(a)(4)(ii) shall have the right to appeal, in accordance with procedures prescribed by the Government agency, any decision concerning the granting, denial, interpretation, modification, or revocation of a license.

§ 101–4.105 Litigation.

An exclusive licensee shall be granted the right to sue at his own expense any party who infringes the rights set forth in his license and covered by the licensed patent. The licensee may join the Government upon consent of the Attorney General as a party complainant in such suit but without expense to the Government, and the licensee shall pay costs and any final judgment or decree that may be rendered against the Government in such suit. The Government shall have an absolute right to intervene in any such suit at its own expense. The licensee shall be obligated to furnish promptly to the Government, upon request, copies of all pleadings and other papers filed in any such suit and of evidence adduced in proceedings relating to the licensed patent including, but not limited to, negotiations or settlement and agreements settling claims by a licensee based on the licensed patent, and all other books, documents, papers, and records pertaining to such suit. If as a result of any such litigation the patent shall be declared invalid, the licensee shall have the right to surrender his license and be relieved from any further obligation thereunder.

§ 101–4.106 Transfer of custody of Government inventions.

A Government agency having custody of a Government-owned invention may enter into an agreement to transfer its custody to another Government agency for purposes of administration, including the granting of licenses pursuant to this subpart.

Effective date. This subpart is effective May 7, 1973, but may be observed earlier. However, the head of a Government agency may exclude from the terms, conditions, and procedures set forth in this subpart any license that was in the process of being negotiated on the effective date.

Dated: January 29, 1973.

Arthur F. Sampson,
Acting Administrator of General Services.

[FR Doc.73–2119 Filed 2–2–73;8:45 am]

National Technical Information Service

Government-Owned Inventions

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Inquiries and requests for licensing information should be directed to the address cited on the first page of each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Inquiries and requests for licensing information should be directed to the "Assignee" as indicated on the copy of the patent.

Douglas J. Campion,
Patent Program Coordinator, National Technical Information Service.

Department of Health, Education, and Welfare

Patent application 274,749. Inhibition of Leukemia Utilizing 5-Methyltetra-Hydrohomofolate. Filed July 24, 1972. PC $3/MF $0.95.

Patent 3,674,818. Synthesis of a Material with Juvenile Hormone Activity. Filed December 5, 1969. Patented July 4, 1972. Not available NTIS.

Patent 3,677,092. Volume Metering Apparatus for Circulatory Assist Pumps. Filed June 17, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,678,233. Standardized Set of Compensating Filters For Mantel-Field Radiation Therapy. Filed April 2, 1970. Patented July 18, 1972. Not available NTIS.

Department of the Interior

Patent 3,693,411. Apparatus for Measuring Thixotropy. Filed March 18, 1971. Patented September 26, 1972. Not available NTIS.

Patent 3,693,412. Method for Measuring Thixotropy. Filed March 18, 1971. Patented September 26, 1972. Not available NTIS.

National Aeronautics and Space Administration

Patent application 266,930. A Potable Water Dispenser. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 266,925. A Fluid Dispenser. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 266,822. Method and Apparatus for Synchronizing a Single Channel Digital Communications System. Filed June 27, 1972. PC $5.50/MF $0.95.

Patent application 274,360. Pulse Code Modulated Signal Synchronizer. Filed July 24, 1972. PC $8.50/MF $0.95.

Patent application 266,912. Gated Compressor, Distortionless Signal Limiter. Filed June 28, 1972. PC $3.25/MF $0.95.

Patent application 258,464. Multi-Wire High Temperature Thermocouple. Filed May 31, 1972. PC $3/MF $0.95.

Patent application 254,323. Thermocouple Tape. Filed May 17, 1972. PC $3/MF $0.95.

Patent application 271,951. An Apparatus Used in the Calibration of Ultra High Vacuum System. Filed July 14, 1972. PC $3/MF $0.95.

Patent application 266,911. Apparatus for Scanning the Surface of a Cylindrical Body. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 239,577. A System for Calibrating Pressure Transducer. Filed March 30, 1972. PC $3/MF $0.95.

Patent application 275,118. High Field CDS Detector for Infrared Radiation. Filed July 26, 1972. PC $3/MF $0.95.

Patent application 266,927. Apparatus for Producing High Purity I–123. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 266,943. Doppler Shift System. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 266,866. Electrostatically Controlled Heat Shutter. Filed June 28, 1972. PC $3/MF $0.95.

Tennessee Valley Authority

Patent 3,676,101. Self-Suspending Ammonium Polyphosphate Suspension Fertilizer. Filed January 28, 1971. Patented July 11, 1972. Not available NTIS.

Patent 3,674,219. Green-Wood Fibrating Means and Method. Filed July 24, 1970. Patented July 4, 1972. Not available NTIS.

[FR Doc. 72-21421; Filed 12-12-72; 8:49 am]

National Aeronautics and Space Administration

Patent application 266,832. Electron Beam Controller. Filed June 27, 1972. PC $3/MF $0.95.

Patent application 258,152. New Use of Thin Film Light Detector. Filed May 31, 1972. PC $3.50/MF $0.95.

Patent application 278,228. Process for Producing Nickel Aluminide Coating Low Alloy Stainless Steel. Filed July 19, 1972. PC $3/MF $0.95.

Patent application 248,471. Air Conditioning System and Component Therefor: Distributing Air Flow from Opposite Directions. Filed April 28, 1972. PC $3.25/MF $0.95.

Patent application 266,913. Scanning Nozzle Plating System. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 266,928. Method of Heat Treating a Formed Powder Product Material. Filed June 28, 1972. PC $3/MF $0.95.

[FR Doc. 72-21729; Filed 12-19-72; 8:45 am]

Atomic Energy Commission

Patent 3,640,808. Radiolytic Destruction of Nonbiodegradable Organic Pesticides. Filed October 7, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,640,844. Power Flattened Seed-Blanket Reactor Core. Filed November 7, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,640,845. Dynamic Seal. Filed July 9, 1968. Patented February 8, 1972. Not available NTIS.

Patent 3,640,888. Californium-252 Neutron Source and Method of Making Same. Filed December 11, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,641,226. Method for Purification of Di-(2-ethylhexyl) Phosphoric Acid. Filed November 24, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,641,444. Baseline Compensating Integrator. Filed September 1, 1970. Patented February 8, 1972. Not available NTIS.

Patent 3,641,454. Electron Beam-Pumped Gas Laser System. Filed May 25, 1970. Patented February 8, 1972. Not available NTIS.

Department of the Interior

Patent 3,696,866. Method for Producing Retorting Channels in Shale Deposits. Filed January 27, 1971. Patented October 10, 1972. Not available NTIS.

Patent 3,698,924. Saline Resistance Cementitious Binders. Filed May 5, 1970. Patented October 17, 1972. Not available NTIS.

[FR Doc. 72-22221; Filed 12-26-72; 8:51 am]

U.S. Atomic Energy Commission

Patent 3,638,160. Shock Pressure Transducer. Filed September 4, 1969. Patented January 25, 1972. Not available NTIS.

Patent 3,639,978. Method for Making Flexible Electrical Connections. Filed November 3, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,640,579. In Situ Pressure Leaching Method. Filed April 28, 1970. Patented February 8, 1972. Not available NTIS.

Patent 3,640,704. High-Temperature-Strength Precipitation-Hardenable, Austenitic, Iron-Base Alloys. Filed January 20, 1970. Patented February 8, 1972. Not available NTIS.

Patent 3,641,465. Compact High-Power Broadband Radiofrequency Load Termination. Filed September 15, 1970. Patented February 8, 1972. Not available NTIS.

Patent 3,644,221. Polycrystalline Graphite with Controlled Electrical Conductivity. Filed November 14, 1969. Patented February 22, 1972. Not available NTIS.

Patent 3,644,664. Nuclear Fuel Body and Process for Making Same. Filed November 14, 1969. Patented February 22, 1972. Not available NTIS.

Patent 3,644,777. Cathode-Ray Tube with Serpentine-Shaped Transmission Line Deflection Means. Filed June 2, 1970. Patented February 22, 1972. Not available NTIS.

U.S. Department of the Interior

Patent 3,698,559. Reverse Osmosis Module Suitable for Food Processing. Filed March 1, 1971. Patented October 17, 1972. Not available NTIS.

Patent 3,697,390. Electrodes Position of Metallic Boride Coatings. Filed April 14, 1969. Patented October 10, 1972. Not available NTIS.

Patent 3,699,391. Reactor Fault Relay. Filed September 2, 1971. Patented October 17, 1972. Not available NTIS.

Patent 3,701,905. Static Stopper. Filed October 27, 1971. Patented October 31, 1972. Not available NTIS.

National Aeronautics and Space Administration

Patent application 281,876. Ultrasonic Biomedical Measuring and Recording Apparatus. Filed August 18, 1972. PC $3.25/MF $0.95.

Patent application 277,436. Insert Facing Tool. Filed August 2, 1972. PC $3/MF $0.95.

Patent application 280,390. Method of Making Rolling Elements for Bearings. Filed August 14, 1972. PC $3/MF $0.95.

Patent application 273,240. Ejectable Underwater Sound Source Recovery Assembly. Filed July 19, 1972. PC $3/MF $0.95.

Patent application 288,856. High Power Laser Apparatus and System. Filed September 13, 1972. PC $3/MF $0.95.

Patent application 119,282. Pump for Delivering Heated Fluids. Filed February 26, 1971. PC $3.25/MF $0.95.

Patent application 289,083. Enhanced Diffusion Welding. Filed September 14, 1972. PC $3/MF $0.95.

Tennessee Valley Authority

Patent 3,697,247. Elimination of Magnesium Gels in Liquid and Suspension Fertilizers Derived from Wet Acid. Filed April 1, 1971. Patented October 10, 1972. Not available NTIS.

[FR Doc. 73-400; Filed 1-9-73; 8:45 am]

U.S. Atomic Energy Commission

Patent 3,650,926. Radiolytic Treatment of Organic Industrial Wastes in a Pressurized Oxygen Atmosphere. Filed October 7, 1969. Patented March 21, 1972. Not available NTIS.

Patent 3,640,115. Tube Spacer Tool. Filed December 19, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,640,336. Recovery of Geothermal Energy by Means of Underground Nuclear Detonations. Filed June 19, 1970. Patented February 8, 1972. Not available NTIS.

Patent 3,638,200. Electrostatic Recording System. Filed March 4, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,638,160. Shock Pressure Transducer. Filed September 4, 1969. Patented January 25, 1972. Not available NTIS.

U.S. Department of the Interior

Patent 3,699,849. Hydraulic Cell for Calibrating a Pressure Transducer. Filed November 12, 1970. Patented October 24, 1972. Not available NTIS.

National Aeronautics and Space Administration

Patent application 289,050. Rocket Chamber and Method of Making. Filed September 14, 1972. PC $3/MF $0.95.

Patent application 281,877. Method and Apparatus for Checking the Stability of a Setup for Making Reflection Type Holograms. Filed August 18, 1972. PC $3/MF $0.95.

Patent application 282,738. Shoulder Harness and Lap Belt Restraint System. Filed August 22, 1972. PC $3/MF $0.95.

[FR Doc. 73-847; Filed 1-16-73; 8:45 am]

U.S. Atomic Energy Commission

Patent 3,635,676. Method for Increasing the Strength of Carbon Foam. Filed November 5, 1969. Patented January 18, 1972. Not available NTIS.

Patent 3,635,793. Connector Assembly. Filed October 7, 1969. Patented January 18, 1972. Not available NTIS.

Patent 3,635,831. Production of High-Purity Cesium-137. Filed September 25, 1969. Patented January 18, 1972. Not available NTIS.

Patent 3,636,328. Geographic Position Locator. Filed May 1, 1970. Patented January 18, 1972. Not available NTIS.

Patent 3,636,389. Magnetohydrodynamic Method and System. Filed March 22, 1971. Patented January 18, 1972. Not available NTIS.

Patent 3,636,462. Automatic DC Level Controlling System for a DC-Coupled Amplifier. Filed December 11, 1970. Patented January 18, 1972. Not available NTIS.

Patent 3,636,674. Insulation Module with Superposed Deformed Core Sheets. Filed August 10, 1964. Patented January 25, 1972. Not available NTIS.

Patent 3,636,923. Apparatus for Coating Microspheres with Pyrolytic Carbon. Filed May 4, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,637,314. Tubing Reflectometer. Filed January 13, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,637,422. Dispersion-Hardened Tungsten Alloy. Filed January 3, 1968. Patented January 25, 1972. Not available NTIS.

Patent 3,638,017. Thermoluminescent Dosimeter Encoding and Readout Method. Filed December 23, 1969. Patented January 25, 1972. Not available NTIS.

Patent 3,638,023. Radioisotopic Power Source. Filed November 7, 1969. Patented January 25, 1972. Not available NTIS.

Patent 3,638,154. Braided Superconductor. Filed March 26, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,643,441. Oil Storage Method. Filed May 5, 1970. Patented February 22, 1972. Not available NTIS.

Patent 3,650,896. Nuclear Fuel Particles. Filed October 9, 1969. Patented March 21, 1972. Not available NTIS.

Patent 3,652,233. Method of Improving Recovery of Neptunium in the Purex Process. Filed December 29, 1969. Patented March 28, 1972. Not available NTIS.

Patent 3,652,744. Method of Making Nuclear Fuel Elements. Filed November 19, 1969. Patented March 28, 1972. Not available NTIS.

U.S. Department of the Interior

Patent 3,700,591. Clearing of Used Membrane with Oxalic Acid. Filed September 24, 1970. Patented October 24, 1972. Not available NTIS.

National Aeronautics and Space Administration

Patent application 293,727. Phase Detection System for AC Power Lines. Filed September 29, 1972. PC $3/MF $0.95.

[FR Doc. 73-1387; Filed 1-23-73; 8:45 am]

U.S. Atomic Energy Commission

Patent 3,634,033. Method for the Production of Single Crystals. Filed June 10, 1970. Patented June 11, 1972. Not available NTIS.

Patent 3,634,704. Apparatus for the Production of Highly Stripped Ions. Filed September 2, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,636,778. Method and Means for Dimensional Inspection of Tubing. Filed June 5, 1970. Patented June 25, 1972. Not available NTIS.

National Aeronautics and Space Administration

Patent application 289,048. Totally Confined Explosive Welding. Filed September 14, 1972. PC $3/MF $0.95.

Patent application 289,017. Grinding Arrangement for Ball Nose Milling Cutters. Filed September 14, 1972. PC $3/MF $0.95.

Patent application 287,150. Flow Control Valve. Filed September 7, 1972. PC $3/MF $0.95.

Patent application 293,726. Improved Diffusion Welding. Filed September 29, 1972. PC $3/MF $0.95.

Patent application 290,021. Bonded Joint and Method. Filed September 18, 1972. PC $3/MF $0.95.

Patent application 297,128. Differential Phase Shift Keyed Communication System. Filed October 12, 1972. PC $3.50/MF $0.95.

[FR Doc. 73-1807; Filed 1-30-73; 8:45 am]

U.S. Atomic Energy Commission

Patent 3,632,520. Radioisotope Fuel. Filed January 4, 1968. Patented June 4, 1972. Not available NTIS.

Patent 3,633,888. Concentric Fluidized Beds. Filed February 19, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,634,558. Method of Producing Mono-Disperse Silica Spheres Having a Dispersed Radioactive Tracer. Filed October 29, 1968. Patented January 11, 1972. Not available NTIS.

Patent 3,634,563. Method for the Manufacture of Inorganic Thermal Insulation. Filed Mar. 13, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,634,781. Generalized Circuit. Filed August 6, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,638,020. Mineral-Detection Apparatus. Filed May 26, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,638,127. Stabilization System for Resonant Cavity Excitation. Filed January 29, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,640,805. Removal of Nitrate Contamination From Nickel-Plating Solutions. Filed June 13, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,644,821: Capacitance Method and Apparatus for Detecting an Interface Between Electrically Conductive Immiscible Liquids. Filed January 14, 1969. Patented. February 22, 1972. Not available NTIS.

National Aeronautics and Space Administration

Patent application 186,700. Automatic Vehicle Location System. Filed October 5, 1971. PC $3.75/MF $0.95.

Patent application 297,127. Differential Phase Shift Keyed Signal Resolver. Filed October 12, 1972. PC $3.25/MF $0.95.

Patent application 244,566. Star Tracking Reticles Process for the Production Thereof. Filed April 17, 1972. PC $3.25/MF $0.95.

Patent application 288,847. Electric Field Measuring and Display System. Filed September 13, 1972. PC $3/MF $0.95.

Patent application 292,682. Automatic Lightning Detection and Photographic System. Filed September 27, 1972. PC $3/MF $0.95.

[FR Doc. 73-2178; Filed 2-6-73; 8:45 am]

U.S. Atomic Energy Commission

Patent 3,646,813. Cryogenic-Sensing Device Using Uranium Monophosphide-Uranium Monosulphide. Filed September 9, 1969. Patented March 7, 1972. Not available NTIS.

Patent 3,647,421. Reprocessing a Plutonium Dioxide-Molybdenum Fuel. Filed April 4, 1969. Patented March 7, 1972. Not available NTIS.

Patent 3,648,472. Cryogenic Fluid Discharge Muffler. Filed February 6, 1970. Patented March 14, 1972. Not available NTIS.

Patent 3,649,450. Control Rod Position Indication System. Filed March 4, 1970. Patented March 14, 1972. Not available NTIS.

Patent 3,649,452. Nuclear Reactor Fuel Coated Particles. Filed March 28, 1968. Patented March 14, 1972. Not available NTIS.

Patent 3,649,829. Laminar Flow Cell. Filed October 6, 1970. Patented March 14, 1972. Not available NTIS.

Patent 3,649,834. Laminar Gas Flow Radiation Detector. Filed October 6, 1970. Patented March 14, 1972. Not available NTIS.

Patent 3,650,804. Process for Decreasing Permeability of a Porous Body and the Product Thereof. Filed February 19, 1969. Patented March 21, 1972. Not available NTIS.

Patent 3,650,893. Port Plug for a Plasma-Confining Cavity. Filed December 2, 1969. Patented March 21, 1972. Not available NTIS.

Patent 3,652,744. Method of Making Nuclear Fuel Elements. Filed November 19, 1969. Patented March 28, 1972. Not available NTIS.

Patent 3,654,794. Drawbench. Filed March 7, 1969. Patented April 11, 1972. Not available NTIS.

Patent 3,656,012. Method of Generating Unipolar and Bipolar Pulses. Filed February 2, 1971. Patented April 11, 1972. Not available NTIS.

Patent 3,656,116. Computer Interface. Filed May 5, 1970. Patented April 11, 1972. Not available NTIS.

Patent 3,656,128. Magnetic Matrix Recording System. Filed December 22, 1970. Patented April 11, 1972. Not available NTIS.

Patent 3,657,137. Nuclear Fuel Comprising Uranium Dioxide in a Porous Ceramic Oxide Matrix. Filed June 4, 1964. Patented April 18, 1972. Not available NTIS.

Patent 3,657,542. Production of Beams of Excited Energetic Neutral Particles. Filed May 4, 1970. Patented April 18, 1972. Not available NTIS.

Patent 3,657,920. Sequential Sampler. Filed May 6, 1970. Patented April 25, 1972. Not available NTIS.

Patent 3,658,467. System for Total Iodine Retention. Filed July 28, 1969. Patented April 25, 1972. Not available NTIS.

Patent 3,658,644. Fast Breeder Reactor. Filed February 6, 1970. Patented April 25, 1972. Not available NTIS.

Patent 3,659,105. Subatomic Particle Detector with Liquid Electron Multiplication Medium. Filed October 21, 1970. Patented April 25, 1972. Not available NTIS.

Patent 3,659,106. Portable Neutron Source Using a Plurality of Moderating Means. Filed September 21, 1970. Patented April 25, 1972. Not available NTIS.

Patent 3,659,107. Radioisotopic Fuel Capsule. Filed July 29, 1970. Patented April 25, 1972. Not available NTIS.

Patent 3,659,527. High Temperature Detonator. Filed October 29, 1970. Patented May 2, 1972. Not available NTIS.

Patent 3,660,075. Crucible Coating for Preparation of U and P Alloys Containing ZR or HF. Filed October 16, 1969. Patented May 2, 1972. Not available NTIS.

Patent 3,660,300. Method of Preparing Oxidized Radon Solutions. Filed June 5, 1970. Patented May 2, 1972. Not available NTIS.

Patent 3,660,712. Electrode Structure for Controlling Electron Flow with High Transmission Efficiency. Filed December 9, 1970. Patented May 2, 1972. Not available NTIS.

Patent 3,660,715. Ion Source with Mosaic Ion Extraction Means. Filed August 18, 1970. Patented May 2, 1972. Not available NTIS.

Patent 3,662,589. Ultrasonic Flow Determination by Special Analysis. Filed February 2, 1971. Patented May 16, 1972. Not available NTIS.

Patent 3,662,280. Explosively Driven Pulsed Chemical Laser. Filed November 16, 1970. Patented May 9, 1972. Not available NTIS.

Patent 3,662,684. Hydrostatically Powered Messenger Style Wire Cutter. Filed December 18, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,178. Mixer-Settler Apparatus. Filed June 3, 1969. Patented May 16, 1972. Not available NTIS.

Patent 3,663,360. Conversion of High Temperature Plasma Energy into Electrical Energy. Filed August 13, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,361. Nuclear Fusion Device of the Air-Core Tokamak Type. Filed February 17, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,362. Controlled Fusion Reactor. Filed December 22, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,855. Cold Cathode Vacuum Discharge Tube with Cathode Discharge Face Parallel with Anode. Filed February 24, 1967. Patented May 16, 1972. Not available NTIS.

Patent 3,663,363. Identification of Failed Fuel Elements. Filed March 13, 1969. Patented May 16, 1972. Not available NTIS.

Patent 3,664,921. Proton E-Layer Astron for Producing Controlled Fusion Reactions. Filed October 16, 1969. Patented May 23, 1972. Not available NTIS.

Patent 3,664,950. Process for Selective Removal and Recovery of Chromates from Water. Filed June 23, 1970. Patented May 23, 1972. Not available NTIS.

Patent 3,665,236. Electrode Structure for Controlling Electron Flow with High Transmission Efficiency. Filed December 9, 1970. Patented May 23, 1972. Not available NTIS.

Patent 3,665,573. Method of Fabricating a Heat Pipe. Filed May 18, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,666,451. Aluminum Alloy. Filed August 13, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,666,529. Method of Conditioning Aluminous Surfaces for the Reception of Electroless Nickel Plating. Filed April 2, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,624. Hydraulic Hold-Down for Nuclear Reactor Fuel Assembly. Filed July 18, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,666. Ferroelectric Ceramic Materials. Filed December 17, 1969. Patented May 20, 1972. Not available NTIS.

Patent 3,666,845. Production-Scale Formation of Ultrahigh Purity Carbide Powders. Filed May 6, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,029. Method and Means for Charging or Discharging Superconducting Windings. Filed April 15, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,246. Method and Apparatus for Precise Temperature Control. Filed December 4, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,668,066. Dynamic Stabilizer for Plasma Instabilities to Improve Plasma Confinement and to Increase Plasma Density. Filed February 18, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,668,067. Polygonal Astron Reactor for Producing Controlled Fusion Reactions. Filed October 16, 1969. Patented June 6, 1972. Not available NTIS.

Patent 3,668,084. Process for Plating Uranium with Metal. June 10, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,668,285. Warm-Pressing Method of Making Stacked Fuel Plates. Filed October 27, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,669,681. Removal of Materials from Ion Exchange Resins. Filed January 8, 1970. Patented June 13, 1972. Not available NTIS.

Patent 3,670,164. Personnel Plutonium Monitor. Filed August 18, 1970. Patented June 13, 1972. Not available NTIS.

Patent 3,671,199. Plutonium Hexafluoride Reduction. Filed March 4, 1969. Patented June 20, 1972. Not available NTIS.

Patent 3,671,392. Light-Water Breeder Reactor. Filed March 15, 1971. Patented June 20, 1972. Not available NTIS.

Patent 3,671,455. Nitriles as Scintillation Solvents and Solutes. Filed May 6, 1971. Patented June 20, 1972. Not available NTIS.

Patent 3,672,204. Transient Thermal Method and Means for Nondestructively Testing a Sample. Filed April 8, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,672,246. Automatic Spindle Growth Compensation System. Filed April 20, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,672,772. Automatic Photoelastimeter. Filed August 31, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,672,846. Method for Reprocessing Spent Molten Salt Reactor Fuels. Filed April 21, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,673,038. Method for Brazing Graphite and Other Refractory Materials. Filed April 14, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,673,513. Electron Beam-Initiated Chemical Laser Systems. Filed May 26, 1970. Patented June 27, 1972. Not available NTIS.

[FR Doc. 73–2806; Filed 2–13–73; 8:45 am]

U.S. ATOMIC ENERGY COMMISSION

Patent 3,632,885. Carbon Composite Structures and Method for Making Same. Filed Mar. 17, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,633.597. Flow Rate Control Method. Filed May 28, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,633,665. Heat Exchanger Using Thermal Convection Tubes. Filed May 11, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,638,032. Fast-Acting Magnetic Switching Device for High-Level Electrical Signals and Diverter Incorporating Same. Filed February 4, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,646,309. Self-Adaptive Welding Torch Controller. Filed January 26, 1971. Patented February 29, 1972. Not available NTIS.

Patent 3,646,330. Continuous Digital Ratemeter. Filed May 28, 1970. Patented February 29, 1972. Not available NTIS.

Patent 3,656,063. Digital Frequency Comparator. Filed April 29, 1970. Patented April 11, 1972. Not available NTIS.

Patent 3,660,031. Method for Preparing Boron Suboxide. Filed March 9, 1971. Patented May 2, 1972. Not available NTIS.

Patent 3,660,047. Production of Plutonium Formate and Plutonium Dioxide. Filed March 18, 1970. Patented May 2, 1972. Not available NTIS.

Patent 3,661,061. Picture Position Finder. Filed May 5, 1969. Patented May 9, 1972. Not available NTIS.

Patent 3,661,267. Solid Filters. Filed November 3, 1970. Patented May 9, 1972. Not available NTIS.

Patent 3,661,709. Nonswelling Uranium Nitride Fuel. Filed April 6, 1970. Patented May 9, 1972. Not available NTIS.

Patent 3,662,042. Method of Making a Nuclear Reactor Fuel Element of Uranium Mononitride in a Refractory Metal Matrix. Filed September 25, 1970. Patented May 9, 1972. Not available NTIS.

Patent 3,662,781. Sodium Heated Steam Generator. Filed March 2, 1971. Patented May 16, 1972. Not available NTIS.

Patent 3,663,504. Radiation-Resistant Plastic Insulators. Filed November 10, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,664,859. Pulsed Method for Impregnation of Graphite. Filed March 4, 1969. Patented May 23, 1972. Not available NTIS.

Patent 3,665,752. Vibration Density Meter Comprising Nodal Circle Supported Resonant Disk. Filed June 9, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,666,426. Continuous Process for the Production of High-Density Thoria. Filed May 1, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,443. Plutonium Production. Filed November 5, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,560. Electrochemical Power-Producing Cell. Filed September 21, 1970. Patented May 30. 1972. Not available NTIS.

Patent 3,666,673. Method of Disposing of Radioactive Organic Waste Solutions. Filed December 24, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,784. Process for Preparing *a*,*a*-Fluorinated Alkyl Isocyanates. Filed August 27, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,846. Process of Forming an Isotopic Heat Source. Filed April 11, 1969. Patented May 30, 1972. Not available NITS.

Patent 3,666,958. Up-Down Counter for Background Compensation. Filed August 18, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,508. Electrostatic Accelerated Charged Particle Deflector. Filed April 8, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,059. All-Metal Discharge Tube. Filed March 9, 1971. Patented May 30, 1972. Not available NTIS.

Patent 3,668,065. Apparatus for the Conversion of High Temperature Plasma Energy into Electrical Energy. Filed September 15, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,670,648. Linear Structure Capturing and Cutting Apparatus. Filed August 14, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,671,885. Fibrous Carbonaceous Composites and Method for Manufacturing Same. Filed June 17, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,673,327. Touch Actuable Data Input Panel Assembly. Filed November 2, 1970. Patented June 27, 1972. Not available NTIS.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Patent application 263,559. Synthesis of N5-Methyltetrahydro-Homofolic Acid and Related Reduced Derivatives of Homofolic Acid. Filed June 16, 1972. PC $3/MF $0.95.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 291,845. Arterial Pulse Wave Pressure Transducer. Filed September 25, 1972. PC $3/MF $0.95.

Patent application 178,771. Anti-Fog Composition. Filed September 8, 1971. PC $3/MF $0.95.

Patent application 304,705. Pulse Code Modulated Signal Synchronizer. Filed November 8, 1972. PC $3.50/MF $0.95.

Patent application 292,698. Electromagnetic Wave Energy Converter. Filed September 27, 1972. PC $3/MF $0.95.

Patent application 292,685. Turnstile Slot Antenna. Filed September 27, 1972. PC $3/MF $0.95.

Patent application 293,725. Star Scanner. Filed September 29, 1972. PC $3.25/MF $0.95.

Patent application 304,430. Conductive Elastomeric Extensometer. Filed November 7, 1972. PC $3/MF $0.95.

Patent application 289,049. Attitude Sensor. Filed September 14, 1972. PC $3/MF $0.95.

Patent application 285,705. Digital Controller for a Baum Folding Machine. Filed September 1, 1972. PC $3.75/MF $0.95.

Patent application 301,039. Latch Mechanism. Filed October 26, 1972. PC $3.25/MF $0.95.

Patent application 293,739. Passive Dual Spin Misalignment Compensators. Filed September 29, 1972. PC $3/MF $0.95.

Patent application 281,875. Method and Apparatus for Determining Thermophysical Properties of Specimens. Filed August 18, 1972. PC $3/MF $0.95.

[FR Doc. 73–3256; Filed 2–20–73; 8:45 am]

U.S. DEPARTMENT OF COMMERCE

Patent application 289,040. Preparation of Functional Fish Protein Concentrates and Isolates. Filed September 14, 1972. PC $3/MF $0.95.

Patent application 309,868. Sulfur Dioxide Pollution Monitor. Filed November 27, 1972. PC $3/MF $0.95.

Patent application 312,529. A System for Determining Parameters of a Particle by Radiant Energy Scattering Techniques. Filed December 6, 1972. PC $3/MF $0.95.

Patent application 221,249. Method of Producing an Intense, High-Purity K X-ray Beam. Filed January 27, 1972. PC $3/MF $0.95.

U.S. DEPARTMENT OF THE INTERIOR

Patent 3,378,336. Sulfate Removal from Brines. Filed June 17, 1966. Patented April 16, 1968. Not available NTIS.

Patent 3,577,331. Apparatus and Process for Effecting Changes in Solution Concentrations. Filed June 8, 1967. Patented May 4, 1971. Not available NTIS.

Patent 3,547,579. Removal of Sulfates from Brines. Filed December 19, 1967. Patented December 15, 1970. Not available NTIS.

Patent 3,632,309. Formation and Separation of Barium Hydrosulfide and Barium Hydroxide for Use in Chemical Recovery Processes. Filed March 27, 1970. Patented January 4, 1972. Not available NTIS.

Patent 3,676,335. Process for Effecting Changes in Solution Concentrations. Filed December 9, 1970. Patented July 11, 1972. Not available NTIS.

Patent 3,691,818. Method for Determination of Impurities in Helium Gas. Filed March 27, 1970. Patented September 19, 1972. Not available NTIS.

Patent 3,683,589. Helium Purifier. Filed September 8, 1970. Patented August 15, 1972. Not available NTIS.

Patent 3,676,208. Semipermeable Membranes. Filed August 7, 1970. Patented July 11, 1972. Not available NTIS.

Patent 3,676,107. Refining Iron-Bearing Wastes. Filed January 4, 1971. Patented July 11, 1972. Not available NTIS.

Patent application 287,592. Reverse Osmosis Membrane. Filed September 19, 1972. PC $3/MF $0.95.

Patent application 285,995. Method of Generating Ice Nuclei Smoke Particles for Weather Modification and Apparatus Therefor. Filed September 5, 1972. PC $3/MF $0.95.

Patent application 285,268. Recovery of Nickel and Cobalt. Filed August 31, 1972. PC $3/MF $0.95.

Patent application 281,667. System for Producing and Maintaining Purified, Sterile Water. Filed August 29, 1972. PC $3/MF $0.95.

Patent application 273,666. Fiber-Optic Probe for Measuring Light Intensity. Filed July 20, 1972. PC $3/MF $0.95.

Patent application 292,231. Bonding Composition. Filed October 3, 1972. PC $3/MF $0.95.

Patent application 292,232. Recovery of Metal Values from Chrome Etching Solutions. Filed October 3, 1972. PC $3/MF $0.95.

Patent application. 279,903. Flotation of Pyrite from Coal. Filed August 11, 1972. PC $3/MF $0.95.

Patent application 277.016. Production of Cuprous Oxide. Filed August 1, 1972. PC $3/MF $0.95.

Patent application 286,627. Mine Wall Coating. Filed September 6, 1972. PC $3/MF $0.95.

Patent application 280,923. Solvent Extraction Procedure for Separating Metal Values. Filed August 15, 1972. PC $3/MF $0.95.

Patent application 275,382. Production of Magnetic Fluids by Peptization Techniques. Filed July 26, 1972. PC $3.25/MF $0.95.

Patent application 219,742. Photomechanical Method and Apparatus. Filed January 21, 1972. PC $3.75/MF $0.95.

Patent application 273,667. Production of Low-Sulfur Fuel from Sulfur-Bearing Coals and Oils. Filed July 20, 1972. PC $3/MF $0.95.

Patent application 281,358. Electrodeposition of Metallic Boride Coatings. Filed August 17, 1972. PC $3/MF $0.95.

Patent application 271,340. Recovery of Copper and Steel from Scrap. Filed July 13, 1972. PC $3/MF $0.95.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 290,915. Low Loss Dichoic Plate. Filed September 21, 1972. PC $3/MF $0.95.

Patent application 310,034. Digital Communication System. Filed November 28, 1972. PC $3.50/MF $0.95.

Patent application 290,030. Digital Second Order Phase Locked Loop. Filed September 18, 1972. PC $3/MF $0.95.

Patent application 290,022. Dual Frequency Microwave Reflex Feed. Filed September 18, 1972. PC $3/MF $0.95.

Patent application 292,681. Controlled Oscillator System. Filed September 27, 1972. PC $3/MF $0.95.

Patent application 301,419. Heat Exchanger System and Method. Filed October 27, 1972. PC $3/MF $0.95.

Patent application 307,728. Steady State Thermal Radiometer. Filed November 17, 1972. PC $3/MF $0.95.

Patent application 310,576. Air Removal Device. Filed March 26, 1972. PC $3/MF $0.95.

Patent application 307,729. Apparatus for Inserting and Removing Specimens from High Temperature Vacuum Furnaces. Filed November 17, 1972. PC $3/MF $0.95.

Patent application 292,477. Program for Computer Aided Reliability Estimation. Filed September 26, 1972. PC $4.50/MF $0.95.

Patent application 308,363. Device to Prevent Clogging in a Hopper. Filed November 21, 1972. PC $3/MF $0.95.

TENNESSEE VALLEY AUTHORITY

Patent 3,703,364. Production of Oil-Prilled Fertilizer Materials. Filed April 8, 1971. Patented November 21, 1972. Not available NTIS.

[FR Doc. 73–3708; Filed 2–27–73; 8:45 am]

U.S. DEPARTMENT OF THE INTERIOR

Patent 3,675,310. Soldering Method. Filed April 20, 1971. Patented July 11, 1972. Not available NTIS.

Patent 3,710,925. Centrifugal Stower. Filed May 6, 1971. Patented January 16, 1973. Not available NTIS.

Patent application 302,960. Measuring Apparatus for Spatially Modulated Reflected Beams. Filed November 1, 1972. PC $3/MF $0.95.

Patent application 302,959. Angular Deviation Measuring Device and Its Method of Use. Filed November 1, 1972. PC $3/MF $0.95.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 308,362. Dielectric Loaded Aperture Antenna. Filed November 21, 1972. PC $3/MF $0.95.

[FR Doc. 73–4189; Filed 3–6–73; 8:45 am]

U.S. DEPARTMENT OF THE INTERIOR

Patent 3,679,973. Electrogasdynamic Dust Monitor. Filed October 20, 1970. Patented July 25, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 302,720. Active Air Cushion Control System Minimizing Vertical Cushion Response. Filed November 1, 1972. PC $3/MF $0.95.

Patent application 298,157. Image Tube. Filed October 16, 1972. PC $3/MF $0.95.

Patent application 313,881. Mossbauer Spectrometer Radiation Detector. Filed December 8, 1972. PC $3/MF $0.95.

Patent application 310,616. Automatic Quadrature Control and Measuring System. Filed November 29, 1972. PC $3/MF $0.95.

Patent application 305,012. Temperature Compensated Digital Inertial Sensor. Filed November 9, 1972. PC $3.50/MF $0.95.

Patent application 305,638. Light Shield and Cooling Apparatus. Filed November 10, 1972. PC $3/MF $0.95.

Patent application 313,390. Emergency Master Control Valve. Filed December 8, 1972. PC $3/MF $0.95.

Patent application 294,788. Control for Nuclear Thermionic Power Source. Filed October 3, 1972. PC $3/MF $0.95.

Patent application 310,611. Structural Panel. Filed November 29, 1972. PC $3/MF $0.95.

Tennessee Valley Authority

Patent 3,711,268. Stabilization of Polyphosphate Fertilizer Solutions. Filed May 7, 1971. Patented January 16, 1973. Not available NTIS.

[FR Doc. 73-5251; Filed 3-20-73; 8:45 am]

U.S. Department of the Interior

Patent application 323,557. Production of Niobium and Tantalum. Filed January 15, 1973. PC $3/MF $0.95.

National Aeronautics and Space Administration

Patent application 31,175. Programmable Physiological Infusion. Filed December 1, 1972. PC $3/MF $0.95.

Patent application 288,857. Hand-Held Photomicroscope. Filed September 13, 1972. PC $3/MF $0.95.

Patent application 305,639. Magnetocaloric Pump. Filed November 10, 1972. PC $3/MF $0.95.

Patent application 302,681. Explosively Welded Scarf Joint. Filed November 1, 1972. PC $3/MF $0.95.

[FR Doc. 73-5734; Filed 3-27-73; 8:45 am]

PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office, either on the basis of 4 years or more service in the Examining Corps; under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases"; or, having passed the examination for registration to practice before the Patent Office, held on September 12, 1972. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before May 18, 1973.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Anderson, Louise P., 1900 S. Eads St., #1031, Arlington, Va. 22202
Anderson, Stanley E., Jr., 1900 S. Eads St., #1031, Arlington, Va. 22202
Beach, William I., 6129 S. Mansfield Ave., Los Angeles, Calif. 90043
Bhogaraju, Sarojini, 2300 S. 24th Road., #225, Arlington, Va. 22202
Borovian, Joseph J., P.O. Box 135, Fairview, N.J. 07022
Cochran, William W. II, 5900 Ryland Drive, Bethesda, Md. 20014
Ditzel, Roger G., 2323 McKinley Circle, Ames, Iowa 50010
Hart, Don A., Office of Naval Research, 760 Market St., San Francisco, Calif. 94102
Horwitz, Harold C., 1819 N. Broadway, Santa Ana, Calif. 92706
Kasa, Pamela D., 11 Cadman Plaza West, Brooklyn, N.Y. 11201
Klem, Stanley J., 321 Elm St., Vestal, N.Y: 13850
Knox, William, 8310 Ashcroft Drive, Houston, Tex. 77035
Koch, Robert J., 2111 Jefferson Davis Hwy., Arlington, Va. 22202
Krieg, Marc S., 75—25 150th St., Flushing, N.Y. 11367
Lappin, Mark G., 5805 Stearns Hill Road, Waltham, Mass. 02154
Loiselle, Arthur A., Jr., 7 Hycrest Drive, Worcester, Mass. 01606
Lorin, Charles M., 1613 Old Beulah Road, Pittsburgh, Pa. 15235
Mahoney, Donald E., 27 Lynnfield Drive, Hightstown, N.J. 08540
McConnell, David G., 5915 N. Western Ave., Peoria, Ill. 61614
Menelly, Richard A., 18 Hyde St., Danvers, Mass. 01923
Policinski, Henry J., 18826 Sunnybrook, Lathrup Village, Mich. 48076
Powell, Maynard A., Esperson Bldg., Houston, Tex. 77002
Quinlan, David M., 3201 Landover St., #1421, Alexandria, Va. 22305
Richbourg, James R., 4641 Capitola Ave., San Jose, Calif. 95111
Riley, Reed F., 434 W. Webster St., Chicago, Ill. 60614
Rushton, George L., 6 Merritt Drive, Trenton, N.J. 08638
Rymek, Edward, 275 Slater St., Rm. 1816, Ottawa, Ontario, Canada
Schmidt, Edward P., 124 Lake Drive W., Wayne, N.J. 07470
Sheehan, William J., 13416 Hillendale Drive, Woodbridge, Va. 22191
Smith, Charles E., 31 Brook Hill Lane, #B, Rochester, N.Y. 14625
Strnad, Elizabeth E., 3133 Bowling Green Drive, Walnut Creek, Calif. 94598
Sturgeon, Edward A. II, 241 N. Spruce Drive, Anaheim, Calif. 92705
Taishoff, Howard A., 105 Oxford Blvd., Great Neck, N.Y. 11023
Vasta, Vincent J., Jr., 1308 Crosby Ave., Bronx, N.Y. 10461
Veeder, David A., 2306 Hoover Ave., Billings, Mont. 59102
Warren, William Z., Box 33, Bethel, Pa. 19507
White, Stephen W., 892 Holmdel Road, Holmdel, N.J. 07733
Young, Harrison H., Jr., 130 Longview Drive, Princeton, N.J. 08540
Zobkiw, David J., 233 Palmdale, #1, Williamsville, N.Y. 14221

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

Part 2—Rules of Practice in Trademark Cases

Abandonment of Application

A proposal was published at 37 FR 18391 to revise § 2.68. Full consideration has been given to all comments received pursuant to this notice and changes in the text of the original proposal have been made in view thereof.

The revision of § 2.68 permits an attorney or other person representing the applicant to abandon or withdraw an application. Prior to this revision, the applicant was required to sign the statement of abandonment. The rule is further revised by the addition of a sentence which indicates that in a Patent Office proceeding, abandonment of the application does not affect any rights which the applicant may have in the mark. The word "withdrawal" which has been added to the rule is synonymous with the word "abandonment" in the context of this rule and may be used by those who prefer to do so.

Effective date. This revision shall become effective on March 27, 1973.

Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is amended by revising § 2.68 to read as follows:

§ 2.68 ***Express abandonment (withdrawal) of application.***

An application may be expressly abandoned by filing in the Patent Office a written statement of abandonment or withdrawal of the application signed by the applicant, or the attorney or other person representing the applicant. The fact that an application has been expressly abandoned shall not, in any proceeding in the Patent Office, affect any rights that the applicant may have in the mark which is the subject of the abandoned application.

Dated: Mar. 15, 1973.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved:

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 73-5768; Filed 3-26-73; 8:45 am]

Published in 38 F.R. 7985; Mar. 27, 1973

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,690,610, Begle and Gaudreau, MILLING CUTTER; **3,278,222**, J. H. Begle, CUTTING TOOL AND METHOD; **3,487,535**, same, METHOD OF ASSEMBLING AND MAINTAINING CUTTING TOOL, filed Feb. 4, 1972, D.C., E.D. Mich. (Detroit), Doc. 37792, *Kysor Industrial Corporation* v. *Indesomatic, Inc. and Thomas C. Meggs.* On joint motion and order dismissed with prejudice, Dec. 1, 1972. Same, filed Aug. 16, 1972, D.C., E.D. Mich. (Detroit), Doc. 38759, *Kysor Industrial Corp.* v. *Supreme Tri-Bit Co. and Norman H. Liebert.* on joint motion and order dismissed with prejudice, Nov. 30, 1972.

2,729,551, C. C. Cohn, SURFACE TREATMENT OF ALUMINUM AND ITS ALLOYS, filed Nov. 20, 1972, D.C. Del. (Wilmington), Doc. 4520, *Colonial Alloys Company (a partnership of Samuel L. Cohn and Charles C. Cohn)* v. *Howmet Corporation.*

2,762,777, Went, Van Oosterhout and Gorter, PERMANENT MAGNET AND METHOD OF MAKING THE SAME; **2,762,778**, Gorter, Rathenau and Stuyts, METHOD OF MAKING MAGNETICALLY-ANISOTROPIC PERMANENT MAGNETS, filed Nov. 17, 1972, D.C., N.D. Ohio (Toledo), Doc. C-72-414, *U.S. Philips Corporation* v. *Ferro Corporation.*

2,762,778. (See 2,762,777.)

2,788,613, Gelfand and Noble, INERTIA-PROPELLED TOY VEHICLE AND LAUNCHING RUNWAY, filed Oct. 10, 1972, D.C., S.D.N.Y., Doc. 72-C-4484, *Ideal Toy Corporation* v. *Remco Industries, Inc.*

2,816,424, Swartswelter and Kullgren, METHOD AND APPARATUS FOR MAKING REINFORCED PLASTIC TUBING, filed Dec. 6, 1972, D.C., S.D. Fla. (Miami), Doc. 72-1935-C-PF, *Cook, Inc.* v. *Cordis Corporation.*

2,881,788, A. J. Johnson, VALVE WHICH CLOSES AGAINST INTERNAL PRESSURE, filed Nov. 15, 1972, D.C. Oreg. (Portland), Doc. 72-930, *R. H. Pierce Mfg. Company* v. *Berg Bros. and Anderson-Miller Mfg. Company, doing business as A-M Mfg. Company.*

2,900,638, O. O'Kelley, APPARATUS FOR DRIVING JOINT NAILS; **2,947,990**, same, APPARATUS FOR FORMING AND DRIVING JOINT NAILS; **3,597,142**, L. Jasper, AUTOMATIC NAILING MACHINE, filed Oct. 6, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2891–HP, *Lane Jasper* v. *Ri-Mat Enterprises Inc. et al.*

2,906,875, E. T. Molinaro, STATION SAMPLING RADIO, filed Dec. 11, 1972, D.C., M.D. Pa. (Scranton), Doc. C–72–612, *Edward T. Molinaro and Anthony P. Catanzaro* v. *Sears, Roebuck and Company.*

2,947,990. (See 2,900,638.)

3,051,464, Yeo and Wald, AIR-HEATING GAS BURNER; **Re. 25,626**, same, filed Nov. 21, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2942, *Eclipse Fuel Eng. Co.* v. *Maxon Corporation.*

3,073,536, J. N. Quinn, PORTABLE CRUSHING PLANT; **3,400,235**, same, filed Nov. 17, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72–C–634, *John N. Quinn and Johnson Welding & Equipment Co., Inc.* v. *Lippmann, Inc. and Edmind Lippmann & Gladys Lippmann, doing business as Gilco Co.*

3,083,393, J. J. Nappi, SHOE SOLE CLEANER; **3,665,543**, same, TACKY MAT STACK, filed Nov. 17, 1972, D.C., N.D. Tex. (Dallas), Doc. CA–3–6511–D, *Arbrook, Inc. and John J. Nappi* v. *American Hospital Supply Corporation.*

3,159,897, Ellis and Thorsteinson, MACHINE FOR EXTRUDING HOLLOW CORED CONCRETE SECTIONS; **3,284,867**, G. Booth, MACHINES FOR FORMING HOLLOW CORED CONCRETE PRODUCTS, filed Sept. 14, 1972, D.C. (District of Columbia), Doc. 1848–72, *The George Hyman Construction Co.* v. *Spiroll Corporation, Ltd.*

3,204,324, F. Nilsen, METHOD FOR MAKING AN INSULATED FRAME CONSTRUCTION; **3,624,885**, Holliday and Barker, APPARATUS FOR MAKING A THERMALLY INSULATING JOINT CONSTRUCTION AND AN ADJUSTABLE GUIDE ASSEMBLY FOR USE THEREWITH, filed Oct. 27, 1972, D.C., E.D. Mich. (Detroit), Doc. 39126, *Reynolds Metals Co.* v. *Acron Bldg. Components Inc.*

3,222,715, E. J. Harris, APPARATUS FOR LOADING GREEN TIRES IN A TIRE PRESS; **3,223,767**, same, METHOF OF LOADING A TIRE IN A TIRE PRESS, filed Dec. 7, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–1310, *Edward J. Harris* v. *NRM Corporation et. al.*

3,223,767. (See 3,222,715.)

3,251,016, Manetti and Brugger, ELECTRON TUBE SOCKETS; **3,543,098**, Simovits, Dumas and Manetti, ELECTRON TUBE SOCKET ASSEMBLY, filed Apr. 1, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c813, *American Plasticraft Co.* v. *Permonite Mfg. Co.* Pursuant to stipulation under Rule 41(a), cause dismissed with prejudice, Dec. 7, 1972.

3,273,222. (See 2,690,610.)

3,284,867. (See 3,159,897.)

3,304,636, Viecell and Walczak, HEATING AND STEAM GENERATING SUBASSEMBLY FOR A PRESSING IRON; **3,335,507**, J. S. Viecell, same; **3,541,306**, Barnas and Gronwick, ELECTRIC PRESSING IRON; **3,599,357**, Gronwick and Westphal, same; **3,691,660**, Gronwick, Illian and Westphal, same, filed Dec. 7, 1972, D.C. Del. (Wilmington), Doc. 4533, *Scovill Manufacturing Company* v. *Sunbeam Corporation.*

3,335,507. (See 3,304,686.)

3,398,372, Vickery and Fisher, CARBON DIOXIDE LASER SYSTEMS FOR THE EMISSION OF COHERENT RADIATION, filed Dec. 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c3050, *Semi-Elements Inc. et al.* v. *Motorola, Inc.*

3,400,235. (See 3,073,536.)

3,432,798, Muska, Schacker and McHattie, GROUNDING CONNECTION FOR ELECTRICAL UNIT, filed Sept. 8, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2284, *William A. Muska, James L. Schacker, and Earl E. McHattie* v. *Sierra Elec.* Plaintiff voluntarily dismissed the proceedings, Dec. 8, 1972.

3,487,535. (See 2,690,610.)

3,499,305, T. W. Abernathy, ROLLING MILL AND METHOD OF ROLLING STRIPS; **3,534,576**, Abernathy and Lindsay, TAPER ROLLING MILL; **3,535,903**, same, ROLL FORMING APPARATUS HAVING ROLLS WITH RADIALLY AND AXIALLY YIELDABLE FORMING MEMBERS, filed Nov. 3, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–2471–ALS, *Tronchemics Research Inc. and PRP Corporation* v. *Northrop Corporation.* Dismissed for want of prosecution, Nov. 20, 1972.

3,534,576. (See 3,499,305.)

3,535,903. (See 3,499,305.)

3,541,306. (See 3,304,636.)

3,543,098. (See 3,251,016.)

3,576,099, R. S. Walton, SOLID STATE TIME PIECE HAVING ELECTRO OPTICAL TIME DISPLAY; **3,644,118**, same, ELECTRONICALLY CONTROLLED TIMEPIECE USING LOW POWER MOS TRANSISTOR CIRCUITRY; **3,672,155**, Bergey and Walton, SOLID STATE WATCH, filed Oct. 6, 1972, D.C., S.D.N.Y., Doc. 72–C–4261, *HMW Industries Inc.* v. *Uranus Electronics, Inc. and Elgin National Industries, Inc.*

3,597,142. (See 2,900,638.)

3,599,357. (See 3,304,636.)

3,613,044, W. G. Rarick, POWER SUPPLY CORD HATCH, filed Dec. 11, 1972, D.C., N.D. Ind. (South Bend), Doc. 72S248, *Lyall Electric, Inc.* v. *Mid American Sales Co., Inc. and Guy P. Bassi.*

3,624,885. (See 3,204,324.)

3,646,574, H. S. Holzer, COMPATIBLE STEREO GENERATOR, filed Aug. 25, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1967–RJK, *Howard S. Holzer* v. *Parasound, Inc. and Kurt Orban Company, Inc.*

3,644,118. (See 3,576,099.)

3,665,543. (See 3,083,393.)

3,672,155. (See 3,576,099.)

3,691,660. (See 3,304,636.)

Re. 25,626. (See 3,051,464.)

Certificates of Correction for the Week of Apr. 24, 1973

Re. 27,170
Re. 27,488
2,837,778
3,453,941
3,535,070
3,572,498
3,591,451
3,583,399
3,609,209
3,619,142
3,621,785
3,622,530
3,623,644
3,624,115
3,624,445
3,624,786
3,627,005
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Patents Available for Licensing or Sale

D. 225,039. RETRACTIBLE CLIP-ON PACIFIER. Irene Sauritis, 710 Richfield Ave., Kenilworth, N.J., 07083.

3,465,373. HOSPITAL BED. Harriet A. Wilson, 115 Hilltop Road, Waverly, Pa., 18471.

3,686,938. PORTABLE COOKING GRILL. Edward J. Faltersack. 19517 Almaden Road, San Jose, Calif., 95120.

3,695,658. GLARE-SHIELD. Fred Vacha, 226 Lombardy Ave., Fort Lauderdale, Fla., 33308.

3,709,513. TROLLEY SUITCASE. K. A. I. Cassimally, 210 3rd St. W., Roundup, Mont., 59072.

3,712,047. TIME DISPLAY DEVICE FOR TIMEPIECES. Pierre Girard. Correspondence to: Stevens, Davis et al., 1911 Jefferson Davis Hwy., Arlington, Va., 22202.

3,718,241. SAFETY BELT. John D. Forsythe, 1543 Dougall Ave., Windsor, Ontario, Canada, N8X 152.

The following patent is available for non-exclusive license on reasonable terms.

Inquiries should be addressed to: Henry Reitler, P.O. Box 785, Nashville, Tenn., 37202.

3,195,125. TELEVISION AID TO AIRCRAFT INSTRUMENT LANDING.

The following 6 patents are offered by: The Horstman Gear Co., Ltd., Newbridge Works, Bath, Somerset, England.

3,565,009. CHEQUE SIGNING MACHINE.
3,573,620. SECURITY SYSTEM WITH INDUCTIVE TO RF COMMUNICATIONS LINKS.
3,579,221. ALARM SYSTEM.
3,577,079. WATCHMAN'S RADIO LOCATION INDICATING SYSTEM.
3,539,821. TRANSDUCER OPERATED SWITCHES.
3,478,181. ELECTRIC CIRCUIT CONTROLLERS INCORPORATING TIMESWITCHES.

The following 6 patents are offered by: Bruce B. Krost, 754 Union Commerce Bldg., Cleveland, Ohio, 44115.

3,581,395. TOOL FOR INTERNALLY CUTTING A TUBE AT AN ANGLE TO THE AXIS THEREOF.
3,677,255. ELECTRICAL IGNITION SYSTEM.
2,925,787. AUTOMATIC DISPATCH.
3,039,029. CONTROL APPARATUS FOR ELECTRICAL SYSTEMS.
3,006,464. DRAWING PLUG.
3,292,407. TUBE DRAWING APPARATUS.

Rockwell International Corporation is prepared to grant non-exclusive licenses under the following 2 patents upon reasonable terms.

Application for license may be addressed to Rockwell International Corporation, Los Angeles, Aircraft Division, International Airport, Los Angeles, Calif., 90009, Attn: Div. Patent Counsel.

3,444,603. ROLL DIFFUSION BONDING METHOD.
3,550,252. ROLL DIFFUSION BONDING METHOD.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 32 patents.

Inquiries respecting licenses under the RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of Americas, New York, N.Y., 10036.

3,708,418. APPARATUS FOR ETCHING OF THIN LAYERS OF MATERIAL BY ION BOMBARDMENT.
3,708,615. GAMMA CORRECTION BANDPASS AMPLIFIER CIRCUITS.
3,708,622. CATHODE-RAY TUBE WITH LAMINATED SAFETY PANEL AND SEPARATE LIGHT-ATTENUATING LAYER.
3,708,655. ARTICLE IDENTIFICATION APPARATUS.
3,708,712. INTELLIGENCE-HANDLING DEVICE HAVING MEANS FOR LIMITING INDUCED ELECTROSTATIC POTENTIAL.
3,709,206. REGULATED IGNITION SYSTEM.
3,710,140. FLIP-FLOP AND HOLD PHASE DETECTOR.
3,710,167. ORGANIC ELECTROLUMINESCENT CELLS HAVING A TUNNEL INJECTION CATHODE.
3,710,202. HIGH FREQUENCY POWER TRANSISTOR SUPPORT.
3,710,283. APPARATUS FOR EFFICIENTLY CONVERTING MICROWAVE ENERGY INTO ACOUSTIC ENERGY.
3,710,303. EDGE CONNECTOR.
3,711,001. WEB POSITION DETECTOR USING TEMPERATURE SENSING ELEMENTS.
3,711,641. VELOCITY ADJUSTING SYSTEM.
3,711,720. AUTOMATIC BRIGHTNESS CONTROL FOR IMAGE INTENSIFIER TUBE.
3,711,738. HIGH VOLTAGE AND WIDTH REGULATION CIRCUIT.
3,711,763. OVERCURRENT PROTECTION CIRCUIT FOR A VOLTAGE REGULATOR.
3,711,793. HIGH POWER MICROWAVE SWITCH INCLUDING A PLURALITY OF DIODES AND CONDUCTIVE RODS.
3,712,147. MECHANICAL DRIVE MECHANISM WITH PROGRAMMABLE OUTPUT FUNCTION.
3,712,700. METHOD OF MAKING AN ELECTRON EMITTER DEVICE.
3,712,733. MAGNETO-ELECTRIC APPARATUS FOR REPRODUCING AN IMAGE ON A RECORDING ELEMENT.
3,712,995. INPUT TRANSIENT PROTECTION FOR COMPLEMENTARY INSULATED GATE FIELD EFFECT TRANSISTOR INTEGRATED CIRCUIT DEVICE.
3,713,111. OPERATION OF MEMORY ARRAY EMPLOYING VARIABLE THRESHOLD TRANSISTORS.
3,713,140. DECODER FOR DELAY MODULATION SIGNALS.
3,713,822. PYROELECTRIC PHOTOCONDUCTIVE ELEMENTS AND METHOD OF CHARGING SAME.
3,713,884. METHOD FOR PREPARING A CONDUCTIVE COATING ON A GLASS SURFACE.
3,713,886. ENCAPSULATED MAGNETIC MEMORY ELEMENT.

3,714,490. LUMINESCENT SCREEN COMPRISING PHOSPHOR CORES LUMINESCENT IN FIRST COLOR AND PHOSPHOR COATINGS LUMINESCENT IN SECOND COLOR.
3,714,491. QUADRANT PHOTODIODE.
3,714,521. SEMICONDUCTOR DEVICE OR MONOLITHIC INTEGRATED CIRCUIT WITH TUNGSTEN INTERCONNECTIONS.
3,714,572. ALIGNMENT AND TEST FIXTURE APPARATUS.
3,714,583. MUTING CIRCUIT.
3,714,638. CIRCUIT FOR IMPROVING OPERATION OF SEMICONDUCTOR MEMORY.

General Electric Company is prepared to grant non-exclusive licenses under the following 245 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following 4 patents should be addressed to: Patent Counsel Construction Materials Business Division, General Electric Company, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,631,519. STRESS GRADED CABLE TERMINATION.
3,639,529. METHOD FOR MANUFACTURING CROSS-LINKED CHLORINATED POLYMERIC SYSTEMS.
3,644,662. STRESS CASCADE-GRADE CABLE TERMINATION.
3,665,602. HAND CUTTING TOOL.

Applications for license under the following 8 patents may be addressed to: General Electric Co., Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind., 46804. Attn: Patent Counsel.

3,172,197. METHOD OF ACHIEVING ALIGNMENT OF BALL BEARINGS AND SHAFT COMPONENTS.
3,195,222. METHOD OF ASSEMBLING DYNAMOELECTRIC MACHINES.
3,359,628. METHOD OF PRODUCING MACHINES HAVING PROPER FREEDOM OF REVOLUTION FOR ROTATABLE ASSEMBLIES THEREIN.
3,633,056. STATOR SLOT AND WINDING ARRANGEMENTS.
3,659,337. APPARATUS AND METHOD FOR TYING COILS.
3,670,408. METHOD OF MAINTAINING A LAMINATED ARTICLE UNDER COMPRESSION DURING A PART OF ITS MANUFACTURE.
3,686,618. LAMPHOLDER.
3,701,877. METHOD AND APPARATUS FOR MAKING ELECTRICAL CONNECTIONS.

Applications for license under the following 233 patents may be addressed to: Patent Counsel Semiconductor Products Department, General Electric Co., Electronics Park, Bldg. #7, Syracuse, N.Y., 13201.

3,016,318. SEMICONDUCTOR DEVICES AND METHODS OF MAKING SAME.
3,020,129. PRODUCTION OF SILICON OF IMPROVED PURITY.
3,021,461. SEMICONDUCTOR DEVICE.
3,080,704. NON-RECTIFYING CONTACTS TO SILICON CARBIDE.
3,065,391. SEMICONDUCTOR DEVICES.
3,110,849. TUNNEL DIODE DEVICE.
3,116,183. ASYMMETRICALLY CONDUCTIVE DEVICE.
3,124,703. SEMICONDUCTOR DEVICES.
3,132,408. METHOD OF MAKING SEMICONDUCTOR STRAIN SENSITIVE DEVICES.
3,135,585. METHOD OF GROWING DISLOCATION-FREE SEMICONDUCTOR CRYSTALS.
3,146,204. PREPARATION OF II–VI SEMICONDUCTING COMPOUNDS BY SOLVENT EXTRACTION.
3,160,798. SEMICONDUCTOR DEVICES INCLUDING MEANS FOR SECURING THE ELEMENTS.
3,172,068. SEMICONDUCTOR DEVICE.
3,176,149. SOLID STATE CIRCUIT INTERRUPTER.
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3,184,633. SEMICONDUCTIVE ELECTRON MULTIPLIER.
3,197,839. METHOD OF FABRICATING SEMICONDUCTOR DEVICES.
3,200,017. GALLIUM ARSENIDE SEMICONDUCTOR DEVICES.
3,201,227. METHOD OF PREPARING READILY DECOMPOSABLE MATERIALS.
3,201,666. NON-RECTIFYING CONTACTS TO SILICON CARBIDE.
3,216,942. N-TYPE SEMICONDUCTING CUBIC BORON NITRIDE.
3,232,799. METHOD OF DETERMINING THE THICKNESS OF EPITAXIALLY DEPOSITED LAYERS OF MATERIAL.
3,235,937. LOW COST TRANSISTOR.
3,237,064. SMALL PN-JUNCTION TUNNEL-DIODE SEMICONDUCTOR.
3,239,728. SEMICONDUCTOR SWITCH.
3,242,551. SEMICONDUCTOR SWITCH.
3,243,267. GROWTH OF SINGLE CRYSTALS.
3,243,274. METHOD OF FORMING SILICON ARTICLE.
3,244,040. SEMICONDUCTOR LEAD WIRE HANDLING.
3,249,473. USE OF METALLIC HALIDE AS A CARRIER GAS IN THE VAPOR DEPOSITION OF III–V COMPOUNDS.
3,249,764. FORWARD BIASED NEGATIVE RESISTANCE SEMICONDUCTOR DEVICES.
3,249.826. SEMICONDUCTOR DEVICE MOUNTING HAVING ONE PORTION OF THE SEMICONDUCTOR SECURED TO A LEAD.
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3,261,730. METHOD OF FORMING GALLIUM ARSENIDE SEMICONDUCTOR DEVICES.
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3,265,909. SEMICONDUCTOR SWITCH COMPRISING A CONTROLLED RECTIFIER SUPPLYING BASE DRIVE TO A TRANSISTOR.
3,268,309. SEMICONDUCTOR CONTACT MEANS.
3,270,562. SOLID STATE HYDROSTATIC PRESSURE GAUGE.
3,271,700. SOLID STATE SWITCHING CIRCUITS.
3,275,907. SEMICONDUCTOR DEVICE MOUNTING WITH EMBEDDED THERMAL MATCHING CONTACT MEMBERS.
3,275,909. SEMICONDUCTOR SWITCH.
3,278,813. TRANSISTOR HOUSING CONTAINING PACKED, EARTHY, NONMETALLIC, ELECTRICALLY INSULATING MATERIAL.
3,282,749. METHOD OF CONTROLLING DIFFUSION.
3,284,675. SEMICONDUCTOR DEVICE INCLUDING CONTACT AND HOUSING STRUCTURES.
3,284,681. PNPN SEMICONDUCTOR SWITCHING DEVICES WITH STABILIZED FIRING CHARACTERISTICS.
3,291,578. METALLIZED SEMICONDUCTOR SUPPORT AND MOUNTING STRUCTURE.
3,292,128. SEMICONDUCTOR STRAIN SENSITIVE DEVICES.
3,293,449. SOLID STATE THYRATRON REPLACEMENT.
3,295,029. FIELD EFFECT SEMICONDUCTOR DEVICE WITH POLAR POLYMER COVERED OXIDE COATING.
3,297,920. SEMICONDUCTOR DIODE WITH INTEGRATED MOUNTING AND SMALL AREA FUSED IMPURITY JUNCTION.
3,303,360. SEMICONDUCTOR SWITCH.
3,316,130. EPITAXIAL GROWTH OF SEMICONDUCTOR DEVICES.
3,324.359. FOUR LAYER SEMICONDUCTOR SWITCH WITH THE THIRD LAYER DEFINING A CONTINUOUS, UNINTERRUPTED INTERNAL JUNCTION.
3,328,652. VOLTAGE COMPARATOR.
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3,341,380. METHOD OF PRODUCING SEMICONDUCTOR DEVICES.
3,346,384. METAL IMAGE FORMATION.
3,346,784. MINIATURE RECTIFIER AND METHOD OF MANUFACTURE.
3,346,787. HIGH FREQUENCY TRANSISTOR WITH INTERNAL ANGULAR POSTS AND DIVERGENT, STIFF LEADS TO REDUCE INTERELECTRODE CAPACITANCE.

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3,354,368. PNPN SWITCH WITH $10<N_E/N_B<100$ SO THAT CONDUCTIVITY MODULATION RESULTS DURING TURN-OFF.
3,363,150. GLASS ENCAPSULATED DOUBLE HEAT SINK DIODE ASSEMBLY.
3,368,120. MULTILAYER CONTACT SYSTEM FOR SEMICONDUCTOR DEVICES.
3,368,122. SEMICONDUCTOR DEVICES.
3,368,179. TEMPERATURE COMPENSATED SEMICONDUCTOR STRAIN GAGE.
3,369,153. DEVICE FOR PROTECTING ELECTRICAL APPARATUS.
3,370,207. MULTILAYER CONTACT SYSTEM FOR SEMICONDUCTOR DEVICES INCLUDING GOLD AND COPPER LAYERS.
3,370,209. POWER BULK BREAKDOWN SEMICONDUCTOR DEVICES.
3,371,227. TRANSISTOR-S.C.R. CIRCUITRY PROVIDING A THYRATRON EQUIVALENT.
3,372,318. SEMICONDUCTOR SWITCHES.
3,372,672. PHOTOPOLYMERIZATION MEANS IN A VAPOR DEPOSITION COATING APPARATUS.
3,374,809. LEAD ORIENTOR.
3,375,416. SEMICONDUCTOR TUNNEL DIODE DEVICE.
3,375,417. SEMICONDUCTOR CONTACT DIODE.
3,379,625. SEMICONDUCTOR TESTING.
3,381,185. DOUBLE HEAT SINK SEMICONDUCTOR DIODE WITH GLASS ENVELOPE.
3,381,226. ZERO CROSSING SYNCHRONOUS SWITCHING CIRCUITS FOR POWER SEMICONDUCTORS.
3,391,310. SEMICONDUCTOR SWITCH.
3,401,107. METHOD OF MANUFACTURING SEMICONDUCTOR CAMERA TUBE TARGETS.
3,403,558. PIEZORESISTIVE THERMOMETER.
3,408,222. GLASS-SILICON ASSEMBLIES.
3,408,593. SCANNED LASER BEAM DEVICE.
3,408,732. METHOD OF FORMING A SEMICONDUCTOR DEVICE.
3,410,132. SEMICONDUCTOR STRAIN GAUGE.
3,413,527. CONDUCTIVE ELECTRODE FOR REDUCING THE ELECTRIC FIELD IN THE REGION OF THE JUNCTION OF A JUNCTION SEMICONDUCTOR DEVICE.
3,416,959. METHOD OF FORMING CARBON RESISTOR FILM.
3,417,246. FREQUENCY MODULATED SEMICONDUCTOR JUNCTION LASER.
3,417,248. TUNNELING SEMICONDUCTOR DEVICE EXHIBITING STORAGE CHARACTERISTICS.
3,427,512. SEMICONDUCTOR LOW VOLTAGE SWITCH.
3,428,870. SEMICONDUCTOR DEVICES.
3,432,758. METHOD OF ANALYZING MATERIALS TO DETERMINE THE IMPURITY CONTENT THEREOF.
3,434,023. SEMICONDUCTOR SWITCHING DEVICES WITH A TUNNEL JUNCTION DIODE IN SERIES WITH THE GATE ELECTRODE.
3,434,868. SILICON DIOXIDE COATINGS UTILIZING A PLASMA.
3,436,679. SEMICONDUCTOR JUNCTION LASER WITH ELECTRONICALLY DISPLACEABLE AND DEFLECTABLE BEAM.
3,438,668. CONTACTLESS LIFTER.
3,439,235. EPOXY ENCAPSULATED SEMICONDUCTOR DEVICE.
3,439,237. ANALOGUE UNIJUNCTION DEVICE.
3,446,351. CRYOGENIC AVALANCHE PHOTODIODE OF ImSb WITH NEGATIVE RESISTANCE CHARACTERISTIC AT POTENTIAL GREATER THAN REVERSE BREAKDOWN.
3,449,641. EPOXY ENCAPSULATED SEMICONDUCTOR DEVICE WHEREIN THE ENCAPSULANT COMPRISES AN EPOXY NOVOLAK.
3,451,867. PROCESSES OF EPITAXIAL DEPOSITION OR DIFFUSION EMPLOYING A SILICON CARBIDE MASKING LAYER.
3,452,252. DEVICE FOR PROTECTING ELECTRICAL APPARATUS.
3,456,131. SEQUENTIAL FLASHER CIRCUITS.
3,457,631. METHOD OF MAKING A HIGH FREQUENCY TRANSISTOR STRUCTURE.
3,462,657. PROTECTION MEANS FOR SURFACE SEMICONDUCTOR DEVICE HAVING THIN OXIDE FILMS THEREIN.
3,463,936. SEQUENTIAL LOAD ENERGIZING CIRCUIT.
3,463,970. INTEGRATED SEMICONDUCTOR RECTIFIER ASSEMBLY.
3,465,417. ALLOY-JUNCTION AND METAL-SEMICONDUCTOR DIODE FABRICATION METHOD.
3,466,529. ALTERNATING CURRENT POWER CONTROL CIRCUIT.
3,471,291. PROTECTIVE PLATING OF OXIDE-FREE SILICON SURFACE.
3,476,918. CARD AND TAPE READER.
3,476,993. FIVE LAYER AND JUNCTION BRIDGING TERMINAL SWITCHING DEVICES.
3,479,234. METHOD OF PRODUCING FIELD EFFECT TRANSISTORS.
3,479,573. WIDE BAND GAP SEMICONDUCTOR DEVICES HAVING IMPROVED TEMPERATURE INDEPENDENT NON-RECTIFYING CONTACTS.
3,480,848. THIN-FILM STORAGE DIODE WITH TELLURIUM COUNTERELECTRODE.
3,481,796. METHOD OF PRODUCING HOMOGENEOUS CRYSTALS OF CONCENTRATED ANTIMONY-BISMUTH SOLID SOLUTIONS.
3,482,119. REGULATED NUCLEATING POSITION TWO-VALLEY ELECTRO-TRANSFER EFFECT DEVICE.
3,482,177. TRANSISTOR DIFFERENTIAL OPERATIONAL AMPLIFIER.
3,482,189. FREQUENCY CONTROL OF SEMICONDUCTIVE JUNCTION LASERS BY APPLICATION OF FORCE.
3,482,974. METHOD OF PLATING GOLD FILMS ONTO OXIDE-FREE SILICON SUBSTRATES.
3,482,975. PHOTOETCHING OF GOLD.
3,482,976. PHOTOLYTIC ETCHING OF GOLD.
3,483,108. METHOD OF CHEMICALLY ETCHING A NONCONDUCTIVE MATERIAL USING AN ELECTROLYTICALLY CONTROLLED MASK.
3,484,626. SEQUENTIAL FLASHER CIRCUITS.
3,484,713. TWO-STAGE SEMICONDUCTOR COHERENT RADIATION SOURCE.
3,485,630. METHOD OF ETCHING A METAL LAYER COATED WITH A LAYER CONTAINING A PHOTOLYTIC HALOGEN LIBERATOR AND A BLEACHABLE ORGANIC DYE.
3,489,563. PHOTOLYTIC ETCHING OF NICKEL-CHROMIUM ALLOY.
3,489,564. PHOTOLYTIC ETCHING OF SILICON DIOXIDE.
3,490,056. ELECTROMECHANICAL RESONATOR FOR INTEGRATED CIRCUITS.
3,491,286. ELECTRON BEAM FABRICATION OF MICROELECTRONIC CIRCUIT PATTERNS.
3,491,272. SEMICONDUCTOR DEVICES WITH INCREASED VOLTAGE BREAKDOWN CHARACTERISTICS.
3,494,768. CONDENSED VAPOR PHASE PHOTOETCHING OF SURFACE.
3,496,427. SEMICONDUCTOR DEVICE WITH COMPOSITE ENCAPSULATION.
3,498,818. METHOD OF MAKING HIGHLY REFLECTIVE ALUMINUM FILMS.
3,504,302. FREQUENCY CONTROLLED SEMICONDUCTOR JUNCTION LASER.
3,505,571. GLASS COVERED SEMICONDUCTOR DEVICE.
3,509,446. FULL-WAVE RECTIFYING MONOLITHIC INTEGRATED CIRCUIT.
3,514,346. SEMICONDUCTIVE DEVICE HAVING ASYMMETRICALLY CONDUCTIVE JUNCTION.
3,516,346. PHOTOLYTIC ETCHING OF NICKEL-CHROMIUM ALLOY.
3,517,240. METHOD AND APPARATUS FOR FORMING A FOCUSED MONOENERGETIC ION BEAM.

3,518,111. PHOTOPOLYMERIZED FILM, COATING AND PRODUCT, AND METHOD OF FORMING.

3,520,684. PHOTOLYTIC ETCHING OF SILICON DIOXIDE BY ACIDIFIED ORGANIC FLUORIDES.

3,520,685. ETCHING SILICON DIOXIDE BY DIRECT PHOTOLYSIS.

3,520,686. INDIRECT PHOTOLYTIC ETCHING OF SILICON DIOXIDE.

3,520,687. ETCHING OF SILICON DIOXIDE BY PHOTOSENSITIVE SOLUTIONS.

3,521,339. METHOD OF MAKING CAPACITORS.

3,522,076. PHOTOPOLYMERIZED FILM, COATING AND PRODUCT, AND METHOD OF FORMING.

3,522,226. POLYMERIZED HEXACHLOROBUTADIENE.

3,523,608. FORMED PLASTIC PACKAGE WITH SNAP-IN CLOSURE.

3,524,997. MONOLITHIC INTEGRATED PHASE CONTROL CIRCUITS.

3,529,961. FORMATION OF THIN FILMS OF GOLD, NICKEL OR COPPER BY PHOTOLYTIC DEPOSITION.

3,531,735. SEMICONDUCTOR LASER HAVING GROOVES TO PREVENT RADIATION TRANSVERSE TO THE OPTICAL AXIS.

3,532,417. NONINVERTING OPTICAL REFLECTING DEVICE.

3,533,832. GLASS COVERED SEMICONDUCTOR DEVICE.

3,534,290. SEMICONDUCTOR LASER BEACON FOR ROTATING AN OUTPUT BEAM.

3,535,600. MOS VARACTOR DIODE.

3,535,775. FORMATION OF SMALL SEMICONDUCTOR STRUCTURES.

3,537,174. PROCESS FOR FORMING TUNGSTEN BARRIER ELECTRICAL CONNECTION.

3,537,889. LOW TEMPERATURE FORMATION OF OXIDE LAYERS ON SILICON ELEMENTS OF SEMICONDUCTOR DEVICES.

3,537,912. METHOD OF GROWING CHALCOGENIDE PSEUDO-BINARY CRYSTALS OF UNIFORM COMPOSITION.

3,537,925. METHOD OF FORMING A FINE LINE APERTURED FILM.

3,540,926. NITRIDE INSULATING FILMS DEPOSITED BY REACTIVE EVAPORATION.

3,540,952. PROCESS FOR FABRICATING SEMICONDUCTOR LASER DIODES.

3,541,357. INTEGRATED CIRCUIT FOR ALTERNATING CURRENT OPERATION.

3,541,676. METHOD OF FORMING FIELD-EFFECT TRANSISTORS UTILIZING DOPED INSULATORS AS ACTIVATOR SOURCE.

3,545,854. SEMICONDUCTOR MASK MAKING.

3,558,375. VARIABLE CAPACITY DIODE FABRICATION METHOD WITH SELECTIVE DIFFUSION OF JUNCTION REGION IMPURITIES.

3,558,922. FULL WAVE PHASE CONTROL INTEGRATED CIRCUIT.

3,559,002. SEMICONDUCTOR DEVICE WITH MULTIPLE SHOCK ABSORBING AND PASSIVATION LAYERS.

3,559,855. SHIMLESS SCRIBING.

3,566,457. BURIED METALLIC FILM DEVICES AND METHOD OF MAKING THE SAME.

3,566,517. SELF-REGISTERED IG-FET DEVICES AND METHOD OF MAKING THE SAME.

3,566,518. METHOD FOR FABRICATING FIELD-EFFECT TRANSISTOR DEVICES AND INTEGRATED CIRCUIT MODULES CONTAINING THE SAME BY SELECTIVE DIFFUSION OF ACTIVATOR IMPURITIES THROUGH PRESELECTED PORTIONS OF PASSIVATING-INSULATING FILMS.

3,567,508. LOW TEMPERATURE-HIGH VACUUM CONTACT FORMATION PROCESS.

3,573,108. PURIFICATION OF GERMANIUM.

3,573,516. RECTIFIER BRIDGE FOR USE WITH AN ALTERNATOR.

3,573,571. SURFACE-DIFFUSED TRANSISTOR WITH ISOLATED FIELD PLATE.

3,575,644. SEMICONDUCTOR DEVICE WITH DOUBLE POSITIVE BEVEL.

Re. 27,120. SEMICONDUCTIVE DEVICES AND METHODS OF MAKING SAME.

3,577,019. INSULATED GATE FIELD EFFECT TRANSISTOR USED AS A VOLTAGE-CONTROLLED LINEAR RESISTOR.

3,577,045. HIGH EMITTER EFFICIENCY SEMICONDUCTOR DEVICE WITH LOW BASE RESISTANCE AND BY SELECTIVE DIFFUSION OF BASE IMPURITIES.

3,577,046. MONOLITHIC COMPOUND THYRISTOR WITH A PILOT PORTION HAVING A METALLIC ELECTRODE WITH FINGER PORTIONS FORMED THEREON.

3,579,060. THYRISTOR WITH IMPROVED CURRENT AND VOLTAGE HANDLING CHARACTERISTICS.

3,579,815. PROCESS FOR WAFER FABRICATION OF HIGH BLOCKING VOLTAGE SILICON ELEMENTS.

3,586,549. METHOD OF PRODUCING DIFFUSED JUNCTIONS IN PLANAR SEMICONDUCTIVE DEVICES AND PRODUCT THEREOF.

3,586,932. FIVE LAYER GATE CONTROLLED THYRISTOR WITH NOVEL TURN ON CHARACTERISTICS.

3,591,852. NONVOLATILE FIELD EFFECT TRANSISTOR COUNTER.

3,596,370. THIN FILM CAPACITOR.

3,599,057, SEMICONDUCTOR DEVICE WITH A RESILIENT LEAD CONSTRUCTION.

3,601,667. A SEMICONDUCTOR DEVICE WITH A HEAT SINK HAVING A FOOT PORTION.

3,601,888. SEMICONDUCTOR FABRICATION TECHNIQUE AND DEVICES FORMED THEREBY UTILIZING A DOPED METAL CONDUCTOR.

3,604,990. SMOOTHLY CHANGING VOLTAGE VARIABLE CAPACITOR HAVING AN EXTENDABLE PN JUNCTION REGION.

3,606,035. SUBDIVIDED SEMICONDUCTOR WAFER SEPARATOR.

3,608,189. METHOD OF MAKING COMPLEMENTARY FIELD-EFFECT TRANSISTORS BY SINGLE STEP DIFFUSION.

3,609,471. SEMICONDUCTOR DEVICE WITH THERMALLY CONDUCTIVE DIELECTRIC BARRIER.

3,609,476. INTERDIGITATED STRUCTURES FOR GATE TURNOFF THYRISTORS AND FOR TRANSISTORS.

3,609,517. LINE VOLTAGE COMPENSATING POWER CONTROL CIRCUIT.

3,611,066. THYRISTOR WITH INTEGRATED BALLASTED GATE AUXILIARY THYRISTOR PORTION.

3,614,547. TUNGSTEN BARRIER ELECTRICAL CONNECTION.

3,614,829. METHOD OF FORMING HIGH STABILITY, SELF-REGISTERED FIELD EFFECT TRANSISTORS.

3,617,682. SEMICONDUCTOR CHIP BONDER.

3,617,828. SEMICONDUCTOR UNIJUNCTION TRANSISTOR DEVICE HAVING A CONTROLLED CROSS-SECTIONAL AREA BASE CONTACT REGION.

3,624,464. PERIPHERAL GATE SCR WITH ANNULAR BALLAST SEGMENT FOR MORE UNIFORM TURN ON.

3,627,278. VIBRATORY TREATMENT APPARATUS.

3,627,589. METHOD OF STABILIZING SEMICONDUCTOR DEVICES.

3,628,106. PASSIVATED SEMICONDUCTOR DEVICE WITH PROTECTIVE PERIPHERAL JUNCTION PORTION.

3,628,107. PASSIVATED SEMICONDUCTOR DEVICE WITH PERIPHERAL PROTECTIVE JUNCTION.

3,634,150. METHOD FOR FORMING EPITAXIAL CRYSTALS OR WAFERS IN SELECTED REGIONS OF SUBSTRATES.

3,639,975. GLASS ENCAPSULATED SEMICONDUCTOR DEVICE FABRICATION PROCESS.

3,641,405. FIELD-EFFECT TRANSISTORS WITH SUPERIOR PASSIVATING FILMS AND METHOD OF MAKING SAME.

3,642,597. SEMICONDUCTOR PASSIVATING PROCESS.

3,643,136. GLASS PASSIVATED DOUBLE BEVELED SEMICONDUCTOR DEVICE WITH PARTIALLY SPACED PREFORM.

3,644,801. SEMICONDUCTOR PASSIVATING PROCESS AND PRODUCT.

3,649,803. FAST MOUNT OVEN.

3,653,120. METHOD OF MAKING LOW RESISTANCE POLYCRYSTALLINE SILICON CONTACTS TO BURIED COLLECTOR REGIONS USING REFRACTORY METAL SILICIDES.

3,654,527. UNITARY FULL WAVE INVERTER.

3,654,529. LOOSE CONTACT PRESS PACK.

3,660,687. HYSTERESIS-FREE BIDIRECTIONAL THYRISTOR TRIGGER.

3,669,478. MACHINE AND PROCESS FOR SEMICONDUCTOR DEVICE ASSEMBLY.

3,669,731. SILICON DEVICE HAVING A LEAD-SILICATE THEREON AND METHOD OF FORMING THE SAME.

3,675,045. VOLTAGE RESPONSIVE SWITCH.

3,681,667. CONTROLLED RECTIFIER AND TRIAC WITH LATERALLY OFF-SET GATE AND AUXILIARY SEGMENTS FOR ACCELERATED TURN ON.

3,685,140. SHORT CHANNEL FIELD-EFFECT TRANSISTORS.

3,689,991. METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING A FLEXIBLE CARRIER.

3,697,829. SEMICONDUCTOR DEVICES WITH IMPROVED VOLTAGE BREAKDOWN CHARACTERISTICS.

3,698,080. PROCESS FOR FORMING LOW IMPEDANCE OHMIC ATTACHMENTS.

3,699,402. HYBRID CIRCUIT POWER MODULE.

3,699,406. SEMICONDUCTOR GATE-CONTROLLED PNPN SWITCH.

3,701,696. PROCESS FOR SIMULTANEOUSLY GETTERING, PASSIVATING AND LOCATING A JUNCTION WITHIN A SILICON CRYSTAL.

3,706,129. INTEGRATED SEMICONDUCTOR RECTIFIERS AND PROCESSES FOR THEIR FABRICATION.

3,706,409. SEMICONDUCTOR LEAD ATTACHMENT SYSTEM INCLUDING A SEMICONDUCTOR PELLET ORIENTATION PLATE.

3,706,915. SEMICONDUCTOR DEVICE WITH LOW IMPEDANCE BOND.

Disclaimer

3,595,828.—*Christian H. Stapfer,* Newtown, Pa. 3-PHENYL-2-PROPEN-1-ONES AND 3-PHENYL-1-PROPANONES AS BIOSTATS IN PLASTICS, PAINTS AND TEXTILES. Patent dated July 27, 1971. Disclaimer filed Oct. 16, 1972, by the assignee, *Cincinnati Milacron Chemicals Inc.*

Hereby enters this disclaimer to claim 6 of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 3, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-20-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	3-16-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-15-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	12-17-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-10-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	8-21-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-16-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-03-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-22-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-05-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	5-26-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-01-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-08-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-10-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-28-72

Expiration of patents: The patents within the range of numbers indicated below expire during April 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,740,117 to 2,743,441, inclusive
Plant Patents	Numbers 1,467 to 1,471, inclusive

PATENTS

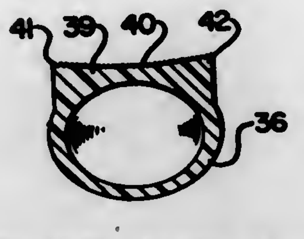
GRANTED APRIL 24, 1973

GENERAL AND MECHANICAL

3,728,736

THUMB OR FINGER GUARD

Evelyn M. Pugh, 10 St. Nicholas Terrace, New York, N.Y.
Filed April 5, 1971, Ser. No. 130,968
Int. Cl. A41d *1/00*
U.S. Cl. 2—21 **3 Claims**

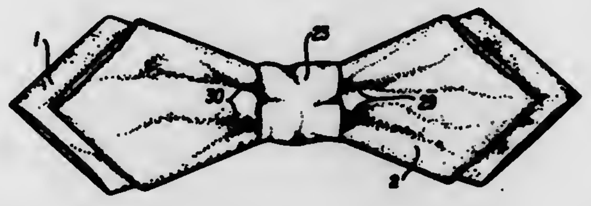


A thumb or finger guard formed of resilient rubber or plastic material molded in one piece and providing for dropped curved gripping surfaces on the front portion of the guard. By forming the front portion with thickened material and dropped curved surfaces sharp ridges are provided which will increase the grip upon the surface of the object, such as an apple, potato or carrot, when effecting cutting, tearing or grating of the same. The curvatures, either in single form according to one form of the invention or in multiple and parallel forms, provide for the ridges and for thickened material that will keep the knife or grater from penetrating to any great extent the material of the thumb guard. The guard is cut away at the location of the first knuckle to allow the guard to be more easily flexed and opposing clip formations have been provided for facilitating the insertion of the thumb or finger into the guard or the removal therefrom and at the same time providing for a good gripping action and allowing for further easy flexing of the knuckles of the thumb or finger. Such opposing clip portions are carried on the rear end of a flexible extension leaving the knuckle open except for the very front of the thumb or finger. The knuckle can be worked readily in and between the opposing clip portions.

3,728,737

SIMULATED BOW TIE AND METHOD OF MAKING SAME

Frances Burton Gillie, 4806 Suecia Drive, Richmond, Va.
Filed July 6, 1971, Ser. No. 159,845
Int. Cl. A41d *25/02*
U.S. Cl. 2—151 **7 Claims**

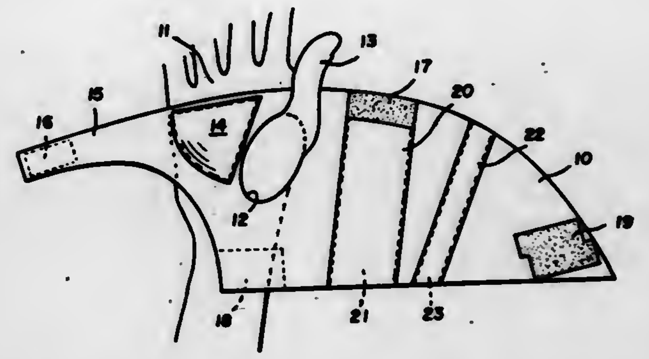


A simulated bow tie constructed from three rectangular pieces of fabric and the method of making such bow tie including the steps of folding each of two of the rectangular pieces about diagonal fold lines, forming an assembly by stitching the folded pieces together, in superposed relationship, on a line through the center point of each and normal to a longitudinal center line of each, stitching together the upper and lower meeting edges of the assembly, inverting the article, and securing a third rectangular knot band piece around the central portion of the assembly to form an item of personal wear which is versatile, permanently neat and attractive.

3,728,738

BOWLING GLOVE

Joseph P. Andolino, 112 Ravenwood Avenue, Rochester, N.Y.
Filed Oct. 1, 1971, Ser. No. 185,692
Int. Cl. A41d *19/00*
U.S. Cl. 2—161 A **6 Claims**

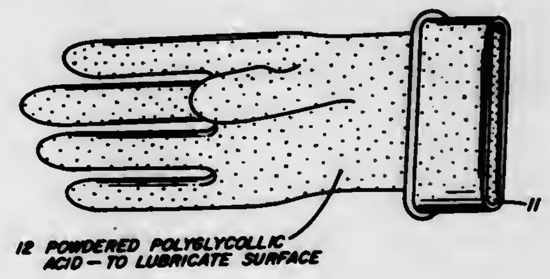


An improved bowling glove stiffens and supports the hand in proper relation to the wrist and forearm. It braces the back of the hand in line with the top or back of the wrist, and braces the side of the hand opposite the thumb against rearward movement toward the radius side of the wrist and forearm. It includes a wrapper extending around the palm, back of the hand, wrist, and forearm with a hole to receive the thumb, a pad in the palm, and two stiffeners. The first stiffener extends over the back of the hand and the back of the wrist, and the second stiffener extends along the side of the hand opposite the thumb and across the radius side of the wrist and into the forearm region.

3,728,739

STERILE SURGICAL GLOVES

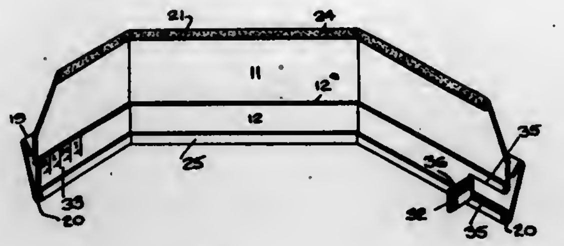
Bernard Albert Semp, Richmond, Va., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 770,792, Oct. 25, 1968, abandoned. This application Feb. 23, 1971, Ser. No. 117,998
Int. Cl. A41d *19/00*
U.S. Cl. 2—168 **3 Claims**



Natural or synthetic rubber surgical elements such as tubing, catheters, drains and gloves are "lubricated" so as to prevent sticking during storage, and permit easier emplacement, such as putting on the gloves by a surgeon or nurse, by applying to the surface of the rubber element finely divided polyglycolic acid powder. The polyglycolic acid powder is readily absorbed by living tissue without deleterious tissue reaction, thus minimizing tissue reaction from the transfer of the powder from the element such as a glove to internal sites in a subject.

3,728,740
ADJUSTABLE HEAD PIECE

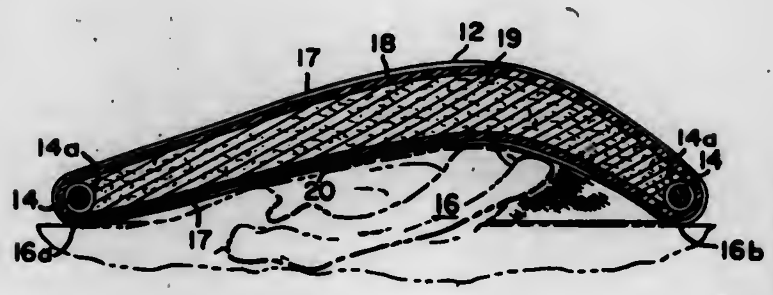
Gilbert B. Wagenfeld, Bala Cynwyd, Pa., assignor to Cellucap Manufacturing Co., Philadelphia, Pa.
Filed Jan. 18, 1971, Ser. No. 107,150
Int. Cl. A42b *1/22*
U.S. Cl. 2—197 **1 Claim**



A head-piece formed of paper or like material cut, scored and folded to provide a flexible crown piece secured to a head encircling band having relatively shiftable telescopically related portions which are permanently sealed together in head-size adjusted relation by a pressure sensitive adhesive which is normally covered by a protective backing strip to preclude sealing action of the adhesive until after the head band has been adjusted to size and the strip is removed from the adhesive.

3,728,741
NOISE PROTECTIVE DEVICE

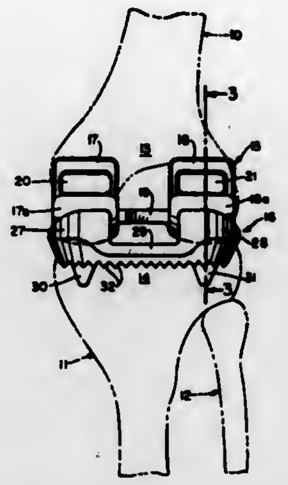
Meyer Lepor, 4745 Filipo St., San Diego, Calif.
Filed Dec. 28, 1970, Ser. No. 101,649
Int. Cl. A41d *21/00*
U.S. Cl. 2—209 **7 Claims**



A representative embodiment of a lightweight headgear free of protuberances includes an elongate panel formed of a pair of layered, pliable sections joined together at one end and terminating in a fastener at the other end. The headgear is worn kerchief-style and the pliant sections, consisting of alternating layers of sound attenuating materials, block ambient noise. Proper selection of headgear materials and dimensioning permit the hearing of relatively low frequency speech while attenuating higher frequency noise. By being formed of a pliant material readily conforming to the contours of the head free from protuberances, the headgear is wearable at all times, especially during sleep without undue discomfort to attenuate ambient noise.

3,728,742
KNEE OR ELBOW PROSTHESIS

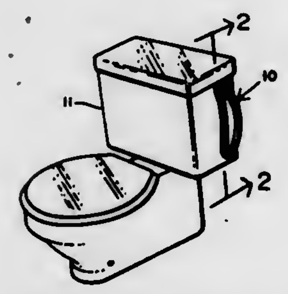
Robert G. Averill, Ringwood, and Alex Khowaylo, Westwood, both of N.J., assignors to Howmedica, Inc., Rutherford, N.J.
Filed June 18, 1971, Ser. No. 154,542
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **7 Claims**



A total knee or elbow joint prosthesis having opposing condyle and plateau replacing members for attachment respectively to the upper and lower arm or leg bones, the members having respectively convex and concave spherical mating surfaces.

3,728,743
SANITARY SIPHON BIDET

Haroutun Hagopian, 1510 110th Terrace, Miami, Fla.
Filed Feb. 7, 1972, Ser. No. 223,848
Int. Cl. A47k *3/22, 11/08*
U.S. Cl. 4—7 **2 Claims**

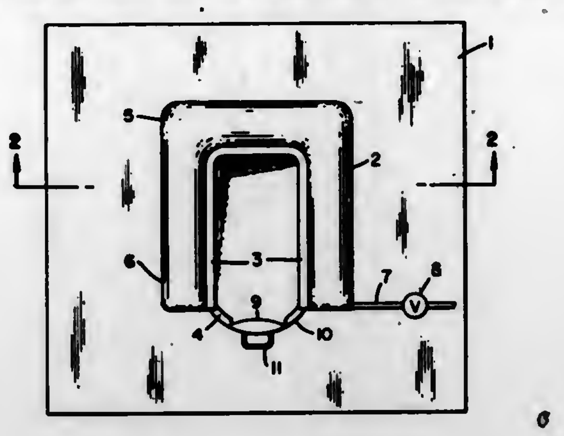


A sanitary siphon bidet utilizing siphon-effect for the flow of water from a flush tank having a substantially rigid pipe extending from adjacent the bottom of the flush tank over the top edge thereof to which a substantially flexible tubing is connected thereto. The free end of the flexible tubing is folded in itself and inserted into a cup-like member to prevent the flow of fluid through the flexible tubing. A peg which is mounted on the end portion of the rigid pipe is used to support the end of the flexible tubing by means of a tab that is secured to the free end of the cup-like member.

3,728,744
BEDPAN APPARATUS

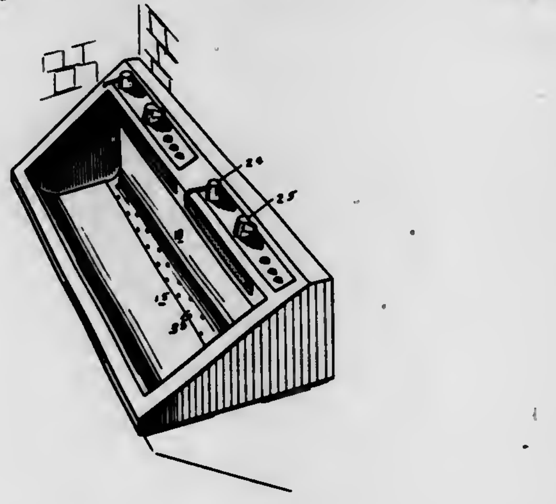
Exall L. Kimbro, Jr., and Clara D. Kimbro, both of 10470 Waterfowl Terrace, Columbia, Md.
Filed Jan. 18, 1972, Ser. No. 218,751
Int. Cl. A61g *9/00*
U.S. Cl. 4—113 **10 Claims**

An apparatus to facilitate the use of bedpans for bedfast persons which includes (a) an inflatable crescent or U-shaped cushion of rubber or other soft elastic material which, in inflated condition, is capable of elevating and supporting the sacrococcygeal area of a patient higher above the plane of the bed than the height of a bedpan, and shaped to receive a bedpan between the legs of the crescent or U; (b) said cushion supported on a flexible pad-like base large enough to fit under the hips of the patient and having sufficient rigidity to permit insertion under the patient with minimal manual lifting; and (c) a bedpan adapted to slide into and fit snugly between the legs of the cushion. The cushion may be adapted with a waterproof flange inside the crescent or U at a height above the bedpan rim and extending inwardly far enough to cover said rim thereby preventing drainage of fluids onto the base.



3,728,745
SCRUB SINK

Thomas Brendgord, Erie, Pa.; Klaus G. Strasser, Jamestown, and Jon W. Wehrenberg, Kennedy, both of N.Y., assignors to American Sterilizer Company, Erie, Pa.
Filed Aug. 13, 1970, Ser. No. 63,525
Int. Cl. A47k *1/04;* **E03c** *1/12*
U.S. Cl. 4—166 **3 Claims**

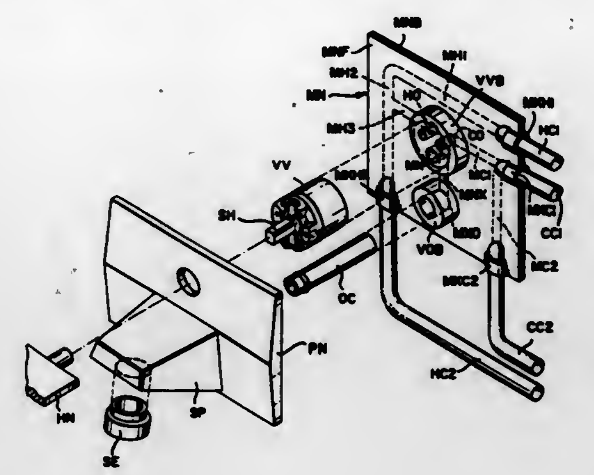


This disclosure describes a scrub sink especially suited for use in hospitals and the like. The sink has an elongated basin to accommodate use by more than one person at one time. At least two elongated nozzles are provided. The nozzles are sufficiently long in lateral expanse to spray the entire forearm of the user. The bottom of the basin is contoured to avoid splashing of the water. The nozzles are removable for easy cleaning and the entire control panel may be removed as a unit for servicing.

3,728,746
PLUMBING MANIFOLD

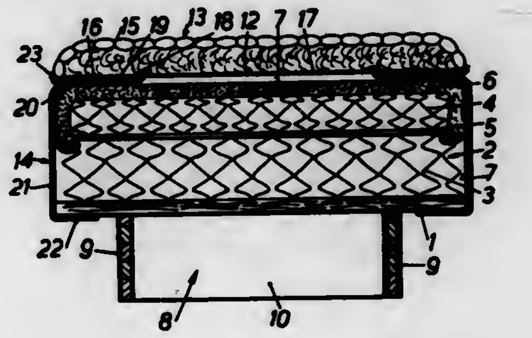
Thomas P. Konen, Somerville, and Robert W. Smith, Flanders, both of N.J., assignors to American Standard Inc., New York, N.Y.
Filed July 7, 1970, Ser. No. 52,872
Int. Cl. E03c *1/04*
U.S. Cl. 4—192 **13 Claims**

This invention covers a manifold for a plumbing fitting or fixture which may include a valve mechanism, such as a single lever faucet, and a spout. The manifold structure includes a plurality of conduits which are formed internally of the structure for interconnecting pipes transmitting hot and cold water with the valve mechanism and in turn with the spout. The manifold is made essentially of two metallic or plastic substantially parallel plates which may be relatively thin. One of the two plates will be bulged wherever conduits are to be provided. The second plate of the manifold need not have any bulges for completing the conduits. The two plates are joined together permanently so that the manifold may be connected as a unit to the valve mechanism and the spout, either at the factory or at the place where the combination is to be installed.



3,728,747
BEDS

Leslie Thomas Docker, Chadwick End, England, assignor to Slumberland Group Limited, Birmingham, England
Filed May 3, 1971, Ser. No. 139,797
Int. Cl. A47c *23/00*
U.S. Cl. 5—351 **4 Claims**



A bed comprises in combination a support, a padding unit and a decorative surround. The support comprises a spring interior with insulation on top of it. The padding unit comprises padding and can be releasably secured on top of the support so to leave a peripheral gap beeen the padding unit and the support into which gap the marginal parts of sheets and other bedclothes can be tucked. The decorative surround can be releasably secured around the support and may be permanently attached to the underside of the padding unit at the inner edge of the gap. Alternatively the padding unit may have a skirt of plain material of the same shape as such a decorative surround, there being a separate decorative surround which can be fitted over the skirt.

3,728,748

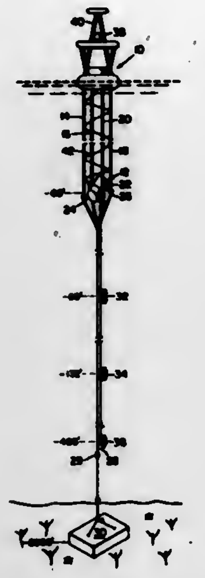
MOORING APPARATUS

Frederick G. Roehler, II, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 27, 1970, Ser. No. 93,318

Int. Cl. B63b *21/52*

U.S. Cl. 9—8 R **1 Claim**



A tethering arrangement for a water-borne object which is effective to absorb forces tending to cause positional displacements thereof and subsequently utilize the energy so absorbed to return the object to its original location. In a preferred embodiment, one or more elongate members each having a predetermined elasticity factor connecting the floating object to a fixed sub-surface point or structure, the overall length of each such member varying in accordance with the stresses imposed thereon by virtue of weather conditions and/or other environmental factors to which the floating object may be subjected. In addition, the constant flexing of the elastic members greatly inhibits the growth of marine organisms on the surface thereof, as well as eliminating the cyclic stress which leads to the failure of steel components due to work-hardening.

3,728,749

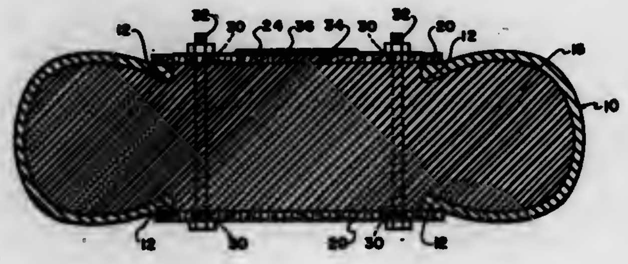
TIRE FLOAT AND METHOD FOR FORMING SAME

Jack A. Eby, and Eugene F. Andersen, both of Vancouver, Wash., assignors to Topper Floats, Inc., Vancouver, Wash.

Filed Feb. 8, 1971, Ser. No. 113,494

Int. Cl. B63b *21/52, 35/00*

U.S. Cl. 9—8 R **4 Claims**



A method for converting used tire bodies into marine floats for use as moorings, buoys and the like. The tire body is provided with side panels of plywood, plastic or other material to fit over the sidewall openings on either side of the tire and thereby form an enclosed shell. Thereafter, urethane, polystyrene or other expandable plastic foam material is injected through an opening in one of the panels and expands to fill the entirety of the core cavity formed by the shell which functions as a mold. The foam material expands, forms a fused mass and secures itself to the interior of the tire and sidewall panels forming an integral shell and core, the curing of the foam being effected or accelerated by the application of heat if necessary. The injection hole may then be covered over, if desired, by fiberglass cloth to which an epoxy resin catalyst is applied to form a seal. Finally, the exterior of the shell is coated with epoxy paint or other sealant to provide a waterproof covering. Bolts or other fasteners are provided through the sides of the tire float for securing it to structures which are to be buoyantly supported thereby.

3,728,750

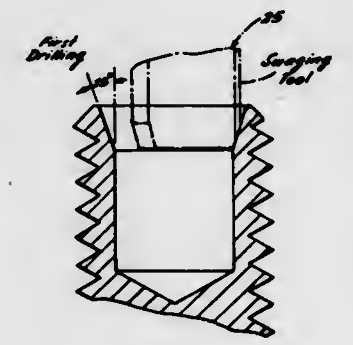
METHOD OF FABRICATING SCREW FASTENERS

Donald W. Stillman, Playa Del Rey, and Mansour A. H. Bagheri, Los Angeles, both of Calif., assignors to Long-Lok Fasteners Corporation, Cincinnati, Ohio

Filed March 3, 1971, Ser. No. 120,462

Int. Cl. B23g *9/00*

U.S. Cl. 10—10 R **10 Claims**



To fabricate a hollow-end screw having a thin circumferential wall with radial protuberances for self-locking action, the tendency for cracks to develop in one location is avoided in part by thickening the circumferential wall and in part by eliminating a sharp corner at an intermediate fabrication stage. The tendency for cracks to develop in a second location on the screw is avoided by eliminating a sharp corner in the final configuration of the screw.

3,728,751

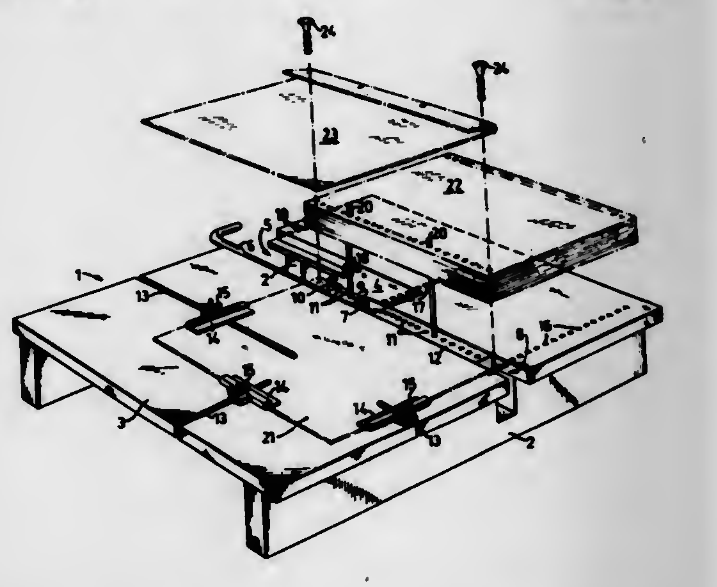
METHOD FOR MOUNTING BUNDLES OF PERFORATED PAPER SHEETS BETWEEN TWO PERFORATED FILE COVERS, AND A DEVICE FOR CARRYING OUT THE METHOD

Per Sigurd Nes, Akerbyvagen 308, 183 35 Taby, Sweden

Filed May 27, 1971, Ser. No. 147,406

Int. Cl. B42c *19/00*

U.S. Cl. 11—1 R **7 Claims**



The present invention relates to a method for mounting bundles of perforated paper sheets between two perforated file covers, and a device for carrying out said method. The method is characterized by first fixing one cover panel of the file in position between guide means and then fixing the bundle of papers by at least two guide pins in positions such that one side, having at least two free holes, overlaps the perforated back portion of the file cover panel with said free holes coinciding with corresponding holes in the file cover panel. The other file cover panel is then placed on top of the sheet bundles in a position corresponding with the first file cover panel. Finally, retaining means are inserted into the free holes and the guide pins are removed. The device is chiefly characterized by a mounting plate having guide structures for fixing a perforated file cover panel in such a position that at least each outermost hole in the spine portion of the cover is located opposite its respective recess in the plate, at least one row of holes spaced raltive to the holes in the bundle of paper sheets being so arranged in the plate relative to the recesses that the bundle of sheets can be fixed by means of two guide pins capable of being passed through the holes in the sheets and holes in the plate so that at least two free holes in one side of the bundle of paper sheets coincides with the holes of the fil cover panel located opposite the recesses.

3,728,752

BEARINGS FOR BRIDGES AND SIMILAR STRUCTURES

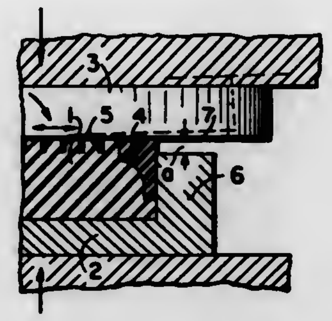
Wolfhart Andra, Stuttgart; Erwin Beyer, Dusseldorf; Fritz Leonhardt, Stuttgart; Heribert Thul, Bonn-Bad Godesberg, and Louis Wintergerst, Esslingen Am Necarb, all of Germany, assignors to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Oberhausen-Stekrade, Germany

Filed Feb. 22, 1971, Ser. No. 117,661

Claims priority, application Germany, Feb. 20, 1970, P 20 07 767.2

Int. Cl. E01d *19/06*

U.S. Cl. 14—16 **20 Claims**



A slidable-tiltable bearing arrangement is comprised of a deformable resilient load transmitting bearing pad positioned within a casing which encloses the bottom and a part of the lateral surface of the pad. The upper bearing surface of the pad extends upwardly above the edge of the casing and a seal, preferably formed as a reinforced ring-shaped body of polytetrafluoroethylene, extends about and confines the upper edge of the pad against deformation. Further, the upper surface of the pad acts as a slide surface and depression or recesses are formed in it to hold a lubricant which aids in the sliding action. The casing may be formed with a separate side wall and base or the side wall and base may be formed as an integral member.

3,728,753

DOCKBOARD

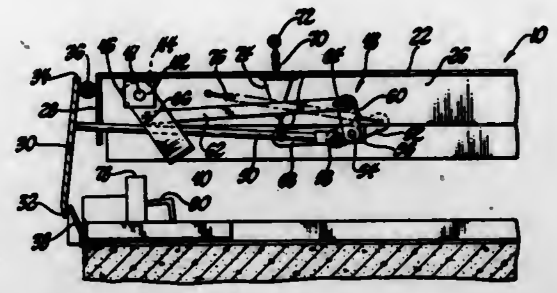
Robert C. Beckwith, Scotts Bluff, Nebr., and Robert W. Hecker, Jr., Clare, Mich., assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed March 3, 1971, Ser. No. 120,520

Int. Cl. B65g *11/00*

U.S. Cl. 14—71 **10 Claims**

A dockboard assembly including a support structure with a ramp having a first end pivotally connected to the support structure for pivotal movement between raised and lowered positions on opposite sides of the dock level position. A lip is pivotally connected at a rear edge to the front of the ramp for pivotal movement between an extended cantilevered position and a pendent position. The support structure includes lip supporting keepers for receiving the front edge of the lip when the lip is in the pendent position for supporting the ramp in the dock level position. Safety legs are pivotally connected to the ramp for engaging one of two vertically spaced abutment surfaces for limiting downward pivotal movement of the ramp. The improvement resides in actuation means for pivoting the lip upwardly from the pendent position as the ramp is pivoted upwardly slightly to allow the front edge of the lip to move downwardly past the lip support keepers and for pivoting the safety legs to a retracted position whereby they will not engage the abutment surfaces so that the ramp may be pivoted to a lowered position.



3,728,754

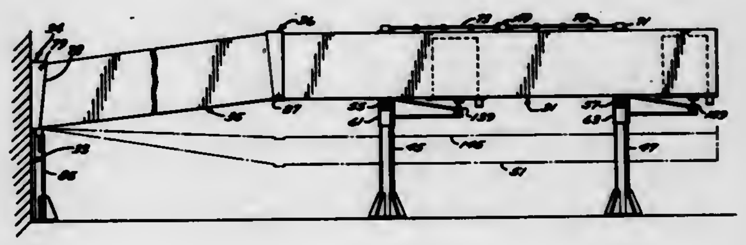
VERTICALLY ADJUSTABLE LOADING RAMP APPARATUS

Carl L. Lodjic, Long Beach, Calif., assignor to Global Erectors, Inc., Long Beach, Calif.

Filed July 16, 1971, Ser. No. 163,342

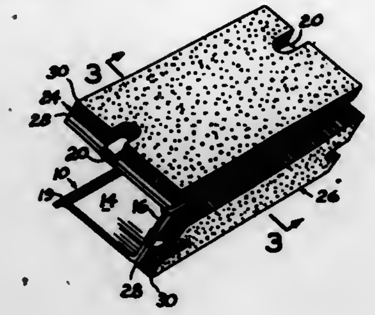
Int. Cl. B65g *11/00*

U.S. Cl. 14—71 **9 Claims**



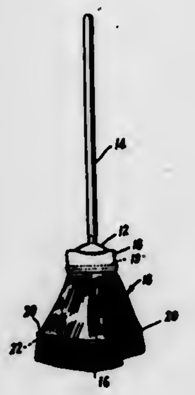
A vertically adjustable loading ramp apparatus for use with first and second aircraft having respective first and second sets of entryway sills disposed at respective first and second heights, at least one of such sets including a pair of entryway sills spaced apart a selected distance. A horizontal main ramp extends longitudinally of an aircraft loading area and is adjustable from a first horizontal position disposed at substantially the first height to a second horizontal position disposed at substantially the second height. The main ramp is connected with the terminal structure by means of an approach ramp which is adjustable to enable the main ramp to be shifted between the first and second positions. A pair of mating ramps are disposed longitudinally along the main ramp for mating with the respective first and second sets of entryway sills and extend transversely from such main ramp to terminate in doorways for mating with the respective first and second entryways of the one set. Drive means is provided for shifting the main ramp vertically between the first and second positions whereby the main ramp will be maintained horizontal while in both the first and second positions to thereby enable the mating ramps to align with the respective aircraft entryways.

3,728,755
PAINT APPLICATOR
Joseph J. Whalen, 1220 S. W. 24, Oklahoma City, Okla.
Filed June 4, 1971, Ser. No. 150,112
Int. Cl. A46b *15/00;* **B44d** *3/28*
U.S. Cl. 15—210 R **3 Claims**



An elongated generally U-shaped channel forms a base member having normally disposed planar surfaces. Rectangular sections of pile fabric overlie two of the outer surfaces of the base member and transfer liquid coating material to a surface to be covered. Means on the base member removably secure the pile fabric ends thereto.

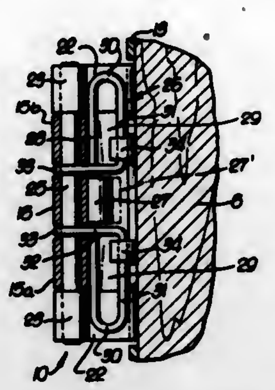
3,728,756
MOP HEAD
John G. Argeris, 8 Leander Street, Danielson, Conn., and James A. Atwood, III, Genbren Road, Plainfield, Conn.
Continuation-in-part of Ser. No. 73,115, Sept. 17, 1970, Pat. No. 3,633,975. This application Sept. 14, 1971, Ser. No. 180,279
Int. Cl. A47l *13/20*
U.S. Cl. 15—229 A **8 Claims**



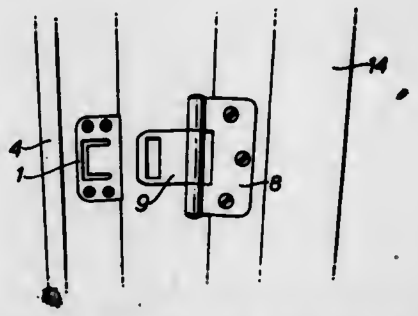
A mop head has generally U-shaped loops extending to both sides of the center band and the loops are extensively twisted along their lengths. Additional bands may be provided on both sides of the center band. The center band is secured to portions of the loops that are untwisted.

3,728,757
SELF-LATCHING HINGE
Gerald A. Lloyd, Monterey Park, Calif., assignor to Jaybee Manufacturing Corporation, Los Angeles, Calif.
Filed June 23, 1971, Ser. No. 155,943
Int. Cl. E05d *11/08*
U.S. Cl. 16—142 **9 Claims**

A self-latching cabinet hinge includes a tubular pressure roller supported by a spring member attached to the first of two pivotally connected hinge members. The pressure roller cooperates with the edge of a hinge knuckle of the second hinge member to perform the latching function. The spring member comprises a unitary, resilient wire having a central pressure roller supporting section the ends of which are bent back to define return sections which are gripped by ears on the first hinge member. The free ends of the return sections are bent at right angles to form retaining sections which cross the roller supporting section and loop around the hinge pin.



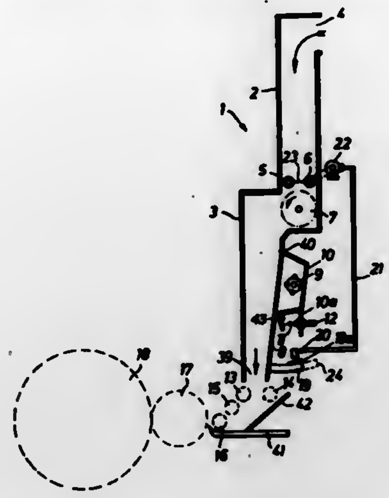
3,728,758
HINGE
Jan Johansen, Oslo, Norway, assignor to A/S Grorud Jernvarefabrik, Oslo, Norway
Filed Dec. 11, 1970, Ser. No. 97,106
Claims priority, application Norway, Dec. 16, 1969, 4962/69
Int. Cl. E05d *7/12*
U.S. Cl. 16—149 **5 Claims**



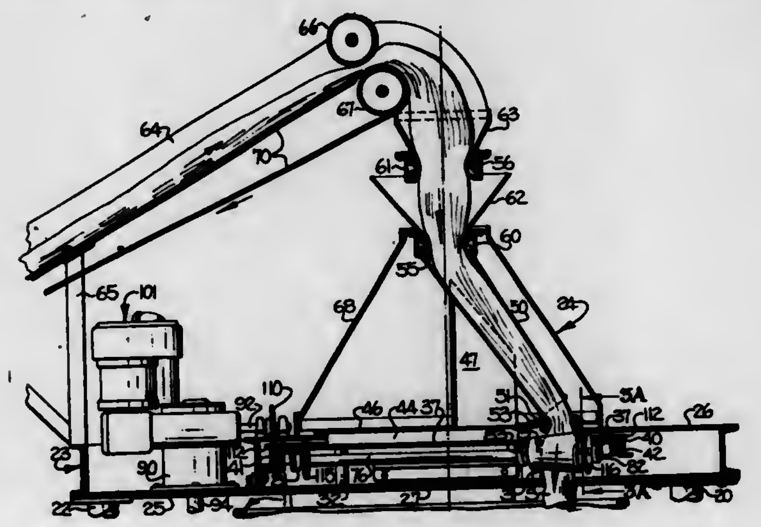
A hinge for door panels and the like which are adapted to be stacked one upon the other and at the same time avoid damage to adjacent doors by hinge members carried by the doors, the hinge construction comprising a locking plate mounted in a cut-out at the mounting edge of the door and having a flat outer surface in the plane of the flat surface of the door, said locking plate being adapted to be secured to the door and providing in cooperation with the cout-out an elongated opening for receiving an engagement structure, and a hinge plate member having means along one edge for receiving a hinge pin, including an engagement structure to be received in the elongated opening under the locking plate and a resilient locking member extending inwardly from the front edge portion of the locking plate and having an outer surface in the plane of the outer surface of the locking plate, and locking means on the underside of the inner portion of the resilient locking member adapted to be engaged by the engagement structure of the hinge plate member when inserted into the elongated opening.

3,728,759
APPARATUS FOR REGULATING THE SUPPLY OF FIBROUS MATERIAL FED TO PROCESSING MACHINES
Herbert Hergeth, Dulmen, Germany, assignor to Hergeth Maschinenfabrik und Apparatebau, Dulmen (Westphalia) Germany
Filed Jan. 20, 1971, Ser. No. 107,891
Claims priority, application Germany, Jan. 31, 1970, P 20 04 394.1
Int. Cl. D01g *15/40*
U.S. Cl. 19—105 **6 Claims**

A process and apparatus for regulating the supply of fibrous material fed to processing machines includes means for determining the density of the fibrous material as it passes through a hopper and for adjusting the rate of feed of the fibrous material into the hopper in response to the density determination whereby the fibrous material may be maintained at a predetermined density. The density determination may be made either by a movable wall of the hopper which moves in response to variations in the amount of fibrous material contained in the hopper or by directing an air stream through fibrous material in the hopper and measuring the air pressure change caused by variations in the density of the fibrous material.



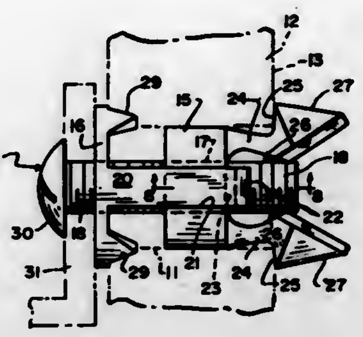
3,728,760
APPARATUS FOR COILING STRAND MATERIAL SUCH AS TEXTILE SILVER
Herman S. Johns, Patterson, N.C., assignor to Wellman Industries, Inc., Johnsonville, S.C.
Filed Oct. 19, 1970, Ser. No. 81,738
Int. Cl. B65h *54/76*
U.S. Cl. 19—159 R **3 Claims**



Strand material is coiled into a container through a rotating coil forming member by means of a pair of calender rolls, at least one of which comprises a tubular shell spaced from and surrounding its rotational axis, with resilient means; preferably elastomeric material, positioned between the shell and its axis to permit lateral displacement of the shell relative to its axis by strand material passing between the calender rolls.

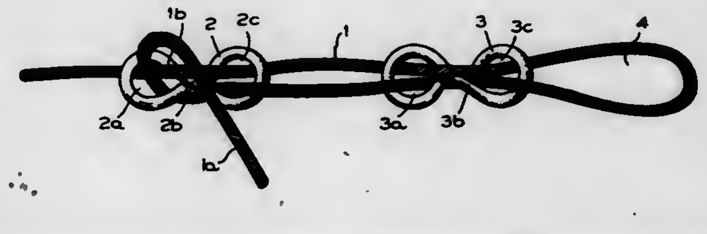
Also disclosed is apparatus for coiling strand material of substantial bulk or width, in which a pair of frustoconically-shaped calender rolls are arranged to advance strand material through a coil forming member eccentrically thereof, such that the outer edge of the strand material is advanced at a faster rate than the inner edge of the strand material to compensate for the difference in the diameters of the outer and inner edges of the coils of strand material being deposited in the container.

3,728,761
FASTENER
James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.
Filed June 22, 1971, Ser. No. 155,476
Int. Cl. A44b *21/00;* **F16b** *13/04, 39/24*
U.S. Cl. 24—73 **6 Claims**



A fastener attachable to an article in an opening therein in which the fastener has two parts, an inner part and an outer part, with interengaging means permitting longitudinal adjustment of the over-all length of the fastener, grasping elements on each of these parts engaging the opposite side surfaces of the article when the fastener is in position in an opening in the article and a securing bolt extending from one surface of the article into the fastener and engaging the inner part as a nut with the bolt on rotation expanding the grasping elements of the inner part to engage the inner surface and drawing the parts toward each other to press the respective grasping elements of both parts into secure engagement with their respective surface areas on the article, the bolt being easily removable from the fastener so that the inner and outer parts may be removed as desired from their positions in the article opening.

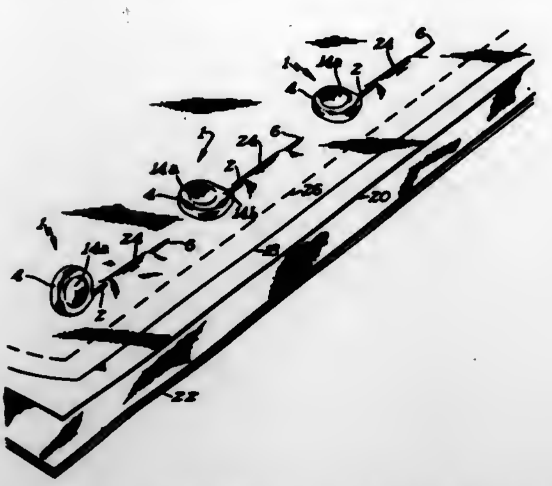
3,728,762
HOLDER ASSEMBLY FOR CABLES AND METHOD
James W. Hogg, 6216 Hillsboro Road, Nashville, Tenn.
Filed Dec. 1, 1970, Ser. No. 94,056
Int. Cl. F16g *11/14*
U.S. Cl. 24—129 C **3 Claims**



A knot assembly for cables is obtained by introducing a flexible cable through holes defined by two relatively rigid shaped metal rods and bending it around the rods and the cable itself; a loop made with this cable is held together by this knot assembly.

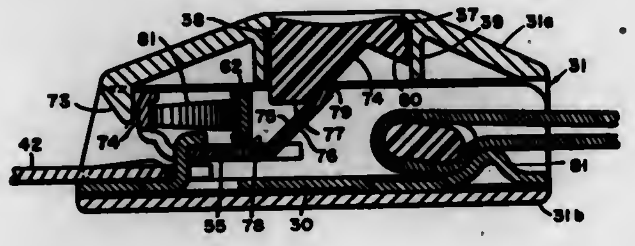
3,728,763
SEAMSTRESS PIN
James J. Warzecha, 405 4th Ave., N.E., St. Cloud, Minn.
Filed May 3, 1971, Ser. No. 139,343
Int. Cl. A44b *9/02*
U.S. Cl. 24—150 DP **5 Claims**

An improved seamstress pin adapted for controlled and easy insertion in fabric by the attachment of an elongated, pointed shank at its base end to an enlarged, disc-shaped pin head at a vertical location between the center of the head and a curvilinear, fabric engaging base wall of the head. The shank is horizontally centered in the pin head at a distance above the fabric engaging base wall of the head which is equal to one-half the thickness of the head measured between its side walls so that the head may be pivoted to a horizontal position with one of its side walls lying against the fabric without changing the elevation of the pin shank above the work surface on which the fabric is resting.



3,728,764
DUAL ACTUATION SAFETY BELT BUCKLE MECHANISM

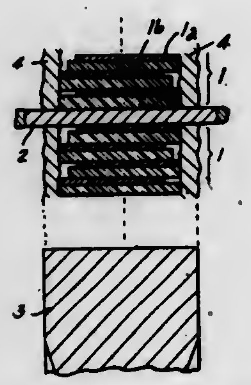
Andrew G. Carter, Grand Rapids, Mich., assignor to Carter Engineering Company, Grand Rapids, Mich.
Filed July 22, 1971, Ser. No. 165,160
Int. Cl. A44b *19/00;* **A47c** *31/00*
U.S. Cl. 24—230 A **12 Claims**



A mechanical conversion system provides push-button actuation of a slide-action locking mechanism, while preserving the possibility of actuation by sliding handle movement where this is desired.

3,728,765
PROCESS FOR THE PRODUCTION OF CAPACITORS

Reinhard Behn, Munich; Heinrich Gottlob, Regensburg; Hans Haid; Gerhard Hoyler, both of Munich, and Hartmut Kessler, Regensburg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Division of Ser. No. 834,405, June 18, 1969, Pat. No. 3,670,378. This application Nov. 24, 1971, Ser. No. 201,867
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 **2 Claims**

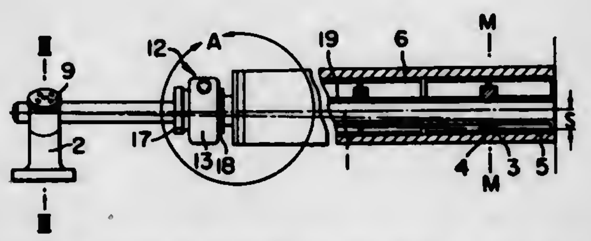


Capacitors are manufactured by winding a number of parent or master windings one upon another, coating the windings in common with metal on the face sides thereof by a metal spraying process and separating them one from the other. In one instance, the master windings are separated one from the other by the provision of inactive layers which project at the face sides or ends of the windings to prevent contacting of the layers of the windings during metal spraying. In another embodiment the interlayers are dimensioned as wide as the capacitively active layers and the face-side zones of the interlayers are masked during the application of the metallic layers. In yet another embodiment the inactive layers are completely metal coated and separation is provided by sawing or cutting in the zone of the interlayers. In this case, the interlayers remain on the finished partial capacitor as cover layers.

3,728,766
Patent Not Issued For This Number

3,728,767
APPARATUS FOR ADJUSTING THE ALTITUDE OF A CHORD OF AN EXPANDING ROLL

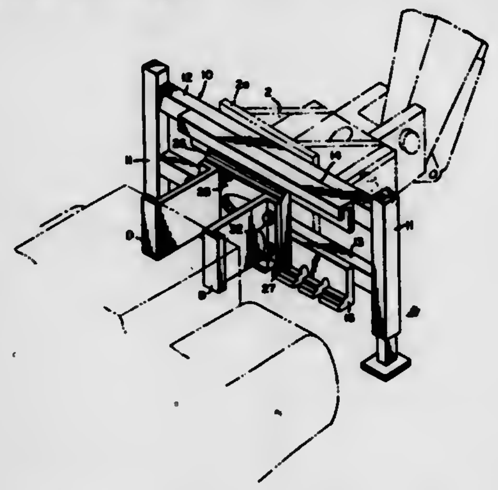
Masayuki Shirai, Osaka, Japan, assignor to Yamauchi Rubber Industry Co., Ltd., Osaka, Japan
Filed Dec. 28, 1970, Ser. No. 101,815
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 AD **7 Claims**



An apparatus for adjusting the altitude of the chord of a roll for expanding a strip of synthetic resin film, cloth, and metal foil, etc. comprising; a central shaft bent in an arc-shape and journaled by bearings, a plurality of eccentric bushes rotatably inserted on said shaft and axially spaced therealong and having an eccentricity successively increasing toward the center of said shaft, a plurality of sleeves wherein said bushes are inserted and disposed therein through the medium of a ball bearing, a rubber roll covering said sleeves and defining combining therewith as a unit, one of bearings wherein said central shaft is journaled being fixed and, in case of need, said shaft being allowed to rotate therein.

3,728,768
METHOD FOR ATTACHING BACK-HOE

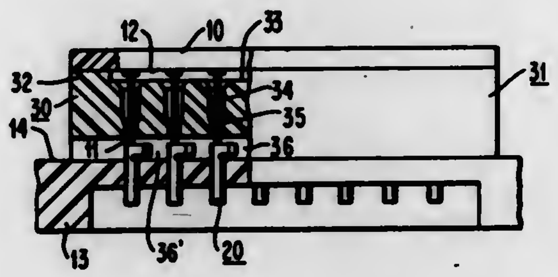
Ikuo Mori, Komatsu-shi, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed July 15, 1970, Ser. No. 54,970
Claims priority, application Japan, July 15, 1969, 44/55578
Int. Cl. B21h *7/00;* **B21k** *19/00*
U.S. Cl. 29—148.3 **3 Claims**



The present disclosure relates to the method for attaching back-hoe which comprises disconnectably suspending the slide-bed provided on the swing bracket of the back-hoe on the mount-adopter provided on a tractor-shovel or bulldozer in such a manner that said slide-bed can be slid in the lateral direction to the effect that digging operation on the side of the body can be smoothly carried out even if said slide-bed be made smaller than the width of the body, and the connection or disconnection of back-hoe can be simply and smoothly carried out at any time.

3,728,769
APPARATUS FOR ASSEMBLING A MODULE ELEMENT TO A SUBSTRATE ELEMENT

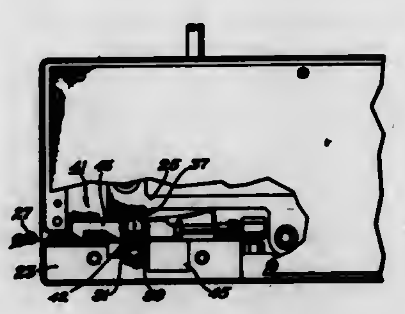
Robert L. Judge, and Eugene S. Pearson, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 101,662, Dec. 28, 1970, Pat. No. 3,676,832. This application March 9, 1972, Ser. No. 233,376
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **11 Claims**



Apparatus for shifting one of or creating relative lateral movement between the pin and a novel female connector as described and claimed in U. S. Pat. No. 3,676,832, when the connectors are mounted respectively in a module element and a substrate element. This is a division of application Ser. No. 101,662 filed Dec. 28, 1970, now U. S. Pat. No. 3,676,832 issued on July 11, 1972. The female connectors are inserted into a printed circuit board or module, the connectors each comprising an axially extending conductive tubular body portion having a loop-type receptacle at one terminal end of the body portion, the loop having a greater dimension than the diameter of a male connector-type pin so as to permit essentially zero axial force insertion of the pin into the receptacle. The receptacle includes a pair of resilient, radially projecting arms which converge from the receptacle and in conjunction with the receptacle define a converging path between the receptacle and the arms whereby relative lateral motion between the pin and female connector causes the pin to be engaged and retained by and between the pair of resilient arms.

3,728,770
APPARATUS FOR ENSURED SPLICING OF WIRES

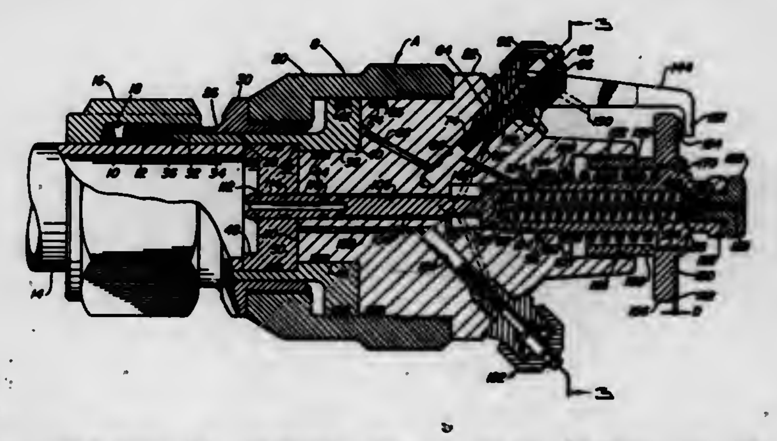
Albert L. Pence, and Van Zandt Smith, both of Austin, Tex., assignors to A.P.C. Industries, Inc., Mineral Wells, Tex.
Division of Ser. No. 93,107, Nov. 27, 1970. This application May 18, 1972, Ser. No. 254,430
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **22 Claims**



Apparatus for splicing conductors characterized by inserting the conductors to be spliced within a crimpable connector means, passing penetrating radiation through the connector means and conductors, monitoring a quantum level of a function that is responsive to the attenuation of the penetrating radiation and crimping the connector means to join the conductors only if the penetrating radiation is attenuated an amount sufficient to indicate proper insertion of the conductors, indicated by the quantum level of the function being in a predetermined scalar direction from a predetermined level. Also disclosed are specific types of penetrating radiation; for example, energy and nuclear particles; and specific structures.

3,728,771
APPARATUS FOR SWAGING AND TESTING FERRULES

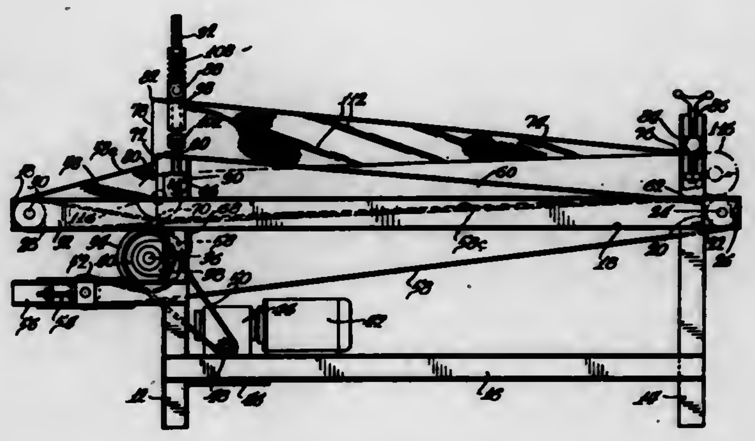
Leonard P. Spontelli, Seven Hills, Ohio, assignor to Crawford Fitting Company, Solon, Ohio
Filed April 15, 1971, Ser. No. 134,229
Int. Cl. B21d *41/00*
U.S. Cl. 29—237 **38 Claims**



Apparatus for swaging one or more ferrules on the periphery a cylindrical member such as a tube and for testing the integrity of the grip by the ferrules on the tube following a swaging operation. The apparatus shown in the drawings includes power actuated camming means for engaging the ferrules and forcing them radially inwardly into engagement with the tube while means cooperate therewith to prevent longitudinal movement of the ferrules. Additionally, testing means are provided for testing the integrity of the swaging operation including means for applying a predetermined longitudinally directed force against an end of the tube while the ferrules are held to determine whether or not the tube will move relative to the ferrules.

3,728,772
TAPE BREAKER (CASE 1)

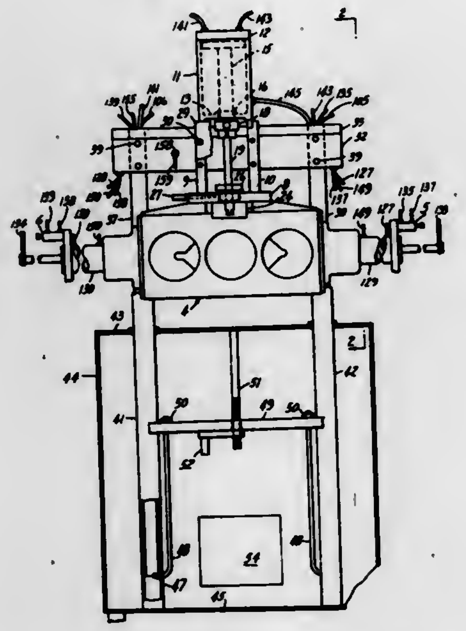
Robert B. Coffman, 1405 Spring Beach, Cary, Ill.
Filed Oct. 26, 1971, Ser. No. 192,034
Int. Cl. B23p *19/04*
U.S. Cl. 29—239 **4 Claims**



A breaker for separating individual spools of slit and rewound gummed paper.

A roll of spools is passed between a moving surface and a complementary fixed surface. The surfaces are flat at the entrance and gradually curve an increasing amount to the point of discharge. Since the roll of spools can not conform to the curved surfaces they tend to separate from each other.

3,728,773
CLIPPING APPARATUS
Arnold E. Dobbert, Fremont, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.
Filed March 24, 1971, Ser. No. 127,495
Int. Cl. B23p *11/00*
U.S. Cl. 29—243.57 **3 Claims**

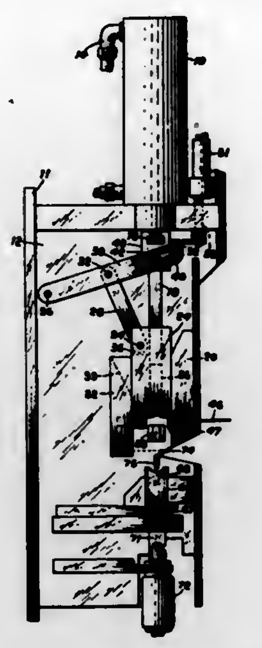


Clipping apparatus for tying stuffed casings. A gathering and constricting device is arranged to receive the elongated stuffed casing therethrough and, in timed relation with the stuffer, said device constricts the filled casing at space points along the length of the latter and a clipping cylinder associated with said gathering device applies a U-shaped clip around the casing at the constricted point. Two axially spaced apart clips may be applied at one time as disclosed herein.

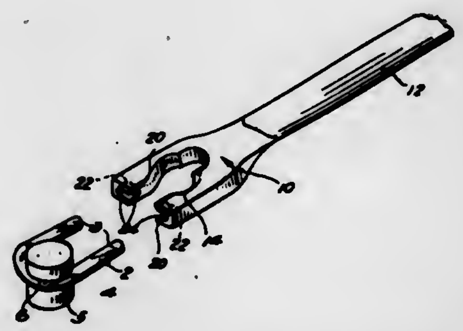
The clipping cylinder is proiided with a crimp control that permits adjustment of the length of travel of the clipping punch and therefore the degree of pressure applied to the deformed clip. The apparatus is mounted so as to be vertically adjustable in order to suit the height of the stuffed casing being extruded from th stuffer. A novel arrangement of fluid lines supplying power to the various parts of the apparatus is provided so as to minimize the number of lines exposed to danger and fouling. Such arrangement includes a manifold which permits fast connection and disconnection of any line for adjustment and repair of the particular device it serves.

3,728,774
WIRE CLIP CLOSURE MACHINE
Arthur H. Steller, 16 Florham Ave., Florham Park, N.J.
Filed Dec. 10, 1971, Ser. No. 206,673
Int. Cl. B23p *11/00*
U.S. Cl. 29—243.57 **11 Claims**

A machine for fastening wire clips around the ends of bags or casings, such as used for packaging meats and foods, includes an air actuated cylinder which drives a movable block having a cutting edge at the forward end. The cylinder rod is also connected to a plunger which reciprocates within a longitudinal channel in the block. A section of wire is fed into the path of the block which moves forward to cut off a desired length and form the wire over an inverted U-shaped die. The like shaped wire is forced into the channel while another internal surface of the block moves the die back out of the path. The plunger also moves along the channel to force the ends of the wire into curved grooves in a closure die which wraps the ends of the wire together to form an overlapping loop around the end of a bag to enclose the package. All of the operations are performed in one continuous stroke of the main air cylinder with the sequence controlled by different linkages connecting the block and plunger so that the block has a shorter slower stroke than the plunger. Two additional air cylinders are operated following the closure of the bag. One actuates a knife to cut the trailing end of the enclosed bag and the other feeds the proper length of wire under the block upon the return stroke of the main cylinder and before the start of the next sequence of operation.



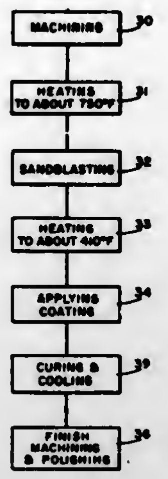
3,728,775
TOOL FOR LOCK RINGS
William A. Hosbach, 715 Newport Dr., Baldwin Township, Allegheny County, Pa.
Filed March 31, 1971, Ser. No. 129,907
Int. Cl. B23p *19/08*
U.S. Cl. 29—243.57 **5 Claims**



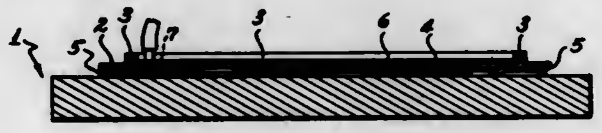
A tool for holding horseshoe shaped lock rings to facilitate their installation or removal. The tool has a handle with a bifurcated end forming two legs. The legs have facing slots or grooves at their outermost ends arranged to straddle the lock ring at a point inward of either of its ends.

3,728,776
EPOXY COATING OF REFURBISHED BALLS
Louis D. Defazio, Box 19A Newbury St., Seabrook Beach, N.H.
Filed April 19, 1971, Ser. No. 135,198
Int. Cl. B23p *7/00*
U.S. Cl. 29—401 **7 Claims**

A process is provided for epoxy coating seawater valve balls and other valve balls in marine use to provide a surface finish greatly exceeding in durability the normal finish of the balls. Valve balls requiring refinishing are machined to a selected smaller diameter than that required and then coated in several applications in a fluidized bath under proper heat to a greater diameter than required. The ball is then machined to the desired diameter and hand-finished where necessary.



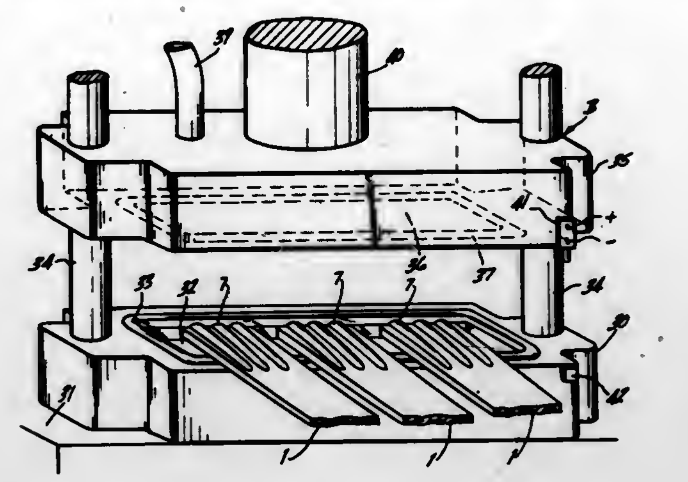
3,728,777
CASTING PROCESS
Gordon Appling Crowe, Ann Arbor, Mich., assignor to North American Urethanes, Inc., Upsilanti, Mich.
Filed March 1, 1971, Ser. No. 119,522
Int. Cl. B23p *17/00*
U.S. Cl. 29—421 **4 Claims**



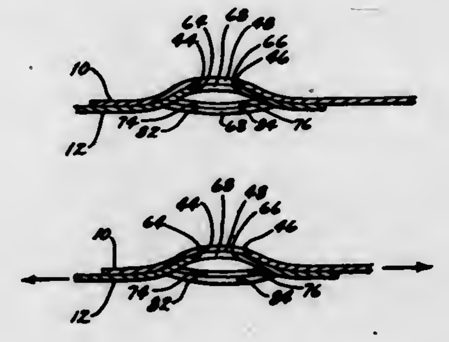
A process and apparatus for flattening a metal sheet and casting a coating comprising supporting a sheet on a support having a substantially air impervious bottom and a substantially air impervious wall which enclose a region having an open top and containing an air pervious supporting means, and removing air from the region of the air pervious supporting means until the air pressure above the sheet exceeds the air pressure within the region and forces the sheet against the pervious support substantially free from undulations and then casting a coating over at least part of the sheet while it is substantially free from undulations and maintaining the sheet free from undulations until the coating is a solid.

3,728,778
METHOD OF INFLATING METAL STRIP OR PANELS HAVING INFLATABLE FLUID PASSAGEWAYS
Verne L. Middleton, East Alton, Ill., assignor to Olin Corporation, New Haven, Conn.
Division of Ser. No. 875,636, Nov. 12, 1969, Pat. No. 3,603,128. This application March 22, 1971, Ser. No. 127,048
Int. Cl. B23p *17/00*
U.S. Cl. 29—421 **4 Claims**

An inflation apparatus for inflating metal strips or panels containing inflatable passageways connected to a preformed opening. The apparatus comprises two opposing plates which have resilient sealing means mounted on each of the opposing faces of the plates. At least one of the plates has a pressure cavity for supplying fluid under pressure to the preformed opening of the metal strip or panel for inflating the passageways therein. The apparatus also includes means for clamping plates about the preformed opening so that the resilient sealing means sealingly engage the metal strip or panel. This engagement results in crimping the preformed opening but does not close it completely. In operation, the plates are clamped about opposing surfaces of the panel or strip at the preformed opening and a suitable fluid under pressure is forced into the pressure cavity and through the preformed opening so as to inflate the passageways.



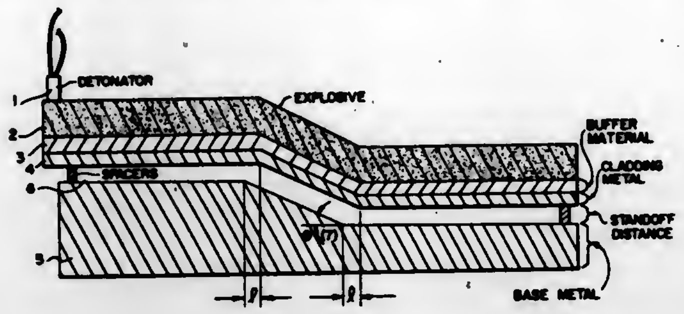
3,728,779
METHOD OF JOINING STRIP MATERIAL
Walter D. Behlen, and Anthony G. Hilger, both of Columbus, Nebr., assignors to Behlen Manufacturing Company, Inc., Columbus, Nebr.
Continuation of Ser. No. 665,875, Sept. 6, 1967, abandoned. This application Nov. 23, 1970, Ser. No. 92,197
Int. Cl. B23p *11/00*
U.S. Cl. 29—432 **3 Claims**



The method of bonding a pair of strips of material together, comprising, simultaneously deforming a portion of material out of each of the sheets and then longitudinally moving the sheets with respect to each other whereby the deformed portions will interlock to bond the sheets together. The joint formed by deforming the sheets effectively bonds the two sheets together thereby preventing any separation thereof.

3,728,780
EXPLOSIVE CLADDING ON GEOMETRICALLY NON-UNIFORM METAL MATERIAL
Kyung Taik Chang, Seoul, South Korea, assigner to Korea Institute of Science and Technology, Seoul, South Korea
Filed Jan. 22, 1971, Ser. No. 108,698
Claims priority, application Korea, Jan. 24, 1970, 122/70
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **10 Claims**

A method for explosively cladding one metal having a non-linear surface on another metal having a similar non-linear surface. A metal base member is spaced from a metal cladding plate an an explosive is positioned over the cladding plate whereby ignition of the explosive forces the cladding against the metal base to create a metallurgical bond.



3,728,781

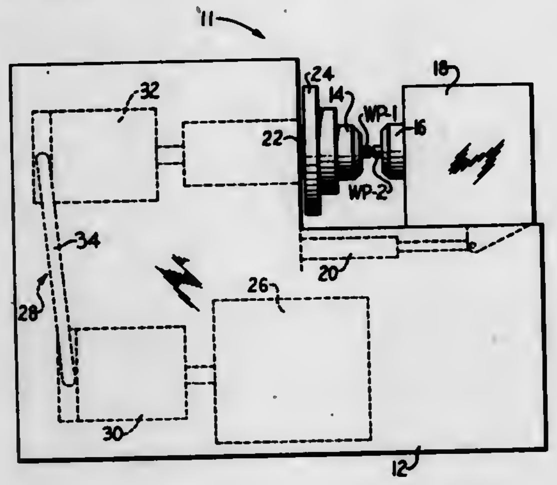
METHOD OF PRODUCING A STRANDED WIRE ASSEMBLY BY FRICTION WELDING

Ronald E. Curtis, Chillicothe, Ill.; Gary L. English, Scotia, N.Y., and James R. Hense, Peoria, Ill., assignors to Production Technology Inc., Peoria, Ill.

Filed April 26, 1971, Ser. No. 137,258

Int. Cl. B23k *27/00*

U.S. Cl. 29—470.3 **2 Claims**



A method for producing a stranded wire assembly whereby a connector member is metallurgically bonded to the end of a stranded wire cable. The wire cable is inserted into one end of a hollow sleeve member until the end of the cable is flush with the opposite end of the sleeve. The sleeve is then mechanically fastened to the cable and the coplanar surface of cable and sleeve is friction welded to the connector.

3,728,782

PROCESS FOR THE PRODUCTION OF STRAIGHT-BEAD WELDED PIPE

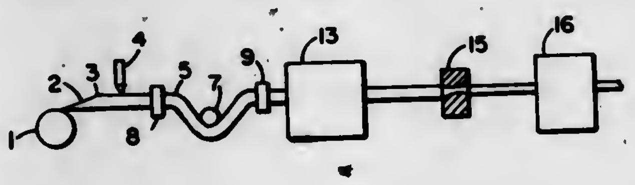
Gerhard Ziemek, Hanover, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte, Hanover, Germany

Filed Oct. 4, 1971, Ser. No. 186,173

Claims priority, application Germany, Oct. 8, 1970, P 20 49 420.6

Int. Cl. B23k *31/02*

U.S. Cl. 29—477 **7 Claims**



Straight-bead welded pipe with an entirely homogeneous gain structure is produced by plastic deformation of the welded pipe, specifically in the area of the weld seam, to substantially destroy the weld-induced variations in grain structure and provide nuclei for new, equiaxed grains. A grain texture is avoided by effecting deformation in two directions with two distinct stresses: bending the pipe away from and back to its axis deforms it in the transverse plane, and compressing the pipe along the weld bead deforms it in the longitudinal plane: Thereafter, the pipe is straightened, annealed and, if desired, reduced to finished diameter and wall thickness.

3,728,783

PROCESS FOR BRAZING STAINLESS STEEL PARTS TO PARTS OF ALUMINUM AND ALUMINUM ALLOYS

Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Dec. 4, 1970, Ser. No. 95,402

Claims priority, application France, Dec. 15, 1969, 6943387

Int. Cl. B23k *31/02, 35/36*

U.S. Cl. 29—495 **4 Claims**

Process for brazing stainless steel parts to parts of aluminum and aluminum alloys in which the steel parts are pickled in an aqueous bath, then dipped in a flux bath containing a salt of zinc and dried in a stove, the steel parts thus coated are then brazed to said parts of aluminum by usual technics.

3,728,784

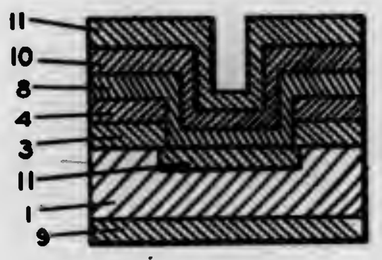
FABRICATION OF SEMICONDUCTOR DEVICES

John G. Schmidt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed April 15, 1971, Ser. No. 134,240

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **6 Claims**



The disclosure herein pertains to methods for fabricating planar, discrete or monolithic arrays of semiconductor devices, particularly light-emitting diodes and arrays thereof. The disclosure more particularly concerns diffusion processes to form controlled regions of P-type conductivity in N-type conductivity semiconductors.

3,728,785

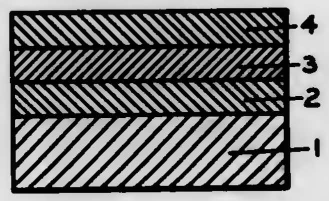
FABRICATION OF SEMICONDUCTOR DEVICES

John G. Schmidt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed April 15, 1971, Ser. No. 134,251

Int. Cl. B01j *17/00*

U.S. Cl. 29—588 **6 Claims**



The disclosure herein pertains to methods for fabricating discrete semiconductor devices, particularly light-emitting diodes. The disclosure more particularly concerns a diffusion process to form controlled regions of P-type conductivity in N-type conductivity semiconductors.

3,728,786

METHOD OF MANUFACTURE OF A PERMANENT-MAGNETIZED ROTOR FOR A SYNCHRONOUS MOTOR

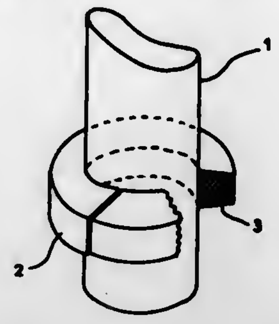
Pierre Lucas, Dourg-Les-Valence, and Pierre Paillet, Pierre-Curie-Valence, both of France, assignors to Crouzet, Paris, France

Filed Nov. 15, 1971, Ser. No. 198,892

Claims priority, application France, Nov. 16, 1970, 7041294

Int. Cl. H02k *15/02, 15/10*

U.S. Cl. 29—598 **1 Claim**



A method of manufacture of a permanent-magnetized rotor for a small multipolar synchronous motor from a rectangular tape made of a flexible plastomagnetic material comprising an organic binder loaded with magnetic powder, wherein said flexible tape has a rectangular or square cross-section and is cut to suitable dimensions and then shaped as a ring with a trapezoidal cross-section through contiguous winding on a cylindrical mandrel with a suitable diameter and is subjected to a curing operation designed to impart to it a predetermined stiffness while maintaining in it a slight expansibility, due to the controlled curing of the binder and then after the concentric introduction of the ring and of an axis in a mold with a cylindrical wall, the axis and the ring are made integral through injection of a thermoplastic or thermosetting material or of a metal having a low melting point whose pressure tends to apply the ring onto said cylindrical wall of the mold the internal diameter of which corresponds precisely to the external diameter of the finished rotor.

3,728,787

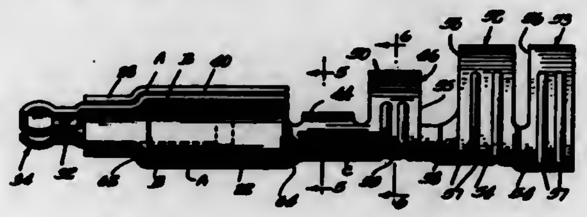
METHOD OF MAKING A SHIELDED CABLE CONNECTOR

Cletus G. McDonough, Elmhurst, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Division of Ser. No. 61,185, Aug. 5, 1970, Pat. No. 3,660,805. This application Oct. 13, 1971, Ser. No. 188,740

Int. Cl. H02g *15/00*

U.S. Cl. 29—629 **6 Claims**



Complementary male and female connectors are provided for shielded cables such as audio cables. Each connector comprises inner and outer sheet metal conductors with a sheet of insulation laminated to the outer conductor and located between the two conductors to insulate the two conductors. Each connector has portions for crimping respectively the center conductor and shield of a shielded cable. A method of making the connector is provided whereby a sheet of metal, a part of which has the insulating sheet laminated thereto, may be blanked and folded to bring together an outer laminated conductor part and an inner non-laminated conductor part so that the insulation is sandwiched between the two conductor parts, following which the inner and outer parts are shaped into a configuration which includes a tubular body having a longitudinal seam.

3,728,788

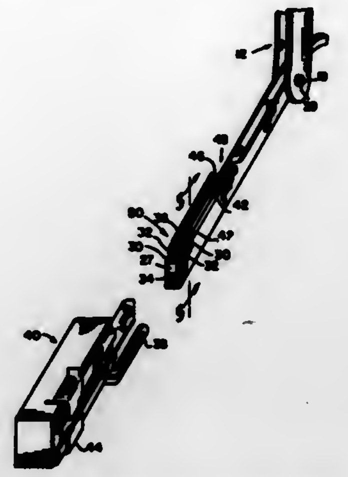
STRAIGHT RAZOR ADAPTED FOR USE WITH INJECTOR BLADES

Robert E. Pearson, 414 Kessler Boulevard, Seymour, Ind.

Filed Aug. 26, 1971, Ser. No. 175,255

Int. Cl. B26b *21/10, 21/24*

U.S. Cl. 30—53 **3 Claims**



A razor of the straight razor type has closely spaced blade shields adjacent one of its ends, and an opening adjacent to but spaced from the blade shields which will receive a key of an injector cartridge with an interference fit, which may use injector blades and receive them directly from their cartridge.

3,728,789

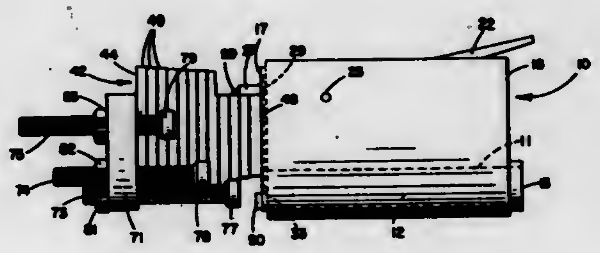
WIRE STRIPPER

Milton G. Fischer, Banning, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

Filed June 25, 1971, Ser. No. 156,763

Int. Cl. H02g *1/12*

U.S. Cl. 30—90.1 **16 Claims**



A coaxial wire stripper including a body having an opening through which a wire is extended, a blade being positioned transverse to the opening and resiliently biased toward it by a spring-pressed pivotal arm, a member adjacent the body being selectively indexable to position different stops adjacent the pivotal arm to limit its movement to control the stroke of the blade toward the wire, and hence the depth of the cut, this member also including axially adjustable abutments engageable by the end of the wire for controlling the amount of wire exposed past the blade, and hence the position of the cut in the wire.

3,728,790

TUBE CUTTER ASSEMBLY

Sherley E. Blakeslee, 4132 Keever St., Long Beach, Calif.

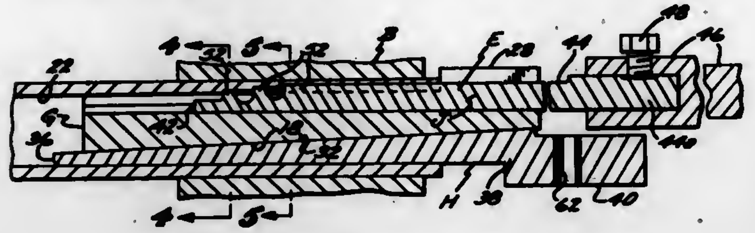
Filed Jan. 3, 1972, Ser. No. 214,982

Int. Cl. B23d *21/06*

U.S. Cl. 30—92.5 **4 Claims**

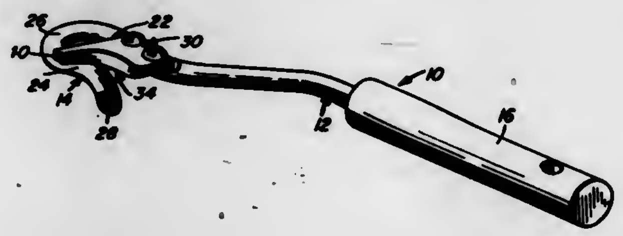
A tube cutter tool assembly, preferably actuated by an air hammer, for facilitating the removal of metallic tubes, such as boiler tubes and the like, from the sheet of a vessel in which the end portions of the tubes are sealingly positioned, and from which sheet said end portions extend outwardly.

The tool assembly, when used in conjunction with an air hammer, forms two longitudinal, transversely spaced slots on the interior surface of the sheet-engaged end portion of the tube. The weakened longitudinal section of the tube wall between the slots may be forced inwardly to provide an elongate space in the tube that permits the end portions of the tube within the sheet, as well as the portion of the tube that extends outwardly therefrom, to be crushed by suitable transversely applied forces. The crushed end portion of the tube may then be removed easily from the opening in the sheet in which it was previously sealingly positioned.



3,728,791
BALE TWINE CUTTER

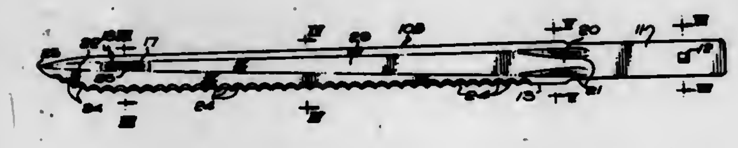
Wesley R. Holmquist, Rt. 5, Box 349 B, Idaho Falls, Idaho
Filed Feb. 10, 1971, Ser. No. 114,269
Int. Cl. B26b *3/00*
U.S. Cl. 30—294 **2 Claims**



An implement particularly adapted for cutting bale twine comprising an elongated shank having a handle on one end thereof and a reversely opening hook on the second end thereof. A transverse blade is provided across the hook for a cutting of bale twine as the twine is guided thereagainst upon a movement of the hook over the top of a bale. The blade is laterally spaced from the hook with the hook looping rearwardly beyond the blade so as to self-cleaning in nature.

3,728,792
CUTTING BLADES FOR POWERED CARVING KNIVES

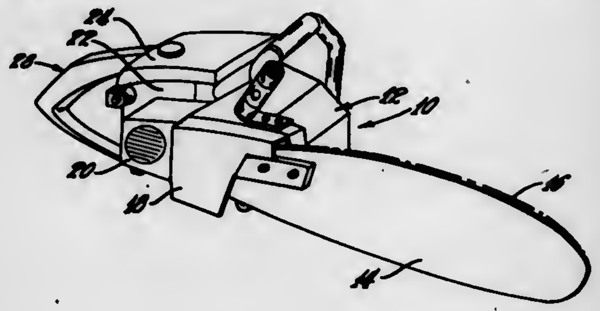
Robert Gault, Sheffield, England, assignor to J. R. A. Steel Processing, Limited, Sheffield, England
Filed Nov. 25, 1970, Ser. No. 92,797
Claims priority, application Great Britain, Nov. 28, 1969, 58,284/69
Int. Cl. B26b *9/02*
U.S. Cl. 30—355 **5 Claims**



Each of a pair of blades for use in a powered knife is formed with a bent transverse cross-section whereby the two blades together create a hollow space between the blades, whereby appreciably thinner material may be used as compared with conventional flat blades, thus representing a considerable saving of material and the hollow space acts as a clearance area for any particles or debris created by the cutting action which particles or debris would be liable to create excessive friction between or jamming of conventional flat blades. The blades are preferably made of stainless steel, and the cutting edges are preferably serrated.

3,728,793
CHAIN SAW WITH DAMPING MEANS

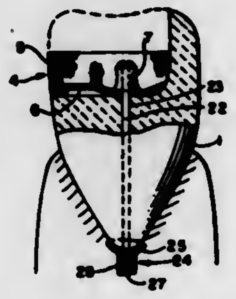
Clifford Makinson, Rosemere, Quebec, Canada, and Arthur M. Fullerton, Toledo, Ohio, assignors to The Scott & Fetzer Company, Lakewood, Ohio
Continuation-in-part of Ser. No. 88,886, Nov. 12, 1970, abandoned. This application April 15, 1971, Ser. No. 134,374
Int. Cl. B27b *17/02*
U.S. Cl. 30—383 **17 Claims**



A chain saw is provided having means for more effectively damping or reducing shocks and vibrations transmitted between the chain saw body and the operator than means heretofore proposed for this purpose. The chain saw has two separate handles, one near the front and one near the rear, and lying in generally mutually perpendicular planes. Each handle has shock-absorbing means connecting end portions thereof to the body of the chain saw. Each shock-absorbing means at each location is specifically designed to provide maximum shock-absorbing characteristics for that position. In one embodiment, the front handle with the shock-absorbing means is readily adapted for mounting on existing chain saws.

3,728,794
METHOD AND APPARATUS FOR TOOTH RESTORATION

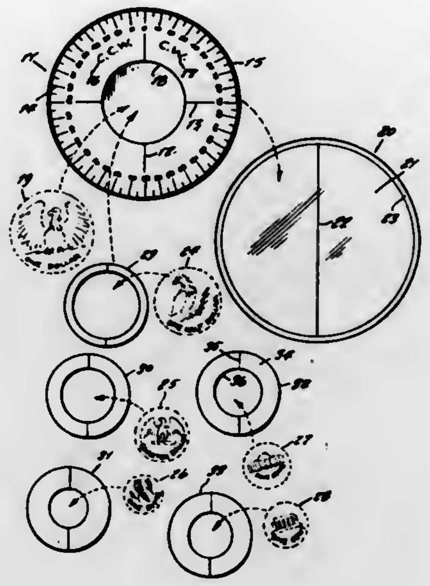
Alfred E. Edelman, 2723 Federal St., Camden, N.J.
Division of Ser. No. 816,319, April 15, 1969, Pat. No. 3,583,069. This application Feb. 17, 1971, Ser. No. 116,038
Int. Cl. A61k *5/02*
U.S. Cl. 32—15 **10 Claims**



A stabilizing device for a loose tooth and a restoration for a tooth having a cavity left in the tooth by the breaking away of a relatively large portion of the tooth from the incisal and side wall surfaces thereof comprising a side wall forming plate inset in the cavity adjacent the base thereof and conforming to the normal side wall contour of the tooth portion that has broken away, a reinforcing mesh secured to the bottom of the side wall forming plate and extending inwardly forming a lining over at least a portion of the cavity, a load distributing anchor extending through the mesh and fastened to the tooth, and a dental filling of hardened plastic material filling the remainder of said cavity and shaped to conform to the normal contour of the natural tooth portion which it occupies.

3,728,795
COIN DEGREE FINDER

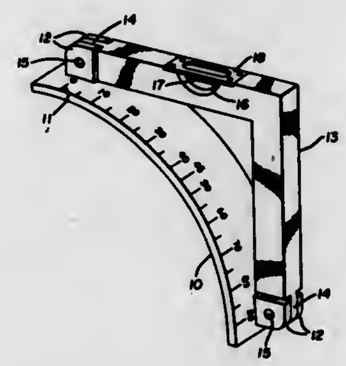
Peter Von Camber, 1171 Lockhaven Way, San Jose, Calif.
Filed Nov. 8, 1971, Ser. No. 196,491
Int. Cl. G07f *3/02*
U.S. Cl. 33—1 N **2 Claims**



A coin degree finder, the device consisting of a 360° protractor of transparent material so to permit viewing therethrough, a circular snap on lid with a scribed center line thereacross, and the lid being made of likewise transparent material, and the device in one form of the invention also including a set of inserts each one of which is adaptable to receive a different denominator of coin, the inserts selectively being receivable in a center opening of the protractor.

3,728,796
CENTER LINE LOCATOR FOR PIPES AND THE LIKE

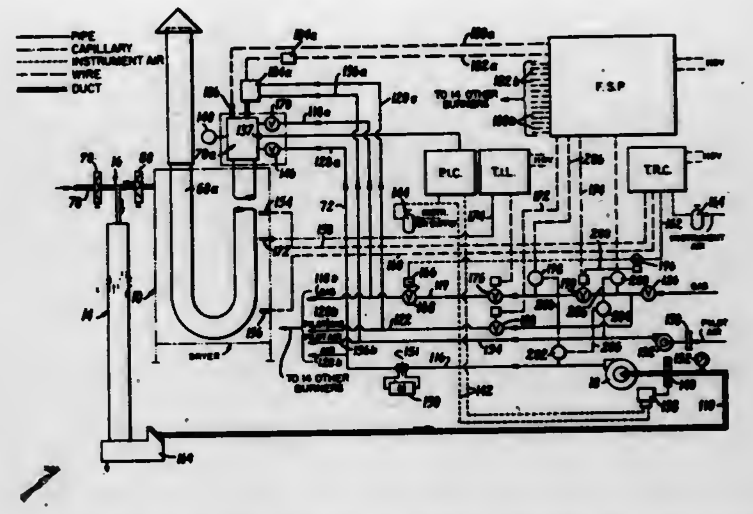
Lawrence E. Lobaugh, 132 Wilson Avenue, Niles, Ohio
Filed July 22, 1971, Ser. No. 165,167
Int. Cl. G01c *9/00*
U.S. Cl. 33—343 **5 Claims**



A center line locator for pipes and the like consists of an arcuate member, the curve of which matches the circumference of the pipe and an angle shaped body member secured thereto at its ends and incorporating a bubble level in one section thereof. The arcuate member is applied to a pipe and moved circumferentially thereof until the bubble level indicates a level condition whereupon indicia on the arcuate member indicate the longitudinal upper center line of the pipe and the longitudinal side center line of the pipe.

3,728,797
APPARATUS AND METHODS FOR HEAT TREATING MATERIALS AND INCINERATING VAPOROUS OFF-PRODUCTS

George M. Worden, Sr., Park Ridge, and Alexander M. Lane, Allendale, both of N.J., assignors to Wyssmont Company, Inc., Fort Lee, N.J.
Filed Nov. 16, 1971, Ser. No. 199,273
Int. Cl. F26b *3/00*
U.S. Cl. 34—32 **26 Claims**

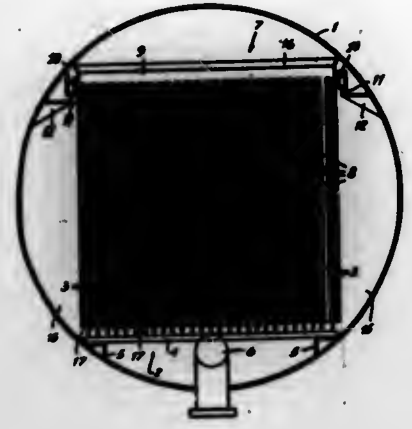


Material to be heat treated is passed through a rotary-tray dryer held at high temperature by burning a combustible fuel in a burner system. The vaporous off-products generated by treating of the material are withdrawn from the dryer, intermixed with outside combustion air and conveyed through a condenser, where condensable constituents are in large part removed, to the burner system to effect combustion of the fuel and incineration of noncondensable, noisome constituents of the vaporous off-products. The volumetric flow rate of air-vapor mixture delivered to the burners is maintained at a substantially constant value by a damper adjusted automatically in response to fluctuation of the mixture pressure at the burners from a predetermined level. A generally T-shaped duct connects the condenser to the dryer and to the atmosphere, and a blower interposed between the condenser and the burners creates a negative pressure on the upstream side productive of an inflow of combustion air from the atmosphere and an outflow of vaporous off-products from the dryer. Adjustable dampers are provided in the T-shaped duct to regulate the pressure drop thereacross so as to establish desired pressure levels within the dryer and at the condenser inlet. Temperature control within the dryer is effected by regulating the flow of fuel to the burners in accordance with variations in dryer temperature. A provision for over-temperature control shuts off the main fuel supply to the burners in the event the dryer temperature becomes excessively high. A flame safety system shuts down the apparatus if certain crucial conditions, such as pilot flame failure, occur.

3,728,798
BULK FREEZE-DRYING APPARATUS

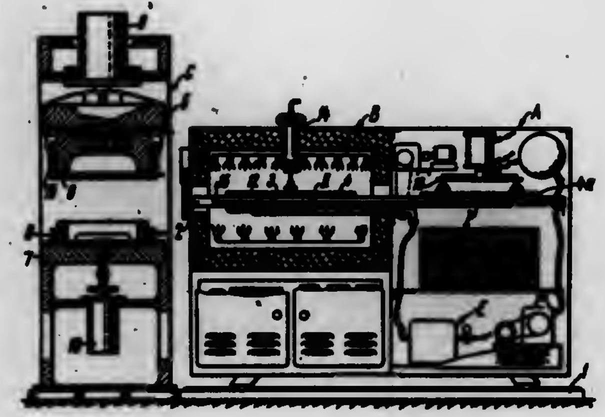
Gunter A. H. Wehrmann, Nibelungenring 30, Elmshorn/Holstein, Germany
Filed Aug. 25, 1970, Ser. No. 66,853
Int. Cl. F26b *5/06*
U.S. Cl. 34—92 **2 Claims**

The invention refers to an apparatus for freeze-drying foodstuffs, luxuries and victuals in a chamber adapted to be closed by means of vacuum and while heating with a plurality of vertical, fixed heating devices. The chamber includes a plurality of movable vertical receptacles (for receiving the material to be dried) alternately arranged with the heating devices and



capable of transporting the material longitudinally through the chamber between the heating devices.

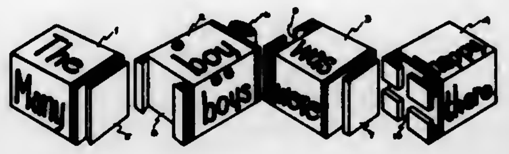
3,728,799
APPARATUS FOR PRODUCING THERMOPLASTIC SHEET ARTICLES
Konstantin Nikolaevich Streltsov, Leingrad, U.S.S.R., assignor to Osboe opytno-konstruktorskoe bjuro po razvitiju mekhano-pnevmaticheskoi tekhnologii, Leingrad, Strelna Krasnoselskoe shossee, 9, U.S.S.R.
Filed April 8, 1971, Ser. No. 132,393
Int. Cl. F26b *13/00*
U.S. Cl. 34—151 **2 Claims**



A machine for making articles from sheet thermoplastic material which is characterized by a group of openings provided in the smooth surface of the machine table and communicating with a source of hot gas fed under pressure to define a gas cushion supporting the blank above the table surface and assisting in the heating of the blank.

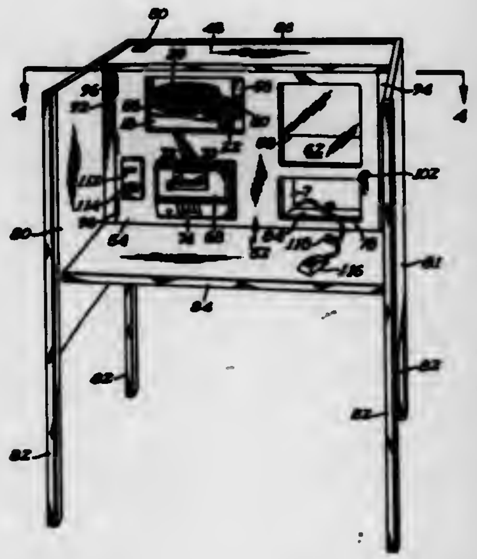
ERRATUM
For Class 35—10 see:
Patent No. 3,729,129

3,728,800
EDUCATIONAL APPARATUS
David Magram, 2304 Sherwood St., Pittsburgh, Pa.
Filed Sept. 15, 1971, Ser. No. 180,659
Int. Cl. G09b *1/36*
U.S. Cl. 35—35 J **5 Claims**



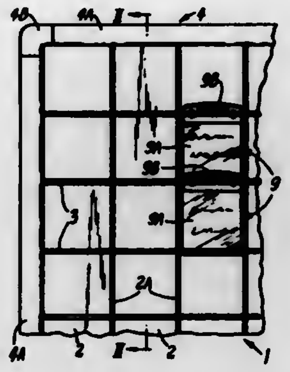
An educational apparatus comprising a plurality of blocks, each side of which includes a grammatical part of speech and the ends of which are designed to interlock with respective blocks to form a grammatically correct sentence.

3,728,801
AUDIO-VISUAL TEACHING UNIT
Richard K. Beckman, Route 3, Eau Claire, Wis., and Burton H. Spangler, 307 Dodge St., Eau Claire, Wis.
Filed Nov. 8, 1971, Ser. No. 196,690
Int. Cl. G03b *21/28*
U.S. Cl. 35—60 **12 Claims**



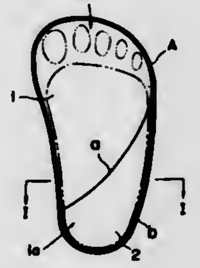
An individual study facility incorporating a projector and a tape player fully enclosed within a cabinet structure made up of modular subassemblies including a portable, readily removable optical module or chassis on which the projector and associated mirrors are supported and a removable, hingedly mounted front panel assembly on which a rear projection viewing screen and the tape player are mounted. The front panel has an access opening at one end thereof directly in front of the projector for loading slides, and a slidable door normally covering the projector access opening is movable to an open position wherein it blocks the viewing screen on the other end of the front panel to preclude use of the projector and visual aids until the projector access door has been closed.

3,728,802
CHARTS
David Maldon James, Hambrook Hall, near Chichester, England, assignor to Beanstalk Shelving Limited, Sussex, England
Filed Dec. 7, 1970, Ser. No. 95,575
Claims priority, application Great Britain, Dec. 8, 1969, 59,876/69
Int. Cl. G09f *3/20*
U.S. Cl. 35—73 **15 Claims**



A wall chart and indicator members therefor, the chart having substantially horizontally extending indicator member supports with which the indicator members can be engaged to hang therefrom.

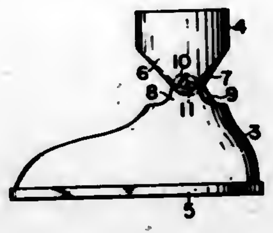
3,728,803
INFANT SHOES
Yaichiro Hirasawa, Yokohama, and Masakatu Ousuga, Shizuoka, both of Japan, assignors to Fujidai Rubber Industry Co., Ltd., Shin-dori, Shizuoka-shi, Japan
Filed Sept. 2, 1971, Ser. No. 177,226
Claims priority, application Japan, March 5, 1971, 46/11257
Int. Cl. A43b
U.S. Cl. 36—2.5 E **5 Claims**



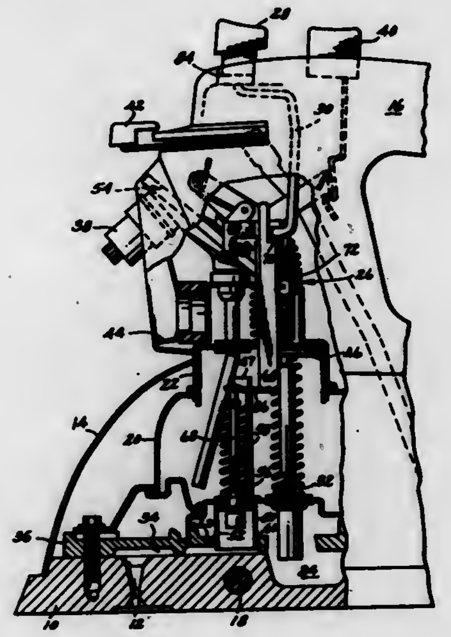
A rigid member is placed above the sole of an infant's shoe, and extends across the heel and to the base of the fifth toe to provide support over the full heel width and forward along the outer edge of the foot outline. The effective width of the infant's foot is thus increased to permit more stable standing and walking by the infant.

3,728,804
SKI BOOT
Yoshinari Mochizuki, Tokyo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo, Japan
Filed July 9, 1971, Ser. No. 161,212
Claims priority, application Japan, July 10, 1970, 45/60982
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **3 Claims**

In a ski boot which outer shell comprises a rigid lower shell enclosing substantial portions of a foot, and a rigid upper shell in the form of an ankle cuff connected to the lower shell, the upper shell is movable to a forwardly outwardly inclined position relative to a boot sole. The movement of said upper shell substantially corresponds to an anatomically natural movement of a user's leg about an ankle.



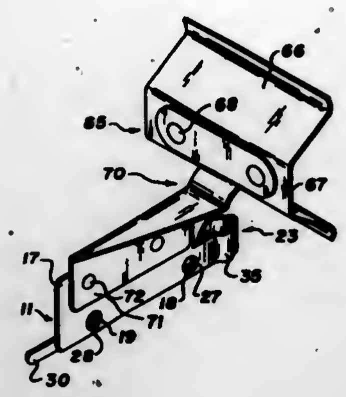
3,728,805
MULTI-FUNCTION STEAM IRON
Harold W. Gowdy, Ontario, Calif., assignor to General Electric Company, Bridgeport, Conn.
Filed May 31, 1972, Ser. No. 258,424
Int. Cl. D06f *75/06*
U.S. Cl. 38—77.83 **14 Claims**



The invention is directed to a self-cleaning steam iron with means to purge the iron through the soleplate by providing a substantially separate large opening in the iron's water tank with a dump valve so the water can be suddenly dumped onto the hot soleplate. With the additional steam suddenly generated, the entire tank, steam distribution system, and ports are completely and forcefully purged of water, steam, loose residues, and entrapped lint. An additional function to this self-cleaning combination uses the same structure with a separate steam knob to actuate the dumping structure separately and in pulses to provide a surge of steam through the soleplate upon actuation. The same knob, on continuous actuation, converts the iron into a dry iron. Thus, common structure provides a multi-function steam iron.

3,728,806
SIGN HOLDER
Peter Kostiuk, Box 1798, Williams Lake, British Columbia, Canada
Filed Sept. 3, 1970, Ser. No. 69,403
Int. Cl. G09f *3/18*
U.S. Cl. 40—11 R **1 Claim**

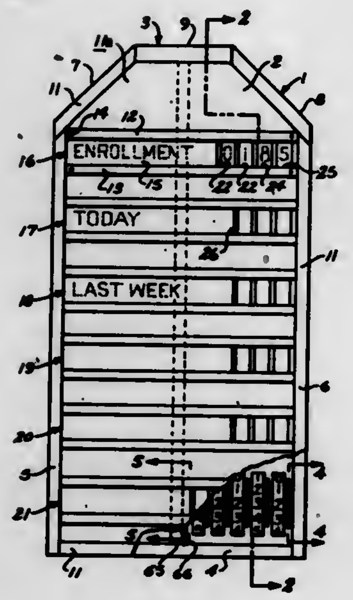
A sign holder is provided having a clip formed of a base member and a spring pressed clamping member. The base and clamping members have openings and sign-puncturing pins which project into the aforesaid openings. Mounting means is



provided for securing the clip in a selected position near the products which are priced and/or advertised by the sign.

3,728,807
ATTENDANCE INDICATING BOARD

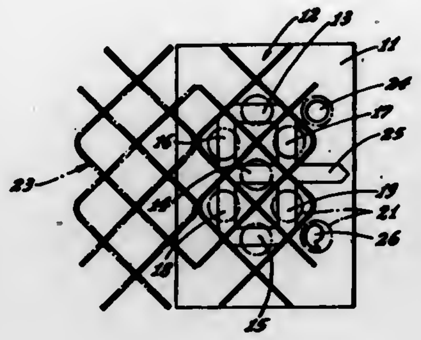
Walter Lee Jameson, P.O. Box 72, Fisher, Ark.
Filed April 12, 1971, Ser. No. 133,163
Int. Cl. G09f *11/02*
U.S. Cl. 40—77.6 **5 Claims**



An attendance indicating board with letters that can be changed and numerals which can be changed quite rapidly by rotating indicator drums on which the numerals are displayed. Rotations of the numeral bearing drums is accomplished by manipulating control discs accessible from the rear of the attendance board and which are connected to the numeral drums by rubber bands to drive the drums when the control discs are rotated. There are plural rows of drums, one row in horizontal alignment with each row of letters. The rubber bands which provide the drive connection between the control discs and the drums also restrain the drums against accidental rotation by urging same transversely against their shafts thereby increasing friction between the drums and the shafts.

3,728,808
BAR SEGMENT READOUT LIGHT SHIELD

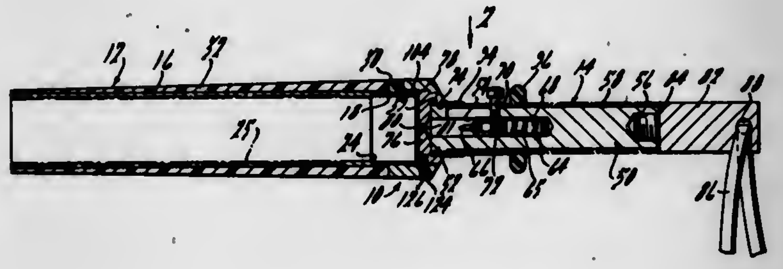
Harold F. Rieth, Costa Mesa, Calif., assignor to Industrial Electronic Engineers, Inc., Van Nuys, Calif.
Filed Aug. 24, 1970, Ser. No. 66,474
Int. Cl. G09f *13/06*
U.S. Cl. 40—130 E **20 Claims**



A readout light shield comprising four slotted elements which may be assembled to form an eggcrate having a plurality of rectangular cells into each of which a light may be placed for illumination of a specific portion of a bar segment readout. The ratio of the lengths of the adjacent sides of the cells may be altered to adjust the angle at which a viewer sees the numerals or characters which are displayed by the readout without causing the horizontal segments to become non-horizontal.

3,728,809
PROJECTILE LAUNCHER BATON

Stephen F. Mulich, San Ramon, and James A. Sweeney, Walnut Creek, both of Calif., assignors to MBAssociates, San Ramon, Calif.
Filed Oct. 2, 1970, Ser. No. 77,526
Int. Cl. F41c *3/00, 27/00*
U.S. Cl. 42—13 **10 Claims**

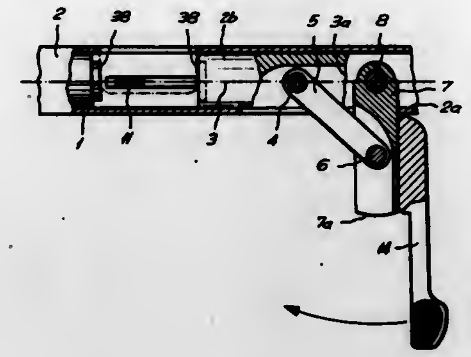


A projectile launcher in the form of a stun baton, or night stick, which is comprised of a barrel assembly, having a receiver therewithin its inward end, and a coaxial handle assembly which includes a firing mechanism, a firing mechanism safety, and a breech member disposed at one end thereof.

Tee receiver end of the barrel assembly and the breech breech end of the handle assembly are respectively connected to opposing halves of a novel split collar ring. The halves of the collar ring are hinged axially for rotatably pivoting the handle portion transversely with the face of the receiver to provide for insertion of the projectile, and after firing for removal of the spent cartridge. A releasable locking mechanism is further provided to lock and align the assemblies in coaxial orientation whereupon release of the mechanism allows the pivotable rotation of the assemblies for disassociation therewith.

3,728,810
FIREARMS, ESPECIALLY SPORTS OR TARGET PISTOL

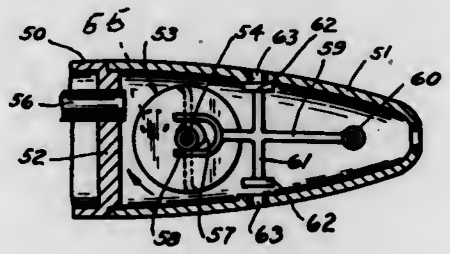
Edwin Rohr, Wettingen, Switzerland, assignor to Vishuy Intertechnology, Inc., Malvern, Pa.
Filed Sept. 16, 1970, Ser. No. 72,578
Claims priority, application Switzerland, Oct. 14, 1969, 15470/69
Int. Cl. F41c *19/00, 11/00*
U.S. Cl. 42—69 A **8 Claims**



A firearm, particularly a sports or target pistol, comprising an angle-lever breechblock mechanism, wherein an actuating or cocking lever is laterally mounted on the pistol for actuating the angle-lever breechblock mechanism.

3,728,811
PLUG TYPE FISHING LURES

Emory L. Weimer, Orondo, Wash.
Filed Feb. 16, 1971, Ser. No. 115,585
Int. Cl. A01k *85/00*
U.S. Cl. 43—26.2 **7 Claims**

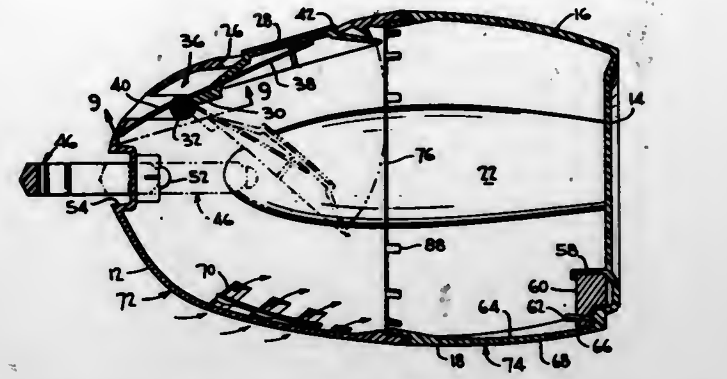


A plug body has in it a cavity in which a water driven rotor is rotatively mounted. A water conduit in the plug body has an intake opening positioned forwardly of the rotor and a discharge opening positioned to direct water onto the rotor to rotate the same. The weight of the rotor is off-center relative to its axis of rotation and when said rotor is rotated the off center weight will cause said rotor to vibrate and impart to the plug body an erratic movement alluring to fish. Means controlled by the rotor to jet water sidewise from the plug body and further increase its erratic movement is also provided.

3,728,812
TROLLING BUCKET

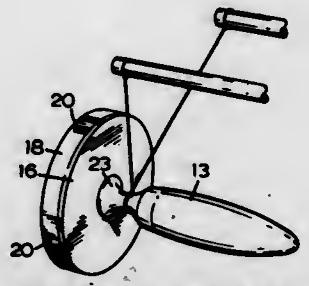
Richard G. Woolworth; Anthony J. Souza, both of Lancaster, and Harper Landell, Fort Washington, all of Pa., assignors to Woodstream Corporation, Lititz, Pa.
Filed April 19, 1971, Ser. No. 133,631
Int. Cl. A01k *97/04*
U.S. Cl. 43—55 **2 Claims**

A trolling bucket for holding live minnows or similar live bait and adapted to be towed behind a boat, comprising a hollow shell of resilient polyethylene or similar material and having a streamlined hull-like bottom surface portion. A pair of closed pockets or chambers disposed on either side of the interior of the hollow shell, generally at the water line, are filled with a foamed plastic material such as polyurethane, to provide flotation of the bucket while being towed. A weight is provided to orient the trolling bucket when floating and an inwardly pivotable access door is provided in the top surface of the shell, to provide access to the interior thereof. The forward end portion of the bucket includes an elongated recess into which handle means for the bucket are slidably retractable so as to be substantially flush with the exterior surface of the bucket. The lower wall portion has an elongated channel which forms a keel-like rib on the exterior of the bucket.



3,728,813
SPINNING TOY

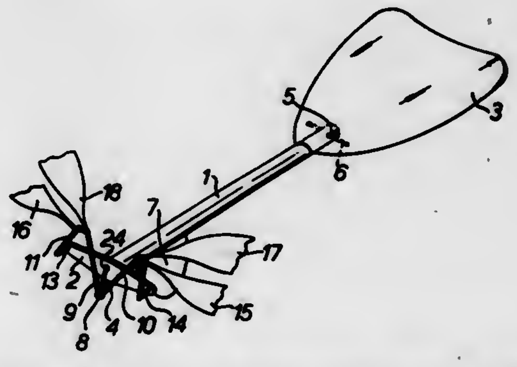
J. Paul Jolliffe, R.R. No. 2, Stevensville, Ontario, Canada
Filed May 18, 1972, Ser. No. 254,370
Int. Cl. A63h *27/12*
U.S. Cl. 46—60 **7 Claims**



A spinning toy of the diabolo type is provided with a central spindle having threads at both ends to which a pair of flat circular discs may be threadably mounted; one disc may be removed and a pointed foot substituted therefor. The provision of the alternate forms permits a learner to progress from a balanced structure to an unbalanced one.

3,728,814
TOY ORNITHOPTER WIND-DRIVING MECHANISM

Gary Richard Ruston, 71, Harcourt Road, Redland, Bristol, England
Filed Jan. 17, 1972, Ser. No. 218,368
Int. Cl. A63h *27/00*
U.S. Cl. 46—74 R **7 Claims**

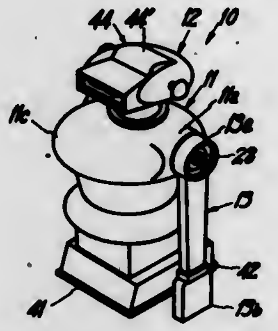


This invention provides a toy ornithopter which has an elongated body and two pairs of wings at the front with a driving mechanism including a cranked drive member arranged so that the wings move in pairs in out-of-phase relation with one pair moving up as the other pair moves down. The driving mechanism includes either articulated linkages connected to the wings or a specially shaped fitment on which the wings are mounted so arranged as to cause the wings to undergo the desired motion.

3,728,815
ACROBATIC TOY ROBOT

Eijiro Tomiyama, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1971, Ser. No. 104,052
Int. Cl. A63h *11/10*
U.S. Cl. 46—104 **4 Claims**

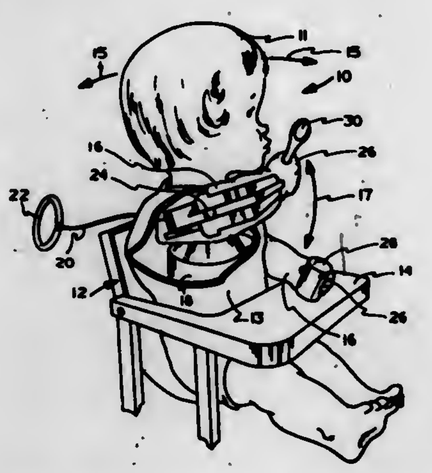


An acrobatic toy robot which comprises a body having a head and rotatable arms, wheel means for driving the robot on a supporting surface and power means in operative connection with said arms and said wheel means, said arms being arranged to overturn the robot when the latter comes into contact with an obstruction and to cause the robot to perform a somersault-like movement when the same is overturned, whereby the robot is arranged to repeat travelling in an upright position and performing such a comical movement.

3,728,816
CLAMORING DOLL

Burt W. Ensmann, Flushing, N.Y., and Robert E. Davis, North Branford, Conn., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed April 21, 1971, Ser. No. 136,018
Int. Cl. A63h *13/00*
U.S. Cl. 46—116 **4 Claims**

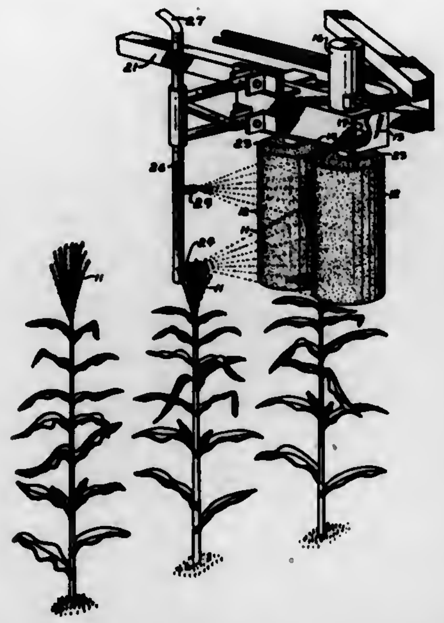


A doll is described which is of the type having a spring motor and a drive train to animate the arms and head. The arms are pivoted for an up and down motion. The drive train includes a spring-loaded yoke connected to drive the arms through the required arcuate displacement, a driven finger on the yoke, and a toothed drive wheel on the output spindle of the motor. The teeth of the wheel gradually displace the finger on the yoke, and afterwards release it abruptly. This abrupt release action, in combination with irregular spacing of the teeth about the spindle, helps to simulate an impatient clamoring activity.

3,728,817
PREVENTING SHEDDING OF POLLEN BY APPLYING BINDER TO CORN TASSELS

John Robert Huey, Princeton, Ill.; Otto B. Wurzburg, Oldwick, N.J., and Clyde D. Goldsberry, Minburn, Iowa, assignors to Moews Seed Company, Granville, Ill. and National Starch and Chemical Corporation, Plainfield, N.J.

Filed May 28, 1971, Ser. No. 148,022
Int. Cl. A01h *1/02*
U.S. Cl. 47—58 **13 Claims**



In raising hybrid corn seed, the necessary exclusion of pollination by pollen from the seed-parent plant is achieved by applying to the tassels of those plants, shortly before pollen-shedding time, a binder which physically prevents the shedding of pollen. The preferred method of application is by driving a high clearance tractor through the field carrying sets of rotating binder-bearing rollers in alignment with the seed-parent plants so that every tassel thereof passes through the bite of a set of rollers, the rollers applying the binder throughout the tassel. Among alternatives are spraying and selectively fogging the tassels. Preferred binders are fine particle dispersions in water of vinyl type homo- or copolymers, such as a copolymer of vinylchloride and butyl acrylate of equal proportions. A great variety of other binders may be used.

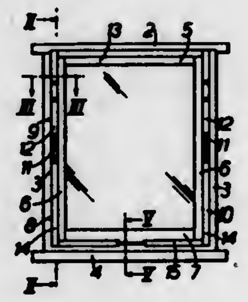
3,728,818
REVERSIBLE SASH WINDOWS

Alan Felix Lovatt, Sunbury-on-Thames, England, assignor to Code Designs Limited, Sunbury-on-Thames, Middlesex, England

Filed Feb. 4, 1971, Ser. No. 112,653

Claims priority, application Great Britain, Feb, 12, 1970, 6,834/70

Int. Cl. E05d *15/52*
U.S. Cl. 49—192 **6 Claims**



A window includes a window frame and a window sash that may be swung outwardly or doubled back to expose the outside window surface at a location convenient for cleaning. A metal frame surrounds the sash and includes upper and lower parts hinged together at a middle portion of the sash. The upper metal frame part is pivotally connected to the upper end of the sash, and the lower metal frame part is fixed to the window frame. A locking device is slidable into one position which locks the upper metal frame part to the window frame so that the sash may swing open relative to the metal frame. The locking device is slidable into another position which locks the sash to the upper metal frame part for inward swinging movement about the central hinges.

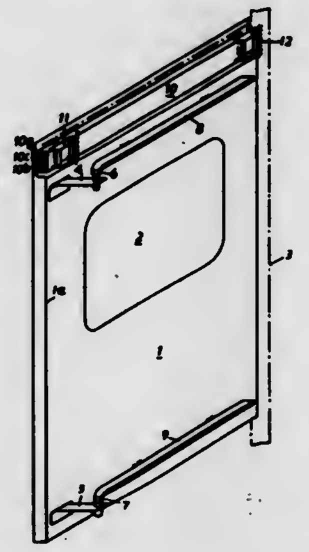
3,728,819
VEHICLE DOORS

Horst Goldbach; Rudolf Brandenburg, and Erich Dabringhausen, all of Heiligenhaus, Germany, assignors to Arn Kiekert & Sohne, Heiligenhaus, Germany

Filed April 28, 1971, Ser. No. 138,032

Claims priority, application Germany, April 28, 1970, P 20 20 576.9; June 23, 1970, P 20 30 799.7; Aug. 29, 1970, P 20 42 936.1; Oct. 28, 1970, P 20 52 764.4; Dec. 21, 1970, P 20 62 822.2; Dec. 31, 1970, P 20 64 678.0

Int. Cl. E05d *15/10*
U.S. Cl. 49—216 **10 Claims**



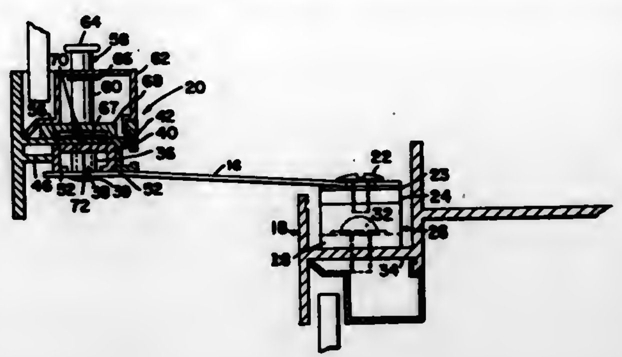
A swinging, sliding door for vehicles, said door comprising at least one door panel, a guide track mounted on the panel, at least one roller guided in the track and a telescopic guide having at least two sections, one of the sections being mounted on the door panel and another of the sections being adapted to be mounted on the body of a vehicle by means of guide members. The telescopic guide extends essentially parallel to the upper edge of the door panel and the sections of the telescopic guide are arranged to move substantially parallel to each other on movement of the door.

3,728,820
CASEMENT WINDOW LIMIT STOP ASSEMBLY

Herbert Lange, San Mateo, Calif., assignor to Soule Steel Company, San Francisco, Calif.

Filed Sept. 13, 1971, Ser. No. 179,743
Int. Cl. E05f *11/00*
U.S. Cl. 49—346 **4 Claims**

A casement window limit stop assembly in which a spring arm is pivotally connected to the casement frame. The window sash is provided with a track within which a shoe, attached to the spring arm, slides. There is a bore within the track into which the shoe is biased and which stops movement of the window. A push button on the window sash and aligned with the bore permits pushing the shoe out of the bore so that

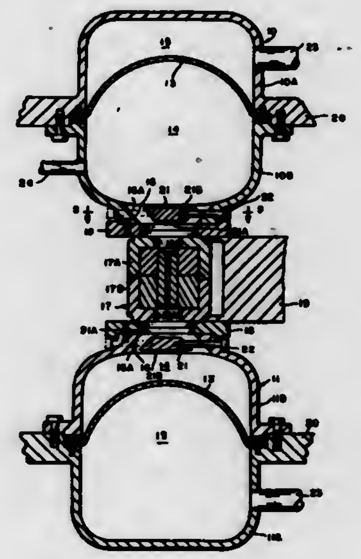


the shoe can slide along the track. The track has a cut-out for removing the shoe from the track thus disconnecting the arm from the window.

3,728,821
MACHINE FOR FINISHING SURFACES

Kenneth E. Perry, Wellesley, Mass., assignor to Dynetics Corp., Woburn, Mass.

Filed Sept. 13, 1971, Ser. No. 179,629
Int. Cl. B24b *7/00, 9/00*
U.S. Cl. 51—2 R **10 Claims**



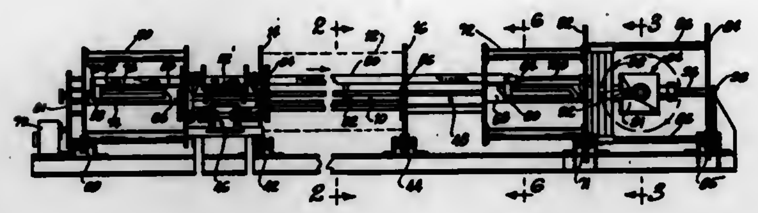
A machine including two hollow members, each divided into two chambers with a diaphragm being the divider between the chambers, one of the chambers of each of the devices adapted to receive fluid to push the diaphragm in a direction to force abrasive material adapted to be held in the second chamber through an orifice extending outwardly from the second chamber, and a baffle positioned in the orifice to prevent expansion of the diaphragm through said orifice and to direct the flow of abrasive material into said second chamber when said hollow members are positioned to cooperatively move abrasive material through a workpiece held between the orifices of said members.

3,728,822
APPARATUS FOR HANDLING PARTS

Myron C. Noble, South Bend, Ind., assignor to Wheelabrator-Frye Inc., New York, N.Y.

Filed Feb. 2, 1971, Ser. No. 111,914
Int. Cl. B24c *3/08, 9/00*
U.S. Cl. 51—15 **20 Claims**

This invention is addressed to a new and improved apparatus for handling heavy metal parts, such as displacement of the part through a blast zone in which the parts are subjected to surface treatment including a rotating tunnel adapted to receive parts in sliding engagement therethrough and a reciprocating drawbar having projections thereon adapted to be displaced toward the tunnel for engagement of the projections with parts in the tunnel and adapted to be displaced away from the tunnel for disengagement of the projections from the parts in the tunnel during reciprocation of the drawbar whereby parts are advanced through the tunnel in a spaced relation by the projections on the reciprocating drawbar.



3,728,823
THREAD GRINDING MACHINE

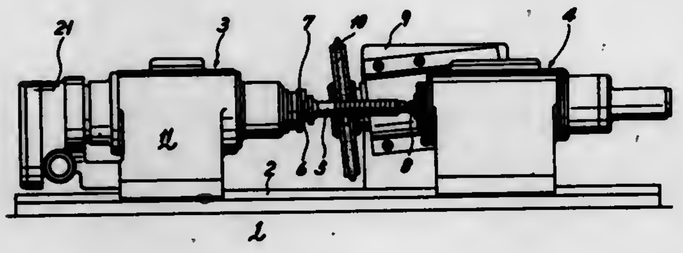
Tamaki Tomita, Okazaki; Kunihiko Unno, and Akiyoshi Kobayashi, both of Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed April 29, 1971, Ser. No. 138,478

Claims priority, application Japan, May 5, 1970, 45/38059

Int. Cl. B24b *3/00, 5/00*

U.S. Cl. 51—95 TG **7 Claims**



A thread grinding machine is provided with a head stock and a tail stock in opposing relation and a spindle for supporting one end of a workpiece to be thread ground is rotatably and axially slidably mounted on fluid bearings in the head stock being threadably engaged with a feed screw shaft secured to the head stock. Rotation of the spindle causes a simultaneous axial sliding movement thereof to grind a helical form in the workpiece. A holding shaft for supporting the other end of the workpiece is mounted on fluid bearings for slidable movement axially in the tall stock and is urged toward the head stock under a constant force sufficient to rotatably support the workpiece.

3,728,824
AUXILIARY WORKPIECE SUPPORTING MEANS FOR PRECISION GRINDING MACHINES

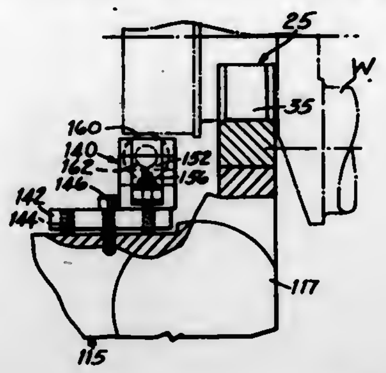
Glover C. Joyce, Worcester, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed April 26, 1971, Ser. No. 137,481

Int. Cl. B24b *5/42*

U.S. Cl. 51—105 SP **13 Claims**

In a precision grinding machine including mutually spaced workpiece supporting assemblies rotatable about a common axis and each incorporating a relatively fixed clamping jaw disposed to support one end of a workpiece during successive workpiece unloading and loading operations and a cooperating relatively movable clamping jaw selectively movable into and out of engagement with a workpiece supported in the cooperating relatively fixed clamping jaw; auxiliary work supporting means mounted upon each workpiece supporting assembly adjacent to its relatively fixed clamping jaw, operative, whenever the relatively movable clamping jaw is released, to support and remove a portion of the weight of the workpiece off the adjacent relatively fixed clamping jaw, including, means operative to facilitate axial and/or angular rotary movement of a workpiece engaged by the auxiliary supporting means for precise axial and/or angular positioning of the workpiece relative to the respective relatively fixed clamping jaws.



ERRATUM

For Class 51—103 see:
Patent No. 3,729,300

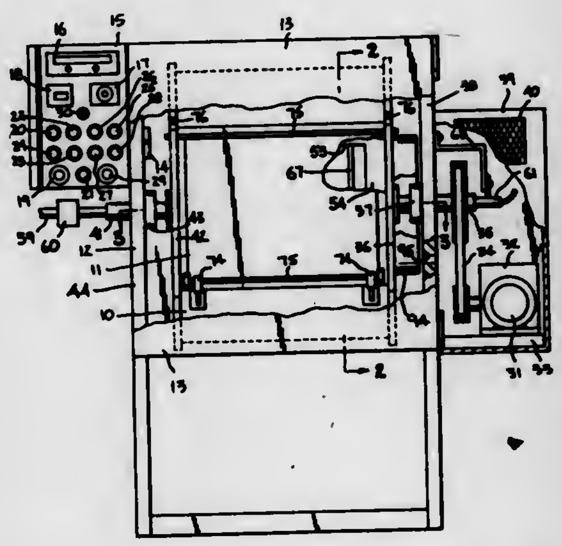
3,728,825
CRYOGENIC DEFLASHING APPARATUS AND OPERATING SYSTEM FOR SAME

Charles D. Barrett, Jr., Mentor, Ohio, assignor to Burdett Oxygen Co. of Cleveland, Inc., Cleveland, Ohio

Substitute for Ser. No. 23,875, March 30, 1970, abandoned. This application Oct. 12, 1971, Ser. No. 188,488

Int. Cl. B24b *31/02*

U.S. Cl. 51—164 **3 Claims**



An apparatus for removing the molding flash from normally soft or resilient molded parts, such as rubber, which utilizes a non-symmetrical tumbling barrel for tumbling and mixing the parts to be deflashed. Low temperature fluid is fed into the barrel to cause freezing or embrittlement of the molded parts to a predetermined extent and temperature-responsive speed control is used for rotation of the tumbling barrel to achieve uniform results and improved efficiency in the cost and effectiveness of the deflashing operation. The temperature sensing probe is isolated from the parts being tumbled, but is so located as to more accurately reflect the temperature of the parts, rather than the temperature of the atmosphere in the barrel. The electric motor utilized to drive the tumbling barrel is disposed in the path of exhaust flow of the cryogenic gas so as to be cooled thereby to reduce the heat factor and consequently the power requirements.

3,728,826
GRINDING MACHINE HAVING AN ADAPTIVE CONTROL SYSTEM

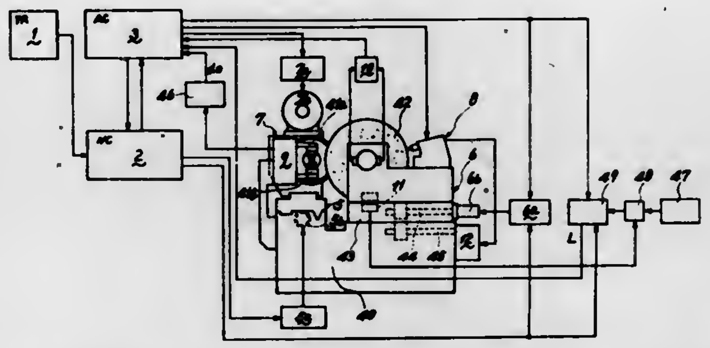
Ryuji Wada; Hideo Nishimura, both of Kariya; Hayashi Kodama, Takahama, and Taisuke Kawamata, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Dec. 6, 1971, Ser. No. 205,150

Claims priority, application Japan, Dec. 19, 1970, 45/114509

Int. Cl. B24b *49/16*

U.S. Cl. 51—165.77 **5 Claims**



A grinding machine is provided which is capable of decreasing the grinding resistance exerted on the grinding wheel thereof towards an objective grinding resistance as a number of grinding operations proceed. A current optimum grinding resistance is calculated on the basis of the objective grinding resistance and the number of grinding operations. The feeding speed of the grinding wheel is controlled such that the grinding resistance exerted on the grinding wheel may be maintained equal to the current optimum grinding resistance.

3,728,827
SAFETY DEVICE FOR A GRINDING SPINDLE

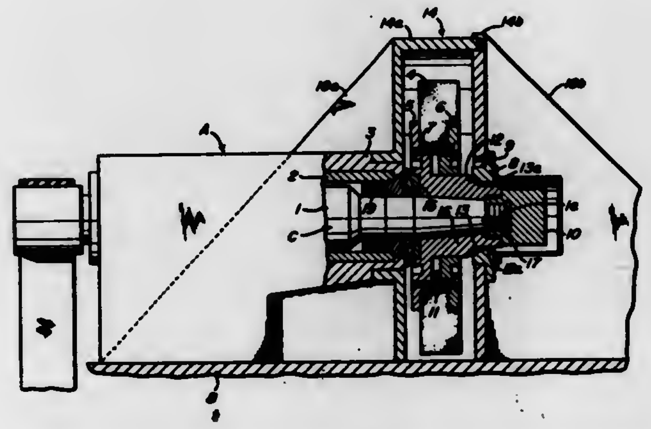
Georg Koppenwallner, Weil der Stadt, Germany, assignor to Fortuna-Werke Maschinenfabrik AG, Stuttgart-Bad Cannstatt, Germany

Filed Sept. 1, 1971, Ser. No. 176,992

Claims priority, application Germany, Sept. 5, 1970, P 20 44 046.4

Int. Cl. B24b *41/00*

U.S. Cl. 51—168 **7 Claims**



The specification discloses a safety device for a grinding machine wheel in which the receiving head, or hub, on which the wheel is mounted is clamped to a spindle shaft by a threaded clamp element and has a guiding surface on the side facing away from the frame of the machine. The frame also has a guiding surface facing the guiding surface on the receiving head and cooperating therewith to support the receiving head radially while confining the receiving head axially in the event the threaded clamp element becomes loose on the shaft.

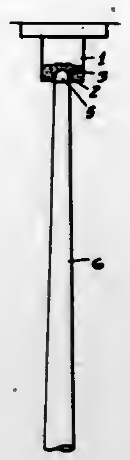
3,728,828
CUE TIP TRIMMER

Gerald Allen Freedman, P.O. Box 503, Worcester, Mass.

Filed Nov. 23, 1971, Ser. No. 201,328

Int. Cl. B24d *7/02, 7/18*

U.S. Cl. 51—204 **2 Claims**



This cue tip trimmer is an abrasive wheel, shaped to easily trim cue stick tips and refinish the same as they are worn.

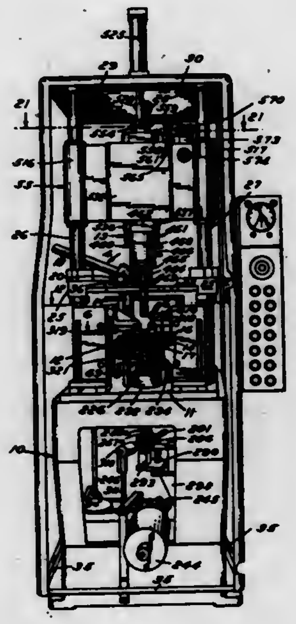
3,728,829
GEAR HONING MACHINE

Myron P. Ellis, Royal Oak; Albin S. Czubak, Detroit, and McDonald Keith A., Union Lake, all of Mich., assignors to Micromatic Hone Corporation, Detroit, Mich.

Division of Ser. Nos. 701,447, Jan. 29, 1968, Pat. No. 3,525,178, and Ser. No. 65,160, Aug. 19, 1970, Pat. No. 3,699,724. This application Aug. 19, 1970, Ser. No. 64,940

Int. Cl. B24b *47/02, 41/06, 5/18*

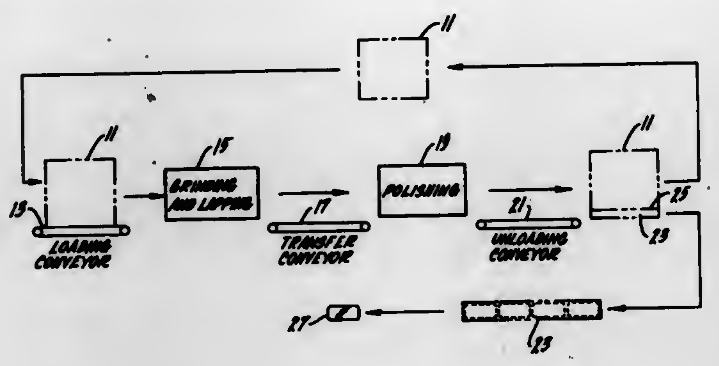
U.S. Cl. 51—215 H **14 Claims**



A multi-surface machining apparatus and method for simultaneously machining the center bore of a gear workpiece concentric to the pitch circle of the gear teeth, and machining one or both of the end faces of the gear workpiece perpendicular to the axis of the center bore. The gear workpiece is rotated in a centerless manner by a pair of master gears comprising a driving gear and a braked retainer gear. The master gears improve the surface finish characteristics of the tooth flanks of the gear teeth while rotating the gear workpiece. Simultaneously, a first machining means is reciprocated axially in the gear workpiece center bore, and a second machining means is reciprocated over one or both of the end faces of the gear workpiece in a direction perpendicular to the axis of the center bore.

3,728,830
PROCESS OF PRODUCING DAY/NIGHT MIRRORS

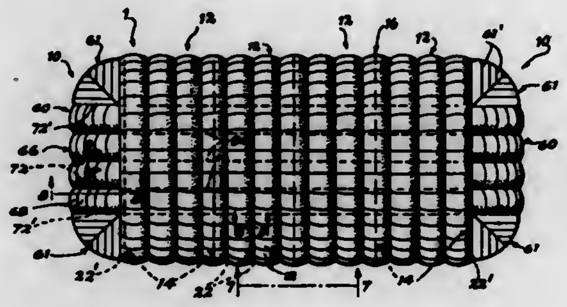
Paul D. Maca, Western Springs, Ill., assignor to Sommer Maca Glass Machinery Company, Chicago, Ill.
Filed Sept. 13, 1971, Ser. No. 179,926
Int. Cl. B24b *1/00*
U.S. Cl. 51—283 **6 Claims**



A method of manufacturing mirrors for use in automotive day/night mirror assemblies. A wide bevel is formed along one edge of a sheet of mirror stock. The beveled portion is cut from the mirror stock and another bevel is formed on the mirror stock along the cut edge. These steps are repeated until the entire usable portion of the sheet of mirror stock is cut into beveled strips. The mirrors are pattern or shape cut from the beveled strips.

3,728,831
SQUARE ENDED AIR INFLATED STRUCTURES

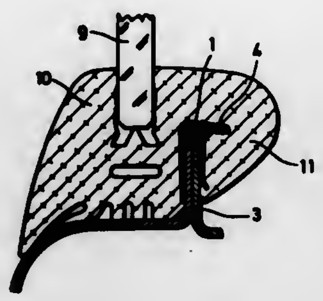
Walter W. Bird, Williamsville, N.Y., assignor to Birdair Structures, Inc., Buffalo, N.Y.
Filed May 12, 1971, Ser. No. 142,445
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 **17 Claims**



An air inflated structure having generally squared end sections when viewed in plan. Each end section includes an end portion having a partial generally cylindrically shaped surface and a pair of corner portions having partial generally spherically shaped surfaces. Each end portion includes an air inflated envelope portion formed of a plurality of horizontally elongated panels, which are edge joined to vertically adjacent panels; and a cable system comprising a series of widely spaced, flexible tension devices. The tension devices are anchored adjacent their lower ends, connected adjacent their upper ends to tension transmitting cables arranged within and extending lengthwise of the central section, and fixed intermediate their respective ends one to each of the envelope panels. Support columns may be arranged within the structure in engagement with the fittings connecting the tension devices and transmitting cables to prevent collapse of the structure in the event of sudden loss of inflating air.

3,728,832
CONNECTION OF A WINDOW PANE TO A FRAME

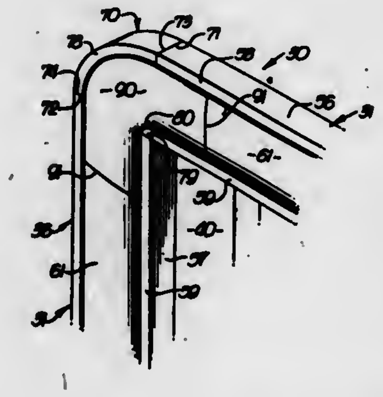
Karl Erck, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Nov. 23, 1970, Ser. No. 91,686
Claims priority, application Germany, Nov. 26, 1969, P 19 59 295.1
Int. Cl. E06b *3/62*
U.S. Cl. 52—400 **18 Claims**



In combination: a frame defining a window opening and having flange means surrounding the opening, clamping means of substantially U-shaped profile straddling the flange means and having first and second legs extending substantially parallel to the flange means and respectively on opposite sides thereof, sealing strip means of elastic material and mounted on the frame and flange means and having a first recess therein, a window pane received in the first recess, the clamping means also having a ridge extending therefrom adjacent the bottom of the profile in a direction away from the window pane and the first leg of the profile which is located on that side of the flange means which faces away from the window pane, the sealing strip means having a second recess for receiving the flange means and clamping means including the ridge.

3,728,833
FRAME CONSTRUCTION HAVING ARCUATE CORNERS AND A CONTINUOUS FEATURE STRIP

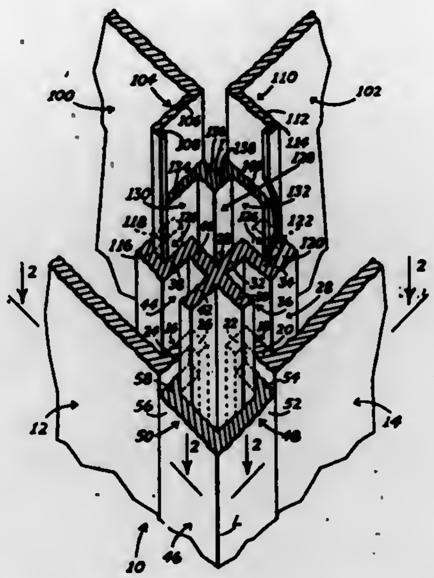
Abraham Grossman, 9339 Rhea Avenue, Northridge, Calif.
Filed March 11, 1971, Ser. No. 123,252
Int. Cl. E06b *1/04;* **E04c** *2/38*
U.S. Cl. 52—211 **5 Claims**



A frame construction for an opening in a wall of a mobile home or the like providing continuous weather sealing means for sealing engagement with the wall and providing an arcuate corner construction whereby a feature or molding strip of continuous and unbroken appearance surrounds the opening and enhances the appearance of the frame construction. A corner member having the configuration of a sector of a circle and providing a curved or arcuate continuation of the linear feature strips of the horizontal and vertical frame members of the frame construction.

3,728,834
BUILDING CORNER ASSEMBLY

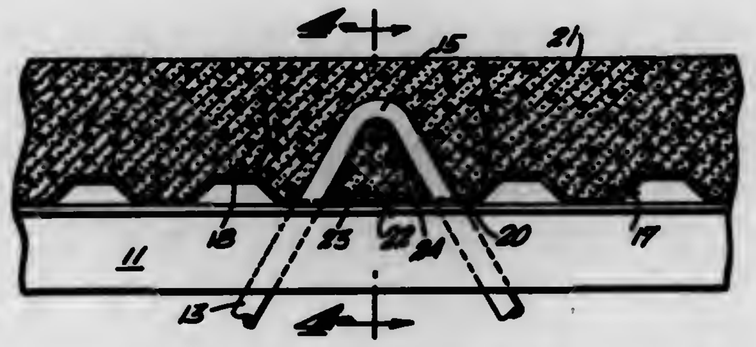
Abner Dean, 166 E. 61st St., New York, N.Y.
Filed July 16, 1971, Ser. No. 163,281
Int. Cl. E04b *1/54, 5/00*
U.S. Cl. 52—282 **12 Claims**



A building corner assembly is provided for joining a pair of walls which lie in intersecting planes. Both walls terminate in arms which also lie in intersecting planes. The assembly also includes a post which has a pair of channels running along its length. The assembly further includes a corner lock which also has a pair of arms. One arm of the corner lock and the arm of one wall fit into one channel of the corner post, and the other arm of the corner lock and the arm of the other wall fit into the other channel of the corner post. The arms of the walls protrude toward the arms of the corner lock within their respective channels of the corner post and thereby enter into an interlocking relationship.

3,728,835
COMPOSITE CONCRETE SLAB AND STEEL JOIST CONSTRUCTION

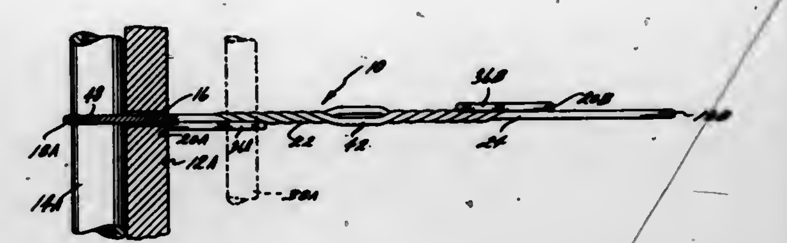
Ira J. McManus, 39 Lincoln Avenue, Florham Park, N.J.
Filed Nov. 5, 1970, Ser. No. 87,067
Int. Cl. E04b *1/16*
U.S. Cl. 52—334 **3 Claims**



A composite action open web steel joist and concrete slab interconnection is described. In one form of the invention, upper apex portions of the steel joist webbing protrude through the upper chord members of the joist, and through apertures provided in the sheet metal formwork placed over such joists prior to the pouring of the concrete slab, whereby said protruding apex portions will be encased within the slab to act as shear interconnection devices therein. Wedge members forced between such protruding joist apex portions and the sheet metal formwork serve to mechanically secure the joist and formwork together, to prevent leakage of the poured concrete through the sheet metal formwork openings, and to enhance the locking of the concrete slab to the protruding joint apex portions.

3,728,836
CONCRETE FORM TIE AND REBAR CHAIR

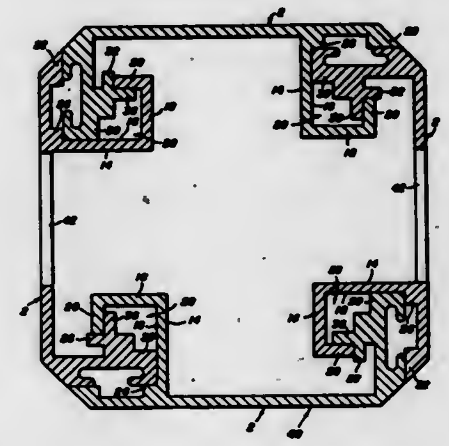
Robert C. Gates, Lakewood, Colo., assignor to Gates & Sons, Inc., Denver, Colo.
Filed Dec. 27, 1971, Ser. No. 211,994
Int. Cl. E04c *5/16;* **E04g** *17/06*
U.S. Cl. 52—687 **6 Claims**



This invention relates to an improved twisted wire concrete form tie characterized by a lower single-wire strand joined to an upper double-wire twisted section by a pair of return bends at opposite ends, all of which cooperate with one another to define an elongate endless loop. The portions of the length of wire that are laid side-by-side and twisted together to form the twisted section terminate in free ends that are bent to form upstanding stops with upwardly opening generally U-shaped rebar saddles on the inside thereof. The section of the return bend projecting outwardly beyond the adjacent stop is slightly longer on one end than the other.

3,728,837
MODULAR STRUCTURES

Augustine J. Kiefer, Jr., 201 Link Avenue, Ross Township, Allegheny County, Pa.
Filed Feb. 25, 1971, Ser. No. 118,824
Int. Cl. E04h *12/00, 17/20*
U.S. Cl. 52—731 **10 Claims**



A modular structure includes elongated modular members which are assembled into a multi-sided panel or post. Each modular member has a side extending the width of the member. A web spaced inwardly from a first end of the side extends from the inner surface of the side toward the first end and a first flange extends from the end of the web toward the inner surface but with an entry slot therebetween. The web and flange form a first opening. A second web extends from the inner surface at the other end. A second flange is attached to the second web in spaced relationship therewith on the side toward the first web so as to provide a second opening having an entry slot. In most cases the modular members are assembled with the first flange of each member in the second opening of the adjacent member.

3,728,838

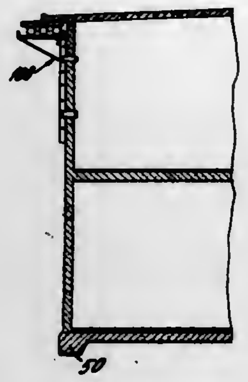
METHOD FOR MAKING CAST-IN-PLACE CONCRETE STRUCTURES

Robert K. Stout, Hamburgo, Num. 75, 9° Piso, Mexico City, 6, D. F., Mexico

Filed Sept. 1, 1971, Ser. No. 176,891

Int. Cl. E04g *11/08, 17/08*

U.S. Cl. 52—742 **7 Claims**



A complete monolithic concrete structure having any desired architectural form and appearance is constructed in a series of operations wherein the foundation, the interior and exterior walls, and the roof are cast-in-place. The foundation and walls are sequentially formed by first temporarily interconnecting a plurality of relatively small concrete forms, after which moist concrete is allowed to cure within the forms. A temporary supporting structure is then erected to support the roof form. After the roof structure has cured, the temporary supporting structure is removed. The required electrical, plumbing, and reinforcing elements are embedded in the cast-in-place structures, and suitable framed openings are left in the wall structures to accept doors and windows.

3,728,839

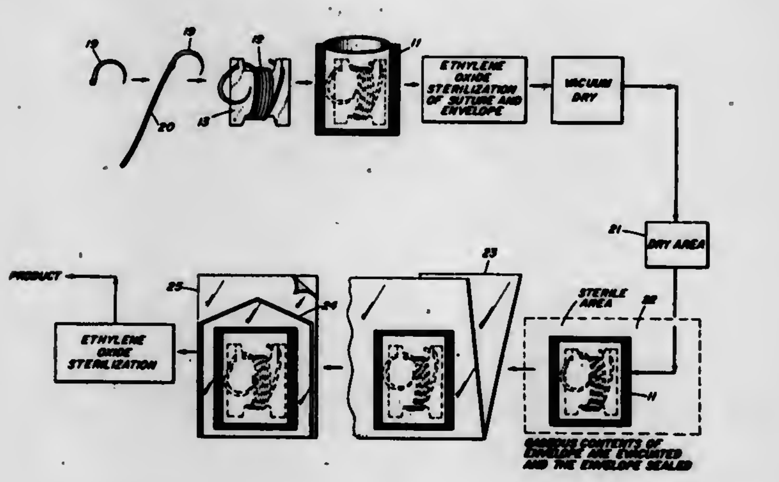
STORAGE STABLE SURGICALLY ABSORBABLE POLYGLYCOLIC ACID PRODUCTS

Arthur Glick, Danbury, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 788,501, Jan. 2, 1969, abandoned. This application April 29, 1971, Ser. No. 138,425

Int. Cl. B65b *55/10*

U.S. Cl. 53—21 FC **6 Claims**


ETHYLENE OXIDE STERILIZATION OF SUTURE AND ENVELOPE
VACUUM DRY
DRY AREA
PRODUCT
ETHYLENE OXIDE STERILIZATION
STERILE AREA
GASEOUS CONTENTS OF ENVELOPE ARE EVACUATED AND THE ENVELOPE SEALED

A dry absorbable synthetic surgical element of a polymer subject to hydrolytic degradation to non-toxic, tissue-compatible, absorbable components, such as a polyglycolic acid suture, is package in an air-tight sealed container which is substantially impervious to water vapor such as a laminate film having a metallic foil layer. The gaseous contents of the envelope are, prior to sealing the suture within the envelope, either evacuated or replaced with a gas which is inert towards said surgical element and which is substantially free from water. The water content should be below 0.5 percent by weight of the weight of the surgical element, and preferably is below 0.05 percent by weight. Polyglycolic acid sutures and other elements thus packaged retain acceptable levels of strength for at least one year at storage temperatures of 72°F. and ambient humidity outside the package. The contents may be sterilized by using ethylene oxide.

3,728,840

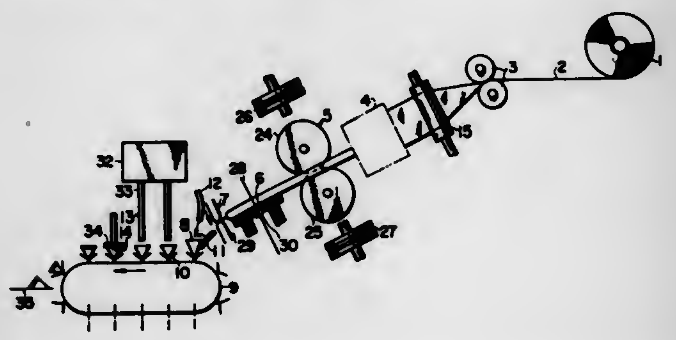
APPARATUS FOR FILLING UP AND SEALING A SYNTHETIC RESIN TETRAHEDRON

Shinjiro Izumi, 18-7 Ryouke 1-chome, Urawa, Japan

Filed July 28, 1971, Ser. No. 166,809

Int. Cl. B65b *43/08*

U.S. Cl. 53—29 **10 Claims**



Apparatus and method for forming a container having no longitudinal seam by passing a flatly folded continuous length of tubular material comprising a pair of oppositely positioned longitudinal folds through means for compressing said folds together while a transverse heat seal is formed at an end of said tubular material perpendicularly to said folds. After the heat sealing operation, the folds are released and the cut edges will separate to form an open mouth into which substances to be stored may be placed. A cover is subsequently sealed to the cut edges to close the container.

3,728,841

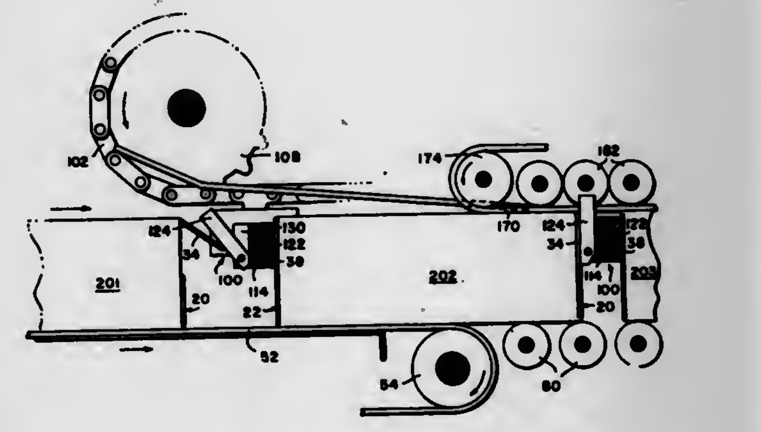
CASE SEALER

John E. Ullman, Huntingdon Valley, Pa., assignor to Huntingdon Industries Incorporated, Bethayres, Pa.

Filed Dec. 15, 1971, Ser. No. 208,131

Int. Cl. B65b *51/10*

U.S. Cl. 53—376 **15 Claims**



A high speed end sealer for cases of the end-closing type in which the cases are fed horizontally into a compression unit and are moved horizontally through the compression unit by pusher bar assemblies carried by an endless chain. The pusher bar assemblies press the end flaps against the end walls of the case providing the necessary gluing pressure therefor. Also, pressure is applied to the top of the case to cause the top manufacturers flap to be glued in position as the case moves through the compression unit.

3,728,842

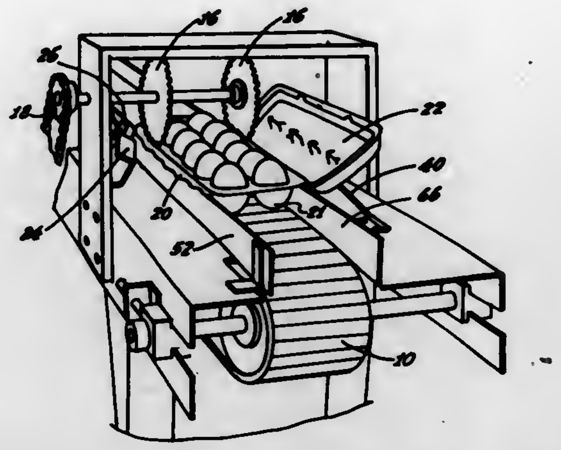
CARTON CLOSING MACHINE

Roy Bruce Wyland, Arcadia, Calif., assignor to Henry Y. Kuhl and Paul R. Kuhl, Sr., Flemington, N.J., part interest to each

Filed Jan. 21, 1972, Ser. No. 219,807

Int. Cl. B65b *7/26*

U.S. Cl. 53—376 **5 Claims**



An improved machine is provided which is particularly adapted for closing styrofoam egg cartons, and the like. The cartons are carried on a conveyor past two spaced powered toothed creasing wheels, which score the cartons at the hinge lines. The cartons are then carried by the conveyor past ramps and bending bars which close the cover, and which also close a locking lip on each carton into a locked position with the cover.

3,728,843

PROCESS FOR CONTINUOUS SEPARATION OF LIQUID OR GAS MIXTURES ON A FIXED BED OF SOLIDS

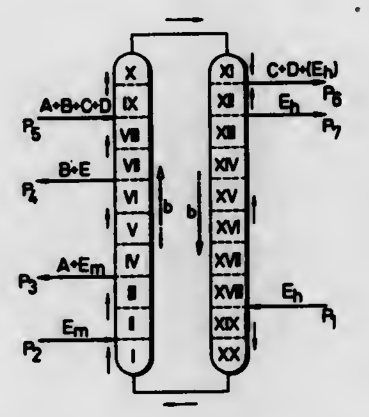
Zoltan Nagy, Budapest; Zsigmond Sebestyen, Veszprem; Laszlo Szepesy, Budapest, and Istvan Feher, Veszprem, all of Hungary, assignors to Magyar Asvanyolaj es Foldgaz Kiserleti Intezet, Veszprem, Hungary

Filed Sept. 29, 1970, Ser. No. 76,543

Claims priority, application Hungary, Oct. 2, 1969, 2,024

Int. Cl. B01d *53/04*

U.S. Cl. 55—25 **18 Claims**



Fluid mixtures are continuously separated on a fixed bed of solids, for example by absorption, by establishing at least four zones in each of which different fluid flow conditions obtain. In one of the zones at least one of the components is separated and in another of the zones at least one of the separated components is removed. In still another of the zones, a fluid is introduced at relatively high pressure and withdrawn at relatively low pressure so as to create the needed pressure differential throughout the system, the direction of flow of this last fluid being opposite the direction of flow of the mixture undergoing separation. The zones are periodically simultaneously shifted all in the same direction.

3,728,844

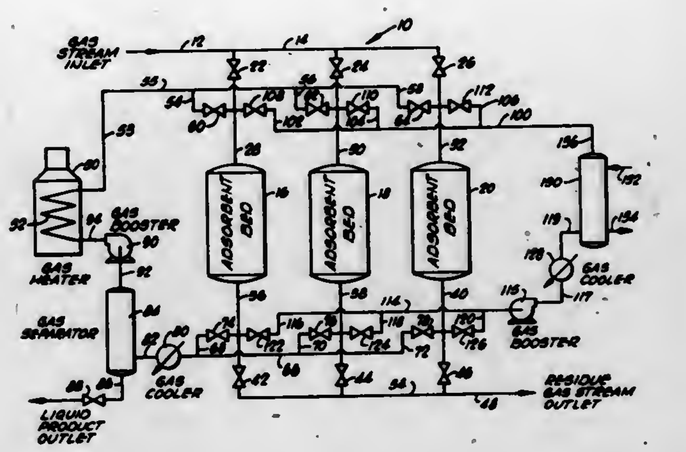
VAPOR ADSORPTION PROCESS

Charles F. Snyder, Conroe, Tex., and Burton M. Casad, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Aug. 19, 1971, Ser. No. 173,059

Int. Cl. B01d *53/04*

U.S. Cl. 55—33 **4 Claims**



The present invention relates to an improved vapor adsorption process, and more particularly, to an adsorption process for removing desired components from an inlet gas stream. By the present invention a bed of solid adsorbent is contacted with a selected adsorbable material during the regeneration thereof, which material has the property of being displaced from the adsorbent bed by desired components contained in the inlet gas stream and a heat of desorption equal to or greater than the heat of adsorption of the desired components. When the bed is contacted with the inlet gas stream, desired components contained therein are adsorbed thereby displacing the previously adsorbed selected adsorbable material from the bed which results in the temperature of the bed remaining relatively constant and the utilization of the maximum bed adsorption capacity.

3,728,845

METHOD AND APPARATUS FOR STRIPPING THE COMPONENTS OF A MIXED SAMPLE FROM A TRAP

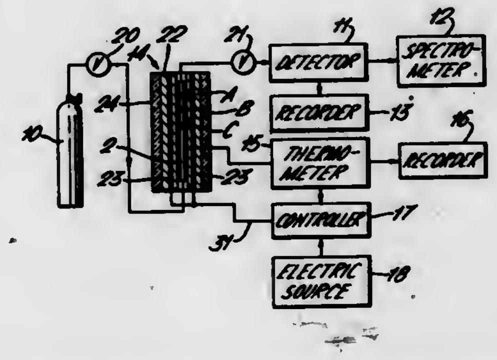
Tatsuro Haruki, and Muneaki Itaya, both of Kyoto, Japan, assignors to Shimadzu Seisakusho Ltd., Kyoto, Japan

Filed Sept. 14, 1970, Ser. No. 71,908

Claims priority, application Japan, May 30, 1970, 45/46648

Int. Cl. B01d *15/08*

U.S. Cl. 55—67 **7 Claims**



Method and apparatus for taking out the components of a mixed sample from a trap having a stationary phase therein where the sample components have been separately fixed at different positions. The whole effective length of the trap is simultaneously heated, and a "stripping" fluid is passed through the trap kept at the temperature so that the sample components are separately and successively elute.

3,728,846
ARRANGEMENT FOR A MOTOR VEHICLE FUEL SYSTEM

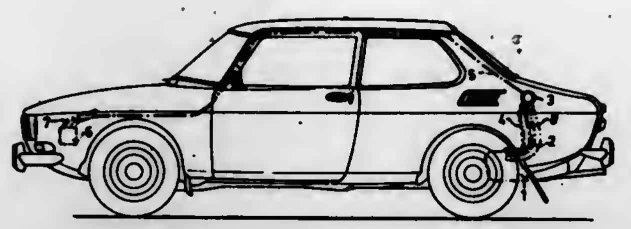
Dan Leo Nilsson, Sjuntorp, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed July 22, 1971, Ser. No. 165,122

Claims priority, application Sweden, Aug. 3, 1970, 10623/70

Int. Cl. B01b *53/06*

U.S. Cl. 55—159 **3 Claims**



The present invention relates to an arrangement for a motor vehicle fuel system. The arrangement comprises a fuel tank, a filler tube connected to the fuel tank and being sealable by a tank cap and a vent line opening into said fuel tank, the vent line being divided into at least two parts, e.g. a lower and an upper vent line. The vent line is connected to a filter means, which is connected to the intake system of the motor. This filter is capable of accumulating and filtering fuel vapors coming from the fuel tank, so that these vapors will not pollute the atmosphere. Instead, the vapors are sucked into the motor and burned when the motor is operating. The arrangement is chiefly characterized in tat the lower vent line, which is connected to the fuel tank, and one end of the upper vent line open into the filler tube at a place adjacent to the tank cap. Further, the end of the lower vent line opening into the filler tube can be sealed by means of a valve operated by the tank cap, the valve being arranged to close when the tank cap is removed and to open when the tank cap is mounted, and further, the upper vent line between the filler tube and the filter reaches, in a previously known way, substantially up to the highest point of the vehicle and constitutes a liquid trap for a gas-liquid mixture destined for the filter means.

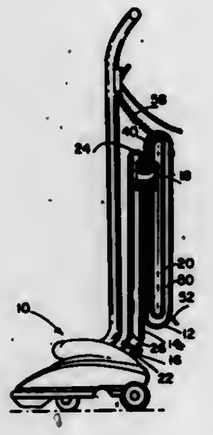
3,728,847
FILTER AND DUST COLLECTING BAG FOR UPRIGHT VACUUM CLEANERS

Sol Howard, and Robert Schaaf, both of Brooklyn, N.Y., assignors to Mil-An Mfg. Corp., Brooklyn, N.Y.

Filed Aug. 17, 1970, Ser. No. 64,397

Int. Cl. B01d *46/04*

U.S. Cl. 55—371 **8 Claims**



A vacuum cleaner dust collecting bag having a main bag of an air permeable material and an air conducting tube. The tube is provided with an intake coupling at one end with the other end being secured to the main bag. A dust-tight coupling collar extends from the tube into the main bag for communication therebetween. The coupling collar is adapted for the attachment thereto of a disposable lining or insert of an air permeable material to collect the dust. The dust collecting bag is adapted for readily attaching to or detaching from an upright vacuum cleaner. The main bag is provided with opening and closing elements for the insertion or removal of the lining.

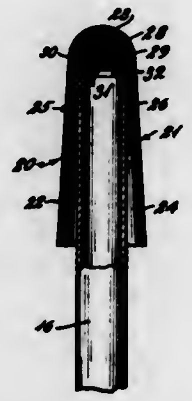
3,728,848
HIGH PRESSURE BLOW-OFF VALVE PROTECTOR

James C. Vest, Jr., 142 Brentwood Boulevard, Lafayette, La.

Filed Sept. 17, 1971, Ser. No. 181,496

Int. Cl. B01d *53/04*; **F16l** *55/10*

U.S. Cl. 55—387 **4 Claims**



Apparatus mountable on the vent pipe of a high pressure blow-off valve for excluding foreign materials from the vent pipe and the blow-off valve and for maintaining a dry atmosphere within the vent pipe to minimize oxidation.

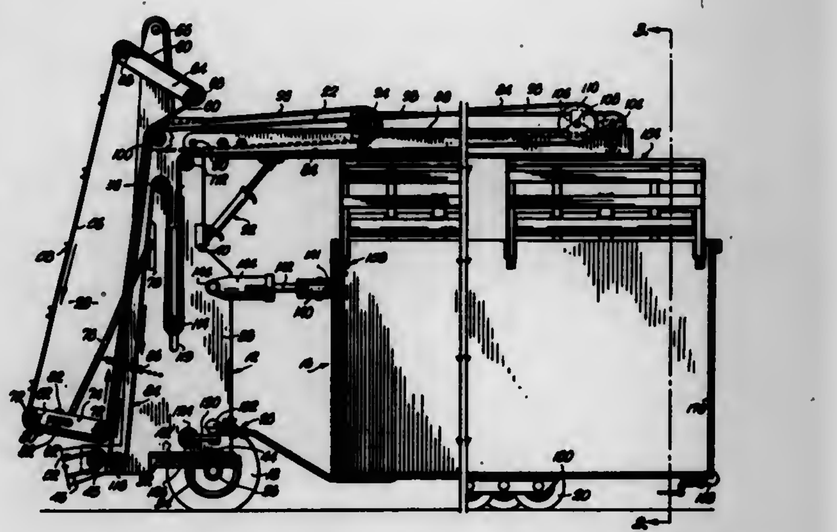
3,728,849
HAY LOADER

Ezra Cordell Lundahl, Providence, Utah, assignor to Hesston Corporation, Hesston, Kans.

Filed Nov. 14, 1969, Ser. No. 876,944

Int. Cl. A01d *89/00*

U.S. Cl. 56—1 **14 Claims**



In the harvesting of agricultural crops, the crop is lifted off the ground continuously by a pickup unit as the vehicular harvesting machine is advanced across the field along the crop windrow. The machine has a crop-handling assembly which includes an elevator for receiving the crop from the pickup unit and continuously raising the crop to a level higher than the bed of the crop-receiving body of the machine. The crop-handling assembly also includes a conveyor which continuously receives the crop from the upper end of the elevator and moves the crop in a horizontal direction rearwardly for dumping into the open top of the body.

The conveyor is extensible fore and aft of the body so that as the crop gravitates from the rear end of the conveyor it is spread evenly front to rear of the body. The entire elevator-conveyor assembly and the pickup unit thereon are also shiftable laterally with respect to the wheeled vehicle to spread the crop evenly from side to side of the body.

The crop is fed between the side walls of the body and between upward extensions of such walls, and those extensions are shifted against the crop from time to time to compress it against the bed of the body and form a stack. Each extension also has a ram for compressing the sides of the stack in the body.

The body is tiltable rearwardly and has a tailgate which may be unlocked and swung upwardly to permit the stack to be pushed rewardly out of the body off the tilted bed through use of a rearwardly moving, upright "false front."

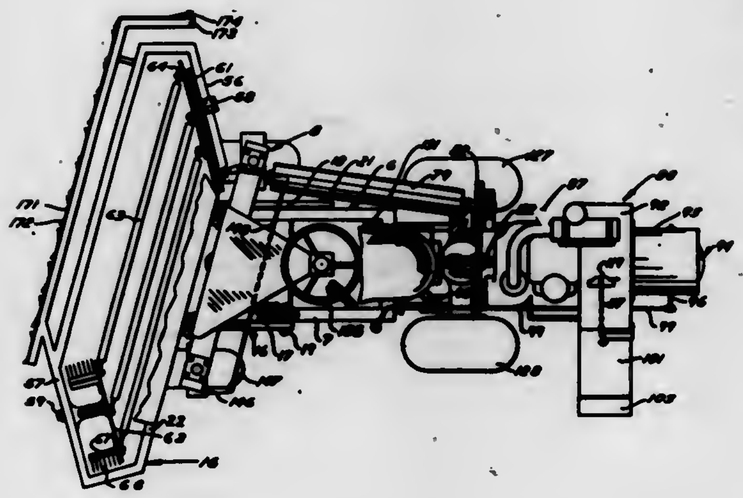
3,728,850
HARVESTING SWEEPER

Howard E. Flory, P.O. Box 908, Salida, Calif.

Filed Dec. 30, 1971, Ser. No. 213,913

Int. Cl. A01d *43/02*

U.S. Cl. 56—12.8 **5 Claims**



A harvesting sweeper has an elongated carriage movable in the direction of the carriage length in an orchard. A vertically adjustable, angularly disposed brush reel at the forward end of the carriage is driven to displace fallen nuts to form a windrow parallel to the carriage length and along one side of the carriage. A blower on the rearward portion of the carriage simultaneously and variably operated with the brush reel, discharges air to the other side of the carriage in a direction transverse to the carriage length to displace nuts and leaves transversely from a path along that other side of the carriage to prepare that other side for the subsequent use of the brush reel.

3,728,851
ELECTRIC CIRCUIT FOR HARVESTER AUTOMATIC HEADER CONTROL

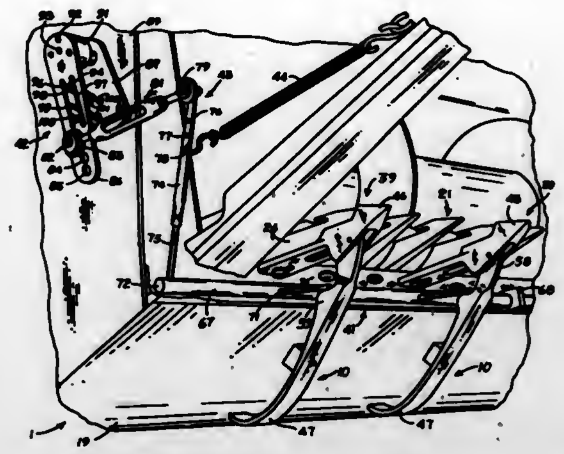
Ferne R. Van Antwerp, Rural Route No. 1, Unionville, Iowa

Continuation-in-part of Ser. No. 645,740, June 13, 1967, Pat. No. 3,611,686. This application Oct. 12, 1971, Ser. No. 188,380

Int. Cl. A01d *67/00*

U.S. Cl. 56—208 **4 Claims**

An electrical circuit for automatically controlling the height of the header of a harvester has a single manual control that has a RAISE position, a HOLD position, and an AUTOMATIC position. In the AUTOMATIC position, a multiple contact sensing switch is connected in the circuit to determine height, and a height control switch connected to the sensing switch provides a choice of height. In both the RAISE and HOLD positions, the sensing circuit is effective to maintain the header a sufficient distance above the ground to prevent damage to the cutting head of the harvester.



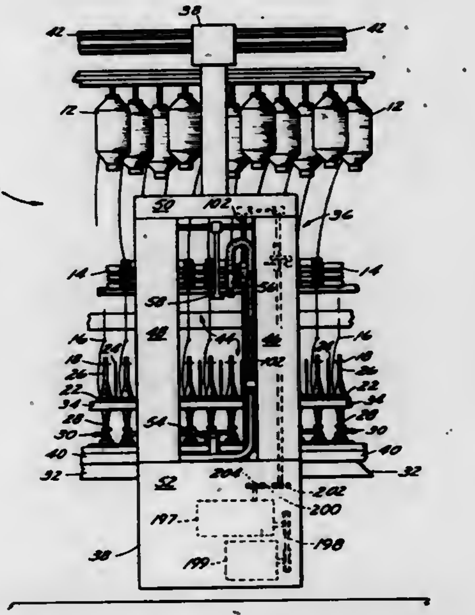
3,728,852
SERVICING ASSEMBLY FOR AUTOMATIC YARN PIECING APPARATUS

Gordon C. Anderson, and Albert D. Harmon, both of Clemson, S.C., assignors to Maremont Corporation, Chicago, Ill.

Filed June 3, 1971, Ser. No. 149,501

Int. Cl. D01h *15/00*

U.S. Cl. 57—34 R **22 Claims**



The disclosed servicing assembly, which preferably includes yarn-positioning and traveler-threading mechanisms, is operable adjacent a ring rail of the spinning machine being serviced by the piecing apparatus. The servicing assembly is mounted by a compound bracket upon an upright splined shaft, which shaft is rotatably mounted upon the mobile carriage of the piecing apparatus and operatively connected to a control cam mechanism of the apparatus, for cable-controlled vertical movement of the assembly longitudinally of the shaft and horizontal movement thereof in response to shaft rotation. A spring biased latch normally maintains the assembly in an elevated position above the maximum elevation of the ring rail of the spinning machine serviced by the apparatus. Release of the latch permits gravity descent of the assembly from its elevated position, whereupon a support member connected thereto is biased from a retracted position to an extended position wherein it overlays and engages the ring rail and thereby supports the assembly for vertical movement in unison therewith. Rotation of the splined shaft about its axis effects desired movement of the entire assembly horizontally toward and away from the spinning machine, and produces desired relative movement between a yarn depressor and other servicing components of the assembly. The yarn depressor preferably is provided with a cam surface engageable with the ring rail to insure its precise positioning relative thereto. Return upward movement of the assembly to its elevated position, which return movement is realized by a cable system having desirable "fail-safe" features, automatically effects re-engagement of the latch and movement of the support member to its retracted position.

3,728,853
METHOD AND APPARATUS FOR INTERRUPTING THE SUPPLY OF FIBER MATERIAL TO A SPINNING MACHINE

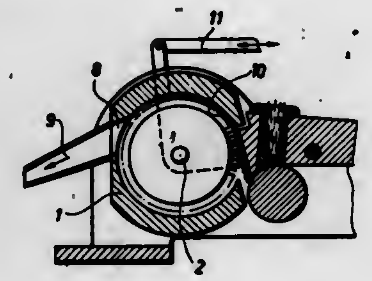
Adolf Schiltknecht, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterhur, Switzerland

Filed July 21, 1971, Ser. No. 164,576

Claims priority, application Switzerland, July 23, 1970, 11159/70

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.95 **10 Claims**



The fiber beard is lifted from the action area of the combing roll of the supply device in response to a disturbance in the spinning machine. The fiber beard is lifted mechanically by a baffle or is eliminated by pivoting of the feed roll assembly away from the combing roll or by reversing of the transporting belts. The fibers beard can also be lifted pneumatically by means of a suction chamber on the wall of the combing roll housing.

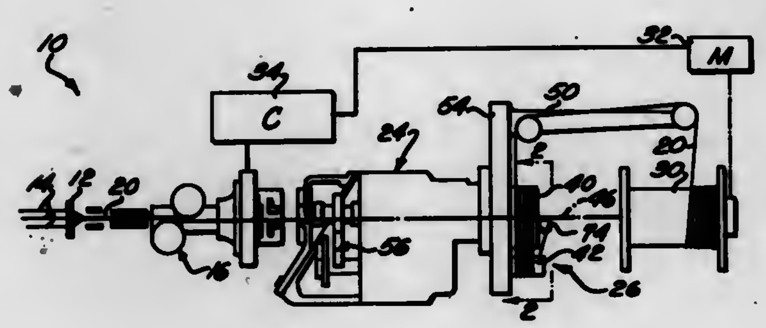
3,728,854
FLYER ASSEMBLY

Valdas S. Ramunas, Cleveland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed May 6, 1971, Ser. No. 140,818

Int. Cl. D01h 7/26

U.S. Cl. 57—68 **16 Claims**



An improved flyer assembly for twisting a strand of material in either of two directions and winding the twisted strand of material onto a spool includes a pair of capstans which are rotated about a central axis of the flyer assembly to twist the strand. A floating guide wheel or roller guides the strand from the central axis of the flyer to one of the capstans. Since the direction of rotation of both the flyer assembly and the capstans is reversed when the twist of the strand is reversed, the guide wheel is freely movable between a first position in which the strand is initially fed to one side of a capstan and a second position in which the strand is initially fed to the opposite side of the capstan. If the strand should break during a twisting operation, the end portion of the length of strand leading to the spool is held against one of the capstans by a retainer roller to prevent spilloff and whipping movement of the strand.

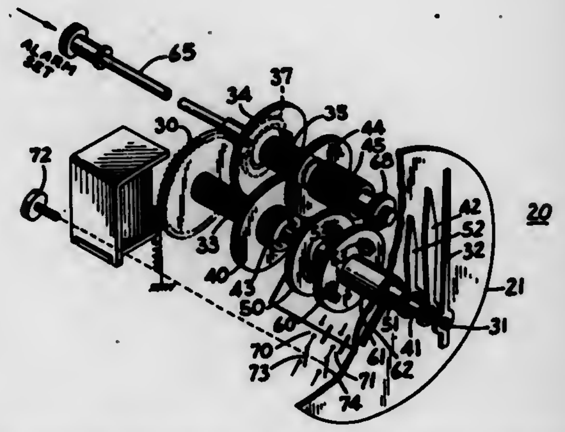
3,728,855
CRYSTAL CONTROLLED MOVEMENT WITH FREQUENCY DIVIDING CIRCUITRY

Ralph H. Preiser, La Salle, Ill., assignor to General Time Corporation, Phoenix, Ariz.

Filed Jan. 22, 1970, Ser. No. 4,865

Int. Cl. G04c *21/12, 21/16*

U.S. Cl. 58—38 **9 Claims**



Timekeeping apparatus in which a precision crystal oscillator is used as a frequency reference, the output of which is divided in frequency by a multi-stage binary divider before being converted to effect mechanical movement of a time display, the reference frequency and number of divider stages being chosen to produce a low divider output frequency to allow the display to be advanced with inexpensive mechanical parts. The intermediate stages of the divider chain are tapped to produce output signals for driving an alarm speaker associated with the primary time display.

3,728,856
AIR-COOLED INTERNAL COMBUSTION ENGINE WITH SUPER-CHARGING, ESPECIALLY MULTI-FUEL INTERNAL COMBUSTION ENGINE

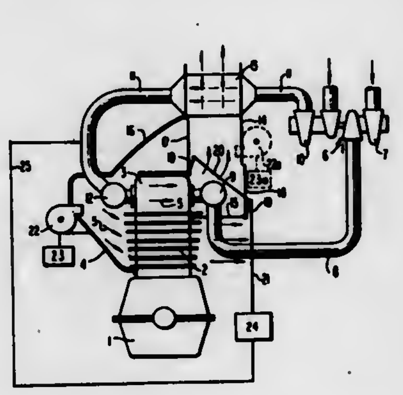
Hans O. Scherenberg, Stuttgart-Heumaden, Germany, assignor to Daimler-Benz Aktiengesellschaft

Filed Feb. 11, 1971, Ser. No. 114,633

Claims priority, application Germany, Feb. 21, 1970, P 20 08 159.8

Int. Cl. F02b *37/04*

U.S. Cl. 60—13 **33 Claims**



An air-cooled internal combustion engine with supercharging by means of a supercharger driven preferably by an exhaust gas turbine, particularly a multi-fuel internal combustion engine, in which a heat-exchanger is arranged in the flow of the supercharged air between the supercharger and the inlet of the internal combustion engine and in that this heat-exchanger is disposed in the discharge air flow of the air serving for the cooling of the internal combustion engine.

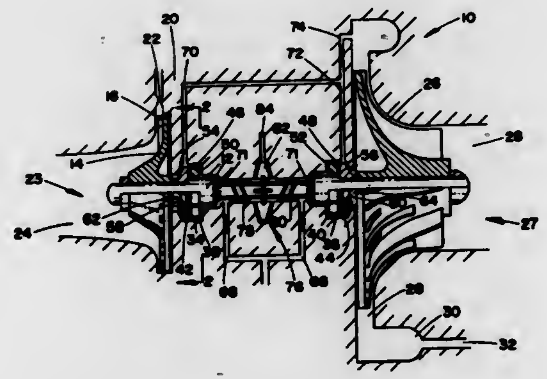
3,728,857
TURBO-COMPRESSOR-PUMP

Kenneth E. Nichols, Arvada, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed June 22, 1971, Ser. No. 155,497

Int. Cl. F01k *25/00*

U.S. Cl. 60—36 **17 Claims**



A turbo-compressor-pump unit utilizing a common working fluid in the turbine, compressor, pump, and as libricant. A dynamic sealing and bearing means maintains separation of the working fluid at different energy or pressure levels within the turbo-compressor-pump unit.

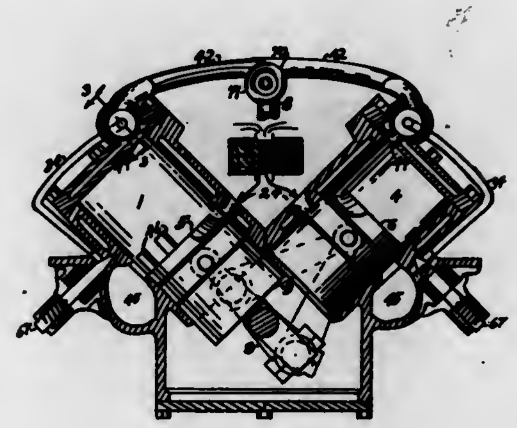
3,728,858
EXTERNAL COMBUSTION ENGINE

George C. Sorensen, 589 S. E. 4th St., Ontario, Oreg.

Continuation-in-part of Ser. No. 800,200, Feb. 18, 1969, abandoned. This application Aug. 28, 1970, Ser. No. 68,395

Int. Cl. F01k *21/04*

U.S. Cl. 60—39.01 **1 Claim**



A steam engine is provided in which exhaust products of combustion from the boiler are introduced into the power cylinder after the expansion stroke. The exhaust products are then compressed providing a heating step for boiler feedwater circulating about the power cylinder. At the end of compression stroke, steam is injected into the power cylinder to drive the piston.

3,728,859
FUEL NOZZLE FOR GAS TURBINE ENGINES

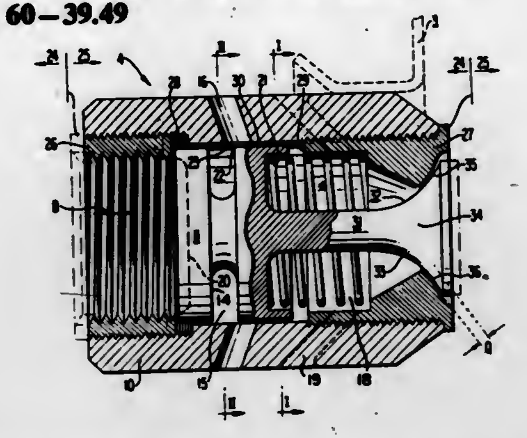
Bernd Seiler, Ampermoching near Munich, Germany, assignor to Motoren-Und Turbinen-Union Muenchen GmbH, Munich, Germany

Filed Sept. 11, 1970, Ser. No. 71,478

Claims priority, application Germany, Sept. 12, 1969, P 19 46 153.1

Int. Cl. F02c *3/24*; B05b *1/30*

U.S. Cl. 60—39.49 **24 Claims**



A fuel nozzle for gas turbine engines in which the fuel jets leaving the fuel metering sections draw-in air delivered by the compressor of the gas turbine engine through passages provided in the nozzle housing; a piston-shaped insert is arranged in the nozzle housing to move relative to the latter so as to vary the quantity of compressor air to be supplied to the fuel nozzle and/or the quantity of the fuel/air mixture to be discharged from the nozzle as the piston-shaped insert means is displaced.

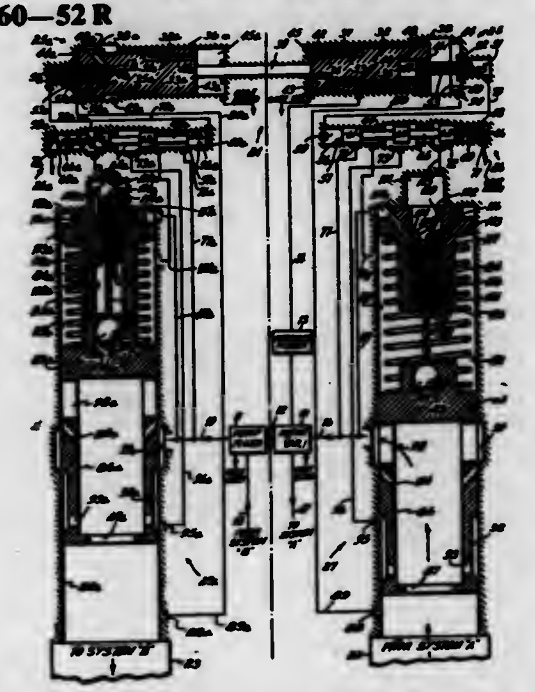
3,728,860
REVERSIBLE FLUID POWER TRANSFER APPARATUS

James L. Coakley, Camarillo, Calif., assignor to Abex Corporation, New York, N.Y.

Division of Ser. No. 91,114, Nov. 19, 1970. This application March 17, 1972, Ser. No. 235,495

Int. Cl. F15b *15/18*

U.S. Cl. 60—52 R **9 Claims**



In a reversible fluid power transfer package, sensing means detect which of two mechanically interconnected fluid pressure translating devices is required to operate as a pump and which is required to operate as the motor. In response to a signal from the sensing means, dual-functioning check valve-flow limiter components associated with each device are ported according to the required mode of function of the respective device, so that whichever device is to operate as the motor is automatically provided with a flow limiter valve, and whichever device is to operate as the pump is automatically coupled to a check valve on its outlet side. The check valve may incorporate variable bypass features.

3,728,861

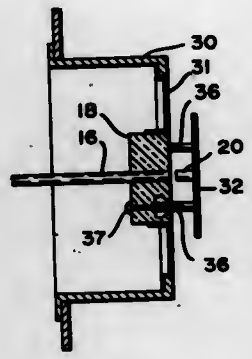
ION THRUSTER WITH A COMBINATION KEEPER ELECTRODE AND ELECTRON BAFFLE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; Eugene V. Pawlik, La Canada, and Dennis J. Fitzgerald, Pasadena, both of Calif.

Filed Dec. 20, 1971, Ser. No. 209,535

Int. Cl. F03h *5/00*

U.S. Cl. 60—202 **6 Claims**



An ion thruster is disclosed in which the cathode front end, surrounded by our insulator, is mounted flush with the front end of the flanged portion of the cathode pole piece. The thruster's baffle positioned in front of the cathode's front end supports the thruster's keeper electrode which is spaced apart and directed to the cathode's open end. The baffle is at the keeper's electrode potential.

3,728,862

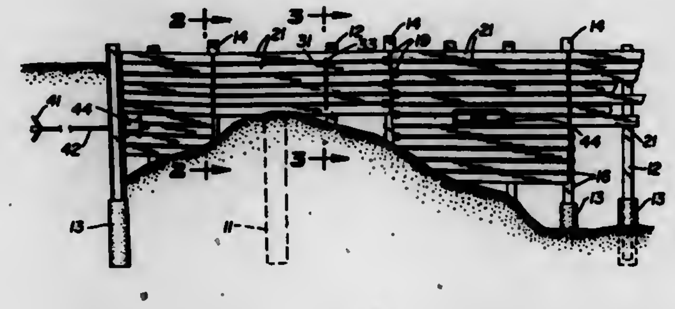
SHORING SYSTEM AND COMPONENTS THEREFOR

John A. Meredith, Denver, Colo., assignor to Meredith Drilling Co., Inc., Denver, Colo.

Filed June 23, 1971, Ser. No. 155,928

Int. Cl. E02d *17/04*

U.S. Cl. 61—39 **12 Claims**



A shoring system for building site excavating operations utilizing caisson holes drilled in spaced positions outside the building perimeter and receiving flanged pile elements with paired main piles disposed at regulated elevations and spacing and having vertically spaced support sockets adapted to receive fastener components for the support of horizontally disposed cribbing pieces that are placed progressively in inverted order to hold back loose materials as the foundation excavation is deepened. Threaded or wedge-set flange clamps are inserted in slots between adjacent cribbing pieces to engage the flanges of intermediate pile elements to provide additional cribbing support. Deadman anchors are driven outwardly into the surrounding loose materials on earth, and a cable tensioning system interconnects the anchor and waler frames placed inwardly to additionally resist forces tending to collapse the shoring system.

3,728,863

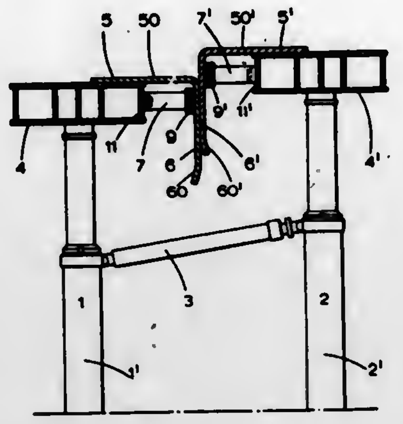
MINE ROOF SUPPORT ASSEMBLIES

Istvan Hidasi, Viola u 7, Hungary, assignor to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Sept. 14, 1971, Ser. No. 180,325

Int. Cl. E21d *17/00*

U.S. Cl. 61—45 D **6 Claims**



A mine roof support assembly composed of two independently movable frames each consisting of two or more telescopic props with roof engaging caps carried at their upper ends, the frames being interconnected through piston and cylinder units which enable the positional relationship between the frames to be adjusted. Each roof cap bears a slidable L-shaped cover member and the cover members of the frames have depending limbs which abut one another between the frames. A curved leaf spring is attached to each of the roof caps and has its ends slidably guided on the associated cover member so as to maintain the cover members in engagement with one another.

3,728,864

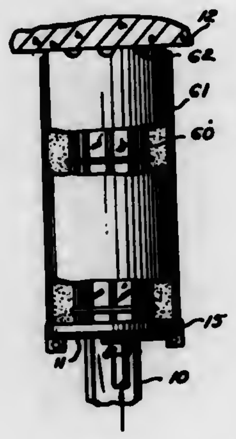
APPARATUS FOR REPAIRING STEEL SUPPORTING PILES

George C. Wiswell, Jr., 1014 Pequot Road, Southport, Conn.

Filed March 4, 1971, Ser. No. 121,005

Int. Cl. E02d *5/60, 15/04*

U.S. Cl. 61—54 **5 Claims**



A cylindrical form is positioned around that portion of a steel pile which is to be repaired and the lower end of the form closed by a bottom plate having an opening therethrough closely conforming to the configuration of the pile. The bottom plate is provided with a nipple to which a hose is detachably connected through which concrete is pumped. Setscrews in the nipple are threaded into a groove on the hose insert to hold the insert into position. The bottom plate is released from the concrete by means of a plurality of bolts threaded into nuts secured on the bottom plate so that threading the bolts inwardly causes the bolt ends to push against the concrete and release the bottom plate therefrom.

3,728,865

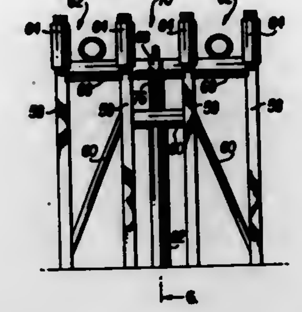
PIPELINE LAYING OPERATIONS WITH DIVERSE PENETRATION ANGLES

Joe C. Lochridge, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Aug. 11, 1971, Ser. No. 170,780

Int. Cl. F16l *1/00;* **B63b** *35/04*

U.S. Cl. 61—72.3 **9 Claims**



Apparatus for laying an elongate flexible means, such as a pipeline, from a surface vessel into a body of water. The vessel is provided with a plurality of essentially predetermined feed paths for diverse penetration angles into the water. The feed paths are continuously available for use depending upon the size of the pipeline to be laid.

3,728,866

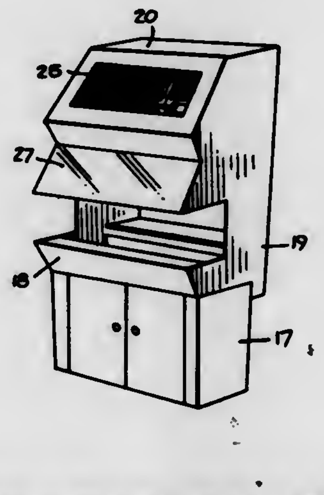
EXHAUSTLESS CLEAN ROOM WORK STATIONS

Howard M. Layton, Pound Ridge, N.Y., assignor to Interlab, Inc., Pleasantville, N.Y.

Filed July 8, 1971, Ser. No. 160,664

Int. Cl. F25b *49/00*

U.S. Cl. 62—126 **10 Claims**



An exhaustless clean room work station in which work to be treated is subjected to a vapor-generating wet process, which vapor contaminates the atmosphere. To maintain clean room standards, the vapor produced at the station is drawn through a chimney containing chilling coils or other means functioning to condense the vapor to form a liquid which is returned to the process, the resultant dry air being forced through a submicronic filter to remove particulate matter therefrom before the air is returned to the station.

3,728,867

DEFROST CONTROL SYSTEM

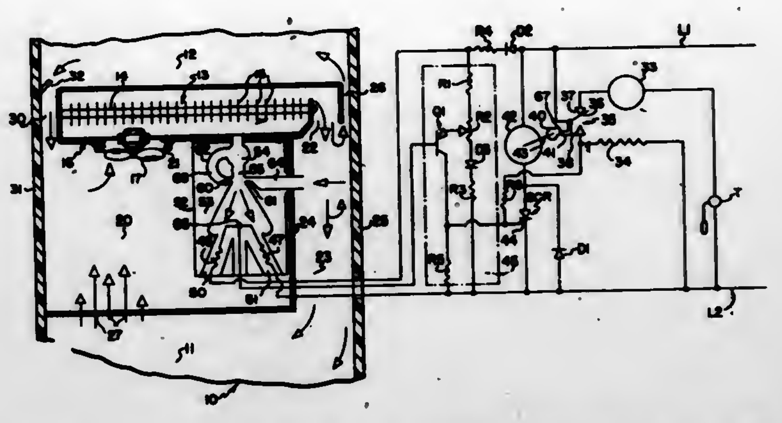
Jay H. Jarrett, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Filed April 29, 1971, Ser. No. 138,673

Int. Cl. F25d *21/02*

U.S. Cl. 62—140 **4 Claims**

A fluid flow amplifier senses increased differences in air pressure on opposite sides of the cooling unit of a forced air refrigerating system due to clogging of the cooling unit by frost, and alters the resistance in a bridge circuit type amplifier which controls one SCR in the circuit of a hysteresis synchronous timer motor which operates switching mechanism to effect a defrost cycle. The switching mechanism operates a defrost device for a predetermined period to melt frost from the cooling unit, after which it restores normal refrigeration. A resistance in the bridge circuit amplifier is located adjacent an air passage in the fluid flow amplifier to maintain the walls of the air passage above the air temperature.



3,728,868

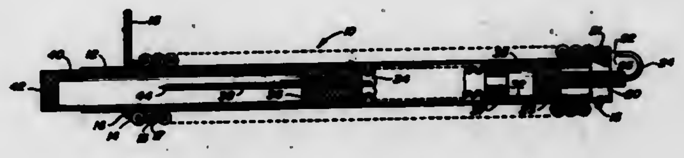
CRYOGENIC REFRIGERATION SYSTEM

Ralph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 6, 1971, Ser. No. 204,883

Int. Cl. F25b *41/04*

U.S. Cl. 62—222 **8 Claims**



A cryogenic refrigeration system wherein in a heat exchanger normally disposed in a container and having a Joule-Thompson orifice provided in one end of the heat exchanger to promote liquefaction of a working fluid by expansion, there is included means to control the flow of fluid through the orifice. The refrigeration system is characterized in that flow through the orifice is regulated by a valve which is activated by a temperature sensing fluid filled bulb-activating means combination spaced apart from the orifice toward the warm end of the heat exchanger.

3,728,869

COOLANT SYSTEM FOR HEAT REMOVAL APPARATUS

Harry Schmidt, 20 North Wacker Drive, Chicago, Ill.

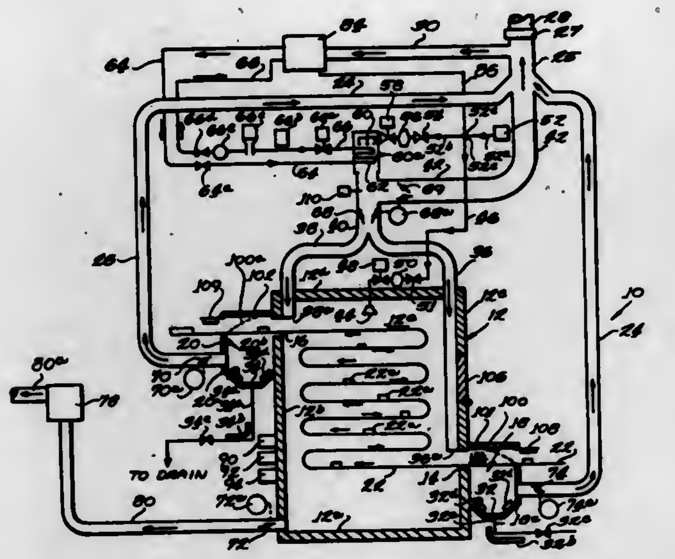
Filed Dec. 27, 1971, Ser. No. 211,933

Int. Cl. F25d *23/02*

U.S. Cl. 62—266 **11 Claims**

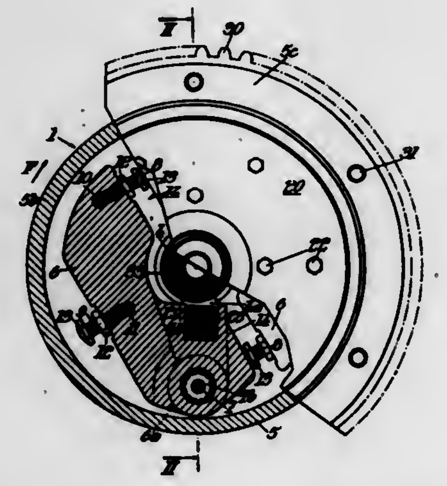
A system and apparatus is provided for continuous coolant of products such as food products with liquid refrigerants which apparatus minimizes atmospheric contamination with gaseous refrigerant and is useful in the recovery of the condensable, normally gaseous refrigerant. The apparatus comprises a cooling chamber having inlet and outlet vestibules, conveying means for transporting products such as food products through the cooling chamber via the vestibules, means for applying and distributing refrigerant in liquid form to the food product while in said chamber, recovery traps associated with the vestibules for gravitational recovery of gaseous refrigerant, conduits leading from the traps to recirculate the gaseous refrigerant to a compressor, means for compression and liquification of the gaseous refrigerant and conduit means for conducting liquified refrigerant to the distributing means.

A process for the cooling of food or other products is also provided which comprises passing units of product to be cooled in a continuous stream through a cooling zone chamber, provided with inlet and outlet vestibules, applying liquid refrigerant to products in the chamber, which refrigerant is normally gaseous and heavier than air at ambient operating temperatures, to thereby reduce the temperature of the produce, regulating the rate of introduction of refrigerant into said chamber to provide a slight positive refrigerant gas pressure in said chamber, recovering the gaseous refrigerant at inlet and outlet vestibules by gravitational separation from atmospheric air, liquifying the gaseous refrigerant and recycling the liquified refrigerant in the process.



3,728,870
PROGRESSIVELY ACTING CENTRIFUGAL REGULATORS

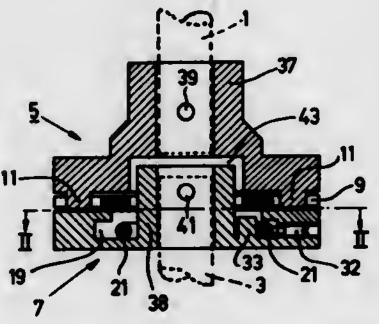
Andre Vuaille, Lyon, France, assignor to Societe Industrielle Generale des Mecanique Appliquee S.I.G.M.A., Paris, France
Filed Feb. 16, 1971, Ser. No. 115,431
Claims priority, application France, Feb. 16, 1970, 7005433
Int. Cl. F16d *5/00*
U.S. Cl. 64—25 **6 Claims**



The device is for insertion between a driven rotary member and a coaxial drive rotary member for progressively varying the angular position between them as a function of the speed of the drive member. The device is useful for regulating the injection lead angle for Diesel engines. The regulator is a self-contained assembly containing centrifugally-acting weights and torsion bars which are pre-set by screw stops enabling the limiting angular positions of the weights to be adjusted and consequently the minimal speed at which the regulator comes into play and the amplitude of the relative angular displacement between the driving and driven members.

3,728,871
COUPLING FOR SHAFTS

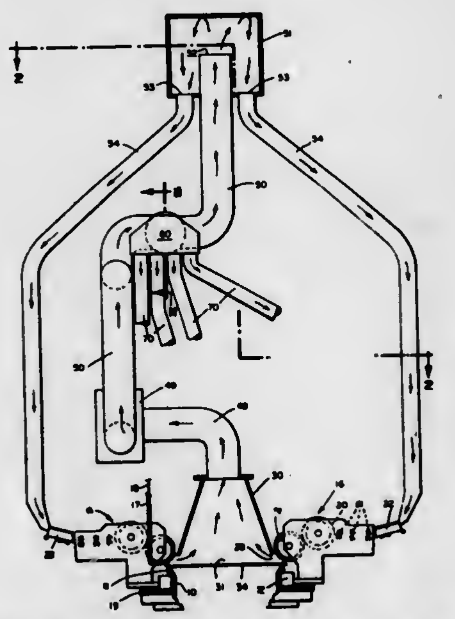
Cornelis Wilhelmus Adrianus Clijsen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed June 15, 1971, Ser. No. 153,243
Claims priority, application Netherlands, June 19, 1970, 7008983
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 R **4 Claims**



A coupling for shafts comprising a coupling disc and two connecting flanges. A spring is located in one of the flanges for eliminating rotational play in conjunction with a cam on the other connecting flange. Clamping means are provided to clamp said spring free from the cam for assembly purposes.

3,728,872
METHOD AND APPARATUS FOR KNITTING SLIVER HIGH PILE FABRICS

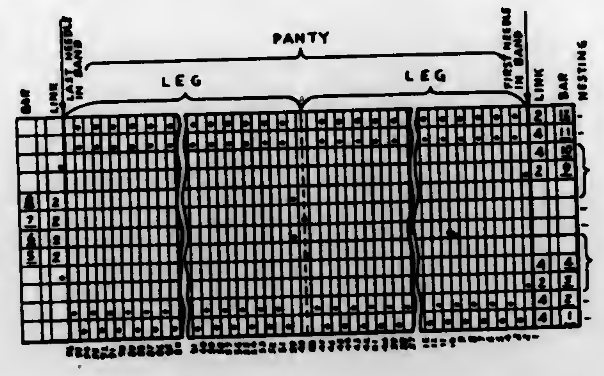
Thomas J. Thore, Tarboro, N.C., assignor to Glenoit Mills, Inc., New York, N.Y.
Filed May 3, 1971, Ser. No. 139,516
Int. Cl. D04b *9/14*
U.S. Cl. 66—9 B **15 Claims**



A pneumatic system for sliver high pile fabric knitting machines whereby the usual air jets, disposed adjacent the needle circle and operative during knitting, are eliminated, and suction is employed for retaining the sliver fibers on the needles during knitting and for removing loose fibers from within the needle circle to a location remote from the needle circle, from which location the loose fibers either may be handled as waste or conveyed back to the machine for re-delivery to the needles.

3,728,873
MACHINE KNITTING

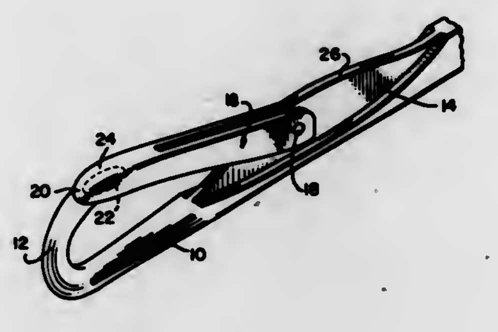
Seymour C. Titone, Birchrunville, Pa., assignor to Titone Research & Development Corporation, Burlington, N.J.
Filed Dec. 29, 1967, Ser. No. 694,655
Int. Cl. D04b *23/02*
U.S. Cl. 66—87 **4 Claims**



This invention relates to machine knitting of fabric, especially warp-knitting of tubular fabric. It provides a method of continuously forming seamless tubular fabric on a Raschel or similar flat-bed machine having a pair of parallel needle bars, particularly seamless tubular fabric having a different number of tubular portions for a given bed width at one part of the run than at another part. Continuity of knitting action and stitch is maintained throughout, including during conversion between different numbers and widths of different tubular portions.

3,728,874
STRADDLE LATCH NEEDLE

Robert F. Kelly, and Joseph T. Speetjens, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.
Filed Aug. 19, 1971, Ser. No. 173,040
Int. Cl. D04b *35/04*
U.S. Cl. 66—121 **15 Claims**

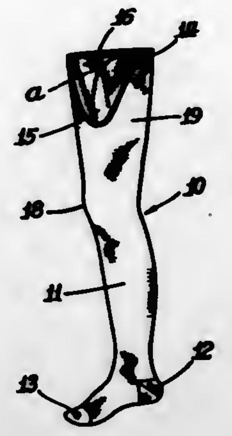


This is a latch type element for use in knitting machines. The latch is externally mounted to avoid manufacturing and operational problems experienced with conventional slot mounted latched knitting machine elements.

3,728,875
STOCKING WITH SOFT INNER THIGH AREA

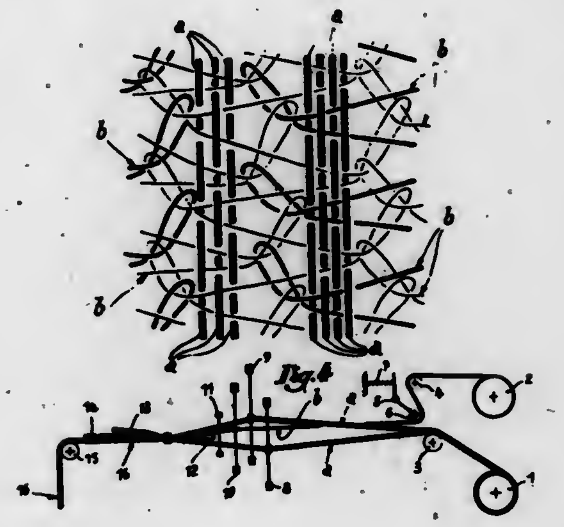
Edward G. Hartigan, Schaumburg; Donald Patience, Barrington, both of Ill., and Herbert Knohl, Seneca, S.C., assignors to The Kendall Company, Walpole, Mass.
Filed Jan. 7, 1971, Ser. No. 104,699
Int. Cl. D04b *9/52, 9/54*
U.S. Cl. 66—172 E **6 Claims**

A full length stocking of knitted fabric including an elastomer-containing yarn which exerts a compressive effect on that portion of the leg covered by the stocking boot. In contrast to a typical stocking of this type which has an attached garter band of elastic webbing encircling the upper thigh, a stocking is disclosed in which that portion of the garter band which covers the plexus of deep and superficial blood vessels in the inner thigh is replaced with a soft fabric such as that in the stocking boot.



3,728,876
WARP KNITTED FABRIC

Jean Etienne Marie Richard, Saint-Etienne (Loire), and Louis Antoine Etienne Jean Richard, Saint-Genest-Lerpt (Loire), both of France
Filed July 13, 1970, Ser. No. 54,125
Claims priority, application France, July 11, 1969, 6922898
Int. Cl. D04b *23/00*
U.S. Cl. 66—192 **2 Claims**

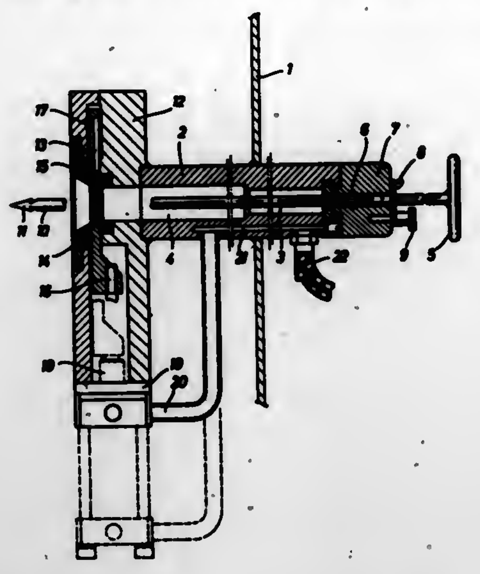


A textile fabric which consists of a warp knitted fabric having additional warp threads woven therein with the underlaps of the warp knitted fabric acting as the weft for said additional warp threads.

3,728,877
SAMPLING APPARATUS FOR HIGH PRESSURE HANK DYEING MACHINES

Leon von Ondarza, Gerhard-Hauptmannstr. 13, 5144 Wegberg, Germany
Filed Oct. 29, 1971, Ser. No. 193,769
Claims priority, application Germany, May 18, 1971, P 21 24 681.1
Int. Cl. D06f *29/00*
U.S. Cl. 68—13 R **8 Claims**

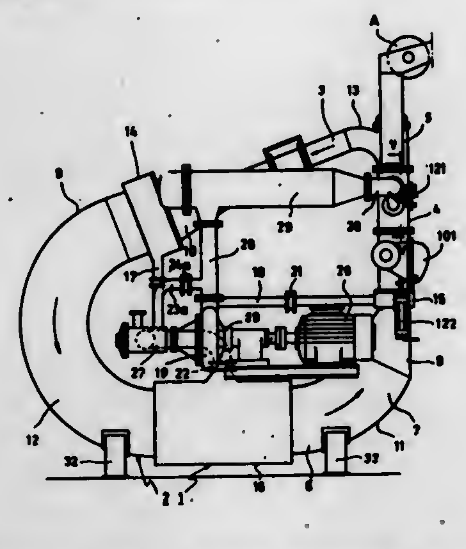
An apparatus for the extraction of test samples from the dyeing vessel of a high pressure hank dyeing machine without the necessity of cooling or de-pressurizing this vessel, comprises a unitary assembly of a mechanical or suction gripper device and a cutter to sever the strands retracted by the gripper device from a hank stationary in the vessel. The cutter



may serve as a pressure seal between the interior of the vessel and a tubular housing of the gripper device serving to receive the cut strands.

3,728,878
AUTOMATIC REVERSAL DEVICE FOR TEXTILE WET TREATMENT APPARATUS

Isidro Folch Trullas, Tarrasa, Spain, assignor to Argelich Termes y Cª, Tarrasa, Spain
Filed Dec. 20, 1971, Ser. No. 209,830
Claims priority, application Spain, June 16, 1971, 392,299
Int. Cl. B05c *3/172, 11/00*
U.S. Cl. 68—184 8 Claims

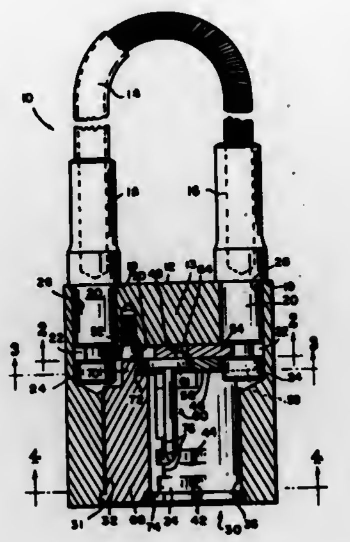


An automatic device which reverses the circulation direction of a cloth in rope form in a textile wet treatment vessel in which the cloth in rope form passes between two rollers which rotate by the friction thereagainst of the cloth and apply their rotation to a dynamo having its shaft in common with one of the rollers; the current generated by the dynamo is controlled by a voltmeter which, at certain values thereof, makes an electrical circuit, through a timed relay, having two solenoid valves, one of which drives the liquid inflow control valves for the jet means while the other separates the rollers, leaving the cloth to run freely therebetween.

3,728,879
HEAVY CABLE SHACKLE PADLOCK

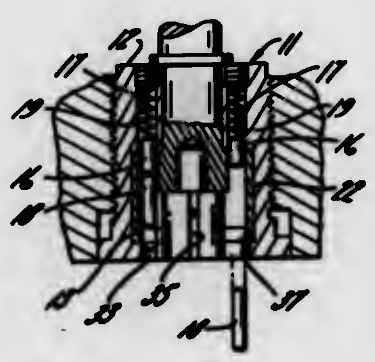
Walter E. Best, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.
Filed Feb. 8, 1971, Ser. No. 113,358
Int. Cl. E05b *67/22*
U.S. Cl. 70—38 R 9 Claims

A padlock having a heavy cable shackle of selected length, constructed to provide good lock security. Identical long cable end pieces are received in parallel bores in a pad lock case and extend into a lock cavity formed by three overlapping parallel bores. The shackle-heel end piece is rotatably fixed in its bore by a heel plate engaged in a retaining groove of the piece and secured against the cavity end wall by a taper-head screw on the axis of one of the cavity bores. The shackle toe end piece is releasably dead-locked in its bore by a toe tumbler or bolt engaged in a retaining groove of the piece and slidably held against the cavity end wall by a retaining plate, which carries a throw assembly rotatable on the axis of the central cavity bore. The retaining plate has one end engaged in a supporting groove in the case and is supported at the other end, and held in the groove, by a plug rotatably locked in one cavity bore and held against removal by an 8-shaped key-actuated lock core received in the other two cavity bores.



3,728,880
REKEYABLE AXIAL PIN TUMBLER LOCK

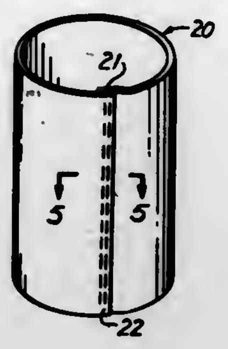
Sidney Falk, Chicago, Ill., assignor to Fort Lock Corporation, Chicago, Ill.
Filed Feb. 10, 1972, Ser. No. 225,164
Int. Cl. E05b *27/08*
U.S. Cl. 70—363 9 Claims



An axial pin tumbler lock is provided with means for rekeying the lock without disassembling the lock. Means are provided for removing an old master key from the lock at a rekeying position, and groove means are included which expose a locking pin for removal. A new pin of differing length can be inserted in the lock and the lock re-locked by a new master key. Service keys are also provided which cannot be used to rekey the lock.

3,728,881
METHOD AND APPARATUS FOR JOINING SHEET METAL, AND SHEET METAL JOINTS

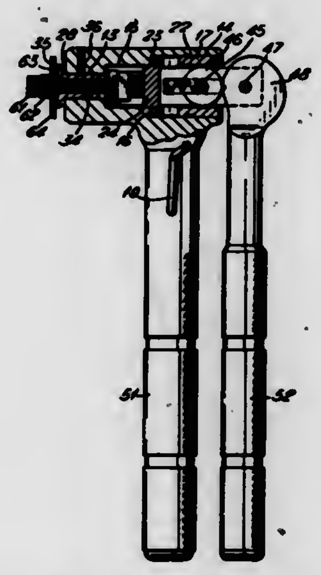
Vernon W. Coop, Pico Rivera, Calif., assignor to Brazil H. Sugden, Bell Gardens, Calif.
Filed Jan. 18, 1971, Ser. No. 107,256
Int. Cl. B21d *39/02*; B23p *23/00*
U.S. Cl. 72—52 12 Claims



A first slit aperture means is formed in a first sheet metal portion and first protruding leg means is formed from the excess metal from the first slit aperture means. A second slit aperture means is formed in a second sheet metal portion and second protruding leg means is formed from the excess metal from the second slit aperture means. The sheet metal portions are then positioned so that a surface of the second sheet metal portion is contiguous to a surface of the first sheet metal portion and so that the second leg means extends through the first slit aperture means. The leg means are then crimped to sandwich the second leg means between the first leg means and a surface of the first sheet metal portion and to sandwich a portion of the first sheet metal portion between the second leg means and a surface of the second sheet metal portion to form the completed joint.

3,728,882
TOOL FOR PLACING THREADED INSERTS

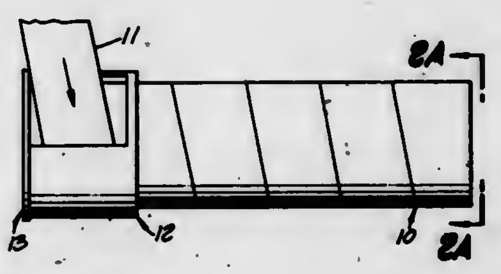
Robert M. Rigot, Granada Hills, and Douglas B. Goettlings, Santa Susana, both of Calif., assignors to Aerpat A.G., Zug, Switzerland
Filed Aug. 30, 1971, Ser. No. 176,199
Int. Cl. B21j *15/04*
U.S. Cl. 72—114 14 Claims



A tool for placing threaded inserts, of the type comprising a threaded first part which is pulled towards a second part to place the insert, has a generally tubular body integral with a radially extending body handle. A rotatable sleeve within the rear part of the body carries a reciprocable and rotatable shaft, to the forward end of which is connected a screw which protrudes through an annular anvil. The rear of the shaft carries a rotatable cam which is integral with a radially extending cam handle and bears against a roller mounted in the sleeve. The cam handle can be used both to rotate the shaft and screw, and to rotate the cam so as to retract the screw with respect to the body of the tool.

3,728,883
SUPPORT APPARATUS FOR LARGE DIAMETER THIN-WALL METAL CYLINDERS

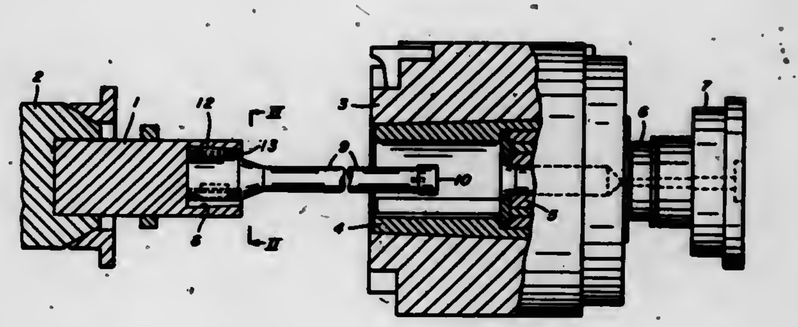
Homer C. Lamborn, Glendora; Palmer C. Gallup, Monrovia, and Paul W. Kao, Covina, all of Calif., assignors to United Concrete Pipe Corporation, Baldwin Park, Calif.
Filed Feb. 12, 1971, Ser. No. 115,011
Int. Cl. B21f *3/04*
U.S. Cl. 72—142 18 Claims



A support assembly is disclosed for providing internal support during fabrication of thin-walled large diameter metal cylinders such as those used as membranes in concrete pipe. Such cylinders are usually 5 feet and larger in diameter. The support assembly comprises a plurality of internally mounted wheel assemblies attached to a common frame.

3,728,884
HIGH PRESSURE TOOLING ASSEMBLY

Pasquale A. Santoli, Natrona Heights, Pa., assignor to Allegheny Ludlum Industries Inc., Pittsburgh, Pa.
Filed July 16, 1971, Ser. No. 163,187
Int. Cl. B21c *25/00*
U.S. Cl. 72—273 4 Claims



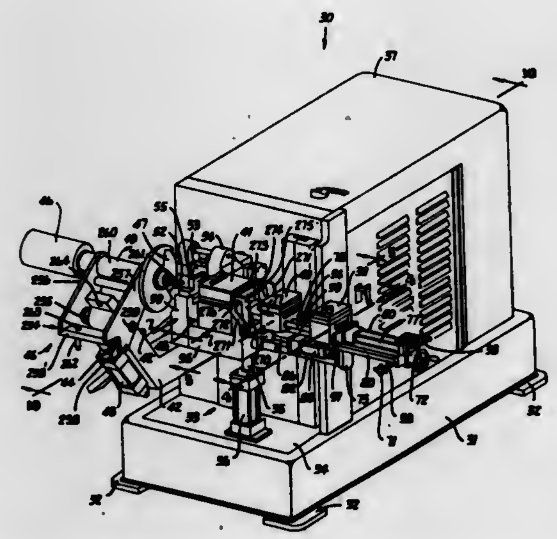
A stem holder that is moved back and forth has an axial socket in its front end that has a side wall circular in cross section and converging toward the front end of the holder. Disposed in the socket in engagement with its inner end wall is a stem that extends forward from the holder. The portion of the stem in the socket is cylindrical and spaced from the socket side wall. In this space there are at least three wedges that are curved transversely to fit against the stem and encircling wall. Each wedge has a threaded longitudinal passage through it, in which is mounted a screw that projects from the opposite ends of the wedge. The inner ends of the screws engage the inner end of the socket, and the outer ends of the screws are formed for turning them so that the wedges can be adjusted along the stem to adjust it laterally in the socket in order to align it with the member with which it cooperates.

3,728,885
TUBE BENDING AND SAWING APPARATUS

Ward A. Ames, Danville, Ill., assignor to Tridan Tool & Machine, Inc., Danville, Ill.

Filed Dec. 11, 1970, Ser. No. 97,253
Int. Cl. B21d *43/28*

U.S. Cl. 72—294 **12 Claims**



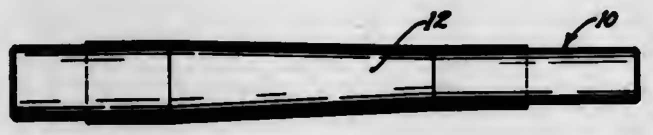
An apparatus for bending and/or sawing tubes to a desired configuration. Tube guides route continuous lengths of tubing to a clamp unit, a feed unit and a bend clamp. The feed unit is slidable on rails for pulling the desired tube lengths through the clamp unit where they are then held in place by the clamp unit and bend clamp. A mandrel and wiper block is engageable with the ends of the tubes and is rotatable about a bend block for bending the tubes to the desired configuration. A circular saw cuts the configured tubes from the continuous lengths of tubing. Stripper rods force the cut tubes from the apparatus.

3,728,886
METHOD OF PRODUCING PRECISION TAPERED TUBES

Lawrance W. Wightman, Saint Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed March 24, 1971, Ser. No. 127,448
Int. Cl. B21d *31/00*

U.S. Cl. 72—364 **5 Claims**



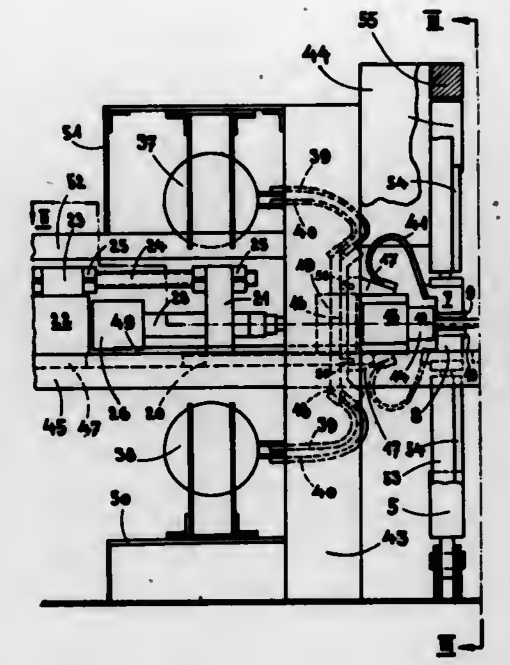
A tapered metal tube is formed slightly undersize, stretched over a mandrel of precisely finished size, annealed on the mandrel and cooled, then again heated while the mandrel is cooled to facilitate removal.

3,728,887
ELECTRIC UPSETTING MACHINE

Horst Bachmann, Einberg, near Coburg, Germany, assignor to Langenstein & Schemann Aktiengesellschaft, Coburg, Germany.

Filed Jan. 6, 1971, Ser. No. 104,233
Int. Cl. B21j *5/08*

U.S. Cl. 72—318 **15 Claims**



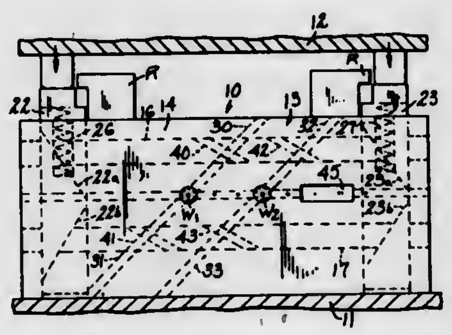
An electric upsetting machine comprising an upsetting device, a pair of clamping electrodes, an anvil electrode and a transformer, the clamping electrodes being arranged in at least two adjacent pairs arranged to operate in parallel.

3,728,888
APPARATUS AND METHOD FOR CUTTING AND FORMING OBJECTS

Alfred E. Motzer, Meriden, Conn., assignor to Hobson and Motzer, Wallingford, Conn.

Filed Feb. 23, 1971, Ser. No. 117,942
Int. Cl. B21d *31/02, 7/06*

U.S. Cl. 72—325 **8 Claims**



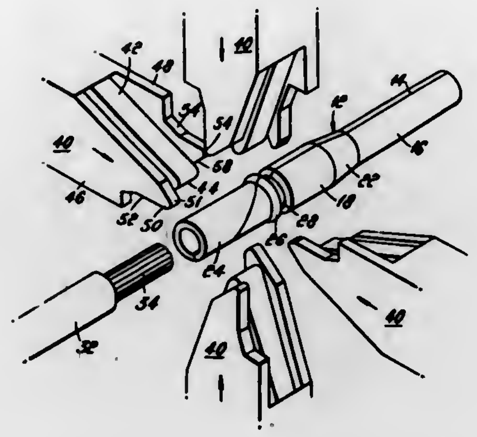
A die assembly for cutting and forming the ends of wire stock comprising a pair of panel slides movable in opposite directions and each operating a diagonally guided cutting and forming tool which simultaneously move toward and away from each other on opposite sides of the work. Also disclosed is a method of providing a four-sided pyramidal point on rectangular wire stock.

3,728,889
CRIMPING DEVICE

William McIver, West Monroe, La., and William R. Mattingly, Santa Ana, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 845,835, July 29, 1969, Pat. No. 3,626,363. This application Aug. 23, 1971, Ser. No. 176,416
Int. Cl. B21d *9/08*

U.S. Cl. 72—402 **3 Claims**



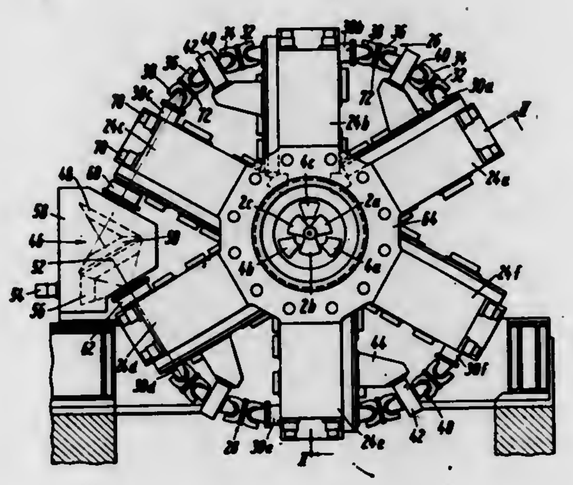
Crimping indentors are provided to secure a wire to a roll formed contact having a terminal portion with a spiral seam therealong. Each crimping indentor is formed with a crimping end portion and a pair of positioning members.

3,728,890
APPARATUS FOR DRAW FORGING

Friedrich Kocks; Ablert Quambusch, and Bernhard Terdenge, all of c/o Friedrich Kocks, Freiligrathstrasse, 4 Dusseldorf, Germany

Filed Feb. 12, 1971, Ser. No. 114,966
Claims priority, application Germany, Feb. 21, 1970, P 20 08 081.3
Int. Cl. B21j *13/02*

U.S. Cl. 72—406 **14 Claims**



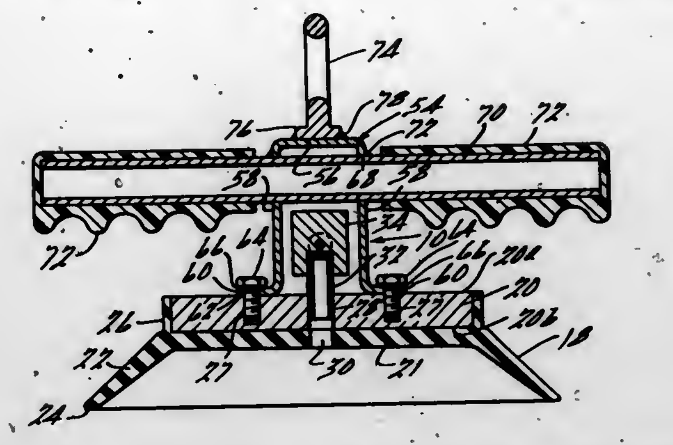
A draw forging apparatus and method are provided in which six swinging jaws are arranged equi-angularly at 60° to one another around the run-through axis of a work piece to be draw forged, each of which jaws depends from eccentric drives. The jaws are reciprocable in the feed direction by an additional drive. The drives are so interconnected that each three of the jaws offset by 120° relative to one another carry out simultaneous movements in the same direction and operate in antiphase with respect to the other three jaws.

3,728,891
VACUUM CUP

Bertie Forrest Hall, Jr., Berkley, Mich., assignor to Raymond P. Wolgast, Berkley, Mich.

Filed Oct. 7, 1970, Ser. No. 78,848
Int. Cl. B21d *1/12*

U.S. Cl. 72—465 **10 Claims**



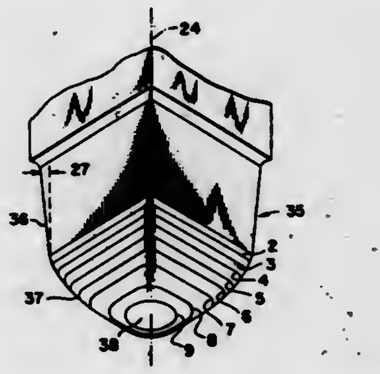
A suction cupped hand tool, adapted to be retained to an indented portion of an automobile body panel or the like for the purpose of restoration thereof, and having means for applying an outward drawing force. A novel saddle bracket is interposed between the suction cup and the drawing means and provides a protective shield over a special venturi evacuator jet; the evacuator jet operates from a standard shop air supply and provides the means of inducing a vacuum within the suction cup for firmly gripping the surface of the body panel thereto.

3,728,892
BALLISTIC SHAPE PUNCH AND SCREW HEAD SOCKET

Allan Sangster, Hamilton, Ontario, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Ontario, Canada

Division of Ser. No. 768,863, Oct. 18, 1968. This application Sept. 15, 1971, Ser. No. 180,713
Int. Cl. B21c *3/16*; **B21k** *1/44*

U.S. Cl. 72—476 **4 Claims**



Punch for forming square socket type head for screw fasteners in which the socket has four equal sides each of which has an upper slightly inwardly inclined flat portion which merges without discontinuity at its lower end with a lower concave bottom portion.

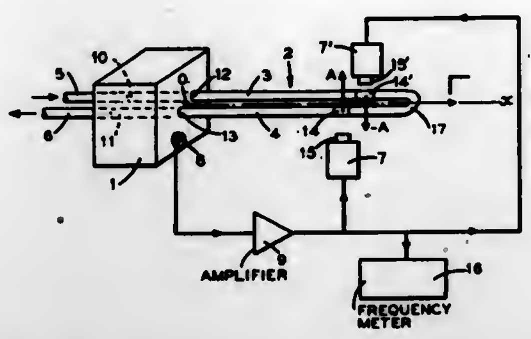
3,728,893
DEVICE FOR MEASURING THE DENSITY OF A FLUID

Sylvain Janssen, Neuilly, Hauts-de-Seine, France, assignor to Compagnie Des Compteurs, Paris, France

Filed April 5, 1971, Ser. No. 131,016
Claims priority, application France, April 6, 1970, 7012318
Int. Cl. G01n *9/02*

U.S. Cl. 73—32 **6 Claims**

Disclosed device includes a fluid conveying, U-shaped tube having its end portions secured to a base member. Means are provided in the proximity of the U-shaped end portion of the tube for establishing a torsional oscillation of the tube and for measuring the frequency of this oscillation, the frequency being representative of the density of the fluid.



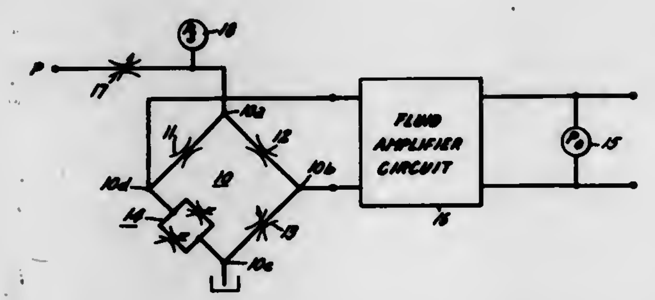
3,728,894
FLUIDIC GAGING DEVICE

HansJoerg Stern, Scotia, N.Y., assignor to General Electric Company

Continuation of Ser. No. 800,623, Feb. 19, 1969, abandoned. This application April 2, 1971, Ser. No. 130,635

Int. Cl. G01b *13/04*

U.S. Cl. 73—37.5 **35 Claims**



A fluidic gage having no moving mechanical parts is utilized for continuous monitoring of a particular parameter such as wire diameter, sliver density and object proximity. The gage comprises a bridge circuit including a pair of fluidic resistors having fixed resistances to fluid flow therethrough and a first fluidic variable resistor in three legs of the bridge circuit. A sensing head is connected in the fourth leg of the bridge circuit in fluid communication with the monitored material to function as a second fluidic variable resistor. The first variable resistor is preset to a predetermined resistance value corresponding to a desired value of the monitored parameter. Deviation from the desired value of the monitored parameter causes a linear change in fluid pressure at the input to the sensing head thereby causing an unbalanced condition of the bridge circuit and developing a pressurized fluid signal which may be utilized for operating a suitable readout device or initiating a control action.

3,728,895
TRIAXIAL COMPRESSION TEST APPARATUS

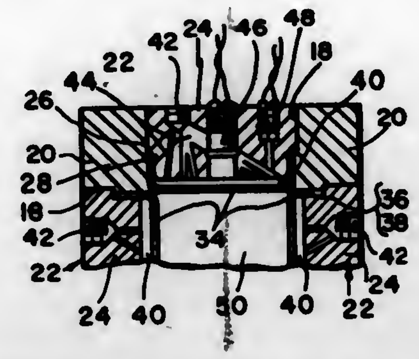
Garrett D. Shaw, Rolling Hills, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 18, 1970, Ser. No. 99,356

Int. Cl. G01n *3/08*

U.S. Cl. 73—94 **1 Claim**

A high-speed triaxial compression test apparatus having a hollow rectangular frame with a central rectangular test cavity for containing a test sample and a rectangular opening to the test cavity in each side of the frame containing a removable pressurizing module having an inner movable pressure wall, such as a flexible diaphragm, which is pressurized through an inlet port in the module to exert a compression load on the test sample along the respective cavity axes, and transducers for generating signals representing the pressure on and displacement of the pressure wall. The primary application of the apparatus is testing soil and rock samples and other natural and fabricated materials to obtain data concerning their mechanical properties.



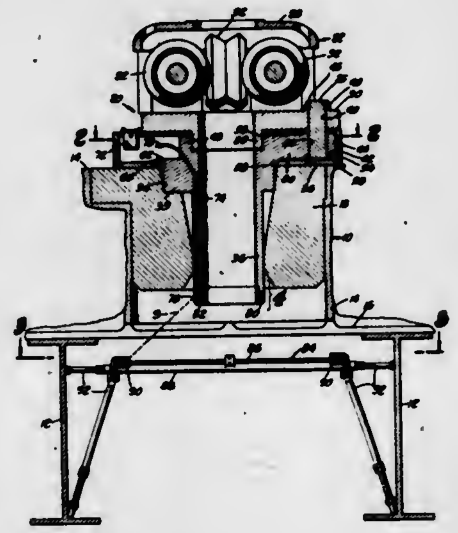
3,728,896
DYNAMIC TORQUE MEASURING SYSTEM

Loren B. Sheldon, Long Beach, Calif.; Lester Lee Cain, Ethell, and J. Dower, Houston, both of Tex., assignors to Drill-Au-Mation Inc., Houston, Tex.

Filed Dec. 17, 1970, Ser. No. 128,597

Int. Cl. G01l *3/10*

U.S. Cl. 73—136 **26 Claims**



A system forming part of subterranean well drilling apparatus for measuring torque between a rotating drive element and a rotating driven element connected between the driving and driven elements, a strain detection and transmitting system connected with the coupling element and carried by the rotating elements for continuously detecting the transient strains imposed in the coupling element by torque between the driving and driven elements and for transmitting a radio output indicative thereof, and a stationary radio receiver system for receiving and indicating such output as a function of torque and torque variations between the driving and driven elements.

3,728,897
COMPENSATED FUEL GAGE

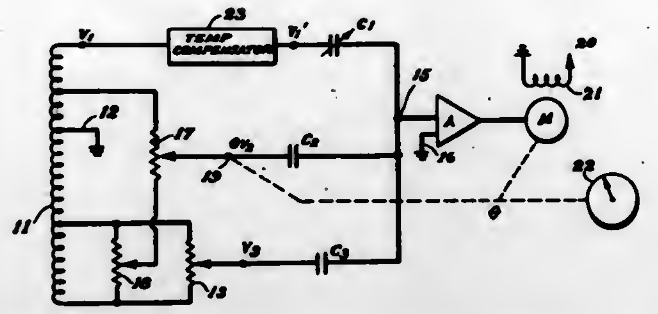
Irwin Wallman, Great Neck, N.Y., assignor to Consolidated Airborne Systems, Inc., Carle Place, L.I., N.Y.

Filed Nov. 16, 1970, Ser. No. 89,681

Int. Cl. G01f *23/26*

U.S. Cl. 73—304 C **10 Claims**

A temperature sensing element responsive to the temperature of the fuel in a tank is connected in one part of the bridge circuit of a capacitance fuel gage. The temperature sensing element compensates for variations in the dielectric constant and density of the fuel and permits a linear readout of the mass of the fuel.



3,728,898
ACTION UNIT FOR MEASURING DEVICES

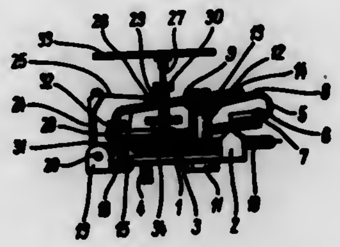
Herbert Schlenker, Schwenningen, Germany, assignor to Firma Herbert Schlenker, Schwenningen a.N., Germany

Filed April 1, 1971, Ser. No. 130,274

Claims priority, application Germany, April 1, 1970, P 20 15 449.8

Int. Cl. G01l *7/12*

U.S. Cl. 73—386 **7 Claims**



An action unit for a measuring device such as an aneroid barometer incorporates a U-shaped blade spring one limb of which is fixed to an adjustable support while the other limb, which is longer than the first limb, provides a bearing surface for an intermediate member engaged by an actuator pin of the measuring device. The actuator pin is disposed between the yoke and the terminal edge of the longer limb of the blade spring and the intermediate member bears on said terminal edge and on points between said edge and the yoke, and said intermediate member is extended to provide means for actuating an indicator through a movement-amplifying linkage system.

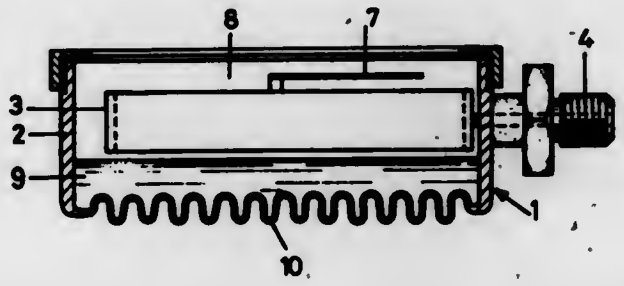
3,728,899
PRESSURE GAUGE

Leendert Frederik Willem Dijkema, Rotterdam, Netherlands, assignor to Heineken Brouwerijen N.V., Amsterdam, Netherlands

Filed Feb. 17, 1972, Ser. No. 227,081

Int. Cl. G01l *19/04, 7/04*

U.S. Cl. 73—393 **6 Claims**



In a pressure gauge of the Bourdon type wherein the gas pressure to be measured is compared with a reference pressure, the reference pressure being provided by a saturated vapor pressure, which liquid shows at least substantially the same characteristic under the influence of temperature and atmospheric pressure variations as the gas to be gauged.

3,728,900
UNIVERSAL NUTATION DAMPER

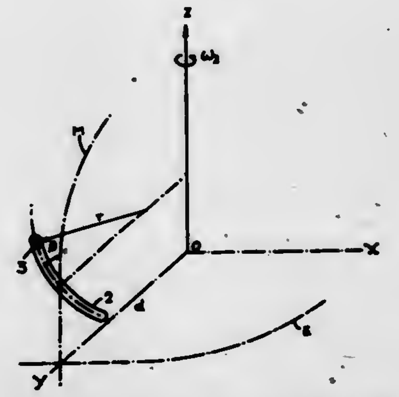
Uwe K. Engelking, Domeinweg Noordwijk, Netherlands, assignor to Organisation Europeenne de Recherches Spatiales, Neuilly-sur-Seine, France

Filed March 30, 1971, Ser. No. 129,330

Claims priority, application Belgium, April 2, 1970, 87299

Int. Cl. B64c *17/02*

U.S. Cl. 74—5.5 **5 Claims**



A stabilization device to keep the nutation of a gyroscopic system, e.g., a spinning spacecraft or space vehicle, comprising an arcuate guide, a gas, liquid and/or solid component contained in said guide and adapted to move therein while dissipating energy, said movement being in a plane making an acute angle with the spin axis of said gyroscopic system.

3,728,901
APPARATUS FOR REVERSING THE TRAVERSE OF THE CAM CARRIAGE OF AN AUTOMATICALLY OPERATING FLAT KNITTING MACHINE

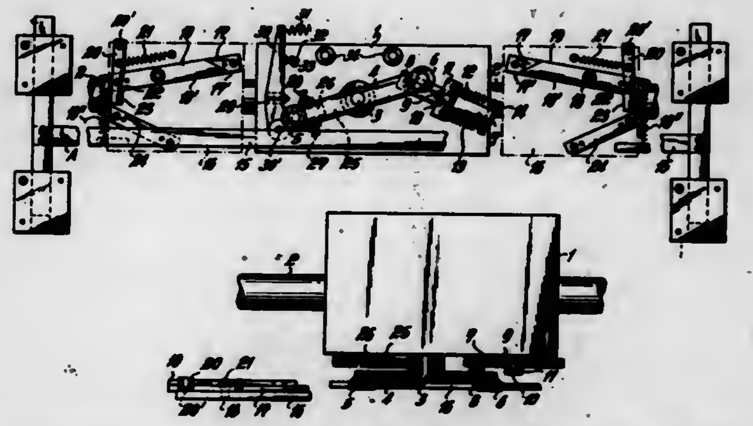
Karl Essig, 7410 Reutlingen, Germany, assignor to H. Stoll & Company, Stollweg, Germany

Filed Aug. 26, 1971, Ser. No. 175,169

Claims priority, application Germany, Aug. 27, 1970, P 20 42 500.7

Int. Cl. F16h *21/16*

U.S. Cl. 74—27 **12 Claims**



A changeover device for a flat knitting machine of the type wherein the carriage is reciprocated through a traverse type gear casing having roll ring gearing for converting rotary movement into linear displacement has a double-armed changeover lever pivotally mounted on the gear casing so as to vary the orientation of the roll ring gearing members therein. The lever is provided with rollers at its ends, and one or the other of these rollers is pressed against a longitudinally extending abutment rail during traverse of the casing and carriage. An inclined braking bar is disposed at each end of the traverse path for encountering an approaching roller to thereby pivot the changeover lever in the sense to bring about a continuing reduction in speed of traverse. A thrust device is released shortly before the carriage comes to rest, and thrusts the changeover lever beyond its dead center position to reverse the carriage traverse. The abutment rail is adjustable to vary the angular setting of the changeover lever, and hence the traverse speed. The braking bars are longitudinally adjustable, and means are provided for biasing the changeover lever oppositely to its pivotal movement until it reaches a predetermined distance beyond its dead center position so as to ensure continued traverse in the same direction after the lever is moved to dead center to stop the traverse.

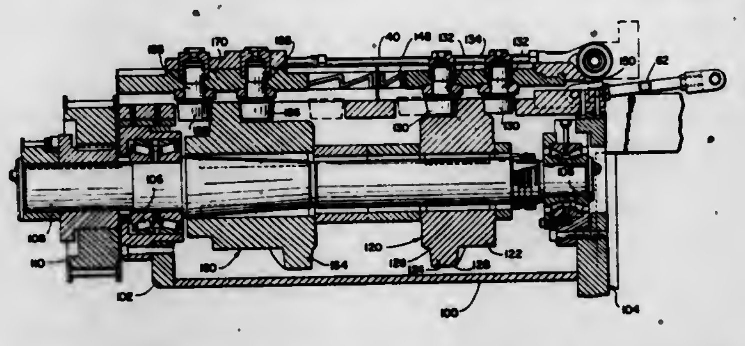
3,728,902
HIGH SPEED TRANSFER DRIVE

Stuart H. McCaughey, P.O. Box 255, Cockeysville Road, Cockeysville, Md.

Division of Ser. No. 25,725, April 6, 1970. This application Nov. 30, 1970, Ser. No. 93,697

Int. Cl. F16h *25/12*

U.S. Cl. 74—56 **2 Claims**



A cam flange extends radially outward from a cylindrical body, and followers are mounted on opposite sides of the flange for continuous uniform direction rotation of the followers as the cam rotates, and the followers move slides.

3,728,903
DEVICE FOR SUPPORTING AN ELONGATED MOVABLE MEMBER

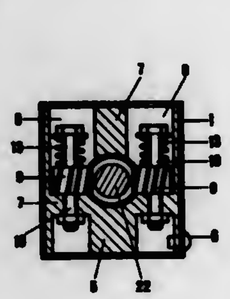
Richard Haller, Ueberlandstr. 240, Dubendorf, Switzerland

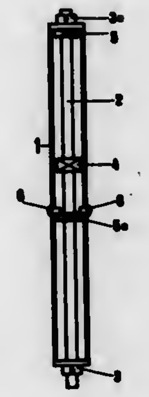
Filed Jan. 18, 1971, Ser. No. 107,030

Claims priority, application Switzerland, Jan. 16, 1970, 610/70

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **7 Claims**





An elongated movable member which may form part of a linear actuator is supported intermediately by means of support devices which are adapted to move to a limited extent with the elongated member and thereafter to be held fixed by stationary abutment means. Each support device includes at least one wheel in bearing engagement with the movable member and if the latter consists of a screw-threaded spindle or a rack the wheel is a toothed wheel engaging the thread or the rack teeth. Friction engagement means cooperating with the wheel ensure that the device moves with the elongated member until the device engages the abutment after which the elongated member moves relatively to the device which then acts as an intermediate support for the elongated member. A cooperating member actuated by the elongated member, for example a nut cooperating with a screw-threaded spindle, may be arranged with recesses to clear the abutment means which engage the support device.

3,728,904
ELECTRICAL WINDOW REGULATOR MECHANISM

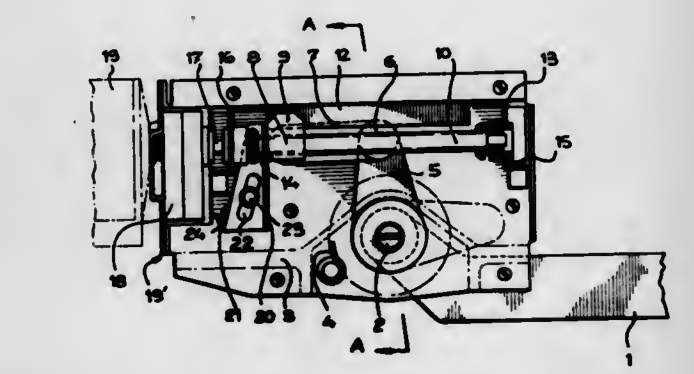
Paul Boyriven, Paris, France, assignor to Compagnie Industrielle De Mecanismes, Courbevoie, France

Filed Feb. 17, 1971, Ser. No. 116,099

Claims priority, application France, Feb. 24, 1970, 7006551; July 6, 1970, 7024906

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **7 Claims**



A device for moving an actuating arm comprising a plate upon which the actuating arm is mounted for rotation through a predetermined angle and a threaded shaft also rotatably mounted on such plate. Means are provided for connecting the output shaft of an electric motor to the thread shaft. A slide is mounted parallel to the threaded shaft and a nut is immobilized in rotation by the slide and adapted to move longitudinally of the threaded shaft upon rotation of the threaded shaft. A first lever is secured to the axis of the operating arm and a second lever is pivotally connected at one end to the first lever and at its other end to the nut, whereby movement of the nut due to rotation of the threaded shaft will cause the first lever to rotate the second lever and thus the operating arm.

3,728,905
BELT TRANSMISSION HAVING MECHANISM FOR REVERSE GRINDING

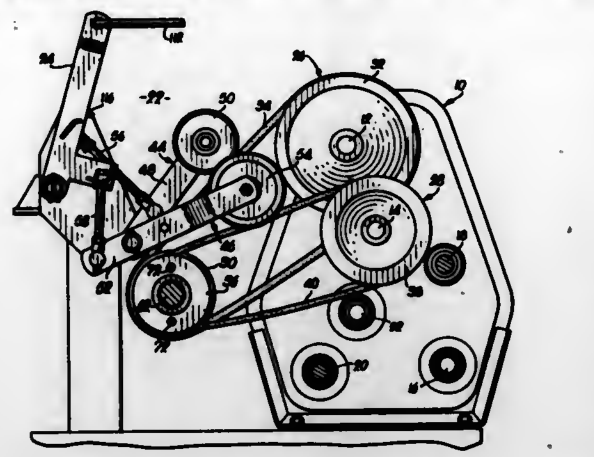
Ferol S. Fell, Newton; Lowell J. Goering, Moundridge, and William D. Long, Hesston, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Jan. 7, 1972, Ser. No. 216,062

Int. Cl. F16h *9/04, 37/06*

U.S. Cl. 74—220 **12 Claims**

A power transmission for farm implements, such as forage harvesters, having a rotor provided with chopping blades, is operable to drive the rotor in reverse during sharpening of the blades. A pair of belt and pulley assemblies are normally driven alternately to effect either forward or reverse rotation of one or more output shafts. Upon the removal of shear or break pins, installation of a stud and substitution of one link for another, a direct drive of the rotor from a power shaft is released and the rotor is reversed by operation of both assemblies simultaneously.



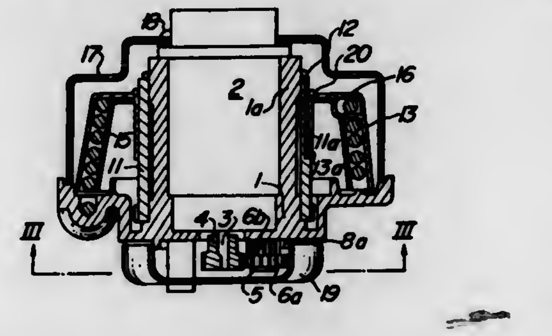
3,728,906
ELECTRICALLY-OPERATED EXTENDING AND CONTRACTING ANTENNA FOR RUNNING AUTOMOBILES

Nobuyoshi Takaki, Aichi-ken, and Tadashi Hattori, Kariya, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Dec. 7, 1970, Ser. No. 95,703

Int. Cl. F16h *1/20*; **H01q** *1/12, 1/32*

U.S. Cl. 74—421 R **1 Claim**



An electrically-operated extending and contracting antenna which employs, instead of a reduction worm gear, a plurality of stages of reduction spur gears superior in gear engagement efficiency for transmitting power from a motor to a rotary drum, so that the loss of driving power in the reduction gear is remarkably reduced, thereby making it possible to employ an electric motor which is small in both power and size.

3,728,907
WORM DRIVE

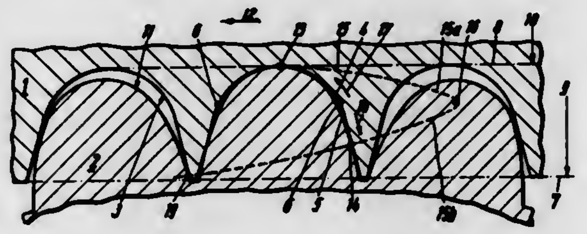
Gerhard Stade, Berlin, Germany, assignor to Herbert Lindner GmbH, Berlin, Germany

Filed Dec. 8, 1971, Ser. No. 206,092

Claims priority, application Germany, Jan. 15, 1971, P 21 03 537.0

Int. Cl. F16h *1/16, 55/04*

U.S. Cl. 74—425 **11 Claims**



A worm drive includes a cylindrical worm and a worm gear, having arcuated corresponding engaging tooth flank profiles, with a mesh or contact line in the engaging region. The flanks of the teeth of the worm gear each consist of at least two flank parts engaging with the flanks of the worm gear teeth. One flank part, in the axial section through the worm, has a profile inclined relative to a perpendicular to the worm axis and which profile may be rectilinear, slightly convex, or slightly concave. The other flank part, in the axial section through the worm, has a sharply curved profile. The mesh or contact line reverses in the engaging region. The flank part having the sharply curved profile may be convex toward the worm gear or may be concave toward the worm gear. Alternatively, the flank part having the sharply curved profile may include a part convex toward the worm gear, a part concave toward the worm gear, and a substantially rectilinear part interconnecting the convex and concave parts. As a modification, the profile of the worm, in the axial section through the worm, may comprise a single curve having one part sharply curved and the other part slightly curved.

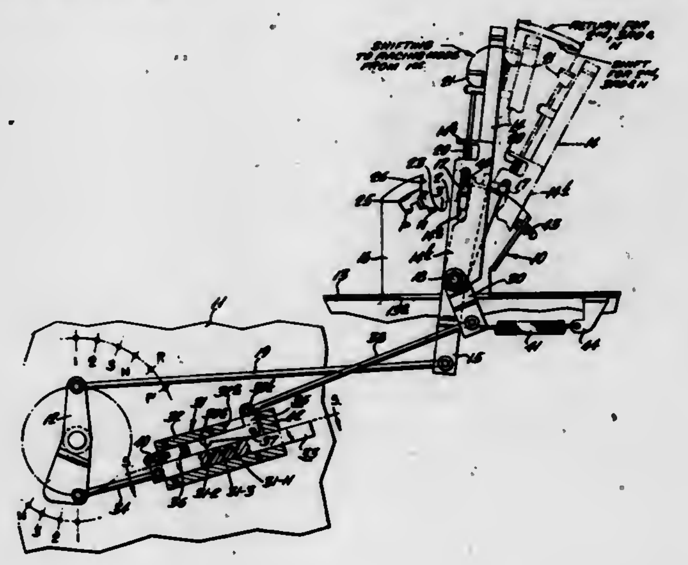
3,728,908
DUAL-MODE SHIFTER FOR AUTOMATIC TRANSMISSIONS

William J. Bieber, R.D. No. 1, Pipersville, Pa.

Filed Nov. 3, 1971, Ser. No. 195,149

Int. Cl. G05g *7/08*

U.S. Cl. 74—473 R **18 Claims**



An automatic transmission having a shift arm which pivots to shift the transmission into various speed ranges is provided with apparatus for pivoting the arm accurately and rapidly and in increments upon repeated sequential displacement of a master shift lever in one direction. One end of the shift arm of the transmission is connected to a primary shift lever through an indexing assembly, and the other end of the shift arm is connected to a secondary shift lever. The master lever is selectively coupled with either the primary or the secondary shift lever; when coupled with the secondary lever the master lever shifts the transmission in the conventional mode; when coupled with the primary lever the master lever shifts the transmission in a rapid shift or racing mode. The indexing assembly includes a housing which slidably mounts a slide element connected to the shift arm and a pawl mounted in a carriage which slides alongside the slide element for gripping the slide element and displacing it longitudinally to pivot the arm. The pawl is connected through linkage to the primary lever and sequentially engages recesses in the slide element to move with the slide and carriage predetermined distances when the master lever is pivoted in one direction. Stop means is provided in the housing to arrest movement of the slide element upon completion of a shift. The master lever is normally biased into an initial position by means of a spring which also operates to disengage the pawl from the slide element in preparation for a succeeding shift.

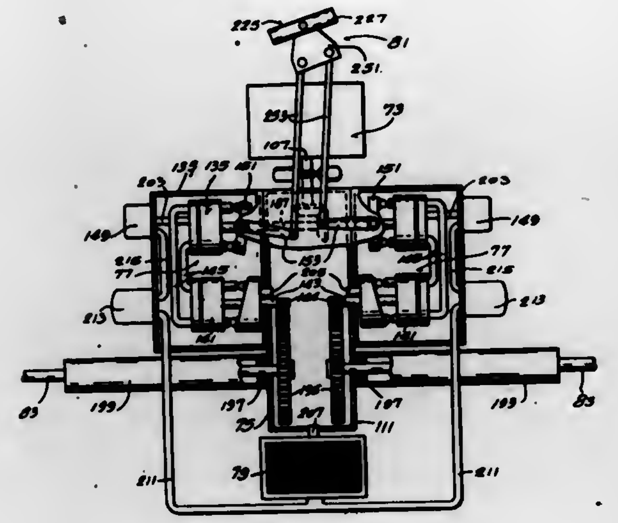
3,728,909
ALL-TERRAIN VEHICLE

Herbert A. Jespersen, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 857,494, Sept. 12, 1969. This application Nov. 27, 1970, Ser. No. 93,476

Int. Cl. G05g *9/00*

U.S. Cl. 74—491 **6 Claims**



Disclosed herein is an all-terrain vehicle including a body, a power generating and transmission group, and a track suspension group, each of which can be separately initially fabricated and subsequently assembled. After assembly of the power generating and transmission group and the track suspension group to the body, a motor hood, drive sprocket, and tracks may additionally be assembled to complete the vehicle.

Also disclosed herein is a track suspension system affording both transverse and lateral resiliently flexible support to an endless track and a releasably locked and pivotally mounted rear bogie wheel assembly which, when pivoted from its normal operating position, affords assembly of or removal of the endless track relative to the sprocket and bogie wheels.

Also disclosed herein is a track sprocket affording maximum open area for the escape of mud, snow, ice and the like.

Also disclosed herein is a hydrostatic transmission including a control having a reverse lock-out preventing accidental movement of the control into position effecting reverse operation.

Still further, there is disclosed herein a hydraulic oil circulating system which utilizes the gear box as a sump for the circulating system and which is in heat exchanging relation with an air circulating system.

3,728,910
CONTROL DEVICES OF EPICYCLIC GEAR TRANSMISSIONS

Jean Piret, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of France

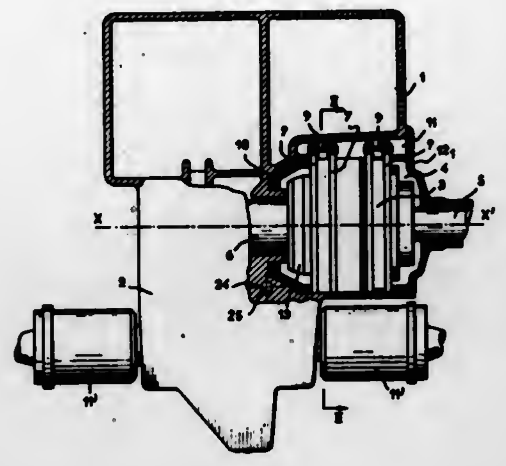
Filed March 31, 1971, Ser. No. 129,713

Claims priority, application France, April 3, 1970, 7012137

Int. Cl. E16h *37/08;* **G05g** *7/16*

U.S. Cl. 74—695 **7 Claims**

This control system is intended for an epicyclic gear train change-speed transmission mechanism comprising at least one main casing and in said casing hydraulic piston-controlled coupling means co-acting with clamping members provided with radial extensions receiving the antagonistic stress from resilient means. This mechanism has said clamping members disposed at unequal intervals along their periphery and received in notches formed in the main casing of the change-speed transmission mechanism, whereby the resultant of the efforts exerted by said resilient means is applied in the direction of the axis of rotation of the planet gear elements and of the coupling means thereof, at right angles to the axis of the shaft controlling the hydraulic gear-shift means lying at the lower portion of the main casing of the change-speed transmission mechanism. This control system and transmission mechanism are applicable to advantage mainly to motor vehicles transmissions, and more particularly to transverse-mounted power and transmission units.



3,728,911
INFINITELY VARIABLE SPEED TRANSMISSIONS

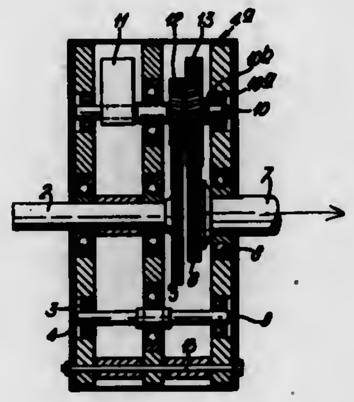
William Francis Granville, deceased, late of 85 Howdale Road, Dowham Market, Norfolk, England (Winifred Mary Granville, executrix)

Filed March 17, 1971, Ser. No. 124,904

Claims priority, application Great Britain, Aug. 13, 1970, 39,131/70

Int. Cl. F16h *3/74*

U.S. Cl. 74—752 F **10 Claims**



The invention relates to an infinitely variable speed transmission comprising an input shaft mounting a first sun wheel and an output shaft coaxial with the input shaft and mounting a second sun wheel, a pair of diametrically disposed planet assemblies being provided each comprising a first planet pinion, mounted on a shaft which is parallel to the input and output shafts, in co-operative connection with the first sun-wheel, and a second planet pinion on the shaft which is in turn in cooperative connection with the second sun wheel, and a centrifugal fly-weight mounted on the shaft, the two centrifugal fly-weights of each assembly being oppositely disposed so that on rotation of the input shaft a drive comprising of only positive impulses is imposed on the output shaft.

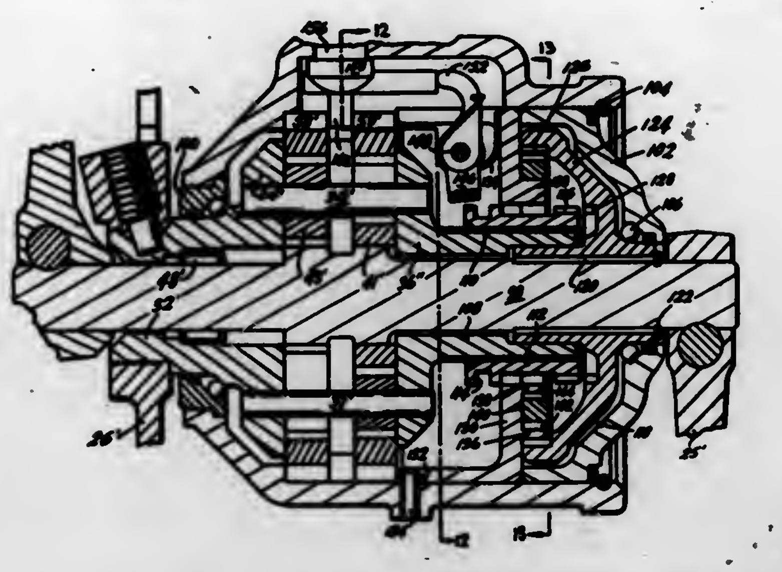
3,728,912
BICYCLE TRANSMISSION

Rex C. Darnell, 8960 Jackson Road, Dexter, Mich.

Filed Nov. 9, 1970, Ser. No. 87,838

Int. Cl. F16h *57/10, 5/36;* **B62m** *11/14*

U.S. Cl. 74—769 **4 Claims**



A bicycle ratio changing transmission of improved efficiency and cost of construction disposed within the crank hanger housing and characterized by the use of a minimum of inexpensive, sturdy components.

3,728,913
PLANETARY GEAR TYPE REVERSING DEVICE

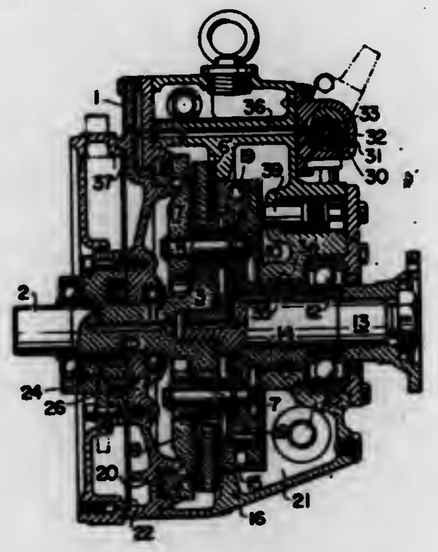
Michisuke Nagasaki, Toyonaka, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed May 25, 1971, Ser. No. 146,699

Claims priority, application Japan, June 2, 1970, 45/55206

Int. Cl. F16h *3/46, 57/10*

U.S. Cl. 74—785 **3 Claims**



A reversing device of planetary gear type for marine engines and the like comprising a sun gear mounted on an input shaft, a plurality of inner planet gears in mesh with the sun gear, a plurality of outer planet gears in mesh with said inner planet gears, an internal gear in mesh with said outer planet gears, bearing discs which support said inner and outer planet gears, an output shaft to which one of said bearing discs is fixedly secured, said internal gear being slidably supported only by the planet gears so as to be gripped either between an extension of the other bearing disc and a normal-running pressing member or between a protrusion of the reversing gear case and a reversing pressing member, and a hydraulic piston which is adapted to move into and out of the reversing gear case to attain pressure contact with a side of one of the bearing discs to avoid unintended rotation of the output shaft while the device is in the neutral position.

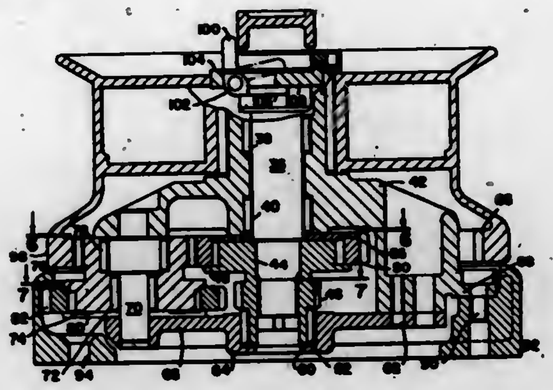
3,728,914
THREE SPEED DECK WINCH

Jesus Guangorena, Atherton, and Edward Kalla, Sunnyvale, both of Calif., assignors to Barient Company, San Carlos, Calif.

Filed Dec. 29, 1970, Ser. No. 102,293

Int. Cl. F16h *5/72;* **B66d** *1/24*

U.S. Cl. 74—812 **16 Claims**



A winch particularly adapted for hauling lines on a sailing craft which will provide three wind-up speeds of the drum for one speed applied to a central shaft by a winch handle or a segment wheel attached to the shaft. Internally, the winch has a gear train mechanism including two rachet gears that provide two different drum speeds when the handle or segment wheel is rotated in opposite directions. A first speed is provided by an engaging means on the drum which causes it to be directly driven in one direction while overriding both ratchet gears of the internal gearing. The engaging means is retracted by movement of the handle or segment wheel in the opposite direction which thus drives the drum at a second speed through one ratchet gear of the internal gear mechanism. Another reversal of the handle or segment wheel causes the drum to be driven at a third speed through the other ratchet gear as long as the engaging means remains in its retracted position. The movable element of the engaging means may be situated in the end face of the drum or in the handle.

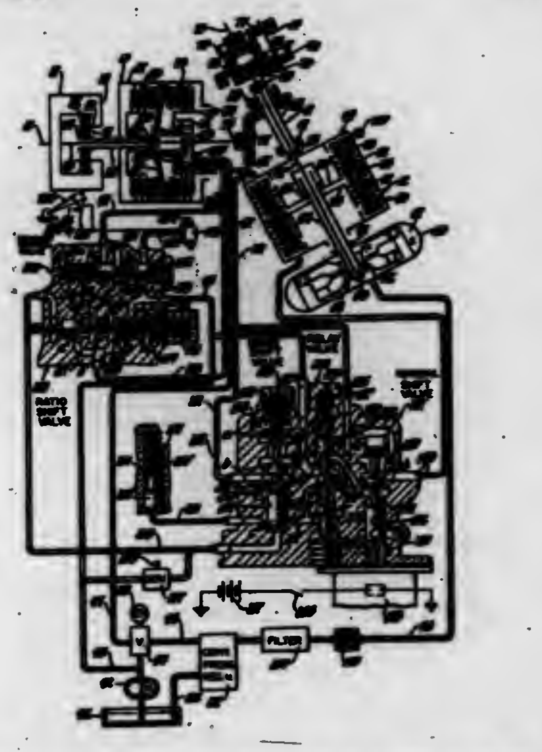
3,728,915
TRANSMISSION SHIFT CONTROL

William B. Clark, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 869,732, Oct. 27, 1969, Pat. No. 3,602,344. This application April 23, 1971, Ser. No. 136,881

Int. Cl. B60k *21/00;* **F16h** *47/00*

U.S. Cl. 74—868 **2 Claims**



A transmission having a converter drive and a direct drive clutch in which the manual neutral and drive control valve supplies fluid to engage the converter drive clutch and the governor actuated direct drive clutch valve supplies fluid through a restriction to engage the direct drive clutch and also to an accumulator pressure regulator to provide a gradual pressure rise in the direct drive clutch motor to a value that carries the load, and then actuates an overlap relay valve to exhaust the converter drive clutch motor for overlap independent of time. On a direct to converter shift, the downshifting direct drive valve connects the accumulator, overlap valve and the direct clutch motor through a restriction to exhaust to delay disengagement of the direct clutch and promptly shifts the relay valve to supply fluid to the converter clutch for a quick engagement for overlap. In the controls for a downshift from a higher ratio to a lower ratio, a throttle actuated valve provides an additional restriction in an exhaust line to delay a downshift at zero and low throttle as compared to the full and high throttle downshift to improve the character of the downshifts while providing fast upshifts at all throttle settings.

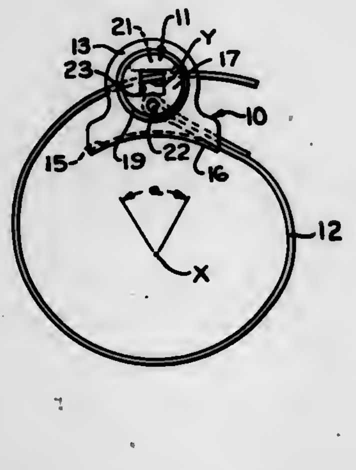
3,728,916
FLEXIBLE STRAP WRENCH

Jerry K. Brantley, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 14, 1971, Ser. No. 152,515

Int. Cl. B25b *13/52*

U.S. Cl. 81—64 **5 Claims**



A strap wrench for grasping and rotating articles, such as cylindrical spin-on filters, comprises a support, a cam member rotatably mounted in the support and a flexible strap having one end attached to the cam member and a second end threaded therethrough. An arcuate surface is formed on the support to abut and substantially conform to outer cylindrical surface portions of the rotated article. Such arcuate surface cooperates with the strap to grasp the article, upon rotation of the cam member, to uniformly distribute a torquing force therearound and to prevent damage thereto.

3,728,917
MULTI-PLUNGE TURNING APPARATUS

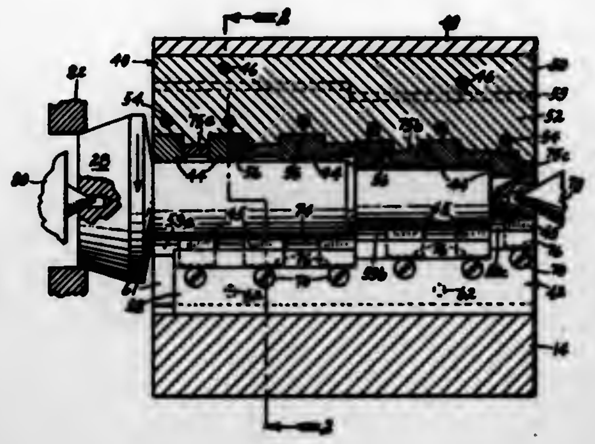
Carl W. Kaesemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 15, 1971, Ser. No. 208,248

Int. Cl. B23b *21/00*

U.S. Cl. 82—25 **2 Claims**

An apparatus for turning a rotating workpiece includes an improved turning apparatus. The improvement comprises a plurality of cutting tools radially spaced about the axis of rotation and secured to a support designed to align the tools in a manner that minimizes the forces present at the axis of rotation. There is further included a means for synchronizing the advancement of the cutting tools into the workpiece.



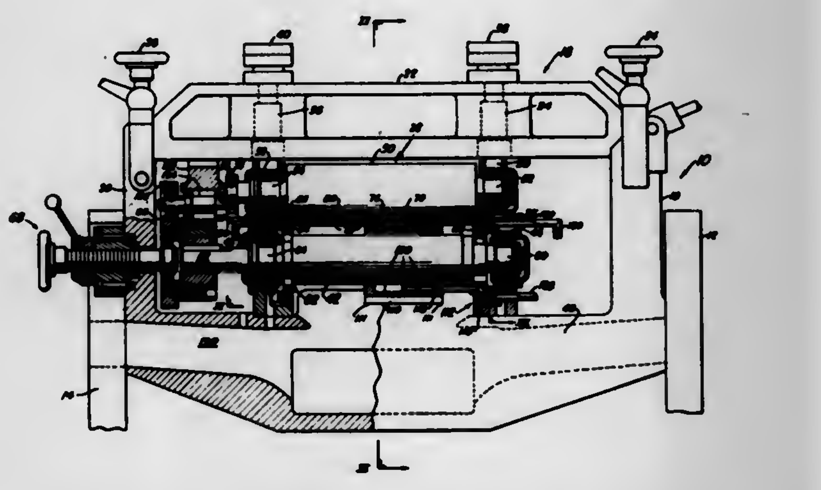
3,728,918
ROTATABLE PANEL CUTTER

Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Nov. 9, 1970, Ser. No. 87,788

Int. Cl. B26d *7/18*

U.S. Cl. 83—22 **14 Claims**



Apparatus for cutting panels from blanks of sheet material that includes a cylindrical anvil roller rotatably supported on a bridge member. A die shaft is rotatably supported on a frame member and positioned below the anvil roller. The die shaft has one or more cutting dies or knives mounted on its periphery and a semi-cylindrical vacuum bar. The vacuum bar is positioned in spaced relation to the cutting dies and is arranged to engage different sized blanks of sheet material. The cutting dies may be positioned at various locations on the die shaft to simultaneously form panels of various sizes at various locations on the blank of sheet material. A first valve member is provided adjacent one end of the die shaft to impart a negative pressure or vacuum through longitudinal openings in the vacuum bar so that the blank of sheet material is engaged to the vacuum bar and conveyed between the dies and anvil roller positioned thereabove. A combination valve is secured adjacent the opposite end of the die shaft and is arranged to impart a negative pressure to the cutting dies while the panel is being severed from the blank and to apply a positive pressure and remove the panels severed from the blank. The anvil roller is arranged to rotate with the die shaft in the same direction as the die shaft or in a direction opposite to the direction of rotation of the die shaft. Other elements are provided to control the peripheral speed of the anvil roller and provide a differential rate of rotation between the anvil roller and the die shaft. The vacuum bar has a plurality of spaced openings that are adapted to engage different sized blanks of sheet material. The openings not employed to engage a particular sized sheet are covered with a tape material during operation of the apparatus.

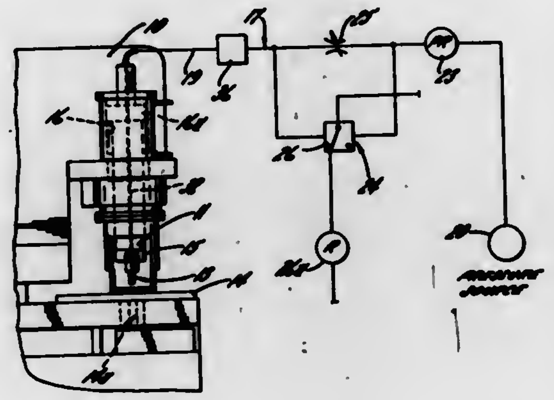
3,728,919
BROKEN TOOL DETECTOR

William B. Scott, Steward, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.

Filed Nov. 15, 1971, Ser. No. 198,689

Int. Cl. B26d *7/22*; **E21b** *13/00*; **B23b** *49/00*

U.S. Cl. 83—62 **5 Claims**



A portion of a pneumatic circuit for sensing the breakage of a punch is formed by a normally closed passageway in the punch itself. If the punch is broken, the passageway is opened up and pressurized air in the circuit is vented to the atmosphere through the passageway. A pressure differential switch in the circuit senses the resulting pressure change and, in response thereto, produces an electric signal to indicate breakage of the tool.

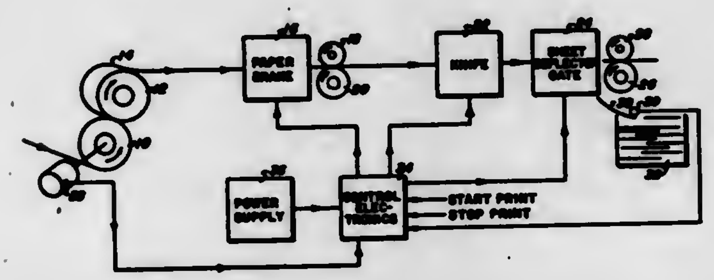
3,728,920
CUT AND DEFLECT WEB DRIVE APPARATUS

John F. Gardner, Penfield, N.Y., and Michael B. Parry, Chalfont St. Peter, England, assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 829,623, June 2, 1969, Pat. No. 3,591,279. This application Jan. 26, 1971, Ser. No. 109,880

Int. Cl. B26d *5/20*

U.S. Cl. 83—106 **2 Claims**



A cut and deflect paper system for allowing printed documents to be exited from the system while scrap paper ahead of, intermediate, or behind said printed documents are cut and deflected into a scrap or waste area within the system. In a continuous web document-printing system, under control of a control electronics, a brake halts the paper movement through the system and a knife cuts the paper into predetermined lengths of normal document sizes. A deflector system in the paper path following the cutter allows printed documents to pass out of the system while it deflects scrap sheets into said scrap area in the system.

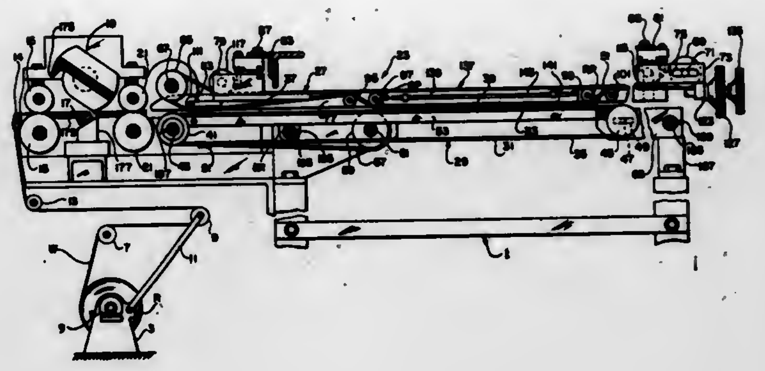
3,728,921
APPARATUS FOR CUTTING A WEB INTO SHEETS AND POSITIONING THE SHEETS

Walter H. Vogel, Plymouth, Wis., assignor to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed April 1, 1971, Ser. No. 130,379

Int. Cl. B65b *41/04, 41/18, 61/06*

U.S. Cl. 83—151 **15 Claims**



Apparatus in which a web of flexible sheet material, e.g., paper or plastic film, is unwound from a roll, and segmented into individual sheets, each sheet, as it is segmented from the web, being fed forward and accurately stopped in a working position in another apparatus such as a wrapping machine in which the sheet is caused to become wrapped around an article or articles. The cut-off sheet is fed forward by an endless belt conveyor arrangement and accurately stopped in the working position by a vacuum stop, with provision for fine adjustment of the working position of the sheet even while the apparatus is in operation.

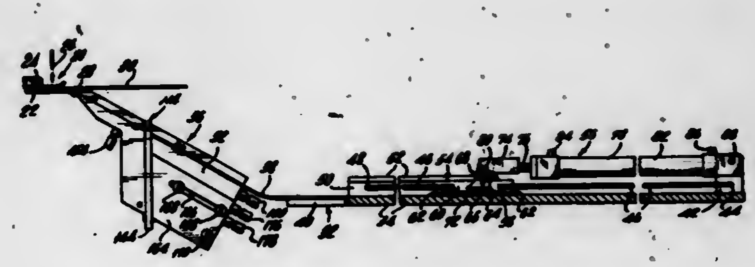
3,728,922
APPARATUS FOR FEEDING AND CUTTING A BAND OF SHEET MATERIAL

Joseph W. A. Off, Dallas, Tex., assignor to Kayser-Roth Corporation, New York, N.Y.

Filed July 28, 1971, Ser. No. 166,755

Int. Cl. B26d *5/20*

U.S. Cl. 83—277 **10 Claims**

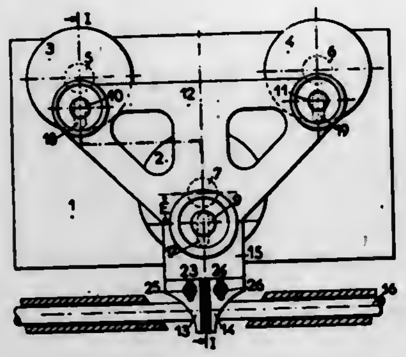


Apparatus for feeding and cutting a band of sheet material such as a waistband which is to be sewn to a garment. An elongated guide structure longitudinally guides the elongated band of sheet material to a predetermined location and a cutting structure is located at a given distance from this location for cutting across the band. A feeding structure coacts with the band for feeding the latter to be predetermined location after the band has been cut by the cutting means, and the feeding structure has a feeding stroke sufficiently great to displace a leading end of the band from the cutting means to the predetermined location.

3,728,923

CUTTING GUIDE, NOTABLY FOR CIGARETTE MAKING MACHINES

Raymond Lanore, Paris, France, assignor to Usines Decoufle, Paris, France
Filed July 29, 1971, Ser. No. 167,244
Claims priority, application France, Aug. 3, 1970, 7028595
Int. Cl. B23d *25/04*
U.S. Cl. 83—318 3 Claims

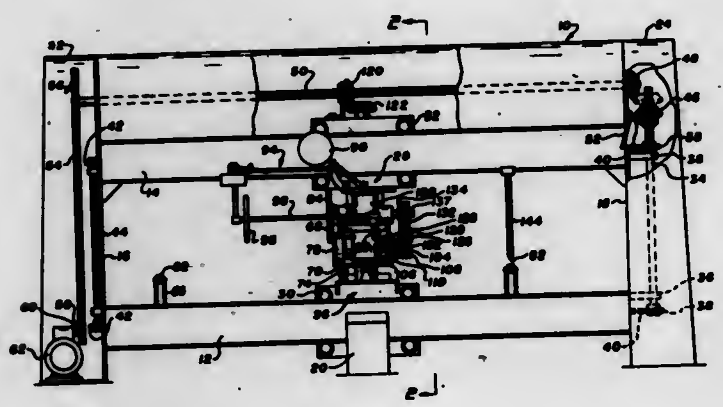


These cutter guides are of the type adapted to move while remaining constantly parallel to themselves and perpendicular to the cigarette rod, and rotating about an axis at a uniform tangential speed equal to the feed rate of said rod. Said guides are carried by a rigid connecting plate comprising three bearings mounted on three crankpins of corresponding separate similar disks one of said disks being rotatably driven while the others revolve freely about their axes. The construction is particularly simple and light in weight.

3,728,924

DOUBLE CARRIAGE SHEAR

Alwin O. Wutke, 636 East 53rd Avenue, Vancouver, British Columbia, Canada
Filed March 29, 1971, Ser. No. 128,893
Int. Cl. B23d *19/04*
U.S. Cl. 83—426 9 Claims



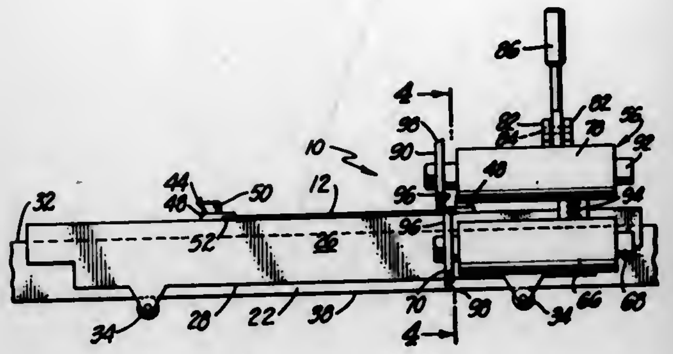
A cutting machine for sheet materials having a pair of circular cutters mounted on parallel spaced axles, with the cutting edges of the cutters touching each other and being slightly overlapped. A steerable, power driven feeding arrangement permits the cutting of variable curves. Straight cuts of infinite length and circles are also possible.

3,728,925

PAPER TRIMMER

Charles L. Peters, Anaheim, Calif., assignor to Box Innards, Inc., Anaheim, Calif.
Filed March 4, 1971, Ser. No. 121,047
Int. Cl. B26d *1/24*
U.S. Cl. 83—441 2 Claims

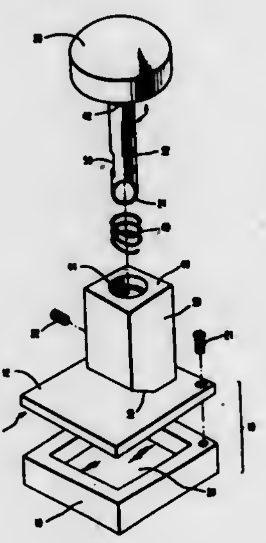
A paper trimmer for use in cutting a continuous strip of paper to a desired width as such a strip is conveyed along a path and occasionally moves tranversely to the path can be constructed utilizing a support extending transversely to the path, a carriage movably mounted on the support, guide means for engaging the strip and for conveying transverse motion of the strip to the carriage so as to move the carriage in accordance with such transverse motion and a cutter assembly mounted on the carriage for cutting the strip to a desired width as it moves along the path.



3,728,926

BOOK-INDEX NOTCHER

Harry B. Clayton, Ander Road RD No. 1, Lansdale, Pa.
Filed Jan. 7, 1971, Ser. No. 104,588
Int. Cl. B26d *7/16, 5/08*
U.S. Cl. 83—467 9 Claims



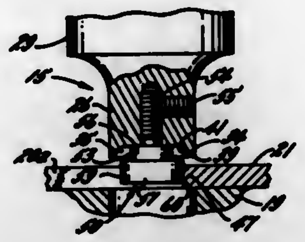
A wedge-shaped guide is arranged to align the free edges of the book leaves in a fanned-out orientation as the cutting edge of a truncated hollow cylindrical plunger shears the leaves while being moved in a direction perpendicular to the base surface supporting the pages in the guide.

3,728,927

NIBBLING PUNCH

George Pfleiderer, Rockford, and Eugene H. Paquet, Winnebago, both of Ill., assignors to W. A. Whitney Corp., Rockford, Ill.
Filed Oct. 12, 1970, Ser. No. 79,986
Int. Cl. B26f *1/14*
U.S. Cl. 83—621 1 Claim

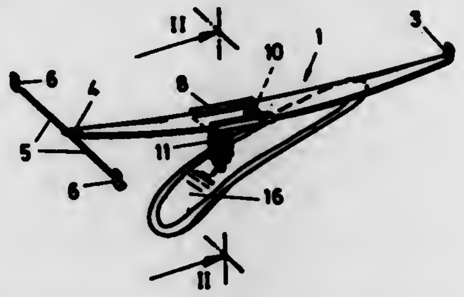
A nibbling punch including a body with a downwardly projecting heel around its lower end to embed in the upper portion of a workpiece to prevent lateral sliding of the punch as the latter is driven through the workpiece. In operations where the workpiece is manually indexed relative to the punch, a pilot punch is connected to the nibbling punch to act as a locater and to determine the extent of the next bite made by the nibbling punch.



3,728,928

SHOULDER PAD ARRANGEMENT FOR A VIOLIN OR VIOLA

Ursula Looser, nee Menge, 3274 Hermrigen, and Max Fluckiger, Holzgasse, 2575 Tauffelen, both of Switzerland
Filed Sept. 20, 1971, Ser. No. 181,731
Claims priority, application Switzerland, Sept. 25, 1970, 14228/70
Int. Cl. G10d *1/02*
U.S. Cl. 84—280 6 Claims

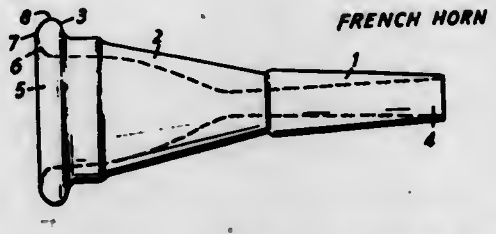


A carrier strap is resiliently clamped to the back of a violin or viola. A helical spring mounted on a slide movable along the strap is attached to a shoulder pad by an internally threaded connector disc on the spring and a threaded stud on the pad. The spring permits universal pivotal movement of the pad and biases the pad toward a normal angular position. The pad may be shifted longitudinally of the strap with the slide and threadedly toward and away from the strap, and may be fixed in the shifted position by a set screw on the slide and a lock nut on the stud.

3,728,929

MOUTHPIECES FOR MUSICAL INSTRUMENTS

Neill Joseph Sanders, 25 Dollis Avenue, London, England
Filed May 26, 1972, Ser. No. 257,097
Claims priority, application Great Britain, June 4, 1971, 19,003/71
Int. Cl. G10d *9/02*
U.S. Cl. 84—398 7 Claims



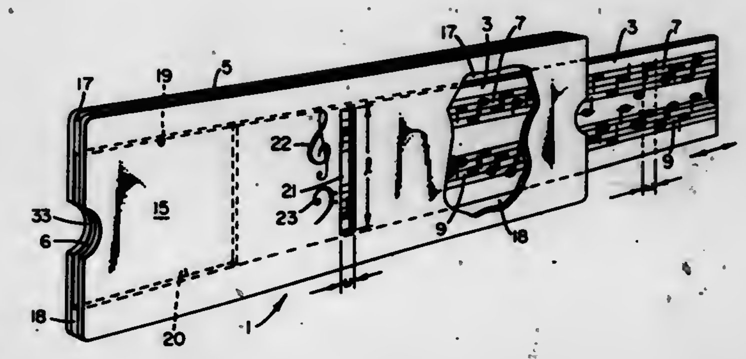
A mouthpiece, particularly for the orchestral brass instruments having an invert lay, whereby the ridge, or high spot, of the rim of the mouthpiece is sensed by the instrument player as being nearer the rim periphery than to the mouthpiece cup.

The contour of the mouthpiece, in axial cross-section, provides a radiused transition region from the mouthpiece rim to the outer periphery and a further radiused transition region from the mouthpiece rim to the inner cup. Therebetween is a flat region which is downwardly inclined in the inward direction, so providing the rim with a circular ridge which is nearer to the periphery than to the cup.

3,728,930

MUSIC TRAINING DEVICE

William Maren, 1235 Buchanan Drive, Santa Clara, Calif.
Filed July 26, 1971, Ser. No. 166,062
Int. Cl. G09b *15/00*
U.S. Cl. 84—471 4 Claims

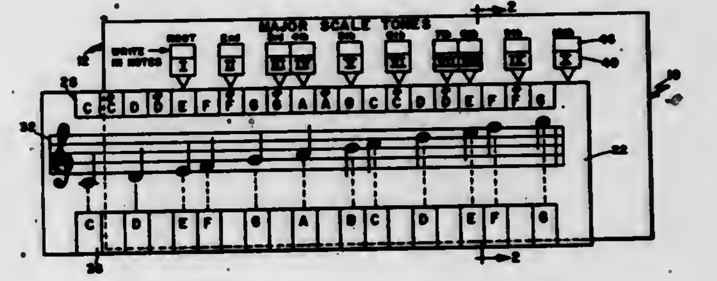


A music training device in the form of a slide member with a plurality of musical staves scored thereon in parallel relationship to one another; a means for forming a guide track in which the slide member may travel, the guide means further including at least one viewing window in the path of travel of the slide, whereby the staves on which notes are shown may pass said window responsive to movement of the slide.

3,728,931

SCALE INTERVALOMETER

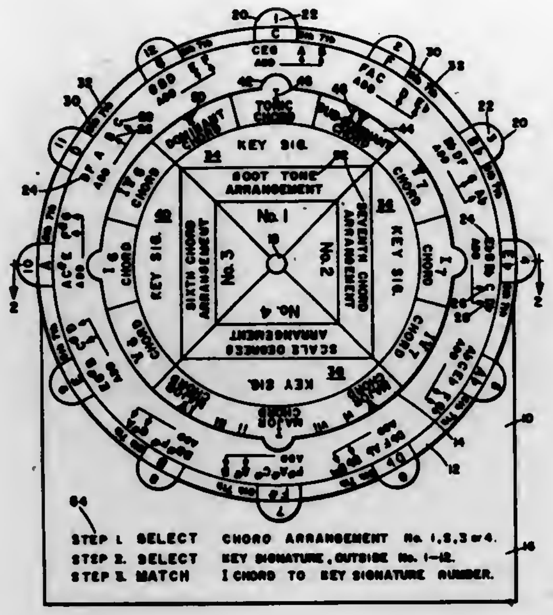
Verna M. Leonard, 6353 North Blackstone, Fresno, Calif.
Filed Aug. 13, 1971, Ser. No. 171,560
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 4 Claims



A device for use by students of music which can be constructed very economically from two sheets of paper or other sheet material to provide the student with quick and easy identification of a root tone and the remaining scale tones and their relationships, including chords and chord inversions, upon his merely adjusting a slider on a holder which may be placed on the keyboard if desired. The fact that for both major and minor scales the intervals are fixed by convention makes it possible to make the slider measure off the intervals against a fixed chromatic scale for the various keys in either mood. Ordinarily the device will have at least two sliders, one for major and one for minor, but the same sliders or other sliders, in a set thereof, are provided with indicators pointing out scale degrees with chords and chord inversions as well as the simple scale tones and their intervals.

3,728,932
QUICK FINDER FOR CHORDS

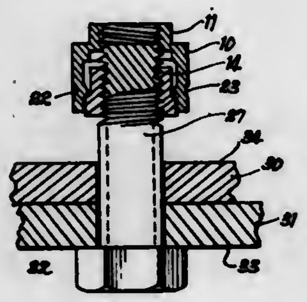
Verna M. Leonard, 6353 North Blackstone, Fresno, Calif.
Filed Aug. 13, 1971, Ser. No. 171,561
Int. Cl. G09b *15/02*
U.S. Cl. 84—473 **3 Claims**


KEY SIG.
TONIC CHORD
DOMINANT CHORD
STEP 1. SELECT CHORD ARRANGEMENT No. 1,2,3 or 4.
STEP 2. SELECT KEY SIGNATURE, OUTSIDE No. 1—12.
STEP 3. MATCH I CHORD TO KEY SIGNATURE NUMBER.

A device for quickly ascertaining various chords identified with any key signature in the cycle of fourths, the device having two rotatable dials so that the key signature and the chords to be read can be disposed at the top of the device where reading and interpretation is easiest without mental gymnastics required to transpose or invert mentally the chord information provided by the device. For further facilitating the use of the device the inner dial has not only one segment with three principal chords, tonic, dominant and sub-dominant for the selected key signature but three further segments naming the chords otherwise as sixth, and seventh chords and as related to a complete split scale degree arrangement.

3,728,933
MEANS AND METHOD FOR CONTROLLING TENSION IN A THREADED MEMBER

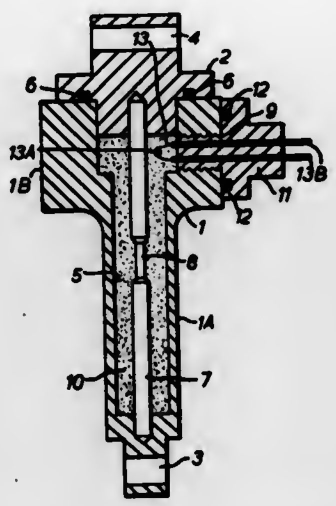
William L. Grube, Mundelein, Ill., assignor to Mac lean-Fogg Lock Nut Co., Mundelein, Ill.
Continuation of Ser. No. 791,366, Jan. 15, 1969, abandoned.
This application March 11, 1971, Ser. No. 123,395
Int. Cl. F16b *31/02, 39/02*
U.S. Cl. 85—61 **18 Claims**



The clamping load on a bolt or other threaded member is controlled by using a pair of nuts, one within the other, and both driven together simultaneously to contact one of the elements to be clamped, the outer one first taking the load and then fracturing along a pre-arranged circumferential line upon the imposition thereon of a predetermined axial load, the spring-back in the system then transferring the load from the fractured nut to the inner nut. The outer nut continues advancing against the inner nut as a jam nut.

3,728,934
CONNECTING DEVICES

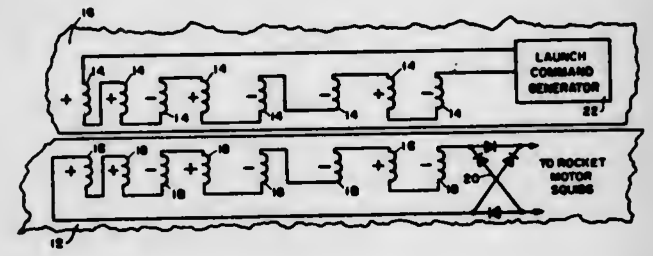
Malcolm George Palmer, Blakedown, near Kidderminster, England, assignor to Electric Reduction Company of Canada Ltd., Toronto, Islington, Ontario, Canada
Filed July 21, 1970, Ser. No. 56,887
Claims priority, application Great Britain, July 24, 1969, 37,245/69
Int. Cl. F42b *22/00*
U.S. Cl. 89—1 B **4 Claims**



Irreversibly severable mechanical and/or electrical linkage useful in submarine oceanographs comprises a connecting member in contact with a thermite mixture which may be ignited so as to destroy the connecting member. Advantageously the connecting member may be of aluminum and the thermite mixture may comprise silicon and red lead.

3,728,935
CODED INDUCTION ROCKET MOTOR IGNITION SYSTEM

William R. Magorian, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 5, 1972, Ser. No. 215,693
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.811 **5 Claims**



An inductor network, for firing missiles to be launched from an aircraft, which includes a series of small electromagnets that are wired in a particular coupling code to minimize accidental triggering of a missile, and are arranged along a weapon attachment pylon for cooperating with a similar set of electromagnets built into a missile.

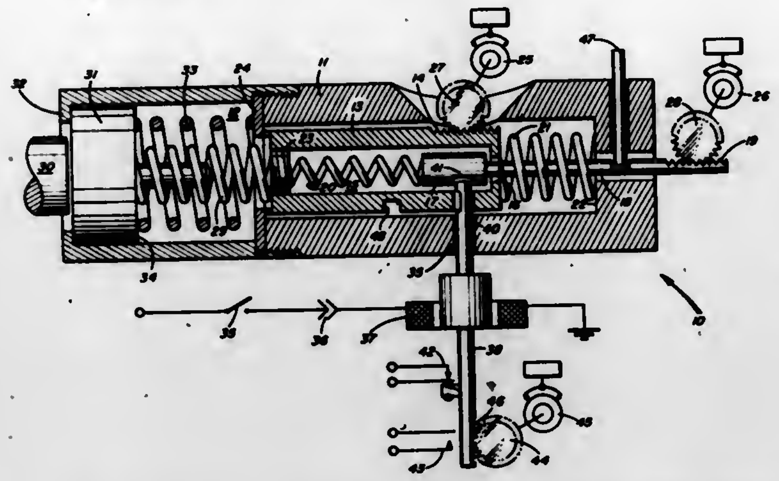
3,728,936
ARMING AND SAFING DEVICE

Bob Norris, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 3, 1964, Ser. No. 415,826
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.812 **7 Claims**

1. In a self-propelled fuel burning type missile of a character containing a nuclear warhead and adapted to be launched

from a high speed aircraft, an arming and safing device for the warhead comprising,

means responsive to gas pressure forces generated by fuel burned during missile propulsion and applied in a manner for driving timer mechanisms and closing respective contacts thereon which are incorporated in the warhead arming circuit,



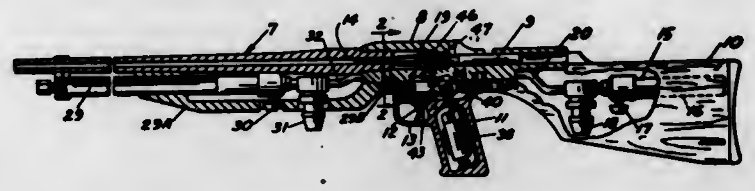
first and second releasable locking means for said timer mechanisms driving means,

electrically actuated means responsive to an intent-to-launch signal generated from within the launching aircraft for unlocking said first locking means,

and means responsive to forces and/or influences occasioned by the separation of the missile from the launching aircraft for unlocking said second locking means.

3,728,937
GAS FIRED CASELESS AMMUNITION RIFLE

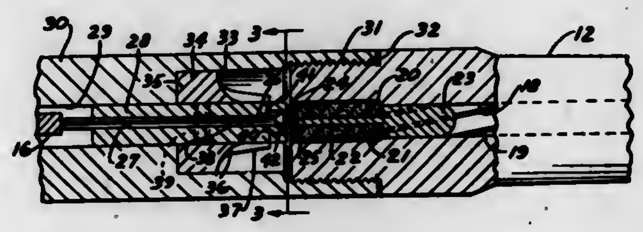
Bruce C. Nelson, 6304 Martin, Detroit, Mich., and Alphonse G. Scibor, 6540 Longacre, Detroit, Mich.
Filed April 30, 1971, Ser. No. 138,925
Int. Cl. F41f *1/04, 11/00*
U.S. Cl. 89—7 **1 Claim**



A caseless ammunition, bolt action, rifle charged with gas and fired electrically. The firing chamber is sealed with a truncated cone insert, having thin walls which are contracted around the bolt by gas pressure, to seal against back pressure leakage.

3,728,938
BREECH SEAL FOR CASELESS AMMUNITION FIREARM

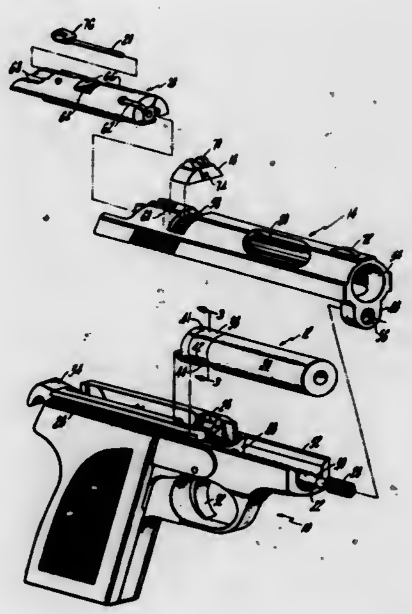
Alphonse G. Scibor, 6540 Longacre, Detroit, Mich., and Bruce C. Nelson, 6304 Martin, Detroit, Mich.
Filed April 16, 1971, Ser. No. 134,592
Int. Cl. F41c *11/00*
U.S. Cl. 89—26 **3 Claims**



A truncated cone insert, positioned in a chamber in the breech block, and having a central bore for receiving the bolt, the reduced end of the cone being adjacent to the ammunition charge, and arranged to be radially compressed by the gas pressure, when fired, to seal the breech.

3,728,939
APPARATUS FOR JOINING THE SLIDE-BOLT AND THE BARREL-FRAME OF A FIREARM

Gary Wilhelm, Hamden, Conn., assignor to Plainfield Ordinance Corporation, Middlesex, N.J.
Filed Sept. 24, 1971, Ser. No. 183,601
Int. Cl. F41c *11/00, 21/00*
U.S. Cl. 89—196 **13 Claims**

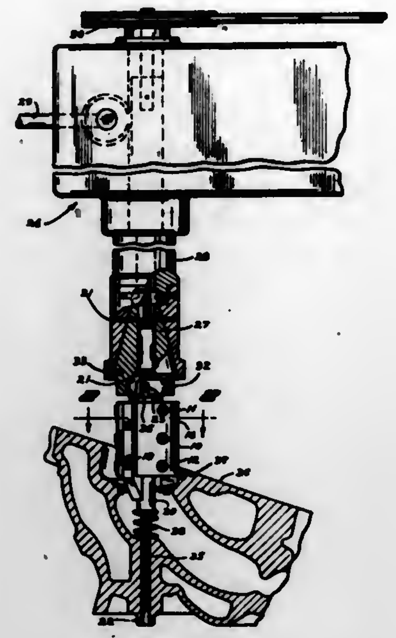


A first member of at least partly tubular configuration is keyed to a solid member disposed within the tubular member by means of a lock piece. In a firearm, the tubular member, which is provided with a cut out extending generally transverse to the path of motion of the slide, will comprise the slide and the solid member, which is provided with a recess for receiving the lock piece, will comprise the bolt. The lock piece will have a size and shape at least commensurate with the combined dimensions of the slide cut out and bolt recess, which will be aligned, and will be retained in position by an axial pin having a bent over and forwardly extending spring loaded locking tab which engages the exterior of the slide. In the environment of a firearm the invention further comprises the frame having a precision barrel bedding recess and a barrel characterized by two diameters with a portion of the smaller diameter barrel section defining the barrel bedding; the remainder of the smaller diameter barrel section being circumscribed by a collar.

3,728,940
APPARATUS FOR CUTTING VALVE SEATS IN ENGINE CASTINGS

Bertil G. Peterson, Bloomington, Minn., assignor to Tobin-Arp Manufacturing Company, Minneapolis, Minn.
Filed Feb. 1, 1971, Ser. No. 111,354
Int. Cl. B23c *3/00;* **B23d** *77/14*
U.S. Cl. 90—12.5 **1 Claim**

A valve seat is cut in a cylinder head or other engine casting in concentric relation to a valve stem opening therein. A boring head, driven from outside the cylinder head, rotates on a cylindrical arbor concentrically mounted in the valve stem opening. Three tool bits are precisely positioned on the boring



head so as to make a three face cut having the exact profile desired with reference to the axis of the valve stem.

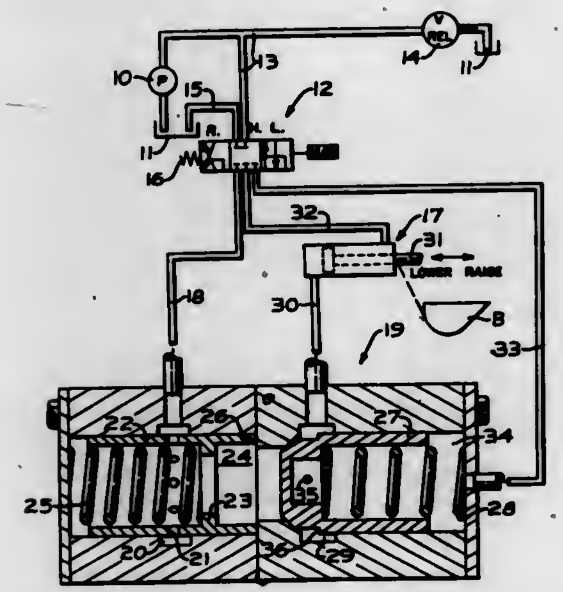
3,728,941
FLOW CONTROL VALVE

John R. Cryder, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 768,733, Oct. 18, 1968, abandoned. This application Nov. 23, 1970, Ser. No. 92,192

Int. Cl. F15b *11/08, 13/04*

U.S. Cl. 91—447 **7 Claims**



A fluid circuit includes a flow control valve comprising surge damping and counterbalance pressure control valves for controlling the actuation of a cylinder having the rod thereof operatively connected to an implement, such as a loader bucket lift arm. The counterbalance pressure control valve maintains a sufficiently high back pressure in the cylinder during the "hold" phase of loader operation to prevent the loader bucket from creeping downwardly. The surge damping valve co-operates with the latter valve to freely communicate pressurized fluid to the cylinder during the "raise" phase of loader operation and to automatically regulate return flow during the "lower" phase in direct proportion to the magnitude of load imposed on the cylinder rod by the loader bucket.

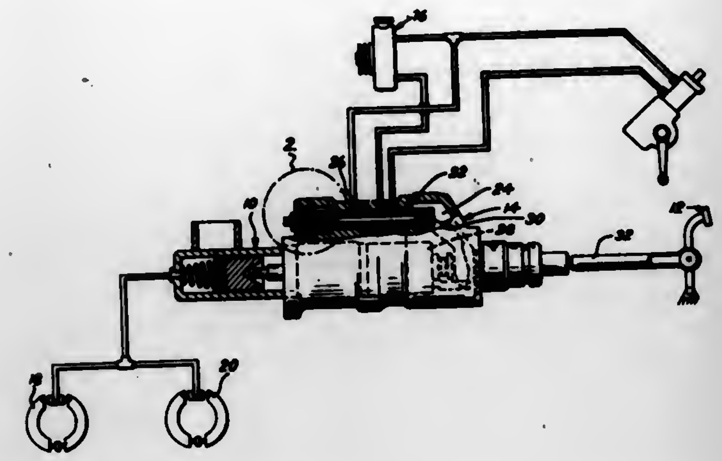
3,728,942
HYDRAULIC BRAKE BOOSTER PRESSURE LIMITING DEVICE

Arthur K. Brown, Jr., South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Jan. 22, 1971, Ser. No. 108,828

Int. Cl. F15b *13/10, 11/08, 13/04*

U.S. Cl. 91—469 **1 Claim**



A hydraulic brake booster pressure limiting device for use in a vehicle braking system to prevent booster pressures from becoming great enough to burst brake hoses. When the booster spool valve returns to a normal operating position thus safely restricting the pressure admitted to the boost chamber from the hydraulic pump, operation of the pressure limiting device is suspended so that the booster may modulate to assist the vehicle operator with the brake application.

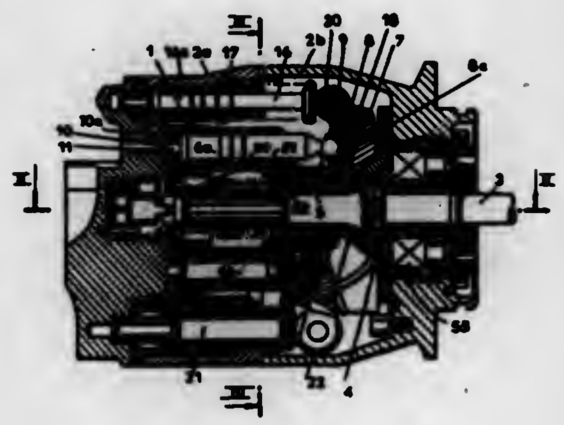
3,728,943
HYDRAULIC PUMPS OR MOTORS OF THE ROTATING — BARREL TYPE

Rene Lucien, Haute de Seine, France, assignor to Messier, Paris, France

Continuation-in-part of Ser. No. 780,699, Dec. 3, 1968, Pat. No. 3,631,764. This application June 9, 1971, Ser. No. 151,436

Int. Cl. F01b *13/04*

U.S. Cl. 91—506 **12 Claims**



A hydraulic pump or motor comprises a rotary barrel carrying reciprocating pistons attached to an adjustable inclined actuating plate. The actuating plate is supported in cradles and is subjected to side thrust from shearing forces applied by the pistons to the plate. At least one side bearing is attached to the actuating plate for contact with an adjacent cradle under the action of the side thrust.

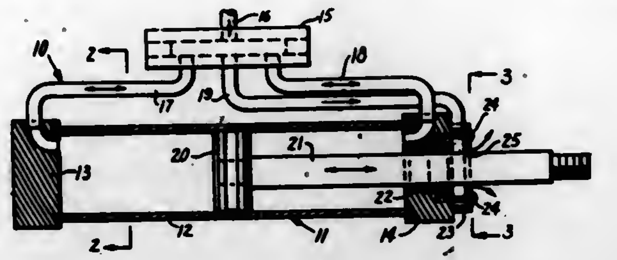
3,728,944
PISTON ROD AIR CLEANING DEVICE

Robert S. Marrara, Box 172, Arthurdale, W. Va.

Filed Jan. 15, 1971, Ser. No. 106,860

Int. Cl. F01b *31/00*

U.S. Cl. 92—87 **6 Claims**



A piston rod air cleaning device in which the exhaust air of a pneumatic motor is fed to a chamber surrounding a piston rod at the end of the cylinder throughwhich the piston rod reciprocates. The air flows axially of the piston rod away from the cylinder to carry all dirt and foreign material away from the cylinder. In hydraulic actuated cylinders a similar chamber is provided and fed with air from a separate air supply.

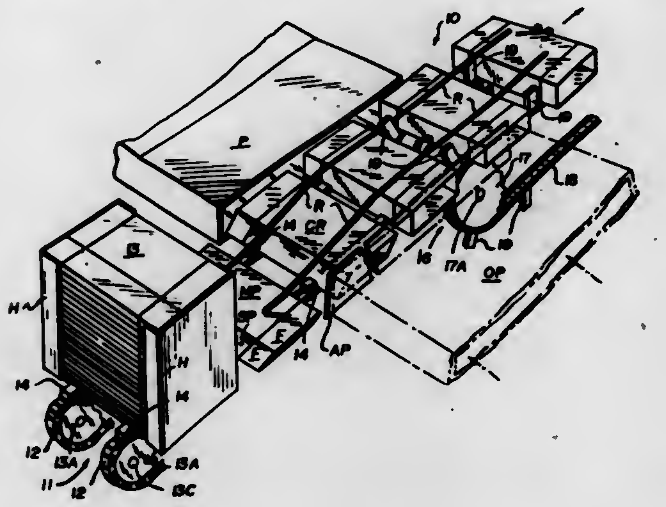
3,728,945
APPARATUS FOR ERECTING CARTONS

Ralph O. Vuilleumier, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Dec. 13, 1971, Ser. No. 207,071

Int. Cl. B31b *1/80*

U.S. Cl. 93—53 R **12 Claims**



Apparatus for erecting cartons from a flattened condition thereof including a conveyer for moving flattened cartons at regular intervals; structure for directing a blast of air at a pressure greater than ambient against an end of the carton to partially erect the same while being conveyed; structure opposing the air blast; structure in spaced relationship to the conveyor and in increasing spaced relationship thereto to accommodate the erecting movement and to prevent dislodgement of the partly erected blank by the air blast; and structure for trapping and removing the erected carton.

3,728,946
SWITCHING APPARATUS FOR EXPOSURE CONTROL DEVICES

Yoshio Kuramoto; Kayoshi Tsujimoto; Kotaro Yata, and Masayoshi Sahara, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

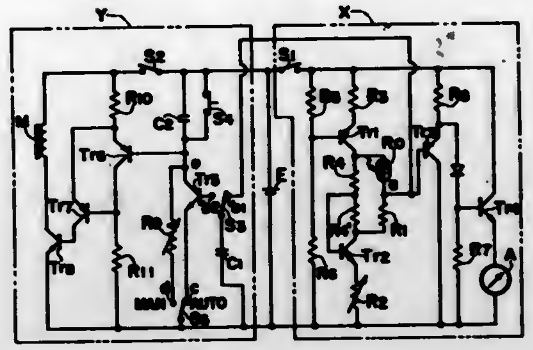
Filed July 6, 1971, Ser. No. 159,886

Claims priority, application Japan, July 7, 1970, 45/58754

Int. Cl. G03b *7/08, 17/18*

U.S. Cl. 95—10 CT **8 Claims**

Switching mechanism in an exposure control device for a photoconductive camera reduces unnecessary battery consumption by disconnecting the power source from a light measuring circuit and a mechanism for actuating shutter closing during those times when either the output of the light measuring circuit and/or the actuation of the shutter are not required. Manually operative individual switches respectively interconnect the light measuring circuit and the shutter actuation mechanism with the power source. A button switch movable between first and second positions engages with a locking member to prevent actuation of the shutter release button to



prevent interconnection of the shutter actuating mechanism with the power source when an exposure time setting member is set to an automatic exposure position and the button switch is in the first position for opening the switch interconnecting the light measuring circuit with the battery source. Rotation of the exposure time setting member to any one of a number of positions rotates the locking member enabling the release button to be depressed and the interconnection of the shutter actuating mechanism with the battery source.

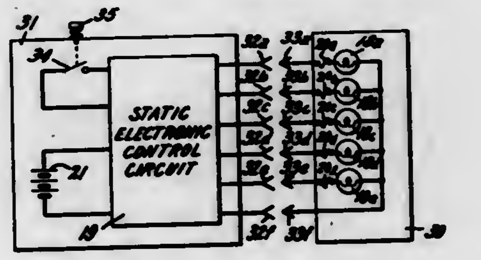
3,728,947
STATIC ELECTRONIC PHOTOFLASH ASSEMBLY AND METHOD OF PHOTOFLASH LIGHTING

John D. Harnden, Jr., and William P. Kronrumpf, both of Schenectady, N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Dec. 16, 1968, Ser. No. 784,093

Int. Cl. G03b *15/03*

U.S. Cl. 95—11.5 R **22 Claims**



A static electronic photoflash assembly and method of photoflash lighting is provided for reliably and selectively sequentially flashing at least one of an array of N flashbulbs with a start-flash electrical signal developed by a camera shutter actuated switch or other similar electrical signal producing device. The static electronic photoflash assembly is coupled to and controlled by the start-flash electric signal and is electrically coupled to and controls the array of N flashbulbs for selectively sequentially flashing at least one of the N bulbs. For this purpose, the static electronic control circuit includes enabling logic circuitry for identifying and establishing through the use of solid state semiconductor devices enabling electric circuit connections to at least one unflashed bulb in an array of N bulbs in advance of the bulb being flashed. For this purpose the logic circuit may comprise either a permanent memory type of logic circuit for remembering which of the N flashbulbs are unflashed, and for establishing enabling electric circuit connections to at least one unflashed bulb. Alternatively, the enabling logic circuit may comprise an arrangement for identifying and establishing the enabling circuit connections to an unflashed bulb at the instant that the start-flash electrical signal occurs. Preferably, the electronic control circuit further includes monitoring logic circuitry for sensing that a light flash has indeed occurred, and establishing enabling electric circuit connections to additional unflashed bulbs in the event that no light-flash has been produced for reliably selectively flashing at least one of the unflashed bulbs, preferably sequentially. The start-flash electrical signal generally is produced by a camera shutter actuated switch which maintains the static electronic control circuit energized throughout the camera shutter-open period, and the circuit is designed in a manner such that the time required for the static electronic control circuit to sense, enable, and flash all N flashbulbs in an array is less than the normal open period of the camera shutter. The photoflash assembly may comprise a separate attachment to a camera that includes permanently wired sockets that are selectively energized by a static electronic control circuit that is part of the attachment with the photoflash bulbs seated in the sockets being replaceable after flashing. Alternatively, the photoflash assembly may comprise a discardable throw-away type of an attachment to a suitably designed camera that includes the static electronic control circuit. In either form of the invention, the static electronic control circuit preferably is fabricated by integrated circuit techniques. The static electronic control circuit also preferably includes static electronic switching devices connected in series circuit relationship with the individual flashbulbs in the array, and the switching devices employed may comprise silicon controlled rectifiers, complementary SCRs, triacs, silicon controlled switches, silicon bilateral switches, silicon unilateral switches, gate turn-off silicon controlled rectifiers, field effect transistors, unijunction transistors, programmable unijunction transistors, equivalent discrete transistor configurations, and the like.

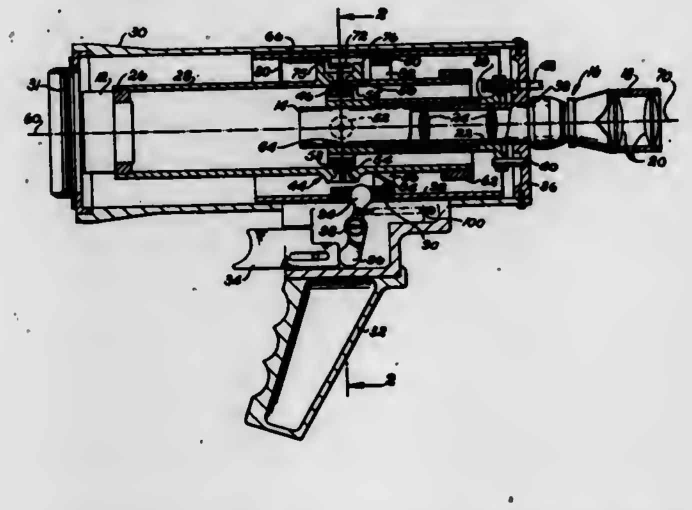
3,728,948
IMAGE MOTION COMPENSATION MECHANISM

David B. Fraser, Maple Glen, Pa., assignor to Dynasciences Corporation, Los Angeles, Calif.

Filed Dec. 28, 1970, Ser. No. 101,951

Int. Cl. G03b

U.S. Cl. 95—12.5 **11 Claims**



An image motion compensation mechanism for an optical system in which random angular motion of the viewing device is compensated by a pivotal system in which the objective lens is mounted on an inertial balance member so as to pivot relative to a predetermined plane in the optical path in order to maintain the optical axis of the objective parallel to the desired line of sight. If the system is a telescope or other such viewing device, the pivot plane is defined at a distance from the objective related to the magnification of the system. If the system is a camera, the plane is coincident with the film plane.

3,728,949
GEAR DRIVE FOR A CAMERA AND FILM CARTRIDGE

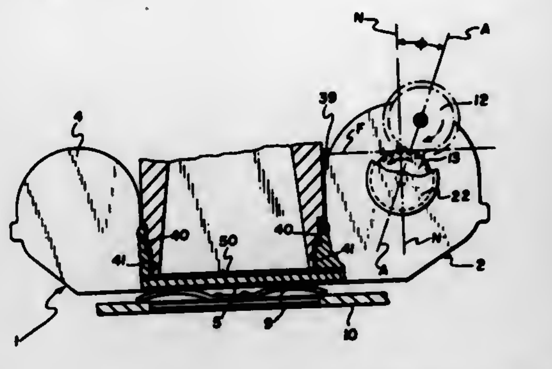
Evan A. Edwards, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 25,957, April 6, 1970, abandoned.

This application July 13, 1971, Ser. No. 162,283

Int. Cl. G03b *19/04*

U.S. Cl. 95—31 R **10 Claims**



A film cartridge includes supply and take-up chambers, a wall interconnecting the chambers to support film therebetween in a plane, and a gear rotatable about an axis for transporting the film across the film plane from the supply chamber to the take-up chamber. A camera for receiving the cartridge includes a cartridge supporting surface and a drive gear engageable with the gear of a received cartridge to define a pressure angle therebetween. The gear axes define a plane which is offset from a normal to the film plane by an angle equal to the pressure angle of the gears, thereby creating a line of force parallel to the film plane so that any tendency of the cartridge to be unseated from the supporting surface in response to the creation of a force component normal to the film plane is negated.

3,728,950
SHUTTER AND FILM CONTROLS FOR CAMERAS

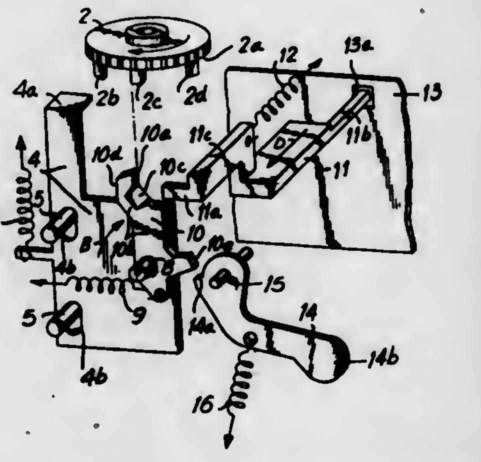
Karl-Heinz Lange, 4980 Bunde 18, Germany, assignor to Balda Werke, Balda Werke, Germany

Filed Aug. 9, 1971, Ser. No. 169,953

Claims priority, application Germany, Jan. 21, 1971, P 21 02 773.6

Int. Cl. G03b *1/04, 1/62, 9/68*

U.S. Cl. 95—31 FM **5 Claims**



A camera having a structure for controlling the tripping of the shutter and the movement of the film. A film-engaging structure has a position for holding the film against movement as well as a retracted position displaced from the film. A shutter-tripping structure when moving from a cocked to a rest position engages the film-engaging structure to retract the latter away from the film, the shutter-tripping structure also tripping the camera shutter when released by manual operation from its cocked position for movement to its rest position. The shutter-tripping structure is displaced from its rest to its cocked position in connection with the transportation of the film, and this movement of the shutter-tripping structure releases the film-engaging structure for movement to its film holding position.

3,728,951
DEVICE FOR ILLUMINATING INDICIA IN THE VIEWFINDER OF A CAMERA

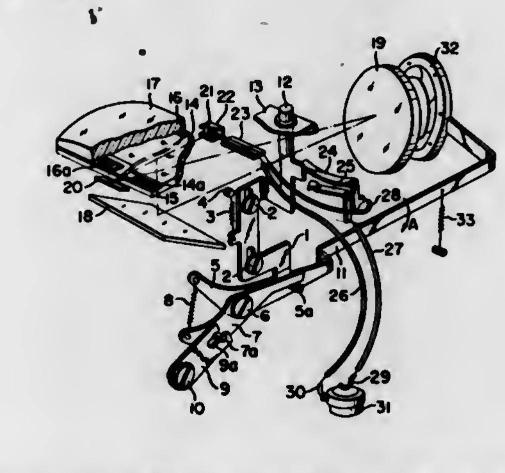
Hidenobu Kondo, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed March 23, 1971, Ser. No. 127,290

Claims priority, application Japan, April 7, 1970, 45/32838

Int. Cl. G03b *19/12*

U.S. Cl. 95—42 **4 Claims**



In a single lens reflex camera having a pre-set diaphragm, means is provided for illuminating the indicia found on the viewfinder. The illuminating means includes a light source, and a set of switches associated with a manually operable member so as to activate and deactivate the light source in response to the operation of the operable member.

3,728,952
DEVICE FOR CONTROLLING SHUTTER RELEASE OPERATION IN PHOTOGRAPHIC CAMERAS

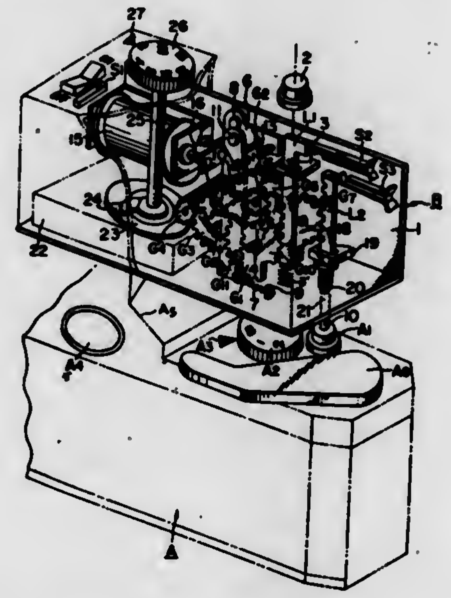
Takehiko Kiyohara, Kaza-gun, Zama-machi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,346

Claims priority, application Japan, Dec. 28, 1970, 45/128421

Int. Cl. G03b *9/58*

U.S. Cl. 95—53 EB **5 Claims**



A device for controlling shutter release operation in photographic cameras comprises a connecting member connected to a camera's shutter release member to effect shutter release operation. The connecting member and an operable starting member are connected together by an intermediate connecting member capable of releasably establishing a mechanical connection by means of an electromagnetic member. The intermediate connecting member is engaged and disengaged under control of time limit means adapted to carry out a predetermined time limit action.

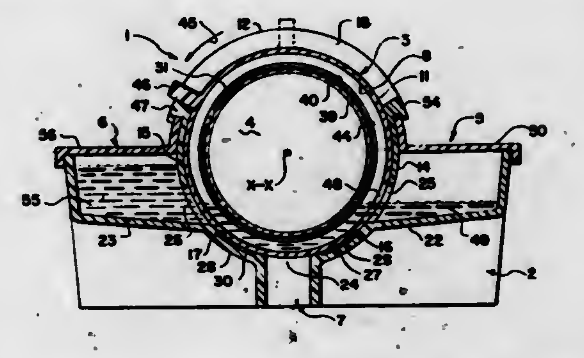
3,728,953
DEVICE FOR PROCESSING PHOTOGRAPHIC MATERIAL

John Edwin Morse, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,630

Int. Cl. G03d *3/08*

U.S. Cl. 95—93 **5 Claims**



A device for processing photographic material wherein a processing chamber, including a peripheral wall and a solution ingress and egress opening in the wall, is supported for movement between processing solution receiving and draining positions. In such receiving position, the chamber is disposed so that the opening aligns with a processing solution applicator for introducing processing solution into the chamber and the wall closes off a processing solution drain. Moveover, in such draining position, the chamber is disposed so that the opening aligns with the drain to remove processing solution from the chamber and the wall closes off the applicator. The chamber is adapted to receive a support on which photographic material is secured; whereupon, processing solution in the chamber is applied to such material. Upon movement of the support within the chamber, the processing solution is agitated to facilitate processing of the photographic material.

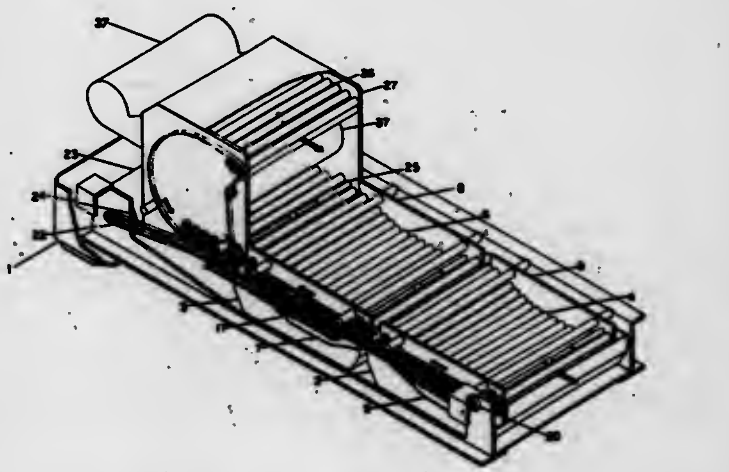
3,728,954
PHOTOGRAPHIC PROCESSING APPARATUS

Thorald E. Montague Everett, White Plains, and Joseph Charipar, Stonybrook, both of N.Y., assignors to A & M Research, Inc., White Plains, N.Y.

Filed June 3, 1971, Ser. No. 149,530

Int. Cl. G03d *3/12*

U.S. Cl. 95—94 R **2 Claims**



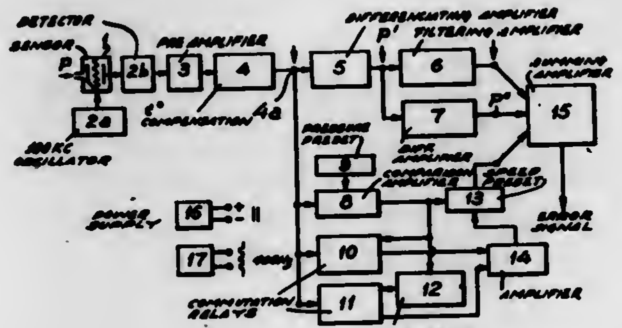
A photographic processing apparatus is provided which comprises a transport system for conveying photographic material successively through a developing zone, a fixing zone, a washing zone and a drying zone with no deleterious contact to the materials being transported or conveyed. The transporting system comprises a series of oppositely offset rollers which are designed to achieve the desired conveyance with minimum change of direction. The novel washing zone comprises a plurality of angled opposed water jets which are preceded and followed by opposed drying rollers. For ease and convenience of operation, the device is designed so that the developed dried film is delivered toward the feeding station at the front thereof.

3,728,955
METHOD AND DEVICES FOR REGULATING THE PRESSURE AND ITS RATE OF VARIATION IN A CHAMBER

Pierre Ricaud, Toulouse, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris and Semca Societe Anonyme des ateliers Semca, Toulouse (Haute Garonne), both of France

Filed Feb. 2, 1971, Ser. No. 111,925
Int. Cl. B64d *13/04*

U.S. Cl. 98—1.5 **14 Claims**



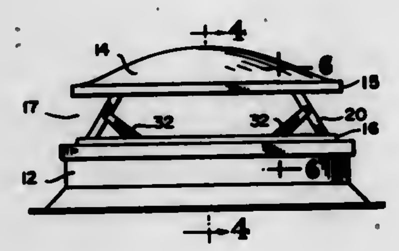
A method and devices for regulating the pressure of a compressible fluid in a chamber located in an atmosphere in which the pressure is variable, wherein a single pressure sensor inside the chamber is associated with electronic differential calculus means for generating an error signal and, thereafter, after summing said error signal with a repeater signal of the position of a valve for discharging said compressible fluid from said chamber, which chamber is continuously supplied with fluid by conventional means, a signal for actuating said valve.

3,728,956
SMOKE AND HEAT RELIEF VENT

Thomas R. Field, Indianapolis, Ind., assignor to Jean-Air Corporation, Indianapolis, Ind.

Filed May 24, 1971, Ser. No. 146,210
Int. Cl. F23l *17/02*

U.S. Cl. 98—86 **5 Claims**



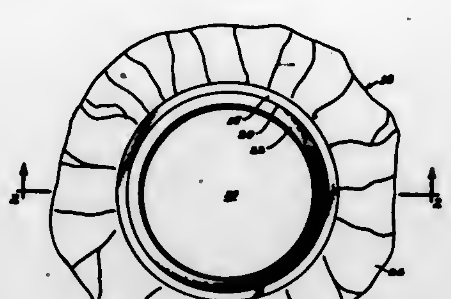
A smoke and heat relief vent for use on building roofs and arranged for automatic or manual opening to release smoke and/or heat resulting from fire inside a building. Manual release is operable for causing opening of the vent at any time.

3,728,957
BAKING SHIELD

Louise Polus, 109 Slack Drive, Anderson, Ind.

Filed Dec. 2, 1971, Ser. No. 204,127
Int. Cl. A47j *37/01*

U.S. Cl. 99—433 **9 Claims**



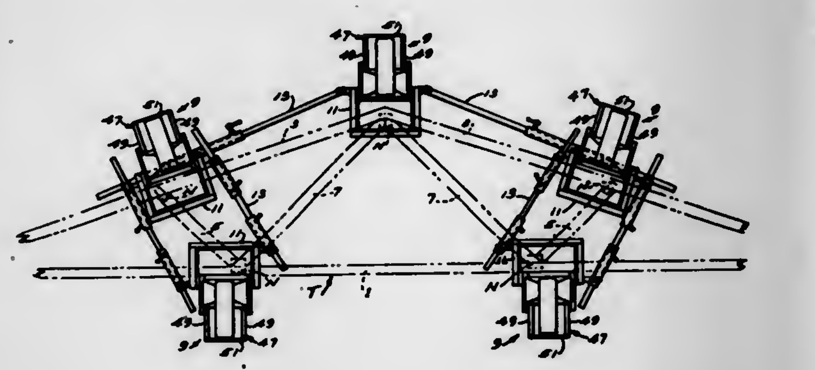
A baking shield for a pie pan, the shield in use extending peripherally around the pie pan and having an outer member of foil or foil-like flexible sheeting which is folded around the outer edge of the pie pan, thus blocking heat to the pie crust periphery and thus permitting a more desirable thoroughness of the pie baking process without burning or charring the outer edge or periphery of the pie crust.

3,728,958
APPARATUS FOR FABRICATING WOOD STRUCTURES

Walter G. Moehlenpah, and David N. Husman, both of St. Louis, Mo., assignors to Hydro-Air Engineering, Inc., St. Louis, Mo.

Filed Jan. 8, 1968, Ser. No. 696,323
Int. Cl. B30b *15/00*

U.S. Cl. 100—100 **36 Claims**



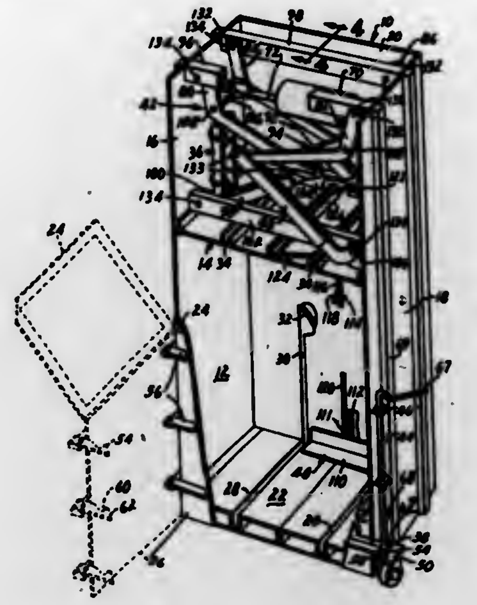
Hydraulic presses are disclosed which have relatively movable opposed platens for driving nailing plates into opposite sides of abutting wood members to form joints for wood roof trusses and the like. The presses are mounted on carriages supported for movement in substantially horizontal planes on stands or pedestals. During this inward and outward horizontal movement of the press between retracted and forward or operative positions, the presses are held against movement relative to the carriages, but in the forward or operative positions, when the platens are moved vertically toward and away from the opposite sides of the wood members, the presses are floatingly or resiliently supported on the carriages so as to avoid any substantial net upward or downward force being applied to the wood members during pressing of the plates into the wood. In one embodiment this is accomplished by employing a spring arrangement supporting the press, while in another embodiment a pneumatic system is employed for this purpose. Also described are such presses supported on pedestals which are made easily movable by an air lift system to different positions on a locating grid.

3,728,959
BALER

Wallace F. Fredrickson, 5224 Penn. Avenue N., Minneapolis, Minn.

Filed Oct. 27, 1970, Ser. No. 84,371
Int. Cl. B30b *15/32*

U.S. Cl. 100—218 **18 Claims**



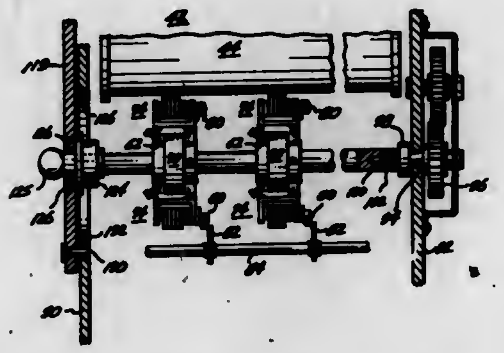
A baler having an improved hydraulically driven toggle mechanism for operating a baler pressing platen, improved bale ejector, and improved baler door latch. The toggle mechanism includes opposed pairs of first and second arms, each first arm of which is a generally C-shaped bell crank arm. The first arms are connected to provide a pressing mechanism which is compact but nonetheless has a long pressing stroke to facilitate production of a large bale in only a few pressing strokes. The bale ejector comprises a lifting plate having a hook which when engaged by a finger secured to the platen lifts the underside of a bale from the rear of the box as the platen is raised to cant the bale onto its forward edge permitting its easy removal from the baler. The lifting plate hook travels in a slot in the baler rear wall and is disengaged from the platen finger by a stop across the slot to drop the lifting plate to the bottom of the box in position for commencement of pressing of a new bale. And, the door latch comprises a rotatable pin and pivotal catch having arced and arcuate surfaces respectively which roll against each other during opening of the door latch to provide an easy opening door latch even when under heavy pressure from a compressed bale.

3,728,960
ROTARY NUMBER PRINTER WITH END-WISE WITHDRAWAL FOR ACCESSIBILITY

Howard W. Heath, Seattle, Wash., assignor to Heath Printers Inc., Seattle, Wash.

Filed May 19, 1972, Ser. No. 255,228
Int. Cl. B41k *3/14*

U.S. Cl. 101—76 **7 Claims**



Number-printing apparatus arranged in tandem to off-set lithographic printing apparatus is disclosed. The number-printing apparatus is capable of end-wise withdrawal from the printing zone, practically inaccessible to the press operator, for the convenient, rapid resetting of the numbering mechanism. The number-printing apparatus may be singly employed or such may be employed in a paired set so that, when one such apparatus is in the printing zone and operating to print numbers the other is disposed outside of the machine and readily available for re-setting by the press operator.

3,728,961
ARRANGEMENT FOR ELECTROMAGNETICALLY SETTING DRUM SERIES PRINT WHEELS

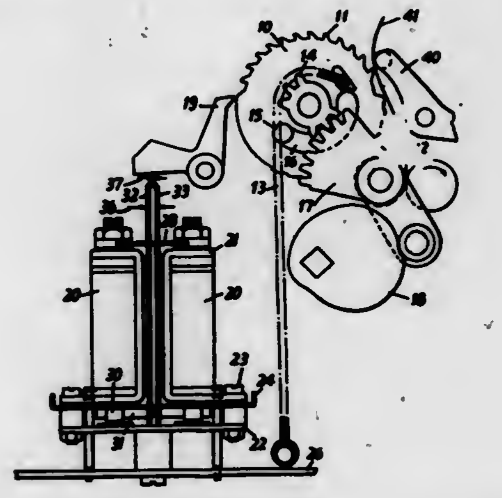
Henry Gross, and Samuel Gross, both of London, England, assignors to Gross Cash Registers Limited, London, England

Filed July 8, 1971, Ser. No. 160,714

Claims priority, application Great Britain, July 18, 1970, 34,929/70

Int. Cl. B41j *45/00, 1/60*

U.S. Cl. 101—99 **6 Claims**



A printing device, e.g., for a calculator having a row of print wheels located in relative positions by a series of pawls which in turn are actuated by electromagnetic coils through stems which are shaped to such angles at their pawl engaging ends that the coils can occupy a wider space than the wheels and pawls.

3,728,962
MARKING APPARATUS FOR MULTI-LANE WEB MATERIAL

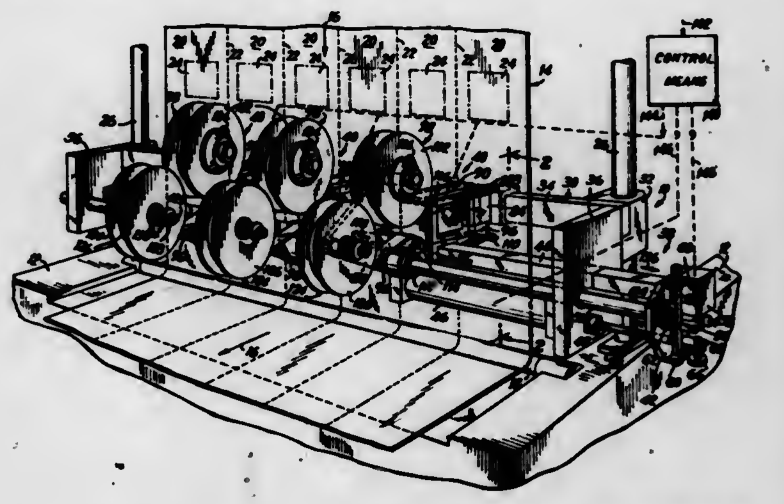
John E. Sherrington, Maidenhead, England, assignor to Adolph Gottscho, Inc., Union, N.J.

Filed Dec. 28, 1970, Ser. No. 101,932

Claims priority, application Great Britain, June 1, 1970, 26,327/70

Int. Cl. B41f *1/08;* **B44b** *5/00*

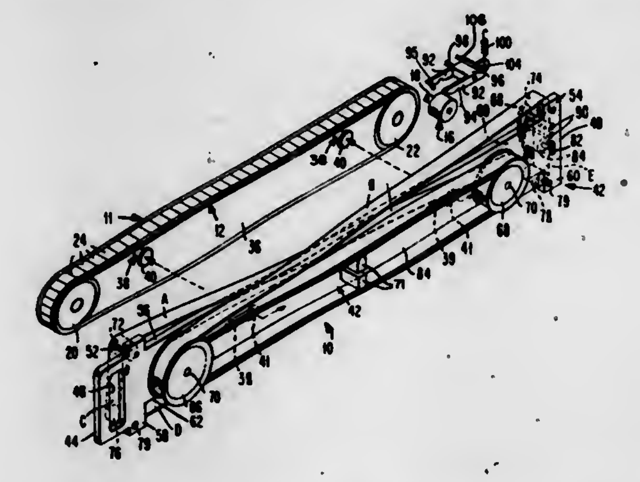
U.S. Cl. 101—288 **12 Claims**



A device for imprinting on multi-lane web material which is intermittently advanced therepassed including a carriage mounted for lateral displacement relative to the web on a frame fixed relative to said web. One or more printing apparatus are mounted on the carriage for imprinting when the web movement is interrupted, said carriage being displaced between at least two positions, each printing means being in registration with one of said lanes at each position.

3,728,963
RIBBON FEED CARTRIDGE

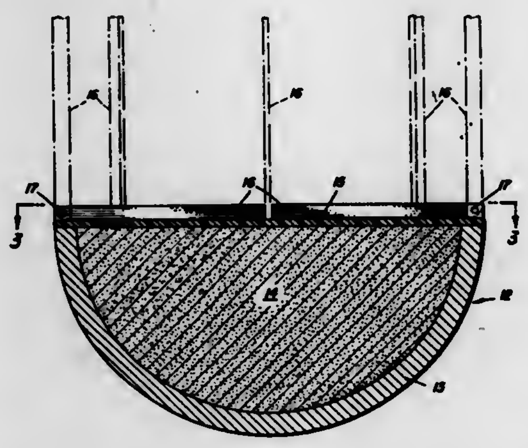
Albert A. Dowd, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 7, 1970, Ser. No. 62,119
Int. Cl. B41l *27/18*
U.S. Cl. 101—336 **8 Claims**



A ribbon feed cartridge for use with a chain printer consists of a rectangular plate carrying on one side spaced spools for storage of an inking ribbon while supporting, at the four corners on the opposite side of the plate, guide rolls defining a rectangular ribbon loop with the ribbon crossing over from side to side above one longitudinal edge of the plate. Pin and slot locking means allow the plate to be locked in place in parallel with the chain printer with a longitudinal run of the inking ribbon lying beneath the moving chain type carrier. Coupling of the ribbon feed cartridge plate to the chain printer support plate forces one end of the ribbon loop into contact with a capstan for driving the same.

3,728,964
AIMED WARHEAD

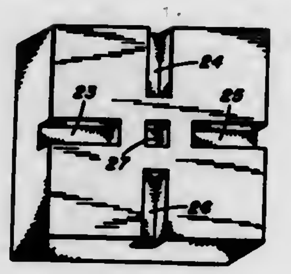
David D. Abernathy, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed Sept. 15, 1966, Ser. No. 580,564
Int. Cl. F42b *25/16*
U.S. Cl. 102—2 **4 Claims**



This invention provides a warhead device comprising a hemispherical shell filled with explosive and closed with a plastic back plate. A plurality of fins are pivoted on the periphery of the shell and normally are folded radially inward against the back plate. When the device is air dropped, it will fall in a nose forward attitude and the inertia of the fins will cause them to pop up parallel to the axis of the shell to provide flight stability. Because of the hemispherical shape, nearly all the fragmentation will be directed toward the target.

3,728,965
EXPLOSIVE CIRCUITS

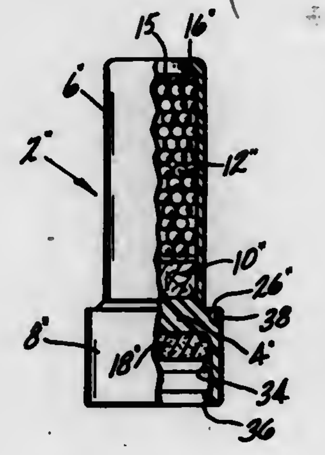
Denis Silvia, King George, Va., assignor to The United States of America as represented by The Secretary of the Navy
Filed June 30, 1965, Ser. No. 468,676
Int. Cl. F42c *19/08*
U.S. Cl. 102—22 **5 Claims**



1. An explosive logic device comprising a supporting plate of inert material having formed therein at least one explosive filled groove-like trail interrupted along its length in a plurality of points by strips of inert material disposed at right angles thereto, said trail with said strips forming a pair of legs and a crossover means, said plate having also formed therein an explosive filled groove means terminating at said crossover means with a strip of inert material disposed at right angles to the length of said groove means and at right angles to one of said first-mentioned strips, each of said strips being of a sufficient breadth such that a plane wave caused by initiation of the explosive in one of said legs will be transmitted through its associated strip to the explosive in said crossover which in turn will detonate the explosive in the other of said legs if the explosive in said groove means has not previously been ignited causing a shock wave to be transmitted to said crossover means.

3,728,966
CARTRIDGE

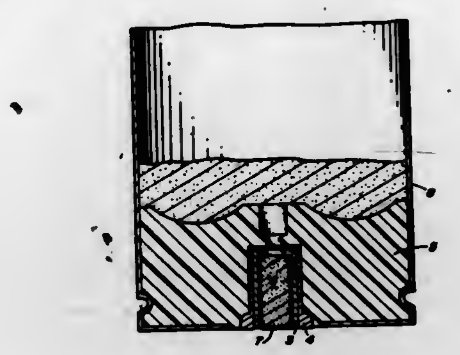
William B. Woodring, Stoney Creek, Conn., assignor to Olin Mathieson Chemical Corporation, New Haven, Conn.
Filed May 7, 1968, Ser. No. 727,164
Int. Cl. F42b *7/06*
U.S. Cl. 102—42 C **15 Claims**



A cased cartridge for firearms in which the cartridge casing is expelled through the muzzle along with the projectile or projectiles to provide the advantages of caseless ammunition in a cased round.

3,728,967
TRI-PRI THREE CONTACT PRIMER

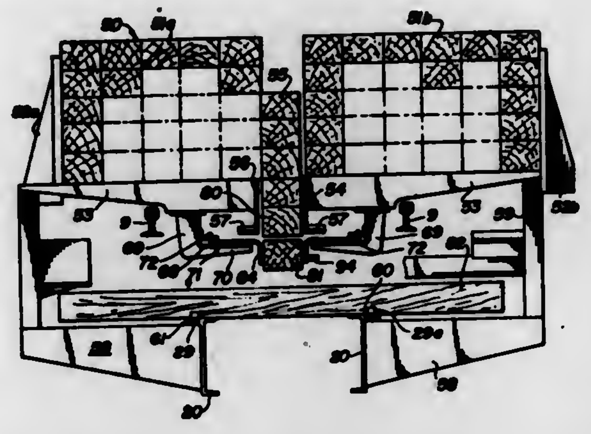
Charles J. Hinkle, Fredericksburg, Va., and Frank R. Marquardt, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy
Filed June 13, 1969, Ser. No. 835,896
Int. Cl. F42b *9/08*
U.S. Cl. 102—46 **2 Claims**



The present invention discloses a balanced electrically initiated primer directed toward use in a cartridge having a conductive mix electrical primer but could also be used with bridgewire electrical primers. Dielectric material is placed around the explosive primer mix, forming a capacitor configuration which prevents inadvertent initiation of the electroexplosive device.

3,728,968
UPPER TURNTABLE APPARATUS FOR POSITIONING RAILROAD TIES

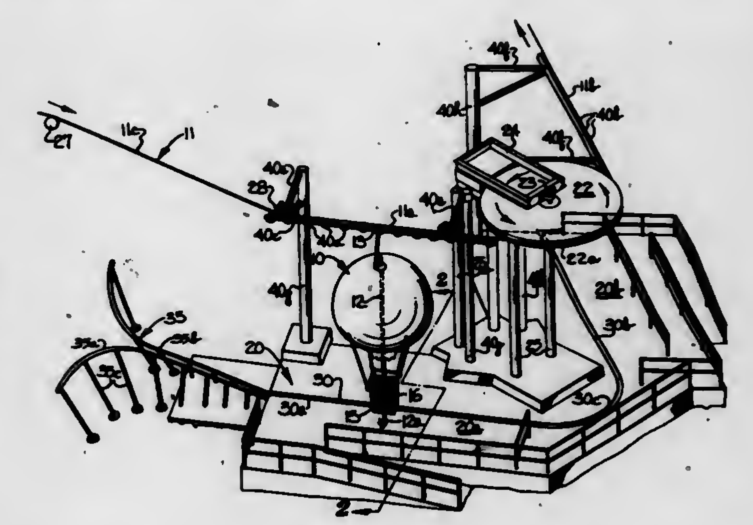
John Edis Rymes, Calgary, Alberta, Canada, assignor to Mannix Co. Ltd., Calgary, Alberta, Canada
Filed Nov. 20, 1970, Ser. No. 91,257
Int. Cl. E01b *29/05*
U.S. Cl. 104—5 **13 Claims**



A tie delivering system for use in an apparatus for constructing railroad track sections comprising a support structure including a conveying path, means for conveying a plurality of longitudinally spaced ties along said path, means for delivering a pair of laterally spaced rails above said ties such that the rails are initially vertically spaced above the ties and come to rest on the ties and means for delivering an assembled track section from the path. The tie delivery system includes a tie storage structure mounted on said support structure at an elevation higher than the conveying means and arranged to hold ties in a position parallel to the rails, an elongated tie receiving chute extending downwardly from said tie support structure between and parallel to said rails, means associated with said chute for releasably holding a tie therein, a tie receiving turntable positioned below said chute for receiving a tie released from the chute, said turntable having an elongated tie receiving opening extending vertically therethrough and said turntable being rotatable through 90° in a horizontal plane positioned below said rails and above said conveying path, the rotation being between a location in which the turntable opening is in alignment with the chute and a location in which the turntable opening is longitudinally at right angles with the rails and means associated with said turntable opening for holding a tie therein and releasing the tie to be deposited onto the conveyor when the turntable opening is at right angles with the rails.

3,728,969
STABILIZING MEANS FOR TRAM CARS

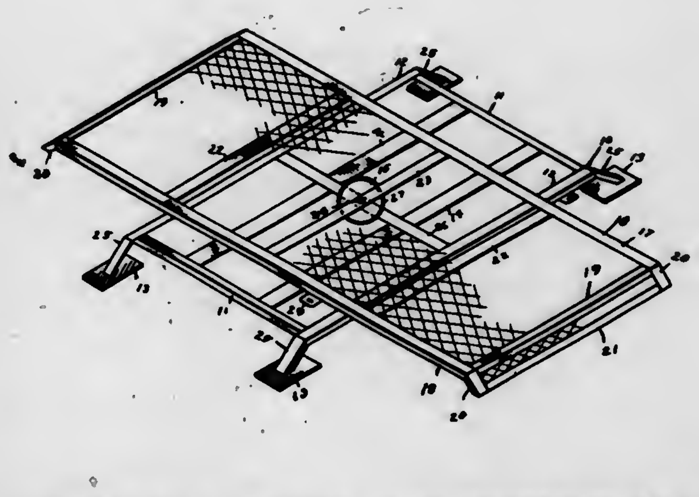
Samuel P. Goforth, and Joseph A. Goforth, both of Shelby, N.C., assignors to Goforth Brothers, Inc., Shelby, N.C.
Filed April 19, 1971, Ser. No. 135,161
Int. Cl. B61b *11/00*
U.S. Cl. 104—28 **5 Claims**



A substantially vertically disposed guide bar is carried by and extends downwardly from the floor of a cable suspended tram car, and a loading platform is provided with means defining an elongate slot therein open at both ends and into which the guide bar passes as the car approaches and passes closely above the platform whereby the walls of the slot limit lateral movement of the guide bar and thereby limit lateral swinging of the tram car while it is disposed above the platform.

3,728,970
TURNTABLE

Robert G. Christensen, R. D. No. 1, Franklin Center Road, Cranesville, Pa.
Filed May 11, 1970, Ser. No. 36,165
Int. Cl. B60s *13/02*
U.S. Cl. 104—44 **1 Claim**



A turntable for a snowmobile or the like made up of a lower frame having ground engaging legs, an upper frame supported on the lower frame and having an inclined ramp on each end which will engage the ground and form a path up which the snowmobile may climb. The upper frame is covered with expanded metal and has cleats fastened to it.

3,728,971

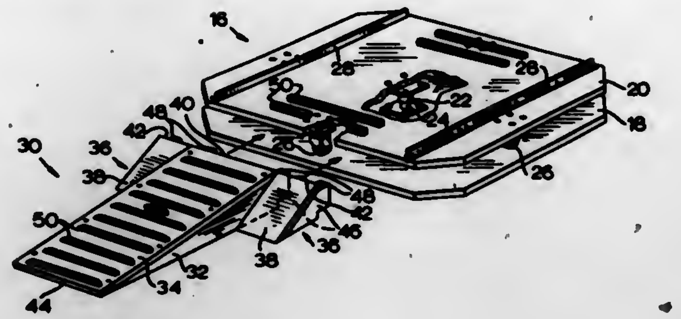
TURNTABLE AND RAMP FOR SNOWMOBILES

William Merrick, 1055 Bloor St., East, Apt. 1506, Mississauga, Ontario, Canada

Filed Sept. 1, 1971, Ser. No. 176,835

Int. Cl. B60s *13/02*

U.S. Cl. 104—44 **7 Claims**



A snowmobile can be driven up a ramp and onto a turntable having a bottom platform and a top platform. The ramp has a plurality of rear projections which rest on the bottom platform of the turntable and transmit to the bottom platform part of any weight on the ramp. The ramp has a central portion with an inclined surface up which the tread of the snowmobile can move and, on either side of the central portion, two side portions with coplanar inclined surfaces up which the skis of the snowmobile can slide. The inclined surfaces of the side portions are set back from the front edge of the central portion sufficiently far that as the snowmobile approaches the ramp the tread moves onto the central portion and transfers weight to the ramp and bottom platform of the turntable before the skis encounter the side portions and apply a rearward force to the ramp and turntable.

3,728,972

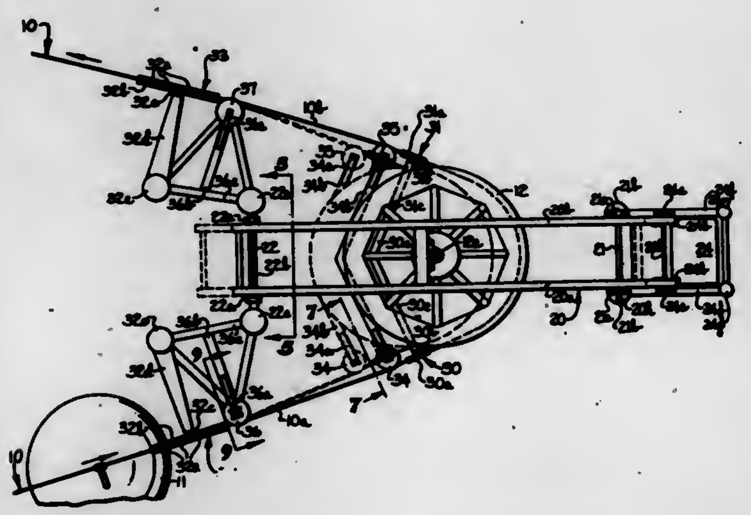
TENSION MEANS FOR AERIAL TRAMWAYS

Samuel P. Goforth, and Joseph A. Goforth, both of Shelby, N.C., assignors to Goforth Brothers, Inc., Shelby, N.C.

Filed May 19, 1971, Ser. No. 144,868

Int. Cl. B61b *7/14*

U.S. Cl. 104—117 **11 Claims**



Apparatus for tensioning an aerial tramway endless cable having three or more runs or reaches such that adjacent or opposing runs diverge from a corresponding supporting pulley whose supporting carriage is biased outwardly so as to move inwardly and outwardly in accordance with variations in the load on the cable. Tracking means is provided for maintaining the diverging opposing runs in proper engagement with corresponding cable supporting roller means adjacent the pulley to ensure that the cable will not creep off of the roller means as the divergence angle of the opposing runs of the cable tends to vary coincident with the movements of the carriage.

3,728,973

RAILWAY CAR STEERING BOGIES

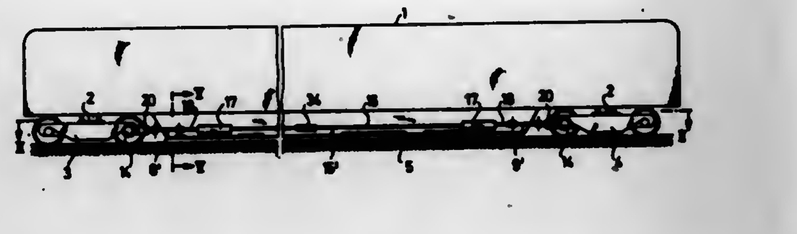
Hermann Hinnen, Sulz-Attikon, Switzerland, assignor to Schweizerische Lokomotiv-Und Maschinenfabrik, Winterthur, Switzerland

Filed Oct. 30, 1970, Ser. No. 85,653

Claims priority, application Switzerland, July 29, 1970, 11437/70

Int. Cl. B61f *3/08, 5/44, 13/00*

U.S. Cl. 105—176 **12 Claims**



The undercarriages are coupled together by tension elements and transverse links so as to reduce the angle of approach of the leading axles of the undercarriages and the guiding forces thereon. Elastic elements can be incorporated in either the tension elements or transverse links or can be used in the connection between the transverse links and undercarriages.

3,728,974

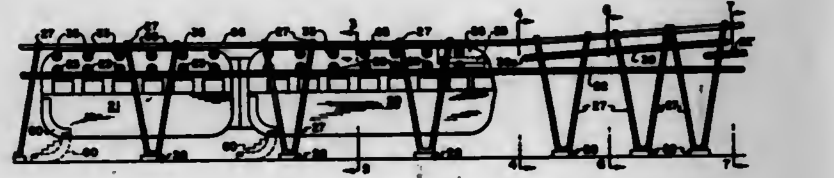
HIGH SPEED TRAIN

Raymond Lashley, 920 South 4000 West, Syracuse, Utah

Filed Aug. 20, 1970, Ser. No. 65,630

Int. Cl. B61d *17/00*

U.S. Cl. 105—329 **2 Claims**



A relatively low cost and economically operated high speed passenger transportation system wherein motive vehicles are coupled to provide transportation for large numbers of people. A powered main vehicle that may be one unit or more than one coupled unit is provided to travel between terminal stations and detachable passenger ferrying auxiliary vehicles are used to transport passengers and their baggage between the main vehicle and intermediate loading or unloading stations. Operation of the independently powered motive vehicles is coordinated through a computor system, sensing units on the vehicles provide signals for coupling control and specially constructed tracks and track switching insure safe operation even at very high speeds.

3,728,975

METHOD AND APPARATUS FOR TRANSPORTATION OF READILY DAMAGED ARTICLES

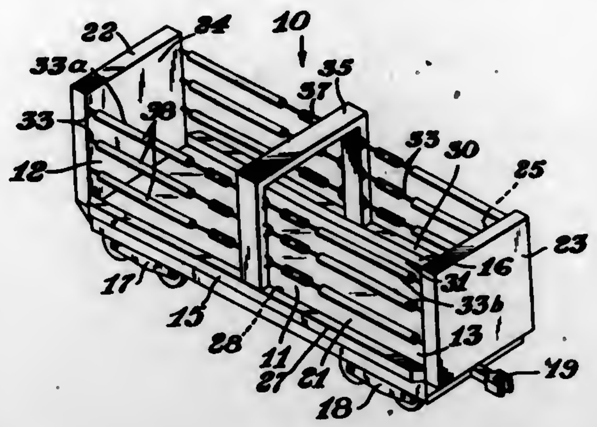
Richard Walker Jehn, Sciotoville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed April 28, 1971, Ser. No. 138,089

Int. Cl. B60p *7/16*; **B61d** *45/00*

U.S. Cl. 105—369 BA **2 Claims**

Readily damaged articles are shipped and transported by confining the articles in generally parallel, regular arrangement, applying a compressive force in a direction normal to the force of gravity and restricting motion in a direction generally normal to a plane containing the force of gravity and the compressive force. The method and apparatus of the present invention are particularly suited for the shipment of plastic foam bodies and rectangular containers having low compressive strength.



3,728,976

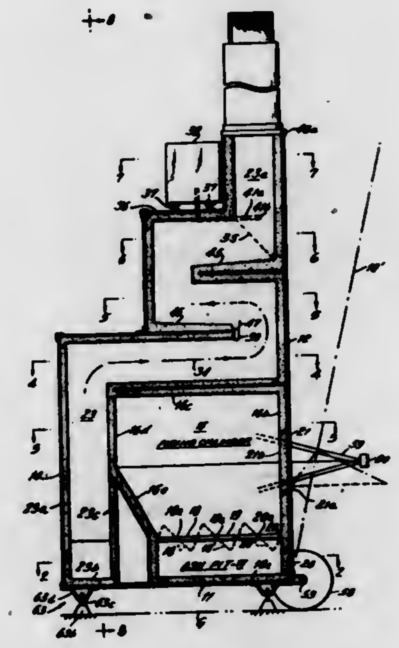
PORTABLE INCINERATOR

Irving Domnitch, 80-15 Forty-First Avenue, Elmhurst, N.Y.

Filed July 13, 1971, Ser. No. 162,195

Int. Cl. F23g *3/00*

U.S. Cl. 110—8 R **8 Claims**



Portable self-contained incinerator apparatus for upgrading the quality of pollution control in which particulate emission is significantly reduced through means for wet-scrubbing the smoke to remove particulate and other harmful material prior to the entry of the smoke into the atmosphere. The system, in addition to removing particulate, is self-cleaning. The portable nature of the device makes it useful in a wide variety of applications.

3,728,977

HOUSEHOLD RUBBISH REDUCTION SYSTEM

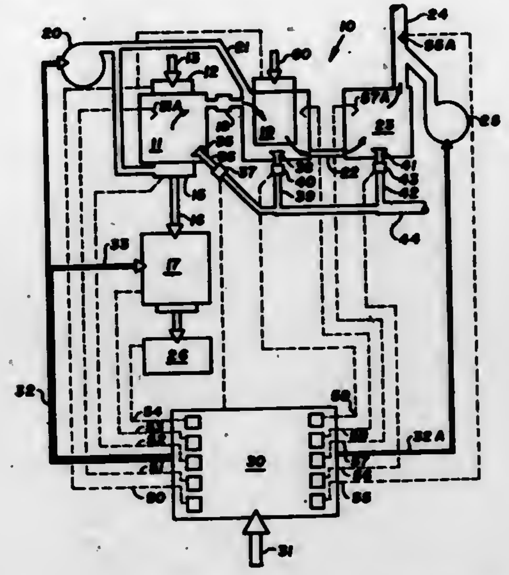
Jack D. Brannan, 9925 Nord Road, Minneapolis, Minn.

Filed Dec. 3, 1971, Ser. No. 204,431

Int. Cl. F23g *5/12*

U.S. Cl. 110—8 R **12 Claims**

Raw rubbish incineration and compaction means comprising the serial combination of a primary furnace, a mixing chamber, and afterburner for the primary furnace and mixing chamber, along with the additional combination of a compacting chamber for compaction of incinerated raw rubbish. The primary furnace receives the raw rubbish and a burner is provided for incineration. A mixing chamber provides additional air for the discharge from the primary furnace and is arranged to discharge the additional air and primary furnace gases to the afterburner. The afterburner is arranged to completely burn any combustible contained within the gaseous mixture received from the mixing chamber. The primary furnace is provided with a grate which can be moved to discharge incinerated solids into the compacting chamber, wherein a movable wall of the compacting chamber moves into contact with the solids and crushes these solids to a predetermined pressure. Temperature control and mechanical interlock controls are provided for the system.



3,728,978

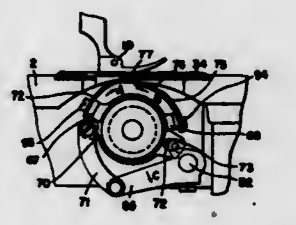
THREAD TRIMMING MECHANISM FOR SEWING MACHINES

Hidemi Honda, and Minoru Morita, both of Wakayama, Japan, assignors to Mitsubishi Electric Corporation, Tokyo, Japan

Filed Dec. 31, 1970, Ser. No. 103,202

Int. Cl. D05b *65/02*

U.S. Cl. 112—252 **2 Claims**



A thread trimming mechanism for sewing machines is provided which automatically cuts the thread with a pair of trimming knives secured to knive-mounting discs which move with a driving shaft rotating according to a predetermined action of a main shaft of the machine. The trimming knives engage the thread just under the eyelet-hole of the needle plate of the machine.

3,728,979

METHOD OF PRODUCING SLIDE-FASTENER STRINGERS

Helmut Heimberger, D7887 Grenzach, and Karl Griesbaum, 43 Essen-Steele, both of Germany, assignors to Opti-Holding AG, Glarus, Switzerland

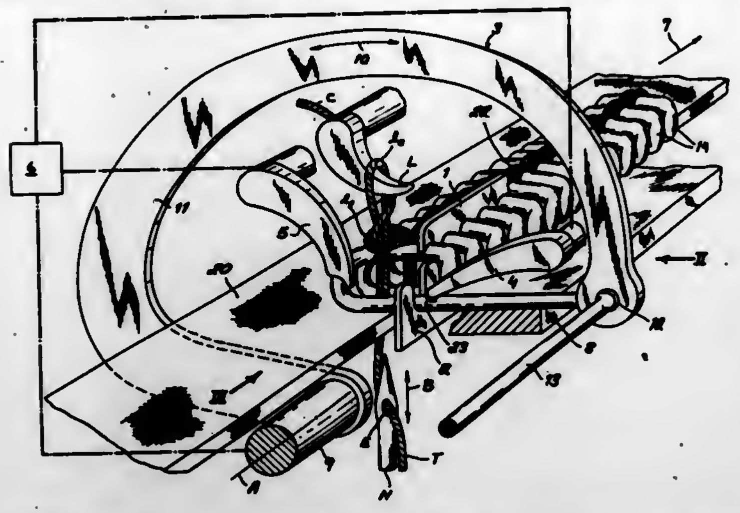
Filed Nov. 27, 1970, Ser. No. 93,273

Claims priority, application Germany, Nov. 28, 1969, P 19 59 886.8

Int. Cl. D05b *3/12, 97/10, 97/12*

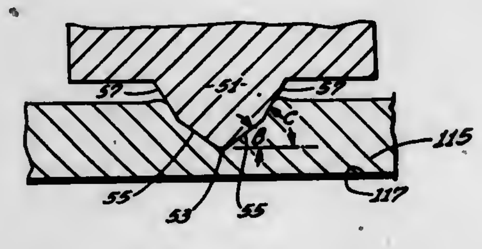
U.S. Cl. 112—265 **4 Claims**

A slide-fastener stringer, especially a slide-fastener stringer half, is formed by stitching individually the turns of an endless coupling element to a support tape with a chain stitch, each stitch being produced as each turn of the coupling element is formed. The chain stitches may secure the shanks of the coupling members to the tape and may lie wholly shielded by shanks which are not engaged by the stitches.



3,728,980
SCORING DIE

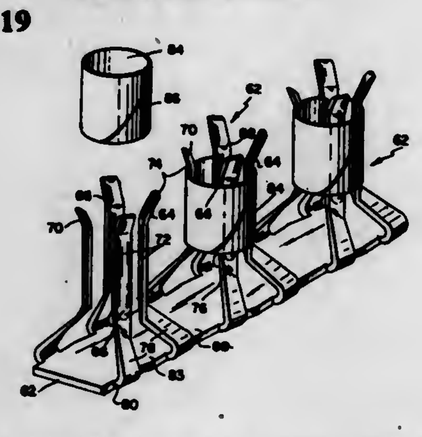
Ermal C. Fraze, 355 West Stroop Road, Dayton, Ohio
Filed Feb. 10, 1971, Ser. No. 114,192
Int. Cl. B21d *51/26*; **B26d** *3/08*
U.S. Cl. 113—1 F **9 Claims**



A tool for forming a score in a can end to define an easy-opening tear strip. In lateral cross section, the scoring die comprises a five-sided element having a leading edge with a very narrow planar surface, a pair of highly finished side faces extending outwardly on either side of the leading edge at first, smaller angles relative to the plane of the leading edge, and a second pair of faces extending upwardly from the highly finished faces at second, larger angles relative to the plane of the leading edge.

3,728,981
MANUFACTURING METHOD FOR CONTACT TERMINAL SOCKETS

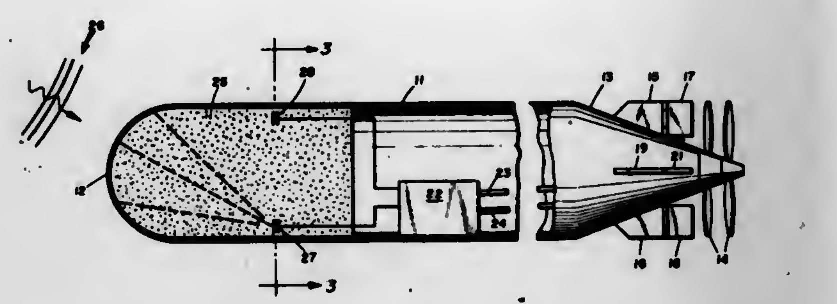
Clarence Leonard Paulius, Lewisberry, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Division of Ser. No. 801,436, Feb. 24, 1969, Pat. No. 3,605,078. This application Aug. 4, 1971, Ser. No. 169,022
Int. Cl. B21d *53/36*
U.S. Cl. 113—119 **4 Claims**



A method of manufacturing electrical contact sockets by stamping and forming sheet metal comprises steps of blanking a strip to form two pairs of arms extending in opposite directions on each side of the strip. The arms are twisted and bent about their own longitudinal axes and are then bent adjacent to the center of the strip to define a socket.

3,728,982
ACOUSTIC HOMING TORPEDO

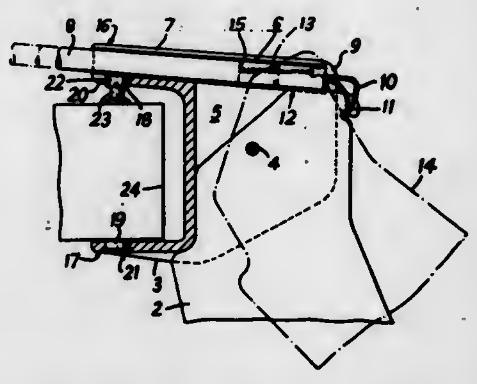
Richard M. Dunlap, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 15, 1964, Ser. No. 376,299
Int. Cl. F42b *19/00*; **G01v** *1/00*
U.S. Cl. 114—23 **11 Claims**



11. The device of claim 8 wherein the velocity of sound transmission in the explosive material is substantially equal to the velocity of sound transmission in seawater,
 the rear surface of the explosive material has the shape of a parabola and is contacted by a sound wave reflector having the contour of a paraboloid,
 said transducers being positioned in the focal plane of the reflector.

3,728,983
TILLER AND RUDDER ASSEMBLY

Michael J. Ingham, London, England, assignor to Richmond Marine Limited, London, England
Filed Feb. 8, 1971, Ser. No. 107,769
Int. Cl. B63h *25/06*
U.S. Cl. 114—162 **13 Claims**



A marine craft steering assembly including a steering tiller and a rudder blade which are interconnected so that the rudder blade can be raised and lowered by longitudinal movement of the tiller the rudder blade being pivoted to a rudder stock in which the steering tiller is supported and can slide.

ERRATUM

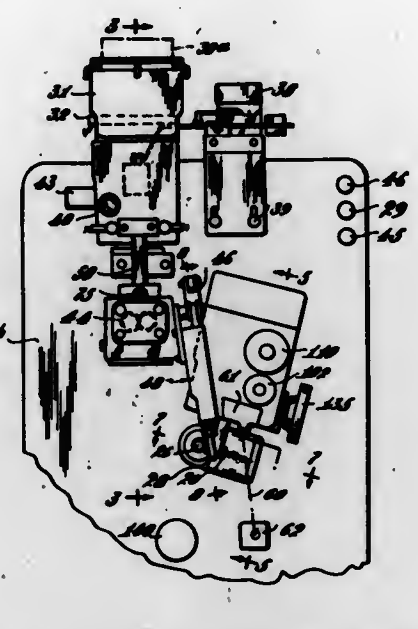
For Class 115—24 see:
Patent No. 3,729,369

3,728,984

Patent Not Issued For This Number

3,728,985
ADHESIVE APPLICATOR FOR LASTING MACHINE

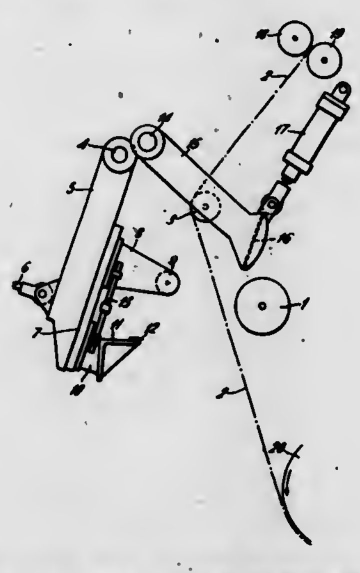
Robert B. Dunlap, Medway, and Ewald O. Peterson, Lynnfield, both of Mass., assignors to Compo Industries, Inc., Waltham, Mass.
Division of Ser. No. 808,286, March 18, 1969, Pat. No. 3,561,027. This application July 6, 1970, Ser. No. 60,975
Int. Cl. B05c *5/02*
U.S. Cl. 118—2 **5 Claims**



In a lasting machine of the kind in which a pair of rolls turning in opposite directions apply lasting and feeding stresses to the lasting margin of a shoe, improvements in means for adjusting the spacing between the axes of said rolls, means for controlling the adhesive flow from the adhesive nozzle, the adhesive delivery system, means for adjusting the position of the nozzle relative to the lasting margin, means for adjusting the axis of a rotary wiper at right angles to the axes of said rolls and means for resiliently urging the operative surface of a wiper blade towards the bite of said rolls whereby it is self-adjusting to accommodate different thicknesses of the last margin.

3,728,986
MACHINE FOR THE APPLICATION OF GLUE TO A RUNNING BAND AND THE CUTTING OF THE BAND AT THE PLACE OF THE GLUE APPLICATION

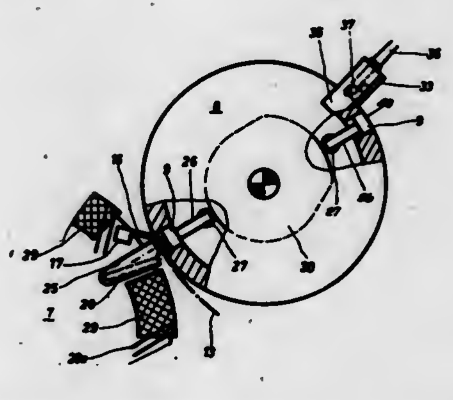
Oskar Brevoll, Oslo, Norway, assignor to Thune-Eureka A/S, Oslo, Norway
Filed June 25, 1971, Ser. No. 156,901
Claims priority, application Norway, April 30, 1971, 1618/71
Int. Cl. B05c *1/08, 1/16*
U.S. Cl. 118—41 **2 Claims**



A glue application and cutting means for a running band is disclosed, the running band being used for the wrapping of large rolls of paper. The running band is brought in contact with a glue applying roller by means of a pressure roller pivotably mounted at a distance ahead of the glue applying roller in a swinging frame. A cutting knife is mounted on the frame between the pressure roller and the glue applying roller, whereas a striking beam is mounted in a second swinging frame on the other side of the band relative to the cutting knife. By its strike movement the striking beam will hit the running band in the area between the cutting knife and the pressure roller, thereby cutting the band avoiding glue application on the trailing edge area of the running band.

3,728,987
LABELING APPARATUS

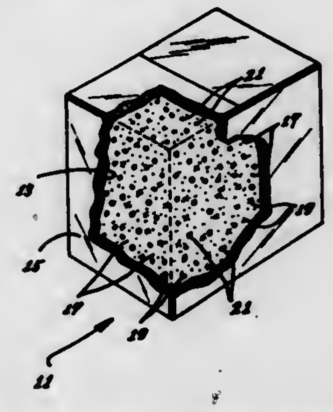
Hermann Kronseder, Berliner Str. 10, Neutraubling, Germany
Filed Sept. 22, 1970, Ser. No. 74,405
Claims priority, application Germany, Oct. 4, 1969, P 19 50 149.6
Int. Cl. B05c *1/02, 11/12*
U.S. Cl. 118—62 **5 Claims**



The labeling apparatus has a source of labels, a gripping turret with mechanical gripping elements that withdraw labels from the label source and fly the labels against the glue retaining surface of a gluing drum, en route to apply the labels to containers. The mechanical grippers are so arranged as to grip only the leading edges of the labels. There is a space between the glue drum and the gripper turret so that label portions trailing their gripped leading edges fly in said space in unsupported relation to the turret. Optional air jet nozzles may blow the flying label portions against the glue drum. The glue drum is provided directly with a doctor blade which spreads glue onto a uniform film on the drum. The drum is provided with recesses to receive the mechanical gripping elements below the glue drum surfaces as the gripping elements sweep past the drum.

3,728,988
MARINE LIFE STORAGE HABITAT MEDIUM AND SHIPPING METHOD

Wallace H. Shapero, Torrance, and Albert Cane, Inglewood, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 22, 1971, Ser. No. 108,832
Int. Cl. A01k *61/00*
U.S. Cl. 119—2 **5 Claims**



Marine life, such as live brine shrimp, are stored in an aqueous habitat medium including a unitary oxygen-releasing, carbon dioxide-diminishing agent, namely sodium perborate, during shipment in containers, either open or closed, to extend the time the marine life may be maintained in a given amount of the aqueous medium.

3,728,989
CONTROL SYSTEM FOR THE INJECTION OF FUEL INTO INTERNAL COMBUSTION ENGINES

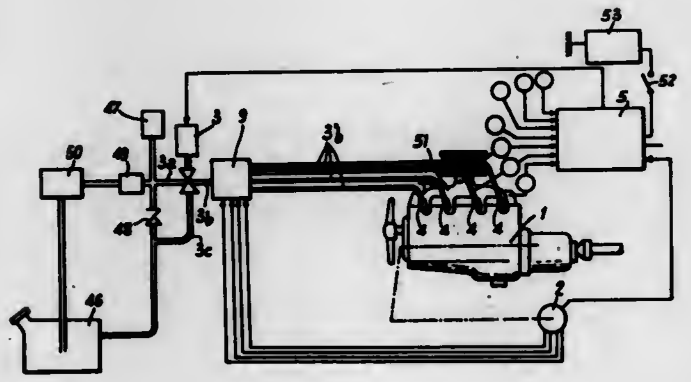
Louis A. Monpetit, L Etang la Ville; Jurg V. Schneider; Herve Gueret, both of Versailles; Pierre Advenier, Paris; Georges R. Sallet, Elizabethville; Jean-Pierre Paul Jourde, Villennes S/Sienne, and J. W. Ufnaleski, Mantes la Ville, all of France, assignors to Societe Des Procedes Modernes D'Injection Sopromi, Les Mureaux, France

Filed April 21, 1971, Ser. No. 135,963

Claims priority, application France, April 22, 1970, 7014583

Int. Cl. F02m *39/00*

U.S. Cl. 123—32 EA 10 Claims



In order to obtain constancy of throughput for the different injectors of an internal combustion engine, the valve is inserted between a supply of fuel and the mechanical injectors is a three way valve connected respectively with the output of the supply, with the injectors possibly through a sequential distributor and with a return to the supply. An electromagnet controlled by electric signals attracts a piston normally connecting the supply output with the return to the supply so as to connect during the desired period the supply output with the injector systems. The three ways of furthermore transiently interconnected at the beginning and at the end of each energization, so as to prevent excess pressure.

3,728,990
HYDRAULIC TAPPETS FOR INTERNAL COMBUSTION ENGINES

Aurelio Lampredi, Turin; Aldo Leoni, Cavoretto; Francesco Ghilardi, Turin; Francesco Degiorgis, Turin, and Luigi Joli, Turin, all of Italy, assignors to FIAJ Societa per Azioni, Turin, Italy

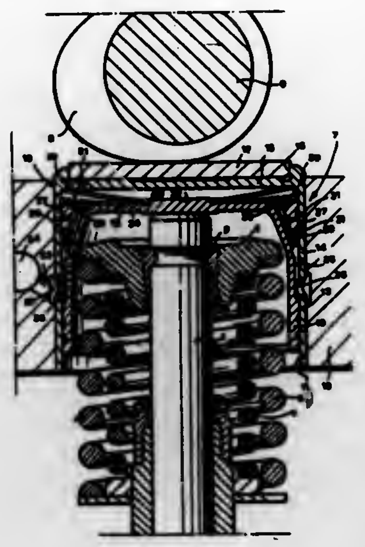
Filed Dec. 13, 1971, Ser. No. 207,068

Claims priority, application Italy, Dec. 22, 1970, 71258 A/70

Int. Cl. F01l *1/24*

U.S. Cl. 123—90.56 6 Claims

A hydraulic tappet comprising two cup shaped parts one inside the other. The outer cup slides in a bore in a housing which may be the cylinder head. The bore has a groove connected to a source of hydraulic pressure and the groove is connected to a cooperating groove in the inner cup *via* holes in the outer cup. The two end walls of the cups define a chamber within which there is a non-return valve formed of a flat spring plate held in the middle so that its edges can flex to uncover the openings to passageways which communicate with the groove in the inner cup to admit hydraulic fluid which acts to automatically adjust the separation of the two end walls of the chamber to adjust the height of the tappet for automatic clearance adjustment.



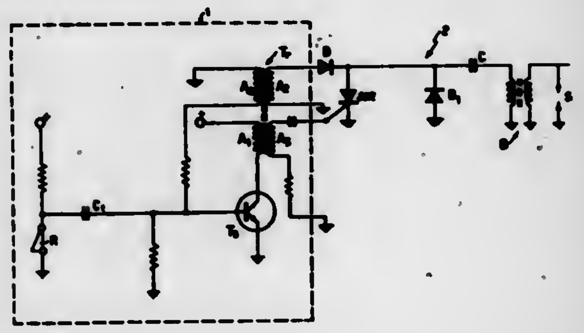
3,728,991
CAPACITIVE DISCHARGE IGNITION CIRCUIT

Mario Montuschi, and Mario Palazzetti, both of Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Oct. 6, 1970, Ser. No. 78,519

Int. Cl. F02p *3/06*

U.S. Cl. 123—148 E 5 Claims



A capacitive discharge electronic ignition circuit for an internal combustion engine, in which the capacitor is charged from the battery via a transformer with a saturable magnetic core. The transformer has a primary winding in a power circuit controlled by a transistor which is in turn controlled by one of the secondary windings of the transformer so that when the magnetic core reaches saturation the current to the primary switches off. This induces a surge of current in a further secondary winding of the transformer which charges the capacitor by a given amount since the energy stored in the saturable magnetic core of the transformer is always the same. The transistor is triggered repetitively from a contact breaker and a third secondary winding of the transformer supplies a firing signal for a controlled rectifier which controls the discharge of the capacitor into the high voltage coil to provide the spark.

3,728,992
ADJUSTABLE JET AND ITS APPLICATION IN AN APPARATUS FOR RECYCLING THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

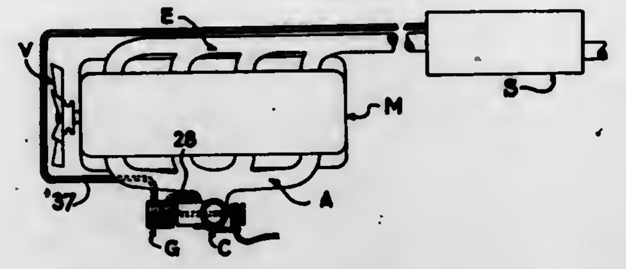
Bernard Bertrand, 78 Aubergenville, and Claude Lesueur, 95 Argenteuil, both of France, assignors to Automobiles Peugeot and Regie Nationale Des Usines Renault, Billancourt, France

Filed Oct. 7, 1971, Ser. No. 187,436

Claims priority, application France, Oct. 13, 1970, 7036959; Jan. 29, 1968, 68137750

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A 7 Claims



An adjustable gas jet in which the passage for the gas is defined by two orifices in two very thin-edged walls one of which is rotatable by a rotary member extending out of the body of the jet. The section of the passage depends on the overlapping of the orifices.

The jet is employed in an exhaust gas recycling conduit for a combustion engine which puts the exhaust pipe in communication with the induction pipe of the engine.

3,728,993
FUEL INJECTION APPARATUS INCLUDING AN AIR SENSOR AND MEANS FOR THE DIRECTION-DEPENDENT DAMPING OF ITS MOVEMENT

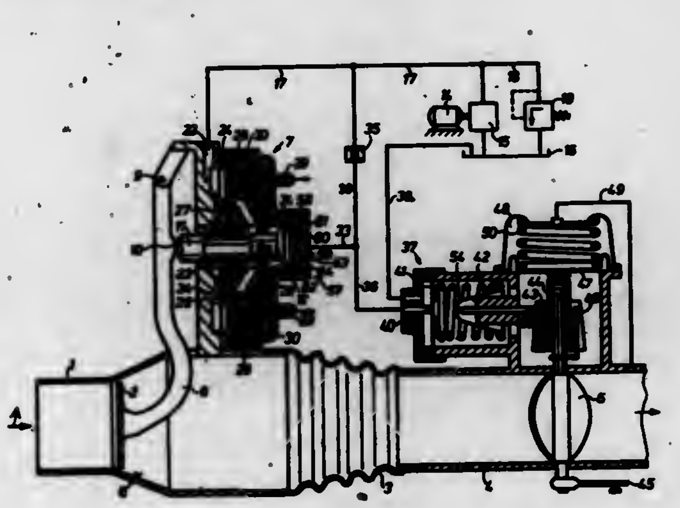
Konrad Eckert, Stuttgart-bad Cannstadt; Heinrich Knapp, Leonberg-Silberberg; Wilfried Sautter, Stetten I.R., and Volkhard Stein, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 16, 1971, Ser. No. 208,699

Claims priority, application Germany, Dec. 17, 1970, P 20 62 078.4

Int. Cl. F02m *69/00*

U.S. Cl. 123—119 R 7 Claims



In a fuel injection apparatus — in which the air-fuel ratio is maintained constant by an air sensor displaceable in the suction tube by the intake air drawn into the internal combustion engine with which the fuel injection apparatus is associated — in order to prevent undesired shifts in the metered fuel quantities in the low rpm range, the pressurized liquid used as a return force for the air sensor passes through a throttle assembly which throttles the liquid flow to an extent dependent upon the direction of flow therethrough.

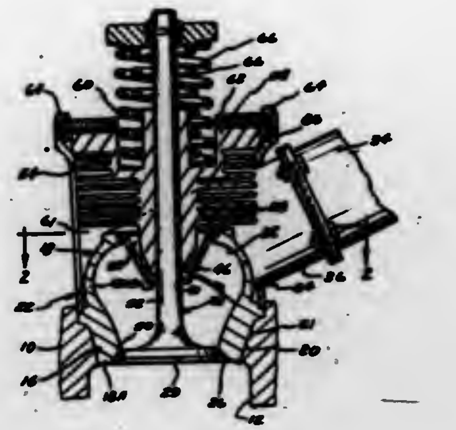
3,728,994
EXHAUST PORT STRUCTURE

Carl F. Bechle, Grosse Pointe Farms, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Aug. 18, 1970, Ser. No. 64,782

Int. Cl. F01p *1/08*; F01l *3/00*; F01p *3/14*

U.S. Cl. 123—188 GC 14 Claims



An exhaust port structure and cylinder head construction for an internal combustion engine in which the exhaust port structure is permitted to attain relatively high temperatures while the exhaust valve and seat are maintained relatively cool. Cooling is achieved by cooling the valve guide structure and overheating of the valve and valve stem is prevented by providing a structure which tends to maintain the valve and its seat in proper alignment regardless of thermal and pressure distortions.

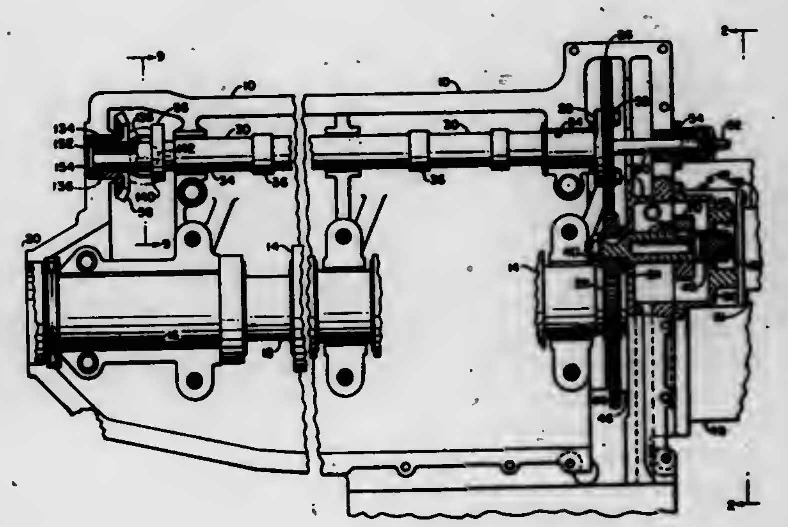
3,728,995
ACCESSORY ARRANGEMENT FOR A RECIPROCATING INTERNAL COMBUSTION ENGINE

George R. Schramm, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.

Filed Oct. 1, 1971, Ser. No. 185,519

Int. Cl. F01m *11/02*; F02b *77/00*

U.S. Cl. 123—195 A 10 Claims

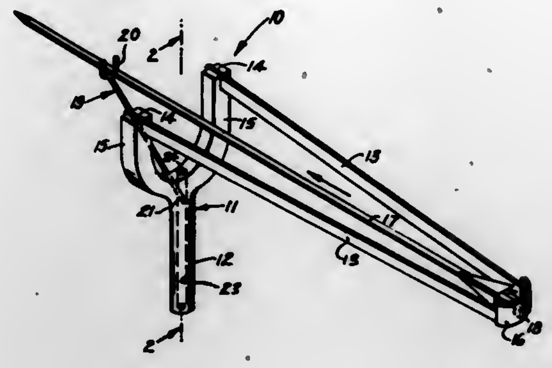


The disclosure illustrates a reciprocating internal combustion engine where the idler gear between the crankshaft and camshaft gears drives an oil pump. A magneto drive gear also meshes with the crankshaft gear. A fuel pump and propeller governor are driven from the forward end of the camshaft. This greatly reduces the number of gears required for the accessory drive train. A few simple modifications enable the oil pump to deliver oil to the engine for forward or reverse engine rotation.

3,728,996

CROTCH TYPE ELASTIC BAND PROJECTING DEVICE

Norman S. Miller, Rt. 1, Box 142, Aliquippa, Pa.
Filed April 20, 1971, Ser. No. 135,723
Int. Cl. F41b *7/00*
U.S. Cl. 124—20 B **1 Claim**

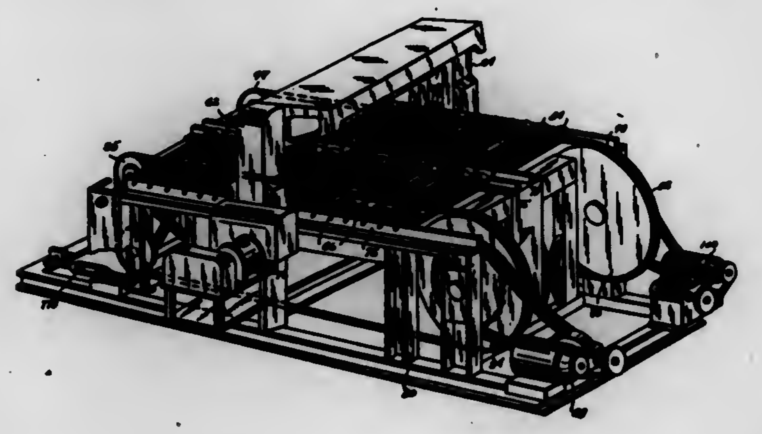


A device for discharging an arrow. The device includes a Y-shaped member with a removable guide and sight rod for accurately discharging an arrow which is propelled by elastic band members, the Y-shaped member having a leg with a longitudinal opening therethrough, and a forwardly, upwardly diagonal opening for selectively receiving the guide and sight rod either in a stored away or arrow shaft supporting position respectively.

3,728,997

APPARATUS FOR CUTTING STONE

Ralph A. Fletcher, Bedford, N.H., and Joseph R. Oliver, Lowell, Mass., assignors to H. E. Fletcher Co., Westford, Mass.
Division of Ser. No. 63,159, Aug. 12, 1970. This application Sept. 24, 1971, Ser. No. 183,600
Int. Cl. B28d *1/32*
U.S. Cl. 125—23 C **2 Claims**

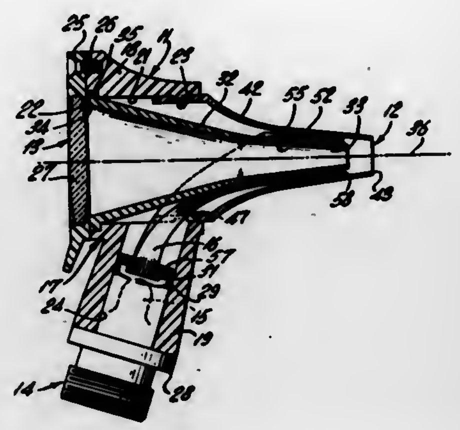


Relatively heavy loads are conveyed along a desired path of travel by positioning the loads on a plurality of spaced endless conveyor elements which are held under high tension. The endless conveyor elements are led around rotating driver sheave means which advance the conveyor elements and load in a desirably controlled manner. Load bearing portions of the endless conveyor elements are received at separated points in rolling contact with separated roller supporting surfaces. The method of conveying and the apparatus devised for carrying out the method are useful especially in handling relatively large blocks of stone such as granite, and particularly where the blocks are required to be processed in a cutting machine of the guillotine type in which a set of aligned cutting elements are moved up and down in a common plane of reciprocating movement to cut up the block into dimension stone pieces of uniform size. The endless conveyor elements may be selectively controlled to guide and position the block during and after each cutting operation.

3,728,998

OTOSCOPE

Helmut A. Heine, Herrsching/Obb, Germany, assignor to Optotechnik G.m.b.H., Germany and Propper Manufacturing Company, Inc., Long Island City, N.Y.
Filed Jan. 26, 1971, Ser. No. 108,704
Int. Cl. A61b *1/22*
U.S. Cl. 128—9 **4 Claims**

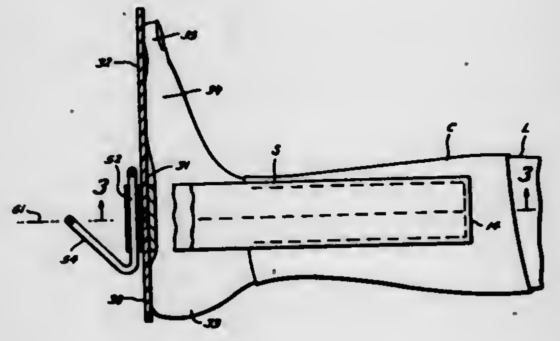


An improved otoscope construction utilizing fiber optics light transmission in which the fiber optic-carrying portion is fabricated as a separate and unitary member for assembly with additional component parts which, when combined, form an otoscope head.

3,728,999

DISPOSABLE TRACTION HARNESS

Stanley E. Thompson, 1108 Morton Street, Richmond, Tex.
Filed Nov. 23, 1970, Ser. No. 91,815
Int. Cl. A61f *5/04*
U.S. Cl. 128—84 R **2 Claims**



The specification discloses a disposable traction harness including a foot support for supporting a person's foot and toes in an upright position when the person is lying down with his leg extended and in traction.

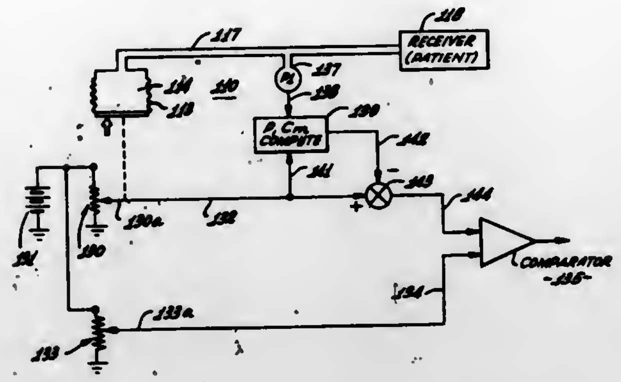
3,729,000

COMPLIANCE COMPENSATED VENTILATION SYSTEM

Steven A. Bell, Santa Monica, Calif., assignor to Puritan-Bennett Corporation, Kansas City, Mo.
Filed May 18, 1971, Ser. No. 144,521
Int. Cl. A62b *7/00*
U.S. Cl. 128—145.6 **17 Claims**

A method and apparatus for maintaining the volume of gas delivered to a patient by a volume-limited ventilator substantially constant, regardless of changes in the delivery pressure which induce corresponding changes in the compression of the gas and the size of various machine elements in the delivery system such as the delivery tubing and the ventilator bellows. The delivery pressure to the patient is monitored and

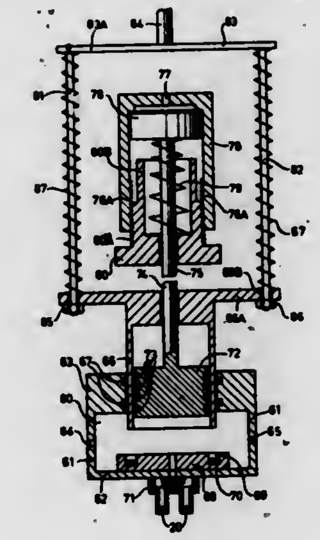
is used to compute, together with ventilator machine compliance, a compliance compensation volume, i.e., the volume trapped within the machine dead space, which is first subtracted from the measured delivery volume prior to comparison of the latter with a reference proportional to desired delivery volume, to effect ventilator machine control for terminating further volume delivery.



3,729,001

MEDICAL RESPIRATORS

John Andrew Bushman, Cambridge, England, assignor to Pye Limited, Cambridge, England
Filed Jan. 29, 1970, Ser. No. 6,846
Claims priority, application Great Britain, Jan. 30, 1969, 5,108/69
Int. Cl. A61m *17/00*
U.S. Cl. 128—188 **10 Claims**

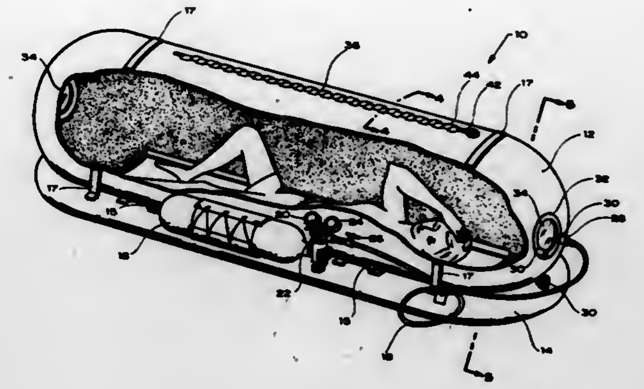


A liquid injector for use in a medical respirator having a cylinder mounted for movement within a cavity. The cavity has a supply of liquid thereto and as the cylinder moves therethrough, it entraps a quantity of liquid within the cylinder at the point when it is sealed against a closure within the cavity. A member is mounted for movement within the cylinder so that when the cylinder is moved against the closure, the member will be forced to move so as to eject the liquid entrapped therein into the stream of gas.

3,729,002

EMERGENCY INFLATABLE RECOMPRESSION UNIT

Donald Miller, P.O. Box 543, Kailua, Hawaii
Filed April 1, 1971, Ser. No. 130,140
Int. Cl. A61m *16/02*
U.S. Cl. 128—204 **6 Claims**

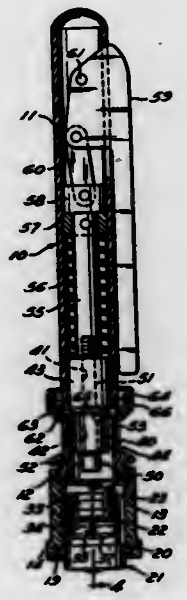


A portable recompression chamber comprising a flexible container constructed of a high-strength pressure-proof rubber-coated fabric which occupies a small space when collapsed and may be easily transported and inflated for use. Entrance to the chamber is through a long zippered opening.

3,729,003

VARIABLE DOSAGE AMPOULE APPLICATOR

Alfred A. Hurschman, Hudson, Ohio, assignor to Ampoules, Inc., Hudson, Ohio
Filed Feb. 11, 1971, Ser. No. 114,423
Int. Cl. A61m *5/20, 5/28*
U.S. Cl. 128—218 DA **5 Claims**



A variable dosage ampoule applicator having an external adjustment to vary the amount of medicament expressed from a medicament-containing ampoule contained within the applicator. The applicator has a hollow body with an ampoule mounting sleeve adjustably threaded to one end of the body. The ampoule is removably inserted within the sleeve and includes a cylindrical sidewall closed at one end by a slidable plunger and at the other end by a pierceable diaphragm. A hollow needle disposed within the medicament chamber is fixed to the plunger with its pointed end directed toward the pierceable diaphragm. The applicator includes a force-applying head to depress the ampoule plunger. The force-applying head has a fixed preselected stroke between a retracted position and an extended position. By adjusting the ampoule mounting sleeve, and therefore the ampoule, relative to the stroke of the force-applying head, the degree of depression of the ampoule plunger may be varied to thereby vary the volume of medicament injected into the patient by actuation of the force-applying head from its retracted position to its extended position.

3,729,004
BABY'S NAPKIN

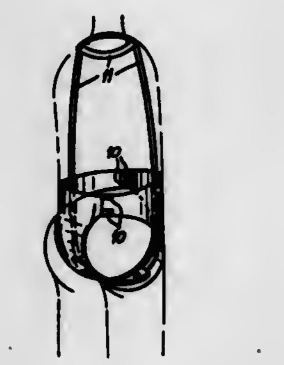
Guy Claude Burger, Les Trois-Noyers 1349 Eclepens, Vaud, Switzerland

Filed Feb. 8, 1971, Ser. No. 113,241

Claims priority, application Switzerland, Feb. 12, 1970, 2022/70

Int. Cl. A61f *5/44*

U.S. Cl. 128—286 **8 Claims**



The invention concerns a napkin to be thrown away which comprises a backing and a first impervious layer, both being provided with two apertures and located against an absorbing layer. A second impervious layer is provided in order to house this absorbing layer between said first and second impervious layers. Furthermore, the backing is provided with lateral recesses so as to conform closely to the shape of the body and around legs of a baby in order to ensure tightness between the baby's body and the napkin.

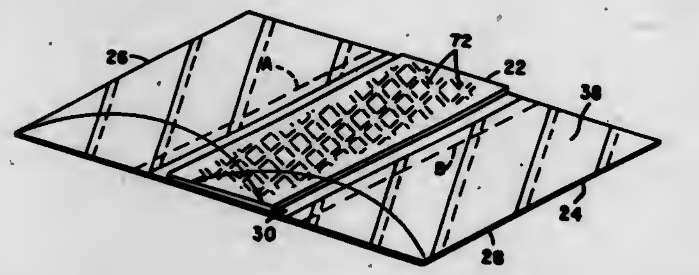
3,729,005
DISPOSABLE DIAPER

Charles A. Lee, and Frank D. Sorrells, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed Feb. 1, 1971, Ser. No. 111.229

Int. Cl. A61f *13/16*

U.S. Cl. 128—287 **15 Claims**



A disposable diaper of generally rectangular outline having longitudinal and transverse directions including a pad of absorbent matter encompassed by a cover sheet comprising a laminated nonwoven fibrous fabric including fibrous web plies having respective longitudinal directions, the web plies being reinforced in their respective longitudinal directions and bonded in superposed relation with their respective longitudinal directions at angle to each other and at angle to the longitudinal direction of the diaper thereby reinforcing the diaper at angles to its longitudinal and transverse directions. The diaper includes wing folds extending longitudinally along the side edges of the diaper to provide a seal around the legs of the child and prevent body exudate from passing outwardly of the diaper in the vicinity of the legs. In one aspect of the inveniton, fibers of the web plies are bonded to the reinforcing medium in a manner such that the fibers are retained in the fabric cover sheet and do not become dislodged to deposit upon the child or other surface even though the diaper becomes wet and is subected to abrasion in the course of normal movements of the child. The desirable absorptivity of the fibrous webs is retained in the product.

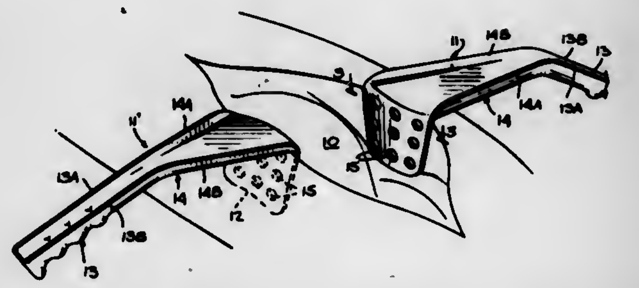
3,729,006
DISPOSABLE SURGICAL RETRACTORS

Joseph R. Wilder, 151 W. 86th St., New York, N.Y., and Maurice S. Kanbar, 34 W. 13th St., New York, N.Y.

Continuation-in-part of Ser. No. 802,343, Feb. 26, 1969, abandoned. This application May 27, 1971, Ser. No. 147,387

Int. Cl. A61b *17/02*

U.S. Cl. 128—303 R **6 Claims**



A hand-held surgical retractor fabricated of resilient plastic material, the retractor being light-weight, glare-free and functionally superior to existing metallic instruments. The retractor includes a non-skid blade whose inner surface is slightly concave, the blade having an array of circular apertures therein whereby when the blade is pressed against tissue, the tissue bellies into the blade to provide a contact therebetween which resists displacement even when low pulling forces are exerted on the retractor.

3,729,007
RESORBABLE SURGICAL SUTURE

Velimir Mirkovitch, Pully, Switzerland, assignor to SUTRAMED S.a.r.L., La Neuveville, Canton of Bern, Switzerland

Filed Dec. 21, 1970, Ser. No. 100,451

Claims priority, application Switzerland, Dec. 26, 1969, 19216

Int. Cl. A61l *17/00;* **D06m** *3/02*

U.S. Cl. 128—335.5 **2 Claims**

A resorbable catgut surgical suture impregnated with a liquid silicone, such as dimethylpolysiloxane.

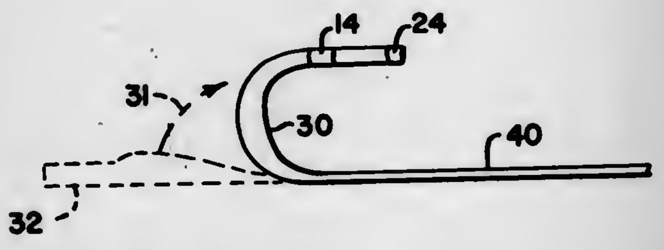
3,729,008
ELECTRODE FOR ATRIAL PACING WITH CURVED END FOR ATRIAL WALL ENGAGEMENT

Barough V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 28, 1970, Ser. No. 101,836

Int. Cl. A61n

U.S. Cl. 128—418 **9 Claims**



A curvilinear electrode suitable for being curved-over and supported by a moving atrium wall of a patient's heart. The electrode includes at least one long, thin, flexible electrical conductor encapsulated by an electrically insulating flexible catheter sleeve. The electrode has a sufficient resilience to maintain the curve in a plane and yet allow the curve to be flexed linear for insertion through a blood vessel of the patient.

3,729,009
SMOKING PRODUCT WITH IMPROVED FLAVOR AND METHOD OF MAKING IT

Chester U. Stevens, and William A. Selke, both of Stockbridge, Mass., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed March 22, 1971, Ser. No. 126,967

Int. Cl. A24b *03/14, 15/04; 03/12*

U.S. Cl. 131—17 **7 Claims**

A smoking product including a substantial proportion of tobacco stem material and incorporating carbamide and a saturated fatty acid composition having a carbon chain length of 16–18. The carbamide is present in an amount from 1.0 to 3.0 percent and the fatty acid is present in an amount of from 1.0 to 4.0 percent, by weight, of the stem material. The carbamide and fatty acid impart to the stem material, when it burns, some of the more pleasant taste and smell characteristics of burning tobacco leaf. The stem material may be in its natural state, but crushed, or it may be made into a reconstituted sheet or film.

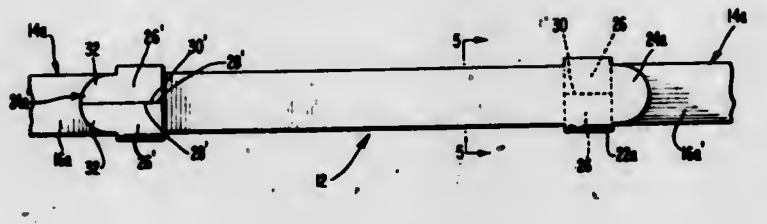
3,729,010
CHIN STRAPS FOR CAPS AND THE LIKE

Paul G. Gallin, 729 Broadway, New York, N.Y.

Continuation of Ser. No. 791,664, Jan. 16, 1969, abandoned. This application April 28, 1971, Ser. No. 138,329

Int. Cl. A42b *7/00*

U.S. Cl. 132—58 **1 Claim**



The adjustable chin strap assembly of a military or like cap is formed of synthetic resinous material and each portion of the strap is moulded of a single piece of material to obviate the expensive operations involved in constructing chin straps of conventional materials.

3,729,011
LOOSE POWDER DISPENSER

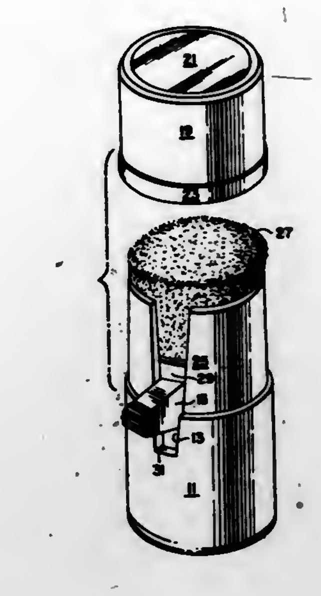
Joseph Gleicher, Bayville, N.Y., assignor to Avon Products, Inc., New York, N.Y.

Filed April 19, 1971, Ser. No. 135,234

Int. Cl. A45d *33/02*

U.S. Cl. 132—83 B **6 Claims**

A loose powder dispenser having a cylindrical openended chamber for containing powder to be dispensed with the chamber being capped by an apertured cover which supports a powder puff for applying the powder material. A knurled button integral with the chamber extends through the housing of the dispenser and is slidable with respect thereto for exposing the powder puff for dispensing the powder. A cap slides



over a recessed portion of the housing and is secured thereto by a force fit and inhibits movement of the knurled button when powder is not being dispensed.

3,729,012
SELF-CLOSING UMBRELLA

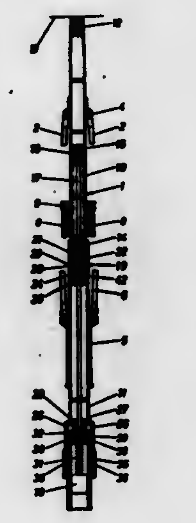
Heinz Weber, Rhineland, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Jan. 25, 1971, Ser. No. 109,307

Claims priority, application Germany, Jan. 24, 1970 P 20 03 250.2

Int. Cl. A45b *19/00*

U.S. Cl. 135—25 **5 Claims**



A self-closing umbrella wherein there are two telescopic stick portions, a crown at the end of one stick portion with the dome ribs hinged thereto, a secondary crown fixed to the free end of the other telescopic stick portion, a runner adapted to slide on the other stick portion with stretcher means extending to the dome ribs and struts hinged to the stretcher means and to the second crown. A tension spring is arranged between the two telescopic stick portions so that when the umbrella stick is telescoped together, the dome ribs are opened and the tension spring is loaded. When the spring is released, the telescopic stick extends to its fullest extent and the dome ribs are closed on the stick.

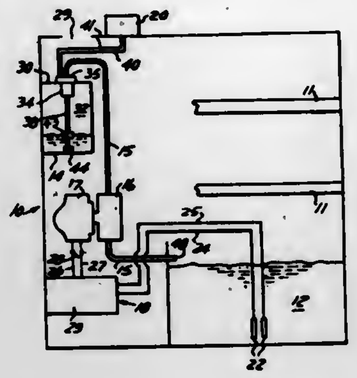
3,729,013
LIQUID LEVEL CONTROL DEVICE

Howard L. Anderson, Wyandotte, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 807,609, March 17, 1969, Pat. No. 3,595,267. This application March 1, 1971, Ser. No. 119,901

Int. Cl. F16k *19/00*; **G05d** *11/08*

U.S. Cl. 137—93 **2 Claims**



A liquid level control device, adapted for use with apparatus for dispensing fluid from a reservoir to a drum or tank, that includes a conduit and an electrical relay encased in a tubular housing and disposed in the reservoir. The conduit is operable to deliver a stored fluid from the reservoir to the drum of a dispensing machine or the like and the relay is responsive to the level of liquid in the reservoir and connected to means for indicating when the liquid falls below a desired level.

3,729,014
FLOW DIVIDER

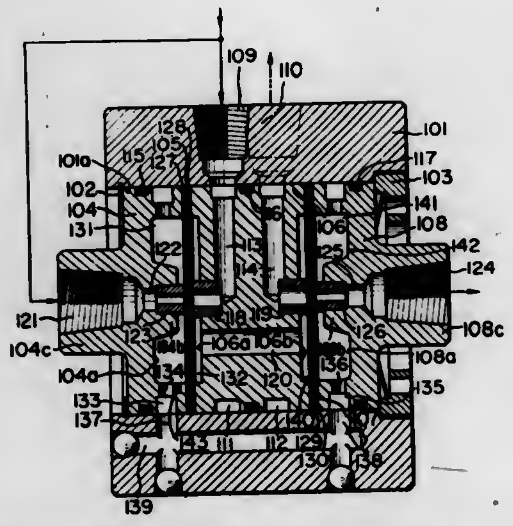
Tadataka Narumi, Kariya, Japan, assignor to Toyoda Machine Works, Ltd., Kariya-shi, Aichi-ken, Japan

Filed Feb. 3, 1971, Ser. No. 112,233

Claims priority, application Japan, Feb. 7, 1970, 45/10920

Int. Cl. G05d *11/00*

U.S. Cl. 137—101 **4 Claims**



A low divider has an inlet port, a pair of outlet ports, and a control chamber therein. The control chamber is separated by a diaphragm into a pair of sub-chambers. Restriction orifices are provided between the inlet port and the pair of sub-chambers and valve seat members are provided between the pair of sub-chambers and the outlet ports and have throttling effects between the valve seat members and the diaphragm.

3,729,015
VALVE WITH SEAT ROTATING MEANS

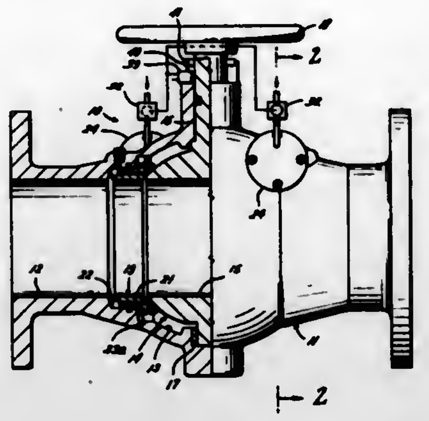
John P. Oliver, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Dec. 29, 1971, Ser. No. 213,410

Int. Cl. F16k *29/00*

U.S. Cl. 137—330 **11 Claims**

A valve having a seat which is caused to rotate about its axis between different rotational positions by power means which is independent of the power means by which the closure member is moved between opened and closed positions. Operation of the power means for rotating the seat may be initiated by means automatically responsive to movement of the closure member into a predetermined position or by means independent of movement of the closure member.



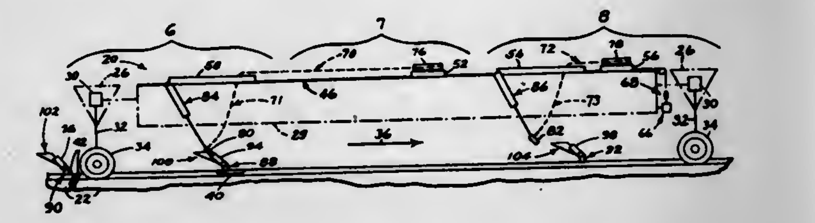
3,729,016
APPARATUS FOR PRODUCING A FLUID-FLOW CONNECTION BETWEEN RELATIVELY MOVABLE STATIONARY AND MOBILE CONDUIT SYSTEMS

Carl V. Von Linsowe, San Jose, Calif., assignor to John T. Page, Portland, Oreg., a part interest

Continuation of Ser. No. 14,455, Feb. 26, 1970, abandoned. This application June 1, 1971, Ser. No. 149,032

Int. Cl. B05b *9/02*; **E01h** *3/02*

U.S. Cl. 137—344 **32 Claims**



An irrigation system including a stationary water supply having plural spaced-apart outlet couplings, and a mobile irrigator adapted to travel adjacent and relative to the supply and to receive water therefrom, having a pair of movable inlet couplings. Apparatus is provided on the irrigator for adjusting automatically the positions of the inlet couplings with travel of the irrigator, whereby with one inlet coupling connected to an outlet coupling, the other inlet coupling advances toward a ready-to-connect position relative to the next adjacent outlet coupling in the direction of irrigator travel. Such apparatus promotes successive fluid-flow connections between the supply and irrigator with the latter traveling relative to the former, and with the outlet couplings in the stationary supply spaced close enough, promotes a continuous fluid-flow connection between the supply and irrigator.

3,729,017
FLOW-CONTROL DEVICE

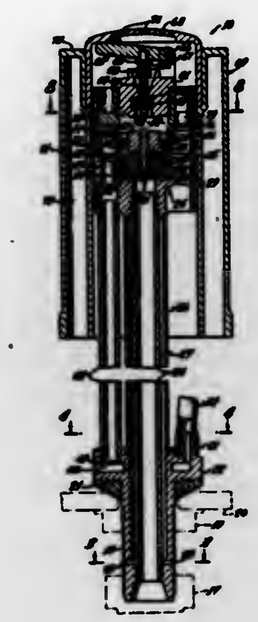
Anthony R. Brandelli, 2418 W. 256th St., Lomita, Calif.

Continuation of Ser. No. 726,164, May 2, 1968, abandoned. This application Sept. 21, 1970, Ser. No. 73,882

Int. Cl. F16k *31/18*

U.S. Cl. 137—414 **5 Claims**

A flow-controlling device that includes a housing having a chamber therein, a fluid inlet connected to the chamber, a first valve member in the chamber controlling flow through the inlet, the chamber having an outlet through which fluid discharges when the first valve member is moved in one direction, a pin extending through an opening in the first valve member and aligned with a second valve member in a second outlet for the chamber, a lever movable for opening the second valve member when the float drops, whereby the pressure in the chamber above the first valve member is relieved to allow the fluid pressure from the inlet to open the first valve member. When the float is raised, water can flow past the pin to pressurize the chamber interiorly and move the first valve member to a closed position.



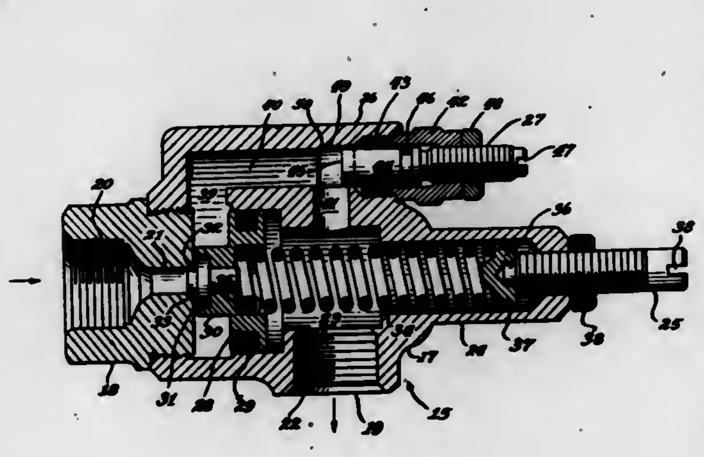
3,729,018
UNLOADER VALVE FOR SPRAY GUNS

Ted Lee Butterfield, Naperville, Ill., assignor to Spraying Systems, Co., Wheaton, Ill.

Continuation-in-part of Ser. No. 55,319, July 6, 1970, abandoned, which is a continuation of Ser. No. 797,196, Feb. 6, 1969, abandoned. This application July 6, 1971, Ser. No. 160,014

Int. Cl. F16k *17/20*

U.S. Cl. 137—469 **9 Claims**



An unloader type valve for spray guns supplied from pumps to limit operating pressures of the pump when the spray gun is stopped. The valve utilizes an adjustable spring to select pressure forces for opening the valve and a variable flow passage from the valve to an outlet when the valve is open, the allowing matching of the valve to the precise operating pressures and flow rates in spray gun and pumping system installations.

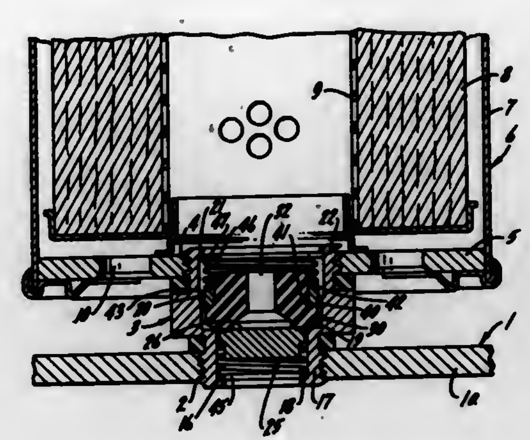
3,729,019
BI-DIRECTIONAL CHECK VALVE

Walter J. Kudlaty, Elmhurst, Ill., assignor to Marvel Engineering Company, Chicago, Ill.

Filed March 10, 1971, Ser. No. 122,937

Int. Cl. F16k *17/26*

U.S. Cl. 137—493.6 **3 Claims**



A connector joins a filter to a reservoir, the connector containing vacuum and pressure release elements entirely therewithin, the release elements including chatter-preventing configurations.

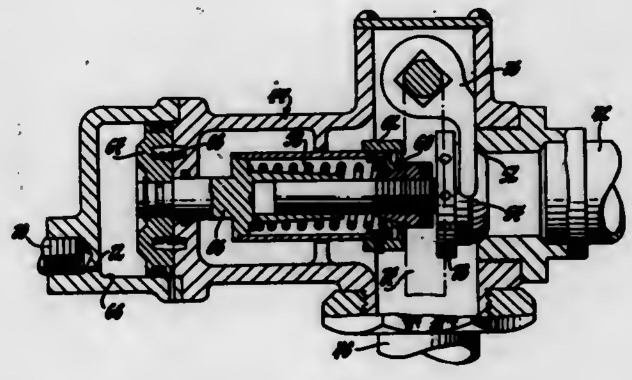
3,729,020
PRESSURE RELIEF AND DRAIN VALVE

Ludvik F. Koci, 917 N. Waiola Avenue, La Grange Park, Ill., and Humberto Suarez, 310 Lathrop, Forest Park, Ill.

Division of Ser. No. 33,319, April 30, 1970, Pat. No. 3,621,907. This application April 26, 1971, Ser. No. 137,280

Int. Cl. F16r *15/06*, *17/04*

U.S. Cl. 137—522 **2 Claims**



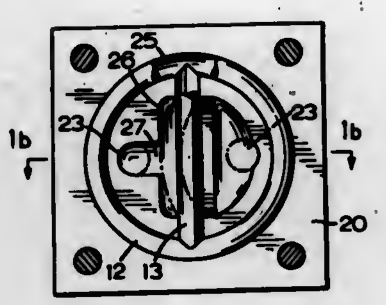
A locomotive cooling system has radiators mounted above the normal coolant level during engine shutdown in the engine and water tank so as to drain the radiators when the engine stops to avoid the possibility of freezing the water therein. An automatic pressure relief and overflow valve is provided which is open during engine shutdown to drain excess water from the cooling system so as to prevent the retaining of any coolant in the radiators. When the engine is operating, the valve is normally closed by engine lubricating oil pressure to permit normal pressure buildup in the engine cooling system. However, the valve opens to relieve excess pressure in the cooling system. Manual opening means are also provided to relieve system pressure during engine operation.

3,729,021
HIGH-PRESSURE PUMP AND CHECK-VALVE

Frederick Harold Humphrey, Markham, Ontario, Canada, assignor to Polypump Curacao N.V., Willemstad Curacao, Netherlands Antilles

Filed Sept. 16, 1971, Ser. No. 181,046
Int. Cl. F16k *15/14*

U.S. Cl. 137—525 **4 Claims**



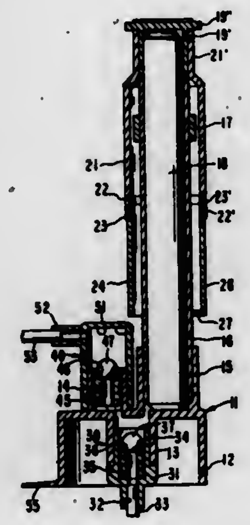
A high-pressure pump or check-valve in which solid tubular flexible members cooperate with slot-like openings in pressure chambers to provide one-way valves. The usual inlet and outlet ports are also provided.

3,729,022
DISASSEMBLEABLE VALVE AND LIQUID DISPENSING DEVICE

William J. Roach, Foster City, Calif., assignor to Oxford Laboratories, San Mateo, Calif.

Filed Jan. 4, 1971, Ser. No. 103,708
Int. Cl. F16k *15/04*

U.S. Cl. 137—533.15 **3 Claims**



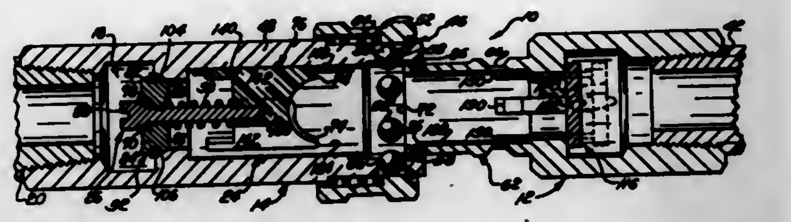
A disassembleable valve is disclosed wherein a hollow glass insert having a circular sealing surface on one end for sealing the passage therethrough is positioned within a tubular plastic member, and a precision spherical ball of a diameter to establish a seal at the insert sealing surface is captured for forming the seal. A liquid dispensing device is provided with a disassembleable valve and includes a cap structure adapted to be secured onto the top of a liquid container and provided with integral tubular sleeve forming a tubular portion of the valve and with a syringe mounted on the cap for moving fluid through the valve. The syringe has a ring on the outside surface of the barrel and a shroud connected to the syringe piston movable within limits set by the ring. The cap has inserts for different shaped fluid containers and a stabilizing stand.

3,729,023
COUPLING ASSEMBLY

Harry H. Hammond, Middleburg Heights, Ohio, assignor to The Hansen Manufacturing Company, Cleveland, Ohio

Filed Jan. 26, 1972, Ser. No. 220,774
Int. Cl. F16l *29/00*

U.S. Cl. 137—614.03 **14 Claims**



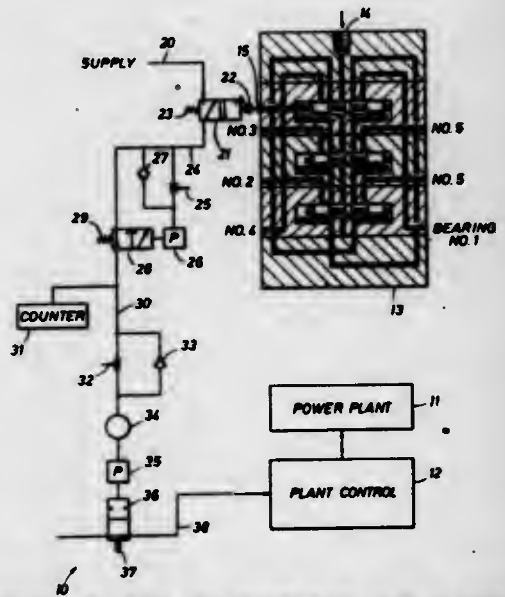
An improved coupling includes a shut-off and velocity control valve assembly which blocks fluid flow upon disconnection of the coupling and whenever the velocity of fluid flow through the coupling exceeds a predetermined rate. The shut-off and velocity control valve assembly includes a main valve which is operated from an open condition to a closed condition in response to a predetermined pressure differential across the main valve. Therefore, the main valve closes when the coupling is disconnected and one side of the main valve is exposed to atmospheric pressure. The main valve also closes if an excessive amount of fluid is exhausted due to a rupturing of a conduit or a malfunction of equipment associated with the coupling. A pilot valve effects operation of the main valve to the open condition upon connection of the coupling by enabling fluid to flow from a high pressure side to a low pressure side of the main valve to thereby reduce the pressure differential across the main valve. Full flow is re-established through the main valve upon opening of the main valve by a biasing spring after the pressure differential across the main valve has been reduced.

3,729,024
MONITORING APPARATUS RESPONSIVE TO OPERATION OF COOPERATIVE EQUIPMENT AT MORE THAN A PREDETERMINED RATE

Robert S. Harrah, 4108 DuPont, Houston, Tex.

Filed Oct. 14, 1970, Ser. No. 80,681
Int. Cl. G05b *19/44*

U.S. Cl. 137—624.13 **9 Claims**



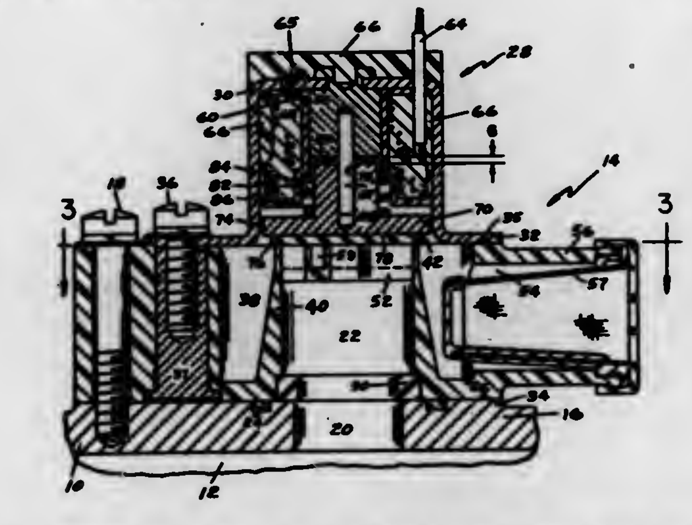
For cooperation with an apparatus which must function periodically in a manner which is manifested by physical movement, a monitoring device which responds to the physical movement by forming a pneumatic pulse of a predetermined length, the pulse being fed to an accumulator and stored therein, the accumulator being steadily bled off; a pressure above a predetermined level is required within the accumulator to hold open a valve which is operated should the pressure drop below a predetermined level, the valve controlling continued operation of the cooperative equipment. Should the pressure within the accumulator drop below the level, the monitoring equipment shuts down the cooperative equipment.

3,729,025
SOLENOID VALVE WITH STROKE INSENSITIVE PORT

Richard L. Silvestrini, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Aug. 31, 1970, Ser. No. 68,096
Int. Cl. F16k *31/06, 1/12*

U.S. Cl. 137—625.33 **6 Claims**



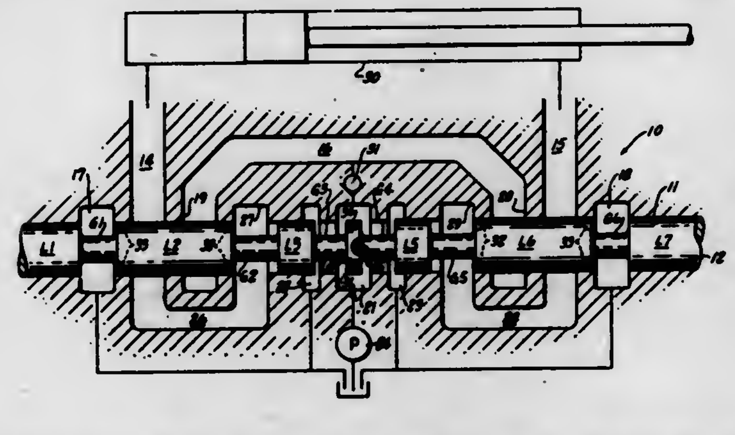
A solenoid valve has seat configurations comprising various patterns or arrangements of elongated slots. The maximum and minimum lift or stroke of the valve is related to slot width in a manner which materially reduces the differences in mass air flow resulting from variation in lift due to manufacturing tolerances. A supplemental orifice in series with the valve port may further control or limit air flow and minimize flow variation with varying valve strokes.

3,729,026
CONTROL VALVE WITH METERING TYPE VALVE SPOOL

Raud A. Wilke, Brookfield, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed May 17, 1971, Ser. No. 143,833
Int. Cl. F16k *11/07*

U.S. Cl. 137—625.69 **12 Claims**



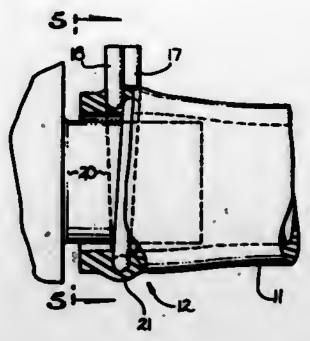
Wherever flow of pressure fluid from upstream to downstream passages in the valve body is metered by passage through throttle notches in the spool lands, the metered fluid debouches from said notches into the bore in which the spool operates before flow thereof to said downstream passages. Each throttle notch opens to the periphery of its land and to the adjacent spool groove between lands, and it has a bottom wall which recedes from the plunger axis toward the adjacent groove at an angle of from 5° to 25°, and a concave side wall which is normal to said bottom wall.

3,729,027
FLEXIBLE TUBING WITH INTEGRAL END CLAMPS

Howard J. Bare, 1721 South Bluff Road, Montebello, Calif.

Filed Jan. 26, 1972, Ser. No. 220,802
Int. Cl. F16l *9/00*

U.S. Cl. 138—109 **8 Claims**



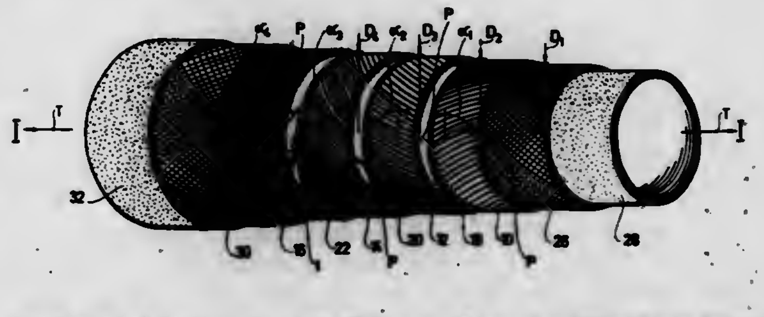
A flexible tubing is disclosed herein having a length of preferably reinforced pliable material in which a circular resilient clamp of the self-tightening type is embedded at the opposite ends thereof. Each clamp comprises a length of wire stock formed in a circle encased by the tubing material so as to be integral therewith and having a pair of tangs outwardly projecting through the tubing material adjacent a cross-over of the opposite ends of the wire stock length. The circular wire stock is resiliently biased to form a clamping action about the tubing end which effects a sealing union between the tubing and a stationary conduit or duct insertably disposed in each end of the tubing.

3,729,028
FLEXIBLE HIGH-STRENGTH WIRE-REINFORCED RUBBER HOSES

Laszlo Horvath; Gusztav Gundisch; Mihaly Arvai, and Sander Antal, all of Budapest, Hungary, assignors to Orszagos Gumiipari Vallalat, Budapest VIII, Hungary

Filed June 10, 1971, Ser. No. 151,739
Int. Cl. F16l *11/00*

U.S. Cl. 138—130 **5 Claims**



In a flexible high-strength fiber-reinforced rubber hose having a plurality of reinforcing wire plies, a well defined relation is established between the wrapping angles of the plies the essence of which is that the angle difference between the plies of higher pitches is smaller than the angle difference between the angles of plies of smaller pitches, while the angles satisfy well defined relations.

3,729,029
APPARATUS FOR THE TRANSPORT OF SHUTTLES

Zdenek Zabrodsky, Usti nad Orlici; Oldrich Crhonek; Jiri Sebela, both of Brno, and Milos Mares, Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

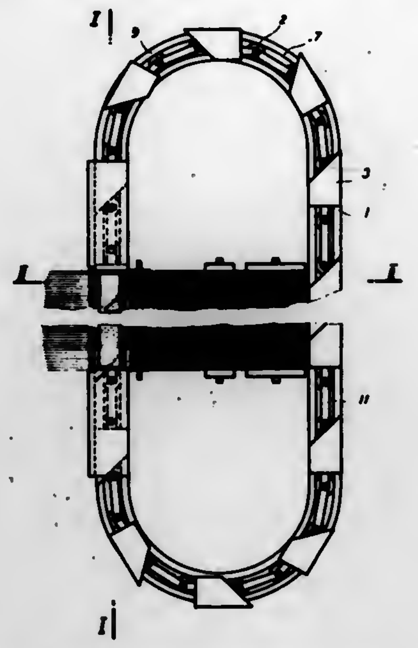
Filed April 22, 1971, Ser. No. 136,335

Claims priority, application Czechoslovakia, April 28, 1970, PV2935

Int. Cl. D03d *47/26*

U.S. Cl. 139—12 **11 Claims**

Apparatus for the transport of shuttles in looms and the simultaneous picking of weft threads by means of an endless chain conveyor carrying the shuttles and traversing a fixed guide means. A covering belt covers the parts of the chain traversing the space of the weaving process. A disconnectable means is provided on each shuttle for the joining of the shuttle with the respective carrier links.



3,729,030
CONTAINER FILLING DEVICE

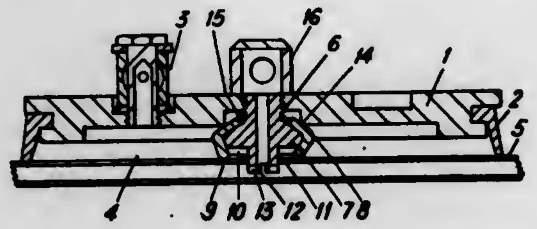
Sidney James George Brissenden, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 9, 1971, Ser. No. 161,049

Claims priority, application Great Britain, July 15, 1970, 34,314/70

Int. Cl. B65b *1/04, 3/04*

U.S. Cl. 141—1 **11 Claims**



A nozzle assembly for filling containers having outer and inner members each having continuous seals for engagement with the surface of a container whereby the assembly can be held against a container by a vacuum induced in a chamber enclosed by the outer member and its seal while the container is filled through the inner member. A method of filling containers using the nozzle assembly is also described.

3,729,031
LIQUID DISPENSER AND PLUNGER AND METHOD AND APPARATUS FOR FILLING SAME

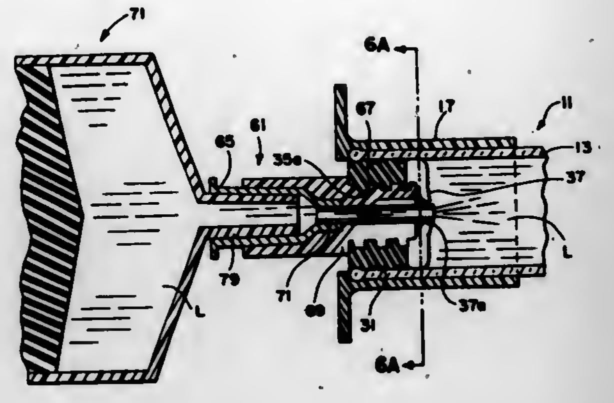
Brian E. Baldwin, Wilmette, Ill., assignor to MPL, Inc., Chicago, Ill.

Filed Dec. 6, 1971, Ser. No. 204,958

Int. Cl. B65b *3/04;* **B67c** *3/02*

U.S. Cl. 141—2 **53 Claims**

A liquid dispenser having a liquid containment barrel with a slidable dispensing-effecting and sealing plunger, the plunger having a self-sealing slit formed therein to enable filling therethrough of the dispenser barrel, the slit being formed at the bottom forwardly facing end of a threaded handle-connecting recess in the exposed rear portion of the plunger. A male fill member is employed to be inserted into and releasably open the plunger slit and to selectively fill the barrel with liquid, while venting past the male fill member through a vent eye formed in the opened slit by insertion of the male fill member. The male fill member is assisted in opening the plunger slit by securing the member into the handle-receiving threaded recess, and subsequently a handle is screwed into this screw-threaded recess to enable selected manual dispensing of liquid from the dispenser. The preferred slitted plunger is molded as a single piece, and the slit therein is preferably formed by moving the plunger laterally past a knife edge to cut the self-sealing slit fully across the bottom of its generally cup-shaped extent.



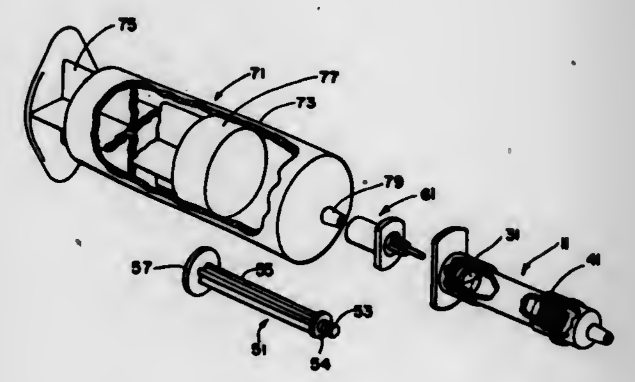
3,729,032
LIQUID DISPENSER AND METHOD AND APPARATUS FOR FILLING SAME

Edward A. Tischlinger, Des Plaines, and Brian E. Baldwin, Wilmette, both of Ill., assignor to MPL, Inc., Chicago, Ill.

Filed Dec. 6, 1971, Ser. No. 205,000

Int. Cl. B65b *3/04;* **B65c** *3/02*

U.S. Cl. 141—2 **59 Claims**



A liquid dispenser having a liquid containment barrel or body with a slidable sealing and dispensing-effecting plunger, the plunger having a self-sealing slit formed therein to enable filling therethrough of the dispenser barrel, the slit being formed at the bottom forwardly facing end of a threaded handle-connecting recess in the exposed rear portion of the plunger. A male fill member is employed, to be selectively inserted into and releasably open the plunger slit and to selectively fill the barrel with liquid, while venting past the male fill member through a vent eye formed in the opened slit as a result of insertion of the male fill member. An annular ring and grove on the rear end plunger and a lip shoulder stop on the rear end of the syringe barrel or body enable desired forward motion inhibiting action on the plunger during insertion and removal of the male fill member relative to the plunger slit.

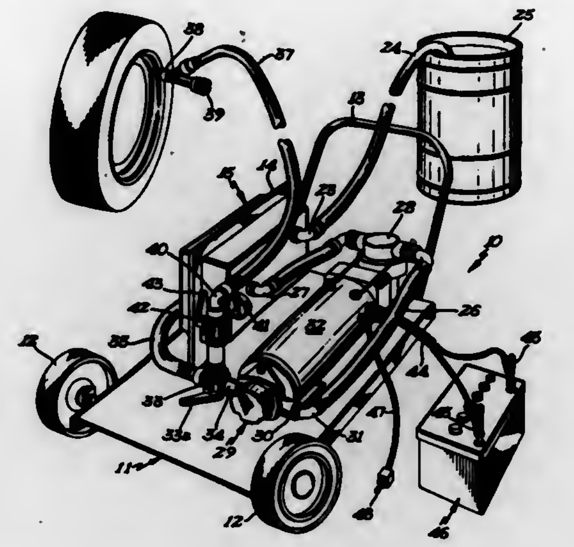
3,729,033
COMPACT PORTABLE TIRE SERVICING DEVICE

Weldon S. Bayerkohler, Okabena, Minn., assignor to A. F. Scheppman and Son Mfg. Co., Okabena, Minn.

Filed March 22, 1971, Ser. No. 126,581

Int. Cl. B65b *31/00*

U.S. Cl. 141—231 **2 Claims**



A compact portable tire servicing device comprises a base having ground engaging wheels upon which is supported a tank and a motor driven pump. A supply conduit is connected to the tank and is connectible to a reservoir which is adapted to contain a supply of calcium chloride solution. The liquid calcium chloride solution is pumped from the tank through an outlet conduit and is returned to the tank by return conduit. A control valve is interposed in flow controlling relation with respect to a filler conduit and the return conduit thus permitting the liquid to be supplied to the tire and to be evacuated therefrom. The tank is compartmented and the pump is positioned below the tank and below the connection of the return conduit to the tank so that the system is self-priming and the pump is flooded continuously.

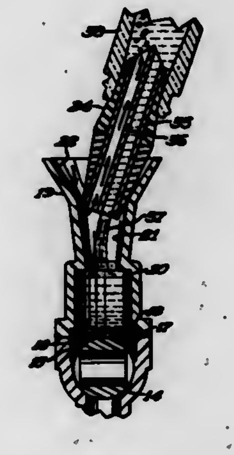
3,729,034
VALVE AND SEAL MEANS

John C. Farrell, and Thomas L. Balfanz, both of Excelsior, Minn., assignor to Select Systems Inc., Minneapolis, Minn.

Filed Dec. 16, 1970, Ser. No. 98,584

Int. Cl. B65b *39/00;* **B67c** *11/04*

U.S. Cl. 141—332 **1 Claim**



A double taper funnel is connected to a reservoir tnat is provided at another point with an open-closed valve having a ball core. The casing of the valve is separable from the reservoir and the ball can enter the casing only through this separation. A cooperating seal for connecting liquid containers to the funnel is a double ended stopper or cork with a tube extending through it. The tube is divided longitudinally by a partition to provide separate passageways for air and liquid.

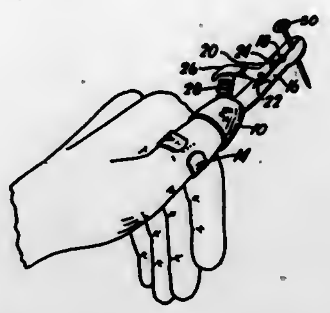
3,729,035
NAIL HOLDER

Alfred L. Manzanarez, Silverton, Colo., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 13, 1971, Ser. No. 180,009

Int. Cl. B25c *3/00*

U.S. Cl. 145—46 **1 Claim**



Apparatus engageable with a thumb of a user and provided with a spring loaded extension for detachably holding a nail in position for nailing in such manner that the fingers of the user cannot be struck by a hammer driving the nail.

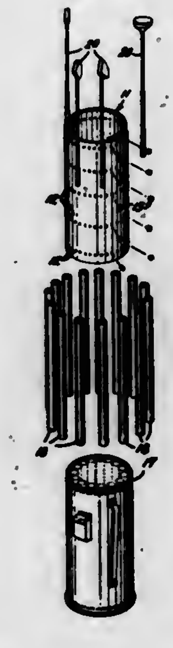
3,729,036
GOLF BAG LINER

William H. McFadden, 4820 Aspasia Lane, Edina, Minn.

Filed April 26, 1971, Ser. No. 137,187

Int. Cl. A63b *55/00*

U.S. Cl. 150—1.5 R **6 Claims**



An insertable liner for golf bags consisting of a rectangular sheet of material which is flexible but self-supporting, and which is rolled to form a tube of predetermined diameter. The liner is adjustable in size to permit it to define an annular space within the golf bag into which golf clubs can be placed. The liner has specific application with golf bags in which each golf club has its own placement tube, the liner serving to peripherally space the individual tubes and maintain them in a desired relative position.

3,729,037
DISPOSABLE HIGH CHAIR TRAY COVER

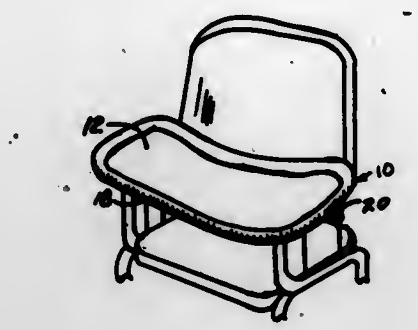
Franklin M. Dare, and Melissa C. Dare, both of 4335 A Birch St., Tacoma, Wash.

Filed July 27, 1970, Ser. No. 58,531

Int. Cl. B65d *65/02*

U.S. Cl. 150—52 R **2 Claims**

Throwaway disposable paper or plastic covers are formed or molded to conform to the top of a child's high chair tray in such a way that spillage is confined and not allowed to gather on the surface of the permanent tray. The high chair itself is adapted to secure the high chair tray disposable cover by adding spring clamps to the edge of the high chair tray, or the throwaway cover is made to receive cross ties that hold it in



place. The disposable cover is always securely fastened so a child cannot accidentally tear it off and spill his dinner. These throwaway disposable tray covers are particularly suited for use in restaurants where children have available sanitary eating surfaces, and restaurant proprietors have available quick and sanitary clean-up tray covers for high chairs.

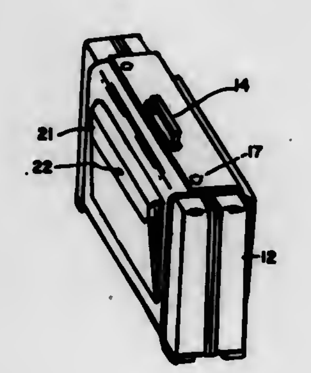
3,729,038
WRAP-AROUND GARMENT COVER BAG FOR LUGGAGE

Alfred G. Ekeson, Fairfield, N.J., assignor to Charles F. Winchell, Scituate, R.I.

Continuation-in-part of Ser. No. 3,780, Jan. 19, 1970. This application Nov. 18, 1970, Ser. No. 90,545

Int. Cl. B65d *65/02*

U.S. Cl. 150—52 E **6 Claims**



A wrap-around removable type of garment or article cover bag made of flexible material designed to fit or wrap around the exterior of a carrying rigid portable case and held in position by attached straps or other fastening means. The wrap-around bag or cover includes pockets to provide extra holding space for personal articles and will retain bulkier clothing between the cover bag and the carrying case.

3,729,039
CHRISTMAS TREE CONTAINER

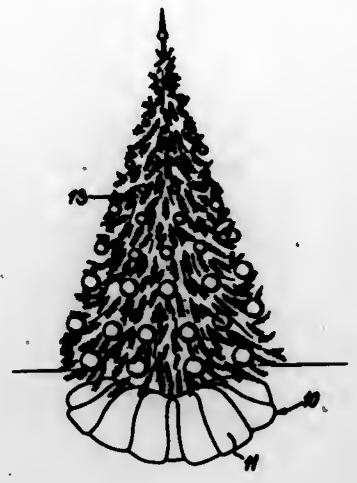
George E. Walsh, 721 Glendale Road, Franklin Lakes, N.J.

Filed Jan. 7, 1972, Ser. No. 216,040

Int. Cl. B65d *85/70*

U.S. Cl. 150—52 R **4 Claims**

A holder and ground cloth combination for Christmas trees characterized by a container of generally cylindrical configuration, having the dual purpose of acting as a ground cloth while the Christmas tree is displayed and adapted to act as a



container for disposing of the carcass of the Christmas tree at the end of the Christmas season.

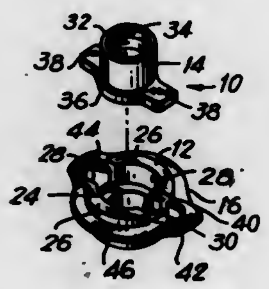
3,729,040
FLOATING REPLACEABLE ANCHOR NUT ASSEMBLY

Roger B. Whiteside, Cinnaminson, N.J., and William Cooper, Warminster, Pa., assignors to Standard Pressed Steel Co., Jenkintown, Pa.

Filed May 26, 1971, Ser. No. 147,043

Int. Cl. F16b *37/04*

U.S. Cl. 151—41.73 **10 Claims**



An anchor nut assembly wherein an internally threaded nut element is releasibly retained within a nut basket and is provided with a predetermined degree of radial float. The nut element is releasibly retained within the nut basket by a rotatable retaining ring member which in one position allows the nut to be readily removed or replaced within the nut basket and in a second position positively retains the nut element within the nut basket while permitting the nut element the desired degree of radial float within the nut basket.

3,729,041
TIRE

Hirokazu Kubota, Kobe, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

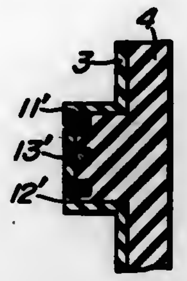
Filed April 14, 1971, Ser. No. 134,001

Claims priority, application Japan, May 17, 1967, 42/31811; May 17, 1967, 42/31812; May 30, 1967, 42/35048; May 30, 1967, 42/35049

Int. Cl. B60c *13/00*

U.S. Cl. 152—353 **7 Claims**

The invention relates to a novel means for realizing a "whitewall" type tire. The tire comprises dual layer sidewalls wherein the inner layer is the colored layer while the outer layer is an abrasion or wear-resistant layer. An annular groove



is formed in said outer layer to expose to view the underlying colored layer.

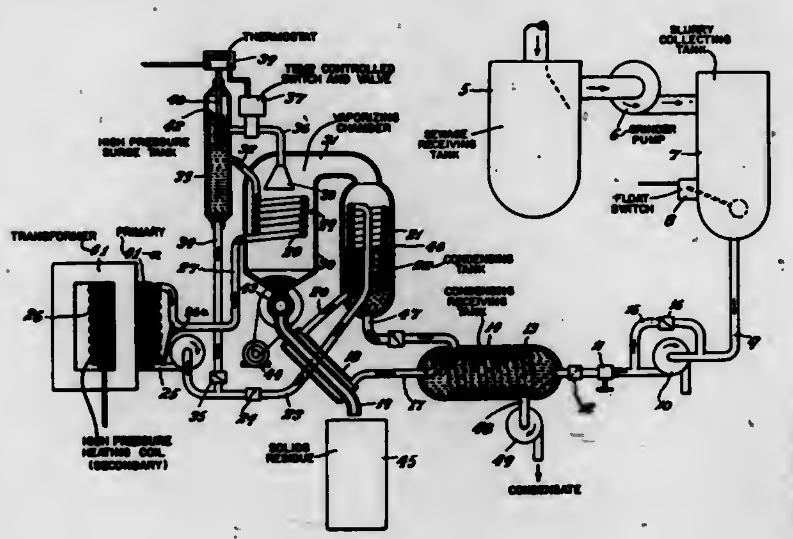
3,729,042
APPARATUS FOR SEPARATING POLLUTANTS AND OBTAINING SEPARATE LIQUIDS & SOLIDS

Henry J. Burnett, West Hartford, Conn., assignor to Pollutant Separation Inc., Elmwood, Conn.

Filed Feb. 22, 1971, Ser. No. 117,620

Int. Cl. B01d *1/28, 3/42, 1/00, 3/14, 3/00, 3/06*

U.S. Cl. 159—2 **4 Claims**



An apparatus for and method of sterilizing and separating solids from liquids in a slurry of sewage wherein said slurry is heated under a high pressure to a high temperature and then released into a low pressure atmosphere whereby the liquids in said heated slurry will burst into a vapor and the solids will be reduced to a fine powder for non-polluting disposal.

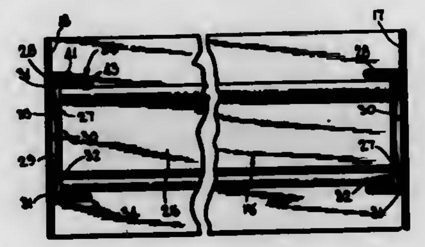
3,729,043
FIRE DAMPER WITH SMOKE SEAL

Sherwin S. Tarnoff, Northbrook, Ill., assignor to Air Balance, Inc., Chicago, Ill.

Filed March 24, 1971, Ser. No. 127,230

Int. Cl. E06b *3/12, 5/00*

U.S. Cl. 160—1 **2 Claims**



Smoke flow through a fire damper and particularly smoke flow about end edges of an assembly of reversely foldable damper blades is substantially reduced by leaf springs positioned adjacent the blade end edges in channels in side walls of a frame for the fire damper. The preferred leaf springs are formed from thin, elongated metal strips with a central bowed portion which projects inwardly toward the blade end edges. The leaf springs exert only a light frictional force on the end edges of the blades and hence do not impede movement of the damper blades to a curtain wall position in which the damper blades prevent fire from penetrating through the fire damper. Preferably, the leaf springs are made of stainless steel to prevent rust from developing on the leaf springs and interfering with movement of the damper blades to the curtain wall position.

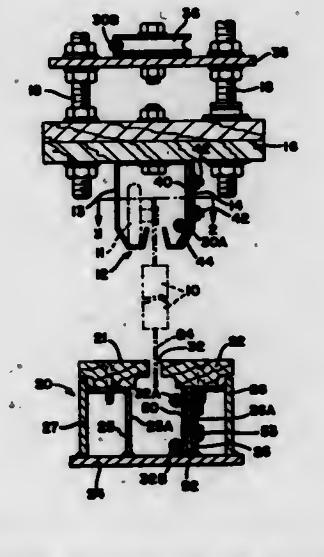
3,729,044
CURVED TRACK WITH PLASTIC LINER

Carl F. Gerkin, New Castle, Ind., assignor to American Standard Inc., New York, N.Y.

Filed April 5, 1971, Ser. No. 131,265

Int. Cl. E05d *15/00*

U.S. Cl. 160—201 **7 Claims**



A track for a coiling partition or the like in which flexible tension members, such as cables or chains, are caused to negotiate curves in the track, in which the inside wall of smallest radius of the track curve is provided with a lining of low friction material such as nylon or ultra-high molecular weight polyethylene to form a continuous bearing surface for the flexible member.

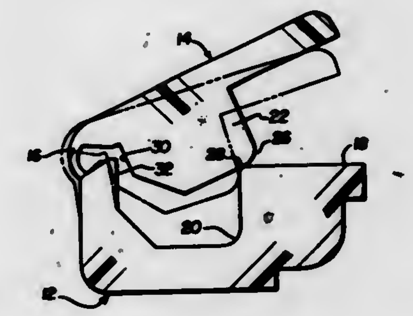
3,729,045
MOLDED SCREEN FRAME

Robert D. MacDonald, Adrian, Mich., assignor to Cardinal of Adrian, Inc., Adrian, Mich.

Continuation-in-part of Ser. No. 77,624, Oct. 2, 1970, abandoned. This application Jan. 13, 1971, Ser. No. 106,009

Int. Cl. E06b 9/52

U.S. Cl. 160—371 **1 Claim**



A one-piece plastic molded window screen frame comprises a bead-carrying locking flap which is connected by an integral hinge to a grooved base portion. The edge of the screen panel is firmly but removably retained between the interlocking bead and groove. The frame also has integral tabs which engage grooves in the window opening to retain the frame therein.

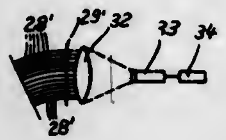
3,729,046
PROCESS FOR MANUFACTURING FOIL

Kurt D. Kennedy, Berkeley, and Maurice E. Turner, El Cerrito, both of Calif., assignors to Airco, Inc., New York, N.Y.
Filed Sept. 10, 1971, Ser. No. 179,579
Int. Cl. B22d *23/00*
U.S. Cl. 164—46 4 Claims

A process is described for manufacturing dense, ductile metallic foil by vacuum evaporation. The foil is produced by vacuum evaporating and depositing the metal of the foil on a high temperature substrate. A fluoride salt release agent is used to facilitate the removal of the condensed magnetic metallic material from the substrate.

3,729,047
DIE-CASTING MACHINE

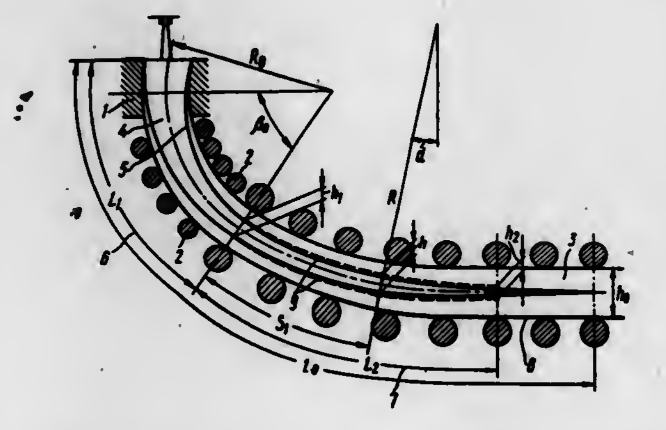
Friedrich Bohnlein, and Georg Stollmann, both of Brescia, Italy, assignors to Idra-Pressen GmbH, Stuttgart, Germany
Filed Jan. 28, 1972, Ser. No. 221,568
Int. Cl. B22c *19/04, 25/00;* B22d *1/02, 17/32*
U.S. Cl. 164—150 10 Claims



In a die casting machine having a piston rod attached to a pressure or firing piston thereof, a device for measuring the speed of said piston comprises: a reflector on said piston rod; a first member arranged generally parallel to said piston rod and carrying a plurality of regularly spaced light transmitters; and a second member also arranged generally parallel to the piston rod and carrying a plurality of regularly spaced light receivers, said members being arranged so that as the piston rod moves during a casting operation light from each transmitter is reflected into a corresponding receiver as the reflector carried by the piston passes therealong, the transmitters passing a series of pulses to a recorder from which the speed of the piston rod, and thus the piston, can be determined.

3,729,048
CONTINUOUS METAL-CASTING PLANT

Evgeny Jukhimovich Gelfenbein, ulitsa 40 let Oktyabrya, 28, kv. 51; Stanislav Evgenievich Karlinsky, ulitsa Kultury, 4, kv. 22; Vitaly Maximovich Niskovskikh, ulitsa Festivalnaya, 21, kv. 60, and Georgy Lukich Khimich, ulitsa Lenina, 53, kv. 92, all of Sverdlovsk, U.S.S.R.
Filed April 1, 1971, Ser. No. 130,413
Claims priority, application U.S.S.R., June 18, 1970, 1438559
Int. Cl. B22d *11/12*
U.S. Cl. 164—282 1 Claim



A continuous metal-casting plant which includes a radial crystallizer and a secondary cooling zone of the ingot with guiding devices for the ingot. Said guiding devices form consecutively-arranged arc-shaped, curved and straight sections. The arc-shaped section has a radius of curvature and its length, including the length of the crystallizer, varies from 0.2 to 0.4 of the overall length of the plant. The length of the curved section, depending on the central angle included between the horizontal and the straight line drawn through the center of the crystallizer curvature and the junction point between said arc-shaped and curved section is determined by the relation:

$$L_2=(1.3-1.8)\left(\frac{\pi}{2}-\beta_0\right)R_0$$

where
L_2 = length of the curved section, m;
β_0 = central angle, rad.;
R_0 = radius of crystallizer curvature, m.

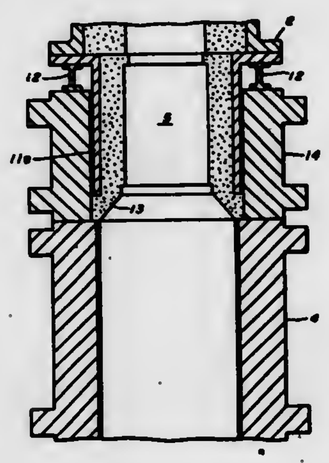
The guiding devices of the curved section are arranged along a curve whose radius of curvature varies with the changes in the length of this section of the thickness of the ingot liquid phase and which is expressed by a natural equation

$$R=a\frac{h}{L_2-S_1}$$

where
a = curve constant;
h_1 = thickness of the ingot liquid phase, m;
S_1 = present length of the curve arc, m.

3,729,049
SLIPPING COPE ASSEMBLY

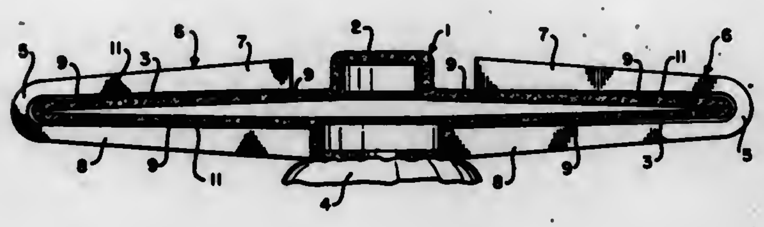
Robert P. Greenwood, and William L. Tiley, both of Canton, Ohio, assignors to United States Steel Corporation, Pittsburgh, Pa.
Filed June 17, 1971, Ser. No. 154,101
Int. Cl. B22d *15/02*
U.S. Cl. 164—352 1 Claim



In the conventional casting of long rolls, contraction strains resulting in tears are avoided by use of a movable sleeve which is accurately machined to slide into the chill. Subsequent to pouring of the metal, supports holding the sleeve are removed and the sleeve then follows the shrinking metal, thus permitting the solidifying metal to contract without tearing. The subject invention provides an improved slipping cope assembly, which avoids contact with the solidifying metal and is readily adaptable to chills of varying diameters.

3,729,050
REFRACTORY SUPPORT FOR SHELL MOLDS

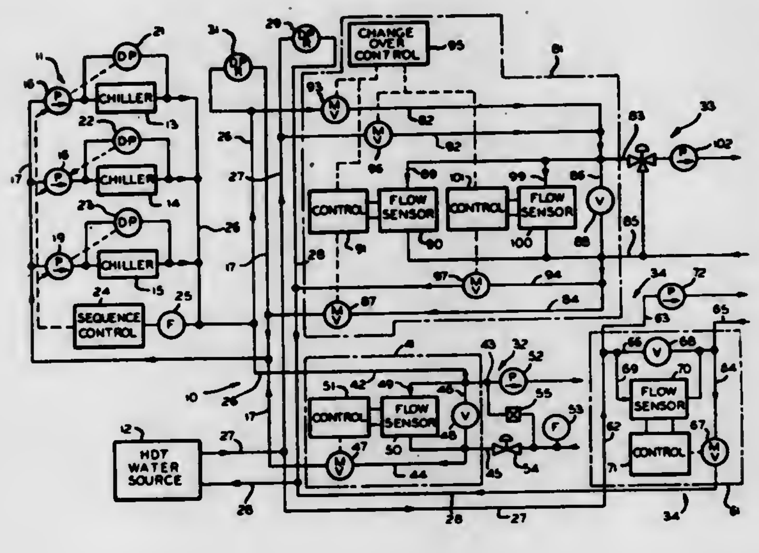
John J. Carnot, West Orange; Stanley Carroll Tingquist, Sparta; Ronald Robert Robb, Dover, and Roy Chester Feagin, Mountain Lakes, all of N.J., assignors to Howmet Corporation, Muskegon, Mich.
Continuation of Ser. No. 808,614, March 19, 1969, abandoned. This application Aug. 10, 1971, Ser. No. 170,645
Int. Cl. B22c *9/02*
U.S. Cl. 164—361 4 Claims



This disclosure relates to devices for supporting molds while they are being poured to reduce distortion of the mold caused by the weight and movement of the molten metal-containing material during and after it is poured into the mold. Support elements made of ceramic or other heat resistant materials are shaped and positioned to support selected wall portions of the mold.

3,729,051
PROCESS FLUID FLOW REGULATION SYSTEMS

Gerald F. Mannion, 608 Bowlingreen Court, Naperville, and James R. Mannion, 10336 S. Kolmar, Oak Lawn, both of Ill.
Filed Aug. 17, 1971, Ser. No. 172,504
Int. Cl. F24h *3/00*
U.S. Cl. 165—22 15 Claims



A flow regulation unit and system for regulating the flow of chilled water, hot water, or other incompressible process fluid to a series of utilization stations having common feeder and return lines and each having its own inlet pump, comprising a bridge between the inlet and outlet connections of each utilization station, sensing means for sensing flow rates in the bridge, a regulating valve interposed in the bridge outlet, and a control, actuated by the sensing means, for adjusting the regulating valve to maintain the flow across the bridge within a limited range.

3,729,052
HYDROTHERMAL TREATMENT OF SUBSURFACE EARTH FORMATIONS

Lyle Caldwell, 2311 Alto Oak Drive, Los Angeles, Calif.
Continuation of Ser. No. 32,400, April 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 824,371, May 5, 1969, abandoned, which is a continuation of Ser. No. 666,470, Sept. 8, 1967, abandoned. This application June 15, 1971, Ser. No. 153,393
Int. Cl. E21b *43/02, 43/26*
U.S. Cl. 166—283 11 Claims

A consolidated, permeable mass of siliceous material is formed within a permeable, subsurface earth formation or in the well bore penetrating such formation, in order to control loose or unconsolidated sand present in such formation, by injecting and displacing into the formation an aqueous solution substantially saturated with an alkaline earth metal hydroxide or compounds which form the same in situ, by reacting with each other or with a material present in the formation, and maintaining the solution in the formation for a time and at a temperature sufficient to form such consolidated, permeable mass from siliceous materials present in the formation, or a siliceous material is added to the solution and the solution is disposed in the well bore, in cavities or openings in the formation or in fractures in the formation for a time and at a temperature sufficient to form such consolidated, permeable mass.

3,729,053
METHOD FOR INCREASING PERMEABILITY OF OIL-BEARING FORMATIONS

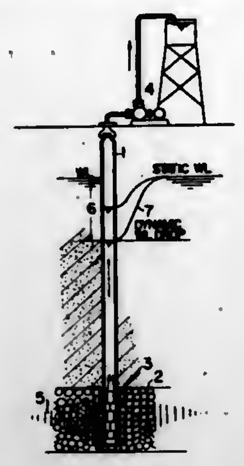
H R. Froning, Tulsa, Okla., assignor to Amoco Productions Company, Tulsa, Okla.
Filed Jan. 5, 1972, Ser. No. 217,703
Int. Cl. E21b *43/25*
U.S. Cl. 166—304 12 Claims

Water injection wells are treated to increase their injectivity by first introducing a solvent such as carbon disulfide, carbon tetrachloride or a composition rich in monocyclic aromatics, into the formation surrounding the well. The waxes and/or bituminous materials normally found at or near the surface of such wells are highly soluble in solvents of this kind. In order to assure the stability of the subsequently injected micellar solution, a suitable buffer such as water or a predominantly aliphatic hydrocarbon, e.g., kerosene, gas oil or crude oil, etc., is injected to immediately follow the aromatic hydrocarbon solvent. Thereafter, the micellar solution, usually containing not more than about 50 percent water, is injected and is substantially miscible with the buffer slug. This system of solvent buffer and micellar solution is then forced out into the formation by means of water or other suitable drive agent.

3,729,054
REJUVENATION OF WELLS AND OTHER GROUND-WATER COLLECTING DEVICES

Kashimi Yokoyama, Hiroshima, Japan, assignor to Suiri Kogyo Kabushiki Kaisha, Hiroshima, Japan
Filed March 23, 1971, Ser. No. 127,124
Claims priority, application Japan, Dec. 28, 1970, 45/119633
Int. Cl. E21b *21/00*
U.S. Cl. 166—312 3 Claims

A drilled well of deficient performance due to accumulation of scales on the water-intake parts of its well pipe is rejuvenated at low cost by inserting a cleaning pipe of smaller diameter through the well pipe to supply concurrently to the water-intake parts an aqueous solution of a harmless washing agent and high-pressure air, which produce a cooperatively combined agitation action by which the scales are chemically dissolved, loosened, and washed off and can be subsequently removed by pumping through the well pipe. The air and solution are delivered from respective supply pumps and supplied through a mixer to the cleaning pipe to be ejected with high energy through a vaned turbine wheel at the lower end of the cleaning pipe.



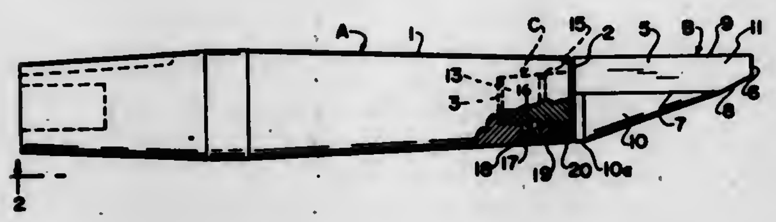
3,729,055
TAMPER BAR FOR A TAMPING MACHINE

George D. Burridge, 36876 Munyan St., Newark, Calif.

Filed March 24, 1971, Ser. No. 127,453

Int. Cl. E01b *27/16*

U.S. Cl. 172—719 **6 Claims**



A two part tamper bar consisting of a tamper bar shank and a tamper bar foot removably secured to the shank. The shank is made from high carbon steel, heat treated, and the foot is made from tool steel. The foot has an integral truncated conical projection that is receivable in a conical recess in the end of the shank. Novel means removably connects the foot to the shank. The foot is rectangular in shape and has an integral semi-conical portion on one face whose greatest radius is the same as the radius of the shank end that lies adjacent to the foot and the center of the radius of the semi-conical foot portion coincides with the center of the shank end radius. The other or second face of the foot has its plane lying tangent to the circumference of the shank end and, therefore, the second face will lie flush with one portion of the shank end circumference and the semi-conical portion will lie flush with another portion of the shank end circumference.

3,729,056
MINING AND EXCAVATING APPARATUS

Friedrich Wilhelm Paurat, Alte Hunxer Str. 45, 4222 Friedrichsfeld, Germany

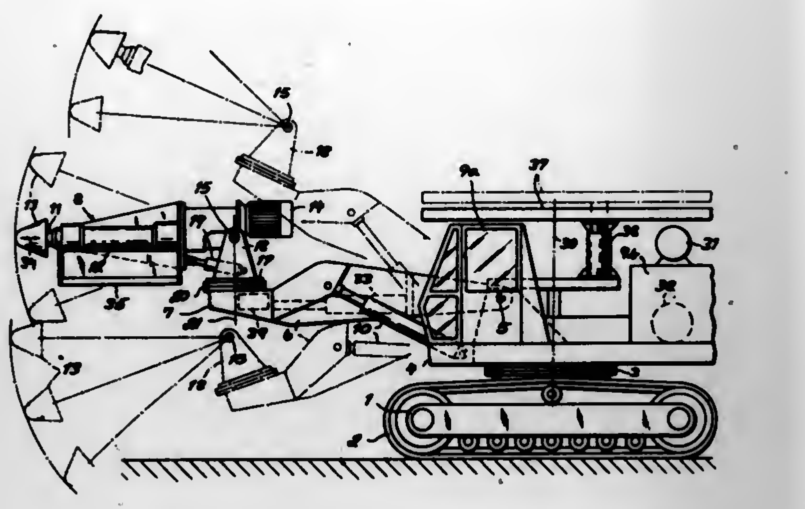
Filed April 19, 1971, Ser. No. 135,254

Claims priority, application Germany, April 18, 1970, P 20 18 778.4

Int. Cl. E21c *11/02*

U.S. Cl. 173—43 **9 Claims**

A percussive mining and excavating apparatus has a carriage supporting a body which is rotatable on the carriage about a substantially vertical axis. An arm has one end pivoted on the body about a horizontal axis and carries on its other end a rectilinearly displaceable hammer. The drive for the hammer, and the hammer itself, are pivotal on this other end of the arm about horizontal and vertical axes so that the hammerhead can attack a wall, floor, or ceiling squarely even when offset from the body. A horizontally or vertically displaceable pair of such electrically-powered hammers can be mounted on the arm and can themselves be individually pivotal about horizontal axes.



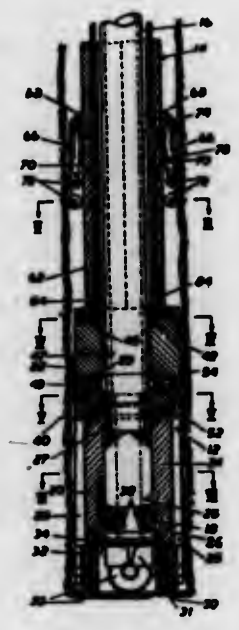
3,729,057
TRAVELLING DRILL BIT

George S. Werner, Pensacola, Fla., assignor to Werner Industries, Inc., Pensacola, Fla.

Continuation-in-part of Ser. No. 872,070, Oct. 29, 1969, abandoned. This application Nov. 30, 1971, Ser. No. 203,164

Int. Cl. E21b *11/00*

U.S. Cl. 175—262 **12 Claims**



Drill bit and drill collar assemblies for use with a drill string which assemblies can be moved up and down the drill string without the need of removing the drill string from the well hole. The drill collar assembly also is shaped, and includes elements, which together serve to prevent excessive lateral shifting of the drill string, thereby assuring the drilling of a straight well hole.

This invention relates to improved drill bit and drill collar assemblies for use in combination with a drill string used in the drilling of wells, such as oil wells, for example.

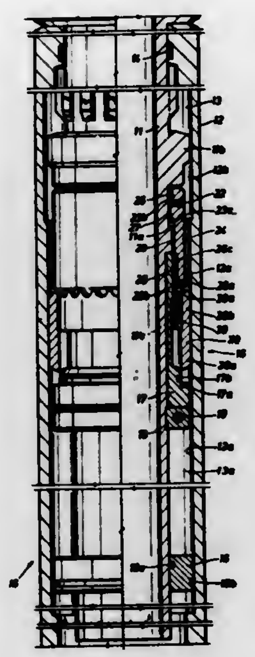
3,729,058
HYDRAULIC JARRING MECHANISM

Preston C. Roberts, Terrebone Parish, La., assignor to Kajan Specialty Co. Inc., Houma, La.

Filed Oct. 21, 1970, Ser. No. 82,571

Int. Cl. E21b *1/10, 23/00*

U.S. Cl. 175—297 **19 Claims**



A bypass passage for displaced fluid in an hydraulic jarring device is equipped with a pressure responsive regulator sleeve which automatically moves axially within the fluid reservoir of the device to restrict fluid flow through the passage as required to maintain a relatively constant pressure in the compression chamber of the reservoir during an initial portion of the upstroke. An externally threaded plug is set within a threaded bore extending through the sleeve between the compression chamber and the bypass passage. The thread peaks on the plug are flattened which produces a helical orifice passage between the plug and bore which may be adjusted in length by rotating the plug which in turn establishes the high pressure value in the compression chamber. A thin wall segment supporting a portion of the plug threads moves radially in response to pressure changes to vary the cross-sectional dimensions of the orifice to assist in pressure regulation.

3,729,059
SEAT BELT SAFETY SYSTEM FOR MOTOR VEHICLES

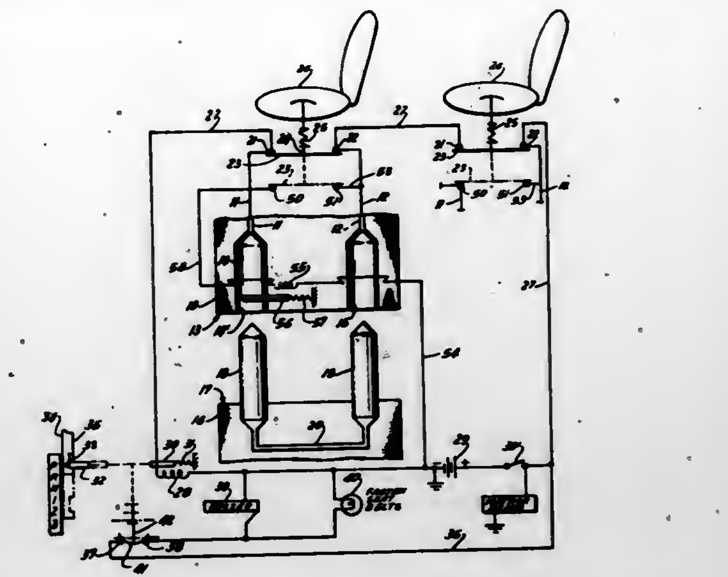
Benjamin Redmond, New York, N.Y., assignor to Leila R. Chenkin, New York, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,392

Int. Cl. B60r *21/10*

U.S. Cl. 180—82 **6 Claims**

A seat belt safety system for motor vehicles has all of its seat belts as elements of a common electrical circuit operative to control the drive system of the vehicle and to prevent placing the vehicle in motion, while permitting running of the vehicle's engine with the vehicle at rest, unless and until the seat belt in each and every occupied seat of the vehicle, is buckled. To prevent circumvention of this safety feature, as by a passenger buckling the belt before occupying his seat, each seat belt incorporates electro-mechanical means operative to prevent the belt from being buckled unless and until the seat is occupied.



3,729,060
SEISMIC PROSPECTING

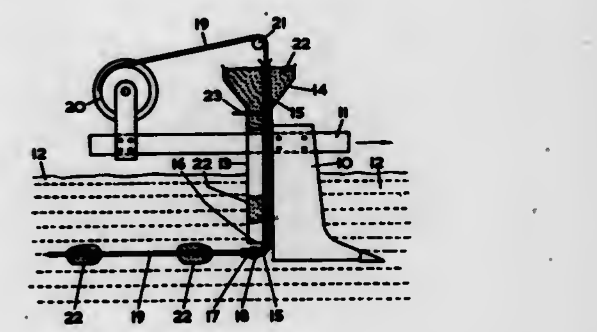
Frank McDonald Murray, Kilmarnock, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed July 27, 1970, Ser. No. 58,580

Claims priority, application Great Britain, Aug. 13, 1969, 40,414/69

Int. Cl. G01v *1/13;* **E02f** *5/10*

U.S. Cl. 181—0.5 XC **11 Claims**



A method of seismic prospecting wherein detonating cord is laid parallel to the surface of a prospect area, a quantity of a fluent explosive, for example a free-running powdered or slurried blasting explosive, is placed adjacent to the cord, and the cord and explosive are detonated.

3,729,061
SPEAKER BOX

Yutaka Tamura, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

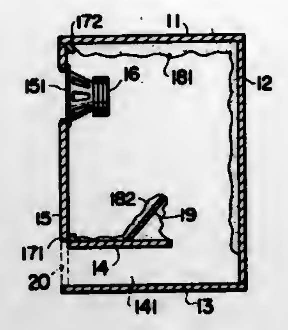
Filed Feb. 26, 1971, Ser. No. 119,333

Claims priority, application Japan, Feb. 27, 1970, 45/16808

Int. Cl. G10k *13/00;* **H04r** *1/28*

U.S. Cl. 181—31 B **4 Claims**

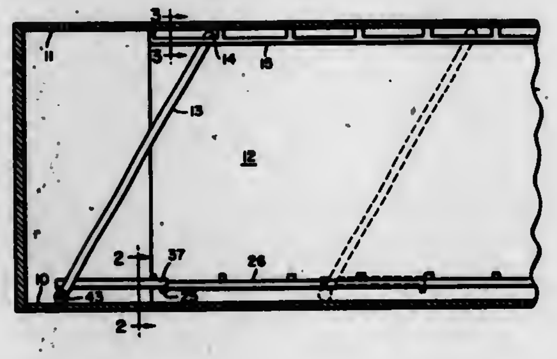
A speaker box has a baffle plate with a speaker mounting hole provided in either the upper or lower portion. A duct for inverting a phase of sound in the neighborhood of the lowermost resonant frequency of the speaker is provided to introduce the sound outside the speaker. Sound absorbing means is provided on the duct so as not to unduly interfere with the sound discharged from the front surface of the speaker in the range that the sound discharged rearwardly of the speaker is of a higher frequency band than the lowermost resonant frequency when the speaker mounting hole is provided in displacement in the neighborhood of the duct.



3,729,062

SHIFTABLE LADDER INSTALLATION

Joseph Anthony Freiburger, 2037 Edgewood, N.E., Grand Rapids, Mich.
Filed Oct. 15, 1969, Ser. No. 866,596
Int. Cl. E06c *1/397*
U.S. Cl. 182—39 **2 Claims**



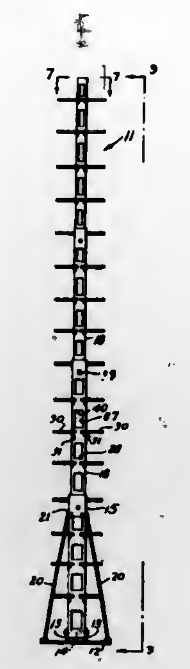
A guide follower assembly secured to the lower portion of an inclined ladder engages a downwardly open guide rail channel for stabilizing the position of the lower portion of a ladder with respect to the guide rails, the upper portion of the ladder being supported in conventional fashion by a follower engaging an upper guide rail. The ladder is inclined in a vertical plane parallel to the guide rails, and the lower follower is mounted on an arm extending preferably from the underside of the ladder, as inclined.

3,729,063

TELESCOPING LADDER

John E. Hein, 14 Cascade Drive, R.D. 2, Warren, N.J.
Filed Jan. 19, 1972, Ser. No. 219,076
Int. Cl. E06c *1/12, 1/22, 1/38*
U.S. Cl. 182—156 **11 Claims**

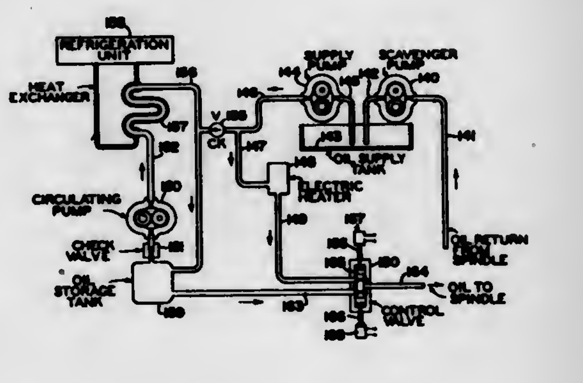
An extensible ladder, consisting of a plurality of nesting telescoping channel sections, which can be telescopically extended, relative to each other. Each section, except the innermost, has a pivoted supporting dog which can be rotated inwardly so as to underlie and support the bottom rim of the next inwardly adjacent section. Each section has a plurality of vertically spaced pairs of opposite outwardly rotatable step bars which can be rotated to outwardly extending horizontal positions. The step bars are supported in outwardly extending positions on lugs provided on the sections or in notches provided in the top rim portions of the next subjacent sections. The lowermost section has a removable supporting base, having side struts whose top ends are engaged in slots provided near the top of the lowermost section.



3,729,064

MACHINE TOOL

Heinz K. Wolf, Willoughby Hills, and Alan G. Alexander, Mentor, both of Ohio, assignors to The New Britain Machine Company, Cleveland, Ohio
Division of Ser. No. 734,105, June 3, 1968, Pat. No. 3,555,962. This application Jan. 18, 1971, Ser. No. 107,330
Int. Cl. F01m *5/00*
U.S. Cl. 184—6.14 **5 Claims**



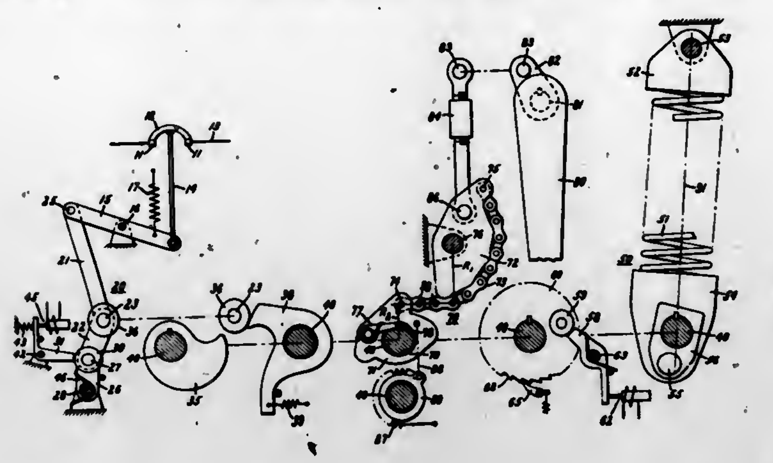
A machine tool having a power driven rotatable tool spindle and an oil distribution and lubrication system for supplying oil to the bearings and tool spindle and preferably stabilizing the bearings, spindle and spindle housing at a predetermined operating temperature range.

3,729,065

MEANS FOR CHARGING A STORED ENERGY CIRCUIT BREAKER CLOSING DEVICE

Ralph J. Baskerville, Sarasota, Fla., and Patrick P. Yen, Philadelphia, Pa., assignors to General Electric Company, Philadelphia, Pa.
Filed March 5, 1971, Ser. No. 121,284
Int. Cl. F03g *1/00*
U.S. Cl. 185—39 **8 Claims**

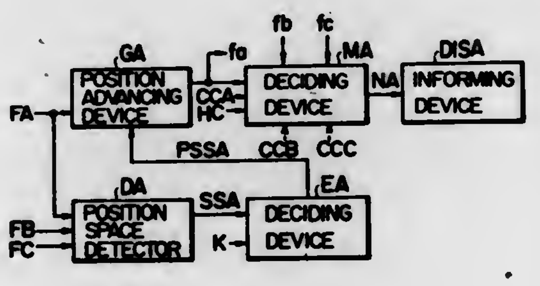
For charging the closing spring of a heavy-duty electric circuit breaker, manually actuated charging means is provided for effecting the desired charging action in response to a single stroke of an input handle. The charging means comprises a pair of spaced cams interconnected by a flexible power-transmitting member that winds about the periphery of one cam while unwinding from the periphery of the other. The cam peripheries are so shaped that the torque on the handle needed to charge the spring remains generally constant during most of the charging operation.



3,729,066

ELEVATOR CONTROL APPARATUS

Tatsuo Iwasaka, 3174-14, Nakane; Hideto Matsuzawa, 404-3, Ichige; Takeo Yuminaka, 5-13, Ishikawa; Akinori Watanabe, and Isao Inuzuka, both of 663 Ichige, all of Katsuta, Japan
Filed July 6, 1971, Ser. No. 159,781
Claims priority, application Japan, July 3, 1970, 45/57774
Int. Cl. B66b *1/18*
U.S. Cl. 187—29 R **9 Claims**



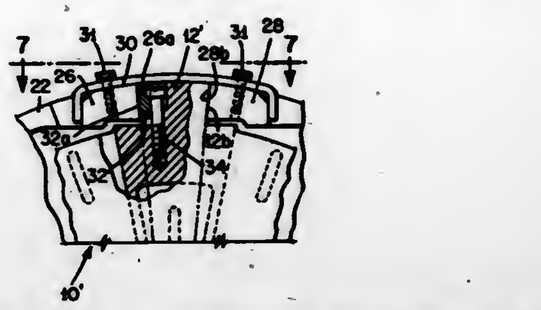
An elevator control apparatus which operates a plurality of elevators so as to serve a plurality of landing floors evenly, wherein the imaginary position of each elevator is determined in accordance with the space between each elevator and the succeeding one, a service zone of each elevator being established between the imaginary positions of each elevator and the preceeding one, and the elevator being stopped when a call is produced within the service zone.

3,729,067

MOUNTING MEANS AND DISK FOR AN EXTERNALLY SUPPORTED DISK BRAKE

Edwin K. Buyze, Philadelphia, Pa., assignor to The Budd Company, Philadelphia, Pa.
Filed Dec. 16, 1970, Ser. No. 98,508
Int. Cl. B60t *1/06*
U.S. Cl. 188—18 A **1 Claim**

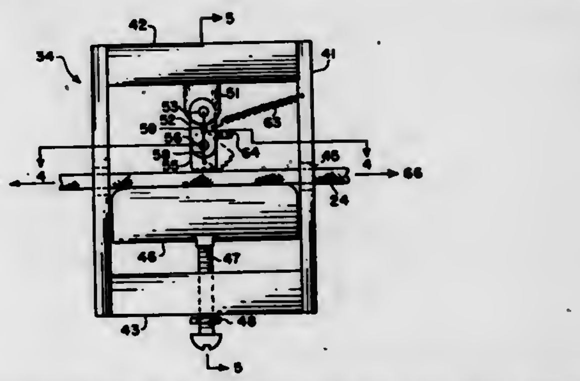
A driver and disk supported thereon for a vehicle disk brake assembly wherein the disk is floatingly supported by the driver. The disk includes an adjustable gib associated with a drive lug. Heat expansion during braking operation does not appreciably affect the clearance between the driver and the disk.



3,729,068

CABLE RESTRAINT

Harry V. Fuller, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 17, 1970, Ser. No. 99,201
Int. Cl. B65h *59/16*
U.S. Cl. 188—65.1 **4 Claims**

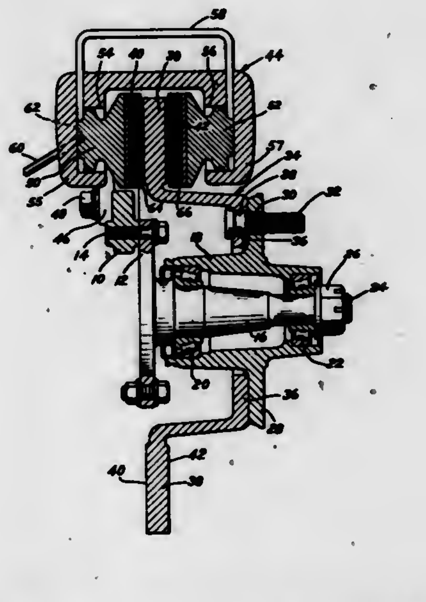


A device for receiving a cable therethrough and permitting substantially free movement of the cable in a first direction but resisting cable movement in an opposite direction until the forces exerted thereon exceed a predetermined minimum and thereafter permitting free cable movement in said opposite direction.

3,729,069

DISC BRAKE ROTOR WIPER AND NOISE SUPPRESSOR

Bruce W. Klein, and John L. Turak, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.
Filed June 28, 1971, Ser. No. 157,212
Int. Cl. F16d *55/228*
U.S. Cl. 188—72.5 **1 Claim**



A disc brake having a rotor with opposed braking surfaces thereon engageable respectively by two friction pads, the radial widths of which are greater than the radial widths of the respective braking surfaces which the pads overlie so that the pads will overlap the braking surfaces at their inner and outer radii.

3,729,070
MANUAL RELEASE MECHANISM FOR AN EMERGENCY AND PARKING BRAKE

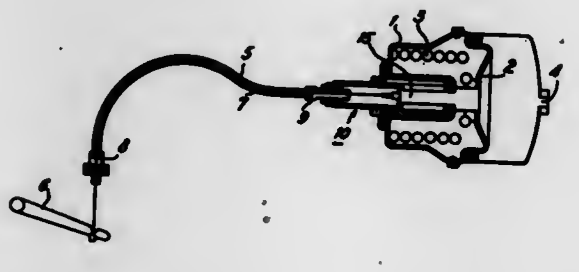
Claude Le Marchand, 95 Domont, France, assignor to Societe Anonyme D. B. A.

Filed May 4, 1971, Ser. No. 140,074

Claims priority, application France, May 5, 1970, 7016324; June 1, 1970, 7019972; March 2, 1971, 7107093

Int. Cl. F16d *59/02*

U.S. Cl. 188—170 **8 Claims**



Manual release mechanism for an emergency and parking brake control system utilizing a fluid pressure operated spring cylinder, a transmission cable stretched between the piston contained in this cylinder and a brake control lever being guided by a sheath, the ends of said sheath taking anchor on a pair of stops respectively connected to stationary parts. The mechanism comprises two relatively slidable members, one connected to one of the stops, the other one connected to the adjacent stationary part, these members being normally locked in the position of their maximum extension. Release of the emergency brake is obtained by releasing the locked members, thus allowing the stop of the sheath to move to a position in which the tension of the cable is relieved. One of the members can be a socket connected to the cylinder body, the other member being then a plug connected to the stop and slidably received in the socket, a projection on the plug and a notch in the socket allowing these members to be mutually locked or unlocked when one of the members is rotated while the projection is facing the notch. Embodiments are described in which re-locking of the members occurs automatically upon reinstating fluid pressure in the spring cylinder.

3,729,071
COMBINED OVERSPEED SAFETY BRAKE AND REVERSE HOLDBACK MECHANISM FOR ELEVATORS

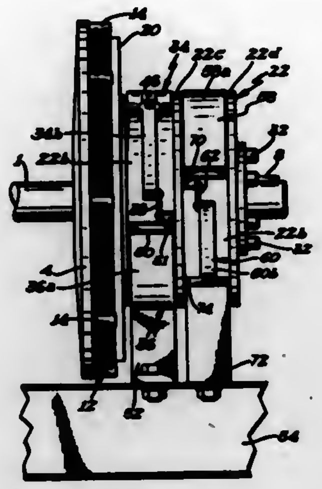
Marvin R. Laing, Edina, and Adwell B. Morris, Faribault, both of Minn., assignors to Humphrey Elevator and Truck Company, Faribault, Minn.

Filed April 8, 1971, Ser. No. 132,283

Int. Cl. B60t *1/00*

U.S. Cl. 188—189 **8 Claims**

A rotary drive shaft of an elevator is provided with a double acting brake mechanism having a first set of centrifugally actuable strike elements pivotal to a stop position to engage a first stationary stop member when the rotational speed of the drive shaft exceeds a predetermined level in the normal direction of rotation, and a second set of strike elements with contact surfaces thereon facing in the opposite direction from contact surfaces on the first set of strike elements and pivotal to a stop position to engage a second stationary stop member oriented to cooperate with the second strike elements in preventing reverse rotation of the drive shaft. The two sets of strike elements are supported in spaced relation along the rotational axis of the drive shaft on an annular clamping member of a disc brake assembly by means of common pivot pins extending parallel to the axis of rotation of the drive shaft.



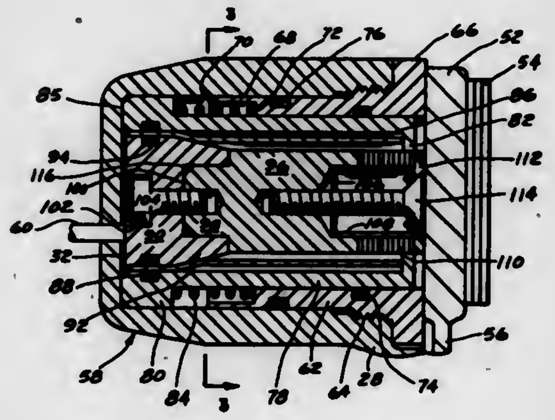
3,729,072
BRAKE ADJUSTER

Donald F. Borkowski, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed March 24, 1972, Ser. No. 237,778

Int. Cl. F16d *65/52*

U.S. Cl. 188—196 P **8 Claims**



An automatically operative brake adjuster and retract device particularly adapted for a multiple disc brake of the disc type. A fixed outer bushing threadedly engaged with a carrier member slidably contains an inner bushing loaded by a return compression spring interposed between the inner and outer bushings. A radially deformable cylinder fixed to the inner bushing slidably contains a fluid pressure actuated tapered piston having an interference or force fit therein and adapted to deform the cylinder radially outwardly under the influence of applied pressurized fluid on the piston to permit axial movement of the piston therein to the degree necessary for brake application. Brake release in response to depressurization of the piston permits the inner bushing to retract relative to the outer bushing under the influence of the compression spring thereby establishing a predetermined retract position of the cylinder and thus the piston frictionally engaged therewith.

3,729,073
BUFFER DEVICE OF A ROBOT MACHINE FOR CONTROLLING THE ROTATIONAL MOVEMENT OF A ROBOT ARM

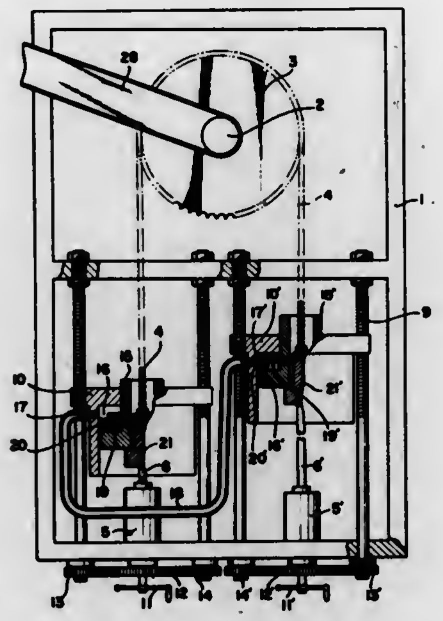
Hisao Fujiwara; Kentaro Sakamoto, and Goro Wada, all of Totsukaku, Kanagawa-ken, Yokohama, Japan, assignors to Kabushiki Kaisha Keiaisha Seisakusho, Kanagawa-ken, Japan

Filed June 14, 1971, Ser. No. 152,574

Claims priority, application Japan, June 30, 1970, 45/56452

Int. Cl. F16f *9/26*

U.S. Cl. 188—303 **5 Claims**



This invention relates to a buffer device of a robot machine for controlling rotational movement of a robot arm by smoothly and accurately operating the rotational shaft at both ends of its swing motion, and which comprises a rotational shaft, a chain for driving said shaft, pistons in the hydraulic pressure means, the ends of said chain being applied between said pistons, stop members provided at ends of piston rods in engagement with pistons slidable in the cylinders, whereby airtight chambers are formed in said cylinders connected with a pipe and said airtight chambers are opened or closed by means of valves operable by said pistons.

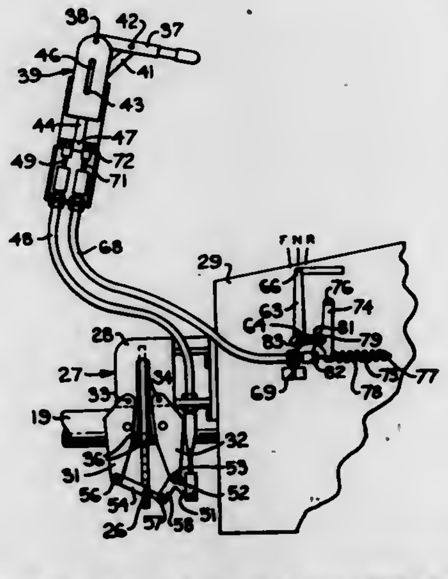
3,729,074
PARKING BRAKE CONTROL WITH TRANSMISSION INTERLOCK

Rodney H. Anderson, Naperville, and Ralph R. Day, Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 14, 1971, Ser. No. 152,712

Int. Cl. B60k *29/02*

U.S. Cl. 192—4 C **2 Claims**



A control system for a vehicle having a parking brake and a transmission is provided with means cooperating with the transmission controls to bias the transmission into a neutral condition when the parking brake is applied. The cooperating control means coact to shift the transmission to a neutral position if the parking brake is applied with the transmission in either a forward or reverse drive condition. A resilient biasing means is employed to provide a manual override to enable the transmission to be manually held in an operating condition with the parking brake engaged.

3,729,075
CONTROL MECHANISM FOR A TRANSVERSE POWER UNIT HAVING AN AUTOMATIC TRANSMISSION

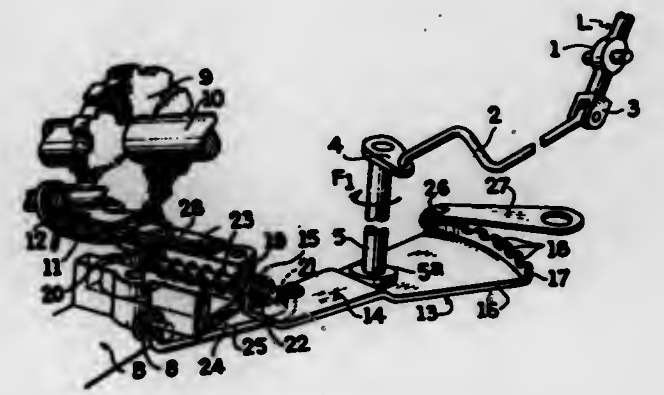
Jean Piret, 78 Bougival, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines, Billancourt, France

Filed July 6, 1971, Ser. No. 160,028

Claims priority, application France, July 10, 1970, 7025796

Int. Cl. F16d *67/00*

U.S. Cl. 192—4 A **9 Claims**



Control mechanism for a power unit having an automatic transmission for interposition between a manually operated selector and a parking brake and a slide of a control. The mechanism comprises a rotatable control bar connected to the selector and fixed at one end to a lever connected by a rod provided with a ramp adapted to cooperate with a pawl for shifting the latter into or out of engagement with a toothed wheel of a parking brake. A spring is interposed between the rod and lever in such manner that the lever shifts the ramp through the medium of the spring to engage the pawl with the toothed wheel. The lever directly acts on the rod in the direction for disengaging the pawl from the toothed wheel. Connecting means connect the lever to the slide.

3,729,076
OVERRUNNING CLUTCH

Pierre De Lacroix de Lavalette, Paris, France, assignor to Societe Anonyme dite: SKF Compagnie D'Applications, Mecaniques, Clamont, France

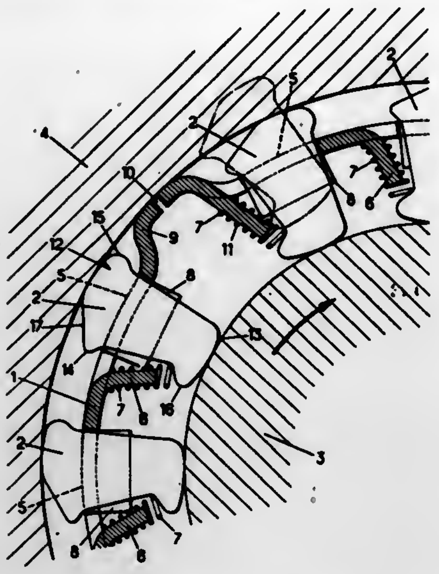
Filed June 3, 1971, Ser. No. 149,722

Claims priority, application France, June 4, 1970, 7020610

Int. Cl. F16d *41/07*

U.S. Cl. 192—41 A **7 Claims**

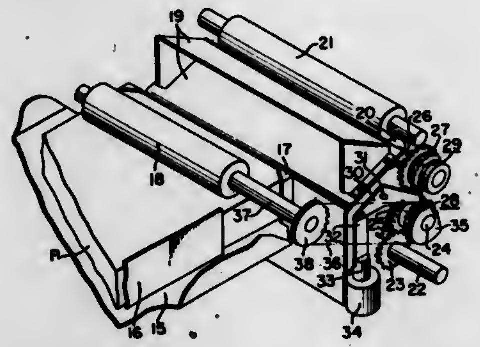
Overrunning clutch of the type comprising a plurality of cams positioned between the two facing concentric surfaces of a shaft and concentric external ring, said clutch comprising an annular cage having openings through which said cams project, said cams being smaller at one end than the other and said openings being large enough to pass the smaller end of a cam but too small to pass the larger end, and spring means engaging the smaller end of each cam and biassing it away from said cage toward one of said concentric surfaces.



3,729,077

SPRING CLUTCH

Akiyoshi Torigai, 5-26-20 Higashi, Ohi, Tokyo, Japan
Filed May 13, 1971, Ser. No. 143,126
Claims priority, application Japan, May 18, 1970, 45/42316
Int. Cl. F16d ***11/06***
U.S. Cl. 192—81 C **5 Claims**



A simple and compact spring clutch suitable for use with paper feed means in copying machines and the like and provided with a coiled spring wound around two equally diametered bosses mounted in opposed relationship and for rotation on a common shaft driven from a drive source. The coiled spring is tightened and loosened with respect to the two bosses whereby when the spring is tightened, the two bosses are connected to transmit a drive and when loosened, the two bosses are separated to interrupt the transmission.

ERRATUM

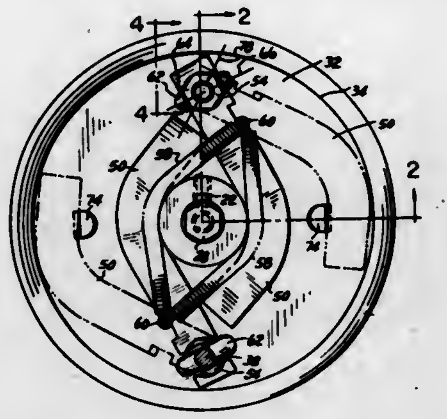
For Class 192—12 see:
Patent No. 3,729,171

3,729,078

CLUTCH WITH CENTRIFUGALLY OPERATED CAMS

James R. Kincaid, 14717 Ziegler, Taylor, Mich., and Clifford Kincaid, 1386 Arlington, Lincoln Park, Mich.
Filed June 23, 1971, Ser. No. 156,006
Int. Cl. F16d ***43/10***
U.S. Cl. 192—105 CP **8 Claims**

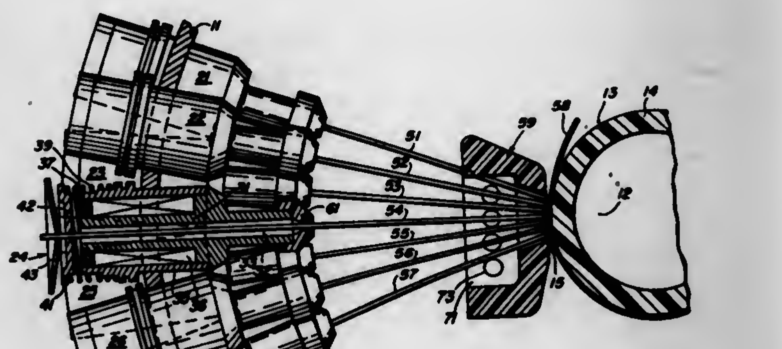
An automatic clutch, engaged by centrifugal force, for coupling a driven shaft with a driving shaft above a predetermined rotational velocity of the driving shaft, and comprising a pair of spaced apart plates, one of which is mounted on the driving shaft, a disc disposed between the plates and connected to the driven shaft, and a pair of annular friction elements disposed one between a plate and the disc and the other between the disc and the other plate. The two plates are interconnected by means of a pair of longitudinally extending studs, and an arm is mounted for pivotal motion on the end of each stud, the surfaces of the arm and the plate in engagement being provided with complementary camming surface such that the pivotal motion of the arm under the influence of centrifugal force causes a pull on the end of the stud drawing the two plates toward each other so as to frictionally engage the plates, the annular friction elements and the disc, with the result that the driven shaft is rotated in unison with the driving shaft. The camming surfaces are shaped such as to cause a positive engagement of the clutch for a certain amount of rotational velocity of the driving shaft, the amount of torque transmitted through the clutch coupling being dependent from the initial adjustment of the clutch rather than dependent from the rotational velocity of the driving shaft.



3,729,079

PRINTING HEAD FOR HIGH SPEED DOT MATRIX PRINTER

Walter J. Zenner, Des Plaines, and Raymond E. Kranz, Mount Prospect, both of Ill., assignors to Extel Corporation, Chicago, Ill.
Filed Oct. 30, 1970, Ser. No. 85,675
Int. Cl. B41j ***1/18***
U.S. Cl. 197—1 R **9 Claims**

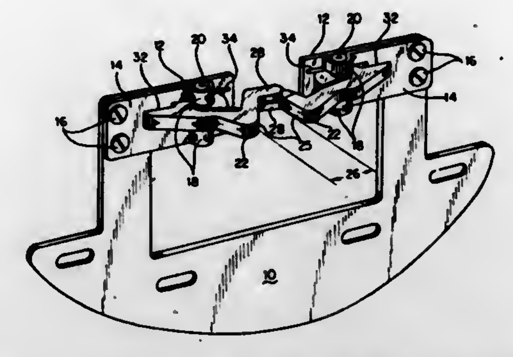


A printing head for a high speed dot matrix printer, comprising a plurality of cylindrical electromagnets mounted in an arcuate array with their axes converging on a series of linearly aligned points immediately adjacent an acruate printing surface. Each electromagnet has a spring-supported armature spaced from its outer end and a needle-like printing rod affixed to the armature and extending through the magnet coil, in spaced coaxial relation thereto, toward the printing surface. A guide bearing engages each rod near the printing surface, but most of the rod length is free of surface contact.

3,729,080

RUGGEDIZED TYPEBAR GUIDE

Hans W. Mueller, Cortland, N.Y., assignor to SCM Corporation
Filed June 1, 1971, Ser. No. 148,457
Int. Cl. B41j ***25/22***
U.S. Cl. 197—43 **11 Claims**

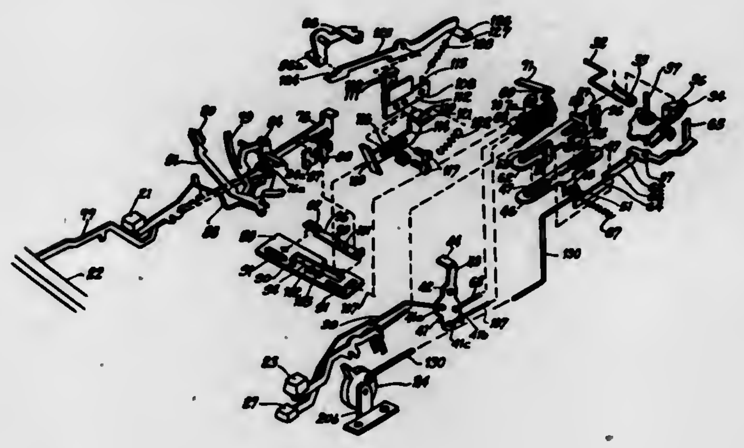


A ruggedized typebar guide is disclosed comprising two spaced pivots and two guide dogs rotatably mounted to the pivots with each guide dog having spaced opposing cam surfaces respectively disposed along opposing sides of a typebar flight path. Shock absorbing means are provided permitting limited movement of the pivots in a direction substantially parallel the flight path upon rotation of the guide dogs. Means are also provided for rotating the guide dogs about the movable pivots upon passage of a typebar between the guide dogs along the typebar flight path to converge the two opposing cam surfaces towards one another a predetermined distance within the flight path to center the typebar.

3,729,081

TYPEWRITER CARRIAGE AND RIBBON FIELD CONTROL FOR ERROR CORRECTION

Chester E. Ozimek, Park Ridge, and Charles H. Seefeldt, Riverside, both of Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.
Filed Dec. 11, 1970, Ser. No. 97,169
Int. Cl. B41j ***19/00***
U.S. Cl. 197—82 **5 Claims**

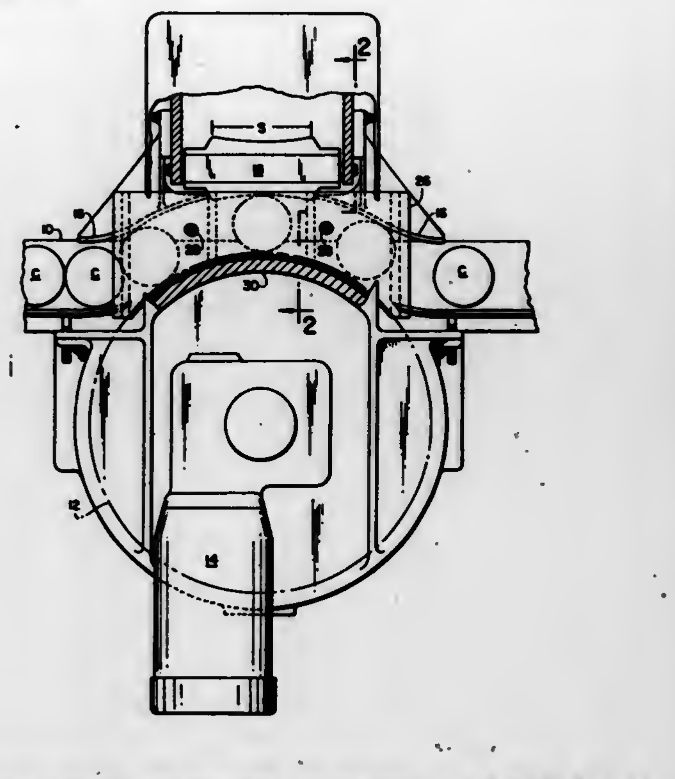


An error correcting typewriter having mechanism for disabling the forward spacing mechanism of the carriage to prevent movement of the carriage for two successive actuations of any character key. A manual key is connected with and to concurrently operate the backspace drive mechanism, the disabling mechanism and the ribbon vibrator. The carriage, after being backspaced one letter width increment, remains in such position during the actuation of a first character key to obliterate an error and the actuation of a second character key to print a correct character. Thereafter, the forward spacing mechanism again becomes effective.

3,729,082

FRAGMENTATION SHIELD FOR A CONTAINER PROCESSING MACHINE

Andrew S. Federko, Bloomfield, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Filed Nov. 22, 1971, Ser. No. 200,904
Int. Cl. B23q ***5/22***
U.S. Cl. 198—19 **11 Claims**

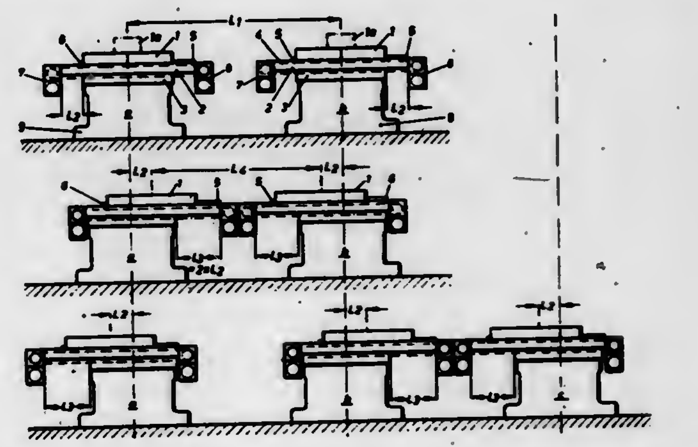


A fragmentation protection structure or shield for a machine having a conveyor belt for advancing a line of frangible containers through an operating station wherein the containers may be burst. The machine includes a means for moving the containers one at a time toward one edge of the belt where the operating station is located, and a plate is supported on the machine over the said station. A thin resilient shield is supported by and below the plate and is so constructed and arranged as to cover the open mouths of containers approaching and leaving the operating station and to be spaced above the open mouth of a container at the station.

3,729,083

BUILDING BLOCK SYSTEM FOR MACHINE TOOLS AND PRODUCTION LINES

Jakob Wollenhaupt, and Agnes Wollenhaupt nee Stang, both of Inn Langen Bruch 33, Cologne-Bruck, Germany
Filed July 16, 1971, Ser. No. 163,260
Claims priority, application Germany, July 20, 1970, P 20 35 874.1
Int. Cl. B23q ***5/22***
U.S. Cl. 198—19 **27 Claims**



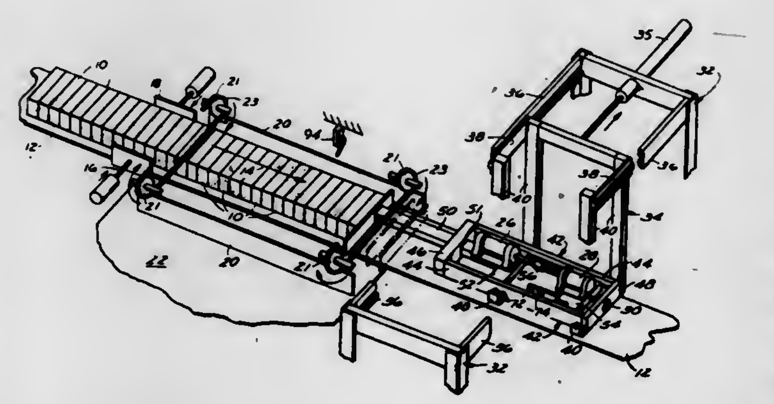
A line for performing work operations on work members in successive stations, with each station having therein a unit on which is mounted a carriage moveable parallel to the line of working stations and having an intermediate working position on the base of the respective unit. Work supports are provided which are slidable on the carriages parallel to the sliding direction of the carriages and which can be locked to the carriages in intermediate working positions.

When a carriage is moved to either of two end positions on the respective base it is adjacent the carriage on the next adjacent unit when the carriage on the next adjacent unit is moved to its end position nearest the first mentioned unit. In this juxtaposed position the work supports can be transferred from each carriage to a carriage next adjacent thereto for a further work operation.

3,729,084
BRICK STOPPING AND GROUPING APPARATUS

Gerald L. Stuart, and John J. Brown, Jr., both of Siler City, N.C., assignors to Forrest Paschal Machinery Company, Siler City, N.C.

Filed March 22, 1971, Ser. No. 126,673
Int. Cl. B65g *47/32*
U.S. Cl. 198—21 **5 Claims**

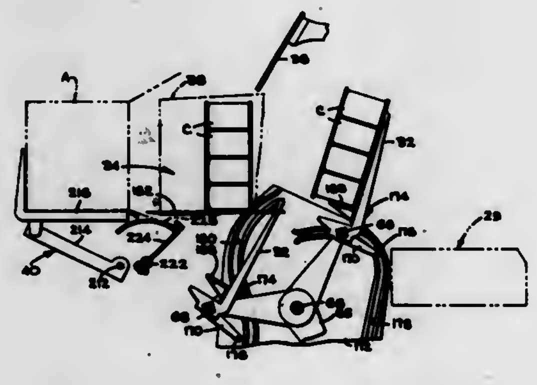


Retractive movement of the brick engaging member is controlled by a plurality of piston and cylinder assemblies connected in tandem thereto and displaceable therewith when desired to an inoperative position.

3,729,085
CASING MACHINE

David F. Schlueter, Hoopeston, Vermilion, Ill., and Myron C. Noble, St. Joseph, Ind., assignors to FMC Corporation, San Jose, Calif.

Division of Ser. No. 757,876, Sept. 6, 1968, abandoned. This application Oct. 19, 1970, Ser. No. 82,044
Int. Cl. B65g *47/24*
U.S. Cl. 198—25 **4 Claims**

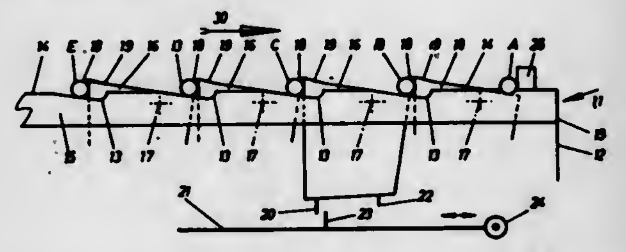


Upright containers are fed into the casing machine from a multiple lane supply line, assembled into one tier, and the tier is transferred and reoriented by tiering fingers which deposit the containers in a tiering chamber. The open end of an empty case is manually positioned adjacent the tiering chamber, and pusher feet insert the tier in the case. A feature of the casing machine is a rocking differential which smoothly accelerates and decelerates the tiering fingers to prevent damage to the containers. Other features include a timing pin and chain mechanism which can be manually adjusted to control the number of tiers loaded into a case, rapid change structure in the zone where the tiers are assembled so that the machine is readily adaptable to handle a range of container sizes, and a lowerator mechanism under positive mechanical control for gently lowering the loaded cases to a discharge position.

3,729,086
CONVEYOR

Maurice Norman Phillips, Burton, Wirral, and Samuel Roberts, Begington, Wirral, both of England, assignors to Phillips & Roberts Limited, Cheshire, England

Filed March 18, 1971, Ser. No. 125,628
Int. Cl. B65g *25/04, 47/29*
U.S. Cl. 198—34 **8 Claims**

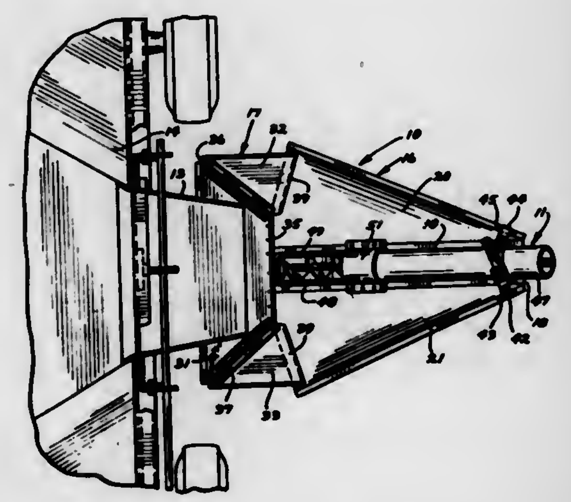


A conveyor for conveying workpieces comprising a rectilinear housing having a longitudinal axis, a rear or loading end and a front or unloading end, a plurality of equidistantly spaced apart forwarding members each mounted pivotally in the housing, each forwarding member having a rearward facing stop surface and a forwardly inclined transportation surface extending substantially parallel to the longitudinal axis along which workpieces are conveyed, the pivotal mounting of said forwarding members being effected such that the transportation surface is upwardly inclined in the direction of travel of workpieces in the stable position of the forwarding members and means for moving each forwarding member such that the transportation surface is transferred from the upwardly inclined position to a downwardly inclined position when workpieces are located thereon.

3,729,087
ADJUSTABLE RETRACTABLE AUGER HOPPER

Wesley W. Bruns, Route 2, Box 184, Gibbon, Minn.

Filed Feb. 17, 1972, Ser. No. 227,566
U.S. Cl. 198—122 **5 Claims**

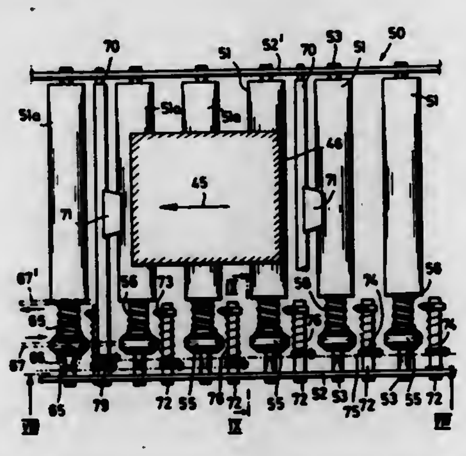


An auger hopper is usable with a screw flight auger to convey granular material, such as grain, from one depository station to another. The auger hopper has upwardly open bin means for temporarily holding the granular material as it is picked up by the auger. Adjustable inlet means are movably connected to the bin means and, in a normal configuration, releasably engage the bin means to close a front opening. The inlet means aids in guiding and deflecting granular material discharged from the first depository station to the hopper proper. Inlet means are movable inwardly to a position within the auger hopper proper to avoid damage as by collision when a truck is manipulated into discharge proximity of the hopper. Inlet means are movable outwardly of the auger hopper as to be out of the way when so desired.

3,729,088
ROLLER CONVEYOR

Hans Vom Stein, Wermelskirchen, and Dieter Specht, Dhunn, both of Germany, assignors to Hans Vom Stein OHG, Dhunn, Germany

Filed June 10, 1971, Ser. No. 151,645
Claims priority, application Germany, June 16, 1970, P 20 29 647.3; April 20, 1971, P 21 18 987.7
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **12 Claims**

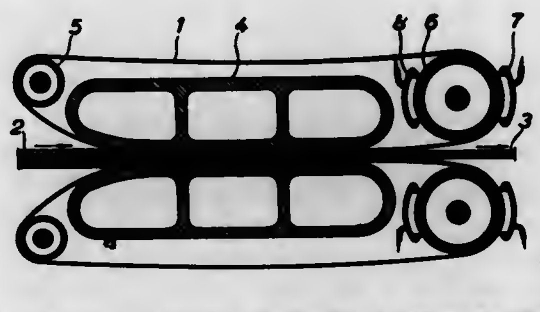


A plurality of rolling elements are mounted in a support longitudinally spaced and turnable about axes extending transversely to the elongation. A continuously operable drive turns one member of a clutch which is normally engaged. A sensing device normally projects beyond the general plane defined by the rolling elements and on which a load travels, and can be downwardly deflected when a load contacts it. A worm constitutes the other part of the clutch and drives a gear fast with one of the rolling elements. The worm can be disengaged, thereby disengaging the clutch, when the mechanical sensing arrangement is depressed by a load and thereby engages with the thread or screw on the worm, whereby the latter is caused to carry out axial displacement in a sense disengaging the clutch, by the force of the drive which normally drives the clutch.

3,729,089
DEVICE IN BELT CONVEYORS

Into Isak Kerttula, Luotsikatu 18 B, and Per Arno Jaatinen, Koivikkotie 12, both of Helsinki, Finland

Filed April 6, 1971, Ser. No. 131,669
Int. Cl. B65g *23/00*
U.S. Cl. 198—203 **1 Claim**

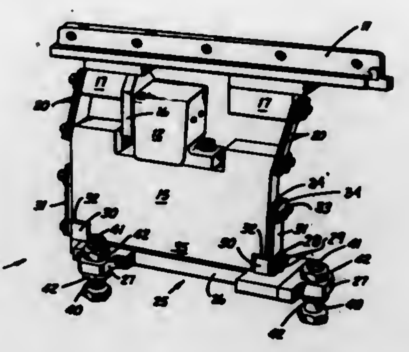


A device in belt conveyors intended to increase the friction between a conveyor belt and the traction roll about which the belt is entrained. Over the conveyor belt there is fitted a pressure chamber, which is open in the direction facing the belt and which presses the belt against the roll.

3,729,090
VIBRATORY STRAIGHT LINE FEEDER

Harold R. Hacker, 522 Woodview Drive, Noblesville, Ind.

Continuation of Ser. No. 33,439, April 30, 1970, abandoned. This application Nov. 22, 1971, Ser. No. 200,820
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 CB **7 Claims**

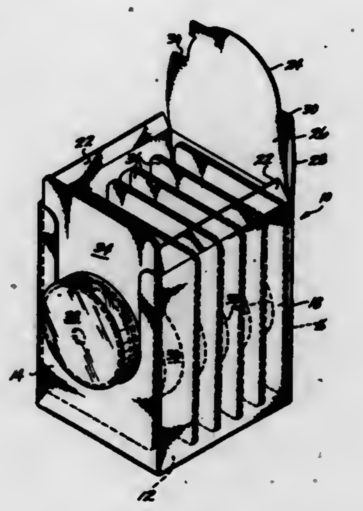


A linear vibratory parts feeder including a counterbalance weight which is connected to a parts container by means of flat leaf springs. A motor drive is mounted on the counterbalance weight and is connected to the parts container for vibrating it. A pair of limit blocks are fixed to the base and have a complementary configuration to recesses in the counterbalance weight. A second set of flat leaf springs is fixed to the counterbalance weight and the limit blocks. The limit blocks prevent excessive damaging deformation of the second set of leaf springs during shipment and handling but do not interfere with actual operation of the parts feeder.

3,729,091
FISHING LINE DISPLAY-DISPENSER

Lester M. Davis, 1565 Center Street, Gig Harbor, Wash.

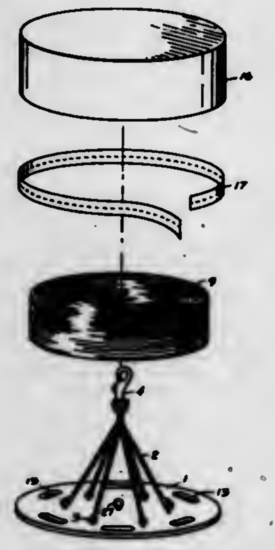
Filed Dec. 31, 1970, Ser. No. 103,149
Int. Cl. B65d *79/00, 73/00, 75/42*
U.S. Cl. 206—44.11 **2 Claims**



A fishing line display-dispenser is disclosed comprising a container having a top opening and a top panel movable into and out of closing position therewith. Within the container are a plurality of rectangular, two-ply cards standing on their ends. A transparent display cover is carried by each card and each comprises a circular or disc-shaped face, cylindrical side walls, and a flanged base. The face and side walls of the display cover extend through an opening in the card and the flanged base is adhered to the inner surface of the front ply of a card. The front wall of the container has an opening therein and the foremost card carries a display cover which is vertically movable into and out of registration with the opening in the front wall of the container. When in registration, the display cover projects through and outward of the front wall of the container. The size and shape of each display cover mates with the opening in the front wall of the container and each is preferably at least a fragment of a circle. A reel of fishing line is disposed in each display cover. The starting and terminal ends of the fishing line of each reel are brought out as free ends and into the space between the plies forming such cards and outwardly therefrom. The free terminal end of each reel extends to and is a continuous line with the free starting end of the fishing line on the next succeeding card in the container.

3,729,092
UNWIND SUPPORT FOR COILED WIRE

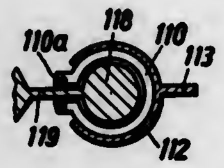
William B. Marcell, 3950 N.W. 36 Ter., Ft. Lauderdale, Fla.
Filed March 12, 1971, Ser. No. 123,699
Int. Cl. B65d *85/04*; B65h *49/22*
U.S. Cl. 206—52 W **6 Claims**



In order to unwind coiled wire, such as electrical wire, straight without kinks or knots, the coiled wire is supported on a base plate and the plurality of lines secured to the plate at points symmetrically arranged around the center of the plate converge and are secured together and connected to a clip which can be clipped into a swivel ring, which latter can be hung on a hook adapted to be hung from a rafter or pipe or the like; there are suitable holes in the plate engageable by an end of the coiled wire to hold it when the other end of the coil is unwound so that the tangential force exerted during unwinding rotates the entire support on the swivel; the lines can be utilized also for securing the coiled wire to the base plate during transportation, means being provided for manually carrying the base plate with the coiled wire thereon.

3,729,093
DISPENSER FOR C-WASHERS AND THE LIKE AND WASHER PACKAGE FOR USE WITH DISPENSER

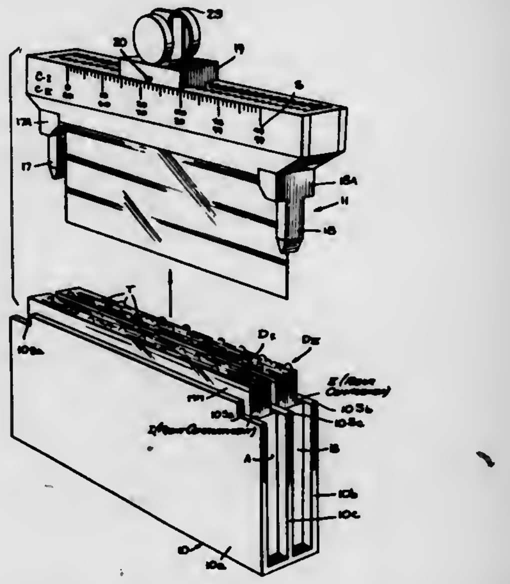
Peter Benzing, Munchingen; Richard Klein, Berkheim, and Alfred Trampisch, Stuttgart-Zuffenhausen, all of Germany, assignors to Hugo Benzing oHG, Munchingen, Germany
Filed Nov. 16, 1967, Ser. No. 683,598
Claims priority, application Germany, Nov. 11, 1966, B 89975; Jan. 17, 1967, B 90764
Int. Cl. B65d *85/58*, *85/62*
U.S. Cl. 206—65 R **3 Claims**



C-Washers are packaged in a tubular plastic envelope by sliding the washers over a carrier bar, inserting the coaxially stacked washers on the bar into a loosely fitting plastic tube, contracting the tube by shrinkage or otherwise until it conformingly engages the washers and secures them in aligned position, and withdrawing the carrier bar. The dispenser has a guide rail similar to the carrier and a cutting blade near one end of the guide rail and obliquely inclined relative to the direction of rail elongation which slits the tube when the stack of washers is slipped over the guide rail so that the tube may be peeled off.

3,729,094
RANDOM-ACCESS CARD FILE SYSTEM

Stanley Engelstein, New York, and Isidore Dorman, Whitestone, both of N.Y., assignors to Bell & Howell Company, Chicago, Ill.
Filed Feb. 24, 1971, Ser. No. 118,455
Int. Cl. B07c *5/34*
U.S. Cl. 209—80.5 **11 Claims**

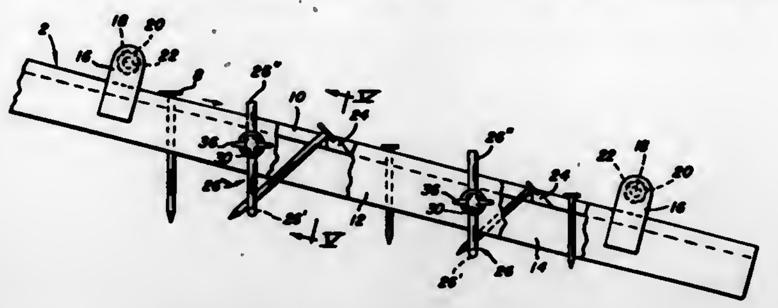


A random-access card file system formed by cartridges for storing the cards and a card file selector adapted to cooperate with the cartridges to extract any desired card therefrom, regardless of its position therein. Each cartridge is capable of accommodating a deck of cards, each of which includes an upstanding tab whose longitudinal position with reference to a selector scale extending the full length of the deck is determined by its master index identification. The selector is provided with a carriage movable along a linear track to any desired incremental point on the scale, the carriage supporting a tab-engaging member or picker, whereby when the selector is placed over the cartridge, the picker engages and grips any tab in registration therewith, and when the selector is thereafter lifted, the tab-held card is extracted from the deck.

3,729,095
APPARATUS FOR SORTING BY LENGTH UP-SET HEADED PIECES SUCH AS NAILS AND THE LIKE

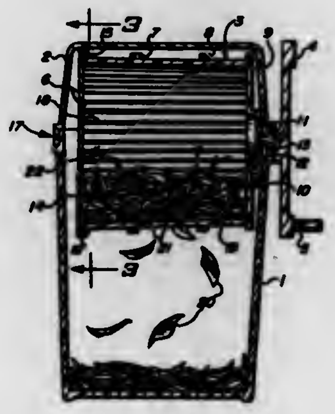
Earl L. Carr, and James E. Foster, both of Antioch, Calif., assignors to United States Steel Corporation, Pittsburgh, Pa.
Filed Dec. 28, 1971, Ser. No. 213,059
Int. Cl. B07b *13/04*
U.S. Cl. 209—90 **6 Claims**

Apparatus involves a downwardly inclined elongated member having a center slot extending longitudinally along its length and a plurality of transverse slots spaced along its length. The inclined elongated member is supported by a pair of spaced upright supporting members and at its upper end is connected with a vibratory feeder which feeds workpieces, each having a head and a shank, to the inclined member with the head of each piece sliding along the upper surface of the inclined member and the shank riding in the longitudinal slot. Trip dogs are provided one upstream from each of said transverse slots which are disposed at progressively lesser distances from the bottom of the inclined member starting at the upper end thereof. The trip dogs trip pieces having a shank length greater than the distance from the bottom surface of the inclined member to the trip dog to tilt the workpiece. The transverse slots are dimensioned to receive and cause to drop through the inclined member workpieces engaged with their heads in tilted position.



3,729,096
APPARATUS FOR PROCESSING HERBS AND THE LIKE

Marcel Fitzner, 3003 East Ina, Tucson, Ariz., and John D. Butler, 211 West Franklin, Tucson, Ariz.
Filed June 2, 1972, Ser. No. 259,249
Int. Cl. B07b *1/22*
U.S. Cl. 209—97 **5 Claims**

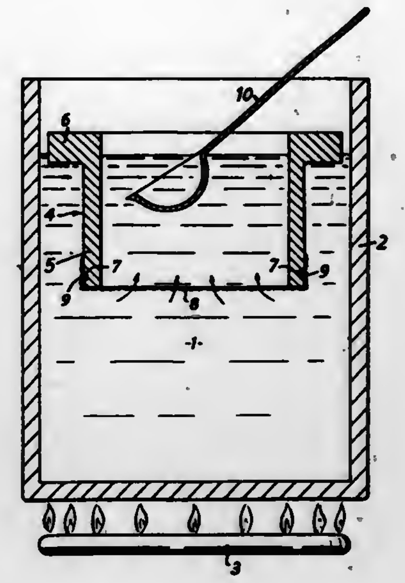


In order to separate the leaves of a herb or herblike plant from the seeds and twigs thereof, a longitudinally slatted cylindrical container is filled with the unprocessed plants, and the cylinder is then disposed in an outer container such that it may be rotated about its axis. The separation between adjacent slats is predetermined to be no larger than the smallest seeds which might be expected within the unprocessed mixture. As the cylinder is rotated, the leaves drop into the outer cylinder leaving the seeds and any twigs within the cylinder. For fabrication purposes, the cylinder may actually take the form of a very slightly tapered truncated cone, which shape provides draft for removal of the cylinder from its fabrication mold.

3,729,097
FILTRATION OF MOLTEN METAL

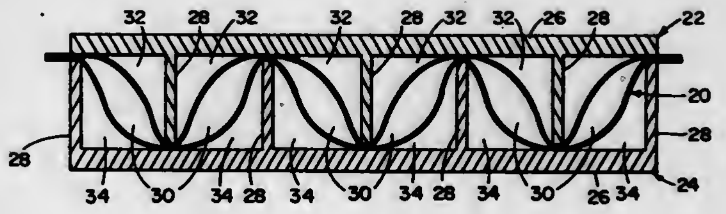
Donald Louis William Collins, Rugby, Warwickshire, and Brian Arthur Gillett, Banbury, Oxfordshire, both of England, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada
Filed March 29, 1971, Ser. No. 128,876
Claims priority, application Great Britain, April 1, 1970, 15,536/70
Int. Cl. B01d *35/28*
U.S. Cl. 210—69 **4 Claims**

In the production of light metal castings by manual methods molten metal is drawn in a ladle from a pool of metal within a filter floating freely in a body of molten metal in a holding furnace. The filter comprises a body made of a material which is not attacked by the molten metal and is provided with one or more apertures at or near the bottom end, these apertures being covered with filter material so that solid inclusions are removed from molten metal entering the filter body.



3,729,098
TREATING BLOOD

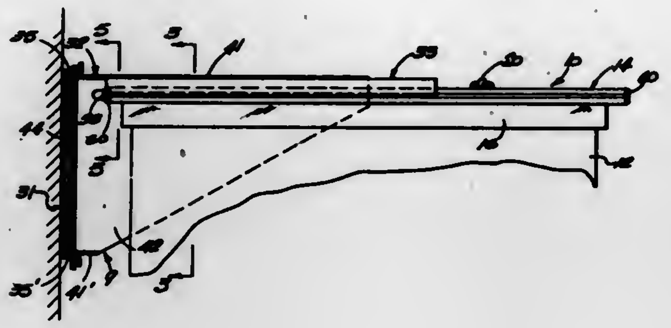
Juan Ricardo Serur, 34A Harvard Avenue, Brookline, Mass.
Filed Feb. 8, 1971, Ser. No. 113,568
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **7 Claims**



Device for treating blood comprising an elongated tubular member of semi-permeable membrane defining a blood flow path, a pair of membrane supports extending adjacent the path on opposite sides of the membrane, each support having a series of protuberances extending longitudinally of the support and spaced across the width of the support, the protuberances of one support being spaced between and overlapping the protuberances of the other support to cause the tubular member to assume a zig-zag form across its width, the supports and the tubular member defining a multiplicity of flow channels outside the tubular member and extending along the path; blood inlet and outlet members adjacent opposite ends of the tubular member and communicating exclusively with the interior thereof; and treatment fluid inlet and outlet members adjacent opposite ends of the tubular member and communicating exclusively with the exterior thereof.

3,729,099
VERTICAL FILING APPARATUS

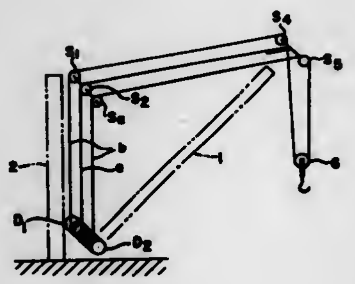
Victor J. Kritske, Sheboygan, Wis., assignor to Mayline Company, Inc., Sheboygan, Wis.
Filed Feb. 14, 1972, Ser. No. 226,106
Int. Cl. A47f *5/08, 7/16*
U.S. Cl. 211—46 **7 Claims**



The apparatus includes a clamp assembly for holding at least one sheet of material in a vertical zone and a bracket assembly on which the clamp assembly is removably mounted. The clamp assembly includes a longitudinal member which has a longitudinally extending groove in each side. The bracket assembly includes a support member having, at its lower side, inturned flanges dimensioned for positioning in said grooves. A plastic end cap at each end of the longitudinal member also has longitudinally extending grooves therein; however, the top wall of the groove is disposed below the corresponding top wall of the groove in the longitudinal member to provide a bearing surface for riding on the inturned flanges during insertion and removal of the longitudinal member on the support member.

3,729,100
CRANE

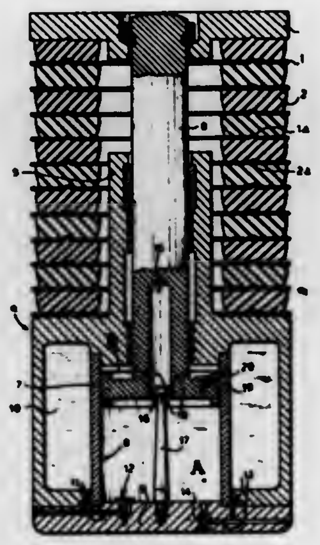
Jiro Tanabe, No. 7, 3-chome, Kanda-Ogawa-cho, Chiyoda-ku, Japan
Filed April 23, 1971, Ser. No. 136,816
Claims priority, application Japan, April 24, 1970, 45/35299
Int. Cl. B66c *23/06*
U.S. Cl. 212—58 **4 Claims**



A crane wherein the lower end of a boom is so pivoted as to permit not only the slanting motion but also swinging or revolving motion of the boom, and one rope is employed not only for slanting the boom and but also for hoisting the loads while the swinging or revolving motion of the boom is effected by a single pressure cylinder whose leading end is coupled to the mid portion of the boom.

3,729,101
DAMPER DEVICE FOR RAILWAY VEHICLE AUTOMATIC COUPLINGS

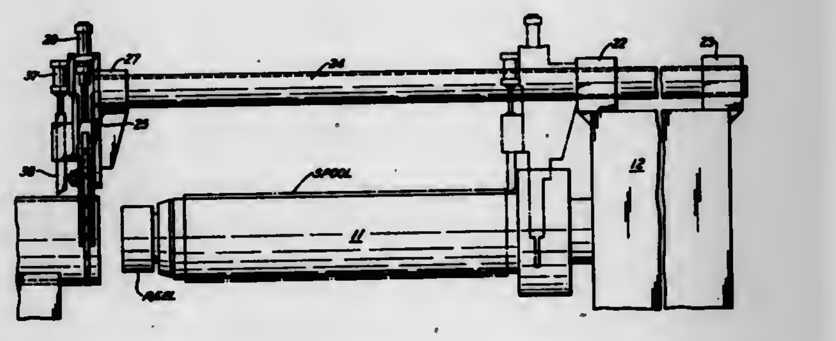
Guido Brambilla, and Vittorio Fogliacco, both of Turin, Italy, assignors to RIV-SKF Officine Di Villar Perosa S.p.A., Turin, Italy
Filed April 7, 1971, Ser. No. 132,026
Claims priority, application Italy, May 4, 1970, 68534 A/70
Int. Cl. B61g *9/08*
U.S. Cl. 213—45 **1 Claim**



A damper device for automatic couplings in railway vehicles has elastic and hydraulic parts, the hydraulic part being double-acting and having two chambers which are interconnected through a variable flow restriction, for example a nozzle formed in part by a shaped axial pin, such that the damping force varies progressively in response to movement applied to the device.

3,729,102
SPOOL AND COIL HANDLING DEVICE FOR A ROLLING MILL

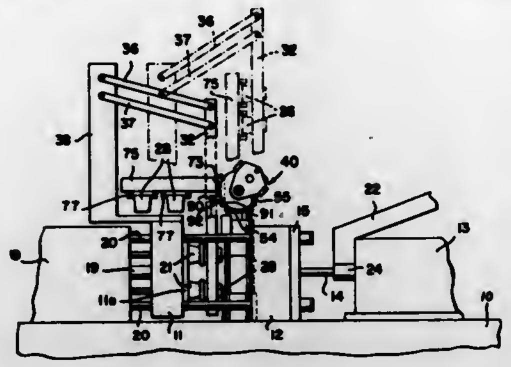
Charles Storer Shumaker, Glenshaw, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed April 13, 1971, Ser. No. 133,568
Claims priority, application Great Britain, May 29, 1970, 26,141/70
Int. Cl. B65g *65/08*
U.S. Cl. 214—1 BB **1 Claim**



The disclosure of this invention relates to an handling device for spools or similar cylindrical tubular members as used, for example, for winding metallic strip material produced by a rolling mill.

3,729,103
TRANSPORTER FOR MOLDED PARTS AND THE LIKE

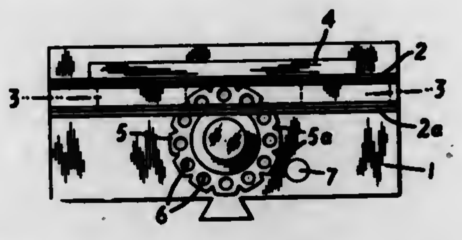
Herbert Rees, Toronto, Ontario, Canada, assignor to Husky Manufacturing & Tool Works Ltd., Botton, Ontario, Canada
Filed Feb. 16, 1971, Ser. No. 115,373
Int. Cl. B66c *1/30*
U.S. Cl. 214—1 BC **11 Claims**



A take-off plate insertable from above between the relatively movable mold portions of an injection-molding machine cooperates with a transfer plate cantilevered on a transverse shaft at the top of a column rotatable through 180°. The shaft carrying the transfer plate is coupled by a step-down bevel-gear transmission with a fixed tube surrounding the rotatable column so that this plate turns through 90° during each 180° swing. In its vertical position, the transfer plate confronts the elevated take-off plate and removes from it the newly formed article or articles extracted from the mold; these articles are held by grippers which are deactivated in a horizontal position of the swung-out transfer plate to release the articles into an underlying receptacle therefor.

3,729,104
WORK-TRANSPORT APPARATUS

Taisuke Takiguchi, Funabashi, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed July 14, 1971, Ser. No. 162,494
Claims priority, application Japan, July 14, 1970, 45/61041
Int. Cl. B65g *59/06*
U.S. Cl. 214—8.5 K **4 Claims**

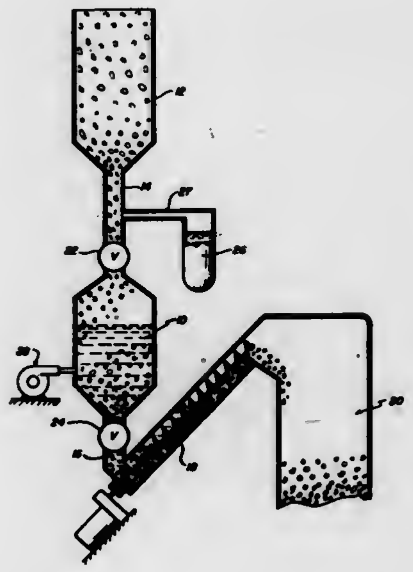


A work-transport method and apparatus for transporting workpieces, such as watch movement assemblies, in stacked relationship in individual compartments of a work container moved reciprocally over a rotary work table. The workpieces are held in frames within the compartments. The frames are removed automatically from the compartments individually and inserted in work-receiving openings or holes in the rotary table. The workpieces are then automatically returned after work operations have been performed thereon, to the original compartment in which the workpieces were stored and removed therefrom.

3,729,105
LIQUID SEALED SOLIDS LOCK HOPPER

Jack Huebler, Deerfield; Sanford A. Weil, Chicago, and Paul B. Tarman, Elmhurst, all of Ill., assignors to The Institute of Gas Technology, Chicago, Ill.
Filed Sept. 27, 1971, Ser. No. 184,045
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 B **6 Claims**

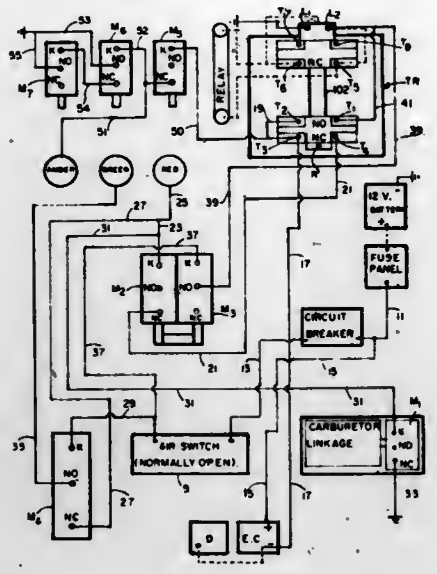
A method and apparatus for transferring solid materials between zones at substantially different pressures which includes, generally, an intermediate vessel or lock hopper which contains a liquid and can be filled with an emptied of solids, two valves, one at each end of the lock hopper, a solids feed device, and a pump to maintain liquid level in the system. In operation, the valve at the upper end of the lock hopper is opened while the valve at the lower end thereof is closed, thereby permitting solids to be transferred into the lock hopper which contains a liquid such as water. The solids displace some of the liquid, and the displaced liquid rises above the top valve and overflows into a collecting vessel. The top valve then is closed, and a pump adds or removes liquid until the pressure in the lock hopper is close to the reactor pressure. The lower or bottom valve is opened after the pressure differential is compensated for, allowing the solids to drop into a feeder which conveys the solids to the reactor. The liquid level in the feeder and the lock hopper is maintained by the pump to replace the volume of solids fed. This liquid level is maintained at a sufficient height to inhibit gas flow into the lock hopper, and is independent of operating pressures. After solids discharge, the bottom valve is closed and the top valve opened, and the cycle is repeated. For continuous solid feed, two or more valved lock lock hoppers can be used in tandem to feed solids to the feeder.



3,729,106
SAFETY APPARATUS FOR GARBAGE TRUCKS

Frank Barbieri, 62 Alabama St., Long Beach, N.Y.
Continuation-in-part of Ser. No. 870,704, July 7, 1969, abandoned, Division of Ser. No. 732,252, May 27, 1968, Pat. No. 3,503,531. This application April 29, 1971, Ser. No. 138,637
Int. Cl. B65f *3/00*
U.S. Cl. 214—83.3 **7 Claims**

Safety apparatus for controlling refuse packing cycles in a garbage truck, said garbage truck having a transmission and a refuse packing assembly in operative association with one another, said transmission having a plurality of operative positions. The safety apparatus comprises a first system operatively associated with the transmission for initiating a refuse packing cycle, a second system operatively associated with the transmission when the latter is in one of the operative positions for permitting the refuse packing cycle to continue to normal completion, and a third system operatively associated with the transmission when the latter remains in another of the operative positions for immediately terminating the refuse packing cycle prior to completion of the latter.



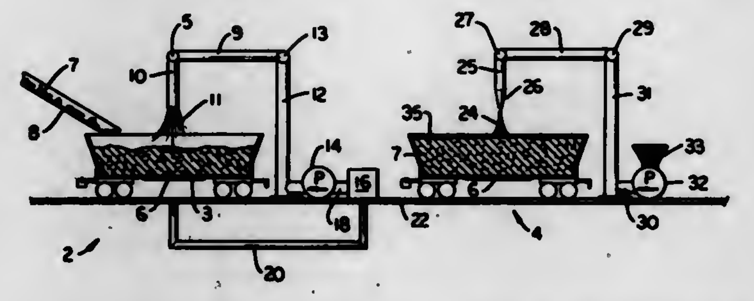
3,729,107
A METHOD OF COMPACTING AND COATING REFUGE MATERIAL

Mortimer T. Present, 535 West 73rd Street, Indianapolis, Ind.

Filed June 20, 1969, Ser. No. 835,090

Int. Cl. B65g *3/04*

U.S. Cl. 214—152 **7 Claims**



A refuse handling system wherein refuse is placed in a container and compacted with a steam of water. After compacting the refuse is coated with a homogeneous film of a foamed polymeric material. The polymeric material can comprise any suitable resinous material. The container for use in this invention can be a wheeled vehicle. Compacted bails of refuse material and other goods in containers can be coated in accordance with this invention.

3,729,108
CASE DUMPER

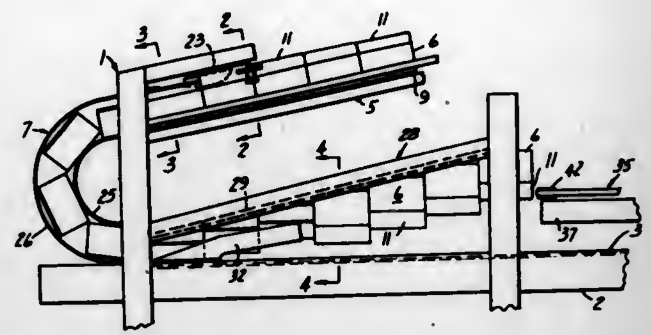
Harold B. Rice, Walnut Creek, Calif., assignor to John Burton Machine Corporation, Concord, Calif.

Filed Dec. 2, 1970, Ser. No. 94,403

Int. Cl. B65b *21/02, 69/00*

U.S. Cl. 214—304 **7 Claims**

The contents of an unsealed conventional paperboard case are removed by passing the case along a path of travel with its top uppermost, automatically opening the side flaps by means of guides, passing the case along a generally semicircular path of travel to invert the same, conveying the case in an upwardly slanting path while the articles contained in the case are moved along a generally horizontally extending conveyor and thereafter turning the case 180 degrees to again bring the top uppermost. The unsealed case is squeezed at its sidewalls at points adjacent the top of the case to automatically raise the side flaps and a fixed guide is employed to swing the side flaps to laterally outwardly extending positions so that the subsequent step of emptying the case may be performed by gravity while the case is being moved along the upwardly slanting path. The final step of turning the case is performed by gripping one of the side flaps between adjacent runs of two conveyors and stationary guides are employed to swing the case about the hinged connection between said flap and the body of the case.



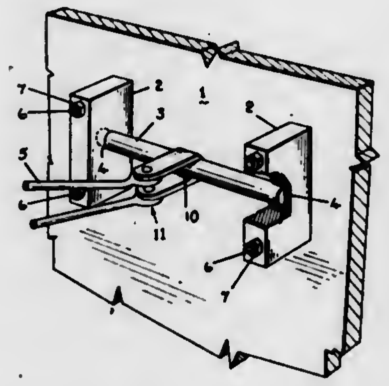
3,729,109
ASSEMBLY WITHIN A BRACKET FOR A PROJECTION SCREEN

Ronald E. McCurdy, 275 Jeffcoat Drive, Rexdale, Ontario, Canada

Filed June 14, 1971, Ser. No. 152,608

Int. Cl. A47g *1/24*

U.S. Cl. 248—487 **4 Claims**



A mounting device for supporting a rigid projection screen, constructed of low to medium density polyethylene or polypropylene and attachable to the back of said screen comprising a pair of spaced mounting blocks attachable to the back of the screen and a hinge pin journalled in said mounting blocks with an interference fit which resists relative rotative movement between the mounting blocks and the hinge pin and a wall bracket having one end fastened to the hinge pin and the opposite end attachable to a wall. This device utilizes the self lubricating quality of the construction material to allow a projector screen to which the device is attached to be moved from one position to another within limits about the axis of the hinge.

3,729,110
SAFETY CLOSURE FOR VIALS

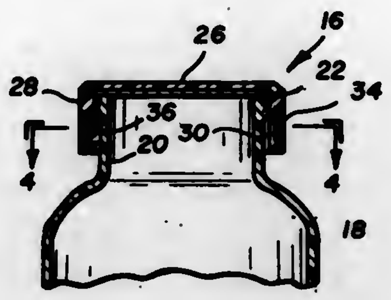
Clarence R. Taylor, 28 Woodside Dr., Penfield, N.Y.

Continuation-in-part of Ser. No. 89,872, Nov. 16, 1970, abandoned. This application Feb. 25, 1971, Ser. No. 118,673

Int. Cl. B65d *55/02*

U.S. Cl. 215—9 **9 Claims**

A safety closure for containers such as vials or the like, each having a preferably tubular mouth with an outer peripheral rim. The safety closure comprises a cup-shaped cap mountable on the mouth and having a projection that is movable between a normal unlatched position in which the projection is free to move in a radial direction and hence does not prevent removal of the cap from the mouth, and a latched position in which the projection is locked in place behind and in alignment with the rim and prevents removal of the cap from the mouth. The surfaces of the projection and rim are preferably shaped to interact and provide a camming action for positively forcing the cap into sealing engagement with the mouth.



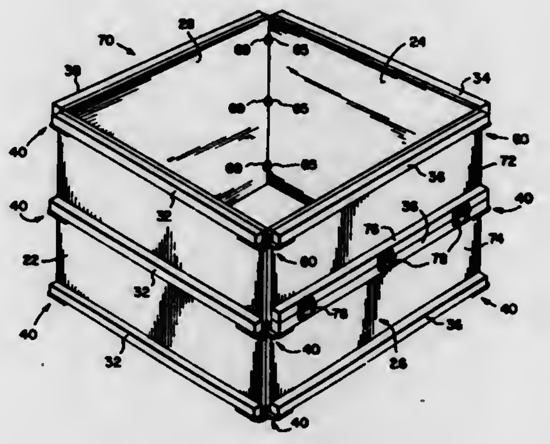
3,729,111
COLLAPSIBLE CONTAINERS INCLUDING SWIVEL HINGE CORNER ASSEMBLY AND ACCESS DOOR ASSEMBLY

William J. Farnsworth, McComb, Miss., assignor to Altamil Corporation, Indianapolis, Ind.

Filed Feb. 16, 1907, Ser. No. 115,302

Int. Cl. B65d *9/14*

U.S. Cl. 217—16 **15 Claims**



A collapsible container is provided comprising a pair of rectangular side panels and a pair of rectangular end panels with horizontal cleats mounted on the exterior surfaces of the panels and a plurality of swivel hinge corner assemblies located at the corners of the collapsible container and secured to the cleats for pivotally connecting adjacent side panels and end panels to permit the container to collapse. Each corner assembly includes a pair of corner plates, each plate having a flat body to be secured to one of the cleats and a prong projecting laterally from one edge of the flat body to overlap the prong projecting from the other plate. The prongs of the corner plates are pivotally connected at a point spaced laterally from the edges of the flat bodies of the corner plates to permit adjacent sides at opposite corners of the container to be folded either inwardly or outwardly to collapse the container. In addition, an access door assembly is provided for pivotally connecting a door to adjacent sides of a collapsible container and permitting the door to be unlatched from the adjacent sides. The access door assembly includes a pair of corner plates that are identical to the corner plates of the swivel hinge corner assembly and a spring catch for releasably engaging openings formed in the prongs of the corner plates to pivotally connect the prongs to permit the sides of the container to collapse and the corner plates to be unlatched.

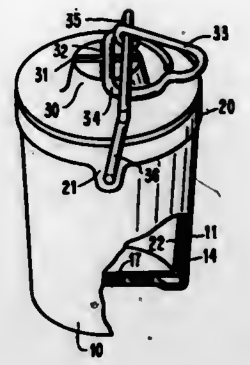
3,729,112
COMPOSITE CONTAINER

Robert K. Gibbs, 105 Hancock St., Henderson, Ky.

Filed May 6, 1971, Ser. No. 140,753

Int. Cl. B65d *25/14, 45/16*

U.S. Cl. 220—17 **3 Claims**



A molded plastic container having a body member and a cap therefore employs a thin wall expendible inner liner for retaining the contents of the container. Rigidity of the body member and tight sealing of the cap against the liner and the body member is obtained by design features compatible with injection molding techniques.

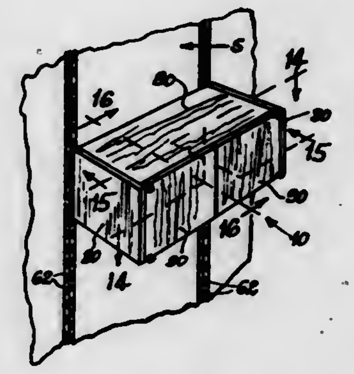
3,729,113
MODULAR CABINET ASSEMBLY, AND COMPONENTS AND SUBASSEMBLIES THEREFOR

Dale R. Lopatka, Hawthorn Woods, Ill., assignor to Reflector Hardware Corporation

Filed July 8, 1971, Ser. No. 160,662

Int. Cl. B65d *25/24*

U.S. Cl. 220—18 **18 Claims**



A modular cabinet assembly and components and subassemblies therefor. A sheet metal, L-shaped, back-bottom member provides a pair of longitudinal walls and integral mounting flanges at each side of each wall. The longitudinal edges of the walls are folded to form rigidifying finish edges. Side panels and brackets defining hooks are securable to the mounting flanges to provide a cabinet subassembly which may be hung from slotted supports. The other two longitudinal sides may be closed by a closure panel mounted to angles secured to the side panels, and an openable door. The openable door may be of a variety of types, selectively to provide a plurality of cabinet assemblies, each with an assemblage of identical subassembly components.

3,729,114
CONTAINER

Enzo Mari, Piazzale Baracca, Milan, Italy

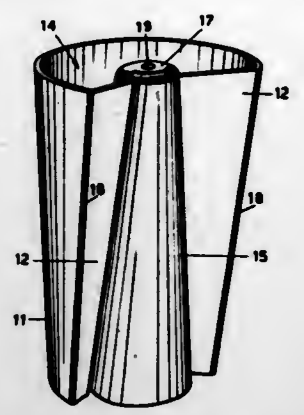
Filed Aug. 28, 1970, Ser. No. 67,957

Claims priority, application Italy, Sept. 2, 1969, 21562 A/69

Int. Cl. B65d *1/24*

U.S. Cl. 220—20 **2 Claims**

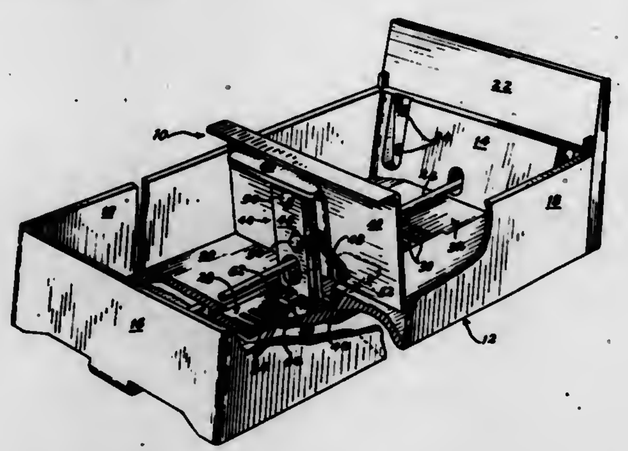
A container is disclosed which essentially comprises two containing receptacles, the mouths of which are placed in opposite directions relative to a common axis of reference. The mouths have different widths so that one of them can accommodate larger objects, whereas the other can accommodate smaller objects, for example bunches of flowers and individual flower stalks. Plastics material is preferred for embodying the subject container.



3,729,115
CARD TRAY FOLLOWER

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,253
Int. Cl. B65d *1/24*
U.S. Cl. 220—22.3 **5 Claims**



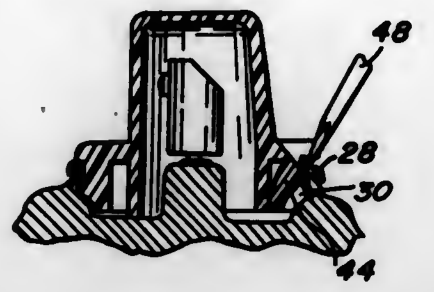
An improved follower for use in association with a card file or like tray of the type having a follower guide track and follower positioning teeth extending lengthwise of its bottom wall. The follower features a latching mechanism including a vertically reciprocating latch flange, which is normally spring biased downwardly for locking engagement with the positioning teeth. The latch flange carries adjacent its lower end a rearwardly directed flange defining a downwardly facing convex cam surface dimensioned to be received within a space between adjacent teeth and a pair of coplanar supporting surfaces. The supporting surfaces forwardly and rearwardly bound the cam surface to normal reside in engagement with upwardly facing edges of the teeth, whereby to limit the extent to which the cam surface projects into the space between the teeth.

3,729,116
REUSABLE TAMPERPROOF CAP FOR AEROSOL DISPENSING CONTAINERS

Edward H. Green, Addison, and Herbert Benedict, Park Forest, both of Ill., assignors to Edward H. Green, Addison, Ill.

Continuation-in-part of Ser. No. 817,302, April 18, 1969. This application Jan. 6, 1970, Ser. No. 104,434
Int. Cl. B65d *43/10, 51/18*
U.S. Cl. 220—60 R **17 Claims**

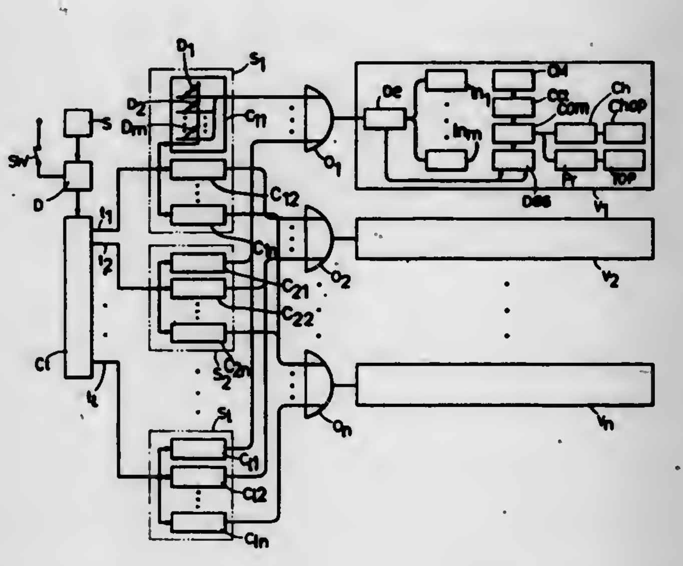
A reusable, tamperproof cap is provided for an aerosol container having a spray nozzle located in a well in its top. The cap comprises an inner body portion that surrounds and protects the spray nozzle; a circular rim extending radially from the body; and an outer skirt portion that depends from the rim and fits within the interior of the well. Interlocking means comprising a protrusion on the exterior of the skirt that engages a groove in the interior of the well locks the cap in the well and prevents manual removal of the cap from the container without the use of a tool. A vertical opening is provided through the rim so that a suitable prying tool may be inserted downwardly into the vertical space between the cap and the inner side surface of the well, whereupon a downwardly rotating prying action will disengage the interlocking means and remove the cap from the container.



3,729,117
AUTOMATIC VENDING MACHINE CONTROL SYSTEM

Nobuyoshi Naito; Tsuyoshi Hiraguri; Katsunori Yamashita, 1-273 Koazawakiyama, Azaenmyoji, all of Otokuni-gun, and Oomi Honda, Kyoto, all of Japan, assigners to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 7, 1970, Ser. No. 95,458
Int. Cl. G07b *1/00*
U.S. Cl. 221—9 **8 Claims**



An automatic vending machine comprising a display panel and vending means capable of dealing with a plurality of kinds of tickets for traffic facilities (simply referred to as "multi-performance machine") is controlled to a less-multi-performance machine or a single-performance machine by means of a setting means, wherein less plurality of kinds or a single kind of ticket are dealt with.

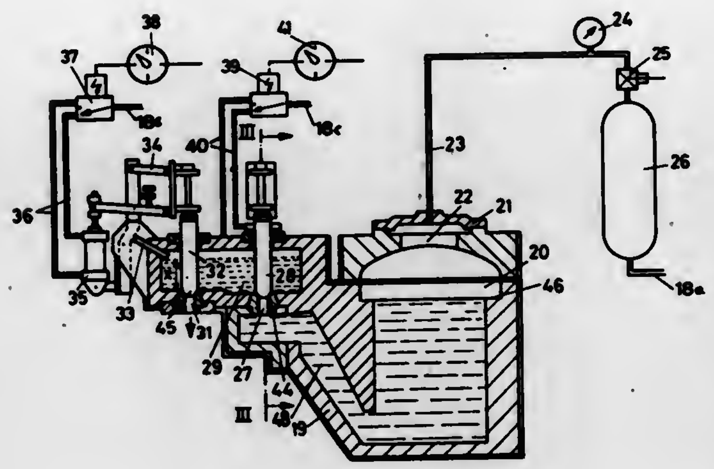
As another embodiment of the invention a plurality of multi-performance machines are installed to provide a group of vending machines and a time sequence programmer is provided for controlling the performance of the machine and also for controlling the number of the machine to be actuated.

The performance and/or number of the machine is displayed on the display panel. An embodiment of the display panel comprises a plurality of indication elements which can be controlled to turn on or off and the panel is controlled by the on-or-off control of the element to provide a plurality of display states.

3,729,118
DEVICE FOR CONTROLLING THE LEVEL OF LIQUID METAL IN A CASTING CONTAINER

Max Wernli, and Hans Tanner, both of Schaffhausen, Switzerland, assignors to Erwin Buhrer, Schaffhausen, Switzerland

Filed June 1, 1971, Ser. No. 148,634
Claims priority, application Switzerland, June 1, 1970, 8150/70
Int. Cl. B22d *37/00*
U.S. Cl. 222—56 **4 Claims**

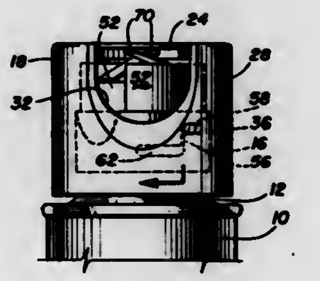


A casting system having a container for a liquid casting material comprising a receiving or entry chamber and an exit or dispensing chamber, a passage interconnecting the entry and exit chambers at their bottom portions, means for supplying a gaseous medium under pressure to the entry chamber for translating the liquid metal between the entry and exit chambers and for regulating the level of the liquid metal therein at a predetermined constant level, the liquid metal in the entry chamber being disposed at a level below the bottom of the exit chamber, and a controllable stopper arrangement disposed in the exit chamber for controlling the dispensing of the liquid metal therefrom.

3,729,119
CHILDPROOF OVERCAP WITH HORIZONTAL SPRAY

James J. Sette, Morristown, and Neil Nix, River Edge, both of N.J., assignors to Sterling Drug Inc., New York, N.Y.

Filed May 11, 1971, Ser. No. 142,316
Int. Cl. B65d *83/14*
U.S. Cl. 222—153 **10 Claims**

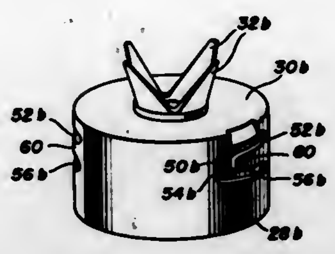


An aerosol having a captive safety overcap which must be rotated, axially depressed, and once again rotated, with respect to the aerosol, to allow operation of the conventional button for actuating the aerosol valve. The overcap is provided with an opening which in the safety position is misaligned with respect to a button access opening in an inner cap, but when turned, depressed, and turned again, the openings are aligned so that a finger may be inserted and the valve button depressed for operating the aerosol.

3,729,120
CHILDPROOF RELOCKABLE ACTUATOR OVERCAP

James J. Sette, Morristown, and Neil Nix, River Edge, both of N.J., assignors to Sterling Drug Inc., New York, N.Y., by said Nix

Filed May 11, 1971, Ser. No. 142,317
Int. Cl. B65d *85/14*
U.S. Cl. 222—153 **15 Claims**



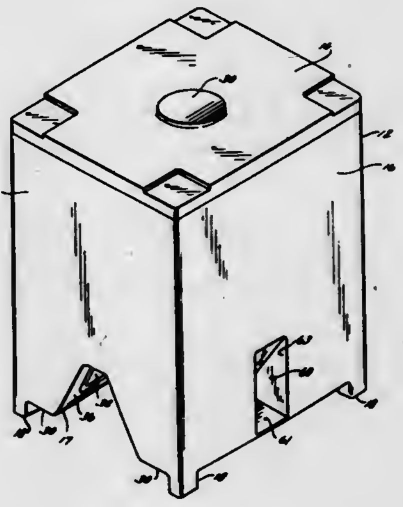
An aerosol having a stem for the actuation of the usual valve thereof, and a captive safety overcap which must be rotated, axially depressed, and rotated again with respect to said aerosol, to operate the stem. The overcap has a base that has an opening aligned with a spray orifice in the stem and includes means to move the stem to actuate it upon the manipulation stated.

When properly positioned to actuate the aerosol, the overcap is locked maintaining the aerosol in its spraying operation without attention, and the manipulation of the overcap must be reversed to stop the spray action.

3,729,121
BOTTOM DISCHARGE BIN AND DUST TIGHT UNLOADING STATION THEREFOR

Robert B. Cannon, 40 Woodhull Place, Northport, N.Y.

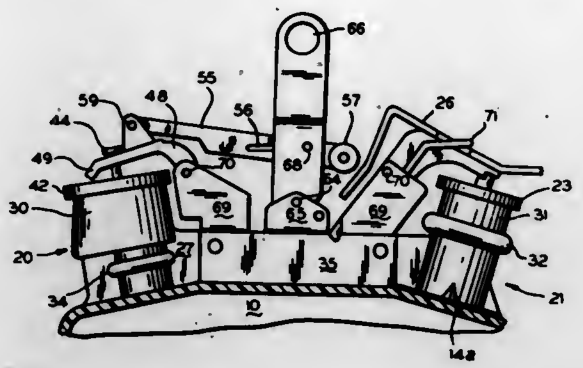
Filed Feb. 8, 1971, Ser. No. 113,169
Int. Cl. B67d *5/06*
U.S. Cl. 222—185 **4 Claims**



A bottom discharge material storage and handling apparatus having a discharge station adapter and transportable bins. The bins are containers each having an opening in a top and two discharge doors mounted on an inverted V-shaped bottom. A cam locking assembly is associated with each of the discharge doors for locking the doors in a closed position. The discharge station adapter has upstanding walls attached to a base and contoured to receive the V-shaped bottom of a bin and to form a dust tight seal therebetween. The base has an opening formed therein and positioned below the discharge doors of the bin. A shaft is rotatably mounted between two opposed upstanding walls and has a closing cam fixedly attached thereto and positioned for simultaneously engaging and urging both doors to a closed position when the shaft is rotated.

3,729,122
SAFETY CONTAINER FOR INFLAMMABLES

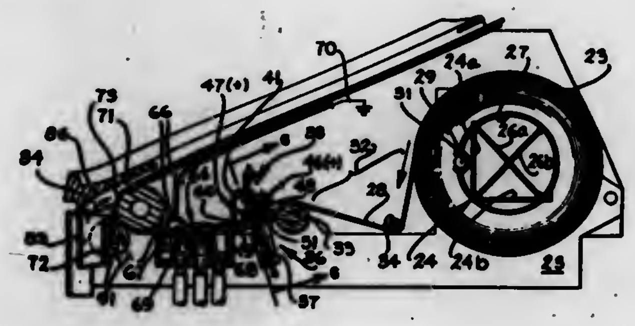
Frank S. Flider, Chicago, Ill., assignor to Justrite Manufacturing Company, Chicago, Ill.
Continuation-in-part of Ser. No. 97,713, Dec. 14, 1970, and a continuation-in-part of Ser. No. 98,557, Dec. 16, 1970. This application May 27, 1971, Ser. No. 147,345
Int. Cl. A47g *19/14*
U.S. Cl. 222—469 **10 Claims**



A completely enclosed plastic container has two openings or vents. One vent has an internal valve and a pouring spout attached thereto. The other vent has a spring biased safety cap which raises for filling or to vent vapors when the internal pressure exceeds some predetermined level. A handle linkage controls the two vents so that the pouring valve opens first and the venting safety cap opens second, as the can is tipped. Suitable springs urge the valve, cap and handle to an automatically closed position when the container is sitting at rest. The handle linkage is attached to a vertical fin formed between the two vents by an enlargement of the flash line formed in molding the container.

3,729,123
PRINTING MACHINE AND METHOD

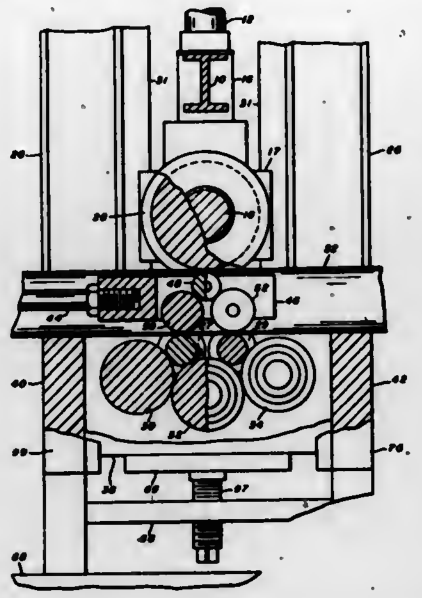
William A. Lloyd, San Jose, Calif., assignor to Versatec, Inc., Cupertino, Calif.
Filed Nov. 27, 1970, Ser. No. 93,256
Int. Cl. B65h *25/06*
U.S. Cl. 226—7 **1 Claim**



A printing machine wherein a pliable record material wrapped to form a supply roll includes means for recording information upon the record material, an upwardly inclined platen supports and guides the record material upwardly, and means for feeding the material engages same at the lower end of the platen and serves to push the pliable material up the platen. An air stream impinges upon the material while the material is moving upwardly across the platen to maintain the material in a flattened state against the platen preventing buckling thereof during its upward travel. A method of feeding a record material upwardly along an inclined plane includes the steps involved above. The supply roll is mounted upon a readily removable support providing a modest restraint from within the core of the supply roll. A fountain of developing toner fluid is disposed to contact the recording material immediately upstream of an upwardly extending wiping means for removing excess toner fluid from the web of recording material when drawn thereacross.

3,729,124
APPARATUS FOR REDUCING THE WELD BUILD-UP ON SEAM WELDED TUBING

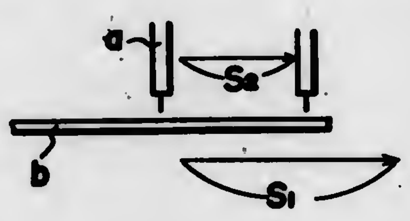
Edward S. Kedzior, Northford; Thomas J. Latham, Jr., Wallingford, and John Boris, Meriden, all of Conn., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
Filed April 5, 1971, Ser. No. 131,203
Int. Cl. B23k *5/22*
U.S. Cl. 228—19 **5 Claims**



Apparatus for reducing weld build-up on seam welded tubing by the use of interior and exterior pressure rolls. The exterior pressure rolls are of the hourglass-type and engage opposite sides of the tubing, one of the exterior hourglass rolls having a center line in contact with the exterior of the seam weld. The interior rolls, usually three in number, are carried on a mandrel, two of the three rolls being concave in configuration and engaging the inner surface of the tubing opposite the weld. The third interior roll is backed up by the first two and engages the inner side of the weld. This third roll is convex, conforms to the inner periphery of the tube, and is on the center line and directly opposite the hourglass roll which engages the exterior of the weld.

3,729,125
TACK-WELDING METHOD AND INSTALLATION

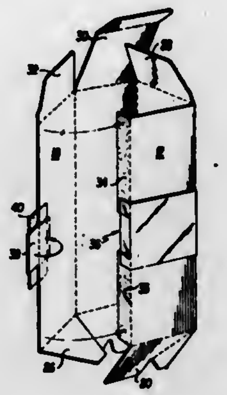
Masaaki Hano, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 25, 1970, Ser. No. 66,844
Claims priority, application Japan, Sept. 6, 1969, 44/70466
Int. Cl. B23k *29/00*
U.S. Cl. 228—26 **7 Claims**



A tack-welding method and installation according to which work which is tack-welded by one tack-welding unit will be supplied to a plurality of welding machines. The work is fed in a given direction at a given speed which is too great for any one welding machine, and the tack-welding unit is reciprocated back and forth along a path parallel to that along which the work moves. At least while the tack-welding unit is moving in the same direction as the work, it is maintained at a speed sufficiently different from the work speed to provide between the work and the tack-welding unit a relative speed suitable for tack-welding, and only during this movement of the tack-welding in the same direction as the work are the tack-welding operations carried out. A distributing structure receives the work from the tack-welding unit and distributes the work to the plurality of welding machines.

3,729,126
DECORATIVE CARTON WITH REMOVABLE BAND AND BLANK THEREFOR

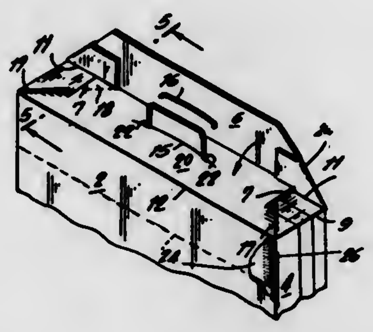
Gary M. Donahue, Richmond, Va., assignor to Reynolds Metal Company, Richmond, Va.
Filed Jan. 18, 1972, Ser. No. 218,800
Int. Cl. B65d *5/10*
U.S. Cl. 229—38 **5 Claims**



A decorative carton with a removable plastic band and carton blank therefor. The carton blank is provided with a glue flap panel attached to an endmost main body panel with the glue flap panel having a notched out portion intermediate its ends. A tab which substantially corresponds in size and location to the notched out portion in the glue flap panel is attached to the main body panel most remote from the one to which the glue flap panel is attached. This provides for nesting of adjacent blanks when the blanks are cut from strip stock material. The decorative plastic band extends transversely of the main body panels but is unattached thereto. One terminal end of the plastic band is attached to the tab and the other terminal end is attached to the glue flap panel adjacent its notched out portion. When the carton blank is assembled into an upright carton, the terminal ends of the removable plastic band are received within a longitudinal side seam of the carton.

3,729,127
PAPER BOX CONSTRUCTION

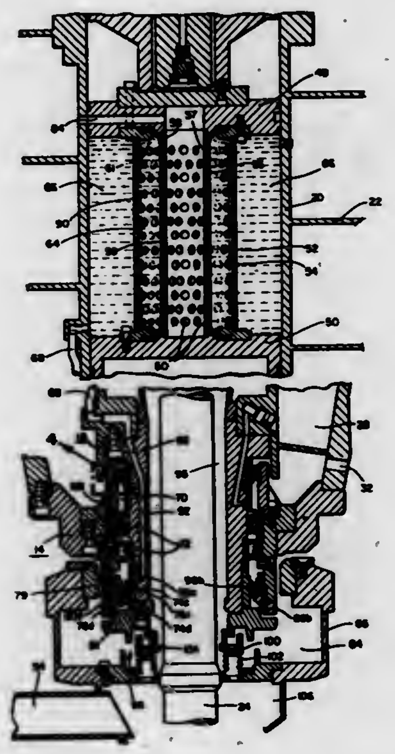
Samuel Kleinhaut, Forest Hills, N.Y., assignor to Bagprint Ltd.
Continuation-in-part of Ser. No. 155,202, June 21, 1971, abandoned. This application Sept. 8, 1971, Ser. No. 178,679
Int. Cl. B65d *5/46*
U.S. Cl. 229—52 A **11 Claims**



A generally rectangular paper box having first and second closure panels with side webs between the panels at the upper end of each of the sides, a first stiffener on the first panel and a second stiffener on the second panel, the first panel adapted to underlie the second stiffener in order to close the box, the second stiffener and second panel having triangular cut-out sections, one leg of each of the triangles being at an angle to the web adjacent thereto and spaced apart therefrom, the leg being inclined away from the web adjacent thereto in the upward direction. There is also provided a centrally located longitudinal slot in the first panel and the first stiffener, an opening in the second panel and the second stiffener which is at least partly in register with the slot when the box is closed, a handle having a stop which bears against the underside of the first stiffener, the handle projecting through the slot and adapted to pass through the hole when the box is closed. The first stiffener and panel are folded substantially perpendicularly to the front panel and the webs are folded inwardly to abut the first panel and the second stiffener, thereby forming points, the second panel and stiffener being folded substantially perpendicularly to the back panel to close the box. In a preferred form of the device there are slits in the first panel and stiffener through which the points pass so that they lie beneath the first panel.

3,729,128
HIGH PRESSURE CENTRIFUGE LUBRICATION SYSTEM

Karl Gardner Reed, Wayne, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Sept. 23, 1971, Ser. No. 182,999
Int. Cl. B04b *1/00*
U.S. Cl. 233—7 **12 Claims**



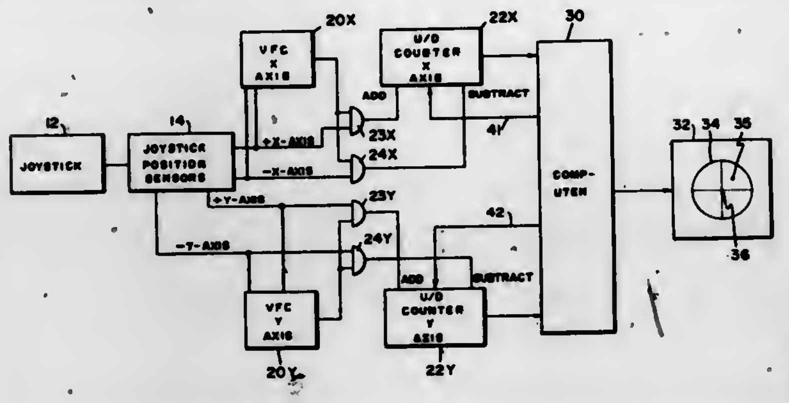
A centrifuge of the type having an internal helical screw conveyor within the centrifuge bowl, and which is subjected to a high internal gaseous pressure, is provided with a lubricating and sealing arrangement for lubricating the conveyor bearings, i.e., the bearings located between the centrifuge bowl and the conveyor. This arrangement includes a rotatable reservoir chamber located within the conveyor, which contains a reserve supply of lubricant, the lubricant being supplied via a passageway to the bearing cavity during operation of the centrifuge via the action of centrifugal force upon the lubricant supply. The chamber includes a flexible wall which is subjected to the internal gaseous pressure, thus transmitting this pressure throughout the lubricant to the bearing cavity. The bearing seals are subjected directly to the gaseous pressure on the exterior surfaces thereof, while the gaseous pressure is transmitted to the internal surfaces thereof via the flexible wall and lubricant. Thus, the pressure is substantially equalized on opposite sides of the bearing seals which results in better sealing. In addition, a collection chamber is provided to collect the total volume of lubricant within the reservoir chamber which will eventually leak past the bearing seals.

3,729,129
NUMERICAL COMPUTER PERIPHERAL INTERACTIVE DEVICE WITH MANUAL CONTROLS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Arthur I. Zygielbaum, 115 S. Monterey Street No. 4, Alhambra, Calif., and Stanley S. Brokl, 728 Orange Grove No. 1, Pasadena, Calif.

Filed June 22, 1971, Ser. No. 155,565
Int. Cl. G06m *3/14*

U.S. Cl. 235—10.2 **3 Claims**



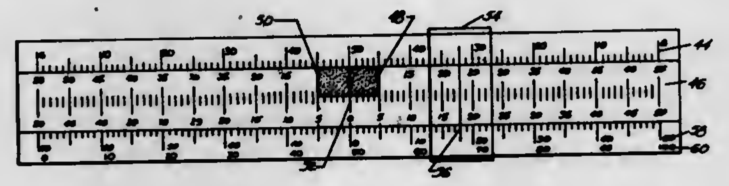
A computer peripheral device is disclosed which includes a joystick whose displacement from a center position along two axes X and Y in either a plus (+) or a minus (−) direction is sensed. The displacement magnitude in either direction controls the rate of clock pulses provided by a variable frequency clock. The clock pulses from the two clocks are accumulated in two separate counters, whose contents are displayed. The contents of the counters are suppliable to a computer to update the contents of specific cells which define the position of a cursor on a display which is under computer control.

3,729,130
FOOTBALL SLIDE RULE

Milton H. Bortz, 1550 Shenandoah Avenue, Cincinnati, Ohio

Filed March 24, 1971, Ser. No. 127,459
Int. Cl. G06g *1/02*

U.S. Cl. 235—70 R **6 Claims**



Slide rule device for use in connection with a football game, including a scale laid out to correspond to the yard line markers on a football playing field, an indicator for marking the starting position of a ball on the playing field, and a movable calculating member for determining distances on the playing field with respect to the starting position of the ball.

3,729,131
THERMOSTATICALLY CONTROLLED GAS VALVE

Eric McGowan, Shepperton, England, assignor to United Gas Industries Limited, London, England

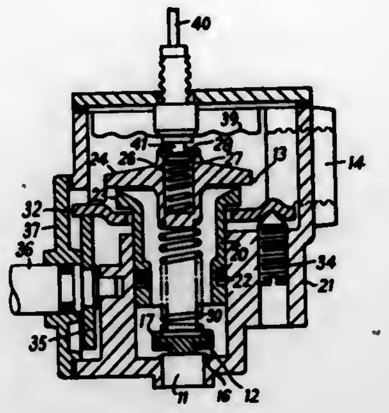
Filed July 2, 1971, Ser. No. 159,248

Claims priority, application Great Britain, July 13, 1970, 33,843/70; Oct. 15, 1970, 49,031/70

Int. Cl. G05d *23/12*

U.S. Cl. 236—99 **8 Claims**

A gas valve particularly for use in gas oven control systems comprises an isolating valve and a thermostatically controlled valve arranged in series. A common sleeve carries both the seat of the thermostatically controlled valve and the head of the isolating valve and a manual control moves the sleeve axially from an OFF position in which the isolating valve is closed to a selected position in which the thermostatically controlled valve is set to close when a temperature corresponding to said position is sensed in the oven.

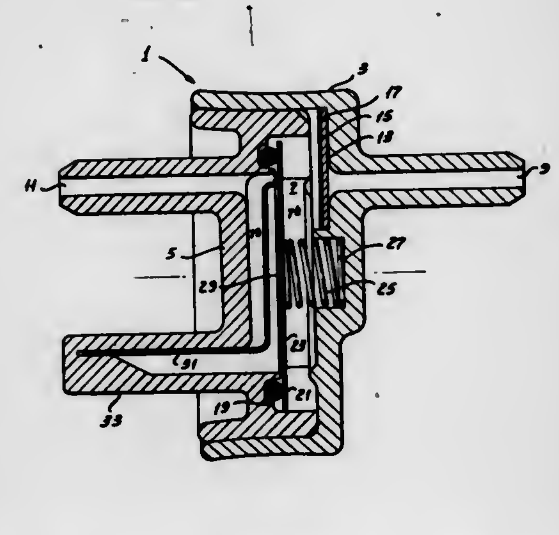


3,729,132
THERMAL CONTROL VALVE

George C. Ludwig, Amityville, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 25, 1971, Ser. No. 109,492
Int. Cl. G05d *23/02*

U.S. Cl. 236—101 **7 Claims**



A valve has a body with inlet and outlet ports and a calibrated orifice for providing restricted flow at least in one direction between the inlet and outlet ports. Valve means provides unrestricted flow in the opposite direction between the inlet and outlet ports and a bi-metal element responsive to temperature operates the valve means at a predetermined temperature to provide unrestricted flow in both directions between the inlet and outlet ports.

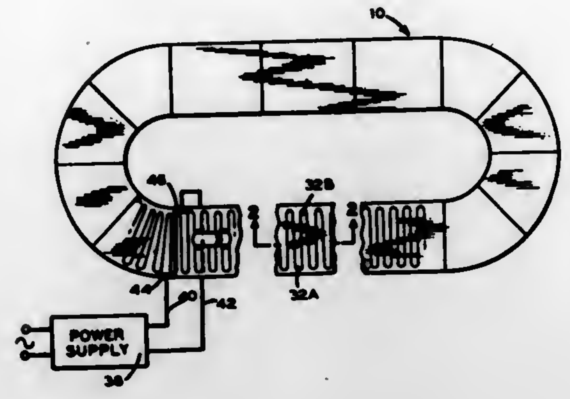
3,729,133
MODEL ROADWAY TRACK

Garry C. Covert, Baroda, Mich., assignor to Heath Company, Benton Harbor, Mich.

Filed July 26, 1971, Ser. No. 166,166
Int. Cl. A63h *18/12*

U.S. Cl. 238—10 E **6 Claims**

A track assembly includes an interdigitated arrangement of foil conductive strips which are fixedly mounted on one surface of an electrical non-conductive baseplate. On the underside of each section of baseplate is a dovetail connector arrangement which interlocks with a similar dovetail arrangement of an adjacent track section.

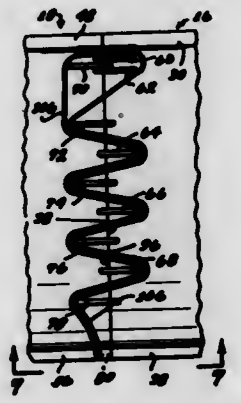


3,729,134
TOY VEHICLE TRACK SYSTEM

John S. Cook, Sunnyvale, and Denis V. Bosley, Palos Verdes Peninsula, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 20, 1971, Ser. No. 107,912
Int. Cl. A63h *19/30*

U.S. Cl. 238—10 E **7 Claims**



A track system having a banked curve portion comprising three track sections. Connection between the track sections is made by connector flanges and connector tabs integral with one track section extending beyond its end to engage the end of an abutting adjacent track section, so that alignment of track section surfaces is achieved in addition to stiffening and strengthening the track sections. An elastic band is then looped about the connector flanges to insure joinder.

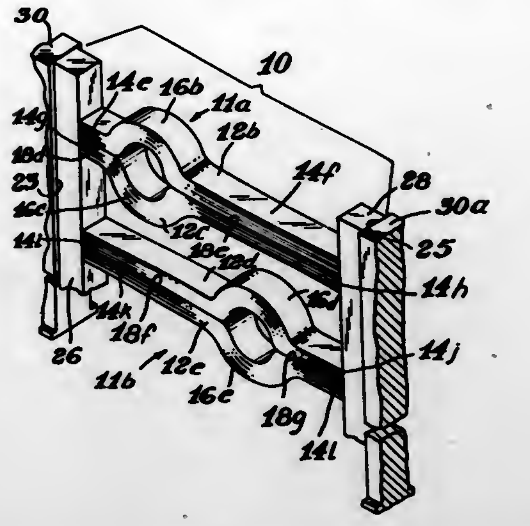
3,729,135
EXPANSION JOINT FOR FLOW SPEED REACTION RAILS

James W. Frasure, Houston, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed March 9, 1972, Ser. No. 233,117
Int. Cl. E01b *11/00*

U.S. Cl. 238—151 **13 Claims**

An expansion joint to connect two rail sections comprising an expansion element with two elongated expandable laminated connectors. The connectors elastically flex upon exertion thereon of generally axially aligned forces. The expansion joint can be enclosed by a suitable cover and side shields and used in mass transport systems.

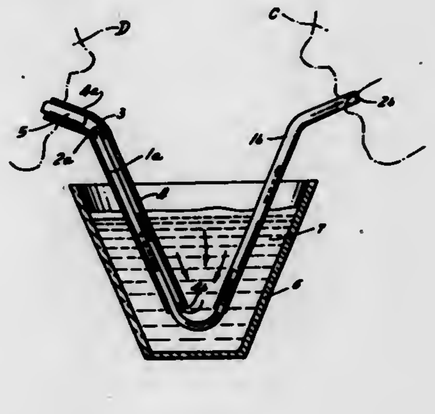


3,729,136
DRINKING STRAW

Sol Friedman, 10 Roland Drive, Monsey, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,129
Int. Cl. A47g *21/18;* **A61j** *15/00*

U.S. Cl. 239—33 **8 Claims**



A drinking straw has opposite open ends and is surrounded in part and with clearance by a tube which extends beyond one of the open ends and an end section of which is closed by a plug which is to be inserted into the mouth of a doll. Thus, when the straw with the open inlet end of the tube is inserted into a body of liquid, and a child exerts suction at the opposite open end of the straw, liquid will first rise in the clearance between the tube and the straw, thereupon enter in the region of the mouth of the doll the straw itself and travel along to the mouth of the child, creating the illusion that the doll is drinking together with the child through the same straw.

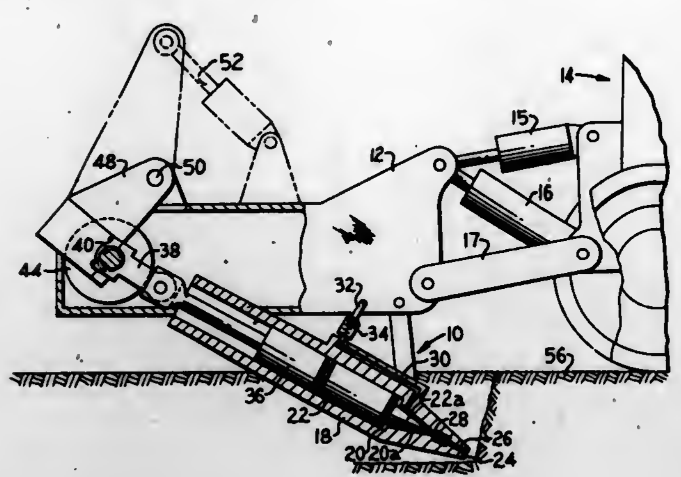
3,729,137
MECHANICALLY ACTUATED WATER CANNON

Delwin E. Cobb, and Robert J. Sullivan, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed April 12, 1971, Ser. No. 133,261
Int. Cl. B05b *1/08*

U.S. Cl. 239—101 **7 Claims**

An apparatus for creating high velocity jets of liquid for fracturing rock and like materials, said apparatus utilizing massive rotary flywheels for storing large amounts of kinetic energy. The kinetic energy is then delivered by a crank and link mechanism to a piston which forces quantities of liquid



from a chamber through a nozzle at sufficient velocity to fracture selected materials.

3,729,138
ULTRASONIC ATOMIZER FOR ATOMIZING LIQUIDS AND FORMING AN AEROSOL

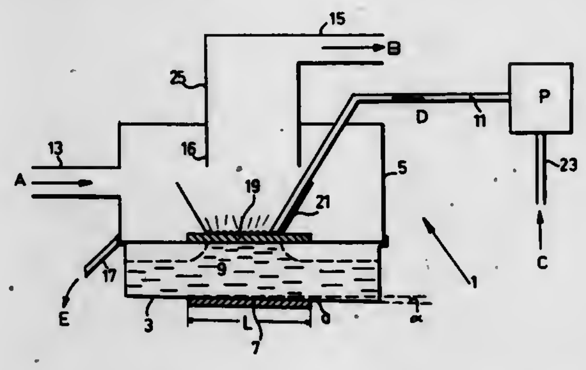
Jan Erik Tysk, Ekero, Sweden, assignor to LKB-Medical AB, Bromma, Sweden

Filed July 21, 1971, Ser. No. 164,567

Claims priority, application Sweden, July 23, 1970, 10183/70

Int. Cl. B05b *3/14, 17/06*

U.S. Cl. 239—102 **5 Claims**



An ultrasonic atomizer for atomizing liquids and forming an aerosol, comprising a container defining an atomizing chamber having a liquid inlet for the liquid to be atomized and a gas inlet for carrier gas and a gas outlet for discharging the aerosol formed, an ultrasonic vibrator being arranged in connection with said chamber for providing liquid atomization, a transmission chamber being positioned in connection with the ultrasonic vibrator and intended to contain a transmission medium for transferring ultrasonic energy from the ultrasonic vibrator to the vibrating element which is positioned on the opposite side of the transmission chamber.

3,729,139
SEALS

Derek Aubrey Roberts, Almondsbury, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

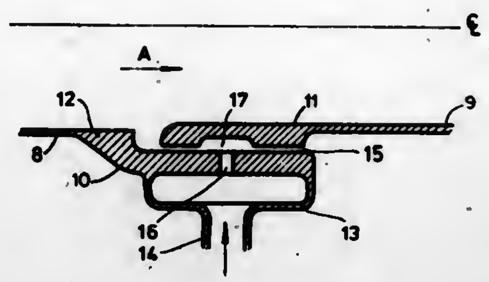
Filed Sept. 17, 1971, Ser. No. 181,398

Claims priority, application Great Britain, Sept. 26, 1970, 45,976/70

Int. Cl. B64d *33/04*

U.S. Cl. 239—127.3 **6 Claims**

A seal clearance is automatically maintained between the mating ends of two ducts the minor one of which is held at a steady temperature by a hot fluid flowing through it. The clearance between the two ducts is maintained by blowing cooling air through apertures in the outer duct which can then



escape through the clearance between the two ducts. The size of the clearance therefore controls the cooling airflow through the outer duct which regulates the size of the clearance by controlling the thermal expansion of the outer duct.

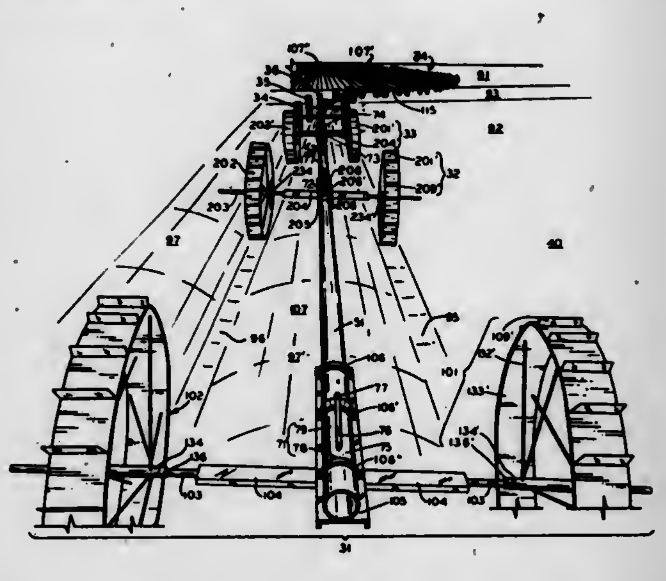
3,729,140
MOBILE IRRIGATION SPRINKLER APPARATUSES AND PROCESSES OF OPERATION THEREOF

Milton H. Wagner, Rt. 1, Brownfield, Tex.

Filed July 19, 1971, Ser. No. 163,742

Int. Cl. A01g *25/02*

U.S. Cl. 239—212 **8 Claims**



Tow type irrigation apparatuses and processes operating without anchors wherein the moving pipe train is automatically maintained in a straight line along one portion thereof and along another portion parallel thereto and longitudinally and laterally displaced therefrom while a third intermediate portion between is in a stable inverse curve form.

3,729,141
WATER MOTOR WITH PARTIAL CIRCLE PATTERN

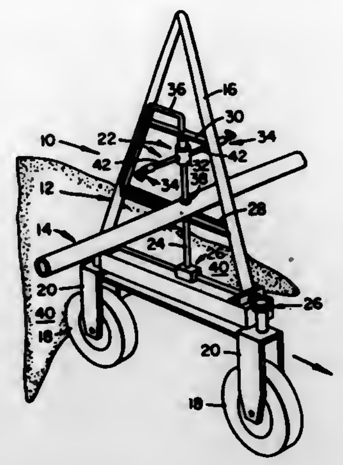
Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

Filed June 16, 1971, Ser. No. 153,518

Int. Cl. A01g *25/02;* **B05b** *3/06, 3/18*

U.S. Cl. 239—212 **.7 Claims**

An improved water motor for automatic sprinkling systems provides a selected sprinkling pattern which is reversed 180° upon reversal of the direction of water motor rotation. Thus a section of ground immediately in front of each driving motor of the sprinkling system is left dry until the drive means passes. To this end, a rotatable sleeve valve disposed within the water motor defines manifold means which allows water to pass from the water motor nozzles only during selected arcuate portions of rotation thereof. The reversal of the direction of water rotation automatically rotates the sleeve valve 180° to reverse the direction of the sprinkling pattern. Further, the improved water motor may be readily disposed with the output shaft from the motor extending through the pipeline in selected configuration, to allow preferred location of the



water motor at a selected height above the pipeline and thus at an optimum height above the ground level.

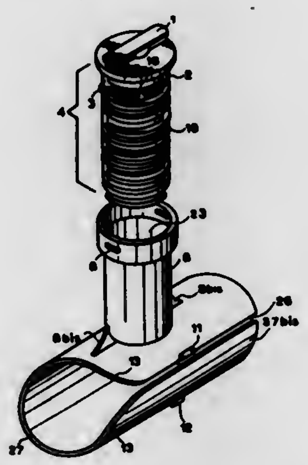
3,729,142
DRIPPERS FOR IRRIGATION

Javier Rangel-Garza, and Jaime Leal-Diaz, both of Escobedo 733 Sur Suite 316, Monterrey, Nuevo Leon, Mexico

Filed Dec. 3, 1970, Ser. No. 94,693

Int. Cl. B05b *1/30*

U.S. Cl. 239—542 **13 Claims**



A dripper for irrigation has a removable male member with a handle and ridges providing a meandering water flow path for controlling pressure drop and is held in a smooth walled female receptacle by tabs for quick removal by twisting the handle. A clamping member accompanying holds the dripper by surrounding supply pipe lines of various sizes with an aperture therethrough to receive a dripper extension by means of a mating lock hook portion engaging the inner walls of the supply pipe line. The dripper male member ridges may be made of plastic to allow ready removal of ridge portions for changing the path and drip rate.

3,729,143
FORAGE HARVESTER CUTTING REEL AND GAUGE PINS FOR POSITIONING THE CUTTING BLADES THEREON

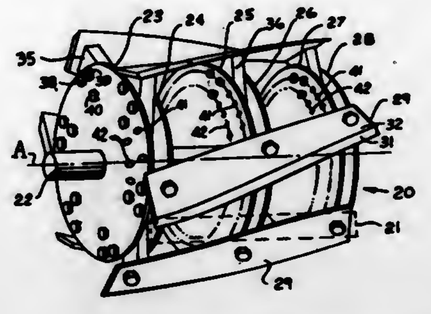
Robert A. Wagstaff, and Thomas W. Waldrop, both of New Holland, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed April 29, 1971, Ser. No. 138,539

Int. Cl. B02c *18/20*

U.S. Cl. 241—282.2 **12 Claims**

A forage harvester has a cutting reel of three pairs of radially extending supporting plates with each supporting plate having two concentric rows of equally spaced mounting holes for passing bolts to fasten cutting blade mounting blocks between the plates of a given pair. The blocks project beyond the edges of the blades and have contoured end surfaces to seat spirally shaped cutting blades on the blocks. The blades are bolted to the blocks so that these bolts will shear more



readily than the mounting bolts through the plates. The blades are positioned on the mounting blocks by retractable gauge pins exteriorly positioned on the opposite side walls of the forage harvester a radial distance equal to the radial distance from the center of the cutting reel to the shear bar.

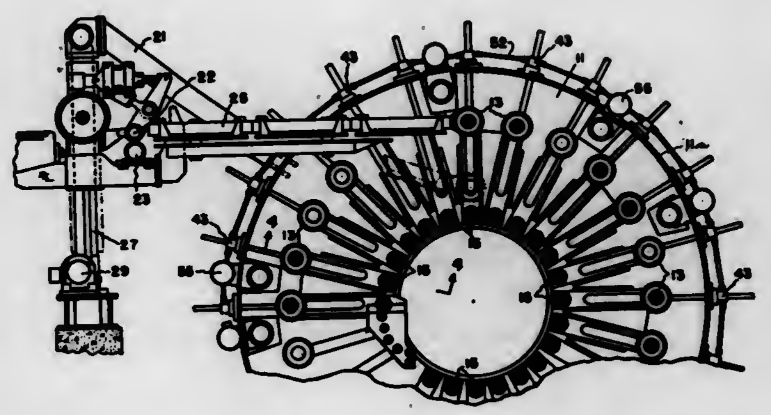
3,729,144
DESIGN OF ROTARY STRIP ACCUMULATOR

Tadeusz M. Bijasiewicz, and Robert A. Somerhalder, both of Pittsburgh, Pa., assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Aug. 5, 1971, Ser. No. 169,192

Int. Cl. B65h *17/48*

U.S. Cl. 242—55 **10 Claims**



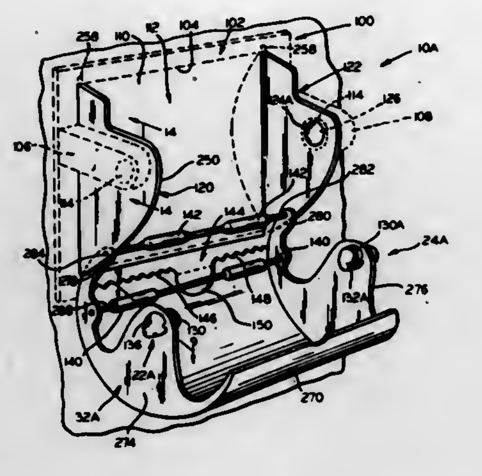
The disclosure relates to a device for accumulating a continuous coil of strip, such as, carbon steel. The device comprises a support upon which the strip material is accumulated by being coiled into two substantially concentric sets of convolutions—an outer set and an inner set—connected by a free reverse loop which orbits between the sets of convolutions. The sets of convolutions are distinguished not only by their relative concentric positions, but by their reversed winding which results in the existence of a numerical balance between the convolutions of the respective sets during periods of strip input and/or output from the device. Accordingly, the rate of change in the number of convolutions in each set is the same; their number increasing as the quantity of the accumulated strip increases and decreasing as the quantity decreases. To accommodate such changes without undesirable collapsing and slippage of the strip, the sets of convolutions are formed against two expansible roller cages which support and guide the strip. The rollers of the cages are provided with interrelated bearing chock assemblies to which are connected mechanical jacks for radially displacing the cages independently. At least some of the rollers of the outer cage are driven by a gear-motor unit directly supportable by the journals of the rollers. The diameters of the rollers of the outer cage are considerably larger than the diameters of the rollers of the inner cage and several of the former are considerably shorter in body length for strip guiding purposes.

3,729,145

PAPER ROLL HOLDING AND DISPENSING DEVICE

Bon Gul Koo, and Bon Hyup Koo, both of 8443 Kean Avenue, Hickory Hills, Ill.

Filed Dec. 29, 1971, Ser. No. 213,340
Int. Cl. B65h *19/00*
U.S. Cl. 242—55.53 **10 Claims**



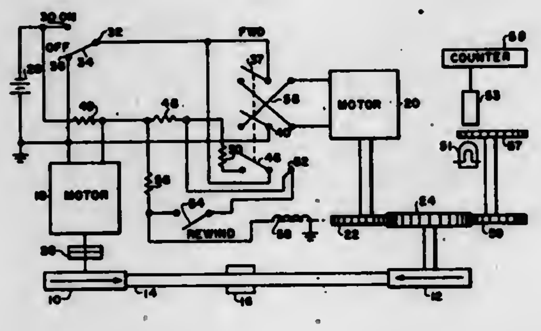
A holder and dispensing device for toilet paper and the like including opposed roll journaling assemblies each including an extending and retracting casing that houses a head member which is spring biased to extended position wherein it projects from the respective casings along the axis of rotation of the roll, an arcuate cover overlying the space between the assemblies and arranged concentrically to said axis to removably cover or mask the paper roll, and an arrangement to extend the respective casings into the roll bore when the cover is moved to closed or masking position and to retract the casings from the bore when the cover is moved to open position to replace the roll, whereby the roll core can be snapped free of the head members and another roll inserted therebetween for returning the holder to use by moving the cover to its closed position.

3,729,146

MAGNETIC TAPE TRANSFER SYSTEM

Robert N. Miller, Dallas, Tex., assignor to International Computer Products, Inc., Addison, Tex.

Filed Nov. 19, 1970, Ser. No. 91,081
Int. Cl. B65h *17/02*
U.S. Cl. 242—67.4 **17 Claims**



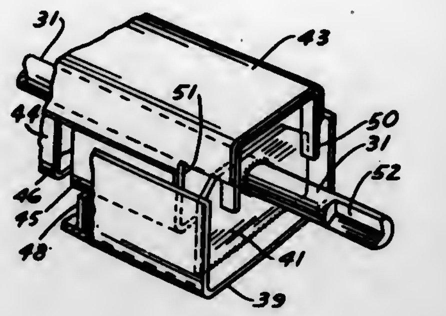
A method and apparatus for driving reels of the tape cassette wherein one motor is connected directly to one reel and supplied with power continuously to drive the reel in a direction to take up tape. A second motor is coupled to a second reel through a speed reducing mechanism providing a mechanical advantage. Both direction of rotation and speed of the second motor are controlled to effect a control transfer of tape between the two reels while the first motor slips.

3,729,147

COLLAPSIBLE SHAFT FOR PAINT SPRAY BOOTH

Sheila Hardy, 400 North Avenue, Dispo Spray Booths, Bartlett, Ill.

Filed Sept. 28, 1970, Ser. No. 75,844
Int. Cl. B65h *75/22*
U.S. Cl. 242—72 **6 Claims**



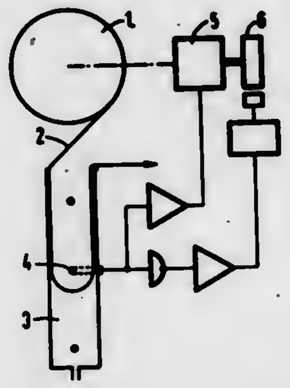
The invention resides in the particular combination and arrangement of elements and especially in the provision of an improved structure having a single, co-extending drive shaft and a single shiftable member to collapse the device, so that it may more easily be removed from a roll of paint laden material.

3,729,148

MAGNETIC TAPE APPARATUS WITH GRADUATED BRAKE AND/OR MOTOR TORQUE FOR CONTROLLING TAPE WINDING

Klaus Winkler, 8033 Planegg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 17, 1971, Ser. No. 181,300
Claims priority, application Germany, Sept. 23, 1970, P 20 46 916.3
Int. Cl. G11b *15/58, 23/12*
U.S. Cl. 242—182 **4 Claims**



A magnetic tape apparatus where the tape feed is uncoupled from the inert tape coils with the aid of buffer systems, and the speed is controlled as a function of the increase and/or decrease of the tape past at least one gate, wherein passage of a barrier by the tape in one direction provides a highly increased brake torque and passage of the gate or barrier in the other direction provides a highly increased motor torque, either of which torques are markedly decreased after a certain time in synchronism with the operation of the tape control system.

3,729,149

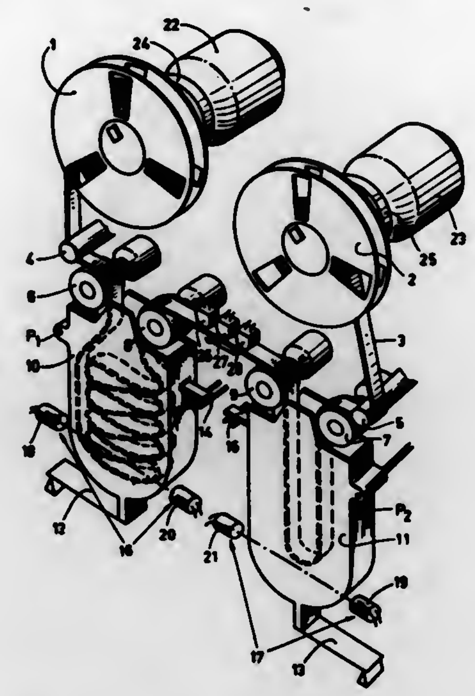
TAPE TRANSPORT

Louis Assuerus van de Wijngaert, Emmasingel, Eindhoven, Netherlands

Filed Feb. 18, 1970, Ser. No. 12,341
Claims priority, application Netherlands, Feb. 24, 1969, 6902878
Int. Cl. G11b *23/12*
U.S. Cl. 242—183 **5 Claims**

A magnetic recording and playback device having a tape-shaped record carrier particularly for use in computer

memory systems having tape-bins and a sensing member for signalling the presence of a tape-loop in said tape-bins. The spool motor on the winding-on side being controlled by the weight of the tape in the associated tape-bin, and the spool motor on the winding-off side being controlled by the presence or absence of the last tape-loop in the associated tape-bin.

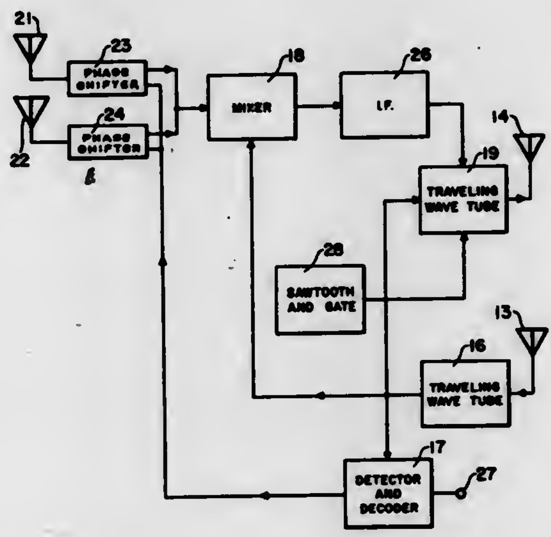


3,729,150

MISSILE GUIDANCE SYSTEM

Robert L. Conger, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 19, 1961, Ser. No. 104,771
Int. Cl. F41g *7/00;* F42b *15/02*
U.S. Cl. 244—3.13 **2 Claims**



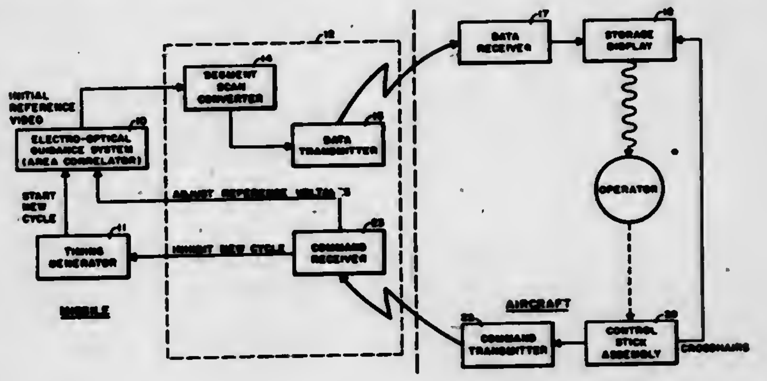
1. In a system for guiding a missile to a distant target the combination comprising:
   a. means located at the missile launching station for transmitting command guidance signals to said missile and for illuminating the target with a radar signal,
   b. receiving antenna means located on the rear portion of said missile for receiving said command guidance signals directly from said missile launching station,
   c. scan antenna means located on the forward portion of said missile for receiving echos of said radar beam from said target,
   d. first amplifier circuit means having an input coupled to said receiving antenna means for amplifying said command signals and having an output,
   e. detector and decoder means having an input coupled to the output of said first amplifier circuit means for supplying command signals to the flight control system of said missile,
   f. transmitting antenna means located on the rear of said missile for transmitting a signal to said launching station,
   g. second amplifier circuit means having an output coupled to said transmitting antenna,
   h. circuit means coupling a portion of the output of said first amplifier circuit means to said second amplifier circuit means for supplying a carrier signal to said second amplifier circuit means,
   i. circuit means coupling said scan antenna to said second amplifier circuit means for amplifier modulating the carrier signal of said second amplifier circuit means whereby the command signals transmitted to said missile modified in accordance with target position information transmitted from said missile.

3,729,151

REMOTE TARGET ACQUISITION AND LOCK-ON SYSTEM

Klaus J. Hecker, Oberursel, Germany, assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1965, Ser. No. 510,165
Int. Cl. F42b *15/02*
U.S. Cl. 244—3.14 **2 Claims**



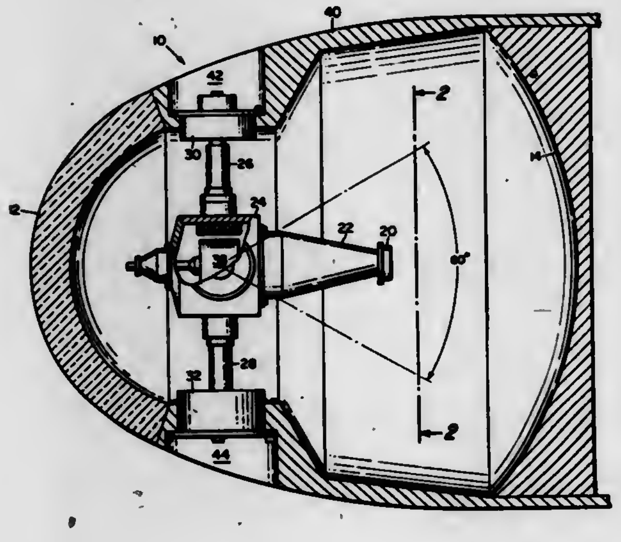
1. A remote target acquisition and lock-on system for use with the control aircraft and an electro-optically guided missile which is launched prior to target acquisition, comprising:
   a. an area correlation type electro-optical television seeker means located in a guided missile and including a storage tube means, optical-axis axis torquing means and cross-hair generator means,
   b. a timing generator means also located in the missile for automatically causing said seeker means to store a new image in its storage tube at regular fixed intervals.
   c. a data link means located in the missile and consisting of a segment scan converter means, data transmitting means and command receiving means,
   d. a data receiver means, a storage display means, a control stick assembly, and command transmitter means all located in a control aircraft,
   e. said seeker means feeding an initial high-frame-rate video reference signal of the image of a scene to the segment scan converter means of said data link means,
   f. said segment scan converter means converting the high-frame-rate video signal to a low-frame-rate signal,
   g. said data transmitting means in the missile transmitting said low-frame-rate signal from the scan converter to said data receiver means in the control aircraft,
   h. the signal received by the data receiver means being displayed on said storage display means in the aircraft for visually determining whether the desired target appears in the displayed image,
   i. said control stick assembly being manually operable to generate commands which are fed to the command transmitting means in the aircraft and transmitted to the com-

mand receiving means in the missile for causing the optical axis of said seeker means to be torqued to look at another scene at each interval until the desired target is displayed on said display means in the aircraft,

j. manually operable means in said control stick assembly operable to cause command signals to be transmitted at such time as a target image appears on said display for inhibiting said timing generator means from automatically re-cycling the storage tube of said seeker means at said regular fixed intervals and for generating tracking-mode cross-hairs on said aircraft, display means, said control stick assembly also including means operable to adjust said cross-hairs to fix on the target image and for producing a signal representing the position of said cross-hairs which is transmitted to the missile causing adjustment of reference voltages in said seeker means to correspond to the cross-hair position, whereby the missile seeker means is locked-on the target for tracking same.

3,729,152
INERTIALLY STABILIZED OPTICAL SYSTEM FOR MISSILES

Andrew N. Stephenson, 2151 Almanor St., Oxnard, Calif.
Filed July 28, 1970, Ser. No. 64,155
Int. Cl. G06f *15/50*; **F42b** *15/02*
U.S. Cl. 244—3.16 **4 Claims**

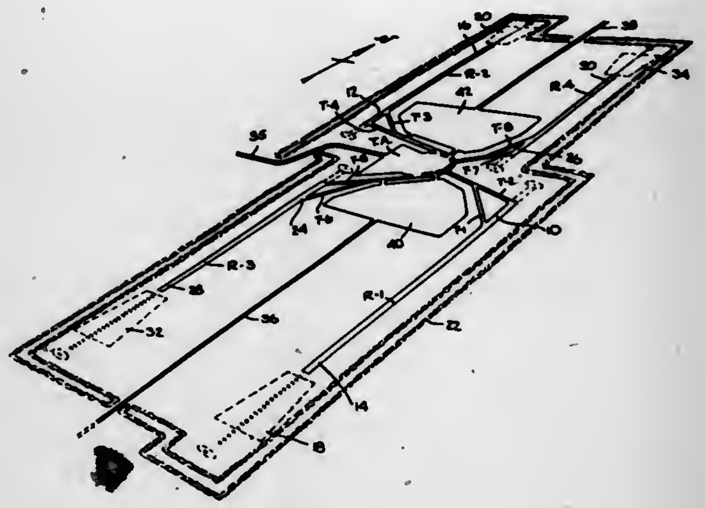


An optical "seeker" system for a guided missile, the system being so designed that a minimum amount of structure is required to be stabilized. Whereas certain known arrangements necessitate mounting the mirror and lens of the optical assembly on a stabilized gimbal while the detector is fixed in place, the present concept reverses this approach and mounts only the detector on the gimbal while the mirror and lens are secured to the missile body. This simplifies overall design and yields a system which is not only more rugged but permits the use of larger optical components with a greater energy-collecting capacity.

3,729,153
HIGH CAPACITY LOW POLLUTANT AIRPORT DESIGN

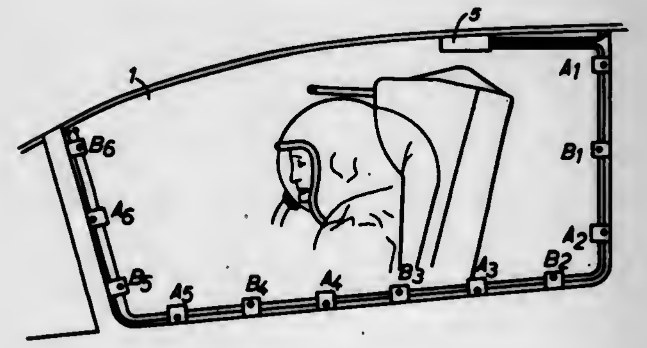
Harold A. Wilde, 6640 S. W. 129th Terrace, Miami, Fla.
Filed Feb. 26, 1971, Ser. No. 119,210
Int. Cl. B64f *1/00*
U.S. Cl. 244—114 R **9 Claims**

The airport construction includes a terminal area and a pair of generally parallel runways on opposite sides of the terminal area. Each of the runways has an end more proximate to the terminal area than its opposite end with the opposite ends extending in opposite directions from the proximate ends. Short or stub taxiways connect the proximate runway ends to the terminal area. Simultaneous aircraft landings and takeoffs are provided. Aircraft traffic is characterized as flowing from one end of the airport toward the terminal area and from the latter to the opposite end of the airport. The short taxiways reduce taxi time and distance for both landings and departures and, in conjunction with the flow through aircraft traffic pattern, minimize air and noise pollution.



3,729,154
METHOD AND DEVICE RELATED TO THE EJECTION OF A PERSON FROM AN AIRCRAFT COCKPIT OR THE LIKE

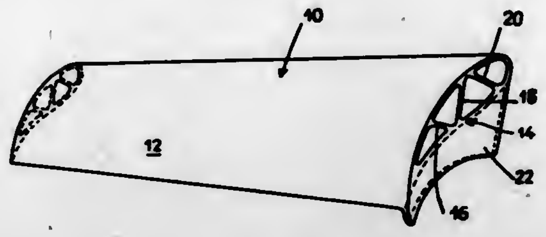
Henri Deplante, Paris, France, assignor to Avions Marcel Dassault, Vaucresson, France
Filed Feb. 17, 1971, Ser. No. 115,956
Claims priority, application France, Feb. 18, 1970, 7005804
Int. Cl. B64c *1/32*
U.S. Cl. 244—122 AF **10 Claims**



A method and device related to the ejection of a person from an aircraft cockpit or the like, wherein two sets of detonating charges in appropriate spaced relationship act on the confining wall, the first set to cause the commencement of ruptures and the second set, which are fired subsequently, to cause completion of the previously commenced ruptures, thereby to permit ejection of the person through the shattered and fragile wall, while the latter is nevertheless still intact, without danger.

3,729,155
MOULDED WING FLAP

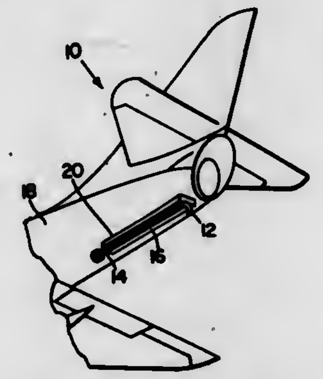
Roger Huet, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France
Filed Dec. 14, 1970, Ser. No. 97,533
Claims priority, application France, Dec. 22, 1969, 6944535
Int. Cl. B64c *3/24*
U.S. Cl. 244—123 **3 Claims**



A moulded light alloy cast wing flap having thin external walls and internal partition walls forming a monolithic cast structure to withstand shrinkage stresses.

3,729,156
PACKAGING FOR DISPENSING MATERIAL

Robert L. Wright, 127 Palomares Avenue, Ventura, Calif.
Filed Sept. 18, 1968, Ser. No. 761,900
Int. Cl. B64d *1/02*; **H01q** *15/00*
U.S. Cl. 244—136 **1 Claim**

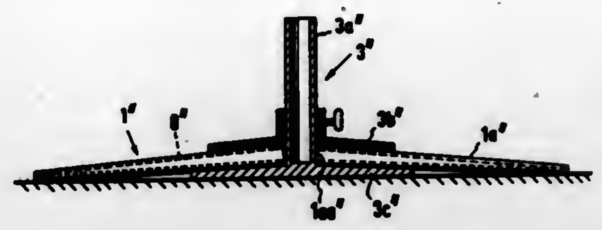


A packaging for chaff material to be loaded into a chaff dispenser which packaging prevents the chaff from being accidentally spilled and blown about during the dispenser loading operation. It includes a flexible sheet enveloping the assembled chaff material and confining the shape of the assembled material to the interior dimensions of the dispenser. The envelope is pre-slit lengthwise and these slits are temporarily sealed with an adhesive tape with the ends thereof extending beyond the dispenser. After the packaged chaff has been loaded into place, the chaff is freed within the dispenser by pulling the extended ends of the tape, thus reopening the slits.

3,729,157
COLLAR FOR UPRIGHT MEMBERS AND STAND WITH SUCH COLLAR

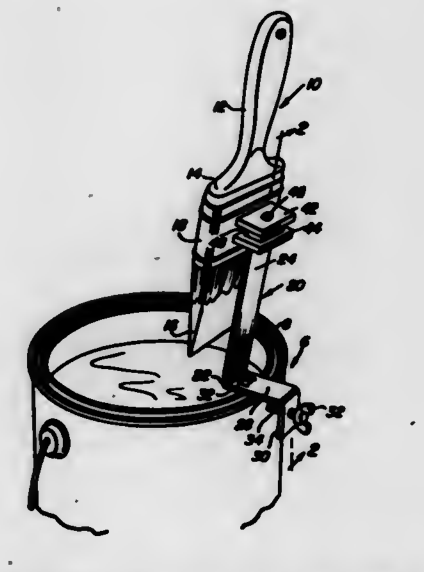
Peter Robert Haff, Munich-Geiselgasteig, Germany, assignor to Mosel-Anstalt, Vaduz Liechtenstein
Filed June 1, 1971, Ser. No. 148,705
Claims priority, application Germany, June 2, 1970, P 20 27 072.8
Int. Cl. A47g *33/12*
U.S. Cl. 248—44 **14 Claims**

The present invention relates to a collar for upright members such as candles or Christmas trees, which is made of a pleated piece of sheet material, for example fabric, paper, metal foil, or synthetic material. The pleated piece of sheet material is folded so that one of its lateral edges forms a central opening for receiving the upright member while its other lateral edge forms a peripheral boundary of the folded collar. The end portions of the piece of sheet material are provided with releasable connecting means and the pleats or at least some of the pleats are provided with stiffening or reinforcing means such as ribs of cardboard. A stand comprising such a collar also has upper and lower stand members whith a spacing therebetween in which the collar is received whereby the stand members extend radially outwardly from said central opening.



3,729,158
PAINT CAN BRUSH HOLDER

David Nagy, 1252 Davenport Road, Toronto, Ontario, Canada
Filed June 14, 1971, Ser. No. 152,685
Int. Cl. B44d *3/14*
U.S. Cl. 248—110 **4 Claims**

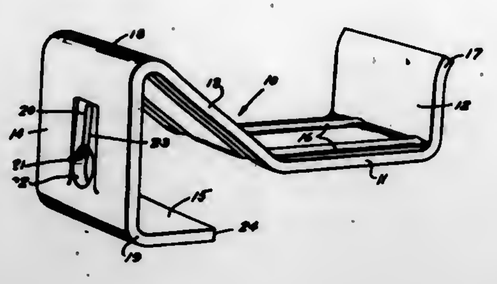


A paint brush elevating, positioning and holding device for use atop a paint can. It is preferably but not necessarily made from a length of flat-faced strap metal whose lower end is L-shaped and fashioned into a readily applicable bracket or clamp. The upper end is reduced to provide a tang and a shoulder and is equipped with upper and lower plates or cleats having a permanent magnet sandwiched therebetween and adapted to attract and hold the usual magnetizable metal band of the paint brush in a ready-to-use position.

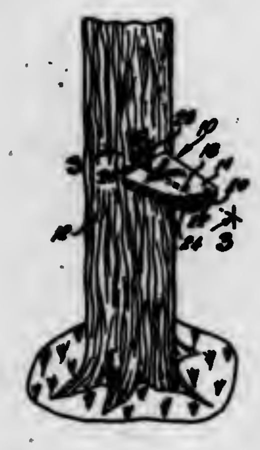
3,729,159
WALL FORMING BRACKET

Robert C. Foster, 403 Laurel St., Elk Grove Village, Ill.
Filed Nov. 2, 1971, Ser. No. 194,820
Int. Cl. E04g *17/02*
U.S. Cl. 248—205 R **7 Claims**

A wall-forming bracket or clamp, also known as a waler bracket, for concrete wall forms of the type using plywood wall-forming sheets, tie rods with headed ends projecting through holes in the sheets, vertical lumber studs overlying the sheets and horizontal lumber walers overlying the studs. The bracket is a one-piece rigid metal member having a flat base on which the waler rests, an upturned outer end flange for overlying the outer edge of the waler, an upturned inclined leg on the opposite end of the base having a keyhole slotted downturned end flange for receiving the headed end of a tie rod and overlying the outer surface of the plywood sheet, and an outturned foot on the bottom of the downturned flange adapted to be struck by a hammer to remove the bracket from the wall form after use. The slotted downturned flange presents a large surface area to the plywood sheet which will not dimple the plywood under a heavy load and the face of the downturned flange receiving the head of the tie rod is inclined to cam the bracket against the plywood sheet causing it to project straight outwardly therefrom. The top and bottom ends of the downturned flange are rounded and any bending deformation of the bracket is in a direction that will not permit these rounded ends to damage the plywood.



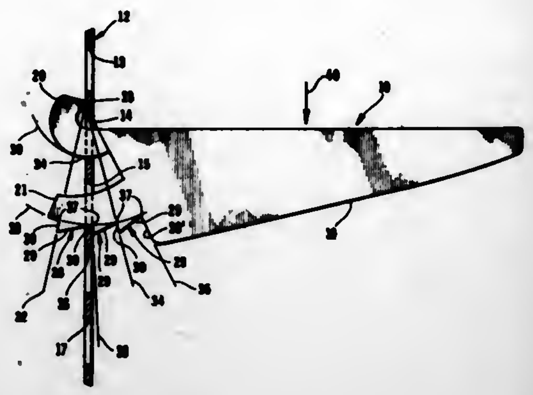
3,729,160
TREE SEAT
Eugene A. D'Imperio, 15 Allen Place, Harrison, N.Y.
Filed July 19, 1971, Ser. No. 163,804
Int. Cl. E04g *3/10*
U.S. Cl. 248—218 **12 Claims**



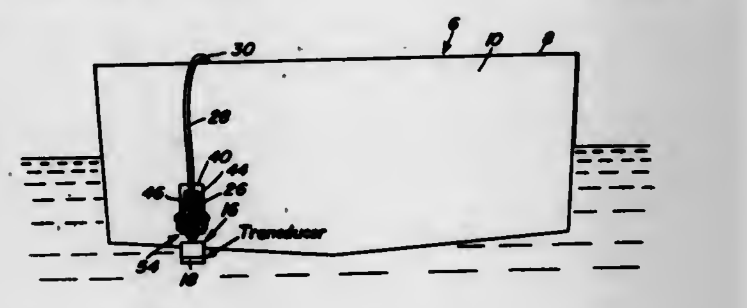
A self-supporting, easily portable tree seat is disclosed as including a seat member, a seat frame underlying the seat member and means for attaching the frame to the seat member such that the frame is rotatable relative thereto. Also attached to the seat member is a seat brace rotatably attached to the seat frame such that the brace is capable of assuming a position bearing against an object, such as a tree, to which the seat is attachable. A support rod underlies the seat member and includes an upstanding arm generally parallel to the brace and a threaded arm projecting through the base for threadable insertion to the tree. The support rod acts as a cantilever support for the seat, thus avoiding the necessity for chains and the like common in the prior art for supporting tree seats.

3,729,161
ADJUSTABLE SHELF BRACKET
Earl Christensen, Albert Lea, Minn., assignor to Streater Industries Inc., Albert Lea, Minn.
Filed Sept. 30, 1970, Ser. No. 76,661
Int. Cl. A47g *29/02*
U.S. Cl. 248—242 **2 Claims**

A one piece adjustable shelf bracket having two hooks or lugs which hook into slots in a vertical post. The bracket is angularly adjustable in a vertical plane and the hooks are designed to vectorize loads applied to the shelf so that forces are applied from the hooks to the slotted post in three or four different places. This provides for an even and efficient distribution of the shelf load.



3,729,162
TRANSOM TRANSDUCER MOUNTING BRACKET
Frank J. Salvato, 6605 Lange Circle, Dallas, Tex.
Filed March 5, 1971, Ser. No. 121,364
Int. Cl. H04r *1/44;* **A47f** *5/10*
U.S. Cl. 248—291 **5 Claims**



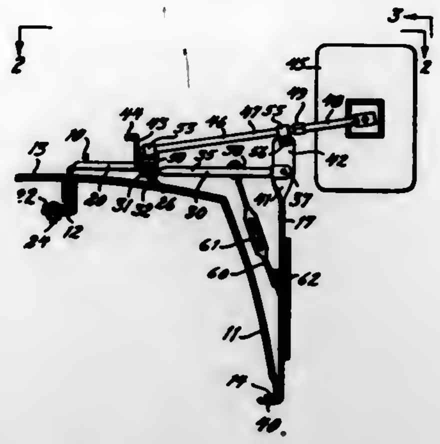
For use on a boat having a vertical transom, a transducer assembly characterized by a flat-bottomed underwater block-like head having an upstanding sleeve providing a sheath for the lower end portion of an insulated wire which is operatively connected with said head, and novel means for mounting said transducer. The mounting means comprises a transom-supported adapter cleat and a bracket. The cleat is joined to the transom by fastening screws. The complemental bracket is L-shaped in edge elevation. The short vertical leg of the bracket is normally flush and united with the lower end of the cleat through the medium of a spring hinge. The long horizontal leg has an elongated slot in which the sleeve is insertably adjustably and retentively mounted. The sleeve-supported transducer is capable of swinging up and out of the way clear of damaging obstructions.

ERRATUM
For Class 248—487 see:
Patent No. 3,729,109

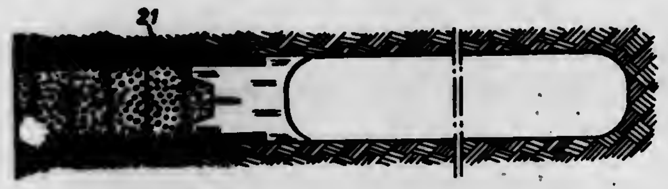
3,729,163
REAR-VIEW AUTOMOTIVE MIRROR
Wayne Cummins, 515 A Blackwood Avenue, Franklinville, N.J.
Filed Dec. 20, 1971, Ser. No. 209,686
Int. Cl. B60r *1/06*
U.S. Cl. 248—487 **5 Claims**

An automotive rear-view mirror for attachment to a fender wherein an upper framework is attached to an inner fender edge for extension laterally outwardly over the fender, a depending frame member extends between the upper framework and the lower fender edge, and a mirror is carried on one end of an arm, the other end being connected to an intermediate

region of the upper framework for swinging movement of the arm between an outer operative position and an inner inoperative position, and upstanding struts on the upper framework for selectively supporting the arm in respective positions of the latter.

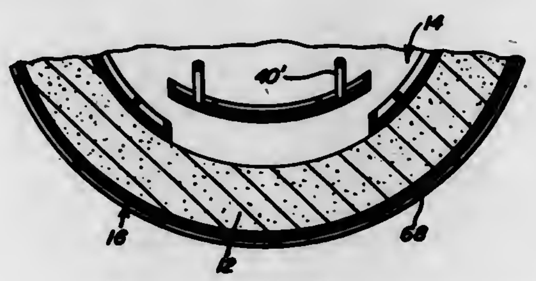


3,729,164
DEVICE FOR FORMING CONTINUOUS WALLS, BY MEANS OF CONSECUTIVE, REINFORCED-CONCRETE PANELS
Michel Armand Rene Alfred Baar, Liege, Belgium, assignor to Compagnie Internationale des Pieux Armes Frankignoul, Societe Anonyme, Liege, Belgium
Filed Dec. 2, 1970, Ser. No. 94,371
Claims priority, application Luxembourg, Dec. 16, 1969, 60021
Int. Cl. E02d *5/20*
U.S. Cl. 249—10 **2 Claims**



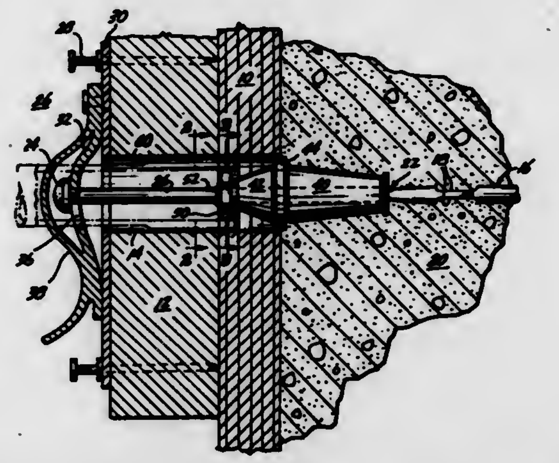
A device for forming a continuous reinforced concrete wall in which the reinforcement overlaps between adjacent sections of the wall to provide continuity of sheer strength in the wall. The method utilizes a mould end of the invention, which is shaped to protect projecting ends of reinforcement bars during casting of a concrete panel forming the wall. The next cast panel is then cast around the projecting free ends of the reinforcement bars of the previous panel.

3,729,165
FORM FOR MANHOLES AND THE LIKE
Carroll O. Trimble, Springdale, Ark., assignor to James D. Cypert, Springdale, Ark., a part interest
Filed June 16, 1971, Ser. No. 153,770
Int. Cl. B22c *9/24*
U.S. Cl. 249—144 **3 Claims**



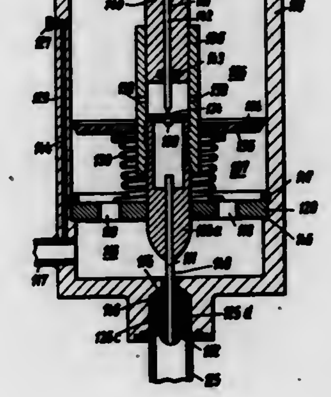
A steel sectional form including inner and outer shells, each formed of components which can be readily assembled for reception of a concrete pour and subsequently disassembled for reuse. The inner shell, which is to be removed through the formed manhole, incorporates key panels for facilitating its disassembly and step gates for enabling the mounting of internal steps as desired subsequent to an initial setting of the concrete.

3,729,166
FORM PANEL WITH SNAPABLE FORM-TIE
Frank E. Buyken, 8620 Island Dr., Seattle, Wash., and Robert C. Foster, 403 Laurel St., Elk Grove Village, Ill.
Filed March 18, 1971, Ser. No. 125,483
Int. Cl. E04g *17/08*
U.S. Cl. 249—190 **4 Claims**



A concrete-form tie is disclosed to include a flat sided member seized thereto close to the usual breakback and adapted to be engaged by a socket whereby torque is applied to "snap" the breakback in aid of removing the outer end of the rod in place in hardened cast concrete.

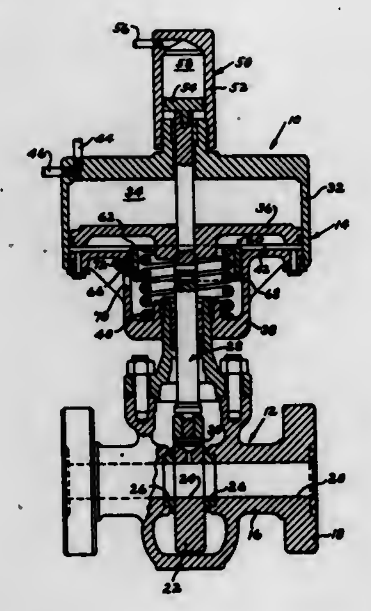
3,729,167
FLUSHING UNIT
Tore Gulich, Marie Dalsvagen 48D, Malmo, Sweden
Filed March 8, 1971, Ser. No. 121,965
Claims priority, application Germany, March 7, 1970, P 20 10 794.2
Int. Cl. F16k *31/383*
U.S. Cl. 251—39 **11 Claims**



A flushing system, especially for toilet installations, with a valve body normally pressed against a valve seat by fluid under pressure, and with a cylinder-piston system, the cylinder chamber of which, is adapted to receive fluid under pressure, in which conduit means adapted to convey fluid under pressure to said cylinder chamber extends coaxially with regard to the cylinder axis through said valve body and through a piston rod connected to the piston of said cylinder piston system, while an auxiliary valve interposed in said conduit means is operable from a point outside the housing containing the flushing system.

3,729,168
PISTON STOP FOR PISTON OPERATED VALVE
Paul J. Natho, Houston, and Felix J. Vicari, Longview, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

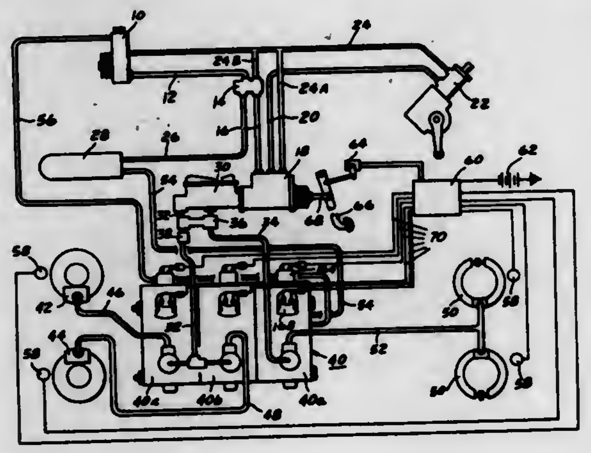
Filed Aug. 13, 1971, Ser. No. 171,606
Int. Cl. F16k *31/143*; F15b *15/24*
U.S. Cl. 251—60 **3 Claims**



A gate valve structure has a stem extending outwardly of the valve housing and a valve operator for actuating the gate valve. The valve operator includes a fluid cylinder and a piston secured to the stem and mounted within the cylinder for reciprocable movement between open and closed positions of the gate valve. A generally cylindrical piston stop has external screw threads mating with internal screw threads on the cylinder and is accessible from a position outside the cylinder so that the piston stop may be adjusted without any disassembly of parts.

3,729,169
ADAPTIVE BRAKING SYSTEM WITH HYDRAULICALLY POWERED MODULATOR
Stanley I. MacDuff, Daytona Beach, Fla., assignor to The Bendix Corporation, South Bend, Ind.

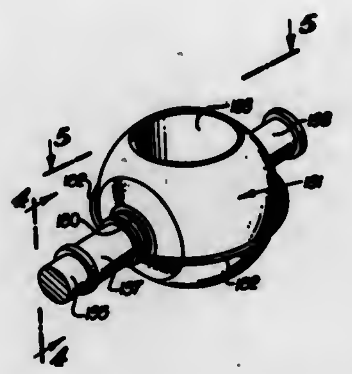
Division of Ser. No. 831,949, June 10, 1969, Pat. No. 3,610,702. This application June 25, 1971, Ser. No. 156,648
Int. Cl. F16k *31/06*
U.S. Cl. 251—129 **6 Claims**



An adaptive braking system for a motor vehicle including a hydraulically actuated brake pressure modulator operatively controlled by solenoid valve means being responsive to wheel deceleration sensing means via computer means.

3,729,170
ROTARY PLUG VALVE ASSEMBLY
George E. Lewis, Arcadia, and Fernando Murman, Palos Verdes Peninsula, both of Calif., assignors to Hydril Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 800,850, Feb. 20, 1969, Pat. No. 3,589,667. This application Oct. 26, 1970, Ser. No. 83,948
Int. Cl. F16k *5/06*
U.S. Cl. 251—315 **9 Claims**



The disclosure concerns the provision, in a valve assembly having a body, of:

a. a rotary plug stopper having an opening extending therethrough and defining a first axis;

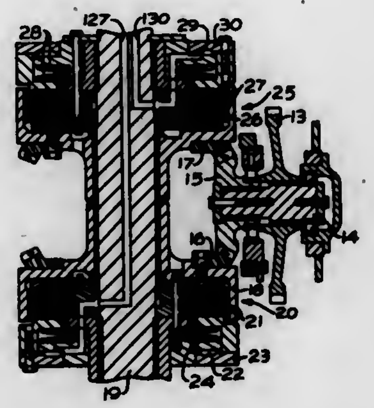
b. trunnion means mounting said stopper for rotation within the body about a second axis to carry said opening into and out of flow passing positions;

c. an annulus extending about said trunnion means, and

d. seal ring structure having a first portion extending closely about the annulus to seal off between the annulus and body and a second portion extending about the stopper in non-sealing relation therewith to permit rotation of the stopper relative to said ring second portion while said ring second portion seals off against the body.

3,729,171
REVERSIBLE TOWING WINCH AND METHOD FOR OPERATING SAME
Lyle F. Yates, Metamora; Hugh C. Morris, Peoria, and James L. Schmitt, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

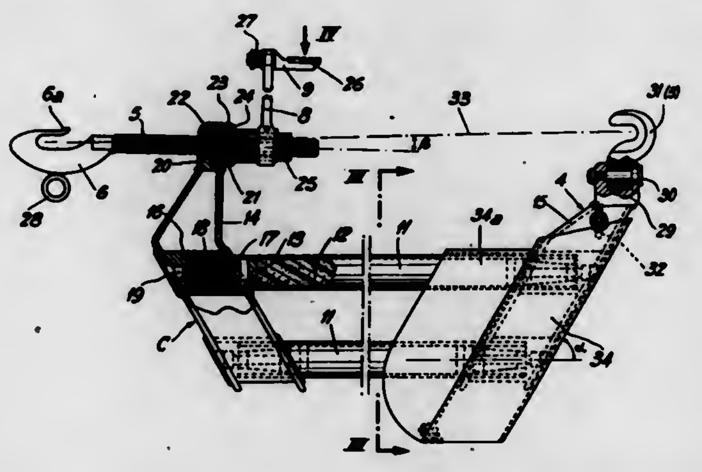
Filed June 9, 1971, Ser. No. 151,367
Int. Cl. F16d *67/02*
U.S. Cl. 192—12 A **24 Claims**



A hydraulically controlled towing winch comprises two winch clutches adapted to rotate a cable drum in opposite directions by selective disengagement of one of the clutches. A normally disengaged input clutch is adapted to selectively couple a power input shaft to a bevel gear arrangement of the winch mechanism for operation thereof. A single lever control system may be utilized to selectively control the actuation of the input and winch clutches to place the winch in the following modes of operation: "Reel-out" wherein the input clutch is engaged and only one of the winch clutches is disengaged to pay-out the cable by rotating the drum in a first direction; "Reel-in" wherein the input clutch is engaged and only the other one of the winch clutches is disengaged to rotate the cable drum in an opposite direction; and "Free-spool" wherein both of the winch clutches are disengaged to permit the drum to rotate freely.

3,729,172
ELECTRIC LINE TENSIONING APPARATUS
Jean Pierre Casalta, Mulhouse; Claude Dubs, Riedisheim, and Andre Lechevallier, Ottmarsheim, all of France, assignors to Electricite de France (Service National), Paris, France

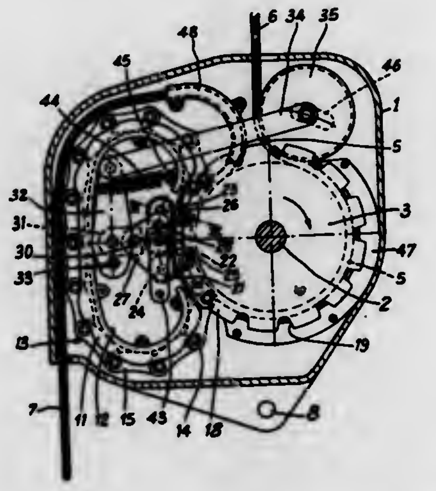
Filed Oct. 26, 1971, Ser. No. 192,066
Claims priority, application France, Oct. 27, 1970, 7038701
Int. Cl. H02g *1/04*; B25b *25/00*
U.S. Cl. 254—67 **10 Claims**



A tensioning apparatus for aerial electric lines which allows the replacement of a defective anchorage insulator without interrupting the electricity supply comprises a generally C-shaped frame connectable at its ends between a pylon or like support and the line and a screw-jack which itself is connected to a clamp on the line.

3,729,173
ENDLESS JAW CHAIN SELF-CLAMPING WINCH
Raymond Levardon, Paris, France, assignor to Tractel S.A., Paris, France

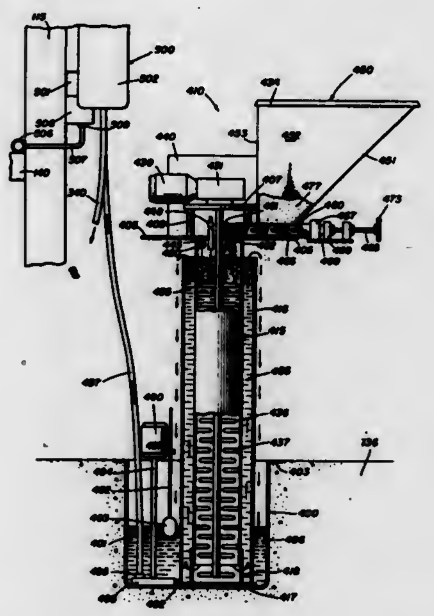
Filed Jan. 24, 1972, Ser. No. 220,271
Int. Cl. B66d *1/16*
U.S. Cl. 254—175.5 **5 Claims**



The rope extending through the device is clamped in a groove of substantially semi-circular or part-circular cross sectional contour, formed in the outer periphery of a pulley, along a predetermined arc of this pulley, by clamping jaws of curved longitudinal configuration and part-circular cross-sectional contour, said clamping jaws being adapted to move along with the rope during the travel thereof through the device, said clamping jaws being carried by an endless chain meshing with at least one circular set of teeth rigid with said pulley, suitable means being provided for automatically exerting against the rope-engaging jaws a clamping force varying as a function of the tension of the taut run of said rope.

3,729,174
APPARATUS FOR PREPARING WASH SOLUTION
Erwin B. Bahnsen, Hinsdale, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

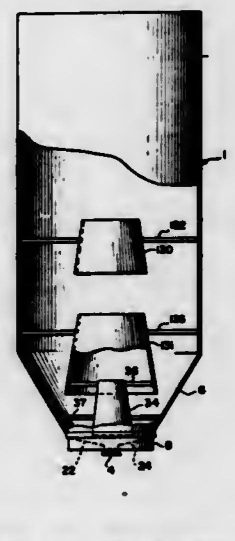
Division of Ser. No. 879,764, Nov. 25, 1969, Pat. No. 3,698,214. This application Sept. 28, 1971, Ser. No. 184,523
Int. Cl. B01f *7/20*, *15/04*
U.S. Cl. 259—7 **4 Claims**



Method and apparatus for loosening soil from a mass of pervious cloth in which wash solution is applied to the rolls in the form of a plurality of reciprocable cascades to maintain the surfaces of the pervious cloth wet for a time sufficient to saturate the same; wash solution is prepared and excess wash solution is continually drained from the mass of tightly-wound rolls.

3,729,175
BLENDING APPARATUS
David M. Matweecha, Bethlehem, Pa., assignor to Fuller Company, Catasauqua, Pa.

Filed March 12, 1971, Ser. No. 123,520
Int. Cl. B01f *13/02*
U.S. Cl. 259—4 **13 Claims**



A blending apparatus for particulate material which includes a vessel having a conical portion at its lower end. A gas permeable divider means is mounted in the conical portion of the vessel dividing the vessel into a material chamber and a plenum chamber. A second plenum chamber is defined in the bottom of the vessel and has a gas permeable wall facing the inside of the vessel. At least a pair of coaxially aligned blending columns are mounted within the blending silo. One of the columns may be smaller in diameter than the other column and positioned below and extend into the bottom of the other column. The larger column may be divided into a pair of columns which are separated from each other so that less than a full batch of material may be blended.

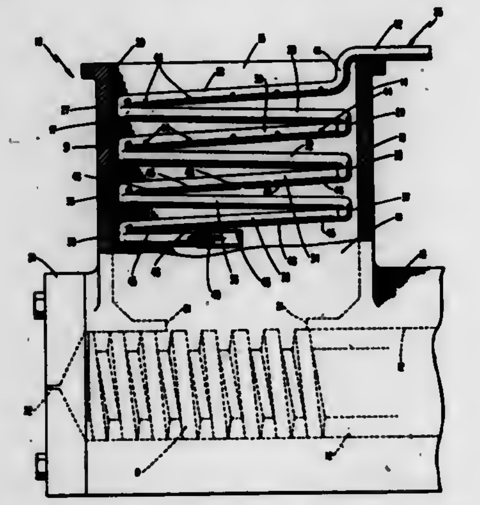
3,729,176
APPARATUS FOR AIDING THE FLOW OF PARTICULATE MATERIALS THROUGH A HOPPER

Hanan Reich, Lakewood, and Seymour Wolf, Saddle Brook, both of N.J., assignors to Nabisco, Inc., New York, N.Y.

Filed April 26, 1971, Ser. No. 137,452

Int. Cl. B01f *15/02*

U.S. Cl. 259—4 **3 Claims**



Apparatus for fluidizing particulate materials flowing through a hopper comprising a helical like tubular manifold for low pressure air shaped to conform to the inner walls of the hopper and having air nozzles throughout its length which are directed horizontally in the upper turns of the manifold and downwardly in the lower turns.

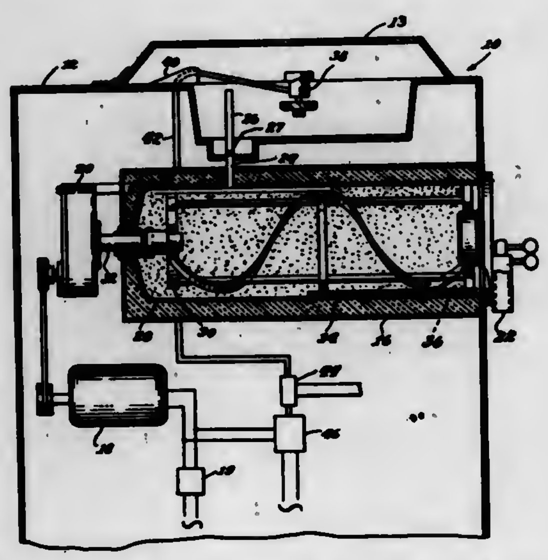
3,729,177
IN-PLACE CLEANING SYSTEM

Richard Martin Keyes, Rockford, and William Christian Herrmann, Rockton, both of Ill., assignors to Beatrice Foods Company, Chicago, Ill.

Filed Feb. 18, 1972, Ser. No. 227,360

Int. Cl. B01f *7/08*

U.S. Cl. 259—10 **7 Claims**



An in-place cleaning and sanitizing system for a frozen confection machine. A wash head is extended over the storage hopper of the machine and liquid and a cleansing agent are introduced into the wash head. A cleaning solution is dispensed from the wash head into the storage hopper, and then into the freeze chamber of the machine, where it cleans and sanitizes the hopper, freeze chamber and all surfaces coming into contact with the frozen confection material.

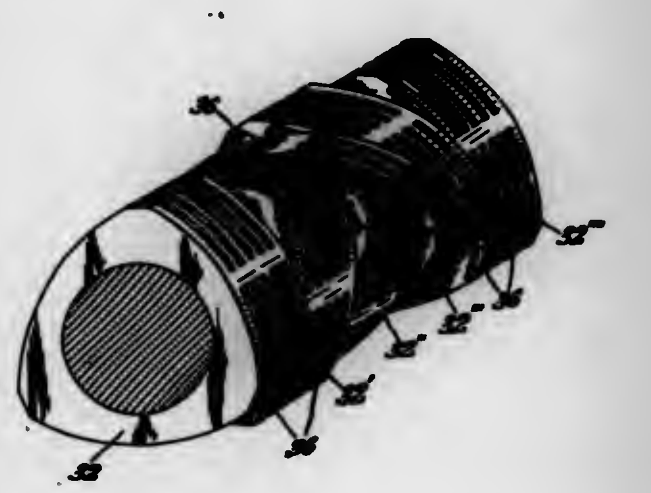
3,729,178
KNEADING ELEMENTS FOR EXTRUDERS

Kurt H. Stade, Piscataway, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 14,543, Feb. 26, 1970, abandoned. This application Nov. 19, 1971, Ser. No. 200,420

Int. Cl. B01f *7/00*

U.S. Cl. 259—192 **5 Claims**



Screw extruder apparatus is provided for the fluxing and mixing of particulate thermoplastic material which comprises providing, in the kneading elements of the screw-mounted kneading section, a plurality of intermittent, substantially radial grooves each having a width smaller than the smallest dimension of the particulate thermoplastic material to be fluxed and mixed.

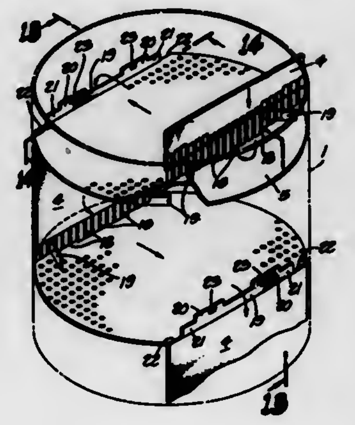
3,729,179
APPARATUS FOR LIQUID AND VAPOR OR GAS MASS TRANSFER

George J. Keller, Arcadia, Calif., assignor to Fractionation Research, Inc., Bartlesville, Okla.

Filed Sept. 23, 1970, Ser. No. 74,771

Int. Cl. B01f *3/04*

U.S. Cl. 261—114 R **5 Claims**



This invention relates to apparatus for liquid and vapor or gas mass transfer on trays and to trays wherein the flow of liquid across the tray from the inlet to the outlet is substantially plug flow.

3,729,180
HEATED REVOLVING DRUM

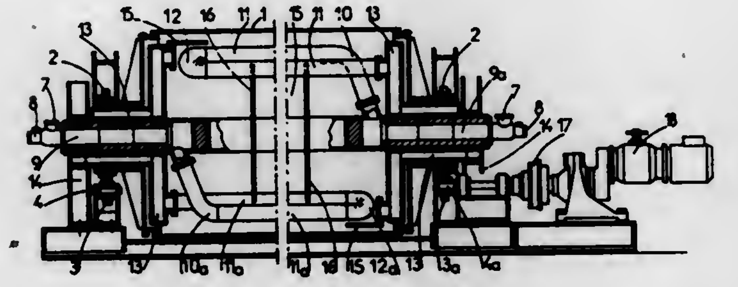
Jean Bourrel, Montreuil; Maurice Remond, Lescar; Noel Potie, Gelos, and Guy Lagacherie, Grenoble, all of France, assignors to Societe Nationale Des Gas Du Sud-Quest, Pau and Compagnie Des Fours Industriels, Montreuil, France

Filed Feb. 2, 1971, Ser. No. 111,886

Claims priority, application France, Feb. 3, 1970, 7003703

Int. Cl. F27b *7/00*

U.S. Cl. 263—6 C **8 Claims**



The invention concerns an industrial drying appliance which may be used in the paper or textile industries, or to dry substances in suspension, such as muds.

A revolving drum contains internal means of heating, consisting of at least one combustion chamber connected with sources supplying fuel and oxygen, and producing a flame in the combustion chamber, and at least one passage reaching from the central axis of the drum to the drum-wall, and opening into a pipe to remove fumes.

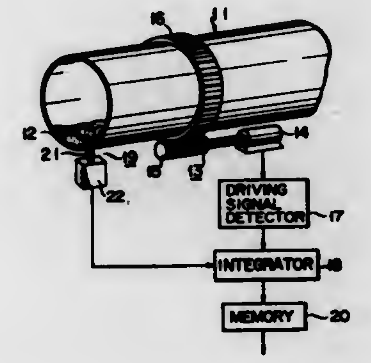
3,729,181
CONTROL SYSTEM OF ROTARY KILNS

Tsutomu Itoh, Shibuya-ku, Tokyo; Koji Suga, Chiba-shi; Yasuo Takumi, Tokyo, and Masahiro Yamamoto, Chiba-shi, Chiba-ken, all of Japan, assignors to Onoda Cement Co., Ltd., Onoda-shi, Yamaguchi-ken, Japan

Filed Dec. 28, 1970, Ser. No. 102,027

Int. Cl. F27b *7/20*

U.S. Cl. 263—32 R **7 Claims**



In a control system of a rotary kiln of the type comprising a power detector for measuring the driving power of the kiln and the output signal from the power detector is utilized to control the kiln, there is provided a synchronizing signal generator for generating one synchronizing signal during one revolution of the kiln, an integrator responsive to the synchronizing signal for integrating the output signal from the power detector for an interval corresponding to one revolution of the kiln, and a memory for storing the output signal from the integrator for use it for the control of the kiln.

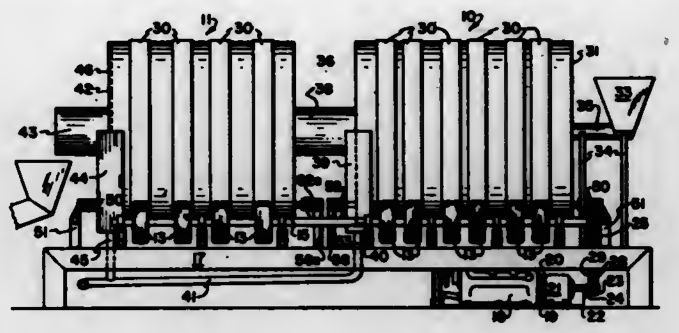
3,729,182
PROCESS AND APPARATUS FOR RECOVERING PRECIOUS METALS

Jack R. Schafer, Wickensburg, Ariz., and Denton C. Linton, Salt Lake City, Utah, assignors to Desert West, Inc., Salt Lake City, Utah

Filed Nov. 19, 1970, Ser. No. 91,082

Int. Cl. C22b *11/12*

U.S. Cl. 266—9 **6 Claims**



A process of extracting gold, silver, platinum, mercury and other precious metals from ores containing the metals using mercury amalgams but without mercury losses due to flowering, galvanic action, oxidation, etc. Ores containing the metals to be recovered are contacted with mercury in an electrically isolated condition. A preferred apparatus useful in performing the process includes a mixing drum having a feed system and a discharge system isolated from ground and insulating wheels for driving the mixing drum.

3,729,183
APPARATUS FOR REFINING MOLTEN IRON AND MOLTEN IRON ALLOYS

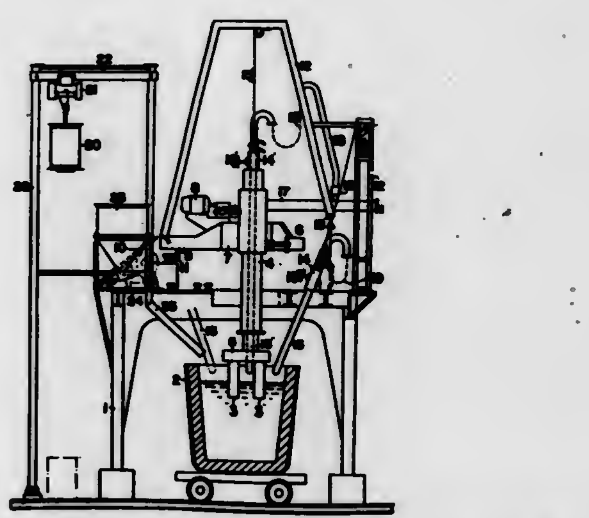
Ryo Ando; Tsutomu Fukushima; Masayoshi Bando, and Akira Honda, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 818,283, April 22, 1969, Pat. No. 3,664,827. This application Feb. 26, 1971, Ser. No. 119,221

Claims priority, application Great Britain, April 22, 1969, 20,416/69; Germany, April 24, 1969, P 19 20 958.6; France, April 24, 1969, 6912993; Canada, April 23, 1969, 49,493; Australia, April 24, 1969, 54013/69; U.S.S.R., April 24, 1969, 1324512; April 24, 1969, 208320; Netherlands, April 23, 1969, 6906228

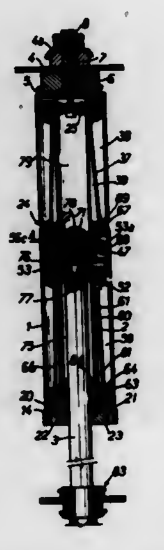
Int. Cl. C21c *7/00*

U.S. Cl. 266—34 A **6 Claims**



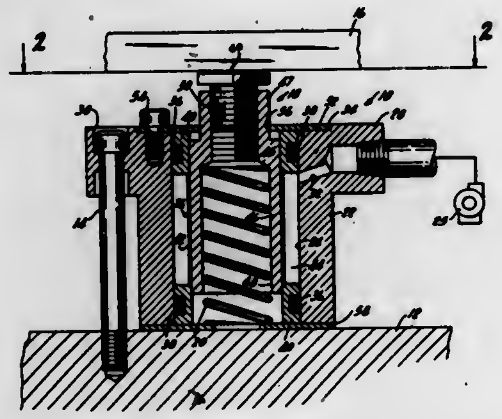
A ladle containing molten iron or molten iron alloys is located beneath a supporting frame, the supporting frame including a movable stirring shaft carrying at least one stirring rod at the lower end thereof, the stirring rod being adapted to extend only into the upper layer portion of the molten iron in the ladle. At least one oxygen blowing lance is connected to the supporting frame and means for supplying a predetermined quantity of reactant into the ladle is provided. The stirring shaft is moved relative to the frame, and preferably, in a swinging manner whereby at least a point on the stirring shaft axis moves along a substantially circular path.

3,729,184
SUSPENSION STRUT
Fernand Michel Allinquant, and Jacques Gabriel Allinquant, both of 53 Avenue le Notre, Sceaux, France
Filed Jan. 25, 1971, Ser. No. 109,363
Claims priority, application France, Jan. 26, 1970, 7002652; July 29, 1970, 7028056
Int. Cl. F16f *5/00*
U.S. Cl. 267—64 R **7 Claims**



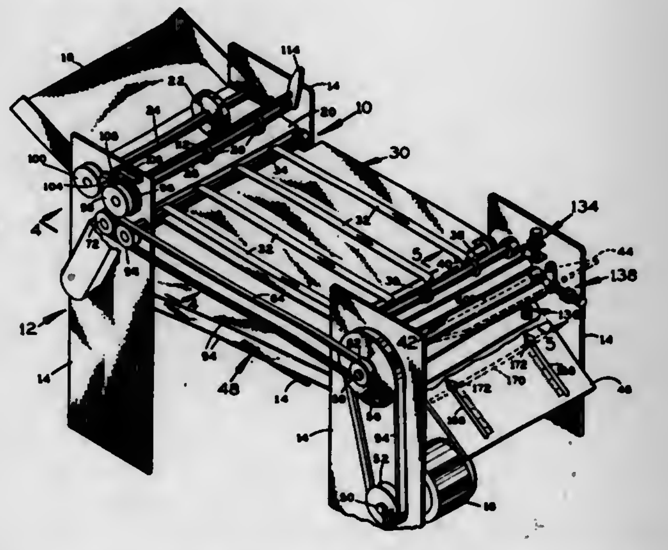
An oleopneumatic suspension strut provided with self-pumping means for automatic level-adjustment wherein said level adjustment is performed by means of a carrier piston incorporating a flap valve adapted to pump liquid out of a container into a suspension chamber through at least one port adapted to be uncovered by the piston and opening into a recess and through a system of gauged flap valves providing a passageway for the flow of liquid out of said recess into a tank storing liquid under pressure and out of the latter back into the container while the damping is ensured by a perforated partition separating the suspension chamber from pneumatic cushioning means.

3,729,185
HYDRAULIC WORK SUPPORT
Eugene A. Roeske, Clarendon Hills, Ill., assignor to Owatonna Tool Company, Owatonna, Minn.
Filed April 1, 1971, Ser. No. 130,232
Int. Cl. G25b *11/00*; **B23q** *3/10*
U.S. Cl. 269—20 **6 Claims**



A hydraulically locked work support including a housing having a bore, a sleeve mounted in said bore, a seal at each end of the sleeve in sealing engagement with the bore to define a chamber between the sleeve and the housing, a work support assembly mounted for reciprocal motion in said sleeve and having an outer diameter substantially equal to the inner diameter of said sleeve, a spring biasing said assembly into engagement with a work piece, and a source of hydraulic fluid for pressurizing said chamber to hydraulically lock the assembly in a fixed position within said sleeve.

3,729,186
METHOD AND APPARATUS FOR FOLDING PAPER
Thomas F. Macke, 525 S. E. 26th Avenue, Fort Lauderdale, Fla.
Continuation-in-part of Ser. No. 814,704, April 9, 1969, abandoned. This application Dec. 14, 1970, Ser. No. 97,776
Int. Cl. B65h *45/14*
U.S. Cl. 270—68 A **2 Claims**



A method of and apparatus for folding paper wherein sheets of paper are folded by a plurality of rolls including three horizontal rolls which are stacked vertically with respect to each other and a fourth roll directly laterally adjacent the middle roll of the stack. The middle roll os driven and in turn rotates the other rolls which idle. With this arrangement of rolls, a sheet may be folded in different ways, and sheets can be handled efficiently and rapidly. The middle roll preferably is in a fixed position, and the other rolls are preferably adjustable, thus facilitating independent adjustment of the latter rolls relative to the middle roll. A feed system for transporting sheets to and from the rolls is disclosed, which system includes a simple clutch device.

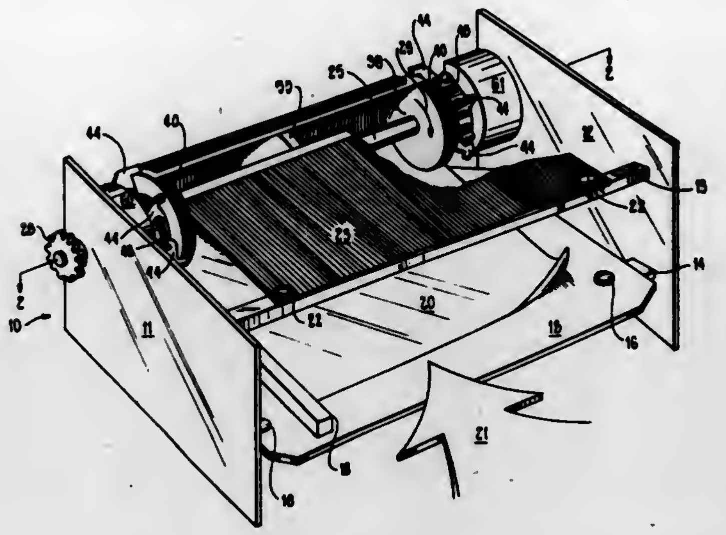
In accordance with the method and apparatus of the invention, the sheets are slit, perforated or creased in a preliminary step prior to folding of the sheets. This is accomplished by feeding the sheets through a slitter, perforator or creaser before they enter the rolls, after which the sheets pass through successive pairs of rolls which make successive folds in the sheet. The folded sheets are transported back to the initial feed point so that only one operator is required.

It has been found that this pre-treatment of the sheets can be accomplished in alternate embodiments; for example, an embodiment employing a different arrangement of rolls than that referred to above. In connection with all embodiments, the pre-treatment device, whether for slitting, perforating, creasing or the like, will sometimes be referred to herein as line scoring means.

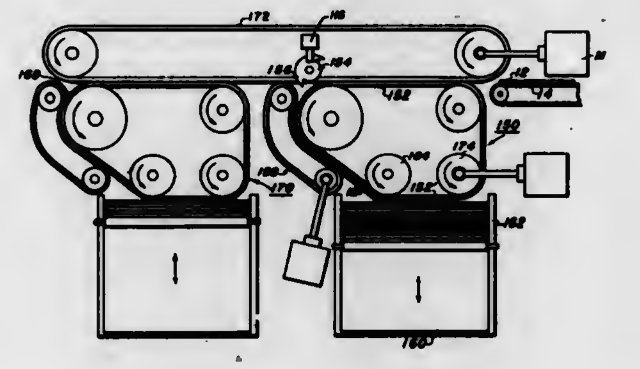
3,729,187
SHEET HANDLING DEVICE
Helmut K. Waibel, San Leandro, Calif., assignor to The Singer Company, New York, N.Y.
Filed Sept. 17, 1971, Ser. No. 181,456
Int. Cl. B65h *5/06, 29/06*
U.S. Cl. 271—51 **19 Claims**

A sheet handling device for changing the feed direction of a conveyed sheet. A hub secured axially on a rotatable shaft has a plurality of gripping members pivotable in different radial

planes disposed thereabout. Each gripping member has a finger portion engageable with a cylindrical sheet guiding surface portion of the hub, and a camming portion engageable with a camming race on a stationary block. A garter spring biases each gripping finger toward the sheet guiding surface to grip the edge of the sheet therebetween. The camming portion and race bias each gripping finger away from the sheet guiding surface over a predetermined angular path. As the hub is rotated, the spring causes successive finger portions to grip the sheet and convey it along a curved path through a predetermined angle. Thereafter, the action of the race on the camming portion of successive fingers causes the sheet to be released in a predetermined exit direction.



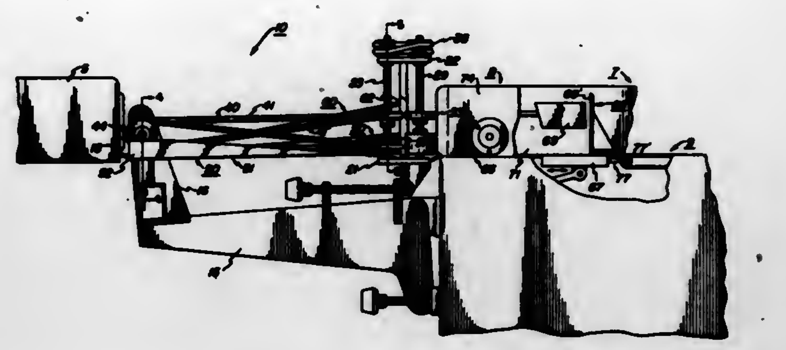
3,729,188
DOCUMENT STACKER APPARATUS
Paul A. Stephenson, Farmington, Conn., assignor to Xerox Corporation, Rochester, N.Y.
Filed May 12, 1969, Ser. No. 823,865
Int. Cl. B65h *29/58*
U.S. Cl. 271—64 **1 Claim**



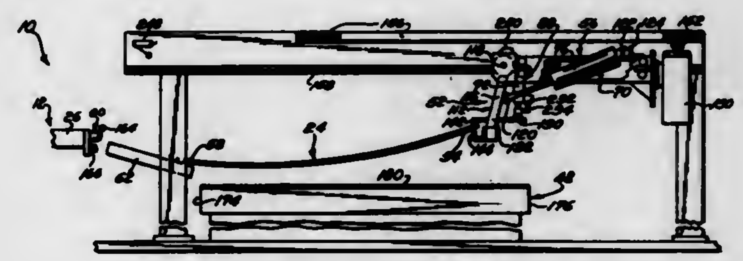
Document stacker apparatus wherein transport belts are continuously in contact with documents as they are transported to a stacking bin. At the stacking bin, roller means forces the trailing edge of the document downwards so that it does not interfere with the leading edge of a succeeding document.

3,729,189
ARTICLE TURNOVER CONVEYOR
Donald W. Watson, 511 N. Wilshire Lane, Arlington Heights, Ill.
Filed Feb. 1, 1971, Ser. No. 111,505
Int. Cl. B65h *29/66*
U.S. Cl. 271—65 **11 Claims**

An article conveyor for turning articles such as envelopes over as they are being conveyed for processing as by an article addressing machine. The conveyor has an inclined ramp on which an upper edge portion of the articles ride, a lower guide to support and control the article lower edge as the article rides up the ramp, and a pair of conveyor belts cooperable with each of the ramp and guide to move the articles through the conveyor. A substantially vertical discharge roller pair eject the articles, which are on edge, into a hopper, the hopper being provided with a side wall guide to assure continued turning of the articles by gravity from a substantially vertical discharge position to a substantially horizontal feeding position in the hopper. To permit operation of the conveyor with the hopper feeder and avoid misfeeding or jamming at the feeder hopper, an interposer is provided which when actuated interrupts the article free fall until the hopper is clear.



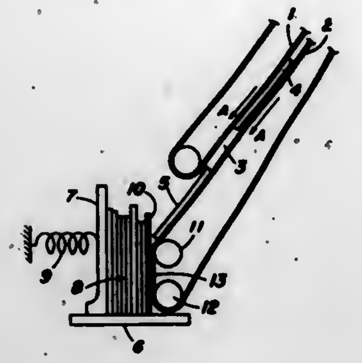
3,729,190
ROTATING ARM SHEET UNLOADER-STACKER
Earl D. Harris, Warminster, and Richard L. Wirsing, Collegeville, both of Pa., assignors to The Warner & Swasey Company, Cleveland, Ohio
Filed April 14, 1971, Ser. No. 133,953
Int. Cl. B65h *29/10*
U.S. Cl. 271—85 **19 Claims**



An improved apparatus for operating on sheets of material includes an unloader assembly which engages the leading end portion of a sheet and pulls it from a punch press table onto a pile of sheets. This unloader assembly includes a trolley mounted clamp assembly which is movable between a retracted or raised position and an extended or lowered position. In the retracted position the clamp assembly is clear of an area through which the punch press table moves during a punching operation. In the extended position the clamp assembly projects into the area through which the table moves during operation of the punch press. After the clamp assembly has been extended and closed to grip the leading end portion of a sheet, the trolley is moved along a path extending over the pile to pull the sheet gripped by the clamp assembly from the punch press. During at least a portion of this movement of the trolley, a trailing portion of the sheet engages a support chute to maintain the sheet suspended above the pile. The sheet is deposited on the pile without unnecessarily disturbing the uppermost sheet on the pile by retracting and opening the clamp assembly to release the leading end portion of the sheet as the trailing end portion of the sheet moves clear of the support chute and onto the pile.

3,729,191
OPEN TYPE STACKING DEVICE

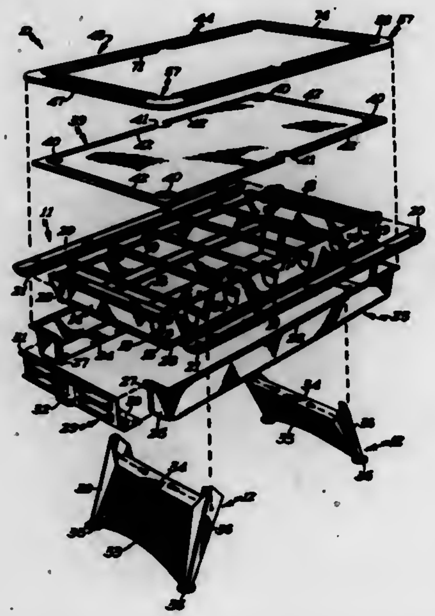
Shoichiro Yoshimura; Kazuyoshi Suda, and Saburo Kagoshima, all of Minato-ku, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed May 26, 1971, Ser. No. 147,147
Claims priority, application Japan, June 2, 1970, 45/47700
Int. Cl. B65h *31/00*
U.S. Cl. 271—86 13 Claims



A stacking device, which automatically stacks letters, postcards or the like sequentially transported thereto, includes first and second channels for accomodating the letters and conveyor means interposed between said first and second channels for conveying stacked letters from said first channel to said second channel. The respective first and second channels are formed into a V-shape and the conveyor means are arranged in two adjacent planes which are formed into a corresponding V-shape, whereby the adjacent two sides of each of the stacked letters are supported within said channels and on said channels and on said adjacent two planes such that each letter is positioned to be in and maintain its correct orientation. The stacking operation of the sequentially transported letters is executed at the first channel and a removal operation of stacked letters may be performed at the second channel such that both operations may be performed independently of each other.

3,729,192
POOL TABLE WITH QUICK-ASSEMBLY FEATURES

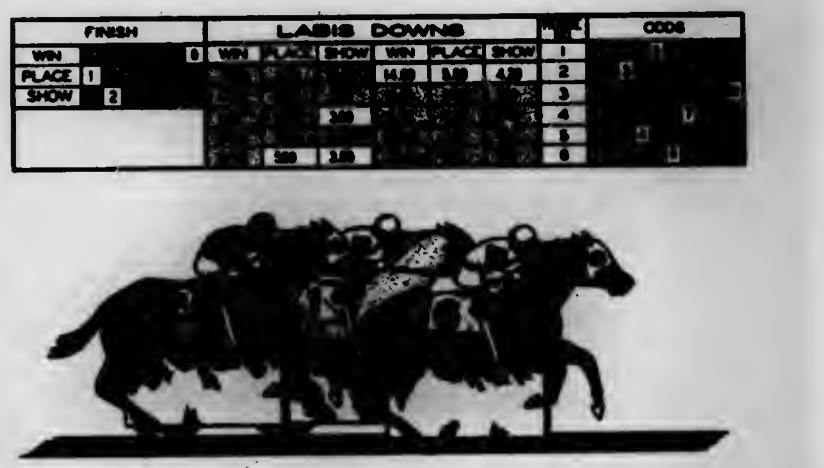
Otto S. Nielsen, 4875 Sorell Avenue North, Minneapolis, Minn.
Division of Ser. No. 774,760, Nov. 12, 1968, Pat. No. 3,584,872. This application Sept. 17, 1970, Ser. No. 73,140
Int. Cl. A63d *15/00, 15/06*
U.S. Cl. 273—7 5 Claims



A pool table is comprised of a bed mounted on a steel frame which is supported by legs and which is capable of ready assembly from a disassembled condition without the use of special tools or skills. A rail and bumper structure is mounted on the bed and is releasably connected to the frame by bolts so that the bed is clamped between the rail and bumper structure and the frame. Additionally, the bumper structure is snap fit to the rail structure. A fabric cover is provided for each of the bumper structure and the bed and each cover is releasably clamped between portions of the bed and the rail and bumper structure to permit ready removal and replacement thereof.

3,729,193
ELECTRONIC RACING GAME

George H. Labis, 27 Possum Way, Murray Hill, Union County, N.J.
Filed Feb. 18, 1971, Ser. No. 116,347
Int. Cl. A63f *9/14*
U.S. Cl. 273—86 B 24 Claims

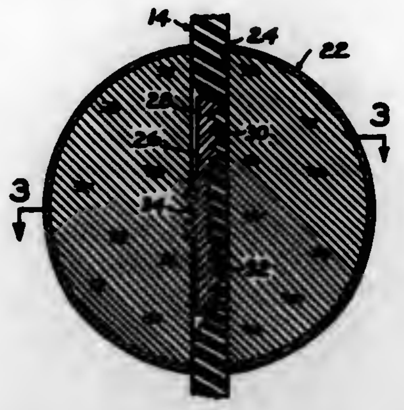


A method and system for racing a plurality of motor driven units along a track which combines a random factor, not subject to control, with manually actuated means for establishing odds between the racing units at the beginning of each race. In a preferred embodiment, the heart of the system comprises two pulse sources operating at substantially different nonharmonic frequencies which are characterized by built-in frequency drifts. The higher frequency pulse source drives a system of stepping selectors through a repetitive cycle. The initial manual arrangement of a group of odds selector dials determines the number of times a power circuit is completed to any specific racing unit as the stepping system proceeds through its cycle. At random contacts during the stepping cycle, depending on the operation of the second pulse source, electrical current passes through one of the power circuits momentarily completed, to drive one or another of the racing units to spurt ahead. This continues until one or more of the units cross an arbitrary finish line. In a preferred embodiment, the racing units are motor driven horses. The odds manually set on each of the horses at the beginning of the race are also indicated on an electronic tote board, which is electronically triggered to indicate Win, Place and Show, at the end of each race, and also, the amount paid on each of the winning horses. Additional features include means for setting and counting races of more than one lap.

3,729,194
BASEBALL PRACTICE DEVICE

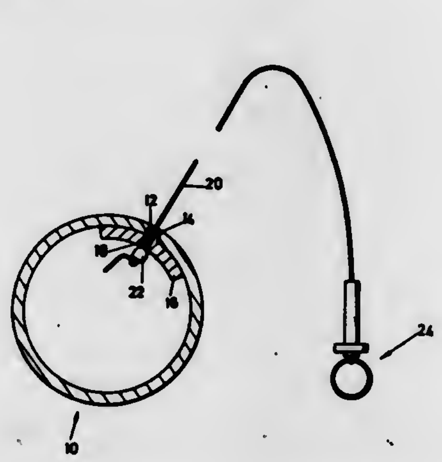
Thomas G. Barnett, P.O. Box 422, Stigler, Okla.
Continuation-in-part of Ser. No. 864,852, Oct. 6, 1969. This application June 3, 1971, Ser. No. 149,428
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 E 2 Claims

An elongated resilient element extends vertically between and is connected with an upper and lower support. A ball having a diametric bore surrounds the resilient element intermediate its ends. A lock means, within the bore of the ball, grips the resilient element and prevents relative movement between the resilient element and ball.



3,729,195
HOLLOW BALL INCLUDING FLEXIBLE TETHERING LINE

Peter Murray Bruce Hutt, New Germany, and Ian Gavin Gormley, Durban, both of Republic of South Africa, assignors to Swingball Investments (Proprietary) Limited, Durban, Republic of South Africa
Continuation-in-part of Ser. No. 857,699, Sept. 15, 1969, abandoned. This application July 19, 1971, Ser. No. 163,746
Claims priority, application South Africa, Sept. 20, 1968, 686085; April 3, 1969, 692418
Int. Cl. A63b *43/02*
U.S. Cl. 273—58 C 4 Claims

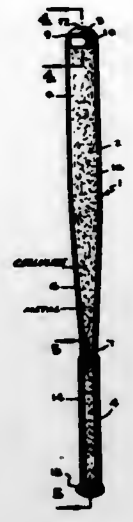


A flexible line is secured to a rounded anchoring element located inside a hollow ball, e.g., a tennis ball. The rounded anchoring element bears against an elongated curved base member which bears against the inside surface of the ball and conforms to the curvature thereof. The curved base member includes an integral raised portion which extends into an opening in the ball. The flexible line is knotted after being passed through the raised portion, base member and anchoring element. The width of the curved base member is substantially equal to the diameter of the opening in the ball.

3,729,196
METAL BAT

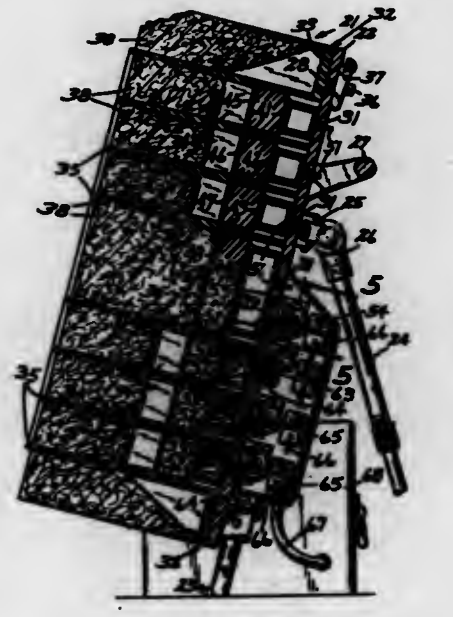
Jesse H. Heald, Jr., Tullahoma, Tenn., assignor to Worth Bat Company, Inc., Tullahoma, Tenn.
Filed Oct. 1, 1970, Ser. No. 77,199
Int. Cl. A63b *59/06*
U.S. Cl. 273—72 A 5 Claims

A baseball bat having a hollow metal casing formed from a tube by swaging to form a conventional bat-shaped casing with the barrel end rolled over to form an inturned lip to interlock with a grooved end plug. A handle grip covers the handle end of the casing, and the interior of the casing is filled with a sound-absorbing wadding. The interior of the handle end of the casing is reamed out to obtain a center of gravity at a desired point forward of the midpoint of the bat.



3,729,197
ARCHERY TARGET HAVING PRESSURE SENSITIVE SCORE INDICATING BAGS

Dale A. Swanson, 5028 Glendale Road, Mound, Minn., and Wilmur B. Blackaby, 3308 Wynmore, Waco, Tex.
Filed March 1, 1971, Ser. No. 122,573
Int. Cl. F41j *3/02*
U.S. Cl. 273—102.2 R 16 Claims

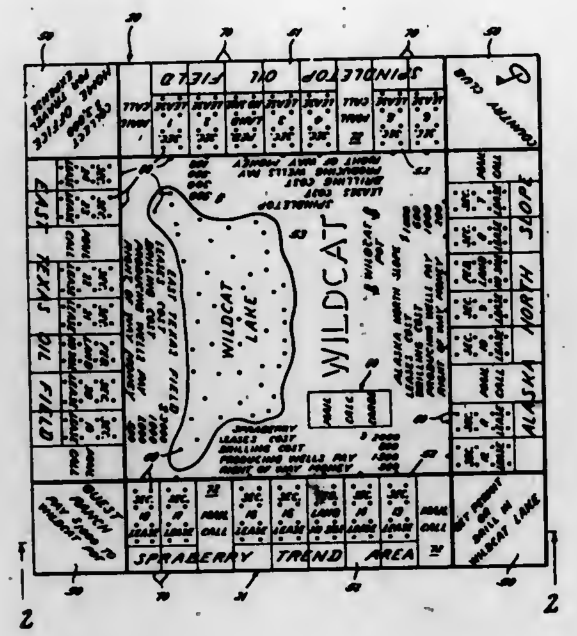


A portable archery target adapted for use with automatic scoring apparatus. The score sensing operation of the target comprises a plurality of inflatable pressure bags conforming in shape to conventional scoring areas on a target; e.g., a plurality of annular areas concentrically disposed with respect to a bulls-eye. The pressure bags are carried by a target frame and each includes a protective facing to preclude bag rupture by an arrow which strikes the facing and generates a scoring pressure pulse. An arrow deflector carried by the frame and projecting forwardly from the pressure bags defines the scoring areas and obviates the difficulty of scoring arrows which strike between the scoring areas. Disposed within the deflector is a thickness of energy absorbing material which the arrows pierce before striking the bag facing. The target is fully portable and includes collapsible legs which are adjustable to angularly position the target for shooting from various distances.

3,729,198
OIL FIELD BOARD GAME APPARATUS

Donald H. Shaffer, Fort Worth, Tex., assignor to William J. Darby and John L. Abbott, all of Fort Worth, Tex., a part interest to each

Filed May 3, 1971, Ser. No. 139,500
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AC 1 Claim

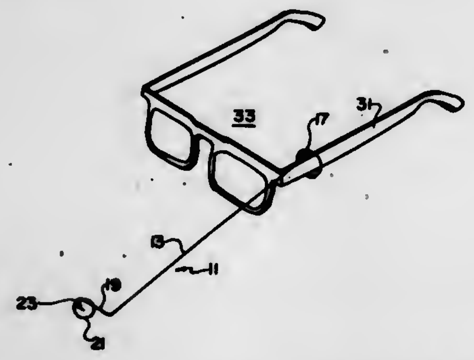


An oil field game which includes a playing board having markings thereon whereby it is divided into surface areas including corner areas and elongated areas extending between the corner areas, the board being hollow and having internal partitions whereby it is divided into compartments corresponding substantially to the surface areas, the elongated compartments having a number of movable blocks loosely and slidably disposed therein and portions of the top of the board coinciding with the elongated areas having numerous small holes therein for selective engagement by playing pieces simulating drilling rigs and having depending pins for selective insertion, in the manner of probes, in the small holes to determine the location of producing wells and dry holes, depending on whether the pin strikes one of the movable blocks. The spaces along the several sides of the board corresponding to the elongated areas are subdivided into individual subdivisions or sections and the corner areas, with the individual subdivisions or sections, form a continuous path along the peripheral edge of the board on which individual player markers are caused to move stepwise, one space at a time, in response to rolling of dice.

3,729,199
SIGHTING DEVICE

Elof Granberg, 201 Nevin Avenue, Richmond, Calif.

Filed Dec. 23, 1970, Ser. No. 100,849
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B 5 Claims

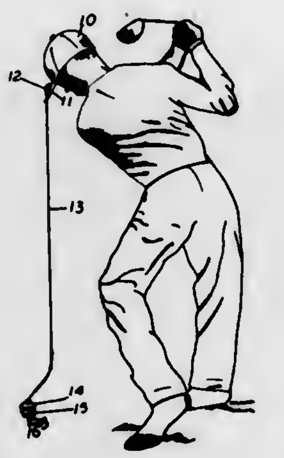


A sighting device capable of being secured to a wearer's head comprising a single length of continuous wire having a sight member formed at one end thereof for aligning the wearer's eye with an object and a clip means formed at the other end of the wire for removably securing the device to the wearer's head.

3,729,200
GOLFER'S HEAD MOVEMENT INDICATOR

Benjamin M. Hines, Fairfield, and Richard I. Johnson, Easton, both of Conn., assignors to Timely Products Corporation, Fairfield, Conn.

Filed Nov. 26, 1971, Ser. No. 202,123
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B 11 Claims



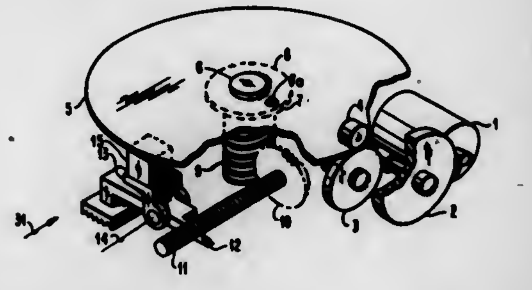
A golf training device which will enable any undesirable head movement of a player during a golf swing to be rendered self-detecting. This is attained by a flexible cord having one end attached to the golfer and the other end releasably connected to the ball so as to effect either a positive displacement of the golf ball prior to contact being made with the club whenever the golfer incurs excessive head movement during a golf swing to induce mis-stroke, or an excessive accumulation of slack in the string in the event of excessive dip of shoulders and/or head, and whereby in the absence of any excessive head movement, contact may be had between the club and the ball which will permit the ball to be readily released from the cord and to assume its normal flight.

The cord is wound about a reel which is attached to a head piece worn by the golfer whereby the length of the cord can be varied to suit a given player. The free end of the cord is provided with a fastener which is contoured to complement an outer peripheral portion of a golf ball and which is releasably secured to the golf ball by an adhesive.

3,729,201
MINIATURE DISC DICTATION MACHINE FEATURING ABSOLUTE SYNCHRONIZED DISC-TRANSDUCER DRIVING ARRANGEMENT

William L. Dollenmayer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,568
Int. Cl. G11b *17/00*
U.S. Cl. 274—4 H 1 Claim

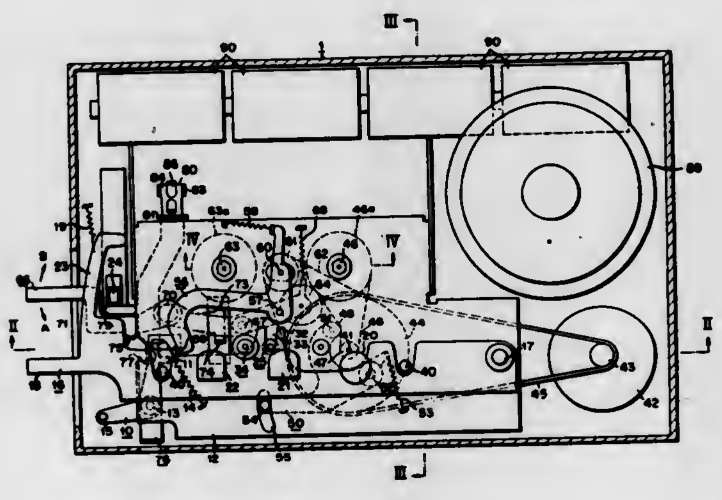


A miniaturized dictation machine has complete facilities for recording and reproducing sound from a magnetic disc record medium. The machine features absolute synchronized driving of an inserted disc record member and a sound head transducer to trace a helical signal path on the disc member, and a pressure pad structure that insures good sound head to disc contact. Other features include a compact, highly efficient sound head carrier design, and backspacing mechanisms.

3,729,202
CASSETTE TAPE RECORDER

Rinske Wakabayashi, Rm. 1102, 2-257, Nishi-Ohkubo, Tokyo, Japan

Filed July 13, 1970, Ser. No. 54,338
Claims priority, application Japan, July 12, 1969, 44/54992
Int. Cl. G11b *15/32, 23/04*
U.S. Cl. 274—4 D 3 Claims

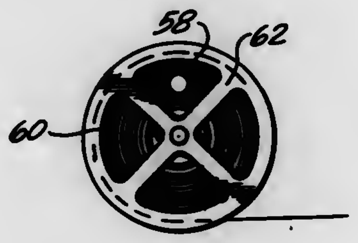


A cassette tape recorder, wherein, when a cassette is placed on a deck, a main lever carrying magnetic heads, a pinch roller and the other required members are released to move toward the cassette, so that the magnetic heads engage the stretched portion of a magnetic tape and the pinch roller pinches the tape with a capstan shaft to drive the tape by the rotation of the capstan shaft.

3,729,203
TAPE SIDE AND TRACK DIRECTION INDICATION

William C. Kinard, 3710 Alder Lane, Pasadena, Calif.

Filed Oct. 16, 1970, Ser. No. 81,427
Int. Cl. G11b *27/10, 23/40*
U.S. Cl. 274—41.4 3 Claims

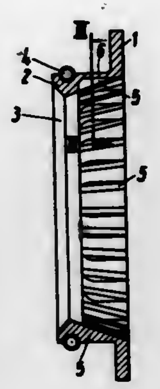


A reel-to-reel magnetic recording tape is indexed with symbols such as numerals, letters or colored dots, to identify the way the tape is wound on its reel so the user may determine which track on the tape will be played back when played on a tape player. Indexing means such as a colored strip extending lengthwise along at least one edge of the tape identifies the track that will be played back, and also marks the directions of tracks recorded on the tape for use in properly splicing the tape.

3,729,204
SEALING SLEEVE, ESPECIALLY FOR RADIAL SHAFT SEALING RINGS

Gustav Augustin, Heilbronn/N., Germany, assignor to Kupfer Asbest Co. Gustav Bach, Heilbronn/N., Germany

Filed Aug. 10, 1970, Ser. No. 62,559
Claims priority, application Germany, Jan. 16, 1969, P 19 41 675.2
Int. Cl. F16j *15/32, 15/54*
U.S. Cl. 277—134 8 Claims

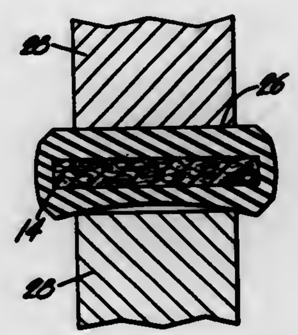


A sealing sleeve, especially for a radial shaft sealing ring with an inwardly located annular sealing lip connected by an annular diaphragm with an outer holding member in which said diaphragm is considerably thinner than the radial thickness of the sealing lip and the thickness of said holding member, while said diaphragm is reinforced by circularly spaced ribs.

3,729,205
GASKETS

Michael Kwok, 158 Cedar Lane, Princeton, N.J.

Continuation-in-part of Ser. No. 760,118, Sept. 9, 1968, abandoned. This application Jan. 7, 1971, Ser. No. 104,575
Int. Cl. B26d *53/00*
U.S. Cl. 277—229 3 Claims



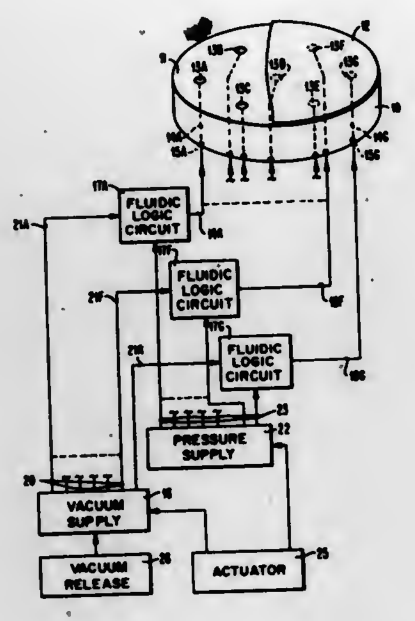
Rubber gaskets internally reinforced with flexible relatively incompressible, preferably fibrous material and externally coated with rubbery material such as coagulated neoprene latex and preferably having at least one concave surface are described. The preferred gaskets are designed to receive a structure to be sealed within the concave surface so that the structure contacts the concave surface in at least two sealing lines. The gaskets are further characterized by having relatively thin rubbery coatings on certain surfaces and relatively thicker coatings on other surfaces in order to provide improved sealing integrity; the thickness of said relatively thin and thick coatings being specified. Methods of making the gaskets are also described.

3,729,206
VACUUM HOLDING APPARATUS

Rene P. Cachon, Wappingers Falls; Ariel L. Perlmann, Poughkeepsie, and Michael A. Schorr, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,270

U.S. Cl. 279—3 **7 Claims**



Automatically operated vacuum chuck apparatus employs fluidic logic selectively to retain semiconductor wafers or parts of broken wafers during processing. The chuck has vacuum connectors communicating with ports in a retaining surface that holds the wafer or part of the wafer. Individual fluidic logic circuits are connected in parallel to respective ones of these connectors and ports and in common to vacuum and pressure supplies. On apparatus actuation, those ports covered by the wafer or part thereof are sensed and vacuum is applied only to these ports under the control of the individual fluidic logic circuits.

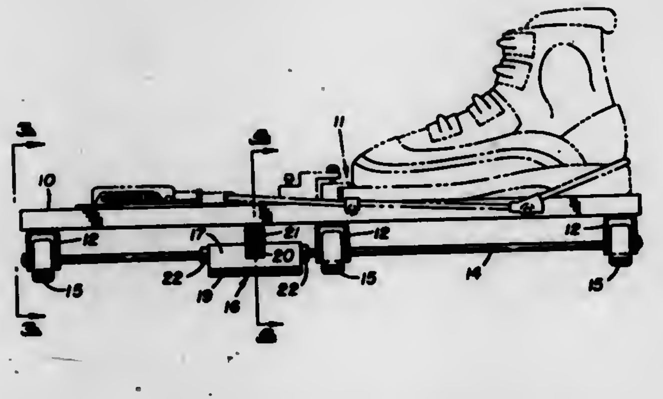
3,729,207
SNOW SKI TRAINING DEVICE

Schuyler Reynolds, 3068 East 13th Avenue, Columbus, Ohio

Filed April 14, 1971, Ser. No. 133,911

Int. Cl. A63c *17/14*

U.S. Cl. 280—11.2 **3 Claims**



A training device for skiers in the form of a pair of skate boards for attachment to the feet of the skier and adapted for sidewise rolling movement over a supporting floor surface with a friction brake responsive to sidewise tilting or "edging" of the boards to control sidewise rolling while permitting sidewise pivoting of the boards.

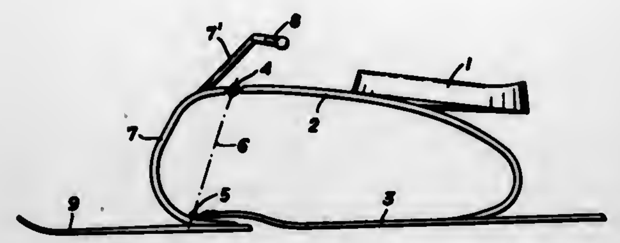
3,729,208
SNOW RUNNER

Erich Brenter, Haide 163, Hallein, Austria

Continuation-in-part of Ser. No. 714,910, March 21, 1968, Pat. No. 3,545,785. This application Dec. 4, 1970, Ser. No. 95,156

Int. Cl. B62b *13/04*

U.S. Cl. 280—16 **7 Claims**



A snow-running vehicle with a rear ski fixed to a seat-carrying frame and with a dirigible front ski has a steering post journaled in the frame and connected with the front ski via an elastic but torsion-resistant link, such as a strong leaf spring, which allows the front ski to swing up and down with reference to the frame but which opposes canting and veering motions thereof.

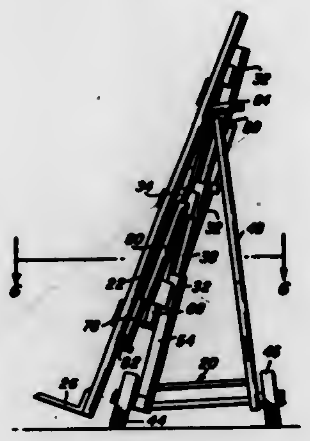
3,729,209
CONVERTIBLE CARRIER

Arthur Litz, 301 E. Hilborn, Apt. 2, Lodi, Calif.

Filed March 26, 1971, Ser. No. 128,390

Int. Cl. B62b *3/04*

U.S. Cl. 280—36 R **6 Claims**



A carrier including an upright support frame adjustably mounted on a wheel assembly which selectively orientates the wheels for movement of the carrier in the manner of a hand truck or alternatively in the manner of a four wheel supported cart. The support unit is vertically adjustable relative to the wheel assembly by means of a carrier mounting jack apparatus.

3,729,210
SUSPENSION SYSTEM FOR VEHICLES

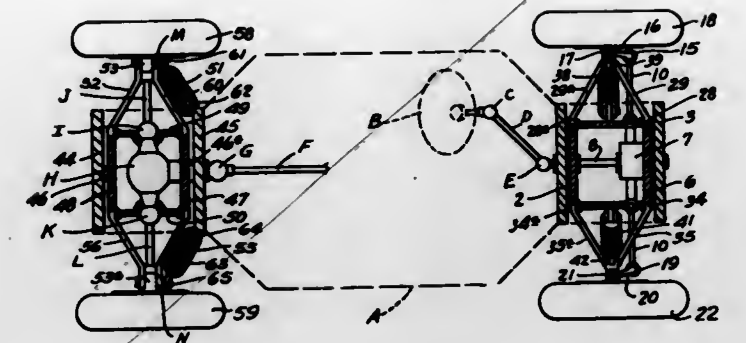
Robert J. Cunningham, Jr., 29 Orchard Lane, Bethlehem, Wheeling, W. Va.

Filed May 4, 1970, Ser. No. 34,388

Int. Cl. B60g *3/18*

U.S. Cl. 280—96.2 R **2 Claims**

The present suspension system for vehicles includes subframes in the vehicle to which the wheels of the vehicle are pivotally connected and which sub-frames are pivotally connected to the vehicle main frame on an axis extending longitudinally of the vehicle to aid in maintaining the wheels vertical at all times.



3,729,211
PNEUMATIC SUSPENSION FOR A MOTORCAR

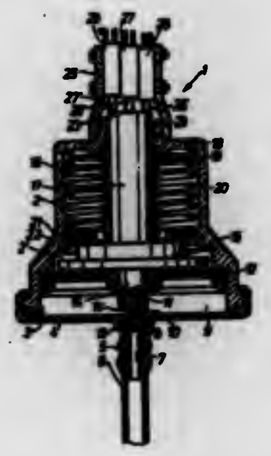
Ortwin Engfer, Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed March 12, 1971, Ser. No. 123,528

Claims priority, application Germany, March 14, 1970, P 20 12 203.6

Int. Cl. B60g *17/04*

U.S. Cl. 280—124 F **9 Claims**



A pneumatic suspension for a motorcar has a level indicator switch having a high load position and a low load position in which it is connected by first and second switches with an electric motor-compressor, and an electromagnetic relief valve, respectively. A third switch connects the motor-compressor parallel to the level indicator switch into the circuit. The three switches are part of a control switch means, and are operated by a spring biassed pressure responsive element having a piston portion in a pressure chamber communicating with the pneumatic cylinder and piston means by which the chassis is supported on a wheel shaft. By use of a strong spring for the pressure responsive element, the operation of the fir. switch takes place only at a predetermined high load.

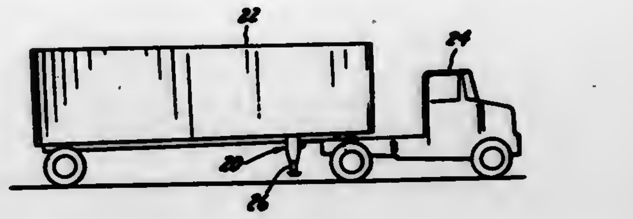
3,729,212
DOUBLE FLANGED SUPPORT LEG

Hyle K. Claflin, North Muskegon, and Jack T. Belke, Grand Rapids, both of Mich., assignors to Western Corporation, Muskegon, Mich.

Filed Dec. 21, 1970, Ser. No. 100,135

Int. Cl. B60s *9/02*

U.S. Cl. 280—150.5 **13 Claims**



A landing gear support wherein the same leg may be used as either the right or left leg of the support. The leg includes a pair of flanges, one on each side of the upper end of the leg such that the leg may be secured with the flanges to either side of the trailer and may be used on trailers having either outside mounting plates or inside mounting plates. Gear boxes for individually moving the legs between their extended and retracted positions may be mounted to the flanges opposite those being used to mount the leg to the trailer. Alternatively, one gear box may be secured to one of the legs with a shaft extending between the two legs such that the legs may be simultaneously raised or lowered.

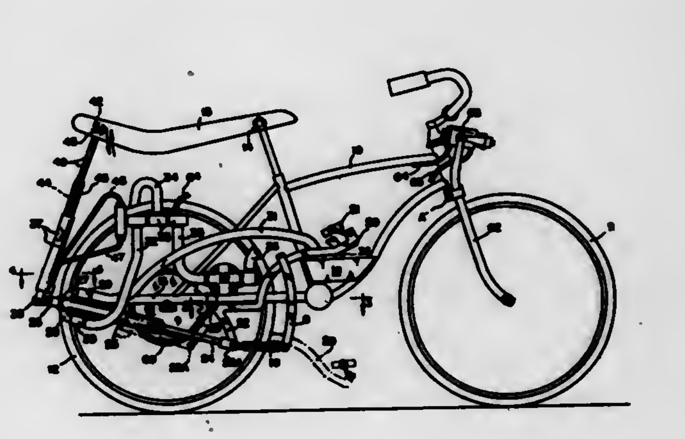
3,729,213
HYDRAULIC DRIVE FOR A BICYCLE

Steve A. Hudspeth, 906 6th Street, and John B. Lunsford, 1061 "B" Street, both of Springfield, Oreg.

Filed June 11, 1971, Ser. No. 152,209

Int. Cl. B62m *1/10, 1/20*

U.S. Cl. 280—216 **2 Claims**



A bicycle having a fluid powered motor. A primary source of fluid for motor operation provided by a pair of hydraulic cylinders with pistons therein powered by the feet of the rider. A secondary or auxiliary source of fluid under pressure for motor operation residing in a pair of seat actuated fluid pumps. The bicycle seat is mounted to permit the weight of the rider to be yieldably supported with fluid being exhausted from said pumps upon bicycle seat movement while the rider is negotiating irregular ground surfaces. An additional source of fluid pressure may be provided by still another cylinder operatively coupled to the front fork of the bicycle.

3,729,214

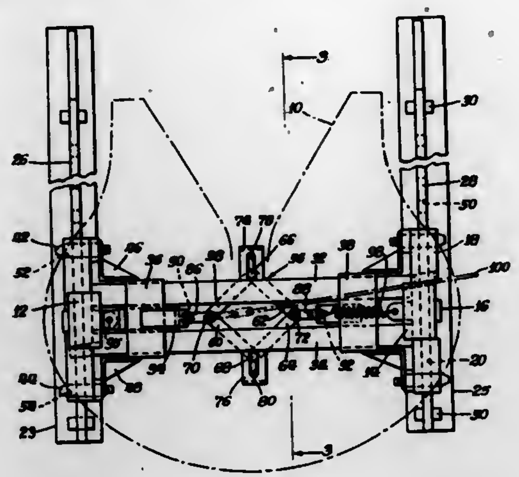
ADJUSTABLE FIFTH WHEEL MOUNTING

Harry William Mulcahy, Lansing, Ill., and AMSTED Industries Incorporated, Chicago, Ill.

Filed Aug. 27, 1971, Ser. No. 175,553

Int. Cl. B62d *53/06*

U.S. Cl. 280—407 **5 Claims**



A fifth wheel is slideably mounted on a truck frame so as to be longitudinally movable along the frame. Aligned horizontal openings in the frame and fifth wheel mounting are engaged by movable pins actuated by a single toggle linkage, which is in turn actuated by a power cylinder or a manually operated rod.

3,729,215

COUPLING DEVICE FOR A DRAY

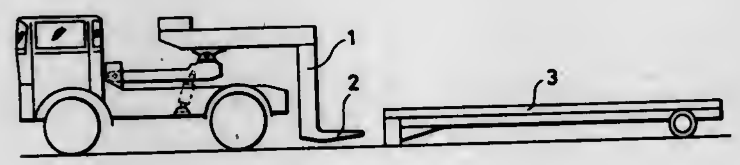
Ilmari Paakkinen, 57210 Nojanmaa, Finland, assignor to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Nov. 18, 1971, Ser. No. 200,032

Claims priority, application Finland, Nov. 20, 1970, 3134/70

Int. Cl. B62d *53/06*

U.S. Cl. 280—425 A **5 Claims**



In a coupling device for a dray, a device with which one end of the dray can be lifted to rest against the pulling vehicle and which consists of a coupling part of a gooseneck attached to a pulling vehicle at one end and a coupling pocket in the dray meant to receive the gooseneck. The side walls of the gooseneck coupling part and the coupling pocket deviate from the vertical plane and are dimensioned so that, when lifted the slanted side walls of the coupling part of the gooseneck are wedged between the slanted side walls of the coupling pocket so that a pulling coupling is created between the dray and the pulling vehicle.

3,729,216

GAME SCORE DISPLAY DEVICE

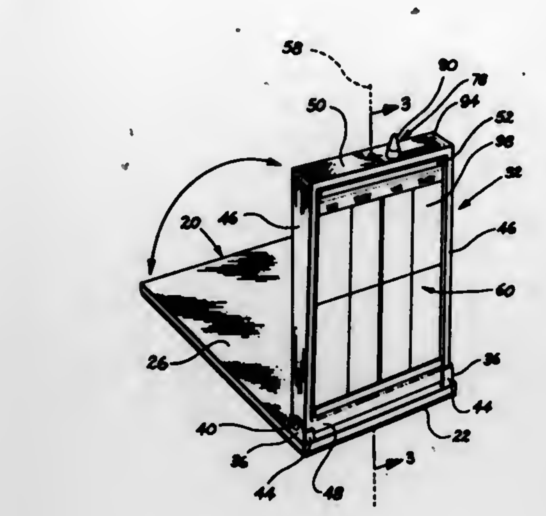
Charles Hahto, and Harry A. Schneirow, both of 1755 North Berendo Street, Los Angeles, Calif.

Filed June 18, 1971, Ser. No. 154,559

Int. Cl. B42d *1/00*

U.S. Cl. 281—45 **10 Claims**

A game score display device including a particular holder adapted to hold a pad upon which a game score can be written by a score-keeper easily and conveniently and, after completion of the writing of each additional scoring change thereon, can be moved into a upright position and then positionally reversed around an upright axis so that the just-written game scoring change (and any previously written game scores) will be visibly displayed in a saliently obvious manner to all persons participating in the card or other type of game, so that it will not be necessary, as has been the prior art practice, for various game participants to frequently ask the score-keeper what the score is. The apparatus is particularly well adapted for displaying game scores of card games such as bridge, or the like, although not specifically so limited.



3,729,217

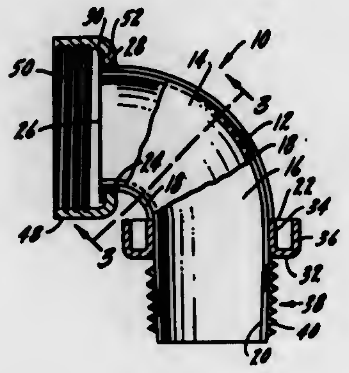
CONNECTOR AND METHOD

Irving R. Metcalf, St. Charles, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed May 10, 1971, Ser. No. 141,727

Int. Cl. F16l *15/00*

U.S. Cl. 285—183 **12 Claims**



A tubular body section having threads attached at one end and a nut held captive on the other end with a tool engaging portion attached intermediate the threads and nut and a method of making the foregoing including the steps of forming the tubular body section from sheet metal, positioning the tool engaging portion on the tubular body section, providing a thread form on the tubular body section adjacent one end thereof, brazing the parts together, thereafter positioning the nut on the other end of the tubular body section and deforming said other end of said tubular body section to hold the nut captive.

3,729,218

BUTT JOINING OF STEEL BARS AND CONNECTION ASSEMBLY THEREFOR

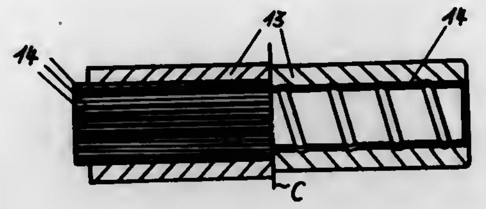
Siegfried Gutmann, Schwarzwaldstrasse 45, 76 Offenburg, Germany

Continuation-in-part of Ser, No. 690,214, Feb. 13, 1967, Pat. No. 3,551,999. This application Aug. 20, 1970, Ser. No. 65,502

Claims priority, application Austria, Dec. 6, 1967, A 11039/67

Int. Cl. F16b *7/00*

U.S. Cl. 287—109 **11 Claims**



To butt join steel bars and maintain any tightly abutting, or accurately spaced position of the bars to be joined, wires of high tensile strength (such as piano-type wires and the like) are located right next to the rod to be joined, the entire assembly then being surrounded by a tubular sleeve which is compressed and cold flowed over the wires and the rods to be joined together; compressive force can be reduced by forming spaced upstanding ridges on the sleeve, the compressive force being applied only against the ridges. The space bridging the ends of the rods to be joined is left free of compression ridges.

3,729,219

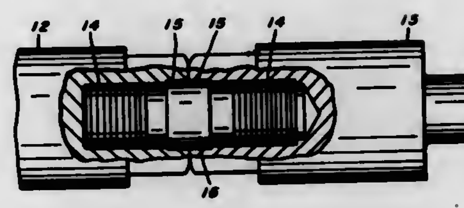
JOINT FOR CONNECTING SECTIONS OF A MEMBER SUBJECT TO CYCLIC COMPRESSIVE LOADING

Robert M. Crane, Dallas, Tex., assignor to United States Steel Corporation

Filed Dec. 24, 1970, Ser. No. 101,215

Int. Cl. F16b *7/18*

U.S. Cl. 287—125 **4 Claims**



A joint for connecting sections of a member which is subject to cyclic compressive loading. Such joints are used, for example, in the piston rods of single-acting reciprocating pumps, and may fail through fatigue. The joint comprises a stud threadedly engaged with the end of at least one of the sections, and means surrounding the stud and transmitting loads independently of the stud. The stud has a substantially lower modulus of elasticity than the load-transmitting means.

3,729,220

LOCK ARRANGEMENT FOR A DOOR OF A MOTOR VEHICLE

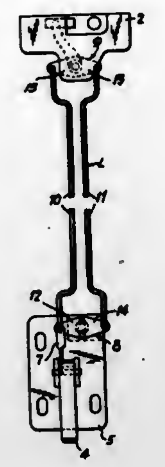
Rudolf Andres, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Unterturkheim, Germany

Filed March 25, 1971, Ser. No. 128,034

Int. Cl. E05c *1/06*

U.S. Cl. 292—336.3 **8 Claims**

A lock of a door of a motor vehicle is unlocked by operation of an actuating handle located an the inner side of the door and at a distance from the lock, the actuating handle being connected by a linkage to the lock. The linkage is of the parallelogram type and includes a two armed lever connected to the actuating lever and a second two-armed lever arranged in the region of the lock, the arms of these levers being interconnected by two mutually parallel rods.



3,729,221

COLLISION ACTUATED BUMPER

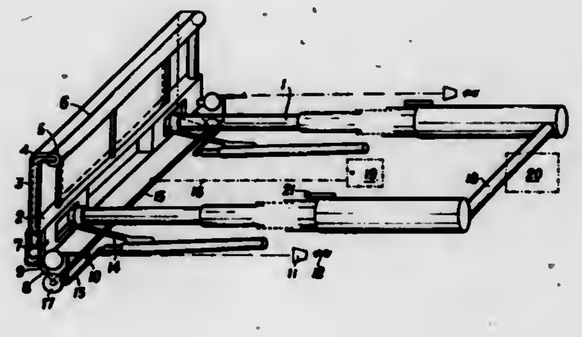
Hubert Granig, Missingdorfstrasse 13/13, Vienna, Austria

Filed Feb. 4, 1969, Ser. No. 796,395

Claims priority, application Austria, Feb. 5, 1968, 8A1090/68

Int. Cl. B60r *19/12*

U.S. Cl. 293—9 **11 Claims**



Piston-cylinder means are connected to a bumper bar and are connected to gas-supplying means for supplying compressed gas to said piston-cylinder means. The piston-cylinder means are adapted to respond to an expansion said supply of gas. Venting means are provided for venting said piston-cylinder means.

3,729,222

MEANS FOR CONNECTING MEMBERS TOGETHER

Peter Thomas Ward, Lichfield, England, assignor to Rubery, Owen & Co., Limited, Darlaston, Wednesbury, England

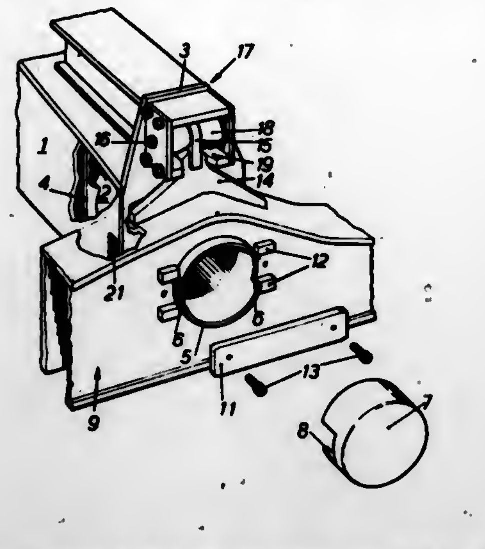
Filed April 14, 1971, Ser. No. 134,015

Claims priority, application Great Britain, April 21, 1970, 18,904/70

Int. Cl. B66c *1/00*

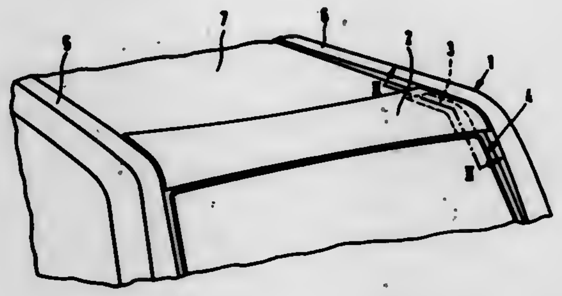
U.S. Cl. 294—67 R **2 Claims**

In a spreader frame incorporated in container handling equipment a cylindrical boss projects from a boom and passes through an opening in a cross-head. Spaced, torque-taking abutments on each side of the opening engage the ends of a key which extends through a slot in the outer end of the boss and retains the cross-head on the boom.



3,729,223
HINGED REAR CLOSURE FOR VEHICLE BODIES

Hans-Egon Leissa, Roetgesbuettel, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed March 3, 1971, Ser. No. 120,595
Claims priority, application Germany, March 20, 1970, P 20 13 277.8
Int. Cl. B62d *35/00*; **B60j** *5/10*
U.S. Cl. 296—1 S **7 Claims**

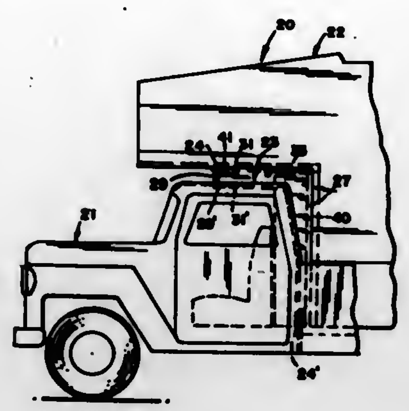


In a motor vehicle body having a hinged rear closure panel supported from the body for swinging movement about a horizontal axis between its opened and closed positions, the vehicle roof is provided with laterally spaced longitudinal ridges along opposite sides thereof. The rear closure panel is provided with hinge members which project upwardly and forwardly therefrom between these ridges and are pivotally connected to the respective ridges to support the closure panel for swinging movement about a horizontal axis which is displaced above and forwardly of the closure panel so that the latter may be swung upwardly to an open position in which both the panel and its hinged structures are entirely removed from the rear opening of the vehicle normally covered by the closure panel. An air deflector carried by the hinges between the said ridges is spaced above the roof and curves downwardly in spaced relation to the rear closure panel to define an air flow passage through which air moving rearwardly over the roof is deflected downwardly across the closure panel.

3,729,224
PICKUP TRUCK CAMPER DEVICE

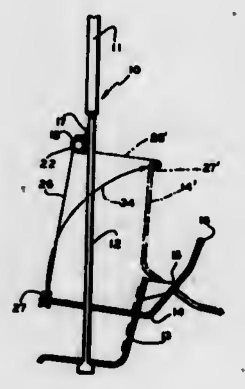
Milton R. Hathaway, Jr., 30 Parlee Road, Chelmsford, Mass.
Filed Sept. 21, 1971, Ser. No. 182,429
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 MC **2 Claims**

This invention comprises a camper and pickup truck device which has a compartment passageway structure mounted to the rear of the pickup truck. The passageway structure is slidably adapted to fit into an opening in different size pickup truck cabs. The outer edge of the compartment passageway structure abutts the front wall of the camper. The front wall of the camper has a passageway therethrough. A pair of doors are pivotally mounted to the inner edge of the front wall of the passageway structure and are adapted to pivot forward into the cab to open the passageway between the camper and the cab of the pickup truck.



3,729,225
WINDSHIELD FOR SKI-LIFT CHAIR

Phillip D. Savage, Owls Head, N.Y., assignor to Hall Ski-Lift Company, Inc., Watertown, N.Y.
Continuation-in-part of Ser. No. 158,689, July 1, 1971, abandoned. This application Oct. 29, 1971, Ser. No. 193,656
Int. Cl. A47c 7/66
U.S. Cl. 297—184 **2 Claims**

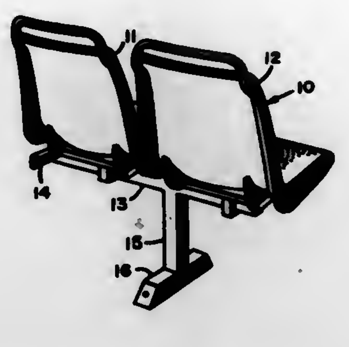


A sheet of transparent flexible plastic resin has one end attached to a roller rotatably mounted to the support structure of a ski-lift chair above the seat. The other end of the sheet is secured to an elongated rigid member adapted to be quickly connected to the chair safety bar in front of the seat. The roll is spring-biased to wind the sheet thereon and when the safety bar is raised the sheet is rolled up out of the way in loading and unloading the chair.

3,729,226
SINGLE PEDESTAL TRANSIT CHAIR

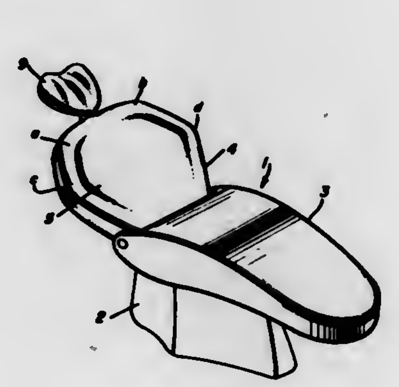
Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed June 4, 1971, Ser. No. 149,947
Int. Cl. A47c *3/00*
U.S. Cl. 297—232 **6 Claims**

A transit chair has a beam supporting two seats and has a side rail for attachment to the side of a vehicle, the beam being supported about midway by a single pedestal which is carried on a hollow foot extending longitudinally of the vehicle floor, the foot being provided at its ends with bolt openings for receiving bolts anchoring the foot to the floor and the foot being cut away along an angle above the openings to provide vertical access for a socket wrench, the ends of the foot being releasably closed by a closure cap having releasable wing lugs interlocked with side openings in the foot.



3,729,227
DENTAL CHAIR

Sadayasu Ohta, 161, Koaza-Kitsune-Gawa, Ohaza-Tanabe, Tanabe-cho, Tsuzuki-gun, Kyoto-fu, Japan
Filed June 11, 1971, Ser. No. 152,247
Int. Cl. A47c *7/36, 7/02*
U.S. Cl. 297—391 **1 Claim**

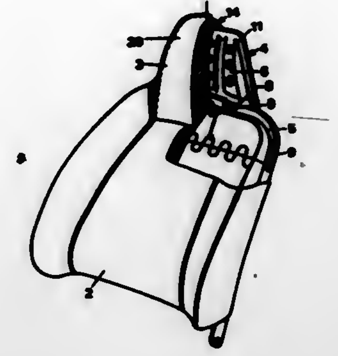


A dental chair comprising a plate-shaped back, both side parts of which corresponding to the portions below both shoulders of the patient are curved inwards, so that both upper portions of his arms and elbows may be supported in comfort by the said inwardly curved portions on both sides of the back.

3,729,228
VEHICLE SEAT PROVIDED WITH A HEAD REST

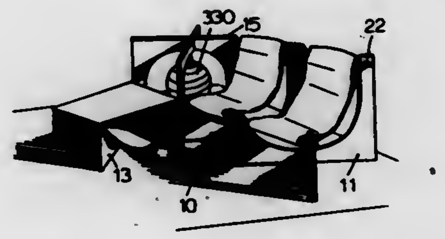
Masahiko Inoue, and Takashi Saito, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed April 1, 1971, Ser. No. 130,214
Claims priority, application Japan, April 10, 1970, 45/30592
Int. Cl. A47b *11/00*
U.S. Cl. 297—396 **1 Claim**

A seat having a head rest wherein the head rest is formed integrally with a back of the seat. Said seat comprises a reinforcement for the head rest provided on the top of a back frame, a shock absorber for the head rest formed as a unit in the shape of a bag for covering said reinforcement for the head rest and an upper portion of said back frame, and means for firmly securing said shock absorber for the head rest to the back.



3,729,229
MODULAR FURNITURE

Lawrence D. Minsker, 102 Pleasant View Drive, Jamestown, N.Y.
Filed Oct. 7, 1970, Ser. No. 78,779
Int. Cl. A47c *4/02*
U.S. Cl. 297—442 **5 Claims**

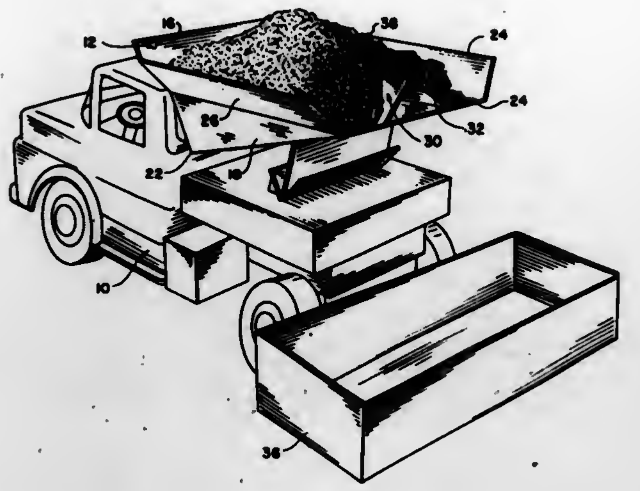


The specification discloses a modular article of furniture made up of a number of modules, each of the modules is made up of two panels which may be plywood or the like. The panels are in pairs similar to each other, each have a semi-circular cutout in one side and the panels are arranged at right angles to each other. The upstanding arms formed by the cutouts can be used to support the edges of support surfaces, such as chairs, tables, lamps, and the like, and the arms can be connected together by rods, if desired, to hold them together in a modular furniture assembly with the rods extending through the arms of more than one support.

3,729,230
DIVIDED BODY FOR DUMP TRUCKS

George A. Tomlinson, Jr.; Tommie J. Long, and Gene C. Galloway, all of Tulsa, Okla., assignors to Unit Rig and Equipment Company, Tulsa, Okla.
Filed Aug. 3, 1970, Ser. No. 60,504
Int. Cl. B60p *1/28*
U.S. Cl. 298—7 **3 Claims**

A divided dump body for a dump truck particularly designed and constructed whereby the entire load from a single dump body may be loaded into a single receiving vessel or container in a manner wherein the load is substantially evenly



distributed in the container, thus eliminating the need for intermediate loading vehicles or devices.

3,729,231

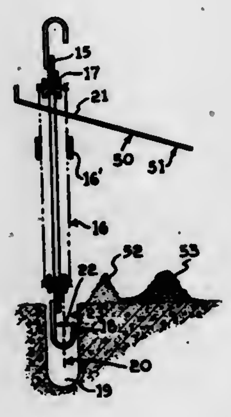
NARROW ROCK CUTTING TRENCHER

Clifford J. Evans, Glen Rose, Tex., assignor to Shields-Jetco, Inc., Dallas, Tex.

Filed April 19, 1971, Ser. No. 135,213

Int. Cl. E02f *5/08*

U.S. Cl. 299—7 **10 Claims**



A narrow rock cutting trencher having a single disk rotatably captured about a framework, and having inwardly opening trench forming buckets disposed about the outer periphery of the disk. An arc plate cooperates with the buckets so as to transport material from the trench into an overhead position as the apparatus progresses along the ground.

3,729,232

APPARATUS FOR CONVERTING SOLIDIFIED POWDERS OF ORES LOADED IN ORE TRANSPORT SHIPS INTO SLURRIES

Masanobu Sakata; Kenichi Nagata; Shigeru Nagamori, all of Ichihara, and Hideo Suzuki, Yachiyo, all of Japan, assignors to Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, Japan

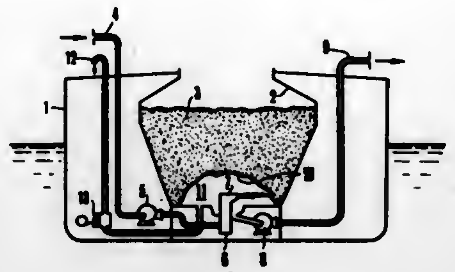
Filed May 31, 1972, Ser. No. 258,291

Claims priority, application Japan, June 7, 1971, 46/40044

Int. Cl. B65g *53/30*

U.S. Cl. 302—15 **3 Claims**

In apparatus for converting a solidified powder of ore loaded in an ore transport ship into a slurry of the type wherein a high pressure water jet is supplied to the bottom of the solidified powder of ore so that a cavity is formed at the



bottom of the solidified powder at the early stage of the converting operation, means is provided for admitting atmospheric air into the cavity.

3,729,233

VEHICLE ANTISKID BRAKING SYSTEM

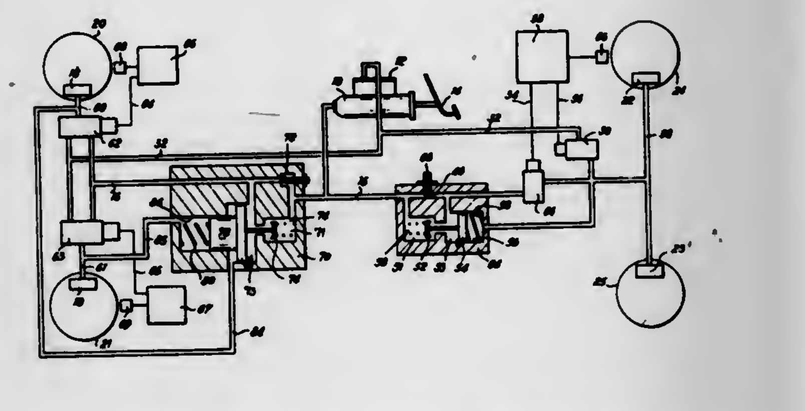
James Mangold, Tremblay-les-Gonesse, France, assignor to Societe Anonyme D.B.A.

Filed March 10, 1971, Ser. No. 122,712

Claims priority, application France, March 12, 1970, 7008933

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 F **3 Claims**



This invention relates to an antiskid braking system for automotive vehicles, wherein the fluid supply connection provided between a variable fluid braking pressure control source and a set of fluid pressure actuated brake motors is controlled by fluid pressure modulating valve means actuated by output control signals generated by an antiskid unit in response to a skidding condition of the brake vehicle. The fluid supply connection is provided with a restricted area fluid passage disposed between said fluid source and said modulating valve means so as to substantially limit the fluid flow rate to said brake motors upon opening of said fluid supply connection, and thereby to dampen the build-up in pressure to the brake motors.

3,729,234

BRAKE CONTROL MODULATOR

Edgar A. Hirzel, Granada Hills, Calif., assignor to Crane Co., Chicago, Ill.

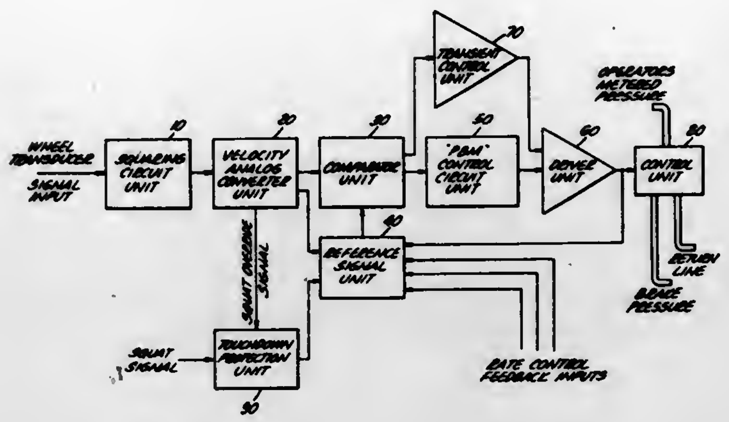
Division of Ser. No. 871,439, Oct. 22, 1969, abandoned, which is a continuation-in-part of Ser. No. 665,072, Sept. 1, 1967, abandoned. This application June 21, 1971, Ser. No. 154,959

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 BE **8 Claims**

A brake control is provided with a system for modifying the action of the brake application apparatus for the wheel of a vehicle. Information obtained from the rotation of the wheel is used to derive an analog signal indicating the braking condition. If the analog signal exceeds a predetermined threshold

level, a modulating signal is produced. The modulating signal includes the time integral function of both the positive and negative variations of the analog signal from the threshold



level. The circuitry for producing the modulating signal includes an integrating capacitor that is charged by said analog signal and that is discharged by current representing the predetermined threshold level.

3,729,235

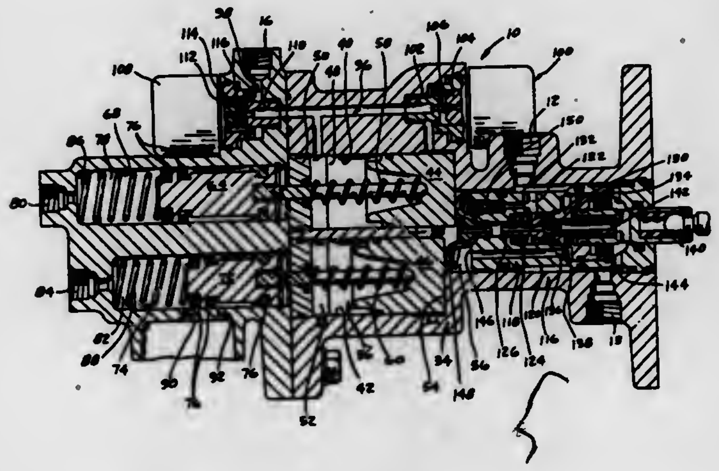
INTEGRATED BRAKE BOOSTER AND ADAPTIVE BRAKING MODULATOR

Lloyd G. Bach, and Richard L. Lewis, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Sept. 3, 1971, Ser. No. 177,729

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 F **19 Claims**



A vehicle hydraulic braking system is disclosed which includes a single device which not only provides a power assist to the vehicle operator when the brakes are applied, but also serves as an adaptive braking modulator. The device includes a housing defining a pressure chamber therewithin, and a number of pistons, one piston for each control channel of the adaptive braking system, which are slidably mounted within the chamber. When the vehicle operator effects a brake application, a valve within the housing admits high pressure fluid from a pressure source into the pressure chamber for urging the pistons in a brake-applying direction. However, when the adaptive braking system senses an incipient skid condition at one of the vehicle's wheels, pressures are equalized on the opposite ends of a corresponding one of the pistons, to thereby permit a spring to yieldably urge the piston in a brake release direction, thereby relieving the braking pressure in the affected brake.

3,729,236

ANTI-SKID BRAKE CONTROL ARRANGEMENT FOR VEHICLE WHEELS

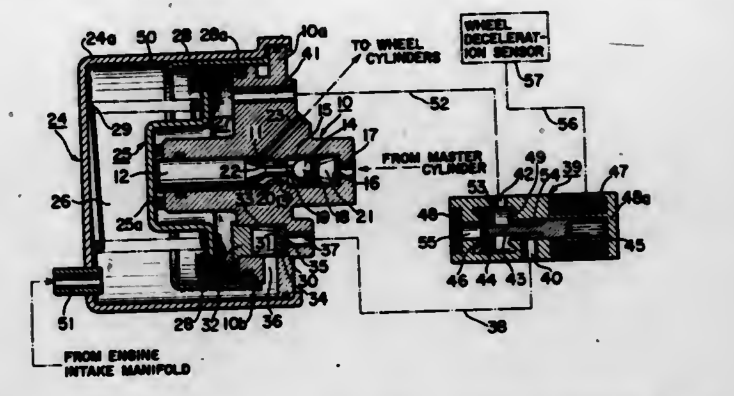
Tosiaki Okamoto; Masami Inada, and Katuki Takayama, all of Kariya-shi, Japan, assignors to Aisin Seiki Company, Limited, Aichi-ken, Japan

Filed May 16, 1969, Ser. No. 825,350

Claims priority, application Japan, May 18, 1968, 43/33655

Int. Cl. B60t *8/12, 8/26*

U.S. Cl. 303—21 F **2 Claims**



This invention relates to a hydraulic pressure control valve arrangement for automotive vehicle wheel brake systems, the latter system comprising a hydraulic master cylinder to be actuated by operating a foot brake pedal; a hydraulic brake pressure control valve assembly provided with a pneumatic servo piston means; and electromagnetic change-over valve assembly fluidically connected therewith; a skid sensor operatively connected therewith and also with a vehicle wheel; and wheel cylinder means for applying hydraulic braking effort upon vehicle wheels. The improvement comprises the provision of a control valve of orifice type in said hydraulic brake pressure control valve assembly, for bringing the working stroke of said servo piston to realize in a rapid way during reduction of the effective volume of the hydraulic circuit leading from said pressure control valve assembly to wheel cylinder means in case of an overbrake application, and until a certain stage of said working stroke, and then carrying about the latter in a highly slow and continuous way.

3,729,237

SPLIT HYDRAULIC BRAKING SYSTEM

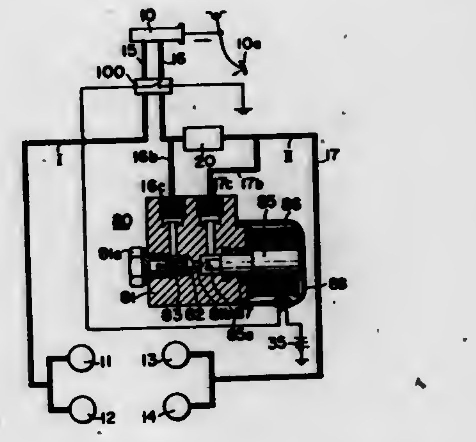
Masakazu Ishikawa, and Hiroyuki Oka, both of Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Oct. 1, 1970, Ser. No. 77,150

Claims priority, application Japan, Oct. 12, 1969, 44/78122

Int. Cl. B60t *15/46*

U.S. Cl. 303—84 A **20 Claims**

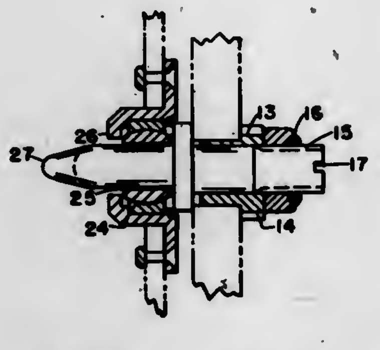


A hydraulic brake system is formed of two separate hydraulic circuits, one for the front wheels and the other for the rear wheels of an automotive vehicle. Both circuits are connected hydraulically to a master cylinder and one of the hydraulic circuits contains a control valve assembly for varying the pressure of the hydraulic brake fluid in that circuit. Means are provided in operative engagement with the control valve assembly for maintaining the valve assembly in the inoperative condition when a failure occurs in the other circuit. As a result of the failure, the circuit containing the valve assembly operates at the pressure supplied from the master cylinder.

3,729,238
SELF-ALIGNING, ADJUSTABLE ANCHOR PIN ASSEMBLY

Arthur A. Arnold, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 13, 1971, Ser. No. 179,863
Int. Cl. F16c *23/00*
U.S. Cl. 308—72 **2 Claims**

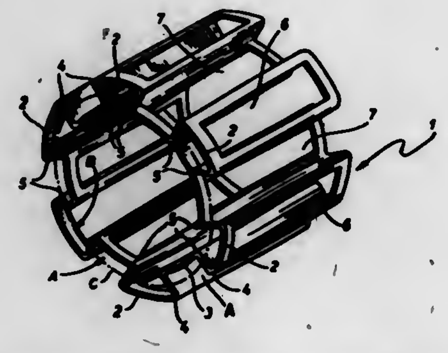


An anchor pin assembly is both adjustable and self-aligning. The assembly includes an anchor pin substantially cylindrical in shape for mounting on a fixed structure. The anchor pin is received into a bearing comprising two members. The first bearing member is mounted in a fitting having means for attachment to a body to be supported against mechanical shock and includes internal spherical surfaces. A second bearing member has external spherical surfaces which are received and movably supported within the internal spherical surfaces of the first bearing member and the second bearing member has an internal cylindrical bore for slidingly engaging and receiving the cylindrical surfaces of the anchor pin. In a preferred embodiment, the anchor pin is flanged and has an eccentric stud portion which is received and supported within an eccentric, substantially cylindrical, bearing member to afford first and second degrees of pivotal positioning to perfect the alignment of the anchor pin with the central axis of the bearing into which it is received and supported.

3,729,239
ROLLER BEARING AND CAGES THEREFOR

Domenico Camosso, Turin, Italy, assignor to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy

Filed May 7, 1971, Ser. No. 141,315
Claims priority, application Italy, May 22, 1970, 68762 A/70
Int. Cl. F16c *33/46*
U.S. Cl. 308—217 **14 Claims**

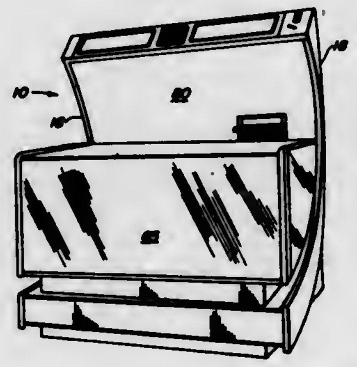


A roller bearing cage in which the rollers are held in pockets formed between adjacent radially projecting longitudinally extending teeth is disclosed. The teeth may be either inwardly or outwardly radially directed or alternately inwardly and outwardly radially directed. In the latter case the pocket formed between adjacent similarly directed teeth is provided in a cavity in the corresponding oppositely directed tooth. The teeth are undercut so that the rollers can be snapped into place in the pockets and located in position by the teeth. Each pocket has an aperture in its base through which the curved surface of the roller projects so as to be able to make contact with both of the bodies which are to have relative rotational movement with the aid of the roller bearing.

3,729,240
CABINET ASSEMBLY FOR COIN OPERATED PHONOGRAPH

Leon C. Clouser, Jr., Lombard, Ill., assignor to The Seeburg Corporation, Chicago, Ill.

Filed Sept. 10, 1971, Ser. No. 179,340
Int. Cl. A47b *81/06*
U.S. Cl. 312—8 **10 Claims**

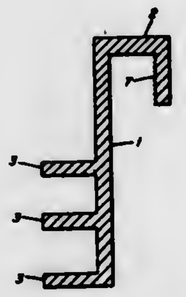


A cabinet assembly for coin operated phonographs has an enclosed vibration isolating speaker chamber at the base thereof, which forms a supporting structure for the record changer and for the side and the back walls of the cabinet assembly. The speaker chamber prevents transmission of sonic and mechanical vibrations to the record changer, thereby eliminating vibration caused distortion of sound reproduction from the records. An enclosure for the electrical components, which is mounted at the top of the side and back walls, thermally isolates heat produced by the electrical components and prevents heat damage to the records stored in the record changer.

3,729,241
MODULAR EXTRUSION FOR CABINETS AND SIMILAR STRUCTURES

James Henry Schippers, and James Edwards Chisholm, both of Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Filed April 26, 1971, Ser. No. 137,301
Int. Cl. A47b *77/00*
U.S. Cl. 312—107 **12 Claims**

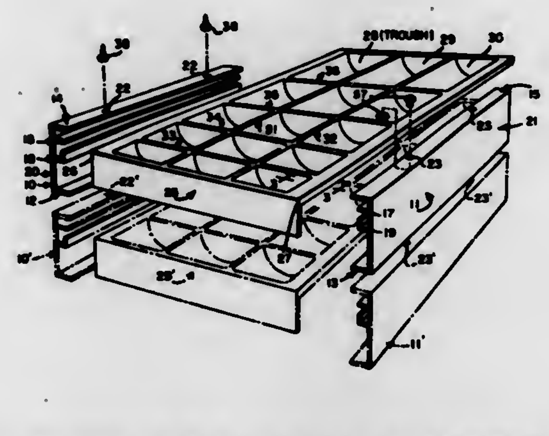


A basic extrusion is in the form of a "J" on the back of the long upright. There are several extended vanes or flags, preferably three. The extrusions are in suitable lengths for assembling into cabinets using mitered corners. There is also provided a hanger channel, which can be incorporated into a wall and from which the cabinet can hang by the channel portion forming the bottom of the J. Stacking extrusions for stacking together several J's are also provided. These extrusions fit into two J's with their bottom channels next to each other. The basic J extrusions are of strong material, preferably aluminum, but the stacking extrusions are usually of plastic having a certain amount of give.

3,729,242
MODULAR SLIDABLE MEMBER AND MOUNTING BRACKET COMBINATION

Jan Alan Barney, 6559 Northridge Drive, San Jose, Calif.

Filed May 17, 1972, Ser. No. 254,030
Int. Cl. A47b *77/00*
U.S. Cl. 312—107 **10 Claims**

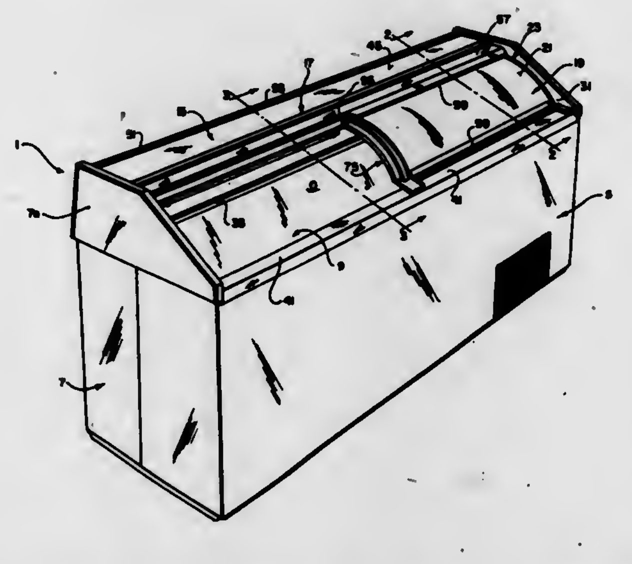


Covers a modular slidable member, e.g., a drawer or shelf and mounting bracket combination which may be stacked upwardly or downwardly to provide a set comprising a plurality of slidably mounted slidable members, e.g., drawers or shelves. The novel brackets of the invention provide not only mounting means for the slidable member but also a framework which serves to hold a plurality of slidable members together.

3,729,243
MERCHANDIZING CABINET

Donald A. Musgrave, and Paul S. McClain, both of Conway, Ark., assignors to UMC Industries, Inc., New York, N.Y.

Filed June 7, 1971, Ser. No. 150,279
Int. Cl. A47f *3/04*
U.S. Cl. 312—116 **10 Claims**

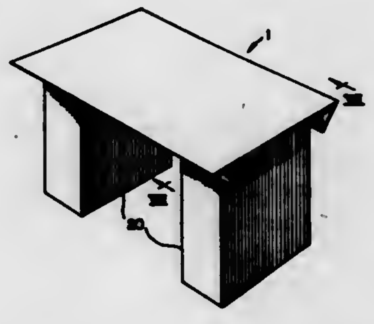


A merchandising cabinet, e.g., an ice cream dipping cabinet, having a transparent window means and a curved transparent lid closing the upper front and top of the cabinet and permitting the contents of the cabinet to be viewed by both the customer and the server with the lid opened or closed. The window means extends the length of the cabinet and comprises a front window extending upwardly at the upper front of the cabinet and a top window extending back from the top of the front window to a position above and forward of the top of the back cabinet wall providing an opening for access to the containers by the server. The curved transparent lid is slidably mounted on curved track means at its ends for sliding movement between a closed position in which the lid blocks the opening and an open position in which a customer may view the containers through the window means and the lid.

3,729,244
COLLAPSIBLE DESK

William M. Butler, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed April 24, 1972, Ser. No. 246,638
Int. Cl. A47b *41/00, 3/06*
U.S. Cl. 312—195 **4 Claims**

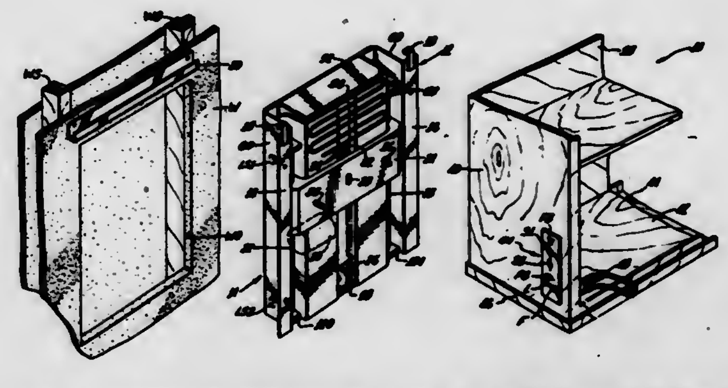


A collapsible desk made of foldable sheet material comprising a pair of folding pedestals and a separably interconnecting top assembly which includes a top panel and three adjoining folding panels on each of two opposite sides of the top panel which fold to form a pair of parallel frame members. The pedestals are interconnected with cooperating tabs and slots to the top assembly between the frame members.

3,729,245
CONCEALED ACTUATING UNIT FOR AUTOMATICALLY RAISING AND LOWERING CABINETS AND THE LIKE

Walter W. Skifstrom, 1504 W. 173rd Street, Gardena, Calif.

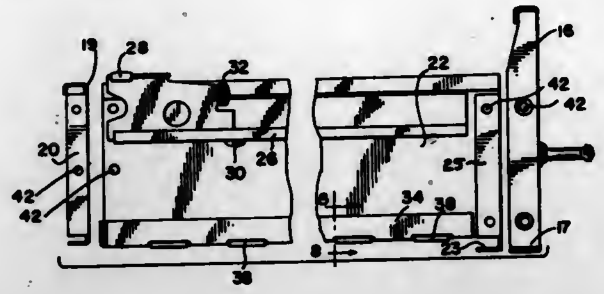
Filed Dec. 28, 1970, Ser. No. 101,767
Int. Cl. A47b *77/08, 67/02, 57/08*
U.S. Cl. 312—223 **1 Claim**



Unitary frame has guideposts which slidably support a carriage moved by a motor driven chain, the frame being easily installed in a wall opening and concealed by a cabinet on the carriage. One of the guideposts is floatingly mounted to accommodate tolerance accumulation and/or slight misalignment. The motor is reversible and controls therefor include control switches, limit switches and safety switches for stopping the motor in a positive manner at will or automatically without harm to the user or the cabinet. A constant force device provides additional lifting power and minimizes tipping of the cabinet.

3,729,246
KNOCK-DOWN DRAWER

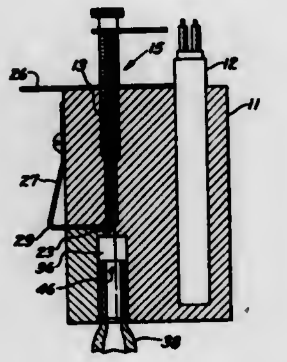
Bob G. Harrell, and Arthur Harbaugh, both of St. Louis, Mo., assignors to Jackes-Evans Manufacturing Company, Saint Louis, Mo.
Filed July 13, 1971, Ser. No. 162,177
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 12 Claims



An apparatus particularly adapted for use as a drawer and capable of being collapsed for shipping in a flattened or knocked-down condition and later assembled, installed and used in connection with a cabinet or locker, having a bottom panel, a front panel, two side panels and a back panel, the bottom panel being removably attachable to each side panel by joint means which includes elements disposed along the lower edge of the side panel and the side edges of the bottom panel and which permits the side panel to be held and maintained in a position perpendicular to the bottom panel for use as a drawer while allowing the side panel to be moved to a position parallel with and adjacent to the bottom panel, or easily disconnected, for purposes of shipping. The bottom panel and side panels, when held together in a drawer position by the joint means, are attachable to the front panel and back panel by holding means disposed through flanges projecting from the edges thereof to form a conventionally shaped drawer which has no protrusions existing on its entire inside surface.

3,729,247
METHOD AND APPARATUS FOR DISPENSING PELLETS INTO LAMPS

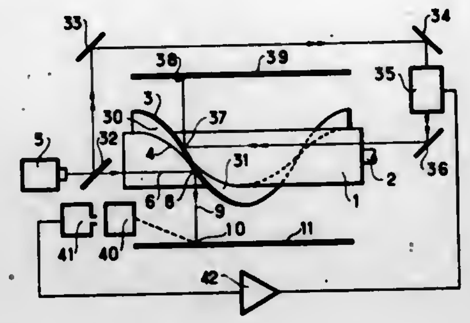
David R. Schaller, Chagrin Falls, Ohio, assignor to General Electric Company
Filed Nov. 19, 1971, Ser. No. 200,325
Int. Cl. H01j *9/38*
U.S. Cl. 316—16 9 Claims



Lamp-dosing material such as indium triiodide is drawn, in molten form, into tubing of slippery plastic material such as Teflon, and allowed to solidify. A length of the tubing and its contents is placed into an elongated opening in a metal dispenser block. The dispenser block is heated to cause the plastic tubing to expand, and a plunger forces a measured length of dosing material out of the tubing. A cutter blade slices off the exposed length of material whereupon it falls into a lamp bulb which has been inserted into an opening in the dispenser block. An inert gas is flowed through the interior of the dispensing block to protect the dosing material from moisture in the atmosphere.

3,729,248
OPTICAL SCANNING ASSEMBLY WITH HELICAL-SHAPED ROTATING REFLECTOR

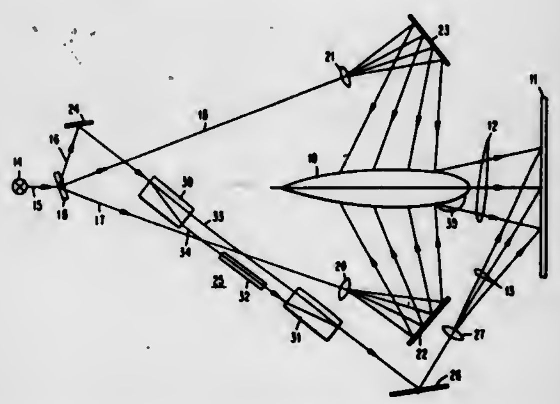
Michel Beduchaud, 91-Massy, France, assignor to Compagnie Industrielle Des Telecommunications CIT-ALCATEL, Paris, France
Filed June 24, 1971, Ser. No. 156,400
Claims priority, application France, June 26, 1970, 7023868
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 10 Claims



An optical scanning assembly employs a reflector constructed in the form of a cylindrical helix which is rotatable about the axis of the helix. A light source is arranged to direct a collimated beam of light parallel to the helix axis, so that the light beam strikes a first reflective surface of the reflector. Depending upon the angle of the reflective surface of the reflector with respect to a radial line of the cylinder, the beam of light from the light source will be deflected away from the axis of the cylinder in a predetermined direction. The light then strikes a desired surface and may be reflected therefrom into the photo-sensitive element for further processing. Because of the rotation of the helix-shaped reflector, the light beam from the light source is scanned back and forth along the line parallel to the helix axis.

3,729,249
METHOD AND APPARATUS FOR LARGE OBJECT INTERFERENCE PATTERN RECORDING

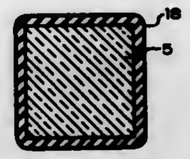
Millard A. Habegger, Poughkeepsie, and Glenn T. Sincerbox, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 12, 1968, Ser. No. 744,404
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 14 Claims



Interference pattern recording of large objects or scenes having dimensions exceeding the coherence lengths of available light sources is accomplished. The recording is performed by illuminating the storage medium with a plurality of reference beams all of which are collinear and the scattered radiation from the object. A path length difference not exceeding and preferably slightly less than the coherence length of the radiation sources is introduced into each successive reference beam.

3,729,250
ACOUSTO-OPTIC FILTER HAVING MEANS FOR DAMPING ACOUSTIC RESONANCES AND STRAY LIGHT

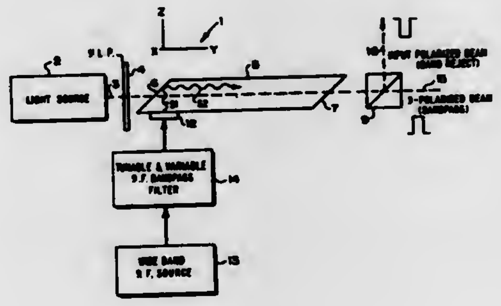
John A. Kusters, San Jose; David A. Wilson; Laurence M. Hubby, Jr., both of Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif., a corporation of California
Filed July 23, 1971, Ser. No. 165,629
Int. Cl. G02f *1/24*
U.S. Cl. 350—149 2 Claims



Acoustic resonances in the acoustically excited photoelastic optically birefringent crystal of an acousto-optic filter are damped by coating the side of the photoelastic crystal with an acoustic absorbing medium, such as tungsten powder loaded epoxy, whereby undesired acoustic resonances are damped. The acoustic impedance of the coating preferably matches the acoustic impedance of the crystal The outside surface of the crystal is preferably cleaned and roughened to assure an intimate bond between the absorbing material and the crystal medium.

3,729,251
ACOUSTO-OPTIC FILTER HAVING ELECTRICALLY VARIABLE RESOLUTION

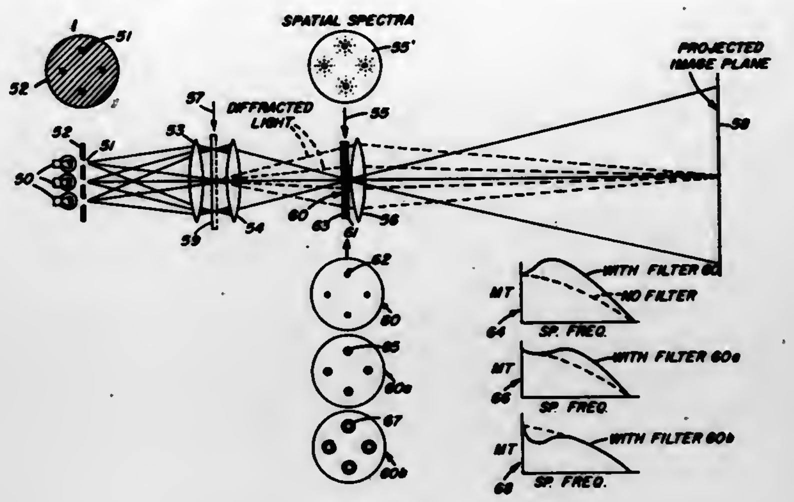
John R. Hearn, Los Altos Hill, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed June 16, 1971, Ser. No. 153,787
Int. Cl. G02f *1/24*
U.S. Cl. 350—149 4 Claims



The optical bandpass or band reject of an acousto-optic filter is tailored in width and amplitude by tailoring the width and amplitude of a band of radio frequency acoustic waves excited in the photoelastic birefringent filter medium and on which the light beam is collinearly diffracted to produce the output light beam of the acousto-optic filter.

3,729,252
OPTICAL SPATIAL FILTERING WITH MULTIPLE LIGHT SOURCES

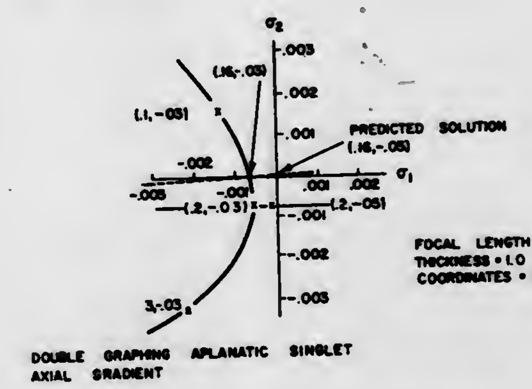
Clarence N. Nelson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 5, 1970, Ser. No. 43,870
Int. Cl. G02b *27/38*
U.S. Cl. 350—162 SF 16 Claims



An optical system in which a plurality of light sources is used in conjunction with a spatial filter to modify at least some of the details of a projected image so as to increase or decrease the image contrast with respect to such details.

3,729,253
OPTICAL SYSTEM COMPRISING A SINGLE ELEMENT HAVING A CONTINUOUSLY VARYING INDEX OF REFRACTION

Duncan Thomas Moore, Yardley, Pa., and Peter John Sands, Garran, A.C.T., Australia, assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed May 28, 1971, Ser. No. 148,070
Int. Cl. G02b *3/00, 9/02*
U.S. Cl. 350—175 GN 28 Claims

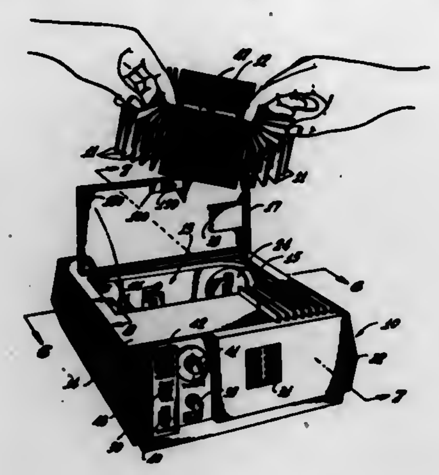


Singlet lenses, and optical systems comprising a singlet lens and a stop, in which at least third-order distortions such as spherical aberration, coma, astigmatism and distortion are reduced by the use of glasses having radial, or axial, refractive index gradients.

3,729,254
SLIDE PROJECTOR FOR UNSUPPORTED FLEXIBLE SLIDE HOLDERS

Gerald J. Frey, Santa Barbara, and Gary E. Peterson, Sun Valley, both of Calif., assignors to said Frey by said Peterson
Filed Nov. 19, 1971, Ser. No. 200,468
Int. Cl. G03b *23/08*
U.S. Cl. 353—109 43 Claims

A slide projector for slides mounted on a slide holder having a series of clips around an endless flexible belt which is inserted in the projector through an access opening in the top wall, fitted loosely around parallel rotary supporting elements permanently mounted in the recess to project toward the access opening, located at the proper level in the projector by positioning surfaces in the projector, and then tensioned by moving one of the supporting elements away from the other. The movable supporting element is positioned in one of the plurality of different zones, for slide holders of different capacities, and is spring-loaded in each zone to apply the proper tensioning force. Feeding of the slides is accomplished

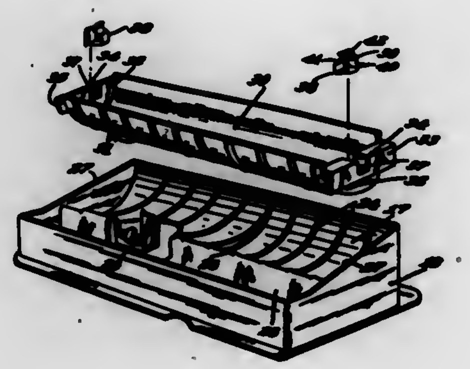


by reciprocating motor and a driver having a reversible ratchet coupling with one of the rotary elements which has teeth for engaging the overhanging end portions of alternate slips around the belt, and the driver also serves as the actuator for a positioning fork which locks the slide to be projected against one of the rotary elements. In a modified form, the driver also operates a hold-out apparatus engageable with the slides on opposite side of the one being projected and an oscillating shutter for blocking the light beam during slide changing.

3,729,255
PHOTODEVELOPMENT APPARATUS INCLUDING TRAY ASSEMBLY AND RETAINING MEANS THEREFOR

Kenneth R. Reick, Oak Brook; Emil Tiger, Highland Park, and David F. Wolff, Glen Ellyn, all of Ill., assignors to Sunbeam Business Equipment Co., Addison, Ill.

Filed Aug. 11, 1970, Ser. No. 62,926
Int. Cl. G03g *15/10*
U.S. Cl. 355—10 **15 Claims**

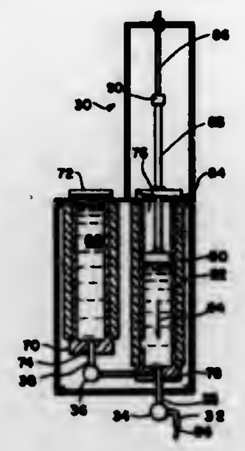


A liquid developer tray is arranged to be supported to receive copy sheets to be developed from feed rollers and has a removable insert cooperating to guide the sheets through developer in the tray and to take-off and squeeze rollers. The guide insert also limits the volume of toner in the tray, improves circulation thereof and reduces the toner surface exposed to evaporation. Cooperating with the insert guide structure are means for positioning and retaining the tray properly oriented with respect to the rollers but enabling ready sliding of the support for the tray assembly into and out of position in a photocopy machine.

3,729,256
ASSEMBLY FOR POLYMERIC DISPENSING

Wayne L. Westfall, Silver Spring; David L. Kramm, Laurel, and Moises G. Sanchez, Severna Park, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,043
Int. Cl. G03b *27/00*
U.S. Cl. 355—18 **3 Claims**

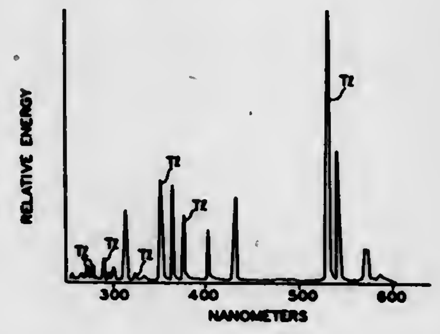


The invention disclosed is for an assembly useful for storing and dispensing a liquid photocurable composition. The assembly for storing and dispensing includes a storage chamber for a liquid photocurable composition which is in flow communication with a dispense chamber having a reciprocably slidable piston therein for effecting volume displacement and dispensing of the liquid composition. The piston selectively effects transfer of liquid composition from the storage chamber into the dispense chamber and, upon reverse actuation, it selectively effects dispensing onto a support surface. The photocurable composition may be thus dispensed onto the support surface, after which it is spread into a layer for exposure to actinic light in selective photocuring.

3,729,257
MEANS AND METHODS FOR EXPOSING PHOTOELECTROSTATIC MATERIALS

Robert L. Gunto, and Merton R. Staley, both of Palatine, Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Division of Ser. No. 653,090, July 13, 1967, abandoned. This application Feb. 16, 1970, Ser. No. 14,851
Int. Cl. G03b *27/54*
U.S. Cl. 355—67 **4 Claims**

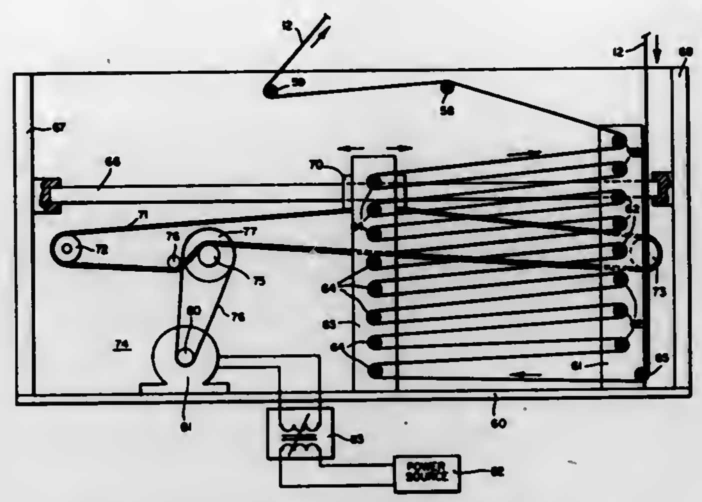


Exposure of the conventional dye sensitized zinc oxide resin binder copy material is accomplished with a radiation source that emits a high level of energy at 535 nanometers. The photoelectrostatic copying method involves illuminating the original to be reproduced with a mercury-vapor type lamp which has been modified to include thallium vapors through the introduction of thallium halide into the lamp envelope. A high intensity green light is emitted which performs as a monochromatic energy source and finds particular application when reproducing originals having more than one color indicia thereon so that all colors are reproduced in accordance with their relative brightness on the original.

3,729,258
EXTENSIBLE ROLL TREE FOR FESTOONED SHEET MATERIAL

Paul E. Kitch, West Springfield, Mass., assignor to Scott Paper Company, Delaware County, Pa.

Filed April 26, 1971, Ser. No. 137,314
Int. Cl. G03b *27/12*
U.S. Cl. 355—109 **6 Claims**

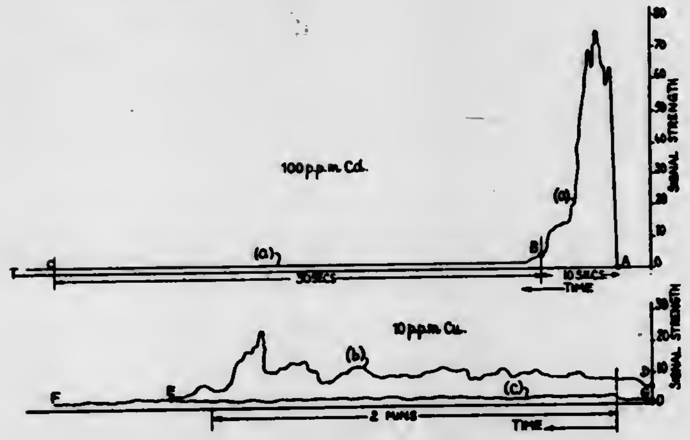


An extensible roll tree for use in apparatus in which continuous sheet material is continually cycled through an operational point from a storage area in which variable lengths of the sheet material are accumulated. The roll tree has two sets of rotatably mounted rolls about which the sheet material is entrained in a manner creating a plurality of stretches of the sheet material between the two sets of rolls. One of the sets of rolls is supported on a movable carriage which is reciprocally movable toward and away from the other set of rolls. A drive motor and a belt are connected to the movable carriage for moving it toward and away from the other set of rolls. This roll tree permits the plurality of stretches of the sheet material between the two sets of rolls to be increased or decreased as desired to accommodate greater or lesser lengths of sheet material in the accumulation area.

3,729,259
METHOD AND APPARATUS FOR MAKING SPECTROMETRIC MEASUREMENTS OF A CONSTITUENT OF A TEST SAMPLE

Brian Sydney Cooper; John Edward Cronk, and Derek John Hobbs, all of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Feb. 25, 1971, Ser. No. 118,925
Claims priority, application Great Britain, March 2, 1970, 9,970/70
Int. Cl. G01j *3/36, 3/30*
U.S. Cl. 356—82 **8 Claims**

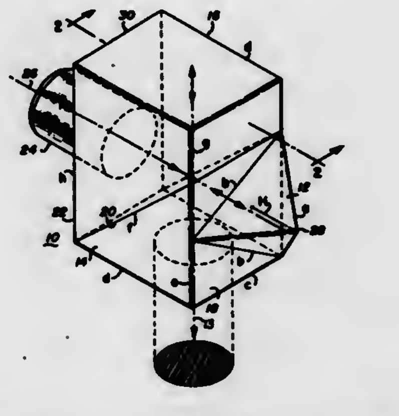


This specification describes a method of carrying out spectrometric measurements of a constituent of a sample, for example a constituent of an alloy in which the intensity of spectral light in one or more wavelength bands is recorded and at least one of the bands includes the spectral light due to the constituent to be investigated. The sample is subjected to volatilization and the record of the intensity is continued until and for at least a short time interval after at least a major part of the constituent has been volatilized from the sample.

3,729,260
INTERFEROMETRIC ROTATION SENSOR

Thomas M. Walsh, Cupertino, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed June 21, 1971, Ser. No. 154,933
Int. Cl. G01b *9/02*
U.S. Cl. 356—110 **4 Claims**

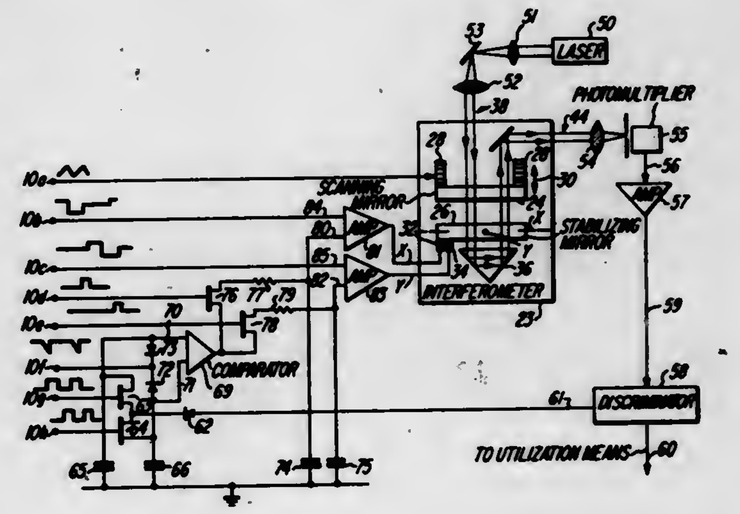


An interferometric rotation sensor and control system is provided which includes a compound prism interferometer and an associated direction control system. Light entering the interferometer is split into two paths with the light in the respective paths being reflected an unequal number of times and then being recombined at an exit aperture in phase differing relationship. Incoming light deviating from the optical axis of the device by an angle α causes a similar displacement of the two component images at the exit aperture with the result being that a fringe pattern is developed with the number of fringes being directly related to the angle α. Various control systems incorporating the interferometer are also disclosed.

3,729,261
STABILIZED MULTIPASS INTERFEROMETER

John Riddle Sandercock, Affoltern, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed June 21, 1971, Ser. No. 154,719
Int. Cl. G01b *9/02;* **H01s** *3/00*
U.S. Cl. 356—112 **18 Claims**

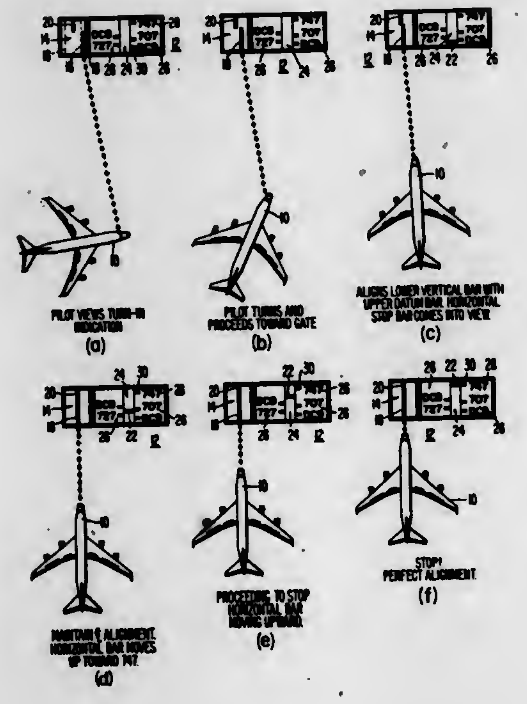


A Fabry-Perot interferometer is multipassed to provide improved contrast for Brillouin spectra measurements, the interferometer being provided with a stabilization system which compensates for both thermal and mechanical drift of the interferometer mirrors with respect to each other. While the instrument is scanning the frequency spectrum of the multipassed beam of incident wave energy, each pass being displaced with respect to the next adjacent pass, the stabilization system maintains the mirrors within the required degree of parallelism.

3,729,262
OPTICAL LENS DOCKING SYSTEM

Edwin E. Snead, Yeadon, Pa., and Jay B. Pitkow, West Chester, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed July 20, 1971, Ser. No. 164,350
Int. Cl. G01b *11/26*
U.S. Cl. 356—153 **20 Claims**


PILOT VIEWS TURN-IN INDICATION
(a)
PILOT TURNS AND PROCEEDS TOWARD GATE
(b)
ALIGNS LOWER VERTICAL BAR WITH UPPER DATUM BAR. HORIZONTAL STOP BAR COMES INTO VIEW
(c)
MAINTAIN ℄ ALIGNMENT. HORIZONTAL BAR MOVES UP TOWARD 747
(d)
PROCEEDING TO STOP HORIZONTAL BAR MOVING UPWARD
(e)
STOP! PERFECT ALIGNMENT
(f)
DC8
727
747
707
10
12
20
22
24
26
28
30

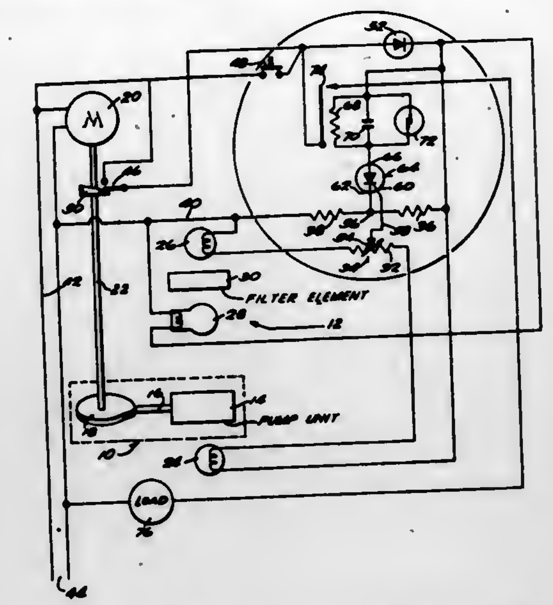
A system is described which provides a visual display for the accurate guidance and docking of aircraft after landing. The display is also suitable for the visual alignment and guidance of other vehicles to a desired parking position. The system employs a combination of lenses and light sources arranged to create for the observer, information for center line steering, closing rate and stopping. In terms of aircraft docking, such information permits the pilot to dock his aircraft without the assistance of ground personnel.

3,729,263
METHOD AND APPARATUS FOR DETECTING THE HARDNESS LEVEL OF WATER

Richard K. Engholdt, Wauwatosa, Wis., assignor to Erie Manufacturing Company, Milwaukee, Wis.,

Division of Ser. No. 812,086, April 1, 1967, Pat. No. 3,652,861. This application Jan. 27, 1972, Ser. No. 221,259
Int. Cl. G01j *3/48*
U.S. Cl. 356—184 **11 Claims**

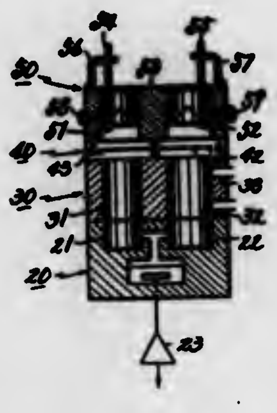
A control including a sampling means for periodically extracting a sample of water from a water system and a detection means for determining the hardness level of the sample. The sample is mixed with a reagent adapted to cause the sample to change color at a predetermined hardness level. The color of the sample is compared with that of a filter element by means of a pair of photo-conductive cells connected in series in one leg of a bridge circuit. A difference in color between the sample and filter element indicating a hardness level above a given level will cause the bridge circuit to become unbalanced. A silicon controlled rectifier is connected across the bridge and will fire when the bridge becomes unbalanced causing a relay to be energized and thus provide power to initiate the regeneration cycle of a water softener apparatus.



3,729,264
ANALYZER USING THE ROTOR OF A MOTOR AS A LIGHT CHOPPER

Tosio Simazaki; Haruo Kotani, and Kezo Isida, all of Minami-ku, Kyoto-shi, Kyoto-fu, Japan, assignors to Horiba Ltd., Kyoto-fu, Japan

Filed Aug. 9, 1971, Ser. No. 170,097
Int. Cl. G01n *21/22*; **G01d** *5/36*; **G02f** *1/30*
U.S. Cl. 356—206 **4 Claims**



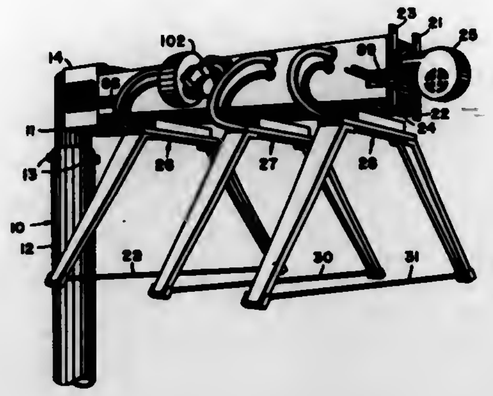
A double light path analyzer has a light intermitter section installed between a cell section and a light source section; the intermitter section provides the magnetic rotor of a slow speed motor with vane defining aperture means and associates it to act also as the light intermitting means; and separate light sources for the two paths are adjustable axially thereof by externally operable and lockable means.

3,729,265
SHADOW-LINE DEVICE WITH A STRUCTURALLY INDEPENDENT GUIDEWAY

Andrew G. Carter, 2930 Lake Drive, S.E., and Charles L. Morgan, 1137 Crosby, N.W., both of Grand Rapids, Mich.

Filed Oct. 8, 1970, Ser. No. 79,207
Int. Cl. B27b *31/06*
U.S. Cl. 356—256 **5 Claims**

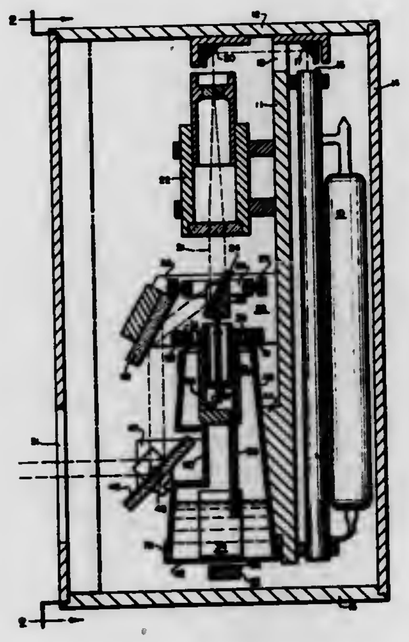
A device for projecting shadow lines on a work surface, at least certain of these lines being shiftable in response to control system, the movable projector assemblies being mounted on carries supported on a guideway formed by a relatively heavy rail with flange grooves, the rail being supported by the frame of the device so as to leave the rail in relatively stress-free condition.



3,729,266
APPARATUS FOR AUTOMATICALLY DIRECTING AND MAINTAINING A BEAM OF ELECTROMAGNETIC RADIATION RELATIVE TO EARTH HORIZONTAL

Mark T. Mason, South Lyndeboro, and Kenneth G. Wood, Walpole, both of N.H., assignors to Hamilton Kent Manufacturing Company, Kent, Ohio

Filed June 18, 1971, Ser. No. 154,434
Int. Cl. G01c *9/12, 9/16, 1/10*
U.S. Cl. 356—250 **13 Claims**

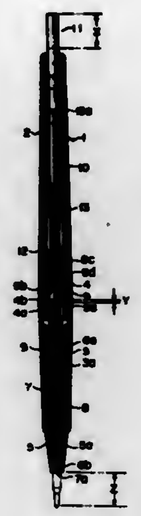


Apparatus for maintaining the direction of a beam of electromagnetic radiation relative to earth horizontal comprising an optical reflector, a pendulum connected to the reflector and a mounting frame supporting said reflector and said pendulum by independent gimbal suspension whereby said reflector moves responsive to pendulum motion through one-half the rotational angle of said pendulum, correcting an optical path in accordance with changes in the position of the pendulum relative to the mounting frame. Apparatus units utilizing coherent light beams are a specific embodiment.

3,729,267
MECHANICAL PENCIL

Jiro Hori, and Kazuhiro Nishiyama, both of Kure-shi, Japan, assignors to The Sailor Pen Co., Chuo-Ku, Tokyo, Japan

Filed July 20, 1971, Ser. No. 164,271
Claims priority, application Japan, May 11, 1971, 46/37591
Int. Cl. B43k *21/22*
U.S. Cl. 401—67 **15 Claims**

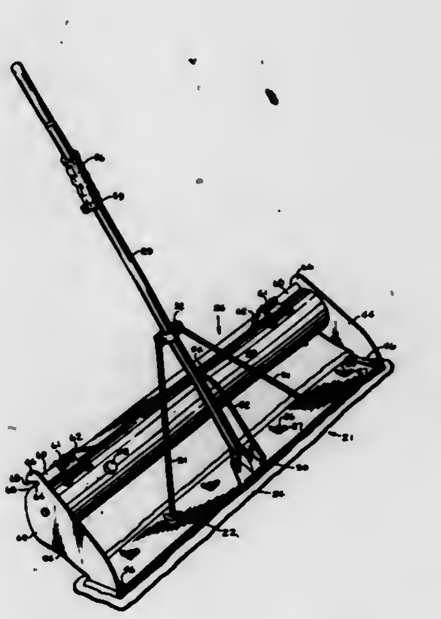


A mechanical pencil comprising a cartridge slidably inserted into the lower part of a barrel and containing a piece of pencil lead; a needle member for normally restricting the upward movement of said pencil lead; and a chuck for causing said cartridge to project from the lower end of the barrel upon depression of a push button mounted at the upper end of the barrel and for normally holding said needle member in position, whereby said cartridge and pencil lead may be jointly replaced when the latter is fully consumed.

3,729,268
FLOOR WAX DISPENSER

Jim E. Failing, 1302 16th Avenue, Greeley, Colo.

Filed Jan. 17, 1972, Ser. No. 218,181
Int. Cl. A47l *13/26*; **B67d** *5/64*
U.S. Cl. 401—137 **10 Claims**



A floor wax dispenser is disclosed attachable to a wax applicator having a base and an upstanding handle. The dispenser is a tubular container mounted on brackets supported on the applicator base. An array of wax discharge ports is aligned on the container. A handle grip is provided connected to the container to rotate the container on the supports and position the discharge ports downwardly so that wax is discharged onto a floor surface. A spring return mechanism normally positions the container with the discharge ports upwardly, and a cover flap encloses the ports to prevent discharge of wax. Cam surfaces on the brackets engage cam pins on the cover both to hold the cover in place when the discharge ports are upwardly and to lock the tubular container to prevent further rotary movement. The cam pins on the cover coact with the brackets to open the cover flap automatically as the container is rotated into the wax discharge position.

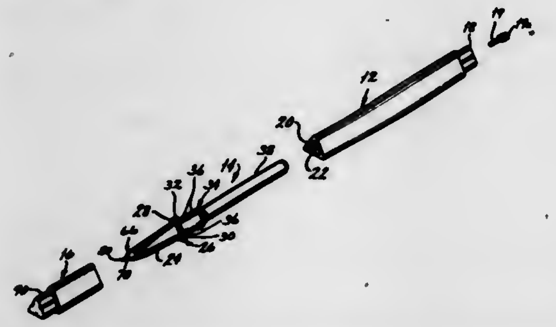
3,729,269
PEN CASING

Harold E. Koeln, St. Louis County, Mo., assignor to Penn Corporation, Princeton, N.J.

Filed Aug. 28, 1970, Ser. No. 67,940

Int. Cl. B43k *7/00*

U.S. Cl. 401—209 **11 Claims**



A pen casing includes an upper member, a middle member and a cap. The upper member has an elongated cavity of triangular cross-section extending therethrough and the middle member has a neck portion adapted to press-fit within the cavity of the upper member. The neck portion has a triangular cross-sectional shape which conforms to the shape of the cavity and includes at least one protrusion extending outwardly from its surface. The protrusion is adapted to press tightly against the inner surface of the cavity to provide a tight press-fit of the middle member within the cavity. The cap is adapted to slidably fit over the lower end of the middle member.

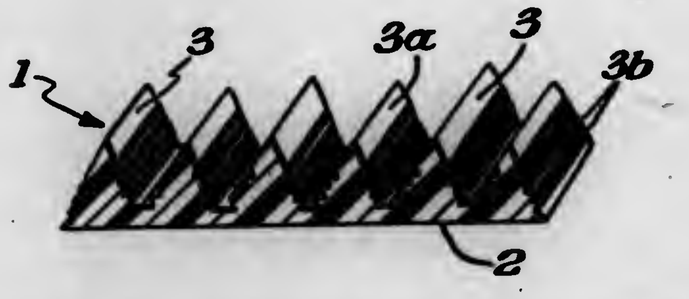
3,729,270
WRITING NIB

Kan Nakano, Tondabayashi, Japan, assignor to Tsukasa Felt Shoji Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1970, Ser. No. 101,905

Int. Cl. A46b *11/00;* **B43k** *1/02*

U.S. Cl. 401—292 **4 Claims**



Flexible nib for writing instrument includes core comprising flexible sheet having planar surface and opposite sawtooth surface formed by individual longitudinally extending triangular segments integrally connected together at their bases in side-by-side fashion. Longitudinally extending notches are located in sides of triangular segments, and longitudinally extending flat portions are located at apex of each triangular segment on each side of each segment. Flexible sheet may be formed into cylinder with planar surface thereof on outside and longitudinally extending flat portions of adjacent triangular segments engaging one another. Notches cooperate with notches of adjacent triangular segments to form longitudinal passageways when flexible sheet is formed into cylinder.

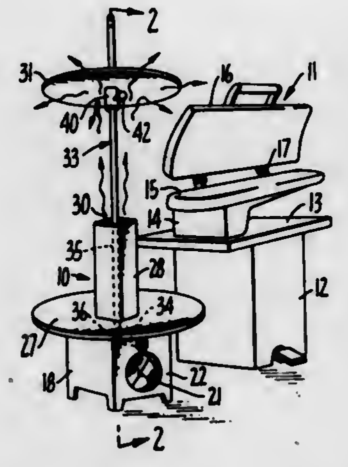
3,729,271
VENTILATING APPARATUS

Giacomo M. Bonaldi, 3655 Noriega St., San Francisco, Calif.

Continuation-in-part of Ser. No. 89,576, Nov. 16, 1970, abandoned. This application Aug. 9, 1971, Ser. No. 170,142

Int. Cl. F01d *15/00;* **D06f** *61/00*

U.S. Cl. 415—148 **1 Claim**



A ventilating device especially adapted for use in combination with commercial garment pressing machines comprising an air blower positioned near a source of cool air, a vertically-extending conduit attached to the exhaust of the air blower and having an open, upper end for directing the stream of exhaust air from the blower upwardly and a stationary deflector positioned at a predetermined height above the open end of the conduit for deflecting the stream of air substantially horizontally in all directions in the horizontal.

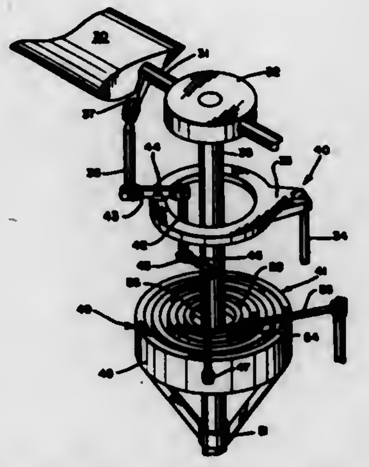
3,729,272
REVERSE VELOCITY ROTOR AND ROTORCRAFT

Harold E. Lemont, Calabasas, Calif., assignor to Fairchild Industries, Inc., Germantown, Md.

Division of Ser. No. 700,469, Jan. 25, 1968, Pat. No. 3,554,662. This application Oct. 30, 1970, Ser. No. 85,717

Int. Cl. B64c *27/74*

U.S. Cl. 416—114 **7 Claims**



A rotary wing aircraft and rotor control system for such aircraft, which uses the reverse velocity airflow produced by high airspeeds of the aircraft across the retreating blade to generate positive lift on the retreating blade. Blade pitch control means and method for such aircraft providing a two/revolution, cam or higher order cyclic pitch input to generate more uniform lift in the advancing and retreating blade sectors of rotor motion. A main rotor for such aircraft having a new airfoil shape adapted to more efficiently generate positive lift from the reverse velocity airflow, and also having slotted flaps or other auxiliary lift devices for increasing lift at low aircraft airspeeds. A twistably-mounted tail rotor for such aircraft adapted for counter-torque operation at low aircraft airspeeds and for forward propulsion at high airspeeds.

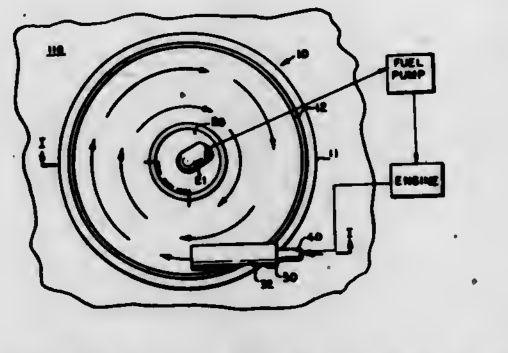
3,729,273
IN-TANK FUEL PUMP RESERVOIR

Yoram Shimrony, Elmira, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 23, 1970, Ser. No. 91,733

Int. Cl. F04b *23/04;* **F04f** *5/46;* **B01d** *19/02*

U.S. Cl. 417—79 **2 Claims**



A fuel reservoir arranged about the intake or suction conduit of a fuel pump supply line in a fuel tank utilized by internal combustion engines, consisting of a cylindrical container having a bottom and open top and to which a venturi nozzle is mounted. The venturi receives the return fuel and injects it into the reservoir. The auxiliary fuel is provided through an inlet opening at the throat of the venturi. The return flow of excess fuel delivered by said fuel pump creates a low pressure zone at the throat of the venturi thereby sucking the auxiliary fuel into the venturi causing both auxiliary fuel and return fuel to be injected into the reservoir in a vortical motion about said suction conduit.

3,729,274
INJECTION PUMP WITH REGULATION OF INJECTION TIMING

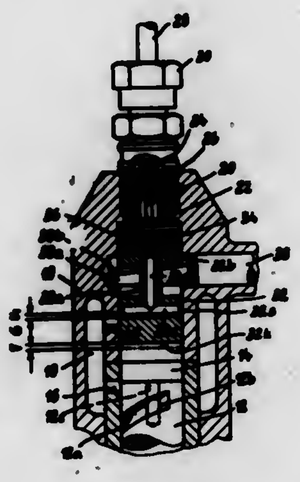
Ernst Hatz, Rufstrof, and Erwin Samitz, Bad Fussing, both of Germany, assignors to Motorenfabrik Hatz KG, Ruhstort, Germany

Filed June 24, 1971, Ser. No. 156,315

Claims priority, application Germany, July 2, 1970, P 20 32 704.2

Int. Cl. F04b *35/02*

U.S. Cl. 417—387 **7 Claims**



In a fuel injection pump for internal combustion engines, a reciprocable piston injects fuel on each compression stroke. The cylinder in which the piston reciprocates has an overflow port which is controlled by at least one control edge of the piston so as to effect injection during the portion of the compression stroke when the overflow port is closed. The beginning and/or end of injection are variably regulated relative to the compression stroke by a setting member which varies the stroke of the piston relative to the overflow port, and hence the elapsed time between the beginning of the compression stroke and the beginning and/or end of the injection.

3,729,275
VACUUM CLEANER

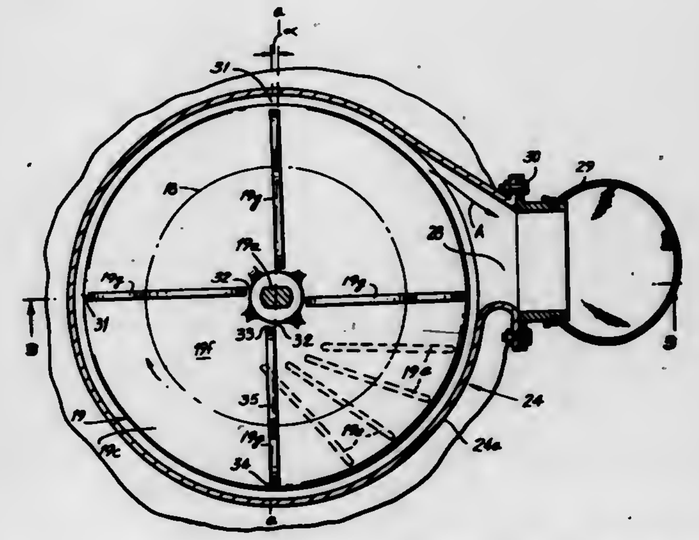
Dennis Leslie Furnell, Hemel Hempstead, England, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed March 12, 1971, Ser. No. 123,568

Claims priority, application Great Britain, March 26, 1970, 14,816/70

Int. Cl. F04b *35/04*

U.S. Cl. 417—424 **10 Claims**



A vacuum cleaner has a casing which is disposed about and envelops at least one end of an electric motor and a fan driven by the motor. The fan includes a disk having a first set of blades at one side, such blades projecting axially in a first direction from the motor toward an air inlet. The motor housing and casing define a space for flowing dust-laden air in a path of flow from the inlet at the one side of the disk to an outlet axially removed therefrom and at the other side of the disk. A gap is formed between the fan disk and the end of the motor housing adjacent to which the fan is located.

The blades of the first set at the air inlet effect flow of dust-laden air radially outward at the one side of the disk, and, after reaching its periphery, such air continues to flow axially toward the outlet. A second set of blades is provided at the other side of the disk, such blades projecting axially in a second opposite direction toward the motor. The blades of the second set function to maintain the gap between the disk and motor housing substantially free of dust accompanying air flowing through the space to the outlet from the periphery of the disk.

3,729,276
ACTUATOR ASSEMBLY

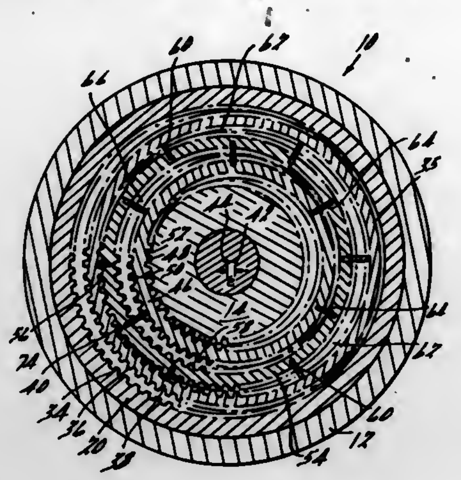
George I. Boyadjieff, Woodland Hills, Calif., and Kenneth W. Verge, Farmington, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed July 6, 1971, Ser. No. 159,900

Int. Cl. F01c *1/42*

U.S. Cl. 418—59 **5 Claims**

An actuator assembly consisting of a plurality of actuators arranged in series and connected to a common output shaft for multiplying the torque available from the shaft wherein a selectively operable clutch is provided for each of the assemblies that is capable of disconnecting the assembly from the output shaft when desired. Each actuator includes a pair of floating ring gears mounted for epicyclic movement relative to a stationary gear and an output gear, and a summing gear disposed between the ring gears so that the combined movements of the ring gears are summed to obtain the desired movement of the output gear, thereby enabling increased output torque from each actuator when desired. In each actuator, a clutch is provided to disconnect the stationary gear and provide for free wheeling of the actuator in response to a predetermined signal.

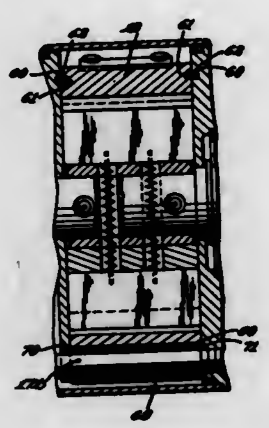


3,729,277
ADJUSTABLE ROTARY VANE TANGENCY COMPRESSOR

Clifford H. Allen, Chesterland, Ohio, assignor to TRW Inc., Cleveland, Ohio

Int. Cl. F01c *19/00*; F03c *3/00*; F04c *14/00*

U.S. Cl. 418—107 4 Claims



A compressor having a closed-ended cylindrical compression chamber with an eccentrically positioned vane carrying rotor received therein and supported by end plates closing the cylinder, wherein the said end plates are pivotably attached to the cylinder by means of pivot pins allowing adjustment of the radial positioning of the rotor within the cylinder to establish zero clearance at the point of tangency after assembly and prior to final tightening, while maintaining the actual contact between the rotor and cylinder at the desired line of tangency and a locking means whereby the initial positioning of the rotor relative to the cylinder is assured against change during the operating life of the compressor.

3,729,278
APPARATUS FOR PRODUCING MICROSPHERES

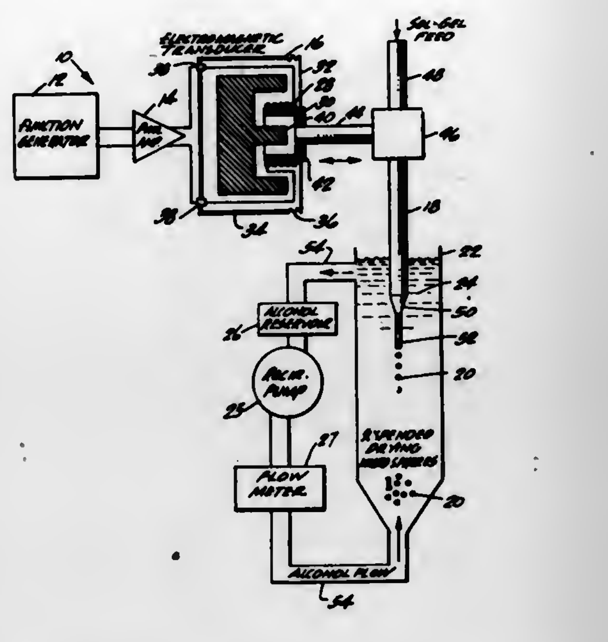
Wayne M. Lysher, Richland, Wash., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Dec. 17, 1970, Ser. No. 98,975

Int. Cl. B22d *23/08*

U.S. Cl. 425—210 2 Claims

Apparatus for producing microspheres including a vertically mounted sol-gel feed tube having a lower microsphere formation needle immersed in an alcohol drying column, variable pump means for feeding sol-gel at a predetermined rate into the upper end of the feed tube, and drive means for vibrating the feed tube in a generally horizontal direction at a predetermined amplitude and frequency to produce microspheres from the formation needle of a uniform and predetermined size. An electromagnetic transducer drive for vibrating the feed tube is used in one illustrative embodiment of the invention, and an electric motor offset drive is used in another illustrative embodiment thereof. A feed tube having multiple microsphere formation needles at its lower end can be used for producing microspheres in quantity.



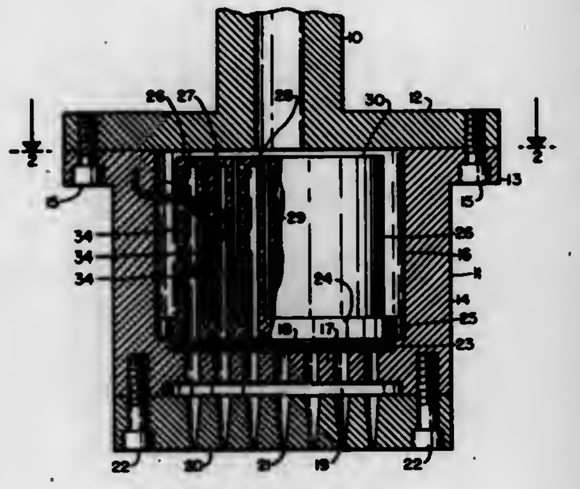
3,729,279
SPINNERETTE WITH HEAD FILTER

Lambert H. Mott, c/o Mott Metallurgical Corp., P. O. Drawer L, Farmington Industrial Park, Farmington, Conn.

Filed June 24, 1971, Ser. No. 156,424

Int. Cl. D01d *3/00*; D29f *3/00*

U.S. Cl. 425—198 4 Claims



The central cavity of a spinnerette head assembly for the extrusion of synthetic polymer fibers is substantially filled by a filter element having a filter disk and upstanding concentric rings extending upward from the disk within the central cavity, the filter area presented to inflowing plastic being at least twice the cross-sectional area of the cavity and the concentric rings occupying at least 45 per cent of the volume of the cavity, the filter element containing concentric circles of closely spaced upward outflow bores extending through the filter disk to the upper portions of the concentric rings.

3,729,280
INJECTION MOLDING UNIT

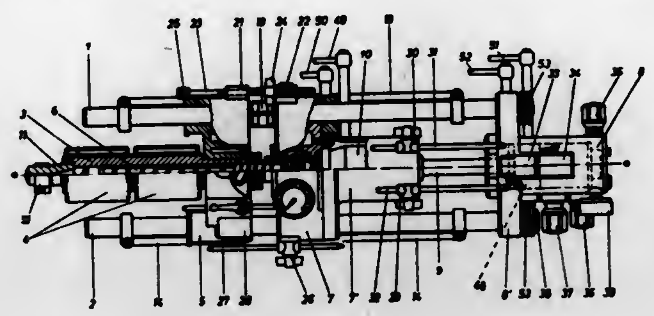
Karl Hehl, Siedlung 183, 729, Loosburg/Wurtt, Germany

Filed Dec. 2, 1970, Ser. No. 94,431

Claims priority, application Germany, Dec. 10, 1969, P 19 61 819.0; Feb. 17, 1970, P 20 07 038.6; April 25, 1970, P 20 20 337.6

Int. Cl. B29f *1/06*

U.S. Cl. 425—251 10 Claims



A method for producing cast pieces from a synthetic material comprises the steps of preplasticizing the synthetic material while the plasticizing cylinder is in communication with the mold cavity, relaxing the preplasticized material to remove the pressure thereon by a limited relative movement between a plasticizing cylinder and a screw conveyer, lifting the plasticizing cylinder away from the mold cavity and out of communication therewith, removing the previously cast piece from the mold cavity, and injecting the material in the plasticizing cylinder through the always open nozzle and into the mold cavity by a stroke of a screw conveyer toward the mold cavity. The apparatus for carrying out this method includes a plasticizing cylinder having a screw conveyer arranged therein. The cylinder and conveyer are mounted for movement relative to one another along the injection axis. Means including a guide member and an abutment are provided for permitting a limited relative movement between the cylinder and screw conveyer.

3,729,281
APPARATUS FOR COMPRESSION-MOLDING A POWDER WITHIN CONTAINERS

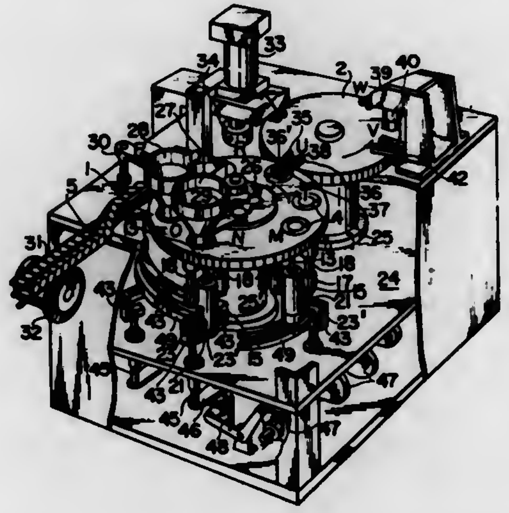
Kei Okubo, Neyagawa-shi; Toru Horiguchi, Kadoma-shi; Miyoji Nakai, Neyagawa-shi, and Haruhisa Shimada, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 10, 1969, Ser. No. 883,799

Claims priority, application Japan, Dec. 13, 1968, 43/91862

Int. Cl. B29c *1/14*, *3/04*, *6/00*

U.S. Cl. 425—361 5 Claims



A plurality of dies are mounted on an intermittently rotating table in circumferentially equally spaced relation and below each die is provided a powder molding mechanism comprising a vertically movable molding tube extending into said die at its top end and a vertically movable center pin extending through said molding tube with the top end thereof located within said die. Each die is charged with a powder at one station and shifted to another station upon the intermittent rotation of said table where a cylindrical container with a bottom is placed in the die with the open end thereof facing downward, and then further shifted to still another station where the powder charged in the die is moved into the container and compression-molded therein by said molding mechanism, whereby the steps of charging the powder into the die, moving the powder into the container and compression-molding the powder within said container are carried out successively during one complete rotation of said table, and hence operation efficiency can be enhanced and the apparatus is highly adapted to mass production.

3,729,282
APPARATUS FOR RADIALLY EXPANDING THE END PORTION OF A TUBE MODE OF THERMOPLASTIC SYNTHETIC MATERIAL

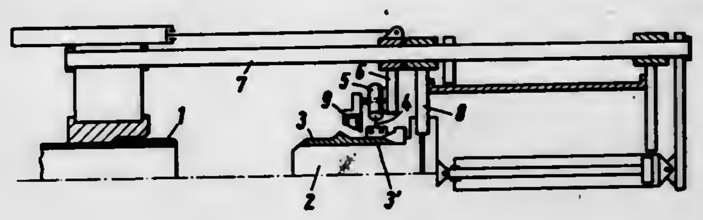
Hermann Herter, Krefeld, and Adolf Scherf, Duisburg, both of Germany, assignors to Mannesmann Aktiengesellschaft, Mannesmannufer, Germany

Filed June 1, 1971, Ser. No. 148,973

Claims priority, application Germany, Oct. 24, 1968, P 18 05 597.5

Int. Cl. B29c *17/00*, *23/00*

U.S. Cl. 425—393 4 Claims



Means for radially expanding the end portion of a tube made of thermoplastic synthetic material provides for a mandrel having a cylindrical sheath which is longitudinally divided into a plurality of sections. Each sections is at the outer end thereof connected through a radial rod with a radial drive. The sections are collapsible inwardly towards the longitudinal axis of the tube portion. In the collapsed position the sheath sections together with the rods and drive are moved towards the tube end. By radially moving the segments into a closed position, the tube end is shaped to the desired configuration.

3,729,283
CLOSING, LOCKING AND PRESTRESSING DEVICE FOR CASTING MOLDS

Ulrich Eggenberger, Bichwilerstrasse, Oberuzwil, and Heinz Nef, Dammweg, Uzwil, both of Switzerland

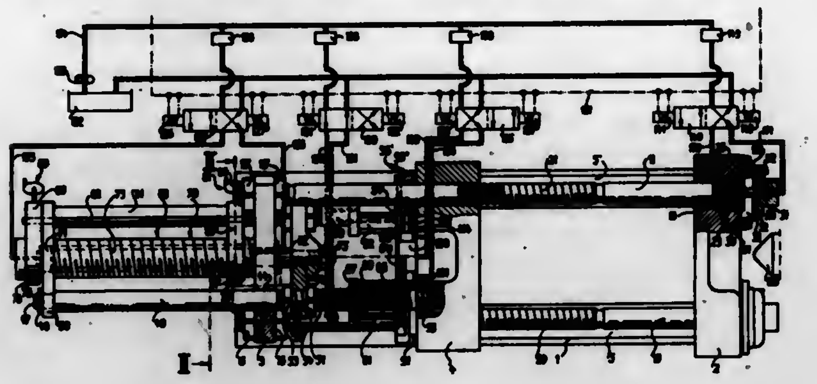
Filed March 22, 1971, Ser. No. 126,567

Claims priority, application Switzerland, March 20, 1970, 4230/70

Int. Cl. B29c *1/16*, *3/02*, *5/00*

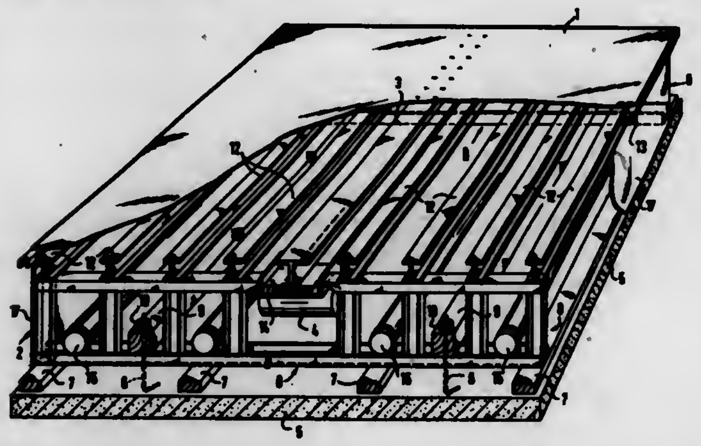
U.S. Cl. 425—450 9 Claims

The device is usable for casting molds, particularly for injection and pressure molding, of the type having a fixed mold part carrier, a supporting part having a shifting device attached thereto, at least two guides extending from the fixed carrier to the supporting part, a mold part carrier movable by the shifting device along the guides and anchorable thereon, and a hydraulic prestressing device acting through the guides upon the two mold part carriers. Two guide bars extend parallel to the shifting device through the supporting part in guided relation therein, and are connected to the movable mold part carrier. At least one stop plate is movable on the shifting device and is connected to the two guide bars, and two mechanical stops provided on opposite sides of the stop plate are cooperable therewith. Each guide bar is provided, between the supporting part and the movable mold part carrier, with a piston and also supports a movable cylinder enclosing the piston. Each cylinder is connected to an ejector plate, and cavities on opposite sides of the piston, inside the associated cylinder, are controllably chareable hydraulically. The guides, adjacent that surface of the fixed mold part carrier away from the casing mold, provided prestressing pistons each movable in a cylinder on the fixed mold part carrier.



3,729,284
JOLTING TABLES

Georg Hubmann, Harlachinger Strasse 17, Munich 90, Germany
Filed Jan. 28, 1971, Ser. No. 110,578
Claims priority, application Germany, Feb. 2, 1970, D 20 04 607.5
Int. Cl. B28b *1/08*
U.S. Cl. 425—456 **7 Claims**

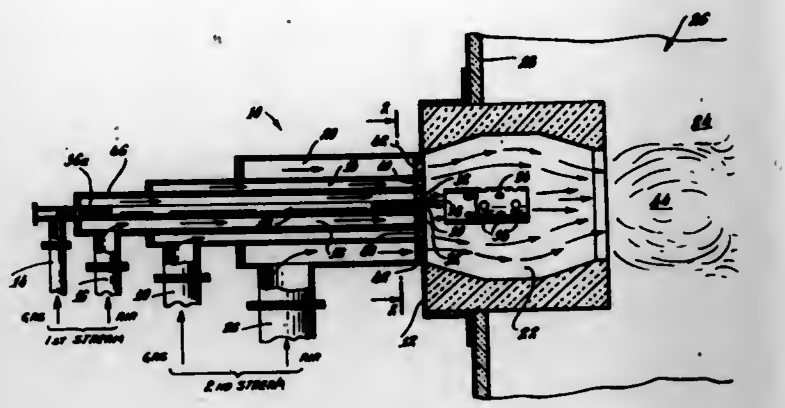


This invention relates to jolting tables for manufacturing structural members from concrete. Such tables normally comprise a vibratory plate on a support structure which is used as a mould base for the member and a jolter is mounted below this plate. In accordance with the invention, the support structure is rigid and the plate is freely mounted thereon without resilient cushioning in such a fashion that it may be laterally displaceable within predetermined limits: the jolter is movable along a jolting rail that extends substantially over the whole length of the plate, said rail being secured directly to the inside of the plate. The support structure is rigidly connected to a base member which may be a prepared slab of concrete or the ground. The support framework may be made from steel or wooden members.

3,729,285
BURNER AND METHOD OF OPERATING IT TO CONTROL THE PRODUCTION OF NITROGEN OXIDES

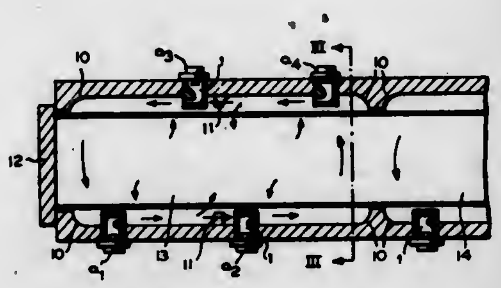
George H. Schwedersky, 276 Main Street, Westport, Conn.
Filed May 22, 1972, Ser. No. 255,532
Int. Cl. F23c *7/00*
U.S. Cl. 431—8 **5 Claims**

In the operation of a burner using gaseous fuel the production of nitrogen oxides is limited and controlled by providing successive stages of combustion and by holding down the temperature of combustion. This is accomplished by introducing the fuel in two streams of unequal volume and comprising respectively more and less than the stoichiometric percentage of air, igniting the streams in sequence, thus effecting first and second stages of combustion, and mixing and consuming the excess fuel and air of said streams respectively, thus effecting a third stage of combustion.



3,729,286
HEATING FURNACE PROVIDED WITH HIGH VELOCITY GAS BURNERS

Hirofumi Iida, Chiba, and Kazufumi Watanabe, Yokohama, both of Japan, assignors to Tokyo Gas Company Limited, Tokyo, Japan
Filed June 9, 1971, Ser. No. 151,446
Claims priority, application Japan, July 10, 1970, 45/68998; Nov. 7, 1970, 45/110565; Dec. 26, 1970, 45/136407
Int. Cl. F23c *5/08*
U.S. Cl. 431—174 **7 Claims**



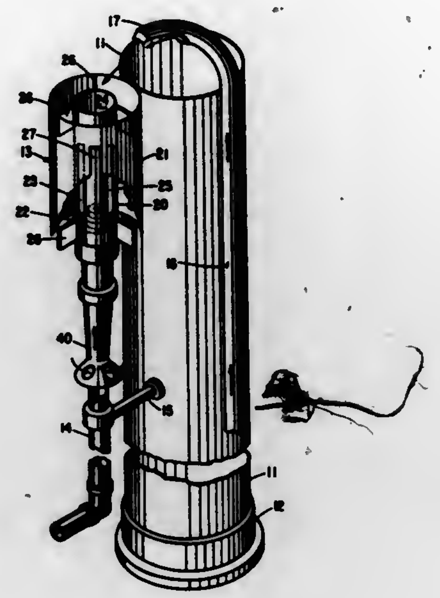
A high velocity gas burner has a combustion chamber. A tapered outlet nozzle is formed at one end of the combustion chamber and has a cross-sectional area smaller than that of the combustion chamber. The chamber also has an air inlet. An air flow equalizing plate having a number of air passage holes therein is disposed within the combustion chamber adjacent the air inlet, and a fuel inlet means extends into the chamber adjacent the air inlet and the air flow equalizing plate.

3,729,287
FLARE WINDSHIELD

Donald T. Strashok, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.
Filed Aug. 23, 1971, Ser. No. 173,950
Int. Cl. F23d
U.S. Cl. 431—202 **7 Claims**

A windshield for a gaseous fuel flare used for igniting combustible gases flowing from a flare stack makes use of two essentially concentric, slotted, thin-wall cylinders surrounding

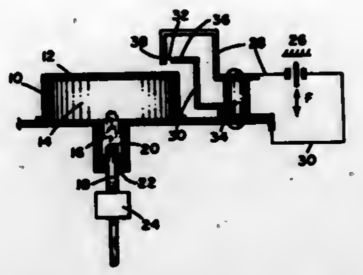
the flare, with the slots staggered so impedance to high velocity air flow is high. As a result the flare is furnished adequate secondary air, but essentially will not be blown out by wind.



3,729,288
PIEZOELECTRICALLY IGNITED GAS BURNER WITH DUAL PURPOSE ELECTRODE

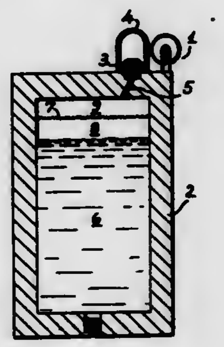
Don A. Berlincourt, Chagrin Falls, and David J. Horvath, Aurora, both of Ohio, assignors to Vernitron Corporation, Bedford, Ohio
Filed Jan. 28, 1971, Ser. No. 110,471
Int. Cl. F23q *3/00*
U.S. Cl. 431—264 **3 Claims**

A high capacity gas burner head. The gas emanating from the burner head is ignited by a piezoelectric ignition system which includes a strip-like hot electrode arranged above the burner to form a spark gap with either the burner head or a ground electrode. The hot electrode also provides a gas deflecting barrier causing the gas to flow into or towards the spark gap.



3,729,289
CIGARETTE LIGHTER

Daniel Bouvier, Paris, France, assignor to S. T. Dupont, Paris, France
Filed Jan. 5, 1971, Ser. No. 104,111
Claims priority, application France, Jan. 6, 1970, 7000300
Int. Cl. F23d *13/04*
U.S. Cl. 431—344 **4 Claims**



A gas cigarette lighter having a burner nozzle, a manually operable closure cap associated with the burner nozzle and a reservoir for holding lighter fuel. Within the reservoir there is disposed wall means which divides the reservoir into at least one first part in which the fuel is stored in its liquid phase and a second part which communicates with the burner nozzle and which contains fuel in its gaseous phase to which said wall means is pervious.

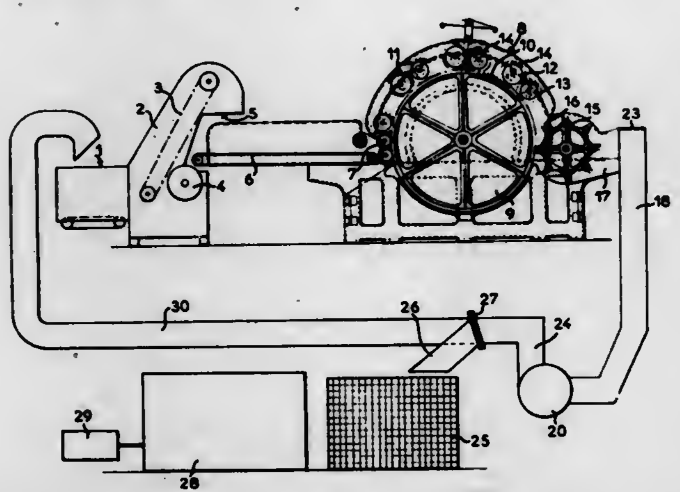
ERRATUM

For Class 432—228 see:
Patent No. 3,729,180

3,729,290

PROCESS AND APPARATUS FOR THE TREATMENT OF LOOSE MATERIALS SUCH AS TEXTILE FIBERS

Pierre Dillies, 10 rue du 11 Novembre 59, Croix, France
Continuation-in-part of Ser. No. 7,962, Dec. 31, 1968, abandoned. This application Oct. 4, 1971, Ser. No. 186,235
Int. Cl. B05b *7/14*
U.S. Cl. 8—149.2 **5 Claims**

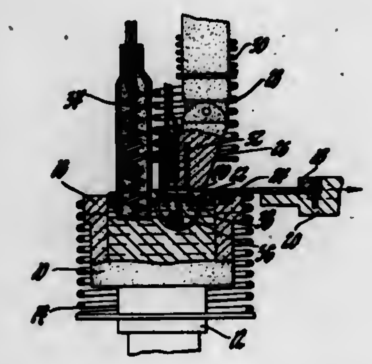


This method and the installation for carrying out same are divised for applying a fast dye to floss fibers of all kinds, notably in the manufacture of carpets and blankets, and consists essentially in opening the fibers, sucking them through the rotor of a fan via a conduit, atomizing the dyeing liquor through an orifice into said conduit in close vicinity of said fan, the atomized dyeing liquor representing from five to fifty per cent by weight of the fibers, and finally exposing said fibers to a vaporization in order definitely to fix the dyestuff thereto.

3,729,291

METHOD FOR GROWING CRYSTALS FROM MOLTEN MELTS SATURATED WITH CRYSTALLINE MATERIAL

Carl E. Biell, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Original application Oct. 29, 1969, Ser. No. 872,042. Divided and this application Apr. 5, 1971, Ser. No. 131,278
Int. Cl. B01j *17/04, 17/18*
U.S. Cl. 23—301 SP **5 Claims**

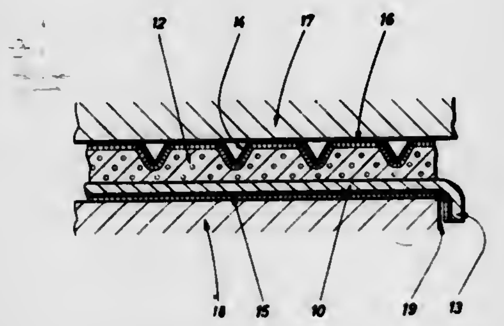


An apparatus and method are disclosed for growing crystals from a melt of a molten solvent metal that is saturated with a solute. Heat is withdrawn through a seed contacting the surface of the melt to precipitate the solute onto said seed at the seed-melt interface. The seed is pulled away from the melt at a rate commensurate with the precipitation rates. Simultaneously, more solute is dissolved into the melt from a solute source in the melt beneath the growth interface while maintaining a close source-growth interface spacing substantially constant.

3,729,292

ANTI-FRICTION BEARING PAD

Friedrich Heck, Deilinghofen, Germany, assignor to Duria-Werk Karl Kempf KG, Neuss, Germany and Atkiengesellschaft Adolph Saurer, Arbon, Switzerland
Filed July 2, 1970, Ser. No. 51,914
Int. Cl. C10m *7/00*
U.S. Cl. 29—182.3 **22 Claims**



An anti-friction bearing pad which is intended for use, for example, between the leaves of a leaf spring comprises a metal backing disc with a porous layer of sintered bronze or other metal applied to one surface. The porous sintered layer has, at least in its surface part a high proportion of a metal or metals which are more electro-positive than iron and the porous sintered layer is also impregnated with polytetrafluorethylene. The polytetrafluorethylene provides the necessary anti-friction properties and the content of metal which is more electropositive than iron and which is in metal-to-metal contact with the metal of the porous sintered layer acts as a sacrificial anode in preventing corrosion of the spring leaves or other iron-containing parts with which the surface of the pad is, in use, in contact.

3,729,293

LEAD-BEARING STEEL AND METHOD OF MANUFACTURE

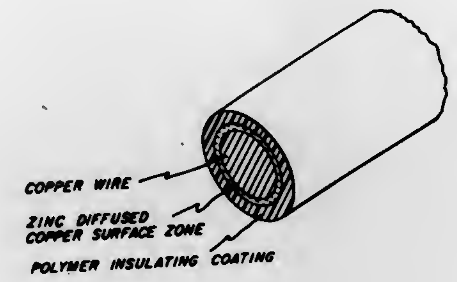
Gary Steven, Pittsburgh, Pa., assignor to Crucible Inc., Pittsburgh, Pa.
No Drawing. Original application Aug. 20, 1968, Ser. 753,900. Divided and this application Apr. 30, 1971, Ser. No. 131,812
Int. Cl. B22f *3/20*
U.S. Cl. 29—182.5 **4 Claims**

This invention relates to a tool-steel composition characterized by improved machinability by the addition of *.5 to 2%* lead in combination with sulfur in an amount up to about *.3%*. Articles characterized by improved machinability are produced in accordance with the present invention by providing a charge of powdered metal of a desired tool-steel composition, coating the particles with lead oxide, thereafter heating said charge under conditions of temperature and pressure to decompose said lead oxide by gassification and then removing the products of gassification from the powdered metal charge to leave the particles coated with lead. The lead-containing charge of particles is then compacted to form a dense compact.

3,729,294

ZINC DIFFUSED COPPER

Louis E. Hibbs, Jr., Schenectady, N.Y., assignor to General Electric Company
Application Feb. 6, 1969, Ser. No. 797,201, now Patent No. 3,600,221, dated Aug. 17, 1971, which is a continuation-in-part of application Ser. No. 720,201, Apr. 10, 1968. Divided and this application Sept. 18, 1970, Ser. No. 73,590
Int. Cl. B32b *15/08*
U.S. Cl. 29—195 **11 Claims**

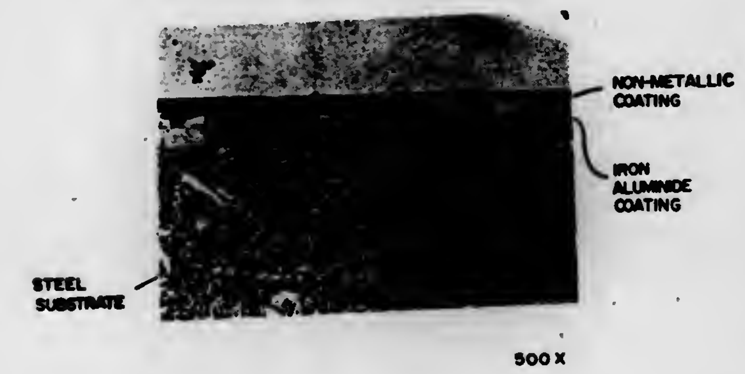


The surface of a copper body which may, for example, be a coating, foil or wire, is provided with a zinc coating. The zinc coating is diffused into the copper surface to form an alloy surface zone which protects and preserves the properties of materials such as polymers and carbon that ordinarily degrade when contacted with copper.

3,729,295

CORROSION RESISTANT COATING SYSTEM

Martin Weinstein, San Antonio, Kenneth K. Speirs, Universal City, and Robert B. Baer, San Antonio, Tex., assignors to Chromalloy American Corporation, New York, N.Y.
Filed May 17, 1971, Ser. No. 143,842
Int. Cl. B32b *15/18*
U.S. Cl. 29—195 **5 Claims**



Ferrous metal articles are provided having improved resistance to corrosion in highly saline and/or marine atmospheres, the articles being characterized by a protective duplex coating comprised of a sacrificial thermally aluminized ferrous metal surface in a combination with a special barrier type non-metallic overcoat. One method of providing the foregoing system is to apply an adherent layer from a liquid of a soluble silicate salt or compound onto a thermally aluminized layer, the silicate layer being preferably thereafter cured. In a preferred embodiment, a conversion coating is applied to the silicate layer and cured in situ to further enhance the resistance to corrosion.

3,729,296

POLYMERIC WAX CRYSTAL MODIFIERS FOR HIGH WAX CONTENT PETROLEUM OILS

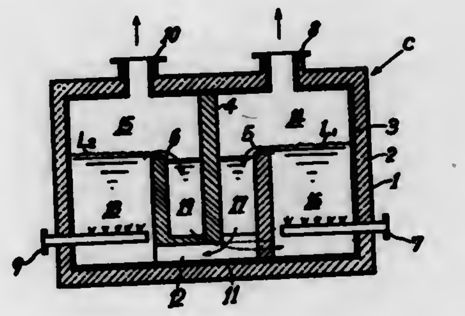
Harold N. Miller, Plainfield, N.J., assignor to Esso Research and Engineering Company
No Drawing. Filed Oct. 14, 1966, Ser. No. 586,654
Int. Cl. C10m *1/26*
U.S. Cl. 44—62 **14 Claims**

Oil-soluble polymers of unsaturated esters having alkyl side chains containing about 18 to 34 carbon atoms improve flow and pour points of high wax content petroleum oils such as crudes, residua, etc., and are useful as dewaxing aids.

3,729,297

APPARATUS FOR CONTINUOUSLY DECOMPOSING HYDROCARBON IN A HEATING MEDIUM BATH

Fujio Yoshida and Kagesumi Akamatsu, Okayama, and Nobito Hara, Yamaguchi, Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., and Mitsui Petrochemical Industries Limited, both of Tokyo, Japan
Filed Nov. 25, 1970, Ser. No. 92,662
Claims priority, application Japan, Nov. 29, 1969, 44/95,471
Int. Cl. C01b *2/28*
U.S. Cl. 48—92 **2 Claims**



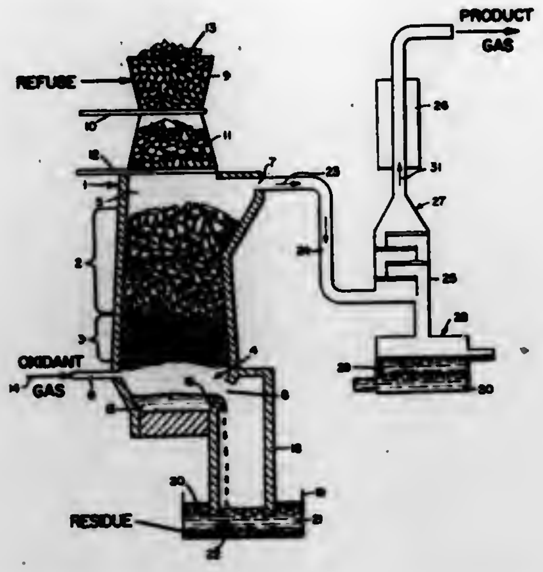
Apparatus for continuously decomposing hydrocarbon gases in a heated bath in which the apparatus is divided into a heating chamber and a decomposing chamber respectively. The liquid medium of the bath is heated in the heating chamber by blowing combustion gas into the bath. The cooled gas is separated at the top of the heating chamber and the heated medium is caused to overflow and is directed to the bottom of the decomposition chamber. The hydrocarbon is introduced into the liquid in the decomposition chamber and is discharged at the top of the chamber and the liquid medium is caused to overflow into a passageway opening into the bottom of the heating chamber so that the liquid heating medium is caused to circulate continuously from the heating chamber through the decomposition chamber and back to the heating chamber without permitting co-mingling of the combustion gases used for heating the medium and the hydrocarbon which is decomposed in the decomposition chamber.

3,729,298

SOLID REFUSE DISPOSAL PROCESS AND APPARATUS

John Erling Anderson, Katonah, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 9, 1971, Ser. No. 161,107
Int. Cl. C10j *3/00, 3/20*
U.S. Cl. 48—111 **25 Claims**

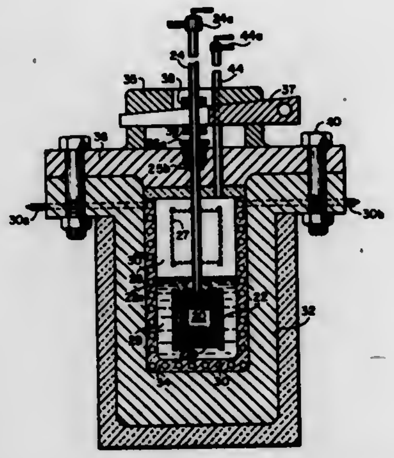
A process for disposing of refuse by thermally decomposing it in a shaft furnace and simultaneously producing a fuel or synthesis gas containing over 50% CO and H_2. A gas containing at least 40% oxygen is fed into the furnace at a rate of 0.15–0.28 ton of O_2 per ton of refuse to create a sufficiently high thermal driving force in the hearth to melt and fluidize the non-combustible inorganic matter and to permit molten metal and slag to be tapped from the base of the furnace without causing over oxidation of the refuse. The metal and slag will solidify to an inert compact residue. The relatively small volume of gas produced from the combustible organic portion of the refuse renders it easy to clean of pollutants prior to further treatment or utilization. The process may be used in combination with an oxygen plant in an integrated system which leaves a major portion of the gas produced available for use.



3,729,299

APPARATUS FOR MAKING FACE PLATES

Frederick H. Norton, Gloucester, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Original application Jan. 20, 1969, Ser. No. 835,113. Divided and this application Feb. 26, 1971, Ser. No. 119,342
Int. Cl. C03b *23/14, 25/00*
U.S. Cl. 65—12 **2 Claims**



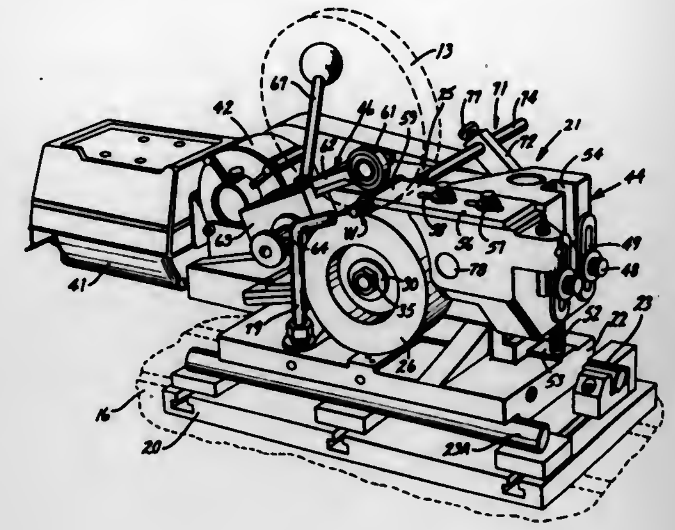
Method and apparatus for making fused image-conducting fiber optic face plates and the like which are impervious to gases and free from gas inclusions and such therein.

3,729,300

CENTERLESS GRINDER

John A. Mackay, Warren, and John A. Doran, III, Hartland, both of Mich., assignors to Unison Corporation, Madison Heights, Mich.
Filed Nov. 9, 1970, Ser. No. 87,779
Int. Cl. B24b *5/18*
U.S. Cl. 51—103 R **10 Claims**

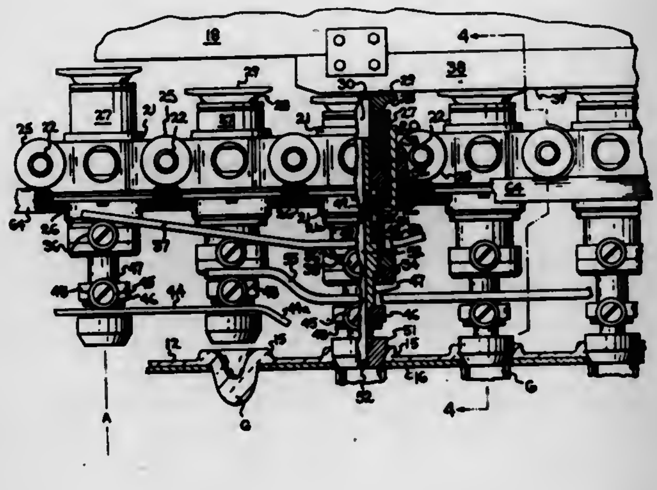
A fixture for converting a surface grinder or any machine having a grinding wheel and a support below said grinding wheel into a centerless grinder, said fixture including rotatably supported shaft means and a regulating roller mounted thereon for rotation therewith near the grinding wheel. The roller will usually rotate around an axis substantially parallel with the axis of rotation of the grinding wheel, but said roller axis may be transverse of the wheel axis. Guide means on said fixture position a workpiece between the grinding wheel and regulating roller for rotation and grinding thereby. Drive means are connected to the grinding wheel and the shaft means for effecting rotation thereof.



3,729,301

METHOD OF SHAPING GLASS

Richard A. Heaton, and Maurice J. Sachs, both of Maumee, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 856,289, Sept. 9, 1969, Pat. No. 3,647,410. This application July 12, 1971, Ser. No. 161,526
Ser. No. 161,526
Int. Cl. C03b *9/14*
U.S. Cl. 65—81 **2 Claims**

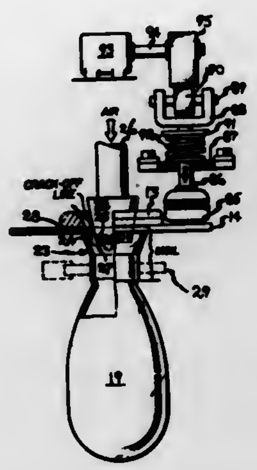


The invention relates to the method of operation of a blow head mechanism on a glass ribbon type forming machine. The blow head includes a blow pipe and the movements and manipulations thereof are positively controlled by cammed movements of (1) the blow shoe onto and away from the air manifold, and (2) the blow pipe into and out of engagement with the underlying glass ribbon carried on an orifice plate conveyor. The positive control of both axially movable members of the chain-like series of blow heads on the machine enables reliable repeatability of the blowing cycle in making successive articles from the glass ribbon, thereby improving quality of the glassware produced.

3,729,302

REMOVAL OF GLASS ARTICLE FROM RIBBON FORMING MACHINE BY VIBRATING FORCE

Richard A. Heaton, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 245, Jan. 2, 1970, Pat. No. 3,642,461. This application July 12, 1971, Ser. No. 161,519
Int. Cl. C03b *21/00*
U.S. Cl. 65—105 **4 Claims**

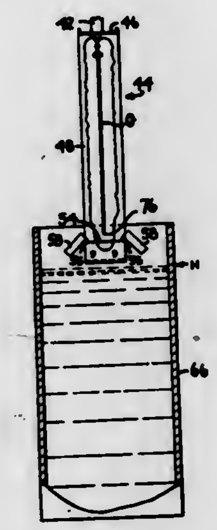


The invention pertains to ribbon machine manufacture of glass articles. The invention includes novel vibration crack-off technique on the ribbon machine. As the article is severed, it drops by gravity a short distance onto individual transfer tongs traveling with the ribbon and just previous to crack-off is inserted around the article neck region. Upon severance, the articles are individually delivered in succession by the tongs to a further processing machine unit, such as a burn-off machine. Simultaneously with crack-off, a pressurized nozzle directs a flow of air under pressure from within the neck region of the article in an upwardly direction and through the mouth region of the article. Any glass chips or particles therein are expelled by the pressurized air flow.

3,729,303

APPARATUS FOR LIQUID QUENCHING GLASS SHEETS

Joseph V. Hornyak, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 10, 1971, Ser. No. 197,430
Int. Cl. C03b *27/00*
U.S. Cl. 65—348 **9 Claims**



Improved apparatus for thermally tempering glass sheets by liquid quenching comprising means adjacent a marginal edge of a glass sheet that permits unencumbered marginal edge heating in a furnace and temporarily retards the rate of cooling of at least a portion of the marginal edge when the sheet reaches the plane of the surface of the quenching liquid. This apparatus causes the body of the glass sheet between marginal edges to cool initially at a rate equal to or preferably greater than the rate at which the edges are cooled. This minimizes the tensile stresses that are temporarily established in the edge permitted to cool at an unregulated rate during liquid quenching, which tensile stresses have been associated with glass breakage during liquid quenching.

3,729,304

PROCESS FOR THE PREPARATION OF OXIMES

Jan Elmendorp, Brunssum, and Abraham H. De Rooij, Geleen, both of Netherlands, assignors to Stamicarbon, N.V., Heerlen, Netherlands
Filed June 15, 1971, Ser. No. 153,187
Claims priority, application Netherlands, June 17, 1970, 7008838
Int. Cl. C05b *11/04*
U.S. Cl. 71—34 **4 Claims**

A process for synthesizing an oxime by reacting an organic carbonyl compound with a hydroxylammonium sulfate and ammonium hydrogen sulfate in the presence of ammonium dihydrogen phosphate whereby an aqueous solution of phosphoric acid and ammonium sulfate is obtained after separating the oxime product therefrom. The phosphoric acid, ammonium sulfate solution can be used in processing rock phosphate with the aid of nitric acid to product a fertilizer composition having a N to P_2O_5 ratio of approximately 1:1.

3,729,305

HERBICIDAL METHOD EMPLOYING TRIFLUOROMETHYLPHENYLACETIC ACID AND AMIDES THEREOF

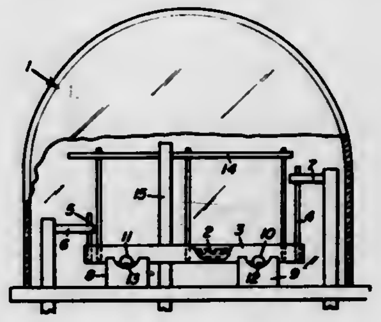
Wilbur J. Doran, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Continuation-in-part of application Ser. No. 756,366, Aug. 30, 1968, which is a continuation-in-part of application Ser. No. 531,041, Mar. 2, 1966, both now abandoned. This application Nov. 14, 1969, Ser. No. 877,005
Int. Cl. A01n *9/20*
U.S. Cl. 71—115 **6 Claims**

A method and compositions for eliminating germinating weed grasses and broadleaf weeds in which a trifluoromethylphenylacetic acid or an amide thereof is the herbicidally active ingredient, particularly useful in corn fields.

3,729,306

PURIFICATION OF RARE-EARTH METALS

Thomas A. Henrie and James Eugene Murphy, Reno, Nev., assignors to the United States of America as represented by the Secretary of the Interior
Filed Apr. 28, 1969, Ser. No. 819,830
Int. Cl. B01j *17/10;* **C22d** *7/04, 9/00*
U.S. Cl. 75—10 **4 Claims**

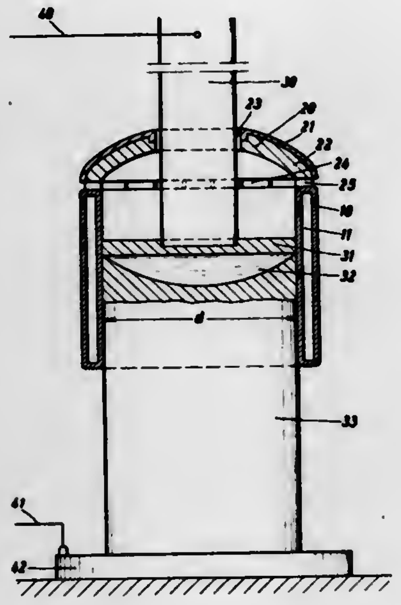


Rare-earth metals are purified and alloys are separated into component metals by electrical field freezing under conditions providing a small thermal gradient and a temperature of the liquid portion of the specimen near the melting point of the metal.

3,729,307

METHOD AND APPARATUS FOR ELECTROSLAG REMELTING OF METALS, PARTICULARLY STEEL

Rudolf Plessing, Kapfenberg, Austria, assignor to Gerb. Bohler & Co., Kapfenberg, Austria
Filed July 20, 1970, Ser. No. 56,434
Claims priority, application Austria, July 21, 1969, A 6,965/69
Int. Cl. C22d *7/08;* C21c *5/52;* H05b *7/18*
U.S. Cl. 75—10 **8 Claims**



A process of and an apparatus for electroslag remelting of metals, particularly of steel, in a liquid-cooled mold in which a consumable electrode is melted. The liquid-cooled mold is provided with a lid or cover, which at least in the inner portion thereof overlying the liquid material in the mold is provided with a lining of refractory material, the cover being spaced somewhat above the mold, and having a central opening through which the electrode passes into the mold. Air drawn in through the space between the cover and the mold passes out through the central opening, whereby to cool the refractory lining of the cover.

3,729,308

IRON NICKEL CHROMIUM ALLOYS

Herbert L. Eiselstein and James C. Hosier, Huntington, W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.
No Drawing. Filed July 21, 1970, Ser. No. 56,977
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 E **10 Claims**

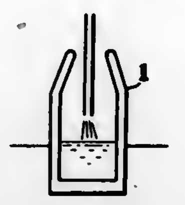
Iron-base alloys for sheathing electric heater elements include specially proportioned amounts of nickel (about 15% to about 23%), chromium (about 17% to about 23%), silicon (about 0.3% to about 1.5%) and cerium (an effective amount up to about .05%) to assure high oxidation resistance and good corrosion resistance.

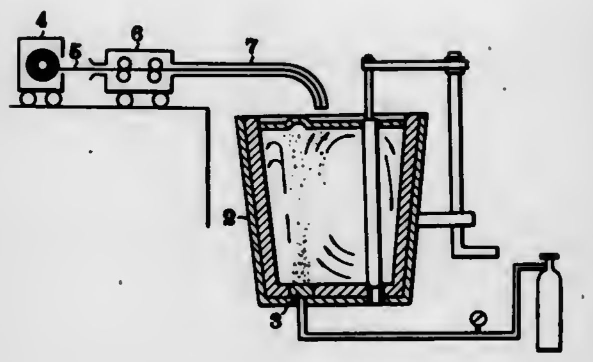
3,729,309

METHOD FOR ADDING ALLOYING ELEMENTS TO MOLTEN METALS

Takaho Kawawa, Kawasaki, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 2, 1970, Ser. No. 15,339
Claims priority, application Japan, Feb. 7, 1969, 44/17,041
Int. Cl. C22c *1/06, 33/00*
U.S. Cl. 75—129 **7 Claims**

A method for adding alloying elements such as aluminium, titanium to molten metals, said elements being capable of reacting with the atmosphere surrounding the metals, comprising inserting a wire rod made of the element into a molten metal bath at a controlled speed, said rod having a controlled size, so as to produce a refined and purified metal alloy.





3,729,310

SURFACE DEFORMABLE IMAGING PROCESS AND MEMBER

Roger N. Ciccarelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
No Drawing. Continuation-in-part of application Ser. No. 670,824, Sept. 15, 1967, which is a continuation-in-part of applications Ser. No. 388,322 and Ser. No. 388,323, both Aug. 7, 1964, all now abandoned. This application Nov. 30, 1970, Ser. No. 93,837
Int. Cl. B41m *5/20;* G03g *13/22*
U.S. Cl. 96—1.1 **10 Claims**

An improved surface deformable imaging process is disclosed. A distinct humidity insensitive layer comprising a polar material and having a thickness of up to about 0.3 micron (μ) is deposited on the surface of a thermoplastic composition. An electrostatic charge pattern is produced on the coated surface of the thermoplastic. When exposed to a softening environment the surface of the thermoplastic deforms in an imagewise manner corresponding to the charge pattern.

3,729,311

ELECTROSTATIC TRANSFER METHOD

Michael J. Langdon, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 830,426, June 4, 1969, abandoned. This application July 15, 1971, Ser. No. 162,897
Int. Cl. G03g *13/22, 13/16, 15/22*
U.S. Cl. 96—1.2 **8 Claims**

An improved method of successively transferring a plurality of powder images, such as toner images of different colors, from an electrostatic plate onto a single copy sheet by employing an electrically biased transfer drum to bring the copy sheet in contact with the electrostatic plate during successive transfer steps. During transfer of the first toner image, the transfer drum is biased at a first potential and during the transfer of all succeeding toner images, the transfer drum is biased at a potential greater than the first potential, the potential applied to the transfer drum during any one succeeding transfer step being of greater value than the potential applied thereto during the immediately preceding transfer step.

3,729,312

ELECTROPHOTOGRAPHIC COMPOSITION EMPLOYING POLY(VINYL-HALOBENZAL) BINDER FOR ORGANIC PHOTOCONDUCTORS

Raymond H. Young, Jr., Macon, Ga., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed June 22, 1971, Ser. No. 155,654
Int. Cl. G03g *5/04*
U.S. Cl. 96—1.5 **9 Claims**

Disclosed herein are poly(vinyl-halobenzal) binders for photoconductor compositions used in reprographic applications.

3,729,313

NOVEL PHOTOSENSITIVE SYSTEMS COMPRISING DIARYLIODONIUM COMPOUNDS AND THEIR USE

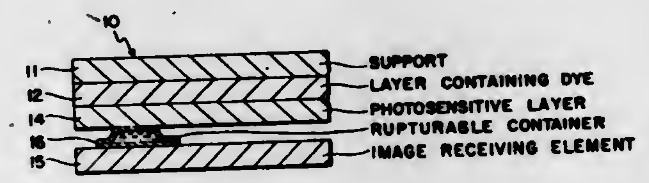
George H. Smith, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Dec. 6, 1971, Ser. No. 205,392
Int. Cl. G03c *1/72*
U.S. Cl. 96—27 R **5 Claims**

A photosensitive admixture comprising a diaryliodonium compound and a compound capable of sensitizing 2-methyl-4,6-bis(trichloromethyl)-s-triazine.

3,729,314

NOVEL PHOTOGRAPHIC PROCESSES AND PRODUCTS

Howard C. Haas, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 740,965, June 28, 1968. This application Dec. 18, 1969, Ser. No. 886,305
Int. Cl. G03c *11/12*
U.S. Cl. 96—29 D **10 Claims**

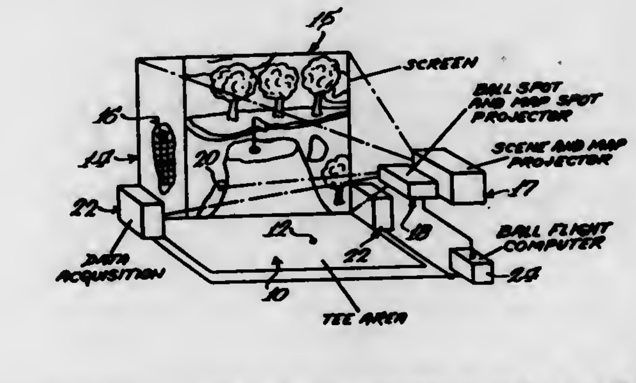


A novel image forming system comprising forming an imagewise distribution of a mordant in the developed areas of an exposed photosensitive layer, mordanting dye in said areas, and forming a reverse image in terms of dye transferred by diffusion from undeveloped areas of the photosensitive layer to an image-receiving layer.

3,729,315

METHOD OF MAKING SCENES FOR A GOLF GAME

Robert M. Conklin, Muskegon; Robert I. Anderson, Spring Lake; Michael G. Gautraud, Muskegon, and William H. Shimanski, Norton Shores, all of Mich., assignors to Brunswick Corporation, Skokie, Ill.
Filed Oct. 1, 1970, Ser. No. 77,300
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 R **14 Claims**



A method of providing scenes for use in indoor golf games having a tee, a screen in front of the tee, a means for projecting on the screen any one of a plurality of scenes taken from different locations on a golf hole, data acquisition means and a computer associated therewith for computing the trajectory of a ball hit from the tee and a ball spot projecting means responsive to the computer for projecting a spot of light on the screen and on the scenes displayed thereon to illustrate the trajectory of the ball, which method permits the use of scenes from actual golf holes taken by photographic methods and eliminates inaccuracies in the ball spot projection that would normally be present due to the uneven nature of the terrain normally found on actual golf holes.

3,729,316

OPTIMIZED GLASS PHOTOGRAPHIC MASK

Paul P. Castrucci, Poughkeepsie, Nadim F. Haddad, Hopewell Junction, and Raymond P. Pecoraro, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed Feb. 17, 1970, Ser. No. 12,150
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.2 **2 Claims**

A process for making a photographic optical glass mask that is used in silicon integrated circuit wafer processing. An optical glass mask is made by means of a step and repeat camera. Displacement error which is caused by the difference in coefficients of expansion between the microset scale of the step and repeat camera and the photographic optical mask, is minimized by using the same material for both elements. Further displacement error caused by thermal mismatch of the optical glass mask and the silicon wafer is minimized by using a borosilicate glass mask having a linear coefficient of expansion of 3.5×10^{-6}/degrees C., which substantially matches the linear coefficient of expansion of the silicon wafer material.

3,729,317

PHOTOGRAPHIC FILM WITH MAGNETIC RECORDING LAYER

Ronald M. Stimson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Original application May 1, 1970, Ser. No. 33,969. Divided and this application Apr. 20, 1972, Ser. No. 246,013
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R **12 Claims**

A magnetic recording member such as tape or striped motion picture film wherein a layer of ferromagnetic particles is bound on a synthetic resin web by a binder consisting essentially of cellulose nitrate in intimate mixture with a polymeric composition consisting essentially of, by weight, 50–80% vinylidene chloride, 2–30% acrylonitrile, and 0–60% of methyl methacrylate or acrylate or hydroxy propyl methacrylate. This binder is especially good for poly(ethylene terephthalate) webs. Best adherence to a web is secured when the ferromagnetic particles and the above binder are deposited from an organic solvent wherein at least 8% of the solvent is N,N-dimethyl formamide or acetamide.

3,729,318

PROCESS FOR CROSS-LINKING SILVER HALIDE GELATINO EMULSION LAYER CONTAINING NON-DIFFUSIBLE COMPOUND HAVING EPOXIDE AND ISOCYANATE GROUPS

Wolfgang Himmelmann, Opladen, Peter Bergthaller, Cologne, and Bernd Quiring and Kuno Wagner, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed July 21, 1971, Ser. No. 164,811
Claims priority, application Germany, July 25, 1970, P 20 36 998.6
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 **4 Claims**

Photographic gelatine layers have to be hardened in order to improve the mechanical properties and to raise the melting point of the layer. Excellent hardening is obtained by means of low molecular compounds having a hardeny epoxide and a hardening isocyanate group.

3,729,319

OPTICAL SUPERSENSITISATION OF SILVER HALIDE EMULSIONS WITH THREE CYANINE DYES

Robin Jefferson and Christopher John Palles, Ilford, Essex, England, assignors to Ilford Limited, Ilford, Essex, England

Filed June 2, 1971, Ser. No. 149,171

Int. Cl. G03c *1/14*

U.S. Cl. 96—124 **4 Claims**

This invention relates to photographic light-sensitive material which comprises a silver halide emulsion containing a super-sensitizing combination. The latter consists of three different dyestuffs. It is useful for increasing the sensitivity of a green sensitised emulsion.

3,729,320

METHOD OF NOURISHING MAMMALS

Fritz Kramer, 60–11 Broadway, Woodside, N.Y. 11377

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,258

Int. Cl. A23k *1/00*

U.S. Cl. 99—9 **6 Claims**

Chicken manure liquefied and absorbed in a small amount of urea-formaldehyde polymer foam and thereafter incubated for fermentation and propagation of the microorganisms contained in the manure is a practically dry product, free from unpleasant odor and rich in protein of microbial origin. It is a feed supplement readily accepted and tolerated as nourishment by domestic animals, particularly ruminants.

3,729,321

PREPARATION OF BEER

Nickolas Lothar Vacano, Seattle, Wash., assignor to The Rainier Companies, Inc., Seattle, Wash.

Filed Oct. 20, 1970, Ser. No. 82,404

Int. Cl. C12c *11/04;* C12g *3/00*

U.S. Cl. 99—31 **7 Claims**

Beer is prepared by carrying out the steps of fermenting, aging and finishing in a large size thin-shelled outdoor tank having a conical bottom inner surface downwardly sloped at 5 to 25° to an outlet. Carbon dioxide gas is supplied from an external supply to a central area above the tank bottom and bubbled upwardly at a rate which effects upward central flow of colder liquid whereby there is achieved cooling by induced convection, and downward peripheral flow of liquid along and about the tank walls to transport yeast to a settling zone on the bottom with minimal disturbance of yeast settling on the bottom.

3,729,322

FREEZE AND THAW IMITATION SOUR CREAM

Philip B. Calvert, Denver, Colo., assignor to Roberts Dairy Company, Omaha, Nebr.

Filed Feb. 27, 1970, Ser. No. 15,289

Int. Cl. A23c *13/00*

U.S. Cl. 99—54 **7 Claims**

A food product having the flavor and consistency of sour cream, which is capable of being frozen for an extended period of time and subsequently thawed while still retaining its smooth texture and which contains a unique combination of hydrophilic colloids including cross-linked amioca starch, low methoxyl pectin and hydroxypropyl methyl cellulose. The invention also includes the process by which the product is manufactured.

3,729,323

PROCESS FOR IMPROVING THE TEXTURE, RIGIDITY, AND COLOR OF FRIED POTATO PRODUCTS

Masahide Nonaka, Moraga, Earl Hautala, Richmond, and Merle L. Weaver, Martinez, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed July 19, 1971, Ser. No. 164,037

Int. Cl. A23b *7/04;* A23l *1/12*

U.S. Cl. 99—100 P **5 Claims**

The texture, rigidity, and color of fried potato strips is vastly improved when their pre-fried precursors are prepared by (a) freezing the surface of the raw strip, (b) leaching the surface sugars with warm water, (c) parfrying the so-treated strip, and (d) refreezing said strip either superficially or totally.

3,729,324

SEPARATION OF EDIBLE TISSUE FROM EDIBLE FLESH OF MARINE CREATURES

Gottlieb Bernhard Fehmerling, Bridgeton, N.J., assignor to Ocean Research Corporation, Hopewell, N.J.

Continuation-in-part of Ser. No. 843,850, July 22, 1969, abandoned. This application Oct. 16, 1970, Ser. No. 80,459

Int. Cl. A22c *29/00*

U.S. Cl. 99—111 **24 Claims**

A method for separation of undesirable edible tissue such as the reproductive, digestive, or other tissue, including skin, from a marine creature such as shellfish, abalones, conches, mussels, scallops, oysters, and clams, or fish such as catfish, tuna, trout, haddock, cod, and flat fish, by immersing the marine creature after any hard shell it may have had is removed in a 0.003–3 percent aqueous solution of enzymes containing 1 to 75 percent proteolytic, 1 to 75 percent glycoside hydrolases, and 1 to 75 percent lipolytic enzymes. Optionally, 1–50 percent pentosanase as well as pectolytic and cellulolytic enzymes may be added. The marine creatures may be divided, washed and preheated prior to immersion in the bath.

3,729,325

PROCESS FOR FORMING A STABLE OIL AND WATER-SOLUBLE PROTEIN-CONTAINING EMULSION AND PRODUCT THEREOF

Norman B. Howard, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 51,007, June 29, 1970. This application July 7, 1971, Ser. No. 160,546

Int. Cl. A23d *3/00*

U.S. Cl. 99—123 **26 Claims**

A stable emulsion is formed from liquid fat, particular acidic lipids, water, water-soluble heat-denaturable protein, and, when said acidic lipid is a lipid other than a fatty acid chloride, a polyvalent metal ion salt. The stable emulsion is useful as a food per se or a food additive in preparing food products such as snack foods and synthetic meats. A process for preparing such emulsions is provided.

3,729,326

CHEESE FLAVOR

Robert L. Kasik, Chicago, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,751

Int. Cl. A23c *19/02;* A23l *1/26*

U.S. Cl. 99—140 R **41 Claims**

A cheese flavor is produced by growing an Acetobacter organism and a lactic acid producing Streptococcus organism in a fluid medium containing a protein and carbohydrate. Growth is carried out for at least five hours at 60° to 130° F.

3,729,327

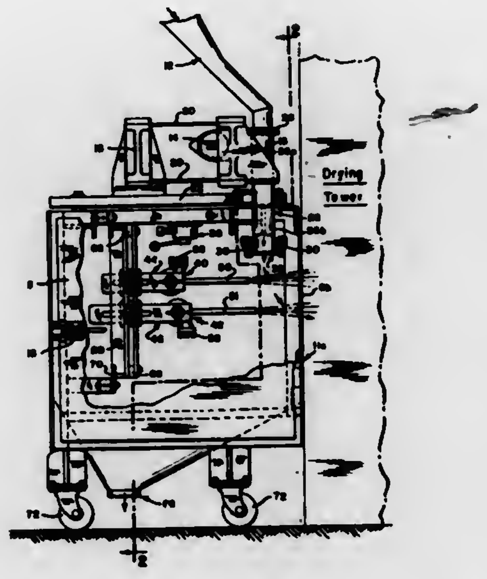
APPARATUS FOR AGGLOMERATION

Stephen Linn, Tenafly, and Robert F. Bardsley, Harrington Park, both of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,738

Int. Cl. A23f *1/08*

U.S. Cl. 99—467 **9 Claims**



An improved apparatus for agglomerating pulverant materials such as soluble coffee powder wherein the particles to be agglomerated are distributed and positioned for wetting and impaction in a gaseous atmosphere by means of a vertically vibrating distributor plate having a plurality of apertures in a horizontal surface. The apparatus is designed and operated to expose the powdered material to the gaseous atmosphere in the form of spatially interrupted parallel streams of falling individual particles or colligations of particles whereby each stream has a substantially rectilinear geometry prior to being intercepted by jets of vapor, such as saturated steam, which disrupt the formation of particles or colligations of particles to the extent they are wetted, randomly impacted to agglomerate form, and concomitantly redirected into a tempering and drying zone.

ERRATUM

For Class 106—15 see:
Patent No. 3,729,434

3,729,328

CELLULAR FOAMED MATERIAL AND METHOD FOR THE MANUFACTURE THEREOF

Jules Magder, Princeton, N.J., assignor to Princeton Organics, Inc., Princeton, N.J.

Original application Sept. 23, 1968, Ser. No. 761,761, now Patent No. 3,565,647, dated Feb. 23, 1971. Divided and this application Oct. 19, 1970, Ser. No. 82,123

Int. Cl. C04b *21/12*

U.S. Cl. 106—87 **6 Claims**

A method for continuously producing foamed cement-based cellular material by subjecting specific liquid and solid components to high-shear mixing for very short periods of time and then discharging the mixture so that it can foam and set promptly. The liquid material which is mixed consists principally of water, and preferably has a viscosity of less than about 2.5 centipoises. The solid component which is mixed contains a particulate water-settable (hydraulic) cement and an inert particulate lamellar foam stabilizing agent. A gas-forming agent will also be included as part of either or both of the liquid and solid components. The time of mixing is not greater than about four seconds and preferably less than about one second, and the high-sheer mixing preferably provides a maximum nominal velocity gradient greater than about 500 seconds^{-1} for substantially all of the material. The maximum nominal velocity gradient is defined for this purpose as the maximum value of the ratio of relative speed of two surfaces of the mixer between which substantially all of the mixture is passed, to the distance between said two surfaces. Preferably the mixer comprises a rotor disposed along the axis of the tubular chamber into which the ingredients to be mixed are continuously fed, the rotor comprising helical screw means disposed along the length of the rotor for moving the mixture through the chamber to its outlet and for providing at least part of the mixing action, together with mixing pins exending radially from the axis of the rotor to within a small distance of the chamber wall to effect further mixing action. The resultant product is of increased compressive strength and characterized by the fact that substantially all of the pore volume thereof is provided by pores having effective diameters outside a range extending from about two microns to about 300 microns, and preferably at least about 97% of the pore volume is provided by pores outside said range. There is also provided novel cellular products consisting essentially of high alumina cement, as the water settable cement, and the stated inert particulate lamellar foam stabilizing agent.

3,729,329

NONAQUEOUS LUBRICANT-BINDER SYSTEM FOR REFRACTORY RAMMING MIXES

Martin Morris, Pittsburgh, and George Ronald Henry, Bethel Park, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

No Drawing. Filed July 9, 1971, Ser. No. 161,350

Int. Cl. C04b *55/04*

U.S. Cl. 106—58 **4 Claims**

A nonaqueous lubricating-bonding system for refractories, especially basic refractories, of increased storage life, said system including a lubricating oil in combination with a metallic stearate.

3,729,330

PHTHALOCYANINE ORGANIC PIGMENTS

Heinrich Leister and Karl-Heinz Wolf, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

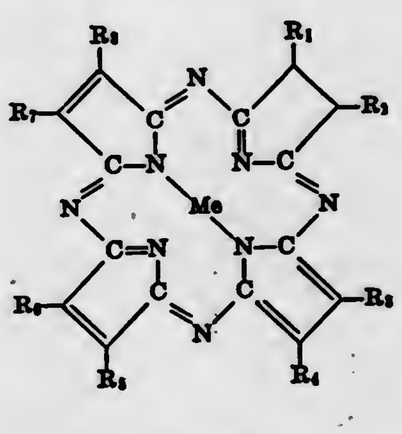
No Drawing. Filed Mar. 10, 1971, Ser. No. 123,035

Claims priority, application Germany, Mar. 17, 1970, P 20 12 505.7

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q **8 Claims**

Copper phthalocyanine and nickel phthalocyanine pigments containing 60–98 mol percent of a copper or nickel phthalocyanine, which may be substituted and 40–2 mol percent of one or more tetraazaporphines of the formula



wherein

Me represents copper or nickel,

R_1 represents an alkyl radical, a cycloalkyl radical, an aralkyl radical or an aryl radical and

R_2, R_3, R_4, R_5, R_6, R_7 and R_8 independently of one another represent hydrogen, an alkyl radical, a cycloalkyl radical, an aralkyl radical or an aryl radical, and wherein one or more of the pairs R_3 and R_4, R_5 and R_6 or R_7 and R_8 are cyclised to give cycloaliphatic units or aliphatic units which may be substituted by chlorine, bromine, lower alkyl, cycloalkyl, aralkyl, phenyl, alkoxy or sulphonic acid groups, or units containing hetero-atoms

and process for their production.

These pigments are resistant to crystallisation in organic solvents.

3,729,331
PROCESS FOR REFLOWING ORGANIC SURFACES

Thomas A. Vivian, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Application Dec. 1, 1969, Ser. No. 881,284, now Patent No. 3,663,255, which is a continuation-in-part of abandoned application Ser. No. 844,662, July 24, 1969. Divided and this application Mar. 25, 1971, Ser. No. 128,175

Int. Cl. B23p *7/00;* **B29c** *25/00*

U.S. Cl. 117—2 R **2 Claims**

Composition for reflowing organic surfaces, such as paints and polystyrene, have been discovered which contains by volume 50 to 90% of a liquid chlorinated aliphatic hydrocarbon, 5 to 30% of a liquid ketone or alcohol, 2 to 20% of a glycol ether alkanoate and 0 to 30% of an alkyl alkanoate, all of such components having a boiling point below 200° C.

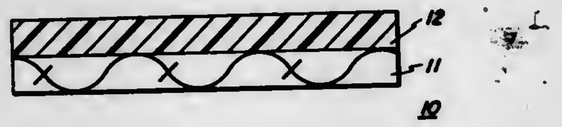
3,729,332
MICROPOROUS POLYOLEFIN INK-RECEPTIVE PAPER AND METHOD

Willard T. Grubb, Schenectady, N.Y., and Robert A. Macur, Milwaukee, Wis., assignors to General Electric Company

Filed Apr. 6, 1970, Ser. No. 25,702

Int. Cl. D21h *1/10*

U.S. Cl. 117—11 **6 Claims**



A microporous polyolefin ink-receptive paper has a composite structure of natural paper and a microporous polyolefin with a porosity of 40 to 90% which composite structure has a diffuse reflectance of at least 90%. Another microporous polyolefin ink-receptive paper has a natural or artificial paper support or backing with a microporous polyolefin coating on at least one major surface which coating has a porosity of 40 to 90% and has a diffuse reflectance of at least 90%. The microporous polyolefin addition to or coating on the paper provides a lightweight ink-receptive surface which optically brightens the paper.

3,729,333
METHOD FOR FORMING AN INSULATION COATING

Takeshi Imai, Siniti Nomura, and Muneo Sumita, Kariya, Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Japan

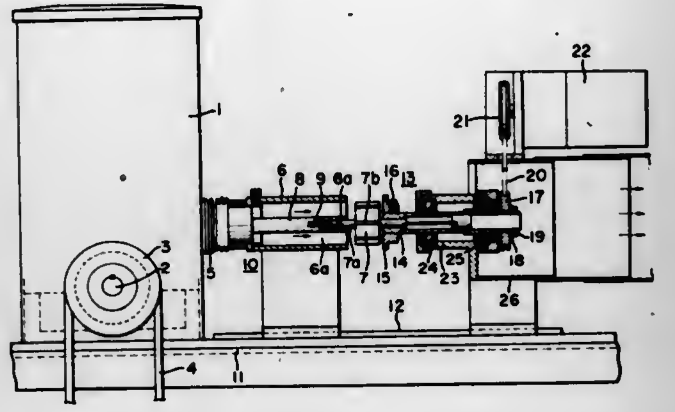
Filed Sept. 23, 1970, Ser. No. 74,692

Claims priority, application Japan, Oct. 3, 1969, 44/79,304; May 11, 1970, 45/40,408

Int. Cl. B44d *1/094;* **B05b** *5/02*

U.S. Cl. 117—16 **5 Claims**

A method for forming an insulation coating on an iron core of an electric winding and like wherein heat meltable powder material is sprayed onto one end face of the core so as to impinge thereto with various angles, a portion of the powder material being deposited on said end face and remainder being passed through coil receiving grooves in the core impinging with various angles and partially depositing on the walls of the grooves, the portions of the powder material which has passed through the grooves being reflected by a powder shielding means disposed at the opposite side of the core so as to impinge on the opposite end face of the core, and the surplus powder material being removed and recovered by a suction mechanism such as a dust collector.



3,729,334
IMAGING PROCESS

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of abandoned application Ser. No. 707,575, Feb. 23, 1968. This application Dec. 30, 1970, Ser. No. 102,726

Int. Cl. B41m *5/00*

U.S. Cl. 117—37 LE **1 Claim**

The subject matter of the present invention is directed to a novel imaging system whereby a donor dispenser is utilized to deliver the developer particles of a liquid suspension in an imagewise manner to produce the final copy. An electrode configuration is provided, capable of establishing a non-uniform electric field within a liquid developer comprising uncharged developer particles. As a result of the established electric field within the system, the pigment particles present in the developer are uniformly coated on at least one surface of the dispensing master. The dispensing master is removed from the developer and delivers the developer particles in an imagewise manner to a suitable transfer sheet.

3,729,335
METHOD OF DEPOSITING INORGANIC COATINGS FROM VAPOUR PHASE

Georgy Alexeevich Domrachev, ulitsa Minina 15a, kv. 3; Valery Vasilievich Melnikov, ulitsa Eltonskaya 50, kv. 3; Georgy Borisovich Kazarinov, ulitsa Belinskogo 106a, kv. 7; Gleb Alexandrovich Skorik, ulitsa Surikova 12, kv. 56; and Konstantin Konstantinovich Fukin, prospekt Lenina 30, korpus 7, kv. 61, all of Gorky, U.S.S.R.

Filed Apr. 22, 1971, Ser. No. 136,481

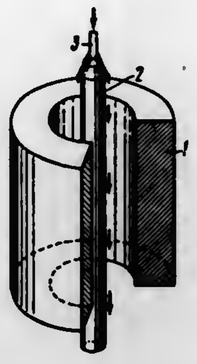
Claims priority, application U.S.S.R., May 29, 1970, 1,432,551

Int. Cl. B44d *1/02*

U.S. Cl. 117—95 **4 Claims**

A method of depositing inorganic coatings from vapour phase involves the formation of vapour phase of liquid compounds of elements, as well as solutions or suspensions

of volatile compositions of said elements adapted to release deposited elements or compositions thereof during thermal decomposition due to heating and vaporization of said liquid over the entire surface of a workpiece by proper thermal radiation of the workpiece being treated. To this end said liquid is supplied under the force of gravity adjacent to and along said workpiece.



3,729,336
SURFACE MODIFIED POLYESTER REINFORCING ARTICLES

Gazie K. Ragep, Durham, N.C., assignor to Beaunit Corporation, New York, N.Y.

No Drawing. Filed June 3, 1971, Ser. No. 149,822

Int. Cl. B32b *25/08*

U.S. Cl. 117—76 T **5 Claims**

Surface modified polyester reinforcing articles, such as filament, yarn, tire cord and the like, having improved adhesion when used as reinforcement in rubber articles are provided by cocrystallizing on the surface of a conventional polyester reinforcing article a composition comprising a mixture comprising (1) a copolymer comprising crystallizable ester units identical to those present in the polyester reinforcing article, polyoxyalkylene groups and polyepoxy containing groups and (2) a polyepoxide. The surface modified polyester reinforcing articles are prepared by applying the treating composition to the polyester article and subjecting the surface treated article to a temperature of at least 80° C. for a time sufficient to cause cocrystallization to take place on the surface of the treated polyester article. The polyester article is also treated, preferably by a second coating application, in a normal manner with a conventional polyhydric phenol-aldehyde-rubber latex, and then bonded to rubber using conventional methods. Improved rubber articles reinforced with polyester reinforcing articles are obtained having outstanding adhesion between the rubber and the polyester reinforcing articles.

3,729,337
PRODUCTION OF PETROLEUM FROM UNCONSOLIDATED FORMATIONS

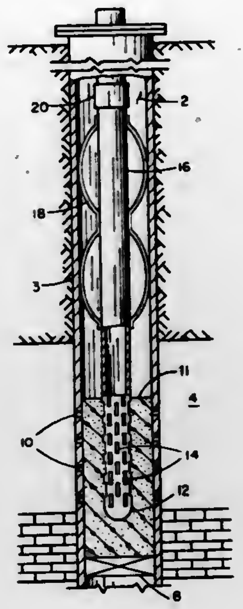
William G. Bearden and Charles A. Powers, Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Continuation-in-part of application Ser. No. 674,551, Oct. 11, 1967, which is a division of application Ser. No. 571,508, Aug. 10, 1966, now Patent No. 3,366,177. This application Apr. 22, 1970, Ser. No. 31,028

Int. Cl. E21b *43/08*

U.S. Cl. 117—98 **5 Claims**

A specially designed screen is described for use in wells producing oil from unconsolidated sands. The apparatus consists essentially of a sleeve fabricated from a ground hydraulic cement clinker, coated with a heat resistant film from material such as sodium silicate to impart compressive strength to the set clinker when the latter is exposed to oil. The clinker material which may be calcium silicate, calcium aluminate or high alumina cement may have a particle size ranging from −4 to +40 mesh.



3,729,338
PROCESS FOR THE PREPARATION OF SELF-ADHESIVE TAPES AND FOILS

Horst Lehmann and Julius Curts, Hamburg, Germany, assignors to Biersdorf Aktiengesellschaft, Hamburg, Germany

No Drawing. Continuation of abandoned application Ser. No. 771,649, Aug. 29, 1968. This application Mar. 24, 1971, Ser. No. 127,849

Claims priority, application Germany, Oct. 31, 1967, P 17 19 096.4

Int. Cl. C09j *7/02*

U.S. Cl. 117—122 P **5 Claims**

Shelf-adhesive tapes or foils which adhere to a variety of dissimilar surfaces upon mere contact without the need of more than slight pressure and have good resistance to heat are prepared by applying on a flexible support, after addition of a small amount of a catalyst and/or a polyfunctional compound, a low molecular copolymer which is spreadable at room temperature in a condition such that it has only small quantities of solvents therein, composed of acrylic acid alkyl esters and a relatively small amount of monomeric compounds which are polymerizable with them, and contain reactive groups in the molecule, and subsequently exposing the coating composition applied to the support to the action of heat for a short time. The action of heat causes the cross-linking of the coating composition and converts it from the liquid or thickly liquid state into a solid cohesive self-adhesive layer with the properties of a good self-adhesive mass.

3,729,339
HYDROXY FUNCTIONAL ACRYLIC INK

Robert H. Kiel, deceased, late of Weston, Ohio, by Jessie H. Kiel, administratrix, Weston, and William C. Grinonneau, Toledo, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Continuation of abandoned application Ser. No. 693,050, Dec. 13, 1967. This application Nov. 25, 1970, Ser. No. 92,946

Int. Cl. C03c *17/00, 21/00*

U.S. Cl. 117—124 E **33 Claims**

This invention relates to the preparation of a novel organic thermosetting resin base decorative composition having increased permanency of adhesion and decorative properties when applied as a film or coating to a glass substrate, said composition consisting essentially of a hydroxyl functional acrylic resin, a thermosetting aminoplast resin, and an ambifunctional, epoxy reactive silane, the acrylic resin being present in an approximate stoichiometeric proportion relative to the aminoplast and the silane being present in an amount sufficient to substantially improve the permanency of adhesion of the composition to a glass surface. A further advantage of this invention is that the composition can be conveniently mixed and stored in one container until used.

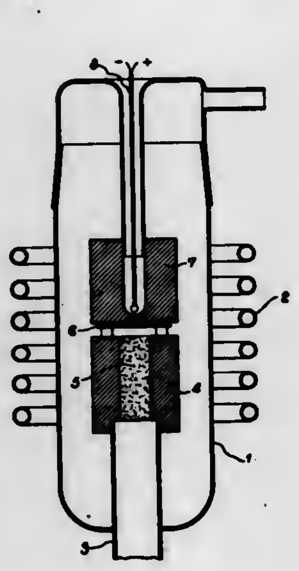
3,729,340
FLAME RETARDANT POLYESTER-ACETATE FABRIC

Stancil Driftwood Powell, Matthews, N.C., assignor to Celanese Corporation, New York, N.Y.
No Drawing. Filed Feb. 22, 1971, Ser. No. 117,817
Int. Cl. C09k *3/28;* **B32b** *27/12*
U.S. Cl. 117—136 **3 Claims**

There is provided a process for imparting both durable flame retardance and a good hand to a textile material whose fiber-forming substance consists of polyester and acetate fibers. In this process the textile material is passed through a solution or emulsion comprised of a flame retardant amount of tris-2,3-dibromopropyl phosphate. Thereafter the treated textile material is cured by subjecting it to a temperature of from about 275 to about 425 degrees Fahrenheit for from about 15 seconds to about 10 minutes. There is also provided a flame-retarded textile material with a good hand whose fiber-forming substance consists of polyester and acetate fibers; even after 50 home launderings, this textile material passes the U.S. Department of Commerce flammability test DOC PFF 3–70.

3,729,341
METHOD FOR PRODUCING EPITAXIAL III–V SEMICONDUCTOR LAYERS CONTAINING GALLIUM

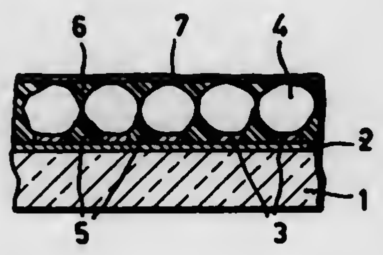
Wolfgang Dietz and Hartmut Seiter, Munich, Bavaria, Germany, assignors to Consortium fur Elektrochemische Industrie G.m.b.H., Munich, Germany
Filed Nov. 5, 1970, Ser. No. 87,080
Claims priority, application Germany, Nov. 6, 1969, P 19 55 971.8
Int. Cl. C23c *11/00, 13/00;* **H01l** *7/36*
U.S. Cl. 117—201 **10 Claims**



A method and apparatus for producing epitaxial III–V semiconductor layers of gallium in two stages, where in the first stage gallium-I-chloride is produced by heating a gas stream consisting of hydrogen and gallium-III-chloride to a temperature of 700–900° C. in the presence of a catalyst consisting of an element of the 5th, 6th or 8th sub-group of the Periodic System, and in the second stage said gallium-I-chloride is converted into a gas stream of III–V semiconductor material by heating said gallium-I-chloride to a temperature of 600–700° C. in admixture with an element of the 5th main group of the Periodic System, and then said III–V semiconductor material is deposited on a semiconductor substrate.

3,729,342
METHOD OF MANUFACTURING A RADIATION-SENSITIVE ELECTRONIC DEVICE

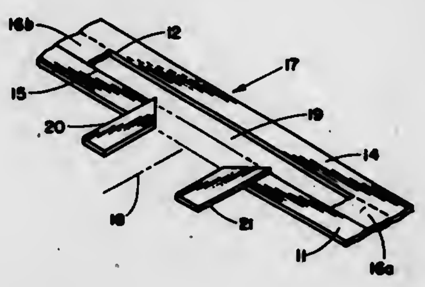
Ties Siebolt te Velde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 1, 1970, Ser. No. 24,556
Claims priority, application Netherlands, Apr. 16, 1969, 6905835
Int. Cl. B44d *1/16*
U.S. Cl. 117—217 **6 Claims**



A method of providing a radiation-permeable contact layer in good electrical contact with radiation-sensitive or electroluminescent grains, the grains being spread on a metal layer which is situated on a radiation-permeable conductive layer, and upon heating in the melted condition the melted metal of the metal layer is drawn by capillary action to between the grains and the permeable conductive layer and the space between the grains is then filled with a polyurethane.

3,729,343
THERMOCOUPLE TAPE

Ralph D. Thomas, Cleveland, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Jan. 8, 1971, Ser. No. 104,885
Int. Cl. H01v *1/04*
U.S. Cl. 136—225 **6 Claims**



A thermocouple which may be rolled as a tape until needed and a method of making same are described. Thermoelectrically different metals are applied to a strip of electrically nonconductive material in longitudinally overlapping relationship. Apertures may be provided along the tape in the overlapping region at predetermined intervals. An adhesive material is applied to the side of the tape opposite the thermoelectric metals either before or after the thermoelectric metals are deposited. The tape may be cut or torn to form a thermocouple device which

is ready for application to a body whose temperature is to be monitored or measured.

3,729,344
PROCESS FOR MAKING THERMALLY HARDENED WROUGHT STAINLESS STEEL SHAPED MEMBER HAVING A DUPLEX FERRITIC/MARTENSITIC MICROSTRUCTURE

Stephen M. Lukes, West Reading, and Robert L. Caton, Sinking Spring, Pa., assignors to Carpenter Technology Corporation, Reading, Pa.
No Drawing. Filed Mar. 12, 1971, Ser. No. 123,813
Int. Cl. C21d *1/18, 7/14*
U.S. Cl. 148—12.4 **8 Claims**

Thermally hardened and strengthened members made from stainless steel containing 0.04–0.10% carbon, 0.04–0.08% nitrogen, up to 1% each of manganese and silicon, 16–17.5% chromium, up to 1.0% nickel and 0.75–1.5% molybdenum, which respond to tempering, can be cold worked up to about 50 to 75% reduction in area and have a duplex micro-structure of both ferrite and martensite.

3,729,345
METHOD FOR MAKING PROPELLERS OF HIGH-STRENGTH AND HIGH-TOUGHNESS CAST STEEL

Teishiro Oda, Makoto Nakamura, and Masato Zama, Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Application Oct. 8, 1969, Ser. No. 864,898, now Patent No. 3,661,658, dated May 9, 1972, which is a division of application Ser. No. 643,679, June 5, 1967, now abandoned. Divided and this application Sept. 20, 1971, Ser. No. 182,109
Claims priority, application Japan, June 11, 1967, 42/37,570
Int. Cl. B22d *25/06;* **C21d** *1/78*
U.S. Cl. 148—3 **5 Claims**

A high strength, high toughness cast steel for marine propellers is comprised of not more than 0.25% of carbon, not more than 1% of silicon, not more than 3% of manganese, from 5–20% of chromium, from 1–8% of cobalt, and from 0.5–7% of one or both of molybdenum and tungsten, and the remainder consisting of iron. In addition, the cast steel may contain up to 8% of nickel and up to 4% of copper, depending on the conditions.

The method of making propellers of cast steel of the composition set forth above comprises the steps of after casting the propeller slowly cooling it at a rate of not more than 1° C. per minute, reheating the casting to between 800° and 1000° C. for improving its strength, ductility and toughness, cooling the casting, and then aging it at 450–700° C. In making the casting it may be cast as a single unit or in individual sections; where individual sections are cast, the method of forming the propeller includes the steps of welding the individual sections, heat treating the welded casting at 800–1000° and then slowly cooling the casting. Further, whether the casting is formed as a single unit or from individual sections, the method includes the step of annealing at 630–700°.

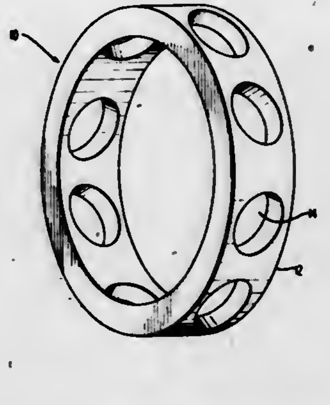
3,729,346
HIGH-PRESSURE SPRAY PROCESS FOR PHOSPHATING IRON OR STEEL SURFACES

Hans Gotta, Weiden, and Norbert Schulz, Oberdollendorf, Germany, assignors to Gerhard Collardin GmbH, Cologne-Ehrenfeld, Germany
No Drawing. Filed May 21, 1971, Ser. No. 145,931
Claims priority, application Austria, June 1, 1970, 4,872/70
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.15 Z **7 Claims**

A process for applying rust-preventing phosphate coatings to surfaces of objects made of iron or steel by spraying said objects with an acid solution of phosphates of layer-forming metals under a spray pressure of 10 to 100 atmospheres gauge.

3,729,347
HIGH-STRENGTH, CENTRIFUGALLY CAST COPPER-BASE ALLOY BEARING CAGE

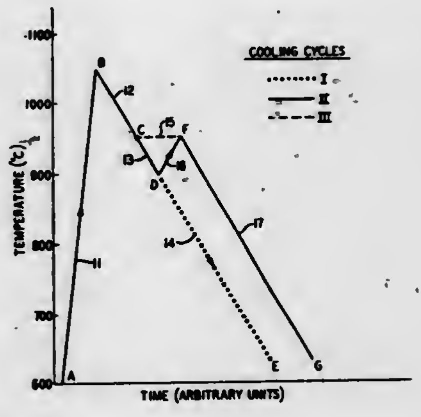
William D. Brown, Churchville, Thomas L. Robertshaw, Warminster, and Garner W. Williams Fox Chase Manor, Pa., assignors to Janney Cylinder Company
Filed Dec. 11, 1970, Ser. No. 97,193
Int. Cl. C22c *9/04*
U.S. Cl. 148—32 **3 Claims**



Alloys consisting essentially of from about 26.0 to about 34.0% zinc, from about 4.5 to about 10.0% (preferably from about 4.5 to about 6.0%) manganese, from about 0.5 to about 1.5% iron, from about 1.0 to about 2.5 aluminum, and the balance copper. Lead can be optionally added, in amount of from about 0.5 to about 1.5%. The alloys have improved physical properties, particularly at elevated temperatures, and can be centrifugally cast for manufacture in antifriction bearing cages.

3,729,348
METHOD FOR THE SOLUTION GROWTH OF MORE PERFECT SEMICONDUCTOR CRYSTALS

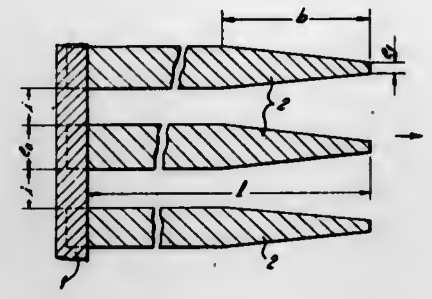
Robert H. Saul, Scotch Plains, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 29, 1970, Ser. No. 76,550
Int. Cl. H01l *7/38, 7/00;* **B01j** *17/20*
U.S. Cl. 148—172 **6 Claims**



If the deposition of semiconductor material from solution onto an imperfect seed is halted for a short time, material deposited subsequent to the halt contains fewer dislocations than material deposited prior to the halt. In compound semiconductors, this procedure has been applied, for instance, to the epitaxial growth of gallium phosphide (GaP) from gallium solution onto a GaP Czochralski pulled substrate.

3,729,349
PROPULSIVE DOUBLE-BASE CHARGES, STRAND-LIKE AND HAVING VARIABLE THICKNESS

**Yves Jean Guy Duprat, 6, rue Gabriel Foucher,
18 Bourges, France
Filed Jan. 7, 1971, Ser. No. 104,802
Int. Cl. C06b** *19/00*
U.S. Cl. 149—2 **5 Claims**



A propellent charge constituted of spaced strands of material is increased in effectivity by tapering the strands so that they diminish in thickness in the direction of gas flow. The spaces between the strands and particularly the tapering of the strands is so effected to provide minimum passage areas. The combustion time of the charge is less than 1 second and the powder charges used have combustion rates which are substantially constant over a large range of pressures.

3,729,350
COMPOSITION FOR FORMING CLOUD OF INCAPACITATING AGENT UPON DETONATION

**William A. Gey, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Feb. 2, 1970, Ser. No. 12,880
Int. Cl. C06b** *17/00*
U.S. Cl. 149—21 **4 Claims**

A formulation in pellet form which upon detonation forms an instantaneous cloud of an incapacitating agent which comprises a blend of ortho-chlorobenzamalonitrile and a high explosive.

3,729,351
FLARE COMPOSITION COMPRISING DRY BLEND OF METAL FUEL AND EUTECTIC MIXTURE OF OXIDIZER SALTS

**Howard W. Kruse, Ridgecrest, Calif., assignor to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Oct. 1, 1969, Ser. No. 866,069
Int. Cl. C06b** *15/00*
U.S. Cl. 149—41 **4 Claims**

Binderless illumination flare compositions formed by dry blending a metal powder and an inorganic oxidizer to form a mixture, heating while compacting the mixture in a casing until fusion of the oxidizer occurs, then cooling the mixture. The preferred metal powders are aluminum, magnesium or magnesium-aluminum alloy and the oxidizers are an alkali or an alkaline earth metal nitrate and mixtures thereof.

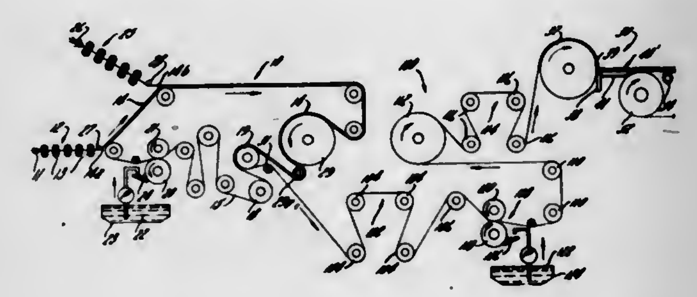
3,729,352
DOPED AMMONIUM PERCHLORATE OXIDIZERS AND METHOD OF PREPARING SAME

**John Norman Maycock and Louis Witten, Baltimore, Md., assignors to Martin Marietta Corporation, New York, N.Y.
No Drawing. Filed Jan. 5, 1968, Ser. No. 695,865
Int. Cl. C06b** *13/00*
U.S. Cl. 149—74 **8 Claims**

An improved class of oxidizers is formed by precipitating crystals from an acid solution in which ammonium perchlorate has been dissolved and from an acid solution in which ammonium perchlorate and a quantity of nitronium perchlorate have been dissolved.

3,729,353
METHOD OF PRODUCING A HIGH-LOFT, NONWOVEN FABRIC

**Robert J. Stumpf, Appleton, William J. Mattes, Neenah, and Herman G. Minshell, Menasha, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 5, 1970, Ser. No. 77,840
Int. Cl: D04h** *11/00*
U.S. Cl. 156—72 **12 Claims**



A high-loft, nonwoven fabric with a backing layer of adhesive and a multiplicity of fibers looped outwardly from the backing; and a method and apparatus for making the fabric by first embedding a web of elements in an open pattern of adhesive, bonding the elements in the adhesive, applying a second adhesive in an open pattern to the first open pattern, and consolidating the adhesives into a continuous backing layer while looping the elements outwardly from the backing. In certain instances the backing may be substantially stretched, resulting in a fabric with a partially consolidated backing layer. The second application of adhesive provides for better element attachment to the backing layer, enabling the use of heavier elements, such as natural or synthetic threads or yarns.

3,729,354
METHOD FOR MAKING INSULATED WALL SECTIONS

**Ronald D. Sukolics, Elkhart, Ind., assignor to American Metal Climax, Inc., New York, N.Y.
Filed July 31, 1970, Ser. No. 59,982
Int. Cl. B29c** *11/00;* **B29d** *3/00;* **B32b** *31/06*
U.S. Cl. 156—244 **9 Claims**

An elongated heat insulating structural member of the type including a pair of spaced apart structural sections secured together by a continuous web of heat insulating material is fabricated by moving a pair of spaced apart structural sections along a predetermined path and flowing a stream of heat insulating material in a semiplastic state into a continuous void provided between the structural sections. A backing member is provided to close the bottom of the void until the heat insulating material is cured and bonded to the structural sections forming an integral heat insulating structural member.

3,729,355
METHOD FOR THE PRODUCTION OF COMPOSITE PLATES

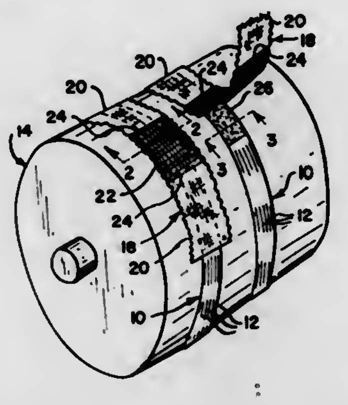
**Jean Schrade, Zurich, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
No Drawing. Filed Apr. [illegible]4, 1971, Ser. No. 134,041
Claims priority, application Switzerland, Apr. 29, 1970, 6,429/70
Int. Cl. B32b** *31/20*
U.S. Cl. 156—283 **6 Claims**

A method for the production of a composite plate having two metal sheets and a thermosetting synthetic resin

therebetween involves sinter molding said resin between said metal sheets whereby said resin will be hardened and will be substantially porous.

3,729,356
METHOD OF MAKING CEMENTED FIBER OPTICAL DEVICES

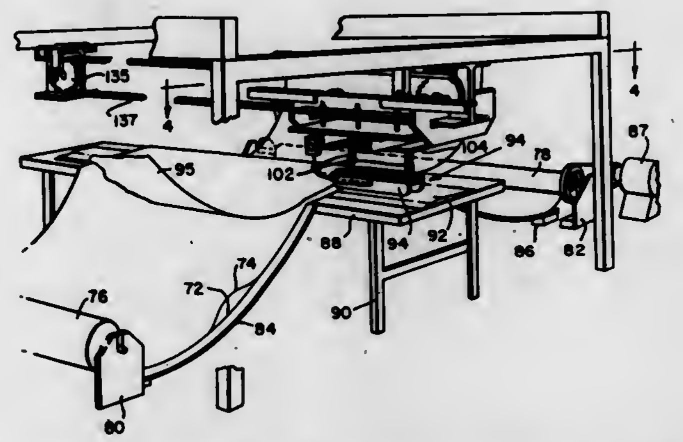
**George J. Carpenter, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 8 ,1971, Ser. No. 121,812
Int. Cl. B32b** *17/04*
U.S. Cl. 156—296 **5 Claims**



Fabricating coherent bundles of cemented together ribbons of optical fibers wherein a connecting cement is screened onto a section of the length of each ribbon, squeegeed to the exact thickness of the screen and allowed to become at least partially dried with the screen in place. Removal of the screen then leaves a clean and even coating of the cement upon each ribbon for adversely securing the ribbons together as a coherent cemented assembly.

3,729,357
THERMOPLASTIC HEAT SEALING APPARATUS

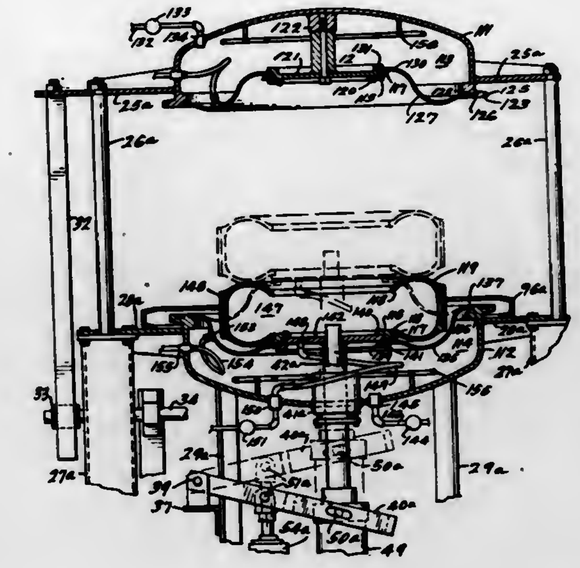
**Henry D. Swartz, Chestnut Hill, Mass., assignor to General Heat Sealing Corporation, Braintree, Mass.
Filed June 25, 1971, Ser. No. 156,865
Int. Cl. B29c** *19/02*
U.S. Cl. 156—380 **11 Claims**



A linearly extending seal or weld between a pair of heat susceptible thermoplastic sheets is produced by interposing the thermoplastic sheets in superposition between a pair of heat resistant control sheets, and sliding an elongated heating wiper along its axis in contact with one of the control sheets in order to apply heat and pressure to the thermoplastic sheets while countered by the other of the control sheets. The result is a weld characterized by a trough at one face of the superposed thermoplastic sheets and a ridge at the other face of the superposed thermoplastic sheets, the trough and the ridge being in registration and the region therebetween being integrated. Apparatus for effecting this process and producing this product is disclosed.

3,729,358
APPARATUS FOR RETREADING TIRES

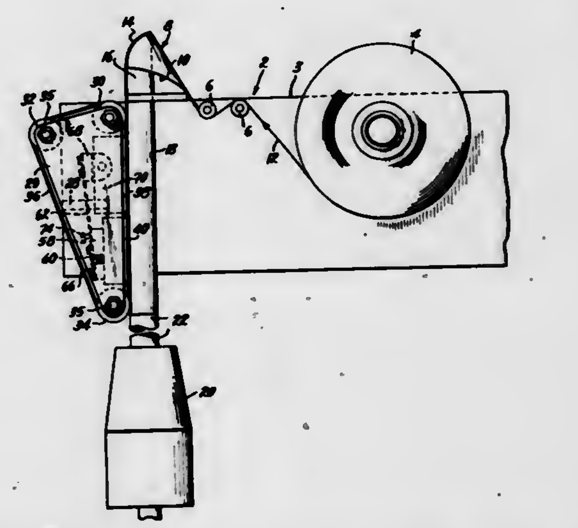
**Carlton Keith Barefoot, 601 Shellbark Road, Muncie, Ind. 47304
Filed July 6, 1970, Ser. No. 52,534
Int. Cl. B29h** *5/04*
U.S. Cl. 156—394 **9 Claims**



The invention is a method and apparatus for bonding and shaping retread stock to a tire casing. A pair of circumferentially mating mold elements engage the tread area of a tire to be retreaded. The mols are divided along a horizontal mating plane and are supported in aligned relationship within a pair of substantially hemispherical pressure chamber members adapted for closing and opening about the tire. Centering plates are provided to locate the tire concentrically within the mold and to form an internal pressure chamber within the tire. The internal pressure chamber is pressurized forcing the tire against the mold elements. Subsequently the outer chamber or chambers are pressurized to a pressure equal to the internal pressure. The centering or bead plates are then displaced from engagement with the tire. Heat is applied for bonding and shaping the tread stock to the tire casing.

3,729,359
CONTINUOUS TUBE SEALER

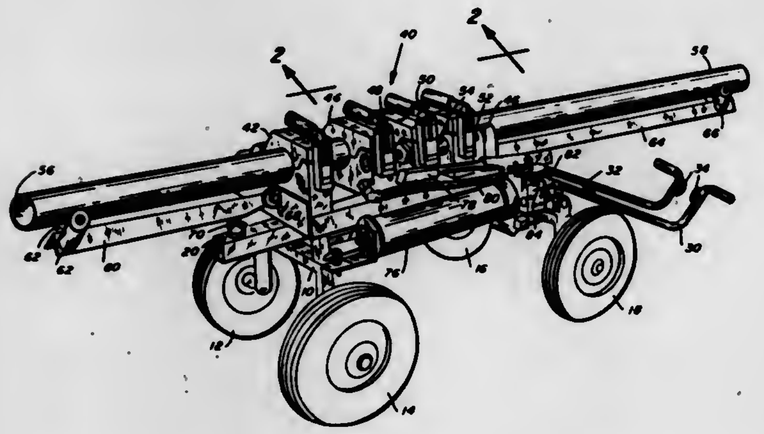
**Claude E. Monsees, Durham, N.C., assignor to Wright Machinery Company, Inc., Durham, N.C.
Filed Apr. 30, 1971, Ser. No. 138,981
Int. Cl. B29d** *23/10*
U.S. Cl. 156—466 **9 Claims**



A tube former directs a web of unsupported polyethylene film into tubular form about a cylindrical mandrel with its longitudinal edges overlapping. An endless belt of Teflon impregnated Fiberglas is trained over idler pulleys to a run along the overlapped edges and a heater device heats the belt and film to fuse the overlapped edges and cause them to adhere to each other and to the belt so that the belt is pulled along as the tube is drawn along the mandrel. Cooling means then cools the belt and film and one of the idler pulleys strips the belt from the sealed tube. The heater is moved to and from the belt under the control of the cooling means.

3,729,360
PORTABLE THERMOPLASTIC PIPE FUSION APPARATUS

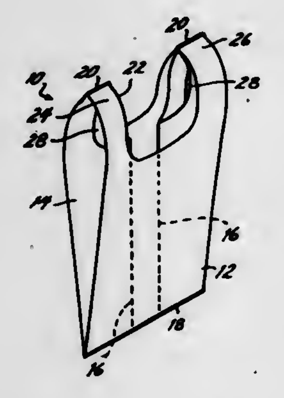
Arthur H. McElroy, 2789 E. 45th Place,
Tulsa, Okla. 74105
Filed Mar. 8, 1971, Ser. No. 121,791
Int. Cl. B32b *31/12, 31/18, 31/20*
U.S. Cl. 156—499 **11 Claims**



A portable wheeled apparatus for use in fusing thermoplastic (i.e., polyethylene) pipe includes means for hydraulically actuating the pipe for facing the pipe ends, heating the pipe ends and fusing them together all in axial alignment of the pipe.

3,729,361
APPARATUS FOR PRODUCING A PLASTIC SHOPPING BAG

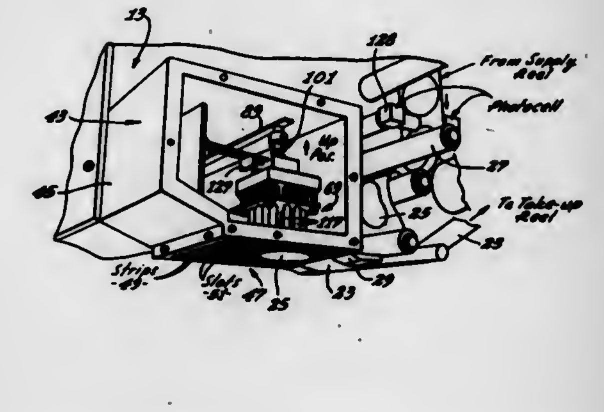
Edward B. Westlake, Jr., 307 Lincoln Ave.,
Havertown, Pa. 19083
Original application Dec. 24, 1969, Ser. No. 887,807, now Patent No. 3,671,350. Divided and this application Dec. 2, 1971, Ser. No. 204,190
Int. Cl. B32b *31/00;* **B31b** *1/14*
U.S. Cl. 156—510 **5 Claims**



Apparatus for making an over-the-arm plastic bag of polyethylene and similar thermoplastic resins which comprises feeding tubular side-gusseted plastic stock through a perforator or cutter station and then through a heat sealing station where a generally rectangular perforated or cut area is produced every two bag lengths in the front and back panels and gussets of the stock and the heat sealing and severing is effected simultaneously transversely of the stock centrally between the perforated or cut areas to form the bottoms of the bags and transversely across and bisecting the perforated or cut area to produce the tops of the bags without opening the welds themselves.

3,729,362
LABELING MACHINE

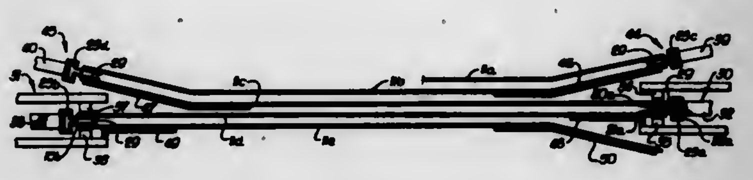
John B. French, 1442 S. 9th Ave., Hacienda Heights, Calif. 91745, and Hubert J. Schroeder, 4572 Birchwood Ave., Seal Beach, Calif. 90740
Filed Dec. 21, 1970, Ser. No. 100,283
Int. Cl. B44c *1/24*
U.S. Cl. 156—542 **14 Claims**



A labeling machine comprising a supply reel and a take up reel. Labels are adhesively secured to a backing strip and the backing strip is wound on the supply reel. The backing strip and labels are moved from the storage reel toward the take up reel and the labels are peeled off of the backing strip and momentarily retained at a first station. An applicator transfers the label from the first station to an adjacent article.

3,729,363
APPARATUS FOR EDGE JOINING PANELS

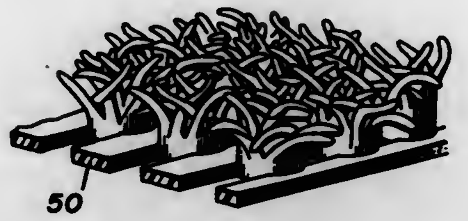
Carlos A. Mollura, 2824 Del Oro Lane,
Fullerton, Calif. 92632
Filed Mar. 5, 1971, Ser. No. 121,408
Int. Cl. B32b *31/10*
U.S. Cl. 156—559 **5 Claims**



A plurality of plastic film panels are stacked and joined edge-to-edge to form a wide, zigzag-folded sheet. Each joint incorporates an extruded plastic joining member of U-shaped cross-section having leg portions welded respectively to the panel edges being joined. Projecting from the closed end of the joining member is a guide bead adapted to direct the panels through an automated production facility in which sets of panels are welded together at successive stations to form the folded sheet.

3,729,364
CONTINUOUSLY MOLDED THERMOPLASTIC MATERIALS

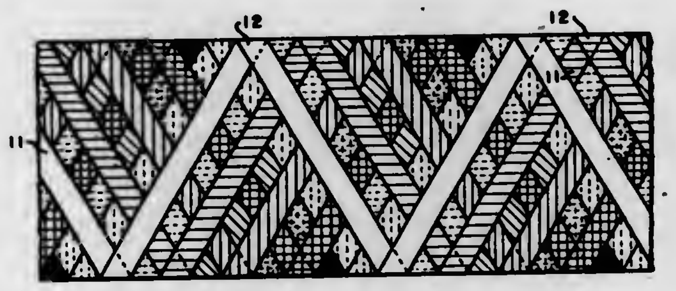
Jack Doleman, Gulf Breeze, Fla., and William H. Hills, Durham, N.C., assignors to Monsanto Company, St. Louis, Mo.
Continuation of application Ser. No. 857,461, Sept. 12, 1969, now abandoned, which is a division of application Ser. No. 650,986, July 3, 1967, now Patent No. 3,507,010. This application July 1, 1971, Ser. No. 158,975
Int. Cl. B32b *3/10, 3/12*
U.S. Cl. 161—36 **1 Claim**



A three-dimensional fused molded product made from thermoplastic materials in a continuous injection molding process. The product comprises a plurality of spaced apart cups which define drainage areas between adjacent base strips to which the cups are connected. The cups have cup walls extending outwardly from a common plane surface and are equipped with a plurality of elongated cup projections which are integral with and extend outwardly from the cup walls.

3,729,365
ENDLESS REINFORCEMENT AND METHOD FOR PRODUCING SAME

Charles W. Greene, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Sept. 3, 1970, Ser. No. 69,348
Int. Cl. B32b *5/12*
U.S. Cl. 161—57 **19 Claims**



An endless reinforcement which comprises a unitary strip including a multiplicity of continuous cords, the strip positioned across the width of the reinforcement from one side to the other at an angle to the edges of the reinforcement with successive lengths of the strip being folded with respect to each other at the edges to form a generally zigzag pattern. Also, a method for producing such a reinforcement and a tire therewith as well as the resulting tire.

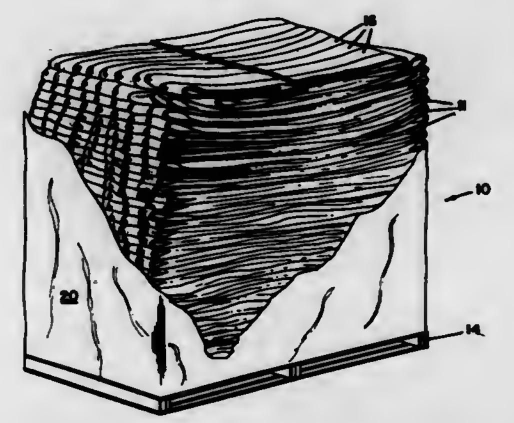
3,729,366
GLUTAMIC ACID POLYMER ADHERENTS

Yasuo Fujimoto, Machida, Koichi Nagaoka, Tokyo, and Keizo Tatsukawa, Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation-in-part of application Ser. No. 776,809, Nov. 18, 1968, and now abandoned. This application Jan. 15, 1971, Ser. No. 106,930
Claims priority, application Japan, Nov. 22, 1967, 42/74,709
Int. Cl. B32b *27/02, 27/34*
U.S. Cl. 161—89 **20 Claims**

A leather-like composite comprising a coating adhesively secured to a substrate, said coating comprising a major amount of a polyglutamic acid and an adhesive containing a diisocyanato-substituted aliphatic carboxylic acid ester as the principal constituent. The adhesive used in the present invention provides a good bond between the polymeric film and the substrate surface, for example, a cotton cloth. The composite exhibits an improved luster and excellent resistance to light, as well as an enhanced elongation.

3,729,367
RUBBER PRODUCT FOR TIRE RECAPPING APPARATUS AND METHOD FOR MAKING

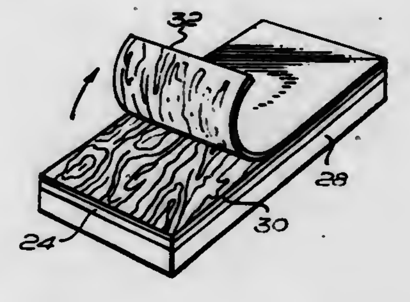
Donald G. Shore, Walnut Creek, and Vitalijs Turjanis, Berkeley, Calif., assignors to Oliver Tire & Rubber Company, Oakland, Calif.
Filed June 1, 1971, Ser. No. 148,819
Int. Cl. B65d *75/00;* **B65b** *53/02*
U.S. Cl. 161—102 **5 Claims**



A rubber product for use in a wrap-on type of tire recapping machine comprising an elongated rubber slab of substantially equal width and thickness and partially severed along longitudinal lines that are equally spaced apart to form adjacent strips, with intermittent breakable web portions interconnecting adjacent strips. The slab, with strips connected, is stacked in a series of folds of equal length and surrounded by a cover that provides support as the product is used when the outermost strip is pulled away by a tension that breaks the web portions. The invention also includes a method for making the product that includes the steps of severing the slab to form intermittent longitudinal slits and web portions and stacking the slab in a series of folds.

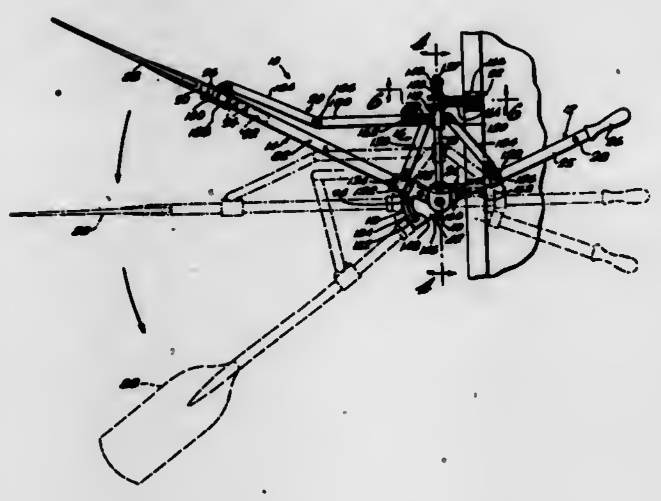
3,729,368
WOOD-PLASTIC SHEET LAMINATE AND METHOD OF MAKING SAME

Robert Edward Ingham and Geoffrey Wilson Deith, Harrogate, England, assignors to R. E. Ingham & Company Limited, Knaresborough, Yorkshire, England
Filed Apr. 21, 1971, Ser. No. 136,059
Int. Cl. B32b *3/00, 31/04*
U.S. Cl. 161—119 **10 Claims**



The production of a laminate comprising a wood veneer and a sheet of plastic material through which the wood is visible. The wood surface pattern is reproduced exactly in the top surface of the plastic sheet by pressing a foil onto the plastic sheet and heating the foil to cause it to melt and flow locally of the wood pores to deform the plastic sheet onto the pattern of the wood surface. Subsequent removal of the foil reveals a surface having the appearance and feel of the bare wood.

3,729,369
BOW FACING OAR
Waldo Ernest Trull, 3110 S.W. 19th Street, Miami, Fla.
Filed July 9, 1971, Ser. No. 161,123
Int. Cl. B63h *16/12*
U.S. Cl. 115—24.2 **4 Claims**

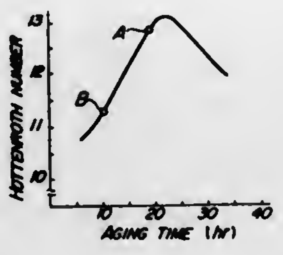


A bow facing oar consisting of an operating arm portion and a blade arm portion and bracket means for attachment to the gunwale of a boat. The adjoining ends of the portions are commonly pivoted on a pin extending vertically through a clevis and a rod, having one end fixed to the clevis, extends horizontally forwardly therefrom to slidably journal a slide block. A first link is pivotally connected between the operating arm and the slide block and a second link is pivotally connected between the slide block and the blade arm whereby pivotal movement of the operating arm is reversely transmitted to the blade arm. Lever means, extending outwardly from the slide block to a point of sliding engagement along the blade arm, is adapted to give the oarsman a force advantage and a cam means is provided to feather the blade at the end of each stroke and to reposition said blade at the beginning of each stroke.

3,729,370
PREPARATION OF VINYL-COATED POLYURETHANE FOAMS
David S. Cobbledick, Kent, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio
No Drawing. Application Aug. 31, 1970, Ser. No. 68,559, now Patent No. 3,691,265, which is a continuation-in-part of application Ser. No. 783,402, Dec. 12, 1968, now Patent No. 3,586,649. Divided and this application Apr. 12, 1972, Ser. No. 243,457
Int. Cl. B32b *3/26*
U.S. Cl. 161—160 **3 Claims**

Certain combinations of polyurethane foam ingredients which react essentially at room temperature are mixed and poured into vacuum-formed polyvinyl sheeting and allowed to cure thereby producing a polyurethane foam with a strongly adherent polyvinyl coating.

3,729,371
PROCESS FOR PRODUCING HIGHLY CRIMPED VISCOSE RAYON
Tadao Sasakura and Katuo Sakuma, Koriyama, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima-shi, Japan
Filed Mar. 9, 1971, Ser. No. 122,387
Claims priority, application Japan, Sept. 9, 1970, 45/79,168
Int. Cl. D01f *3/10, 3/28*
U.S. Cl. 161—173 **8 Claims**



Highly crimped viscose rayon with improved resistance to water is produced by xanthating with 24 to 32% by weight on cellulose of carbon disulfide, adding to thus obtained viscose a combination of modifiers, spinning ripened viscose having a γ-value of 49 to 37 and a Hottenroth number within 20 to 10 and corresponds to a point on the ascending portion of the Hottenroth number-ripening time curve, said point being within a range where the difference of Hottenroth number at spinning from the Hottenroth number at the peak of said curve is 1 or less.

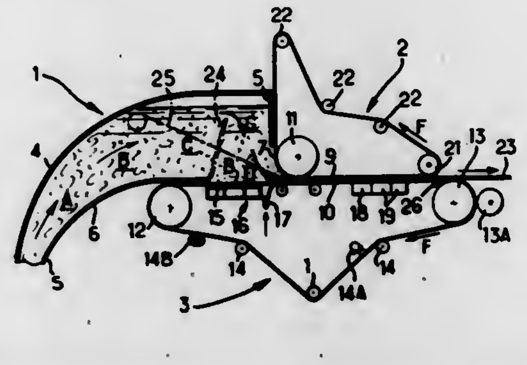
3,729,372
BORON CARBIDE BALLISTIC ARMOR MODIFIED WITH CHROMIUM AND/OR BORON
Ben Matchen and David Robertson, Niagara Falls, Ontario, Canada, assignors to Norton Research Corporation (Canada) Limited, Niagara Falls, Ontario, Canada
No Drawing. Filed Nov. 22, 1971, Ser. No. 201,114
Int. Cl. B32b *1/12, 17/10;* **C04b** *41/04*
U.S. Cl. 161—193 **7 Claims**

Composite ceramic armor with improved ballistic properties. Basic boron carbide armor is improved by the addition to the boron carbide of certain quantities of chromium and/or boron. Improved ballistics also result from a multilayer ceramic face plate wherein one or more layers of the above modified boron carbide is combined with a layer of boron carbide to form an integral ceramic face plate.

3,729,373
WEATHER-STABILIZED ASBESTOS ROOFING FELT
Guillermo J. Hildebrandt, Theodore R. Maugel, Albert R. Morgan, and Boris A. Stern, Cincinnati, Ohio, assignors to The Celotex Corporation, Tampa, Fla.
Filed May 6, 1971, Ser. No. 140,755
Int. Cl. D21f *11/04*
U.S. Cl. 162—123 **16 Claims**

There is disclosed an asbestos roofing felt sheet with improved dimensional stability under exposure to weather, and having an increased asphalt saturant-asbestos felt weight ratio, whereby not only weather resistance is greatly improved, but also the speed of machine saturation of the felt with hot liquefied asphalt is greatly increased by virtue of the increased porosity and permeability of the felt. The sheet consists basically of a very open-mesh skeletal structure of mineral wool fibers which are considerably coarser, longer and more rigid than asbestos fibers, and constitute from about 5% to about 15% by weight of the sheet, with the balance of the fiber content (from about 70% to about 90% by weight) being chrysotile asbestos. A small amount (from about 3% to about 6% by weight) of a modified starch constitutes a binder and increases the tensile strength of the felt, and a small amount (from about 4% to about 8% by weight) of an organic fiber is also used to act as a binder for the fibers, and further to increase the flexibility of the felted sheet. A fractional percentage of a surface active agent may be used to provide smoother machine operation and to yield a more uniform felted sheet.

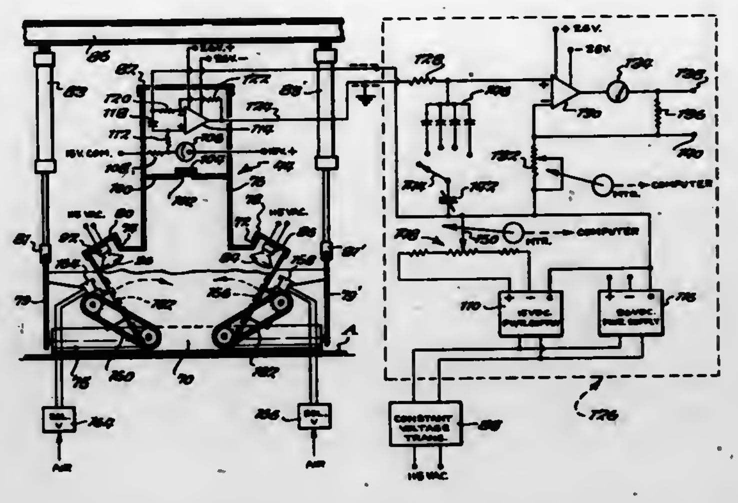
3,729,374
PRODUCTION OF A FIBROUS WEB BETWEEN AN ENDLESS BELT AND AN ENDLESS PERMEABLE BELT
Henri Robert Lissalde, Rouen, France, assignor to Papeteries Navarre, Paris, France
Continuation of abandoned application Ser. No. 705,735, Feb. 15, 1968. This application Feb. 17, 1971, Ser. No. 116,212
Claims priority, application France, Feb. 28, 1967, 96,729
Int. Cl. D21f *1/00, 11/04*
U.S. Cl. 162—203 **5 Claims**



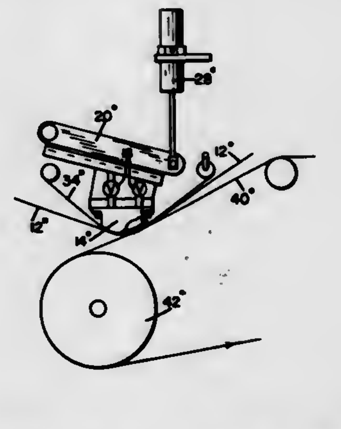
Process for the production of a web or carrier of fibrous elements comprising placing a suspension of fibres in a liquid bath, causing a flow of the suspension through a part of the bath having a progressively decreasing width to concentrate the suspension and causing the concentrated suspension to be advanced between two travelling belts to form the web or carrier.

3,729,375
METER FOR MEASURING BRIGHTNESS OF BLEACHED FIBERS AND CONTROLLING THE BLEACHING PROCESS
James H. Chappelle, Mobile, Ala., assignor to International Paper Company, New York, N.Y.
Continuation-in-part of application Ser. No. 31,857, May 1, 1970, now Patent No. 3,607,623, which is a continuation of application Ser. No. 535,402, Mar. 18, 1966, now abandoned. This application July 29, 1971, Ser. No. 167,407
Int. Cl. D21c *7/12;* **G01n** *21/30, 21/48*
U.S. Cl. 162—252 **9 Claims**

Apparatus for continuously controlling the bleaching of fibers and for continuously measuring and recording the brightness of light reflected from the bleached fibers comprising a bleaching tank, pipe lines for feeding fibers to and from the tank, drums for forming the fibers leaving and entering the tank into mats on the drums, and a first and a second photoelectric measuring apparatus supported by rollers on the fiber mats on the first and second drums, respectively, for producing first and second control signals representative of the separate brightnesses of the fiber mats. Motor controlled valves responsive to the first control signal regulate the flow of bleaching agent into the tank as well as the temperature of the fibers entering the tank. A computerized controller compares the value of the second control signal, representative of the brightness of fibers leaving the tank, with a predetermined standard value and modifies the response of the motor controlled valves to the first contol signal in accordance with changes in the comparative value. Two reflectance standardization plates are mounted in at least one of the photoelectric measuring devices for calibrating the device over the range of brightness values which it must measure.



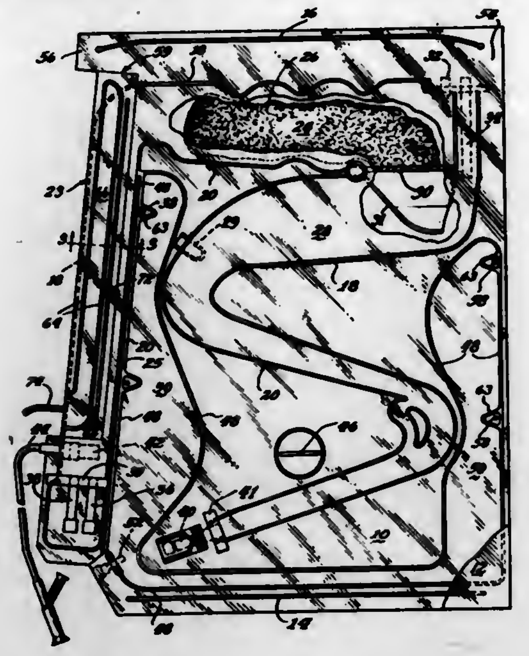
3,729,376
PAPERMAKING MACHINE PICKUP DEVICE INCLUDING AN INFLATABLE MEMBER PRESSING AN APRON UNIFORMLY AGAINST THE WEB
Samuel S. Stevens, Box 218, Erving, Mass. 01344
Filed Oct. 23, 1970, Ser. No. 83,347
Int. Cl. D21f *2/00*
U.S. Cl. 162—306 **7 Claims**



A device for removing or couching a fibrous web from either the forming wire of a Fourdrinier machine or the surface of a forming roll (or cylinder) in the case of a cylinder type machine which includes a smooth apron which contacts the web and an inflatable, elastomeric, hollow member which presses the apron against the web in a uniform fashion. The hollow member can be filled to an adjustable level with liquids or gases.

3,729,377
ENVELOPE OXYGENATOR FOR BLOOD HAVING INFLATABLE PORTIONS AND PROCESS OF USING SAME
Ronald J. Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Mar. 12, 1971, Ser. No. 123,518
Int. Cl. A61m *1/03;* **C12k** *9/00*
U.S. Cl. 195—1.8 **12 Claims**

A blood oxygenator which defines a flow passage, and having means for introducing a stream of blood into one end of the flow passage and means for removing blood from the other end. The oxygenator has means defining a fluid pressurizable section to provide dimensional stability thereto, for example, to control the cross sectional area of the oxygenating portion of the flow passage or to make the oxygenator self-supporting.



3,729,378
PROCESS FOR THE PRODUCTION OF AERUGINOIC ACID

Tomio Imai, Tokyo, Masao Takahashi, Matsudo, Nobuyuki Seki, Soka, and Yoshio Irie, Matsudo, Japan, assignors to Godo Shusei Kabushiki Kaisha, Tokyo, Japan
Filed June 1, 1970, Ser. No. 42,121
Claims priority, application Japan, Sept. 16, 1969, 44/72,757
Int. Cl. C12d *1/00*
U.S. Cl. 195—28 R **5 Claims**

This invention relates to a process for the production of aeruginoic acid by culturing a strain of *Pseudomonas aeruginosa* or a variety of the strain or a variety of *Pseudomonas aeruginosa* having the ability for producing aeruginoic acid on a culture medium comprising as a principal component a carboneous source to produce a broth culture and recovering aeruginoic acid from said broth culture.

3,729,379
HYDROXY-CONJUGATED FATTY ACIDS

Edward A. Emken, Peoria, Ill., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Aug. 31, 1971, Ser. No. 176,753
Int. Cl. C12b *1/00*
U.S. Cl. 195—30 **3 Claims**

Method for producing hydroxy-conjugated fatty acids from linoleic acid soaps dispersed in an aqueous medium containing dimethyl sulfoxide with the enzyme soybean lipoxygenase.

3,729,380
PROCESS FOR PRODUCING LOW MOLECULAR AMYLOSE ON A COMMERCIAL BASIS

Kaname Sugimoto and Mikihiko Yoshida, Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan
Filed Apr. 14, 1970, Ser. No. 28,383
Claims priority, application Japan, Apr. 15, 1969, 44/29,170
Int. Cl. C13l *1/08*
U.S. Cl. 195—31 R **14 Claims**

Process for producing a relatively low molecular amylose having straight chain structure on a commercial basis by selectively hydrolyzing with α-1,6-glucosidase only the bonds of the branched parts in amylopectin molecules contained in starches which are high molecular polymers of glucose.

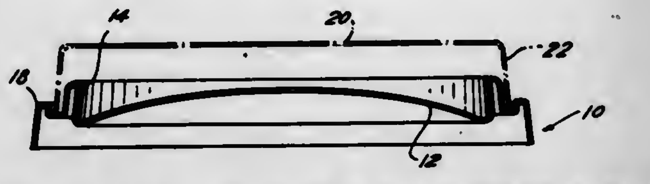
3,729,381
PROCESS FOR PRODUCING L-METHIONINE

Kiyoshi Nakayama, Sagamihara, and Kazumi Araki, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Filed Jan. 25, 1971, Ser. No. 109,609
Claims priority, application Japan, Feb. 6, 1970, 45/10,005
Int. Cl. C12d *13/06*
U.S. Cl. 195—96 **5 Claims**

L-methionine is produced by fermentation of an aqueous nutrient medium with an L-methionine-producing certain type mutant strain of coryneform glutamic acid-producing bacteria.

3,729,382
MICROORGANISM SAMPLING DISH

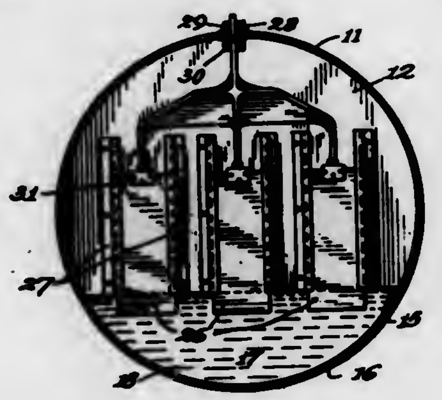
George Raymond Shaffer, Towson, and Eugene M. Roz, Middle River, Md., assignors to Becton, Dickinson and Company, Rutherford, N.J.
Filed Dec. 9, 1970, Ser. No. 96,306
Int. Cl. C12b *1/00*
U.S. Cl. 195—139 **3 Claims**



A microorganism sampling dish for testing a surface for the presence of microorganisms has a base plate formed with an inwardly sloping wall extending therearound at the periphery of the plate. The dish is formed from flexible material and has a convex bottom. A channel is spaced about the dish wall for supporting a cover. A culture medium can be disposed in the dish and a cover may be provided which bridges the dish wall and culture medium and rests in the channel.

3,729,383
FLASH EVAPORATOR STRUCTURE

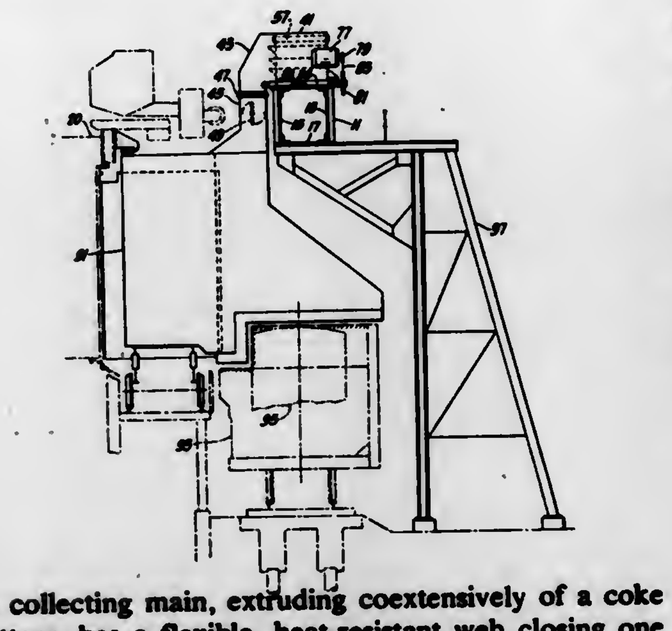
Richard W. Goeldner, Brookfield, Wis., assignor to Aqua-Chem, Inc.
Continuation-in-part of applications Ser. No. 94,879, Mar. 10, 1961, and Ser. No. 267,074, Mar. 14, 1963. This application Jan. 7, 1966, Ser. No. 519,355
Int. Cl. B01d *3/02*
U.S. Cl. 202—173 **13 Claims**



A horizontally arranged multistage flash evaporator wherein a tubular vessel is divided into a plurality of flash chambers by transverse partitions in which the partitions at their lower end provide a passage for feedwater from chamber to chamber, and in which means are provided for controlling the flow of feedwater between chambers to maintain a desired level of feedwater liquid to effect a water seal between chambers.

3,729,384
FLEXIBLE BELT MOVABLE HOOD

Raymond C. Kinzler, Carnegie, and Robert M. Staats, Beaver Falls, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.
Filed Jan. 21, 1971, Ser. No. 108,507
Int. Cl. C10b *27/00*
U.S. Cl. 202—263 **6 Claims**



A gas collecting main, extruding coextensively of a coke oven battery, has a flexible, heat-resistant web closing one side. An apparatus that is mounted to, or that is movable synchronously with, a coke guide cooperates with the flexible web to provide an opening in the collecting main wherever the apparatus stops so that gases, emitted from a coking chamber when the doors are removed and while pushing coke, are directed into the collecting main only through such opening.

3,729,385
INHIBITION OF ETHER DECOMPOSITION DURING DISTILLATION BY QUINOLINE ADDITION

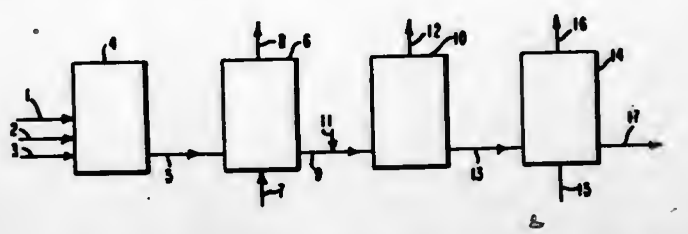
Anthony L. Tumolo, Havertown, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.
Continuation-in-part of Ser. No. 807,995, March 17, 1969, abandoned. This application July 29, 1971, Ser. No. 167,482
Int. Cl. C07c *41/12*
U.S. Cl. 203—6 **2 Claims**

Propylene trimer methyl ether is of interest as a non-air polluting solvent; however, in the production of the ether, there is a major proportion of unreacted propylene trimer from which the ether must be separated. Distilling the propylene trimer methyl ether out of the ether-trimer mixture results in up to 30 percent degradation of the ether. By adding 0.1–10 weight percent quinoline to the distillation mixture, however, reduces degradation loss to less than 5 percent.

3,729,386
ORGANIC ISOCYANATE RECOVERY PROCESS BY DISTILLATION WITH A TAR-THINNING AGENT AND A STRIPPING AGENT

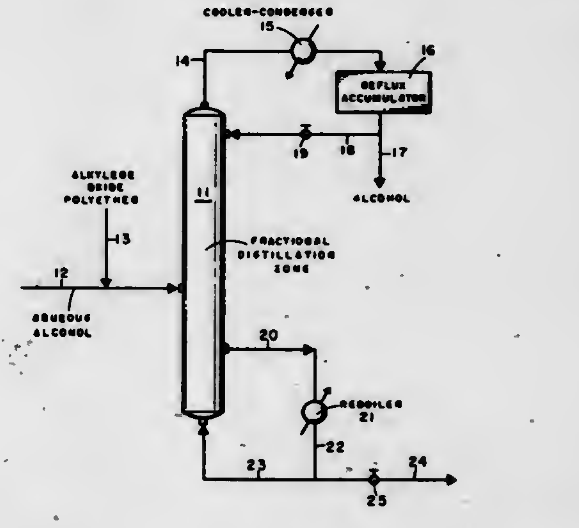
Carl F. Irwin, New Castle, Del., and William T. Muncaster, Woodstown, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 39,779, May 22, 1970, abandoned. This application Jan. 4, 1971, Ser. No. 103,734
Int. Cl. C07c *119/04*; B01d *3/34*
U.S. Cl. 203—8 **8 Claims**

Organic isocyanates can be recovered with beneficial ease and efficiency from crude isocyanate compositions containing tar (residue component) and other contaminants (e.g., compositions as obtained by phosgenation of an amine in a solvent) by a process which includes adding a suitable amount of a useful tar-thinning agent and distilling the resulting mixture either batchwise or continuously in the presence of a stripping agent so that the distillate contains most of the organic isocyanate and the still heel contains the tar and tar-thinning agent.



3,729,387
DISTILLATION OF WATER AND ALCOHOL WHILE PREVENTING FOAMING AND FORMATION OF EMULSIONS

John H. Naschke and Eugene O. Keil, Houston, Tex., assignors to Esso Research and Engineering Company
Original application Feb. 6, 1970, Ser. No. 9,440, now abandoned. Divided and this application July 8, 1971, Ser. No. 160,895
Int. Cl. C07c *29/26*
U.S. Cl. 203—19 **5 Claims**

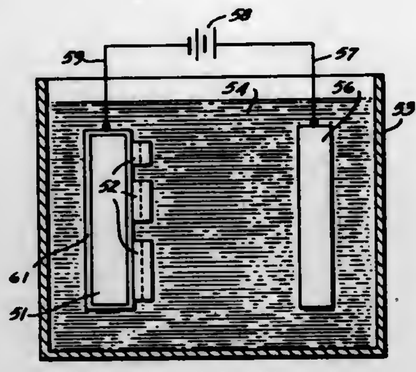


Foaming and emulsion formation in an aqueous alcohol solution are prevented during separation of water and alcohol by heating the solution to a temperature within the range of about 90° F. to about 350° F. at pressures within the range from about atmospheric to about 300 p.s.i.g. in the presence of a small but effective amount of an alkylene oxide polyether containing about 25 to about 175 moles of propylene oxide and about 5 to about 235 moles of ethylene oxide and having a molecular weight of about 3,000 to about 10,000, the propylene oxide being in a major amount and sufficient of the combined oxides being employed to provide a molecular weight in the range given.

3,729,388
METHOD OF PREPARING AT LEAST ONE CONDUCTIVE FORM

Michael Anthony De Angelo, Hamilton Township, Mercer County, and Donald Jex Sharp, Lawrence Township, Mercer County, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Dec. 10, 1970, Ser. No. 96,945
Int. Cl. C23b *7/08, 5/48*; B01k *1/00*
U.S. Cl. 204—3 **44 Claims**

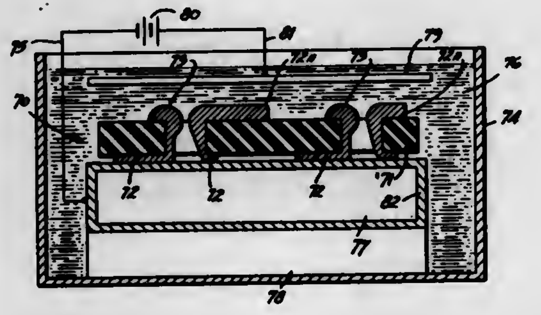
A method of preparing conductive patterns comprises depositing a thin metallic form or pattern on a base material comprising a valve metal. The valve metal base with the deposited pattern thereon is then subjected to an electrolytic plating treatment in which only the pattern and not the base is electroplated and built up to a desired thickness. A background support or substrate, having at least one surface rendered adhesive, may then be contacted with the built-up pattern at the adhesive surface. Pressure is then maintained along the substrate sufficient to (1) insure the subsequent removal of the pattern from the base when the substrate is removed from contact therewith and (2) insure the temporary retention of the patterns on the substrate. The retention of the patterns may then be rendered permanent.



3,729,389

METHOD OF ELECTROPLATING DISCRETE CONDUCTIVE REGIONS

Michael Anthony De Angelo, Hamilton Township, Mercer County, and Donald Jex Sharp, Lawrence Township, Mercer County, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Dec. 10, 1970, Ser. No. 96,946
Int. Cl. C23b *5/48, 5/58;* **B01k** *3/04*
U.S. Cl. 204—15 **34 Claims**



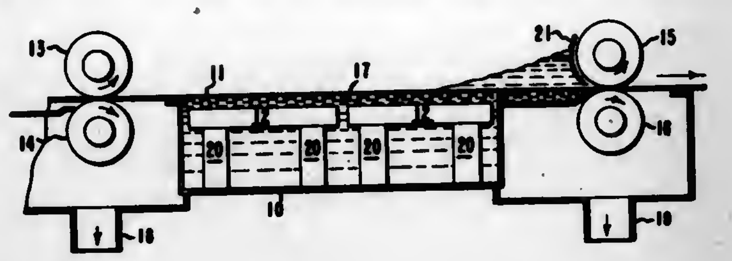
A method of electrodepositing a metal coating on discrete conductive portions is described. The method comprises immersing the discrete conductive portions in a standard metal plating bath containing a suitable anode. The discrete portions are then contacted with a cathode fabricated of a valve metal material, which material is capable of functioning as an electrode but which is passive to metal deposition upon its own surfaces. A current density is then maintained within the plating solution which is sufficient to metal plate the discrete portions to a desired thickness.

3,729,390

ELECTROTINNING PROCESS TO PREVENT PLATING ON THE CATHODE CONTACT ROLL

Owen Bertwell Mathre, Wilmington, and Donald Arthur Swalheim, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Application Jan. 15, 1968, Ser. No. 703,830, which is a continuation-in-part of application Ser. No. 685,452, Nov. 24, 1967, both now abandoned. Divided and this application Feb. 11, 1971, Ser. No. 114,664
Int. Cl. C23b *5/14, 5/58, 5/68*
U.S. Cl. 204—28 **3 Claims**

In an electrotinning process, a metallic shield is positioned near the cathode contact roll and maintained at a slightly more negative (more cathodic) potential than the contact roll so as to prevent plating on the contact roll. Specifically, the metallic shield is operated near the cathode roll in a continuous wire or strip plating unit.



3,729,391

SURFACE TREATMENT OF ZINC/ALUMINIUM ALLOYS

Roger Reid Houghton, Leigh, and Graham Charles Wood, Bolton, England, assignors to Imperial Smelting Corporation (Alloys) Limited, London, England
No Drawing. Filed Feb. 9, 1972, Ser. No. 224,979
Claims priority, application Great Britain, Feb. 9, 1971, 4,231/71
Int. Cl. C23b *9/02, 11/02;* **C23g** *5/00*
U.S. Cl. 204—32 R **8 Claims**

In a method for the surface treatment of an alloy consisting predominantly of zinc and aluminium, and containing 60–85% by weight of zinc by immersing a surface of the alloy in dilute aqueous sulphuric acid, comprising subjecting the alloy to anodic oxidation at a current density of from 50 to 200 milliamperes per square centimetre of surface. The alloy may include up to 0.5% by weight of copper or magnesium as a third metal.

3,729,392

PLATING OF TITANIUM WITH CHROMIUM

John Edwin Bride, Mentor, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Feb. 19, 1971, Ser. No. 117,101
Int. Cl. C23b *5/06*
U.S. Cl. 204—51 **3 Claims**

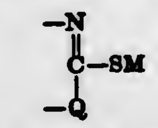
Titanium or titanium-base alloys can be plated with a semi-bright chromium plate of good appearance and durability. The titanium is plated by electrodeposition from a plating medium containing a solution of a particular chromic-compound. More especially the bath contains a solution of a complex, water-soluble trivalent chromic compound containing particular carboxylic acid constituents and halogen. Plated titanium articles can be used alone and exhibit a decorative surface, or they may be used as a base for subsequent coating operation.

3,729,393

ELECTRODEPOSITION OF COPPER

Derek Martin Lyde, Stourbridge, England, assignor to Albright & Wilson Limited, Oldbury, Worcestershire, England
No Drawing. Original application Apr. 25, 1968, Ser. No. 724,225. Divided and this application Apr. 7, 1971, Ser. No. 132,236
Claims priority, application Great Britain, May 1, 1967, 19,989/67
Int. Cl. C23b *5/18*
U.S. Cl. 204—52 R **22 Claims**

Brightening compositions for copper pyrophosphate electroplating solutions comprising a heterocyclic brightener of the type which consists of a



$$\begin{array}{l} -\mathrm{N} \\ \quad \| \\ \quad \mathrm{C}-\mathrm{SM} \\ \quad | \\ -\mathrm{Q} \end{array}$$

group contained in a 5 or 6 membered heterocyclic ring system where Q represents nitrogen or sulphur and M is

hydrogen or a cation (such as mercapto thiazoles, thiadiazoles or pyrimidines), or a precursor thereof; and an auxiliary brightener selected from aryl or alkaryl-sulphonic acids having at least 7 carbon atoms.

3,729,394

COMPOSITION AND METHOD FOR ELECTRODEPOSITION OF ZINC

Grace F. Hsu, Somers, and Merton M. Beckwith, Rockville, both of Conn., assignors to Conversion Chemical Corporation, Rockville, Conn.
Filed April 17, 1972, Ser. No. 244,870
Int. Cl. C23b *5/12, 5/46*
U.S. Cl. 204—55 R **31 Claims**

An aqueous bath for electroplating zinc includes a soluble zinc salt, a soluble electrolyte and a surface active agent formulation. The zinc salt and electrolyte provide ammonium and chloride ions and the surface active agent formulation is based upon a nonionic block copolymer of ethylene oxide and propylene oxide. In some instances, the block copolymer may be utilized alone, in other instances, it is used in combination with an N-(alkyl sulfonyl) glycine compound. Other surface active agents and brighteners are advantageously employed in connection therewith, and the bath may be operated at a pH of 3.0–6.3.

3,729,395

PROCESS FOR THE PRODUCTION OF FLUORINE

Michel Caron, Bollene, Claude Coquet, Soucieu en Jarrest, Philippe Coste, Paris, and Marcel Rey, Versailles, France, assignors to Societe des Usines Chimiques de Pierrelatte, Paris, France
No Drawing. Filed Mar. 15, 1971, Ser. No. 124,530
Claims priority, application France, Mar. 12, 1970, 7008897
Int. Cl. C01b *7/20, 11/26*
U.S. Cl. 204—59 R **13 Claims**

This invention relates to a process for the production of fluorine containing less than 6% HF by volume which comprises subjecting to electrolysis an anhydrous mixture of NH_4F and HF.

3,729,396

RHODIUM PLATING COMPOSITION AND METHOD FOR PLATING RHODIUM

Myron E. Browning and Hamilton M. Solidum, Woodbury, Conn., assignors to American Chemical & Refining Company, Incorporated, Waterbury, Conn.
No Drawing. Filed Aug. 30, 1971, Ser. No. 176,235
Int. Cl. C23b *5/24*
U.S. Cl. 204—47 **7 Claims**

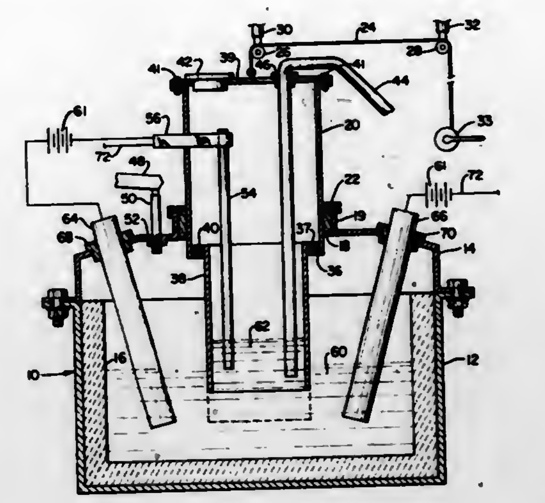
An aqueous acid bath for producing bright rhodium electrodeposits having low internal stress contains rhodium ion, aluminum ion sulfate radical and a polycarboxylic organic acid. Preferably, it also contains a small amount of the phosphate radical.

3,729,397

METHOD FOR THE RECOVERY OF RARE EARTH METAL ALLOYS

James R. Goldsmith, Upper St. Clair, Pa., Paul R. Kruesi, Golden, Colo., and Nathaniel Henri Masarky, Tenafly, N.J., assignors to Molybdenum Corporation of America, Louviers, Colo.
Filed Sept. 25, 1970, Ser. No. 75,346
Int. Cl. C22d *3/00, 3/08, 3/20*
U.S. Cl. 204—64 R **24 Claims**

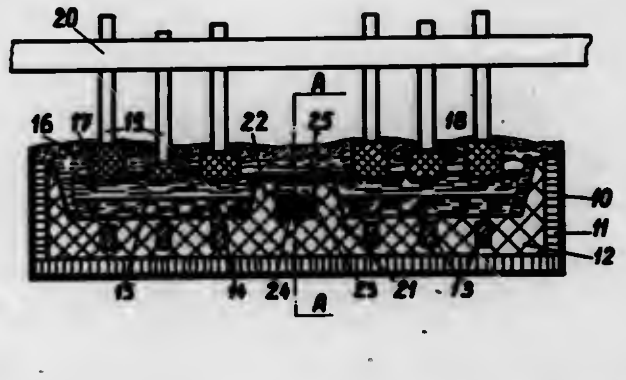
A method for electrowinning of magnesium-rare earth metal alloys from fused salt baths having melting points and specific gravities above that of magnesium which comprises adding the rare earth metal oxide as feed material to a fused salt bath comprising the fluoride of the rare earth metal and an alkali metal fluoride with the optional inclusion of an alkaline earth metal fluoride, and electrolyzing the electrolyte mixture using carbon anodes and as a cathode, molten magnesium which floats on the electrolyte mixture and is confined near the anodes in a boron nitride sleeve and maintained as a cathode through a molybdenum connector extending into the molten magnesium but not into the molten electrolyte mixture.



3,729,398

PROCESS AND CELL FOR THE ELECTROLYTIC RECOVERY OF ALUMINUM

Wolfgang Schmidt-Hatting, Chippis, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Feb. 9, 1971, Ser. No. 113,960
Claims priority, application Switzerland, Feb. 17, 1970, 2,295/70
Int. Cl. C22d *3/02, 3/12*
U.S. Cl. 204—67 **3 Claims**



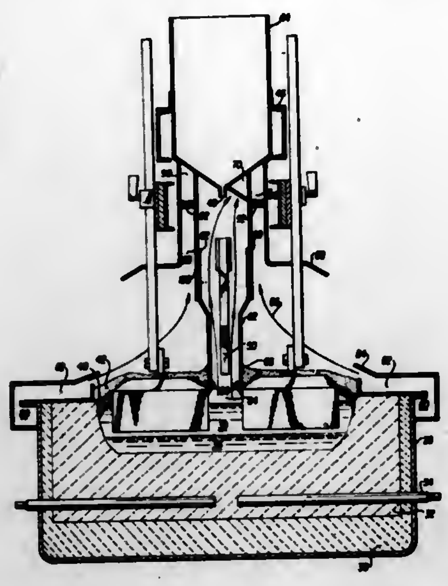
Process for the electrolytic recovery of aluminum from a fused alumina-containing bath of alkali aluminum fluoride in which the fluoride melt is kept in direct contact with a melt consisting of electrolyte highly concentrated in alumina and separated from the liquid cathodic aluminum. The electrolytic cell used therefor comprises one or more troughs resting on its bottom and provided for the reception of the highly concentrated electrolyte.

3,729,399

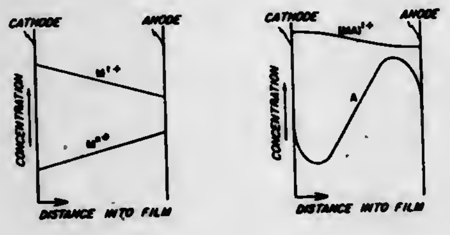
GAS CONTROL METHOD AND APPARATUS

Robert M. Kibby, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.
Filed July 13, 1971, Ser. No. 162,198
Int. Cl. C22d *3/12*
U.S. Cl. 204—67 **19 Claims**

The crust of an alumina reduction cell is periodically pierced and concentrated cell fumes are directed to a concentrated-fume collector for passage to a concentrated-fume processor. A variable output blower directs air upwardly over the cell for directing dilute fumes toward a dilute-fume collector for passage to a dilute-fume processor.



3,729,400
METHOD OF SEPARATING MIXTURES OF GASES
William J. Ward III, Schenectady, N.Y., assignor to General Electric Company
Original application Feb. 27, 1969, Ser. No. 803,019, now Patent No. 3,676,220. Divided and this application Dec. 10, 1970, Ser. No. 96,770
Int. Cl. H01m *27/02;* **B01d** *57/00;* **C01b** *21/36*
U.S. Cl. 204—128 **6 Claims**

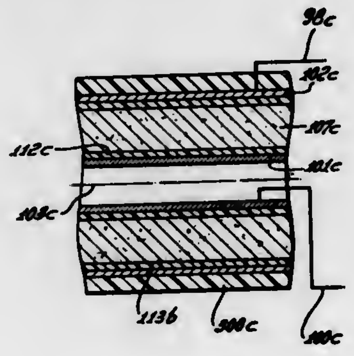


A confined liquid membrane having an electrode in contact with each surface thereof is provided with a concentration of a non-volatile transporting specie in solution therein, which transporting specie can be oxidized or reduced from a first to a second valence state. The transporting specie must be reactive with a specific gas in at least one of the multiple valence states. If the transporting specie is reactive with the gas in both valence states, such reactions must have different equilibrium constants. By bringing the specific gas into contact with one surface of such a liquid membrane and applying an electrical potential across the electrodes on each side thereof, the specific gas may be pumped through the membrane against a concentration gradient. Similarly, while a concentration gradient in the specific gas exists across the structure described, an electrical potential difference develops across the film and the electrodes.

3,729,401
CALCIUM ION MEASURING ELECTRODE
Richard Elmond Cosgrove II, Leucadia, and Charles Arnold Mask, Garden Grove, Calif., assignors to Beckman Instruments, Inc.
No Drawing. Filed Mar. 1, 1972, Ser. No. 230,981
Int. Cl. G01n *27/30*
U.S. Cl. 204—195 L **4 Claims**

An electrode for measuring the concentration of calcium ions in an aqueous solution comprising a substantially water immiscible, liquid organic phase containing an ion exchange material selected from the group consisting of calcium bis [para(1,1,3,3 tetramethyl butyl)-phenyl] phosphate, calcium bis (para-t-butyl phenyl) phosphate, bis [para (1,1,3,3 tetramethyl butyl)-phenyl] phosphoric acid, and bis (para-t-butyl phenyl (phosphoric acid. Means are provided for containing the organic phase and providing an interface for ion exchange contact between the organic phase and the aqueous solution and an internal reference electrode element is also provided in electrical contact with the organic phase.

2,729,402
ELECTROSTATIC FILTER FOR CLEANING DIELECTRIC FLUIDS
Edward A. Griswold, 2072 E. Galbreth Road, Pasadena, Calif. 91104
Continuation-in-part of application Ser. No. 538,275, Mar. 29, 1966, now Patent No. 3,544,441. This application Nov. 27, 1970, Ser. No. 93,363
Int. Cl. B01d *13/02;* **B01k** *1/00;* **B03c** *5/00*
U.S. Cl. 204—302 **10 Claims**



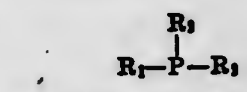
Apparatus for reducing or eliminating destructive electrical arcing between inner and outer electrodes includes an elongated inner electrode element; an elongated outer shell element spaced from and containing the inner electrode, whereby an electric field may be established between the elements; and porous media in the space between the elements to trap particles migrating in the direction of the field. A dielectric coating in the space between the electrodes may be applicable to the element, elements and/or media, for chemical and electrical modification of the surfaces so coated.

3,729,403
HIGH ENERGY CURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION
Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.
No Drawing. Application June 23, 1970, Ser. No. 49,191, which is a continuation-in-part of abandoned application Ser. No. 617,801, Feb. 23, 1967, which in turn is a continuation-in-part of abandoned application Ser. No. 567,841, July 26, 1966. Divided and this application June 25, 1971, Ser. No. 156,971
Int. Cl. C08c *11/54;* **C08d** *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.14 **17 Claims**

The invention disclosed is for a new high energy curable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain backbone of the molecule, and a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule. The high energy curable liquid polymer composition upon curing in the presence of high energy irradiation forms odorless, solid, elastomeric products which may serve as sealants, coatings, adhesives, and molded articles.

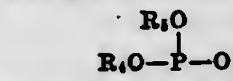
3,729,404
PHOTOCURABLE POLYENE-POLYTHIOL POLYMERS USING A PHOSPHINE PLUS AN ADDITIONAL SENSITIZER
Charles Robert Morgan, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.
No Drawing. Filed Sept. 10, 1971, Ser. No. 179,567
Int. Cl. C08d *1/00;* **C08f** *1/16;* **C08c** *11/54*
U.S. Cl. 204—159.15 **6 Claims**

This invention relates to accelerated curing of a composition comprising a polyene containing at least two reactive unsaturated carbon to carbon bonds per molecule and a polythiol containing at least two thiol groups per molecule, the total combined functionality of (a) the reactive unsaturated carbon to carbon bonds per molecule in the polyene and (b) the thiol groups per molecule in the polythiol being greater than four, in the presence of a photosensitizer and a novel class of synergistic agents from the group consisting of (1) phosphines of the formula



$$R_1-\overset{\displaystyle R_3}{\overset{|}{P}}-R_2$$

wherein R_1, R_2 and R_3 are each independently selected from the group consisting of alkyl, aryl, alkaryl and alkoxy and (2) phosphites of the formula



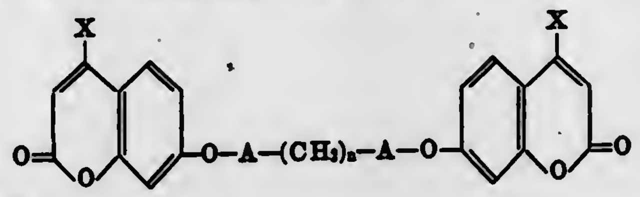
$$R_4O-\overset{\displaystyle R_5O}{\overset{|}{P}}-OR_6$$

wherein R_4, R_5 and R_6 are each independently selected from the group consisting of alkyl, aryl and alkaryl, said alkyls containing 1–12 carbon atoms.

The curing takes place in the presence of a free radical generator, preferably actinic radiation, e.g., UV light.

3,729,405
PHOTOCYCLOADDITION POLYMERISATION OF BIS-COUMARINS
Frans Carolus De Schrijver, Leuven, and Luc Leenders, Hasselt, Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium
No Drawing. Filed June 29, 1972, Ser. No. 267,482
Claims priority, application Great Britain, July 12, 1971, 32,613/71
Int. Cl. C08d *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.23 **10 Claims**

Photocycloaddition polymerization products are obtained by irradiation with ultraviolet light, having a wavelength above 310 nm., and in the presence of a photosensitizer, of bis-coumarines of the formula:



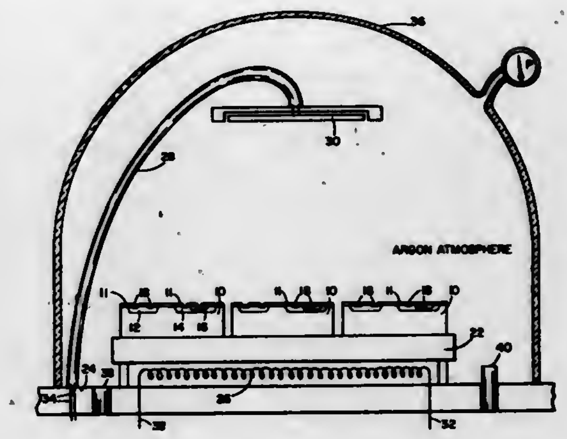
wherein:

A represents a carbonyl group or a chemical bond,
X represents an alkyl group (1–4 C), and
n is an integer from 1 to 20.

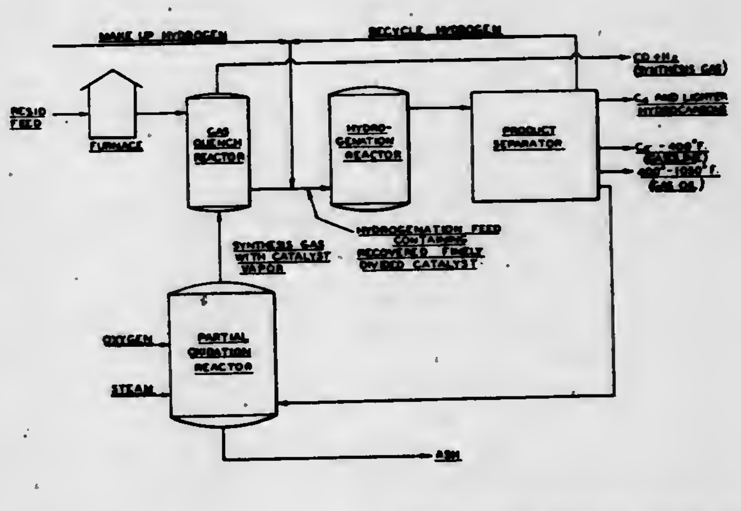
Upon exposure of the photocycloaddition polymerization products with ultraviolet light of 310 nm. the monomeric bis-coumarines are reformed.

3,729,406
METHOD OF ADHERING TUNGSTEN TO GLASS AND FOR PROVIDING A TUNGSTEN-GOLD INTERCONNECT LAYER
John Francis Osborne, Tempe, and Hans Joachim Pille, Mesa, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed May 10, 1971, Ser. No. 141,645
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **4 Claims**

In building semiconductor integrated circuits, it is often necessary to adhere a layer of electrically conductive connections to an insulating layer. The electrically conductive connections comprise the connections between the several circuit elements built into the integrated circuit. For many reasons, the circuit connections are of gold and the insulating layer is of SiO_2 (glass). However, gold does not adhere with sufficient tenacity to glass, whereby, an intermediate layer of tungsten is used between the glass and the gold. It has been found that the tungsten does not adhere sufficiently tightly to the glass in accordance with prior art processes to produce high quality integrated circuits. This poor adherence is due to the fact that the tungsten which is sputtered on the glass in an argon atmosphere contains large amounts of argon and other gases. Furthermore, the formation of tungsten oxide tends to prevent adherence of the tungsten to the glass. A method of depositing an adherent layer of tungsten on glass is disclosed in which the oxygen in the argon atmosphere is reduced below the level that causes the production of tungsten oxide and the argon entrapped in the tungsten is greatly reduced. A greatly improved method of producing a tungsten-gold circuit element interconnection layer including the so deposited tungsten is also disclosed.



3,729,407
HYDROGENATION PROCESS UTILIZING RECOVERED CATALYST
Frederick W. Camp, West Chester; Frederic S. Eisen, Broomall; James Van Dyck Fear, West Chester, and Merritt C. Kirk, Jr., Thornton, all of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.
Filed April 5, 1971, Ser. No. 131,336
Int. Cl. C10g *1/06*
U.S. Cl. 208—10 **5 Claims**



In a hydrogenation process where molybdenum oxide or sulfide is used as catalyst, the improvement of condensing vapors of recovered catalyst in the feed stream to the hydrogenation unit.

3,729,408
CATALYTIC REFORMING PROCESS

James L. Carter, Chatham, and John H. Sinfelt, Berkeley Heights, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Dec. 28, 1970, Ser. No. 102,208

Int. Cl. C10g *35/08;* **B01j** *11/08, 11/22*

U.S. Cl. 208—65 **14 Claims**

A catalytic reforming process wherein naphtha feed streams, boiling from about 80° to 450° F, and comprising naphthenes, paraffins and aromatics, are contacted, in an initial reaction zone, with a hydrogen containing gas, in the presence of a catalyst comprising Pt and a group IB metal supported on a refractory oxide; passed into a tail zone wherein the feed stream is again contacted with a catalyst and thereby further reacted; and a high octane product is recovered. In a preferred embodiment the Group IB metal is Cu.

3,729,409
HYDROCARBON CONVERSION

Nai Yuen Chen, Titusville, N.J., assignor to Mobil Oil Corporation

Filed Dec. 24, 1970, Ser. No. 101,231

Int. Cl. C10g *35/06*

U.S. Cl. 208—135 **12 Claims**

This disclosure relates to a method of improving the yield-octane number relationship of a reformate or reformer effluent by contacting the same in the presence of hydrogen with a family of crystalline aluminosilicate zeolites identified as ZSM–5 type.

3,729,410
DE-OILING OF POLLUTED WATERS

Albert Abadie, Argeles Gazost, and Henri Roques, Portet-sur-Garonne, France, assignors to Anvar (Agence Nationale de Valorisation de la Recherche), Courvevoie, France

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,695

Claims priority, application France, Mar. 3, 1970, 7007641

Int. Cl. E02b *15/04*

U.S. Cl. 210—32 **23 Claims**

A process for de-oiling polluted waters which comprises contacting the oil-containing water with an oleophilic resin having a high surface area, for example, in the form of a powder or small spherules or granules, and removing the treated water from the resin, after several stages as necessary if a particular degree of de-oiling is desired. The oleophilic resin can be an ion exchange resin; the oleophilic properties are imparted thereto by organic ions fixed thereon. Accordingly, an ion exchange operation can be conducted concurrently with the de-oiling process, if desired.

3,729,411
METHOD OF REMOVING OIL FROM WATER

Joseph V. Otrhalek, Dearborn, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,879

Int. Cl. E02b *15/04*

U.S. Cl. 210—36 **3 Claims**

Oil slicks and other oil films are removed from bodies of water by casting onto the water a silicone-treated expanded volcanic ash containing, optionally, a thickening agent, and, thereafter, removing the oil absorbed composition from the water.

3,729,412
SLUDGE CONCENTRATION

Robert Carl MacKenzie, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,351

Claims priority, application Canada, Aug. 31, 1970, 91,963

Int. Cl. C02b *1/20*

U.S. Cl. 210—52 **10 Claims**

A process is provided for the dewatering of a sludge derived from the treatment of an industrial waste water stream, wherein the sludge is mixed with a latex comprising rubbery polymer and, on addition of a coagulating agent, a coagulum is formed which is separable from the aqueous phase.

3,729,413
PROCESS FOR THE REMOVAL OF CYANIDE FROM SEWAGE BY MEANS OF FORMALDEHYDE

Zoltán Csürös, Józef Petró, Zsigmond Dusza, Zsuzsa Simó nee Bárczy, István Turcsán, and Józef Vaczulin, Budapest, Hungary, assignors to NIKEX Nehezipari Kulkereskedelmi Vallalat, Budapest, Hungary

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,350

Int. Cl. C22c *5/02*

U.S. Cl. 210—59 **6 Claims**

Sewage is decyanized with formaldehyde and the formed product recovered. The essence of the method is that a formaldehyde solution of at least pH 8 alkalinity is added under intensive agitation to the sewage, the solution allowed to stand at temperatures ranging from room temperature to 100° C. for 50–1 hours and heated or boiled. To improve the economy of the method in given cases the ammonia is absorbed and the formed glycolic acid recovered from the solution. The method can be applied to the detoxication of both dilute and concentrated cyanide-containing sewage.

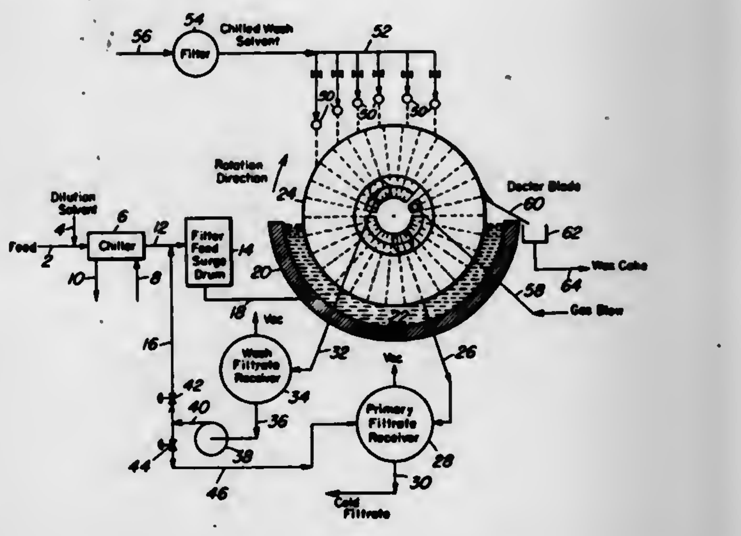
3,729,414
DEWAXING AND DEOILING PROCESS

Robert E. Harris, and William R. Moseley, both of Beaumont, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 171,930

Int. Cl. B01d *37/00*

U.S. Cl. 210—66 **3 Claims**



In a rotary filter dewaxing-deoiling process, the method and apparatus for improving the deoiling of the wax cake is described, characterized by utilizing a plurality of transverse solvent distributor pipes each of which dispense a relatively dense transverse curtain of solvent droplets on the wax cake thereby providing areas of solvent flooding interspaced with areas of considerably reduced solvent concentration.

3,729,415
LUBRICATING COMPOSITION

William J. Davis, Wyomissing, and Richard C. Gilles, Sinking Spring, both of Pa., assignors to Joseph E. Ferri, Schillington, Pa.

Continuation of Ser. No. 771,273, Oct. 28, 1968, Pat. No. 3,547,819, which is a continuation of Ser. No. 668,692, Sept. 18, 1967, abandoned, which is a continuation of Ser. No. 486,214, Sept. 9, 1965, abandoned, which is a continuation-in-part of Ser. No. 363,294, April 28, 1964, abandoned. This application Dec. 11, 1970, Ser. No. 97,294

Int. Cl. C10m *1/18, 1/10, 5/08*

U.S. Cl. 252—25 **10 Claims**

Lubricating composition comprising a hydrocarbon oil and polyethylene having an average molecular weight within the range of from over 1 million to about 5 million, the composition being of various forms, namely a fluid-like gel, a jelly-like gel and a rigid gel, depending on the amount of polyethylene present in the composition.

3,729,416
LIQUID SOFTENING RINSING AGENT COMPOSITIONS

Jürgen Brüning, Luchtringen, Hans-Werner Eckert, Dusseldorf, and Arnold Heins, Hilden, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

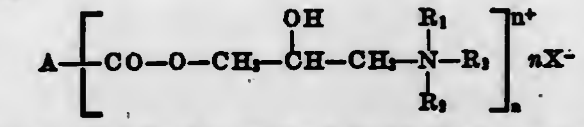
No Drawing. Filed May 24, 1971, Ser. No. 146,515

Claims priority, application Germany, May 27, 1970, P 20 25 945.4

Int. Cl. D06m *13/46*

U.S. Cl. 252—8.8 **4 Claims**

Liquid softening rinsing agent compositions for washed textiles containing, in the rinse liquid, from 0.1 to 2.0 gm./l. of an unsaturated carboxylic acid ester of the formula



$$A\left[-CO-O-CH_2-\overset{OH}{\overset{|}{C}H}-CH_2-\underset{R_3}{\underset{|}{\overset{R_1}{\overset{|}{N}}}}-R_2\right]_n^{n+} nX^-$$

wherein R_1 and R_2 are selected from the group consisting of alkyl and alkenyl having from 10 to 24 carbon atoms, R_3 is alkyl having 1 to 4 carbon atoms, A is selected from the group consisting of alkenyl and alkenylene having from 2 to 5 carbon atoms, X is an anion selected from the group consisting of halide and the anion of an organic, non-surface-active acid and *n* is an integer of 1 or 2. Liquid compositions containing from 1 to 25% by wegiht of said carboxylic acid esters and the process of softening washed textiles are also disclosed.

3,729,417
QUENCHING OIL COMPOSITIONS

Kametaro Hashimoto and Hiroo Nakamura, Toyota-shi, Toshio Okada, Kyoto-fu, and Misugu Tanaka and Kazuto Fukuhara, Kobe-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, and Nippon Grease Co., Ltd., Dojima, Kita-ku, Osaka-shi, Japan

No Drawing. Filed Feb. 12, 1970, Ser. No. 10,990

Claims priority, application Japan, Feb. 14, 1969, 44/11,199

Int. Cl. C10m *1/48*

U.S. Cl. 252—46.6 **3 Claims**

Quenching oil composition of the invention comprises mineral quenching oil containing a specific compound belonging to (1) aliphatic acids or derivatives thereof, (2) phosphites, (3) thiophosphites, (4) phosphates, (5) zinc dialkyl dithiophosphates, (6) disulfides, (7) tetraalkylthiuram sulfides, (8) dithiocarbamates or (9) mercaptanes, said compound being contained in the range of 0.05 to 5 weight parts, based on 100 weight parts of the mineral quenching oil. The present quenching oil compositions are capable of quenching metals and, at the same time, imparting lubricating property to the metals quenched therewith.

3,729,418
LIQUID DEVELOPER FOR ELECTROSTATIC LATENT IMAGE

Hazime Machida, Akira Tsurugi, and Zenjiro Okuno, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 831,195, June 6, 1969. This application July 12, 1971, Ser. No. 161,892

Claims priority, application Japan, June 14, 1968, 43/40,584

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 **1 Claim**

A liquid developer for development of electrostatic latent images is prepared by dispersing a colored solution into a carrier liquid having specific insulation resistance of more than 10^9 Ω-cm. and a dielectric constant of less than 3, said colored solution comprising a polar solvent, insoluble in said carrier liquid, with said colored substance being dissolved in said solvent.

3,729,419
LIQUID DEVELOPER

Satoru Honjo, Tokyo, Hajime Miyatuka, Asaka, and Sadao Osawa, Kawaguchi, Japan, assignors to Xerox Corporation, Stamford, Conn.

No Drawing. Filed Mar. 5, 1971, Ser. No. 121,537

Claims priority, application Japan, Mar. 12 ,1970, 45/20,984

Int. Cl. G03g *9/04, 13/10*

U.S. Cl. 252—62.1 **7 Claims**

Liquid developer for developing an electrostatic latent image present on an electrostatographic imaging surface comprising an insulating liquid having dispersed therein positively charged marking particles and also containing at least one charge control agent selected from the group consisting of vinyltriethoxysilane, γ-glycidoxypropyltrimethoxysilane, and β-(3,4-epoxycyclohexyl)ethyltrimethoxysilane.

3,729,420
ANTIFREEZE COMPOSITIONS

Herbert L. Sanders, Skokie, Ill., and John B. Braunwarth, Janesville, Wis., assignors to Northern Petrochemical Company, Omaha, Nebr.

No Drawing. Original application Oct. 31, 1968, Ser. No. 764,919, now abandoned. Divided and this application Aug. 10, 1970, Ser. No. 62,668

Int. Cl. C09k *3/02*

U.S. Cl. 252—77 **4 Claims**

Disclosed are olefin oxide adducts of N-alkyl diethanolamines and processes of producing the same. The adducts are useful foam inhibitors and as such find use in ethylene glycol-based engine coolants.

3,729,421
SOAP CONE AND HOLDER

Cleo E. Gibson and Lee Ben Gibson, both of P.O. Box 416, Snellville, Ga. 30278

Continuation-in-part of abandoned application Ser. No. 378,906, June 29, 1964. This application Aug. 4, 1970, Ser. No. 60,923

Int. Cl. C11d *17/00*

U.S. Cl. 252—90 **6 Claims**

A conically shaped single use article of sodium stearate and additive soap adapted to nest with other similarly constructed single use articles of soap so as to be easily and individually withdrawn from a dispenser.

3,729,422
MILDEWSTATIC LAUNDRY SOUR

William Lozo, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Mar. 22, 1971, Ser. No. 127,040

Int. Cl. C11d *3/48*

U.S. Cl. 252—106 **4 Claims**

A mildewstatic laundry sour wherein para-halo-meta-xylenol and zinc silicofluoride are the active ingredients is disclosed.

3,729,423
SOLID ACID CONTAINING PEELING TYPE PICKLING COMPOSITION

Nobuyoshi Hirota, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Apr. 6, 1971, Ser. No. 131,786
Claims priority, application Japan, Apr. 30, 1970, 45/36,423
Int. Cl. C11d *7/08;* **C23g** *1/02*
U.S. Cl. 252—142 **5 Claims**

A peelable composition suitable for pickling is prepared from sodium alginate, gelatin, starch, a water-soluble resin and a penetrant.

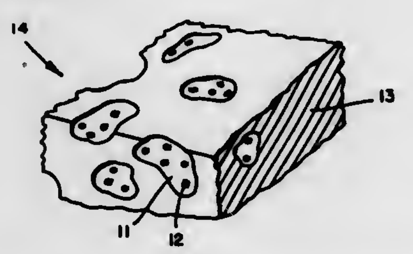
3,729,424
TERTIARY AZEOTROPIC CLEANING SOLUTION BASED ON TETRACHLORODIFLUOROETHANE

John Allan Schofield, Riverside, Conn., and Roger Albert Delano, Dobbs Ferry, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Original application Oct. 28, 1968, Ser. No. 771,334, now Patent No. 3,640,884. Divided and this application July 28, 1971, Ser. No. 167,012
Int. Cl. C09d *9/00;* **C11d** *7/52;* **C23g** *5/02*
U.S. Cl. 252—171 **2 Claims**

A ternary azeotrope of tetrachlorodifluoroethane, dichloroethane and methanol has superior properties for solvent vapor cleaning and degreasing applications.

3,729,425
POROUS CHEMILUMINESCENT MATERIAL AND METHOD OF MANUFACTURE

Carl A. Heller, Herbert P. Richter, and William S. McEwan, China Lake, Calif., assignors to the United States of America as represented by the Secretary of the Navy
Filed Apr. 29, 1969, Ser. No. 823,244
Int. Cl. C09k *3/00*
U.S. Cl. 252—188.3 CL **3 Claims**



A porous sponge-like chemiluminescent material comprising porous polyethylene impregnated with tetrakis-(dimethylamino)ethylene and having lithium chloride dispersed throughout the walls of the pores. This material is used in location markers, free-fall dispensers, and the like, and gives good light yield under humid conditions.

3,729,426
CHEMILUMINESCENT FLUORESCER COMPRISING PHENYLETHYNYL SUBSTITUTED ORGANIC COMPOUNDS

Arnold Zweig, Westport, and Donald Roy Maulding, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Original application Mar. 14, 1968, Ser. No. 712,922. Divided and this application Apr. 20, 1970, Ser. No. 30,342
Int. Cl. C09k *3/00*
U.S. Cl. 252—188.3 CL **7 Claims**

This invention relates to a chemiluminescent system to obtain chemiluminescent light by reacting an oxalic-type compound of the group consisting of (a) an oxalic-type anhydride, (b) an oxalic-type amide, (c) an oxalic-type O-acylhydroxylamine, and (d) an oxalic-type ester with a hydroperoxide compound in the presence of a solvent and a phenylethynyl-substituted aromatic compound as a fluorescer.

3,729,427
NEUTRAL DENSITY SOLUTIONS CONTAINING NIGROSIN DYE AND CARBON BLACK

Allan L. Louderback, Temple City, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
No Drawing. Filed Apr. 8, 1971, Ser. No. 132,562
Int. Cl. F21v *9/02;* **G02b** *5/24*
U.S. Cl. 252—300 **2 Claims**

A neutral density solution comprising an admixture of nigrosin dye and a carbon black dispersion in dilute aqueous solution which exhibits absorbance linearity in the visible and ultraviolet range.

3,729,428
SILICA CONTAINING CATALYST PREPARATION

Keith George Allum, Bracknell, England, assignor to The British Petroleum Company Limited, London, England
No Drawing. Filed June 4, 1970, Ser. No. 43,554
Claims priority, application Great Britain, June 17, 1969, 30,578/69
Int. Cl. B01j *11/22, 11/40*
U.S. Cl. 252—454 **1 Claim**

A catalyst for the oligomerisation of olefins e.g. butenes to octenes and dodecenes, is prepared by contacting silica gel sequentially with aqueous solutions containing (i) aluminium ions (ii) alkali metal ions (iii) nickel ions in that order, and then activating the catalyst by heating in air or an inert gas to 400–1000° C. The oligomers have a low degree of branching, and are produced by contacting the catalyst with the olefin at a temperature from 0 to 300° C. and a pressure from 0 to 5000 p.s.i.g.

3,729,429
LAYERED COMPLEX METAL SILICATE COMPOSITIONS AND THEIR PREPARATION

Harry E. Robson, Baton Rouge, La., assignor to Esso Research and Engineering Company
Filed Aug. 31, 1970, Ser. No. 68,324
Int. Cl. B01j *11/22, 11/40*
U.S. Cl. 252—454 **96 Claims**

A new and improved process for the preparation of layered complex metal silicate, especially chrysotiles, at low severity conditions. These crystalline forms of complex metal silicate, of shape ranging from thick wall tubes through thin wall tubes, and thin wall tubes through flakes, can be produced, with high surface area, as desired, in hydrated form, by contact of suitable silica and metal sources in a reaction or synthesis mixture at pH of at least about 10, and preferably from about 12 to 14, at moderate temperatures and pressures. The process can produce chrysotiles, some of which have been found to exist in nature, or heretofore synthetically produced, but can as well produce chrysotile species which differ chemically or physically, or both, from previously known species. New and novel forms of chrysotile are improved in many of their physical and chemical characteristics as contrasted with previous species, and are particularly useful directly or indirectly in conducting hydrocarbon conversion reactions.

3,729,430
PERFUME COMPOSITIONS

James Douglas Grossman, Old Bridge, and Kenneth K. Light, Freehold, N.J., assignors to International Flavors and Fragrances Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 113,699, Feb. 3, 1971, now Patent No. 3,701,801. This application Nov. 5, 1971, Ser. No. 196,221
Int. Cl. A61k *7/00;* **C07c** *69/78;* **C11b** *9/00*
U.S. Cl. 252—522 **3 Claims**

Novel perfume compositions and perfumed articles are described containing certain monoalkyl-3-chloro ring-substituted resorcylic acid esters which impart to these perfume compositions and perfumed articles a natural and distinctly oakmoss note without causing discoloration.

3,729,431
DETERGENT COMPOSITION

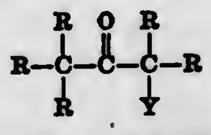
Herbert C. Smitherman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Oct. 12, 1971, Ser. No. 188,597
Int. Cl. C11d *3/65*
U.S. Cl. 252—535 **10 Claims**

A detergent composition is formulated that is relatively calcium insensitive and can effectively be used with many builders. The detergent composition consists essentially of the water-soluble salts of from 40% to 55% alkene-1-sulfonate, from 20% to 40% 2-alkoxy alkane-1-sulfonate with the alkoxy radical containing from one to four carbon atoms, from 10% to 20% of 3- and 4-hydroxy alkane-1-sulfonate and from 2% to 15% alkene disulfonate all by percentage weight. The carbon chain lengths of the above sulfonates are all from 10 to 20 carbon atoms long. The alkene double bond of the alkene-1-sulfonate and alkene disulfonate is distributed between the terminal and the fifth and the seventh carbon atoms, respectively. A preferred built detergent composition consists essentially of the above detergent composition and a builder salt in the ratio of detergent to builder of from 10:1 to 1:10.

3,729,432
DETERGENT BUILDER COMPOSITION

Herman A. Bruson, Woodbridge, Conn., and Henry Gould, Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.
No Drawing. Filed Aug. 6, 1971, Ser. No. 169,870
Int. Cl. C11d *1/12, 3/20, 7/26*
U.S. Cl. 252—545 **14 Claims**

The present invention relates to a detergent builder composition having the formula:



$$R-\overset{R}{\underset{R}{C}}-\overset{O}{\overset{\|}{C}}-\overset{R}{\underset{Y}{C}}-R$$

wherein R is $—CH_2—CH_2—COOX$, X being a member selected from the class consisting of hydrogen, alkali metals, ammonium and substituted ammonium, and Y is selected from the class consisting of hydrogen and

$$—CH_2CH_2—COOX,$$

X being selected from the class consisting of hydrogen, alkali metals, ammonium and substituted ammonium.

3,729,433
METHOD OF PREPARING POLYARYLENE POLYMERS WITH ALKYL AMINO AROMATICS, COMPOSITIONS THEREOF AND PRODUCTS

Norman Bilow, Los Angeles, and Abraham L. Landis, Northridge, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
No Drawing. Continuation of application Ser. No. 785,013, Dec. 5, 1968. This application Sept. 2, 1971, Ser. No. 177,905
Int. Cl. C08f *1/76*
U.S. Cl. 260—2 H **11 Claims**

This disclosure describes a method of providing self-curing and cured hydroxylated or nonhydroxylated polyaromatics or polyarylenes such as polyphenylenes, polyphenolphenylenes, polyphenylsilanes, and polyphenylethers, and mixtures thereof which are prepared from corresponding aromatic hydrocarbons or mixtures of phenols with such aromatic hydrocarbons and aromatic Mannich bases using a strong protonic or non-protonic acid, for example, strong Lewis acid catalysts. The cured polymers exhibit improved adhesion characteristics, and provide compositions with improved strength. The disclosure more particularly describes the method of preparation of improved curable and cured products, of said polyaromatic polymers partially cured and the curing thereof with armoatic Mannich bases of poly[α-(dialkylaminomethyl)]phenyl, or homologous biphenyl, terphenyl or phenol derivatives, isomers of same, and mixtures thereof, with an acid material.

3,729,434
METHOD OF PRODUCING FIRE RETARDANT EMULSIONS

John H. Todd, St. Louis, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.
No Drawing. Continuation-in-part of application Ser. No. 769,360, Oct. 21, 1968. This application June 28, 1971, Ser. No. 157,715
Int. Cl. C09d *5/14, 5/16*
U.S. Cl. 106—15 FP **4 Claims**

There is disclosed a method of making a fire retardant aqueous emulsion for treating flammable materials such as cotton and synthetic fabrics. The aqueous emulsion is derived from a stable concentrate comprising a phosphate ester of haloalkanols dissolved in an organic solvent and an emulsifier selected from a number of oil soluble metal sulfonates blended with polyoxyethylene ether, said solvent having a flash point of about 80° F. and a boiling point range of from 300° to 350° F.

3,729,435
CATHODICALLY DEPOSITABLE COATING MATERIALS

Gerhard Bachmann, Ludwigshafen, and Matthias Marx, Bad Durkheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Rhineland-Pfalz, Germany
No Drawing. Filed June 8, 1970, Ser. No. 44,599
Claims priority, application Germany, June 19, 1969, P 19 30 949.0
Int. Cl. C08g *45/08, 45/10*
U.S. Cl. 260—18 EP **2 Claims**

Cathodically depositable coating materials containing a condensation product which is soluble or dispersible in water, which is at least partly in the form of a salt of a water-soluble carboxylic acid, and which has been obtained by condensation of (a) a polyfunctional amino-alcohol containing tertiary nitrogen atoms with (b) a mixture of monocarboxylic acids and polycarboxylic acid compounds and (c) a phenolic or amino resin which may be etherified.

3,729,436
PROCESSABLE FLAME RESISTANT ABS-PVC BLENDS

Wendell O. Phillips, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Oct. 6, 1971, Ser. No. 187,102
Int. Cl. C08d *9/08*
U.S. Cl. 260—23.7 M **9 Claims**

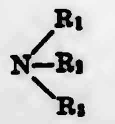
Processable blends of ABS polymers and PVC polymers in weight ratios of 50:50 to 40:60 are rendered nonburning by the incorporation of at least 2 parts by weight per 100 parts by weight of total polymers of chromium salts of carboxylic acids containing from 2 to 20 carbon atoms. Significant flame resistance results from the incorporation of such chromium salts in blends of ABS and PVC polymers in weight ratios as high as 60:40.

3,729,437
PROCESS FOR THE PRODUCTION OF CONCENTRATED AQUEOUS EMULSIONS OR INSOLUBLE LIQUID, PASTY OR SOLID ORGANIC OR INORGANIC SUBSTANCES

Willy Bernheim, Diedorf, near Augsburg, and Hans Deiner, Neusass, near Augsburg, Germany, assignors to Chemische Fabrik Pfersee G.m.b.H., Augsburg, Germany
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,431
Claims priority, application Germany, Dec. 27, 1969, P 19 65 068.1
Int. Cl. B01j *13/00*
U.S. Cl. 260—29.2 EP **8 Claims**

Concentrated aqueous emulsions or dispersions of water-insoluble liquid, pasty or solid organic or inorganic substances are prepared with emulsifiers which are produced by the reaction of:

(a) about 1 mole of urea, guanidine, derivatives of guanidine or the products of the decomposition of guanidine derivatives; with
(b) about 0.25–2.5 moles of an epoxy compound containing in the molecule on the average more than one epoxy group; and
(c) about 0.1–2 moles of an amine of the general formula



wherein

R_1 represents an alkyl group having 2–4 carbon atoms or an alkanol group of 2–5 carbon atoms,
R_2 and R_3 represent hydrogen, an alkyl group having 1–4 carbon atoms, or an alkanol group having 2–5 carbon atoms,

wherein R_2 and/or R_3 represent identical or different groups, and at least two reactive hydrogen atoms are present in the molecule of the general formula, under heating, preferably in the presence of water-miscible solvents boiling at more than about 50° C.

3,729,438

LATEX POLYMERS OF VINYLACETATE AND A SILANE

Marion F. Plesich, Ossining, N.Y., and Edmund A. Zavaglia, Newark, Del., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Mar. 30, 1970, Ser. No. 23,992

Int. Cl. C08f *1/13, 3/56*

U.S. Cl. 260—29.6 R **5 Claims**

Latex polymers comprising an aqueous dispersion of an interpolymer selected from the class consisting of (A) a copolymer of vinyl acetate and vinyl hydrolyzable silane and (B) a terpolymer of vinyl acetate, an ester, e.g. acrylic ester, maleic ester or fumarate ester, and vinyl hydrolyzable silane, as well as the crosslinked polymers derived therefrom; said latex polymers having utility as protective surface coatings and as vehicles for paint formulations.

3,729,439

ENTROPICALLY STABILIZED WATER BASE DISPERSIONS

Fred W. Parker, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,203

Int. Cl. C08f *15/40, 37/00*

U.S. Cl. 260—29.7 W **10 Claims**

Graft copolymers having graft segments which contain hydroxy terminated acrylic monomers which enable the copolymer to form water base dispersions.

3,729,440

THERMALLY STABLE POLYCARBONATE

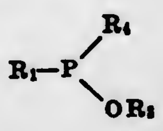
Frank N. Liberty, Mount Vernon, Ind., assignor to General Electric Company

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,824

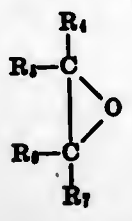
Int. Cl. C08g *51/58*

U.S. Cl. 260—45.7 P **5 Claims**

A thermally stable aromatic polycarbonate composition which is stabilized with a minor amount of a phosphinite, which phosphinite has the general following formula:



Preferably, the phosphinite is ethyl diphenyl phosphinite. The composition may also have included with it an epoxy compound having the following formula:



3,729,441

STABILIZED HIGH MOLECULAR WEIGHT POLY(ETHYLENE OXIDE)

Hideo Tomomatsu, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,809

Int. Cl. C08f *45/58, 51/58*

U.S. Cl. 260—45.95 R **3 Claims**

High molecular weight polymers of poly(ethylene oxide) are stabilized so as to inhibit degradation thereof to lower molecular weight polymer by admixing therewith 2,6-di-tert-butyl-4-methoxy phenol.

3,729,442

LIQUID 2-HYDROXY - 4-ALKOXYBENZOPHENONE ULTRAVIOLET LIGHT STABILIZERS FOR POLYMERS

Ingenuin A. Hechenbleikner, Cincinnati, Ohio, assignor to Carlisle Chemical Works, Inc., Reading, Ohio

No Drawing. Original application Feb. 11, 1970, Ser. No. 10,608, now Patent No. 3,658,910. Divided and this application Jan. 7, 1972, Ser. No. 216,277

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 F **7 Claims**

Liquid 2-hydroxy-4-alkoxybenzophenones are prepared where the alkoxy group is a mixture of random branched alkyl groups of 6–10 carbon atoms. They are useful as ultraviolet light stabilizers for polymers, e.g. vinyl chloride polymers and monoolefin polymers.

3,729,443

SULPHUR-CONTAINING ANTIOXIDANTS

Hans Jakob Peterli, Fullinsdorf, Basel-Land, and Hansjorg Heller, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 822,344, Mar. 6, 1969, now Patent No. 3,546,163, which is a division of application Ser. No. 613,730, Feb. 3, 1967, now Patent No. 3,506,716. This application Sept. 9, 1970, Ser. No. 72,894

The portion of the term of the patent subsequent to Dec. 8, 1987, has been disclaimed

Claims priority, application Switzerland, Feb. 8, 1966, 1,759/66

Int. Cl. C08f *45/58;* **C08g** *51/58*

U.S. Cl. 260—45.95 C **3 Claims**

Compositions comprising an organic polymeric material sensitive to oxidation and sulfur containing sterically hindered 1,1-bis-(hydroxyphenyl)alkans which compounds have antioxidant properties and substantially protect the organic polymeric material against oxidative degradation. A typical embodiment is a composition comprising polypropylene and 1,1-bis-(2-methyl-4-hydroxy-5-tert. butylphenyl)-3-octadecylthiobutane in an amount sufficient to protect said polypropylene against oxidative deterioration.

3,729,444

CARBOXYFUNCTIONAL SILICONES

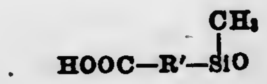
Alvin E. Bey, Midland, Mich., and James R. Heffel, Shelton, Conn., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Aug. 5, 1969, Ser. No. 847,742

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 E **1 Claim**

A sizing agent for paper is disclosed which is a siloxane copolymer consisting essentially of about 90 to 99 mole percent of $(CH_3)_2SiO$ units, and about 1 to 10 mole percent of



$$HOOC{-}R'{-}\overset{CH_3}{\overset{|}{Si}}O$$

units wherein R′ is composed of carbon, hydrogen and sulfur atoms, the sulfur atoms being present in the form of thioether linkages, said R′ containing from 2 to 10 carbon atoms. Paper sized with this siloxane has enhanced resistance to wetting. Sizing can be accomplished by either internal sizing processes (wet end) or surface sizing processes (dry end).

3,729,445

FLUOROSILICONE POLYMERS

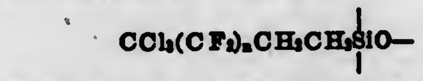
Arthur G. Smith and Yung Ki Kim, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Original application Aug. 1, 1969, Ser. No. 846,956, now Patent No. 3,609,174. Divided and this application Mar. 4, 1971, Ser. No. 121,118

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R **3 Claims**

Organopolysiloxanes, containing



$$CCl_3(CF_2)_nCH_2CH_2\overset{|}{\underset{|}{Si}}O{-}$$

units, are disclosed as nonflammable fluid lubricants and nonflammable elastomers.

3,729,446

IMIDO-SUBSTITUTED POLYESTER COMPOSITIONS

Fred F. Holub and Milton L. Evans, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Original application July 1, 1969, Ser. No. 838,314. Divided and this application Apr. 30, 1971, Ser. No. 139,213

Int. Cl. C08g *17/14*

U.S. Cl. 260—47 CZ **3 Claims**

Polyesters having at least one chemically combined aliphatically unsaturated imido radical, such as a maleimido radical are provided and a method for making such materials. Reaction can be effected between a polyester and an imido-substituted acylhalide, such as a maleimidobenzoylchloride in the presence of an acid acceptor. Blends of the imido-substituted polyester and a variety of aliphatically unsaturated organic monomers, such as styrene, chloro styrene, diallylphthalate, N-phenylmaleimide, bis maleimides or organic polymers such as polystyrenes, styrene-butadiene block copolymers, polyvinylfluoride, polyvinylchloride, polyesters, polysulfone, polysulfone ethers, polycarbonate, polyphenylene oxides, epoxy resins, phenol-formaldehyde resins, acrylonitrile butadiene styrene terpolymers, etc., also are provided. The imido-substituted polyester compositions of the present invention can be employed as coatings, varnishes, injection molding compounds, laminating compounds, etc.

3,729,447

FLAMEPROOF HIGH MOLECULAR AROMATIC POLYESTER-CARBONATES

Ulrich Haberland, Krefeld-Bockum, Günther Lenz, Krefeld, Hermann Schnell, Krefeld-Uerdingen, and Kurt Weirauch, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

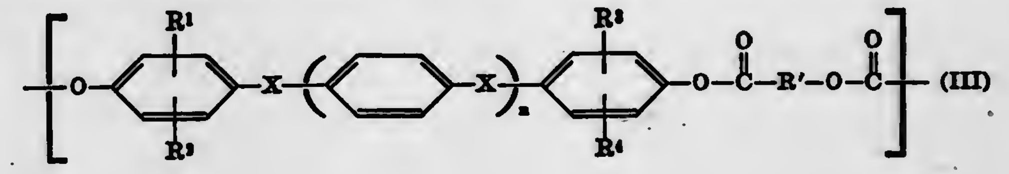
No Drawing. Filed Feb. 25, 1971, Ser. No. 119,045

Claims priority, application Germany, Feb. 28, 1970, P 20 09 494.4; Oct. 26, 1970, P 20 52 378.8

Int. Cl. C08g *17/13*

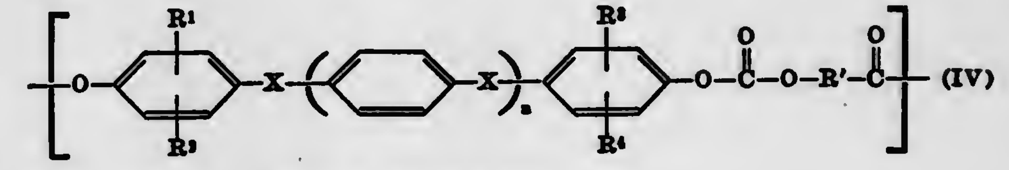
U.S. Cl. 260—47 XA **8 Claims**

High molecular weight linear polyester-polycarbonates are provided which have recurring structural units of the general formulae:



(III)

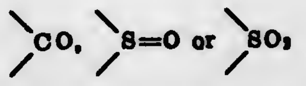
and



(IV)

in which general formulae:

R′ is a divalent aromatic radical;
R^1, R^2, R^3 and R^4, which may be the same or different, each denote a hydrogen chlorine or bromine atom or an alkyl radical having one to four carbon atoms;
X is a single bond, or an alkylene, alkylidene or isoalkylidene radical each of which may have one to five carbon atoms, or a cycloalkylene or cycloalkylidene radical each of which contains five to fifteen carbon atoms, a



linkage or an oxygen or sulphur atom; and
n is 0 or 1,

and to shaped articles, films and foils manufactured from them.

3,729,448

POLYIMIDES FROM 2,6-DIAMINO-S-TRIAZINES AND DIANHYDRIDES

Raymond Seltzer, and David A. Gordon, both of 63 E. 9th St., New York, N.Y.

Filed Oct. 31, 1969, Ser. No. 873,109

Int. Cl. C08g *20/32*

U.S. Cl. 260—65 **14 Claims**

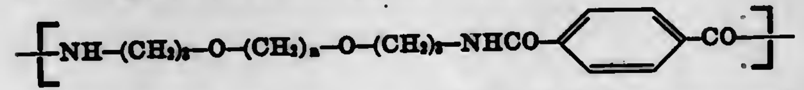
Triazine-based polyimides are prepared by first reacting dianhydrides with s-triazine compounds containing at least two primary aromatic, aliphatic, cycloaliphatic or heterocyclic amino groups to give triazine-based polyamic acids which, on curing, yield the polyimides. From solutions of polyamic acids useful fibers, films, adhesives, coatings and composites can be prepared. The triazine-based polyimides possess high temperature oxidative stability, good mechanical properties and electrical properties and low void contents.

3,729,449

POLYAMIDE FIBERS COMPOSED OF THE POLYAMIDE AND METHODS FOR PRODUCING THEREOF

Isao Kimura, Masao Matsui, Hiroshi Takahashi, and Shizume Takemoto, Osaka-fu, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 20, 1970, Ser. No. 65,641
Claims priority, application Japan, Aug. 27, 1969, 44/67,744; Dec. 4, 1969, 44/97,690; Apr. 13, 1970, 45/31,387; Apr. 21, 1970, 45/34,025; Apr. 23, 1970, 45/35,046; May 26, 1970, 45/45,418
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 2 Claims

A polyamide consisting of a substantial homopolymer of poly-bis(propoxy)alkylene terephthalamide having the recurring structural unit shown by the Formula I



wherein n is a positive integer of 2 to 4, has an improved modulus and antistatic property. This polyamide can be obtained by polymerizing the corresponding etherdiamine with terephthalic acid. A fiber consisting of the polyamide has an excellent antistatic property, spinnability heat stability, modulus, strength, elongated and dye receptivity. The modulus of this fiber can be further improved by drawing the undrawn filament and successively subjecting the drawn filament to a heat treatment under tension.

3,729,450

METHOD OF RECOVERING COPOLYMERS

Francis R. Galiano and Norman A. Greenlee, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Mar. 10, 1971, Ser. No. 123,031
Int. Cl. C08f *1/96*
U.S. Cl. 260—78.5 T 3 Claims

Maleic anhydride and aliphatic 1-olefins having from 8 to 18 carbon atoms inclusive are copolymerized in the presence of a free radical catalyst and an efficient solvent for both the monomers and the resulting copolymer, for example 1,1- or 1,2-dichloroethane. Enough solvent is employed to solubilize not only the reactants but also the copolymer products to give solutions of moderate viscosities. The products are then recovered by steam distillation until solvent and other liquid materials are removed, leaving molten copolymer, which is then poured on a chilled metal surface on which the polymer rapidly solidifies. The steam stripped copolymers are sufficiently non-tacky and brittle so that they are parted from the metal surface and broken into chunks by bending or inverting the chilled surface and allowing the solid material to fall for a substantial distance into a container.

3,729,451

PROCESS FOR COPOLYMERIZATION OF MALEIC ANHYDRIDE WITH 1-OLEFINS

Ronald G. Blecke, Shawnee Mission, and Robert W. Hill, Leawood, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed July 10, 1972, Ser. No. 270,331
Int. Cl. C08f *1/09*
U.S. Cl. 260—78.5 R 3 Claims

Maleic anhydride and polymerizable liquid 1-olefins having from 4 to 14 carbon atoms are copolymerized employing a liquid-liquid dispersion as the reaction mixture by use of excess liquid 1-olefin as a diluent and a minor amount of a copolymer of maleic anhydride with an aliphatic 1-olefin having from 14 to 18 carbon atoms as a dispersing agent. Maleic anhydride and a polymerization initiator become dispersed in the mixture of olefin and dispersing agent and polymerization takes place when the temperature is raised to about 80° C. with agitation.

3,729,452

REACTION PRODUCTS OF AN AMINE AND A METHYL VINYL ETHER-MALEIC ANHYDRIDE COPOLYMER

Harry J. Andress, Jr., Ritman, and Henry Ashjian, Brunswick, N.J., assignors to Mobil Oil Corporation
No Drawing. Original application July 26, 1968, Ser. No. 747,808, now Patent No. 3,578,421, dated May 11, 1971. Divided and this application May 13, 1970, Ser. No. 48,643
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 UA 1 Claim

Liquid hydrocarbon compositions are provided containing, in an amount sufficient to impart anti-static properties, the reaction product of an amine and a methyl vinyl ether-maleic anhydride copolymer.

3,729,453

PROCESS FOR THE PREPARATION OF POLYAMIDOXIMES AND POLYBENZIMIDAZOLE (PBI)TYPE POLYMERS DERIVED THEREFROM

Carl N. Zellner, New Hope, Pa., and Henry W. Steinman, Sparta, N.J., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,752
Int. Cl. C08g *33/02*
U.S. Cl. 260—79.3 R 22 Claims

Process for the preparation of polymers which comprises reacting at temperatures of from about 0° to about 250° C. an aromatic diamine with a bis(hydroxamoyl halide) or a derivative thereof to form a polyamidoxime, which may then be subjected to ring closing conditions to form polybenzimidazole (PBI) type polymers. Formation of the polyamidoxime is preferably conducted in the presence of a solvent, which may or may not also function as an acid-acceptor; if not, then preferably also in the presence of an acid-acceptor. The preferred acid-acceptors are those which are insoluble in the reaction mixture—most preferably melamine. The ring closure may be conducted in the presence of a catalyst at temperatures of from about 0° to about 250° C. or by reaction with an aromatic sulfonyl halide at temperatures of from about 0° to about 90° C. Reactive amine or hydroxamoyl halide terminal groups of the polyamidoximes or PBI type polymers may be reacted with other compounds or polymers which contain groups reactive therewith in order to further extend the polymer chains. In a preferred prior step, aromatic bis(hydroxamoyl halide) reactants are made by the reaction of dialkyl aromatic precursors, e.g., any of the isomers of xylene, with, e.g., nitrosyl halide. Novel polyamidoximes.

3,729,454

METHOD OF POLYMERIZATION OF VINYLTRIORGANOSILANES

Nikolai Sergeevich Nametkin, Leninsky prospekt 13, kv. 11; Sergei Garievich Durgarian, ulitsa Garibaldi 21, korpus 3, kv. 67; Valery Samuilovich Khotimsky, Konkovo-Derevlevo 1, Mikroraion, korpus 7, kv. 147; Vadim Ivanovich Kopkov, ulitsa Zelenogradskaya 25, korpus 2, kv. 194; and Iosif Efimovich Chernyakov, ulitsa Lobachevskogo 24, kv. 35, all of Moscow, U.S.S.R.
No Drawing. Filed Feb. 10, 1971, Ser. No. 114,352
Claims priority, application U.S.S.R., Feb. 16, 1970, 1,397,127
Int. Cl. C08f *1/68, 3/00*
U.S. Cl. 260—80 PS 26 Claims

A method of polymerization of vinyltriorganosilanes residing in that said monomers are polymerized in the presence of dibutyl ether under the effect of dilithium silicon containing carbochain adducts prepared by reacting metallic lithium with a vinyltriorganosilane.

3,729,455

ELECTROCONDUCTIVE METHOD FOR CONTROLLING ORGANOMETALLIC CATALYTIC POLYMERIZATIONS

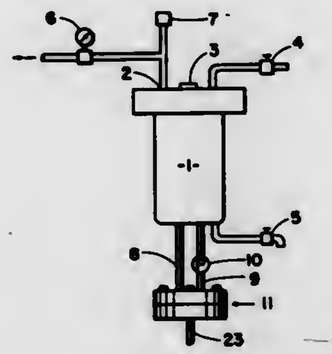
Kenneth E. Harwell, Merriam, and Francis R. Galiano, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Mar. 11, 1971, Ser. No. 123,426
Int. Cl. C08f *1/00, 3/02, 15/40*
U.S. Cl. 260—80.7 2 Claims

A control method comprising measuring the electrical conductivity of an organic solvent olefin polymerization system containing an organometallic catalyst and adjusting the concentration of the organometallic catalyst in said polymerization system responsive to the electroconductivity measurement.

3,729,456

POLYMERS OF N-3-HYDROXYALKYL ACRYLAMIDES AND METHOD OF PREPARATION

Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
Continuation-in-part of application Ser. No. 788,820, Jan. 3, 1969, now Patent No. 3,585,125, which is a continuation-in-part of abandoned application Ser. No. 713,787, Mar. 18, 1968. This application July 1, 1970, Ser. No. 51,712
Int. Cl. C08f *15/10*
U.S. Cl. 260—85.7 19 Claims



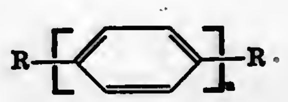
N-3-hydroxyalkyl acrylamides, and substituted derivatives thereof, are prepared by (1) reduction of an N-3-oxohydrocarbon-substituted acrylamide, (2) addition of an alcohol to the N-3-oxohydrocarbon-substituted acrylamide, followed by hydrogenation of the carbonyl group and elimination of the alcohol, or (3) hydrolysis of a 2-vinyl-5,6-dihydro-1,3-oxazine. The acrylamides are useful as monomers for conversion to polymers (which may also be prepared by reduction of the corresponding oxohydrocarbon-substituted acrylamide polymers) with a number of interesting properties, including utility as membranes for desalination of water by hyperfiltration. The polymers may be crosslinked by the action of such reagents as diisocyanates, dicarboxylic acid halides, and aldehydes in acidic solution.

3,729,457

MACRONET POLYSTYRENE STRUCTURES FOR IONITES AND METHOD OF PRODUCING SAME

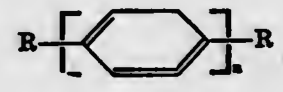
Vadim Alexandrovich Davankov, Leningradskoe shosse 112/1, korpus 3, kv. 703; Sergei Vasilievich Rogozhin, ulitsa Vavilova 55/5, kv. 52; and Maria Petrovna Tsjurupa, Pokrovsky bulvar 14/5, kv. 69, all of Moscow, U.S.S.R.
No Drawing. Filed Sept. 11, 1970, Ser. No. 71,350
Claims priority, application U.S.S.R., Sept. 12, 1969, 1,360,771
Int. Cl. C08f *19/02*
U.S. Cl. 260—88.2 C 4 Claims

Macronet polystyrene structures for ionites, characterized in that they consist of cross-linked polystyrene or cross-linked copolymers of styrene with divinylbenzene in which the content of the divinylbenzene in the copolymers is up to 1 mole percent, and the linking bridges between the benzene rings of the polystyrene chains are as follows



where $R=CH_2$, CO; $n=1,2,3$

The proposed macronet structures can be produced by using a method providing for treatment of polystyrene or granular copolymers of styrene with divinylbenzene, the latter being included in the copolymers in an amount of up to 1 mole percent, by a cross-linking agent in a medium of an organic solvent in the presence of the Friedel-Crafts catalyst. The cross-linking agent is composed of bisfunctional compounds of the general formula



where $R=CH_2Cl$, COCl; $n=1,2,3$

These structures feature a high mechanical strength and have adequately long, rigid, chemically stable bridges regularly arranged between the polystyrene chains and capable of carrying the same ionogenic groups as those carried by the polystyrene chains.

The ionites based on these structures have a high exchange capacity (e.g. up to 5.35 meq./g. for sulphocationite), high osmotic stability and high kinetic characteristics

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3,729,458

COUPLING TETRAZOTIZED AROMATIC DIAMINES WITH AMINO HYDROXYNAPHTHALENES EMPLOYING BASIC INORGANIC SALTS OF MAGNESIUM OR LITHIUM

Gustav Edward Rast, Hamburg, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,391
Int. Cl. C09b *35/02, 35/10, 35/24*
U.S. Cl. 260—182 11 Claims

An improvement in the process of coupling tetrazotized aromatic diamines with aminohydroxynaphthalenes is provided by employing an acid binding agent selected from basic inorganic compounds of lithium and magnesium.

3,729,459

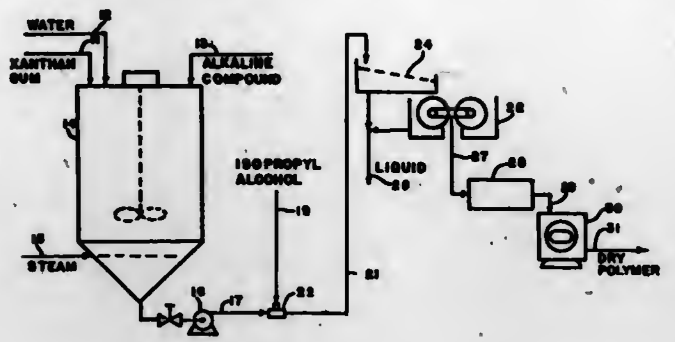
BASIC MONOAZO DYESTUFFS

Gert Hegar, Schoenenbuch, Switzerland, assignor to Ciba-Geigy AG, Basle, Switzerland
Continuation-in-part of Ser. No. 659,583, Aug. 10, 1967, abandoned. This application Dec. 5, 1969, Ser. No. 882,751
Claims priority, application Switzerland, Aug. 17, 1966, 11861/66; June 26, 1967, 9053/67
Int. Cl. C09b *29/08, 31/04*; D06p *3/70*
U.S. Cl. 260—205 5 Claims

Basic monoazo dyestuff of the formula where R is alkyl, R_1 is phenyl or substituted phenyl, R_2 and R_3 are various organic substituents and X is an anion, which dyestuffs are useful in dyeing polyvinyl chloride, polyamide, polyurethane, polyester and especially polyacrylonitrile fibers with intense, level dyeings having good fastness to light and other good general fastness properties, having good stability within a wide pH range, having good affinity in aqueous solutions at different pH values and usually reserving wool wall.

3,729,460
MODIFIED HETEROPOLYSACCHARIDES

John Tinsman Patton, 1213 E. Houghton Ave., Houghton, Mich. 49931
Filed Mar. 2, 1970, Ser. No. 15,590
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R **1 Claim**



An improved thickening agent is prepared by reacting a heteropolysaccharide produced by bacteria of the genus Xanthomonas with an alkaline compound in an aqueous reaction media at elevated temperatures.

3,729,461
SYNTHESIS OF GLYCOSYL GLYCERIDES

Yeshajahu Pomeranz, Madison, Wis., and Hans Peter Wehrli, Zurich, Switzerland, assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Dec. 23, 1970, Ser. No. 101,135
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R **6 Claims**

A method for synthesizing glycosyl glycerides from 2,5-methylene-D-mannitol acetobromogalactose and fatty acid chlorides is described. Specific fatty acids are attached at specific glyceryl positions to give such compounds as 1-O-palmitoyl-2-O-linoleoyl - 3 - O-(β-D-galactopyranosyl)-sn-glycerol.

3,729,462
p-AMINOALKYLBENZENESULFONAMIDE DERIVATIVES

Henri Dietrich, Arlesheim, Basel-Land, and Claude Lehmann, Basel, Switzerland, assignors to Ciba-Geigy Corporation
No Drawing. Filed Sept. 1, 1970, Ser. No. 68,793
Claims priority, application Switzerland, Sept. 4, 1969, 13,400/69
Int. Cl. C07d *49/30*
U.S. Cl. 260—309.7 **5 Claims**

Compounds of the class of substituted 1-[p-(aminoalkyl)-phenylsulfonyl]-2-imino-imidazolidines and the pharmaceutically acceptable acid addition salts thereof have hypoglycemic activity; these compounds are active ingredients of pharmaceutical compositions and are useful for the treatment of diabetes mellitus; a typical embodiment is 1-[p-(2-ethoxyacetamidoethyl) - phenylsulfonyl]-2-imino-3-cyclohexyl-imidazolidine.

3,729,463
p-AMINOALKYL BENZENESULFONAMIDE DERIVATIVES

Henri Dietrich, Arlesheim, Basel-Land, and Claude Lehmann, Basel, Switzerland, assignors to Ciba-Geigy Corporation
No Drawing. Filed Sept. 1, 1970, Ser. No. 68,796
Claims priority, application Switzerland, Sept. 4, 1969, 13,397/69
Int. Cl. C07d *49/30*
U.S. Cl. 260—309.7 **4 Claims**

Compounds of the class of 1-[p-thiocarboxamidoalkyl)-phenylsulfonyl]-2-imino-imidazolidines and pharmaceutically acceptable acid addition salts thereof have hypoglycemic activity; they are active ingredients of pharmaceutical compositions and are useful for the treatment of diabetes mellitus; a typical embodiment is 1-[p-(2-thioacetamidoethyl)-phenylsulfonyl] - 2 - imino-3-isobutyl-imidazolidine.

3,729,464
BIS CYANOPYRAZOLYL ALKANES AND BIS CYANOCYCLOPROPYL ALKANES

Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.
No Drawing. Filed Aug. 27, 1971, Ser. No. 175,726
Int. Cl. C07d *49/02*
U.S. Cl. 260—310 **4 Claims**

Diazoalkanes are reacted with acrylonitriles to obtain cyanopyrazolyl alkanes which are oxidized or photolyzed to cyanocyclopropyl alkanes. The cyanocyclopropyl alkane is cleaved by catalytic hydrogenation to obtain the aliphatic amine.

In one embodiment, bis-diazohexane is reacted with acrylonitrile to obtain bis (cyanopyrazolyl) hexane which, in turn, is oxidized to bis (cyanocyclopropyl) butane. The bis (cyanocyclopropyl) butane is cleaved by catalytic hydrogenation and 1,12-diaminododecane is obtained. These compounds are useful in the manufacture of polyamide resins.

3,729,465
HEXAHYDROAZEPINES

John Frederick Cavalla, Isleworth, and Alan Chapman White, Windsor, England, assignors to John Wyeth & Brother Limited, Taplow, Maidenhead, England
No Drawing. Continuation-in-part of application Ser. No. 848,080, Aug. 6, 1969, now abandoned. This application Feb. 3, 1971, Ser. No. 112,443
Int. Cl. C07d *41/04*
U.S. Cl. 260—239 B **6 Claims**

A new group of substituted hexahydroazepines useful as analgesics is described. These compounds are substituted at either position 3 or 4 by a lower alkyl group and a m-oxygenated phenyl radical (such as m-hydroxyphenyl, m - methoxyphenyl, m - benzyloxyphenyl, or m-acyloxyphenyl), optionally substituted at position 2 by a lower alkyl radical, and optionally substituted at position 1 by lower alkyl, lower alkenyl, lower alkynyl, cyclopropylmethyl, lower alkanoyl, or by ring-substituted or unsubstituted phenethyl, phenacyl, or β-benzoylethyl.

3,729,466
21-FLUORO DERIVATIVES OF 3β-HYDROXY-$\Delta^{4,6}$-HALO-20-OXO-PREGNADIENES

Georg Anner, Basel, and Peter Wieland, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Apr. 13, 1971, Ser. No. 133,736
Claims priority, application Switzerland, Apr. 17, 1970, 5,793/70
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 D **17 Claims**

21-fluoro-steroid derivatives 3-hydroxy-$\Delta^{4,6}$-6-fluoro or 6-chloro-20-oxo-pregnadienes oxygenated in the 16- and 17-position have anti-inflammatory, gestagenic and anti-ovulatory activity. The compounds are prepared in a manner known per se.

3,729,467
PROCESS FOR THE PRODUCTION OF BIS-ARENAZOLYL METHINES

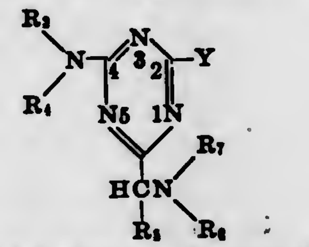
Reinhard Zweidler, 12 Kleinbergstrasse, and Ivan Orban, 10 In den Klostermatten, both of Basel, Switzerland
No Drawing. Continuation-in-part of application Ser. No. 696,722, Jan. 10, 1968. This application May 25 ,1970, Ser. No. 40,435
Int. Cl. C09b *23/04*
U.S. Cl. 260—240.7 **6 Claims**

A novel process for the production of certain basic bis-arenazolyl-methines, useful as optical brighteners or bactericidal substances by alkylation of certain bis-arenazolyl-methylenes which are produced in turn from a reactive function al derivative of malonic acid and o-aminophenols is disclosed, which process avoids the necessity of using carbondisulphide as starting material, and of disposing the toxic methyl mercaptan obtained as by-product, in the hitherto used industrial process for the production of such compounds.

3,729,468
TRIAZINE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

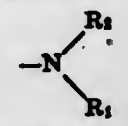
Hideo Tani, Masahiko Nagakura, and Takashi Mizutani, Tokyo, Japan, assignors to Kowa Company, Ltd., Nagoya, Japan
No Drawing. Filed July 17, 1968, Ser. No. 745,393
Claims priority, application Japan, July 20, 1967, 42/46,318; Sept. 13, 1967, 42/58,325; Apr.1, 1968, 43/20,965
Int. Cl. C07d *87/40, 87/46*
U.S. Cl. 260—246 B **40 Claims**

Novel triazine derivatives having a hypotensive activity and diuretic activity, and are useful in the field of medicines, expressed by the following formula:



(I)

wherein Y represents a member selected from the group consisting of lower alkoxy, azido and



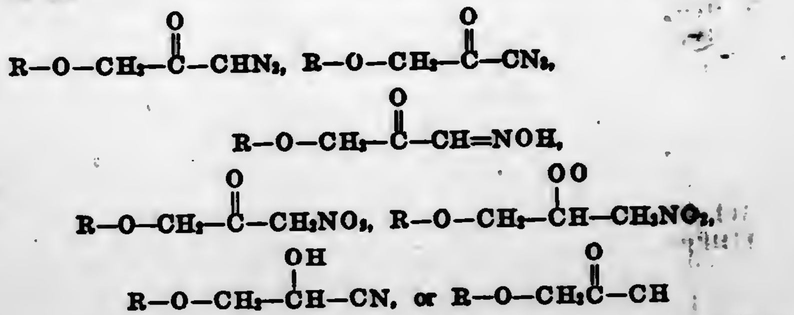
R_1, R_2, R_3, R_4, R_6 and R_7 may be the same or different and represent a member which may have substituents and is selected from the group consisting of a hydrogen atom, amino group, lower alkyl group, allyl group, cycloalkyl group and aryl group; each of R_1 and R_2, R_3 and R_4, and R_6 and R_7 may bond together to form a multi-membered ring which may have substituents and is selected from the group consisting of multi-membered ring bonded with methylene, multi-membered ring bonded with methylene through an oxygen atom, multi-membered ring bonded with methylene through a nitrogen atom and bicyclo multi-membered ring; and R_5 represents a member selected from the group consisting of an aryl group and pyridyl group which may have substituents

and their salts, and also to a process for their preparation.

3,729,469
4-(3-AMINO-2-HYDROXYPROPOXY)-1,2,5-THIADIAZOLE COMPOUNDS

Burton Kendall Wasson, Valois, Quebec, Canada, assignor to Charles E. Frosst & Co., Kirkland, Quebec, Canada
No Drawing. Application Apr. 21, 1969, Ser. No. 818,090, which is a continuation-in-part of abandoned application Ser. No. 731,333, May 22, 1968. Divided and this application Sept. 9, 1971, Ser. No. 179,145
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 **9 Claims**

4-[3-(substituted amino) - 2 - hydroxypropoxy]-1,2,5-thiadiazole compounds, optionally substituted in the 3-position of the thiadiazole nucleus which exhibit β-adrenergic blocking properties and thus are useful in the management of angina pectoris are described. The products are prepared by one of four principal methods (1) reaction of a 4-hydroxy - 1,2,5 - thiadiazole with epihalohydrin to provide 4-(3-halo - 2 - hydroxypropoxy)-1,2,5-thiadiazole which, upon treatment with alkali, forms the epoxide which is then reacted with an amine to provide the desired product; (2) reaction of a 3-chloro(or bromo)-4-(3 - substituted amino - 2 - hydroxypropoxy) - 1,2,5-thiadiazole with an amine or an N-containing heterocycle that replaces the 3-chloro group; (3) reductive alkylation of an



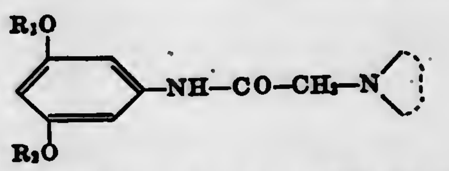
$$R{-}O{-}CH_2{-}\overset{O}{\overset{\|}{C}}{-}CHN_2,\ R{-}O{-}CH_2{-}\overset{O}{\overset{\|}{C}}{-}CN_2,$$
$$R{-}O{-}CH_2{-}\overset{O}{\overset{\|}{C}}{-}CH{=}NOH,$$
$$R{-}O{-}CH_2{-}\overset{O}{\overset{\|}{C}}{-}CH_2NO_2,\ R{-}O{-}CH_2{-}\overset{OO}{\overset{|}{C}H}{-}CH_2NO_2,$$
$$R{-}O{-}CH_2{-}\overset{OH}{\overset{|}{C}H}{-}CN,\ \text{or}\ R{-}O{-}CH_2\overset{O}{\overset{\|}{C}}{-}CH$$

wherein R is the 1,2,5 - thiadiazole-4-yl group; and (4) reaction of a 3-substituted - 4 - (3-amino - 2 - hydroxypropoxy) - 1,2,5 - thiadiazole with a haloalkyl or other desired halogenated compound to provide the 3-substituted - 4 - (3-substituted amino - 2 - hydroxypropoxy)-1,2,5-thiadiazole.

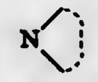
3,729,470
α-(3,5-DIMETHOXY)AMINOACETANILIDES

Madeleine Vaille, born Penciolelli, Brunoy, France, assignor to Orsymonde, Paris, France
No Drawing. Filed May 28, 1970, Ser. No. 41,637
Claims priority, application France, May 20, 1969, 6917560
Int. Cl. C07d *87/42*
U.S. Cl. 260—247.2 A **2 Claims**

The invention provides new phloramine derivatives of the formula



in which R_1 and R_2 are each hydrogen or lower alkyl, and



is an aminoaliphatic or heterocyclic radical, and their salts, which are useful as antispasmodics.

3,729,471
TRIAZINE DERIVATIVES OF BISPHENOLS

Michael Robin, Colonia, and Sheldon R. Schulte, Highland Park, N.J., assignors to Ashland Oil, Inc., Houston, Tex.
No Drawing. Filed Dec. 16, 1969, Ser. No. 885,621
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS **12 Claims**

Reaction products of a triazine compound such as a cyanuric halide and a hindered bisphenol are obtained. Such products are useful as antioxidants and ultraviolet stabilizers in various compositions and materials.

3,729,472
PROCESSES FOR PREPARING CERTAIN PYRIMIDINES

Kenji Ikawa, Osaka-shi, and Fumitaka Takami, Higashi-osaka-shi, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan
No Drawing. Filed Aug. 19, 1970, Ser. No. 65,260
Claims priority, application Japan, Aug. 20, 1969, 44/66,130
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.5 R **5 Claims**

2-methyl - 4 - amino - 5 - aminomethylpyrimidine is converted into N,N - dimethyl-N'-(2-methyl-4-amino-5-pyrimidinyl)-formamidine by the treatment with dimethylformamide diethylacetal. The formamidine is heated to give 7 - methyl - 3,4-dihydropyrimido-(4,5-d)pyrimidine. The formamidine or the pyrimido-pyrimidine is treated with hydrogen sulfide or water to give 2-methyl-4-amino-5-thioformamino-methylpyrimidine or 2-methyl-4-amino-5-formamino-methylpyrimidine.

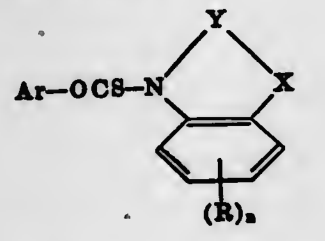
3,729,473

HYDROQUINOLINE THIOCARBAMIC ACID DERIVATIVES

Horst Böshagen, Haan/Rhineland, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 3, 1970, Ser. No. 25,557
Claims priority, application Germany, Apr. 5, 1969, P 19 17 739.0
Int. Cl. C07d *33/60*
U.S. Cl. 260—283 S **32 Claims**

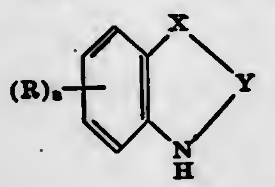
Compounds of the formula:



wherein:

X is sulphur, oxygen, NR^1, CO, CHR^1 or CR^1 wherein R^1 is hydrogen or straight or branched chain lower alkyl,
Y is a straight or branched chain aliphatic moiety of 1 to 3 carbon atoms, or said aliphatic moiety linked to X by a double bond,
R is hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylmercapto or trifluoromethyl,
n is 1, 2 or 3, and
Ar is an unsubstituted or substituted aromatic moiety,

are produced by reacting a compound of the formula:



wherein X, Y, R and *n* are as above defined with a thiocarbonic acid ester halide of the formula:

Hal—CS—O—Ar

wherein Hal is halogen and Ar is as above defined. These compounds are useful as antimycotics for the treatment of fungal infections which are pathogenic to humans and animals.

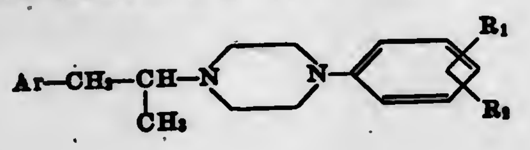
3,729,474

N-(ARYL-LOWER ALKYL)-N'-PHENYL-PIPERAZINES AND SALTS

Anton Mentrup, Karl Zeile, Peter Danneberg, and Kurt Schromm, Ingelheim (Rhein), Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim (Rhine), Germany

No Drawing. Continuation of abandoned application Ser. No. 663,973, Aug. 29, 1967. This application Jan. 28, 1971, Ser. No. 110,766
Claims priority, application Germany, Sept. 3, 1966, B 88,772; Aug. 1, 1967, B 93,758
Int. Cl. C07d
U.S. Cl. 260—268 BC **16 Claims**

Racemic and optically active N-(1-bicyclic arylpropyl-2)-N'-phenyl-piperazines of the formula



wherein Ar is 3,4-methylenedioxy-phenyl, indanyl, naphthyl or 1,4-benzodioxanyl, and R$_1$ and R$_2$ are each hydrogen, halogen, amino, acetylamino, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylcarbonyl of 1 to 4 carbon atoms or alkylthio of 1 to 4 carbon atoms, and non-toxic, pharmacologically acceptable acid addition salts thereof; the compounds are useful as central nervous system depressants.

3,729,475

PHENYL ALKYL AMINE DERIVATIVES

William Robert Nigel Williamson, Farnham, Terence Alan Hicks, Farnborough, and Elaine Hilda Day, Bristol, England, assignors to Lilly Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 866,026, Oct. 13, 1969. This application Mar. 17, 1971, Ser. No. 125,421
Int. Cl. C07d *29/30*
U.S. Cl. 260—293.73 **2 Claims**

Phenyl alkyl amine derivatives in which the phenyl ring is substituted by a heterocyclic amino group. The compounds possess central nervous system activity and a powerful anti-inflammatory action.

3,729,476

CERTAIN 3-ACETAMIDO OR 3-BENZAMIDO-6-HYDROXY-2-1-H-PYRIDONES

Peter William Austin and Allen Crabtree, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 5, 1971, Ser. No. 140,586
Claims priority, application Great Britain, July 10, 1970, 33,635/70
Int. Cl. C07d *31/44*
U.S. Cl. 260—295.5 A **6 Claims**

4 - substituted - 2,6 - dihydroxypyridines and the corresponding N-substituted-2-hydroxypyrid-6-ones containing a 3-amino group are acylated with the halides or anhydrides of organic carboxylic or sulphonic acids to give a range of valuable coupling components; acylation is preferably carried out under an inert atmosphere or on the amino compound as it is formed by reduction of a 3-nitroso, -nitro or -arylazo derivative.

The products obtained by coupling with aromatic diazonium compounds are azo dyestuffs, e.g. disperse dyes for cellulose acetate and polyester fibre, cellulose-reactive or direct dyes for cotton and viscose, metal-complex and acid dyes for wool, and cationic dyes for polyacrylonitrile materials.

3,729,477

CERTAIN 4-(3-AMINO-2-HYDROXYPROPOXY)-1,2,5-THIADIAZOLE-3-CARBOXAMIDES

Burton Kendall Wasson, Valois, Quebec, Canada, assignor to Charles E. Frosst & Co., Kirkland, Quebec, Canada

No Drawing. Application Apr. 21, 1969, Ser. No. 818,090, which is a continuation-in-part of application Ser. No. 731,333, May 22, 1968. Divided and this application Sept. 9, 1971, Ser. No. 179,148
Int. Cl. C07d *91/68*
U.S. Cl. 260—302 D **3 Claims**

4 - [3 - (substituted amino) - 2 - hydroxypropoxy]-1,2,5-thiadiazole compounds, substituted in the 3-position of the thiadiazole nucleus exhibit β-adrenergic blocking properties and thus are useful in the management of angina pectoris are described. The products are prepared by reaction of 3-carboxy-4-allyloxy-1,2,5-thiadiazole with N-bromosuccinimide followed by esterification to give the alkyl ester of 3-carboxy-4-(3-bromo-2-hydroxypropoxy)-1,2,5-thiadiazole which upon treatment with an amine forms a 3-carbamoyl-4-(3-substituted amino-2-hydroxypropoxy)-1,2,5-thiadiazole.

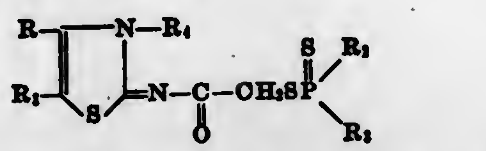
3,729,478

CERTAIN 2-IMINOTHIAZOLE PHOSPHATES AND PHOSPHONATES

Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 29, 1971, Ser. No. 198,011
Int. Cl. C07d *91/26*
U.S. Cl. 260—306.7 **37 Claims**

Compounds of the formula



in which R is hydrogen or alkyl; R$_1$ is hydrogen or alkyl; R$_2$ is alkyl or alkoxy; R$_3$ is alkoxy; R$_4$ is alkyl, alkenyl, alkynyl, benzyl or carbamoyloxyalkylene and the use of these compounds as insecticides and acaricides.

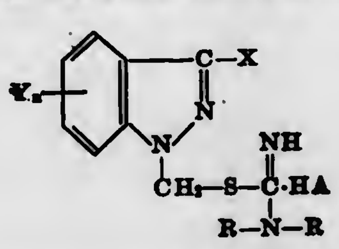
3,729,479

2-(SUBSTITUTED INDAZOLYL-N'-METHYL)-2-THIOPSEUDOUREA SALTS

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of application Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, dated Feb. 8, 1972. This application May 6, 1971, Ser. No. 140,958
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **5 Claims**

Compounds that have the structural formula



wherein X represents hydrogen or halogen; Y represents halogen or nitro; each R represents hydrogen or a lower alkyl group; *n* represents an integer in the range of zero to 2; and A represents the anion of a strong acid, are used to control the growth of fungi. Among the most active of these compounds are 2-(5-nitroindazolyl-N^1-methyl)-2-thiopseudourea hydrochloride and 2 - (3 - chloro - 6 - nitroindazolyl - N^1 - methyl) - 2 - thiopseudourea hydrochloride.

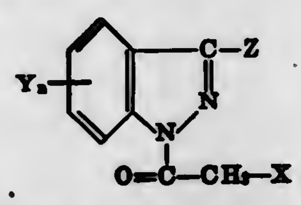
3,729,480

N'-(SUBSTITUTED ACETYL) INDAZOLES AND THEIR USE IN PESTICIDAL COMPOSITIONS

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of applications Ser. No. 589,235, Oct. 25, 1966, now Patent No. 3,637,736, dated Jan. 25, 1972, and Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, dated Feb. 8, 1972. This application May 24, 1971, Ser. No. 146,486
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **5 Claims**

Compounds that have the structural formula



wherein X represents halogen, phenoxy, or thiocyanato; Y represents halogen or nitro; Z represents halogen or hydrogen; and *n* is an integer in the range of zero to 2 can be used to control the growth of various plant and animal pests. Among the most active of these compounds is N^1-chloroacetyl-6-nitroindazole.

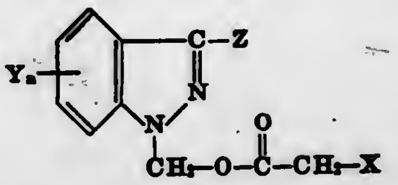
3,729,481

N^1-(SUBSTITUTED ACETOXYMETHYL)INDAZOLES AND THEIR USE IN PESTICIDAL COMPOSITIONS

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of applications Ser. No. 589,235, Oct. 25, 1966, now Patent No. 3,637,736, dated Jan. 25, 1972, and Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, dated Feb. 8, 1972. This application May 24, 1971, Ser. No. 146,487
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **5 Claims**

Compounds that have the structural formula



wherein X represents halogen or thiocyanato; Y represents halogen or nitro; Z represents halogen or hydrogen; and *n* is an integer in the range of zero to 2 can be used to control the growth of various plant and animal pests. Among the most active of these compounds is N^1-thiocyanatoacetoxymethyl-6-nitroindazole.

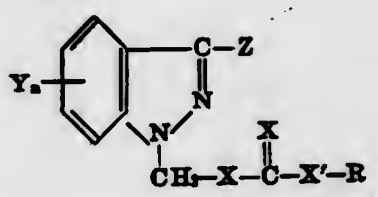
3,729,482

ALKYL (SUBSTITUTED INDAZOLYL-N^1-METHYL) THIOCARBONATES AND THEIR USE AS PESTICIDES

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of applications Ser. No. 589,235, Oct. 25, 1966, now Patent No. 3,637,736, dated Jan. 25, 1972, and Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, dated Feb. 8, 1972. This application May 24, 1971, Ser. No. 146,488
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **8 Claims**

Compounds that have the structural formula



wherein one of the symbols X and X' represents sulfur and the other represents oxygen; Y represents halogen or nitro; Z represents hydrogen or halogen; R represents a lower alkyl group; and *n* represents an integer in the range of zero to 2 can be used to control the growth of various plant and animal pests. Among the most active of these compounds are S-ethyl O-(5-chloroindazolyl-N^1-methyl)thiolcarbonate and O-ethyl S-(3-chloro-6-nitroindazolyl-N^1-methyl)dithiocarbonate.

3,729,483

PREPARATION OF N-VINYL CARBAZOLE BY TRANSVINYLATION

Richard E. Wolf, Prospect Heights, and Susan B. Gorman, Des Plaines, Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

No Drawing. Filed June 4, 1971, Ser. No. 150,236
Int. Cl. C07d *27/68*
U.S. Cl. 260—315 **9 Claims**

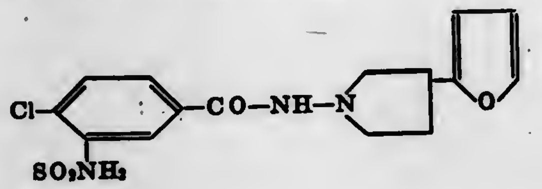
N-vinyl carbazole is produced by a transvinylation reaction of carbazole with an alkyl or aryl vinyl ether in the presence of mercuric salt such as mercuric acetate or mercuric oxide, the reaction being carried out in the presence of an acidic catalyst constituted by any relatively strong acid.

3,729,484
1-(3-SULFAMOYL-4-CHLORO-BENZAMIDO)-3-(2-FURYL)-PYRROLIDINE

Laszlo Beregi, Boulogne-sur-Seine, Pierre Hugon, Rueil-Malmaison, and Michel Laubie, Vaucresson, France, assignors to Societe en nom Collectif "Science Union et Cie, Societe Francaise de Recherche Medicale," Suresnes, France

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,053
Claims priority, application Great Britain, Mar. 10, 1970, 11,430/70
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.3 **1 Claim**

Furan compound of the formula:



This compound possesses diuretic and antihypertensive properties.

3,729,485
N-HALOALKENYLCYCLOAMIDINES

Hartmund Wollweber and Wilhelm Stendel, Wuppertal-Elberfeld, and Edgar Enders, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,828
Claims priority, application Germany, Nov. 4, 1969, P 19 55 481.5
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.85 **10 Claims**

N-haloalkenylphenylcycloamidines, e.g. wherein each halogen atom of the alkenyl group is attached to a double-bonded carbon atom and wherein the phenyl group is substituted by from one to four halogen, trifluoromethyl, difluoromethyl, lower alkyl or alkenyl radicals, which possess acaricidal properties, especially animal acarid ectoparasiticidal properties, and processes for their preparation.

3,729,486
EPITHIO DI-UNSATURATED ALIPHATIC KETONES AND ALDEHYDES

John B. Siddall and Clive A. Henrick, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,650
Int. Cl. C07d *59/00, 1/00*
U.S. Cl. 260—327 E **10 Claims**

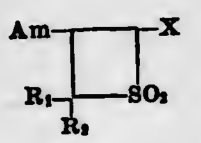
Di-unsaturated aliphatic ketones and aldehydes substituted with oxido, epithio, hydroxy and ethers and esters thereof, or halogen useful for the control of insects.

3,729,487
2-HALO-3-AMINOTHIETANE AND 2H-THIETE-1,1-DIOXIDES

Melvin Harris Rosen, Florham Park, and Herbert Morton Blatter, Summit, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 768,546, Oct. 17, 1968, now Patent No. 3,644,632, dated Feb. 22, 1972. This application Dec. 16, 1970, Ser. No. 98,936
Int. Cl. A61k *27/00;* **C07d** *61/00*
U.S. Cl. 260—327 R **4 Claims**

2 - halo - 3 - aminothiethane- or 2H-thiete-1,1-dioxides, e.g. those of the formula



X=halogen
Am=dialkylamino or alkyleneimino
$R_{1,2}$=H or alkyl

or their 3-dehydro-derivatives exhibit anti-inflammatory effects.

3,729,488
PREPARATION OF MONOMERIC 2-CYANO-2-En-BUTYRO LACTONES

Rudolf H. E. Klemke, Sparta, N.J., assignor to Mohawk Industries Inc., Sparta, N.J.

No Drawing. Filed Oct. 14, 1970, Ser. No. 80,768
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 **6 Claims**

Monomeric 2-cyano-2-enbutyrolactones are prepared for use as adhesive compositions in bone and like surgery.

3,729,489
2-OXACHOLESTEROL AND INTERMEDIATES

Robert J. Chorvat, Arlington Heights, Raphael Pappo, Skokie, and Mike G. Scaros, Arlington Heights, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 821,948, May 5, 1969, now Patent No. 3,644,342. This application Dec. 17, 1971, Ser. No. 209,384
Int. Cl. C07d *7/04, 7/20*
U.S. Cl. 260—343.2 S **7 Claims**

ABSTRACT OF THE DISCLOSURE

Cholest-4-en-3-one is allowed to react with ethyl formate to produce the intermediate 2-hydroxymethylene-cholest-4-en-3-one, which upon ozonolysis, yields 2-hydroxycholesta-1,4-dien-3-one. Oxidation of that compound affords 1-oxo-1,2-seco-A-norcholest-4-en-3-oic acid which then is reduced to 2-oxocholest-4-en-3-one. The latter compound is isomerized to produce 2-oxacholest-5-en-3-one which is converted to the instant 2-oxacholest-5-en-3-ol. The compounds of this invention are useful as intermediates and as pharmacological agents as is evidenced by their central nervous system-affective, anti-ulcerogenic and hypocholesterolemic activity.

3,729,490
1-PHENYL-3-PHTHALANCARBOXYLIC ACIDS AND INTERMEDIATES THEREOF

Francis J. Petracek, Bloomington, and Nobuyuki Sugisaka, New Brighton, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 72,232, Sept. 14, 1970, which is a division of application Ser. No. 780,168, Nov. 29, 1968, now Patent No. 3,557,147, dated Jan. 19, 1971. This application June 21, 1972, Ser. No. 264,881
Int. Cl. C07d *7/24*
U.S. Cl. 260—343.2 R **8 Claims**

Optionally substituted 1,4-dihydro - 1 - phenyl - 3H - 2-benzopyran-3-one, 4-bromo - 1,4 - dihydro - 1 - phenyl-3H-2-benzopyran - 3 - one and 4-chloro - 1,4 - dihydro-1-phenyl-3H-2-benzopyran-3-one intermediates are useful for the synthesis of pharmacologically active compounds.

3,729,491
3,5-DIOXO-A-NOR-B-HOMO STEROIDAL SPIROLACTONES

Paul D. Klimstra, Northbrook, and Charles S. Markos, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed June 15, 1970, Ser. No. 46,546
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 **3 Claims**

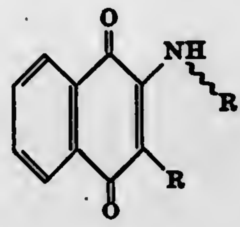
Irradiation of 3-keto-4β,5β-epoxy steroidal lactones with ultraviolet light affords the corresponding 3,5-dioxo-A-nor-B-homo compounds, which have valuable pharmacological properties, e.g. desoxycorticosterone acetate-inhibitory and anti-estrogenic.

3,729,492
NAPHTHOQUINONE DERIVATIVES

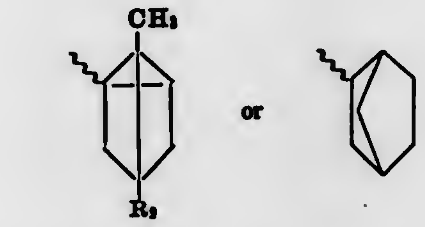
Karl Bernauer, Allschwil, and Janos Borgulya and Erika Böhni, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 9, 1971, Ser. No. 162,029
Claims priority, application Switzerland, July 17, 1970, 10,905/70
Int. Cl. C07c *87/02, 87/64, 91/00, 93/00*
U.S. Cl. 260—396 R **20 Claims**

Novel naphthoquinone compounds represented by the formula



wherein R is hydrogen, halogen, or lower alkoxy, R_1 is a residue of the formula



wherein R_2 is hydrogen, lower alkyl, optionally substituted phenyl or phenyl lower alkyl; and a process for their preparation are described.

3,729,493
DI-(NITRODIPHENYLAMINESULFONAMIDO) COMPOUNDS

David H. Wilcox, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 4, 1967, Ser. No. 672,709
Int. Cl. C07c *143/80*
U.S. Cl. 260—397.7 **10 Claims**

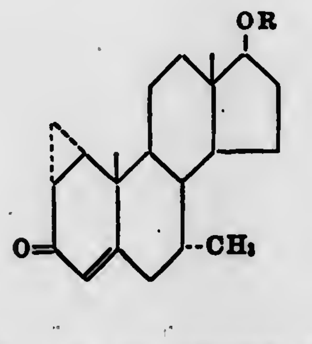
Water insoluble compounds prepared by condensing the product of a nitrochlorobenzene and a diamine with an aniline compound are useful as dyes for hydrophobic textile materials.

3,729,494
7α-METHYLANDROSTENOLONES

Helmut Hofmeister, Hermann Steinbeck, and Rudolf Wiechert, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,152
Claims priority, application Germany, Dec. 6, 1969, P 19 61 906.8
Int. Cl. C07c *169/22*
U.S. Cl. 260—397.4 **8 Claims**

7α-methyl-1α,2α-methylene-androstenolones of the formula



possess anabolic activity with minimal associated androgenic activity.

3,729,495
PROCESS FOR THE PREPARATION OF 9α-CHLORO-11β-HYDROXY STEROIDS

Emanuel Kaspar, deceased, late of Kamen, Germany, by Elisabeth Barbara Kaspar, main heir, Kamen, and Rainer Philippson, Bergkamen, Germany, assignors to Schering A.G., Berlin, Germany

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,149
Claims priority, application Germany, Mar. 7, 1970, P 20 11 559.7
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.45 **3 Claims**

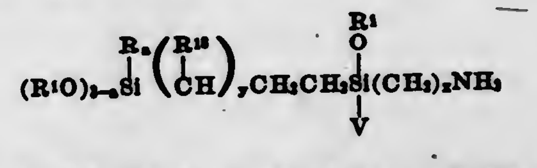
9α-chloro-11β-hydroxy steroids are produced by the reaction of a $\Delta^{9(11)}$-steroid with tert.-butyl hypochlorite in an inert, water immiscible solvent having a high dielectric constant, in the presence of perchloric acid.

3,729,496
DISILYL-CONTAINING COMPOUNDS

Abe Berger, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,292
Int. Cl. C07f *7/18*
U.S. Cl. 260—448.8 R **7 Claims**

A novel class of silicone compounds of the formula,



$$(R^1O)_{3-a}\overset{R_a}{\overset{|}{Si}}\left(\overset{R^{18}}{\overset{|}{CH}}\right)_yCH_2CH_2\underset{\underset{V}{\downarrow}}{\overset{\overset{R^1}{\overset{|}{O}}}{Si}}(CH_2)_xNH_2$$

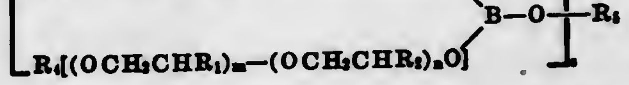
where R, R^1 and R^{18} are hydrocarbon radicals, V is selected from monovalent hydrocarbon radicals and monovalent alkoxy and aryloxy radicals, and the symbols y, x and a are whole numbers that vary from 0 to 20, 2 to 20 and 0 to 2, respectively. This novel class of compounds are useful as glass sizing agents, as flocculants for colloidal organic matter and as detergent resistant agents in various compositions.

3,729,497
BARATE ESTERS PREPARED BY SUCCESSIVE REACTIONS OF BORIC ACID WITH GLYCOL MONOETHERS AND POLYOLS

Arthur W. Sawyer, 158 Earl Ave., Hamden, Conn., and David A. Csejka, 495 Derby-Milford Road, Orange, Conn.

No Drawing. Original application July 14, 1967, Ser. No. 653,337. Divided and this application Nov. 5, 1970, Ser. No. 87,306
Int. Cl. C07f *5/04*
U.S. Cl. 260—462 R **3 Claims**

Borate esters of the formula:



$$\left[\begin{array}{l}R_3[(OCH_2CHR_1)_m-(OCH_2CHR_2)_nO]\diagdown\\ \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad B-O\\ R_4[(OCH_2CHR_1)_m-(OCH_2CHR_2)_nO]\diagup\end{array}\right]-R_5$$

wherein R_1 and R_2 are hydrogen or methyl; R_3 and R_4 are each an independently selected alkyl group having from 1 to 20 carbon atoms; R_5 is the organic residue exclusive of reactive hydroxyl groups of a polyol of the formula:

$$[H(OCH_2CHR_7)_z]_sN(R_8)_{3-s}$$

wherein s is an integer of from 2 to 3 inclusive, z is an integer of from 1 to 10 inclusive, R_7 is selected from the group consisting of hydrogen and methyl and R_8 is selected from the group consisting of hydrogen and alkyl of from 1 to 4 carbon atoms, and n and m are positive integers independently selected in each chain and whose sum in each chain is from 2 to 20 are prepared by successively reacting boric acid with a glycol monoether and a polyol. These esters are useful as stabilizers and corrosion inhibitors for lubricants and non-aqueous hydraulic fluids.

3,729,498
PROCESS FOR THE PREPARATION OF ORGANIC DINITRILES

Yoshiyasu Masada and Teruo Yasui, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Okayama Prefecture, Japan
No Drawing. Filed Sept. 24, 1969, Ser. No. 860,828
Claims priority, application Japan, Sept. 27, 1968, 43/70,314, 43/70,316; Oct. 26, 1968, 43/78,137; Nov. 2, 1968, 43/80,127; Dec. 4, 1968, 43/88,882; Feb. 6, 1969, 44/8,894; June 27, 1969, 44/51,246
Int. Cl. C07c *121/20, 121/26*
U.S. Cl. 260—465.8 D **16 Claims**

Organic dinitriles are prepared in high yield with high content of 1,4-isomers by vapor phase dimerization of acrylonitrile in the presence of a novel ruthenium-containing catalyst comprising, as the first component, a member of the group consisting of metal ruthenium and ruthenium compounds, and as the second component, a member of the group consisting of metal bismuth, bismuth compounds, antimony compounds, elementary arsenic, arsenic compounds, and phosphorus compounds.

3,729,499
PROCESS FOR THE PRODUCTION OF MALONONITRILE

Theodor Lussling and Ferdinand Theissen, Gross-Auheim, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,308
Claims priority, application Germany, Apr. 5, 1968, P 17 68 154.8; Mar. 5, 1969, P 19 11 174.1
Int. Cl. C07c *121/22*
U.S. Cl. 260—465.8 R **17 Claims**

Malononitrile is prepared by the short time high temperature reaction of gaseous acetonitrile and cyanogen chloride in the molar ratio of acetonitrile to cyanogen halide of above 1 characterized in that the well mixed reaction components are reacted at an average temperature below 800° C. and the reaction is quenched to condense acetonitrile and malononitrile by introducing a cooling medium into the reaction system.

3,729,500
1-CYANO-2-SUBSTITUTED ETHENESULFONAMIDES

Edward J. Cragoe, Jr., Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Sept. 3, 1970, Ser. No. 69,452
Int. Cl. C07c *21/66*
U.S. Cl. 260—465 D **7 Claims**

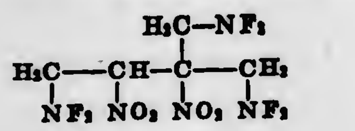
Novel 1-cyano-2-substituted ethenesulfonamides which are useful as diuretic and saluretics and which are prepared by treating an appropriate aldehyde with 1-cyanomethanesulfonamide in the presence of a catalyst. Alternatively, these novel products may also be obtained by treating an appropriate aldehyde with a primary amine followed by the treatment of the intermediate thus obtained with 1-cyanomethanesulfonamide.

3,729,501
DIFLUOROAMINO ALIPHATIC COMPOUNDS

Gilson H. Rohrback, Whittier, and James H. Canfield, Anaheim, Calif., assignors to General Electric Company
No Drawing. Filed Aug. 25, 1961, Ser. No. 136,134
Int. Cl. C07c *77/02, 87/22*
U.S. Cl. 260—467 **2 Claims**

1. 1,4-bis(difluoroamino)-2-nitro-3-nitratobutane.

2. The compound represented by the formula:

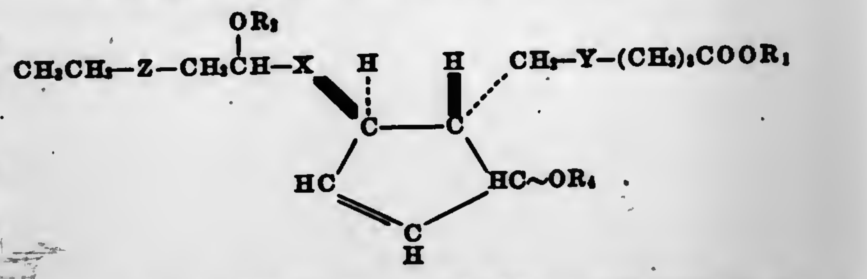


$$H_2C\text{—}CH\text{—}\overset{H_2C—NF_2}{\underset{NO_2}{C}}\text{—}CH_2 \quad (H_2C{:}\ NF_2;\ CH{:}\ NO_2;\ CH_2{:}\ NF_2)$$

3,729,502
PROSTANOIC ACID DERIVATIVES

Philip F. Beal III and John E. Pike, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of application Ser. No. 480,107, Aug. 16, 1965, and a division of application Ser. No. 520,876, Jan. 17, 1966, both now abandoned. This application Oct. 16, 1970, Ser. No. 81,593
Int. Cl. C07c *61/32, 69/74*
U.S. Cl. 260—468 D **11 Claims**

1. A prostanoic acid derivative of the formula:



wherein X, Y, and Z are —CH_2CH_2—, wherein X is trans-CH=CH—, and Y and Z are —CH_2CH_2—, or wherein X is trans-CH=CH—, Y is cis-CH=CH—, and Z is —CH_2CH_2— or cis-CH=CH—, wherein R_1 is hydrogen, lower alkyl, or a pharmacologically acceptable cation, wherein R_2 and R_4 are each hydrogen or lower alkanoyl, with the proviso that when R_4 is lower alkanoyl, R_2 is also lower alkanoyl, and wherein ~ is a generic expression denoting an alpha or a beta configuration for the OR_4 moiety.

3,729,503
AROMATIC ESTERS OF TERPENE ALCOHOLS

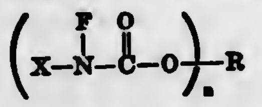
Henry G. Gribou, Chesterfield, and Alfred A. Schleppnik, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Apr. 28, 1969, Ser. No. 819,966
Int. Cl. C07c *69/76, 69/78*
U.S. Cl. 260—476 C **7 Claims**

Esters of terpene alcohols with organic acids are prepared in neutral or alkaline medium in order to avoid acid catalyzed dehydration and/or skeletal rearrangements. Organic acid halides, anhydrides or esters are used as acylating agents under the proper conditions. The terpene esters have a characteristic long lasting floral-woody aroma and are useful in the production of perfumes and perfume products.

3,729,504
BIS-N,N-DIFLUOROCARBAMATES

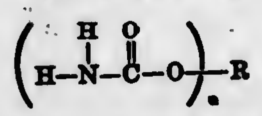
Vytautas Grakauskas, Arcadia, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
No Drawing. Continuation of application Ser. No. 554,947, May 31, 1966, which is a continuation-in-part of application Ser. No. 404,210, Oct. 14, 1964, both now abandoned. This application July 6, 1970, Ser. No. 56,140
Int. Cl. C07c *25/04*
U.S. Cl. 260—482 B **2 Claims**

Novel fluorinated compounds of the formula:



$$\left(X\text{—}\overset{F}{\overset{|}{N}}\text{—}\overset{O}{\overset{\|}{C}}\text{—}O\right)_n\text{—}R$$

wherein X is selected from the group consisting of hydrogen and fluorine, R is an organic radical selected from the group consisting of hydrocarbon, halohydrocarbon and nitrohydrocarbon radicals having a valency equal to *n*, and *n* is an integer of from 1 to about 10, and process for their manufacture involving direct fluorination through reacting fluorine with a compound of the formula:



$$\left(H\text{—}\overset{H}{\overset{|}{N}}\text{—}\overset{O}{\overset{\|}{C}}\text{—}O\right)_n\text{—}R$$

wherein R and *n* have the foregoing definitions.

3,729,505
POLYOLS AND POLYURETHANES DERIVED FROM 5-PENTANOLIDES

Katsumi Hayashi, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Filed Nov. 9, 1970, Ser. No. 88,141
Int. Cl. C08g *17/017*
U.S. Cl. 260—484 A **8 Claims**

Polyols are prepared by the reaction of 5-pentanolides (delta-valerolactones) with a polyhydroxy compound in the presence of an alkaline reagent. These polyols may be reacted with polyisocyanates to form elastomeric polyurethanes.

3,729,506
PRODUCTION OF 2,2-DIMETHYL-1,3-PROPANEDIOLHYDROXYPIVALIC MONOESTER

Franz Merger and Werner Fuchs, Ludwigshafen, Gerd Duembgen, Dannstadt, and Joachim Oberhansberg, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,090
Claims priority, application Germany, Nov. 21, 1969, P 19 58 463.5; Jan. 8, 1970, P 20 00 699.9
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 R **9 Claims**

The production of 2,2-dimethyl-1,3-propanediolhydroxypivalic monoester by heating 2,2-dimethyl-3-hydroxypropanal (prepared by the reaction of formaldehyde with isobutyraldehyde in the presence of tertiary amines) in the presence of an organic salt of a tertiary amine. As compared with the prior art methods, the process according to the invention gives 2,2-dimethyl-1,3-propanediolhydroxypivalic monoester by a simpler and more economical method, in higher purity and with a higher yield with reference to the starting material and with a higher space-time yield of pure end product. The compound which can be prepared by the process according to the invention is a more valuable starting material for the production of synthetic resins and plasticizers.

3,729,507
PURIFICATION OF ALKANE SULFONATE PRODUCTS

Phillip M. Beazley, Littleton, and Charles J. Norton, Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Aug. 10, 1970, Ser. No. 62,462
Int. Cl. C07c *143/02, 143/04*
U.S. Cl. 260—513 B **9 Claims**

Alkane sulfonate mixtures are separated and purified by dissolving crude sulfonate mixture in hot water, heating to 30–300° C., filtering as necessary, crystallizing to form alkane mono-sulfonate of greater than 90% purity from one crystallization. Disulfonate is recovered by concentrating the filtrate to dryness and subsequent separation from inorganic salts by solution in hot methanol.

3,729,508
SULFONYLBENZOIC ACIDS

Carl Ziegler, Glenside, and James M. Sprague, Gwynedd Valley, Pa., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Nov. 20, 1969, Ser. No. 878,576
Int. Cl. C07c *147/06*
U.S. Cl. 260—515 A **7 Claims**

Sulfonylbenzoic acids and salts, esters and amides thereof wherein the benzene ring may be either unsubstituted or substituted by one or more lower alkyl, halo, trihalomethyl, nitro, hydroxyamino, carboxy, amino, halosulfonyl or sulfamoyl radicals. The products are prepared by treating a suitable thiobenzoic acid or sulfinylbenzoic acid with an oxidizing agent and are useful as uricosuric agents in the treatment of gout and gouty arthritis.

3,729,509
(MONO- AND DIACYLVINYL)ARYL ALKANOIC (AND ALKENOIC) ACIDS

Everett M. Schultz, Ambler, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,303
Int. Cl. C07c *65/20*
U.S. Cl. 260—515 R **5 Claims**

[(Mono- and diacylvinyl)aryl]alkanoic (and alkenoic) acids and the salts, esters and amide derivatives thereof, wherein the aryl ring may be substituted by one or two halogen, lower alkyl or hydrocarbylene substituents. The products are diuretic and saluretic agents which may be prepared by treating a formylaryl alkanoic (or alkenoic) acid with a suitable ketone or diketone in the presence of a base.

3,729,510
PROCESS FOR HYDROXYALKYL ARYLAMIDES AND IMIDES

Richard V. Norton, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed Apr. 19, 1971, Ser. No. 135,380
Int. Cl. C07c *103/78;* **C07d** *27/16*
U.S. Cl. 260—326 A **8 Claims**

A process for hydroxyalkyl aryl amides which comprises heating at reflux an alkanolamine with the ammonium salt of an aromatic acid.

3,729,511
N-PENTACHLOROPHENOXY-METHYL-N-HYDROCARBON-AMINES

Joseph W. Baker, Kirkwood, and Ignatius Schumacher, Webster Groves, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed July 13, 1970, Ser. No. 54,606
Int. Cl. C07c *93/06*
U.S. Cl. 260—570.7 **5 Claims**

Halophenoxymethylamines as new chemical compounds. These compounds have been found to be useful in the control of bacteria.

3,729,512
HOMOGENEOUS RUTHENIUM-CATALYZED REDUCTION OF NITRO COMPOUNDS

Francois L'Eplattenier and Fausto Calderazzo, Geneva, Switzerland, assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Nov. 27, 1968, Ser. No. 779,648
Int. Cl. C07c *85/10*
U.S. Cl. 260—580 **6 Claims**

A catalytic process for the reduction of nitro compounds to the corresponding amines is described. The process uses for the reduction a mixture of carbon monoxide and hydrogen and as catalysts ruthenium carbonyls or compounds which are transformed into ruthenium carbonyls in the reaction, such as tris(acetylacetonato) ruthenium. The reactions are, in general, strongly exothermic, and additional solvents, such as benzine, are desirable. Good yields of the amines are obtained and the operation is carried out at moderate temperatures, from 130° to 160° C. under moderate pressure, for example 200 to 300 atmospheres.

3,729,513
TRICYCLO[4.3.1.1^{3,8}]UNDECANE-4-ONE

Gilbert H. Berezin, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Application July 31, 1969, Ser. No. 846,620, which is a continuation-in-part of application Ser. No. 758,631, Sept. 9, 1968. Divided and this application Feb. 9, 1971, Ser. No. 114,086
Int. Cl. C07c *49/26*
U.S. Cl. 260—586 A **1 Claim**

Tricyclo[4.3.1.1^{3,8}]undecane - 4 - one, useful as an intermediate in the preparation of anti-viral 4-amino- and

4-aminomethyl-tricyclo[4.3.1.$1^{3,8}$]undecanes, is prepared from 2-aminomethyl - 2 - adamantanol. The latter compound is prepared from methylene adamantane or adamantanone.

3,729,514
NOVEL CHEMICAL COMPOUNDS AND PROCESS

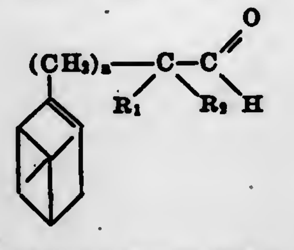
John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Original application Nov. 4, 1969, Ser. No. 874,038. Divided and this application Apr. 2, 1971, Ser. No. 130,535

Int. Cl. C07c *45/00, 47/38*

U.S. Cl. 260—598 **4 Claims**

Novel aldehydes having the structure:



wherein R_1 is hydrogen or lower alkyl, R_2 is lower alkyl and *n* is 1 or 2, lower alkyl acetals thereof; lower alkylene cyclic acetals thereof; mixtures thereof and novel process for the production thereof.

3,729,515
DIMERIZATION

Neville Leverne Cull, Baker, Elroy Merle Gladrow, Baton Rouge, Ralph Burgess Mason, Denham Springs, and Glen Porter Hamner, Baton Rouge, La., assignors to Esso Research and Engineering Company

No Drawing. Filed Jan. 10, 1967, Ser. No. 608,265

Int. Cl. C07c *47/26*

U.S. Cl. 260—602 **14 Claims**

The present disclosure concerns the use of Zn-exchanged, Mg-exchanged, Zn and Co-exchanged, Mg and Co-exchanged and Mg, Zn and Co-exchanged crystalline zeolite molecular sieves with effective pore openings of 4 to 15 Angstrom units ("Zeolite A," "Zeolite X" and "Zeolite Y" exchanged sieves) to dimerize C_2 to C_{20} saturated, aliphatic aldehydes and C_3 to C_{20} saturated, aliphatic ketones. These materials are known compounds which, upon hydrogenation to yield 1,3-glycols, are useful as insect repellents and synthetic lubricants intermediates, plasticizers, etc.

3,729,516
PROCESS FOR TRIS (HYDROXYMETHYL) PHOSPHINE

Richard Frederick Stockel, and William Frank Herbes, both of Bridgewater Township, Somerset County, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 27, 1970, Ser. No. 93,402

Int. Cl. C07f *9/50*

U.S. Cl. 260—606.5 P **4 Claims**

Production of tris(hydroxymethyl) phosphine of high purity and substantially free of water. Phosphine is reacted with about 3 moles of formaldehyde in the presence of a solvent which is a low molecular weight aliphatic alcohol of from one to three carbon atoms, at elevated temperature and pressure.

3,729,517
SYNTHESIS OF DIALKARYL SULFONE

William J. I. Bracke, Brussels, Belgium, assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,104

Int. Cl. C07c *147/01*

U.S. Cl. 260—607 A **17 Claims**

Dialkaryl sulfones are formed by treating the first stage alkaryl sulfonic acid with more alkaryl hydrocarbon in a second stage, the second stage reaction being initiated by P_2O_5, removing the water formed in the reaction by azeotropic distillation of some of the excess hydrocarbon from the reaction mixture as the sulfone is formed.

3,729,518
NOVEL THIA-ALKANOLS

Herbert Lepper Cologne-Mulheim, Wilfried Umbach, Langenfeld, Rhineland, and Werner Stein, Erkrath-Unterbach, Germany, assignors to Henkel & Cie., GmbH, Dusseldorf-Holthausen, Germany

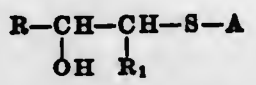
No Drawing. Filed Sept. 10, 1970, Ser. No. 71,214

Claims priority, application Germany, Sept. 25, 1969, P 19 48 385.3

Int. Cl. C07c *149/14*

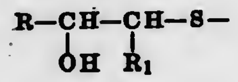
U.S. Cl. 260—609 A **1 Claim**

Novel thia-alkanols of the formula



$$R-\underset{\substack{|\\ OH}}{CH}-\underset{\substack{|\\ R_1}}{CH}-S-A \qquad (I)$$

wherein R is an aliphatic group of 1 to 22 carbon atoms, R_1 is selected from the group consisting of hydrogen and aliphatic group of 1 to 21 carbon atoms with the sum of carbon atoms in R and R_1 being 4 to 22 and R and R_1, taken together with the ethylene group to which they are attached form a cycloaliphatic ring of 6 to 12 carbon atoms and A is selected from the group consisting of aliphatic and cycloaliphatic of 6 to 24 carbon atoms optionally substituted with one or more groups of the formula



$$R-\underset{\substack{|\\ OH}}{CH}-\underset{\substack{|\\ R_1}}{CH}-S-$$

useful as pesticides, lubricant additives and intermediates for surfactants and to a novel process for their preparation.

3,729,519
PROCESS FOR THE PREPARATION OF ALKYL SUBSTITUTED RESORCINOLS

Arnold Brossi, Verona, and Antonino Focella and Sidney Teitel, Clifton, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 22, 1969, Ser. No. 793,191. Divided and this application Sept. 17, 1971, Ser. No. 181,577

Int. Cl. C07c *43/22, 41/00*

U.S. Cl. 260—613 R **2 Claims**

Preparation of 5-alkyl substituted resorcinols such as Olivetol from aliphatic aldehyde and intermediates in this process.

3,729,520
PROCESS FOR THE PREPARATION OF UNSATURATED FATTY ALCOHOLS

Horst Rutzen, Dusseldorf-Holthausen, and Wilhelm Rittmeister, Erkrath-Unterbach, Germany, assignors to Henkel & Cie, GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Continuation-in-part of application Ser. No. 561,042, June 28, 1966. This application May 26, 1969, Ser. No. 827,881

Claims priority, application Germany, July 24, 1965, H 56,673

Int. Cl. C07c *29/00, 33/02*

U.S. Cl. 260—638 A **8 Claims**

Process for the preparation of unsaturated fatty alcohols by selective hydrogenation of unsaturated fatty acids and esters thereof with aliphatic alcohols at 250–330° C. and hydrogen pressure of 100–500 atmospheres, the amount of hydrogen being 10–100 Nm.^{3} per liter of starting material, in presence of zinc-aluminum oxygen containing a catalyst reductively pretreated at elevated temperatures.

3,729,521
PROCESS FOR THE DISPROPORTIONATION OF PETROLEUM HYDROCARBONS

Louis C. Gutberlet, Crown Point, and Ralph J. Bertolacini, Chesterton, Ind., and Harry M. Brennan, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Sept. 1, 1970, Ser. No. 68,656

Int. Cl. C07c *3/00*

U.S. Cl. 260—672 T **39 Claims**

The process comprises contacting in a reaction zone a petroleum hydrocarbon fraction with a catalytic composition under suitable disproportionation conditions, said catalytic composition comprising a member selected from the group consisting of (1) a metal of Group VI–B of the Periodic Table of Elements, (2) a metal of Group VIII of the Periodic Table, (3) the oxide of a metal of Group VI–B, (4) the sulfide of a metal of Group VI–B, (5) the oxide of a metal of Group VIII, (6) the sulfide of a metal of Group VIII, and (7) mixtures thereof deposited upon a solid acidic cracking support, which support comprises an ultrastable, large-pore crystalline aluminosilicate material and a refractory inorganic oxide. The preferred metal of Group VI–B is molybdenum and the preferred metal of Group VIII is cobalt. The catalyst is subjected to a sulfur-providing compound to inhibit demethanation.

3,729,522
METHOD FOR PREPARING LOW COLOR POLYPHENYLS AND HALOGENATED POLYPHENYLS

Gene L. Arnett, Weaver, and William B. Dunlap, Anniston, Ala., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,587

Int. Cl. C07c *7/00*

U.S. Cl. 260—674 R **11 Claims**

A process for the treatment of polyphenyls to improve the color thereof wherein crude polyphenyls comprised predominantly of terphenyl and quaterphenyl are contacted with alkali metal at a temperature of about 225° C. and for a period of time sufficient to substantially reduce the color of the polyphenyl. Halogenated polyphenyls prepared from the treated polyphenyl have exceptionally good color and are particularly useful as plasticizers in color critical applications.

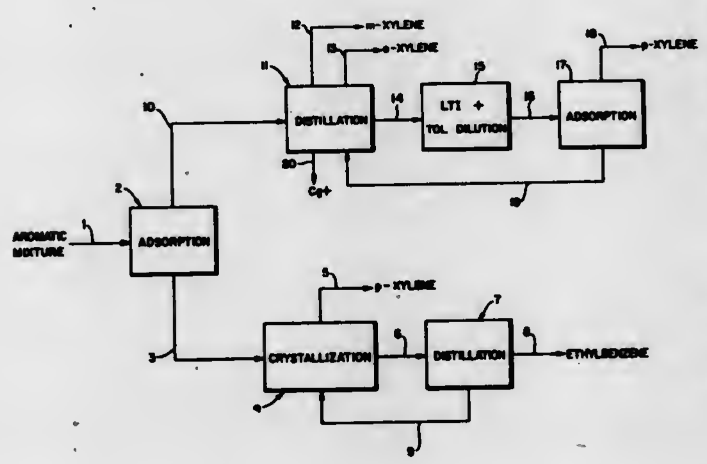
3,729,523
RECOVERY OF ISOMERS FROM AROMATIC MIXTURES

Philip Grandio, Jr., and Paul T. Allen, Beaumont, Tex., assignors to Mobil Oil Corporation

Filed Apr. 14, 1971, Ser. No. 133,929

Int. Cl. C07c *7/02, 15/08*

U.S. Cl. 260—674 A **12 Claims**



Aromatic mixtures which contain para-xylene, ortho-xylene and meta-xylene and ethylbenzene as well as C_9 and higher impurities are separated for recovery of the said components by the steps including subjecting the mixture to adsorption or chromatography to provide (1) a mixture of para-xylene and ethylbenzene, and (2) a mixture of meta-xylene, ortho-xylene and C_9 and other components of the mixture, crystallizing the mixture of para-xylene and ethylbenzene under such conditions as to obtain crystals of para-xylene and then distilling the mother liquor to obtain the ethylbenzene. The mixture of meta-xylene, ortho-xylene and other components is distilled in one embodiment to remove all of the meta-xylene and ortho-xylene. In a separate embodiment only portions of the meta- and ortho-xylene are removed by distillation and the latter is subjected to low temperature isomerization with toluene dilution followed by a second adsorption step to provide additional para-xylene. The advantages of the process are that the production of all isomers is feasible and all useful isomers are recovered in high purity.

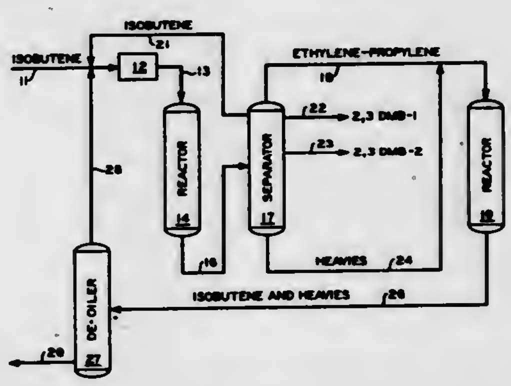
3,729,524
CONVERSION OF OLEFINS

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company

Original application Nov. 6, 1969, Ser. No. 874,147, now Patent No. 3,660,517. Divided and this application Nov. 23, 1971, Ser. No. 201,388

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **6 Claims**



Neohexene is produced by contacting isobutene and ethylene with a catalyst comprising a mixture of tungsten oxide on silica and magnesium oxide.

3,729,525
DISPROPORTIONATION PROCESS

Robert L. Banks and Filippo Pennella, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Apr. 23, 1971, Ser. No. 137,020

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D **5 Claims**

The conversion of disproportionatable olefins is improved when using a catalyst comprising rhenium oxide and alumina by mixing with the feed material an effective amount of dicyclopentadiene or an alkyl-substituted derivative thereof.

3,729,526
HYDROGEN FLUORIDE STRIPPING TO SEPARATE HYDROCARBONS AND ALKYL FLUORIDES IN ALKYLATION PROCESS

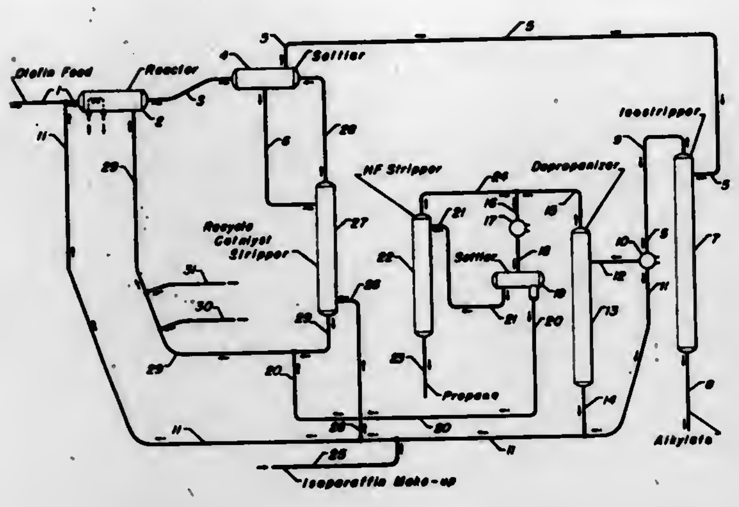
Robert F. Anderson, La Grange Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 5, 1971, Ser. No. 131,198

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.48 **6 Claims**

The reaction mixture from HF alkylation of isoparaffin with an olefin-acting reactant is separated into a hydrocarbon and catalyst phases, unreacted isoparaffin from the hydrocarbon phase strips the catalyst phase to separate an overhead stream of hydrocarbons and alkyl fluorides, and the stripped liquid catalyst is then passed to the alkylation reaction. The separated stream of hydrocarbons and alkyl fluorides may be supplied to the reaction mixture undergoing phase separation to recover valuable hydrocarbons from said overhead stream as a portion of the alkylate product.



3,729,527

THERMOPLASTIC POLYMER BLENDS OF POLYAMIDES AND POLYARYLSULFONES

Eric Nield, Watton-at-Stone, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,286

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 R **5 Claims**

Thermoplastic polymer blends which contain from 99% to 1% of one or more aromatic polysulphones and from 1% to 99% of one or more thermoplastic polyamides having a desirable combination of physical properties and in particular better flow properties in the melt than the polysulphones themselves.

3,729,528

PROCESS FOR THE PREPARATION OF POLYESTER RESINS WITH LOW SHRINKAGE FROM POLYESTER RESINOUS COMPOSITIONS CONTAINING A REACTIVE FILLER

Gerhard Werner, Hofheim, Taunus, Dieter Stahl, Kriftel, Taunus, and Guido Max Rudolf Lorentz, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,216

Claims priority, application Germany, Apr. 23, 1970, P 20 19 673.0

Int. Cl. C08f *43/08*

U.S. Cl. 260—862 **4 Claims**

Unsaturated polyester resins are hardened in the presence of a reactive filler which is a cotelomer of a vinyl aromatic compound, especially styrene, and maleic anhydride. As compared with the resin containing no reactive filler the shrinkage on hardening is reduced. Telomer styrene which was used before as the reactive filler causes an increase in the viscosity of the resins which is considerably higher than the increase caused by the cotelomers herein described.

3,729,529

REACTION PRODUCTS OF AMINE DERIVATIVES OF 1-OLEFIN/MALEIC ANHYDRIDE COPOLYMERS AND METHYL VINYL ETHER-MALEIC ANHYDRIDE COPOLYMERS AS ANTI-STATIC AGENTS

Harry J. Andress, Jr., Pitman, N.J., assignor to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 885,268, Dec. 15, 1969, which is a continuation-in-part of application Ser. No. 797,701, Feb. 7, 1969, both now abandoned, and a division of application Ser. No. 4,024, Jan. 19, 1970, now Patent No. 3,677,724. This application July 8, 1971, Ser. No. 160,942

Int. Cl. C08f *37/18*

U.S. Cl. 260—897 B **6 Claims**

Liquid hydrocarbon compositions are provided containing, in an amount sufficient to impart anti-static properties, the reaction product of an amine derivative of an olefin/maleic anhydride copolymer and an alkyl vinyl ether-maleic anhydride copolymer.

3,729,530

THERMOPLASTIC COMPOSITIONS COMPRISING POLY-1-OLEFIN AND A POLYMER OF CHLORINATED OXETANE

Leonard L. Curry, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application June 1, 1970, Ser. No. 42,507. Divided and this application Nov. 24, 1971, Ser. No. 201,961

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 C **3 Claims**

Compositions of normally solid poly-1-alkene such as polypropylene and from about 1 to about 20 percent by weight based on the total composition of crystalline chlorinated linear polypentyl ether are embossable to provide thermoplastic articles characterized by raised portions having contrasting color.

3,729,531

VACUOLE-FREE FILAMENTS AND FILMS OF ACRYLONITRILE COPOLYMERS

Carlhans Suling, Odenthal-Hahnenberg, and Heino Logemann, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,347

Claims priority, application Germany, Mar. 26, 1970, P 20 14 763.1

Int. Cl. C08f *29/56*

U.S. Cl. 260—898 **13 Claims**

Vacuole free filaments and films of copolymers of acrylonitrile and vinylidene chloride, which contain 0.1 to 4% of a homopolymer of dimethylacrylamide or of a copolymer of acrylonitrile with dimethyl acrylamide.

3,729,532

BISPHENOL PHOSPHORUS ESTERS

Eric Jungermann, Chicago, and Henry E. Reich, Wilmette, both of Ill., assignors to Armour-Dial, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 579,195, Sept. 15, 1966, abandoned. This application June 12, 1969, Ser. No. 832,813

Int. Cl. C07d *103/04*; **C07f** *9/30*

U.S. Cl. 260—936 **1 Claim**

Phosphorus-containing esters of various bis-phenols having germicidal activity.

The foregoing esters in combination with certain halogen-substituted carbanilide and anilides display synergistic germicidal activity.

3,729,533

PROCESS FOR PRODUCING TRIBUTYL PHOSPHATE HAVING LOW SODIUM ION CONTENT

Wallace F. Runge, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Filed Nov. 2, 1970, Ser. No. 86,384

Int. Cl. C07f *9/16*

U.S. Cl. 260—990 **4 Claims**

A process for the production of tributyl phosphate (TBP) characterized by exceptionally low concentration of sodium ion comprising the steps of extracting the TBP twice with aqueous ammonium sulfate solution.

3,729,534

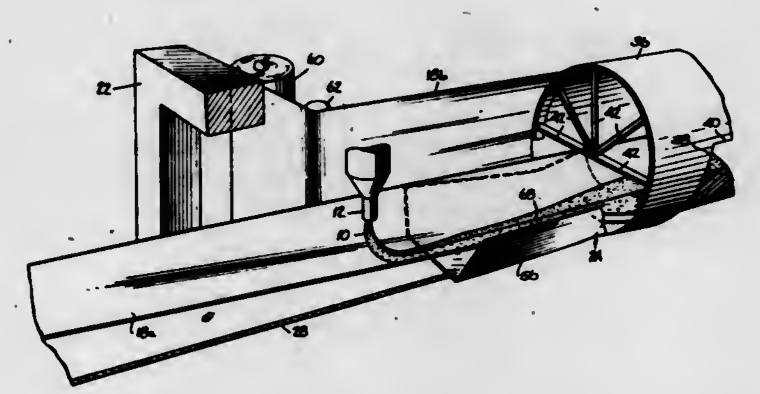
METHOD FOR CONTINUOUSLY FORMING ELONGATED CYLINDERS OF POLYURETHANE FOAM

Charles Ferstenberg, Paramus, N.J., assignor to Tenneco Chemicals, Inc., New York, N.Y.

Continuation of application Ser. No. 696,070, Jan. 5, 1968. This application June 1, 1970, Ser. No. 41,739

Int. Cl. B29d *27/04*

U.S. Cl. 264—54 **4 Claims**



Contouring of flexible webs to the interior of an elongated moving molding channel by the provision of specially located and specially shaped guiding devices, by the provision of special internal mold supports and by the selective overlapping of separate web sheets.

3,729,535

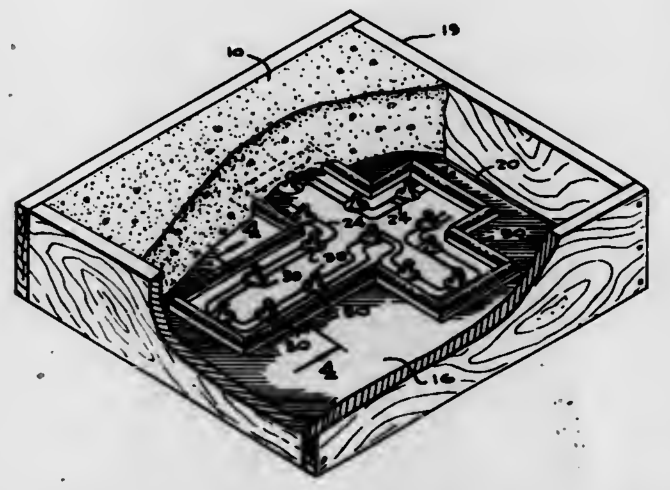
METHOD AND APPARATUS FOR CREATING HAND-CHISELED EFFECT

James L. Regan, 409 Dunkel St.,
Fairbanks, Alaska 99701

Filed Jan. 11, 1972, Ser. No. 217,000

Int. Cl. B44b *1/22*

U.S. Cl. 264—84 **14 Claims**



A method and apparatus is disclosed for decorating concrete including a mould form having a flat base surface to which a paper pattern is attached with the pattern including a printed outline of a desired design and electrical conductors imprinted on the paper within the lines of the design for enabling attachment of individual explosive buttons to required portions of the pattern prior to the filling of the form with fresh concrete. Each explosive member comprises an individual button extending inwardly from the base surface of the form and which buttons are embedded in the concrete upon the hardening of the concrete; all the explosive buttons are simultaneously detonated after removal or loosening of the form to create a chiseled effect in the face of the form. Another aspect of the invention resides in strip members attached to the pattern to provide a groove in the concrete to define an outline of the design with the explosive means being positioned inwardly of the groove so that the effect of detonation of the explosive members is confined to the area inside the groove members.

3,729,536

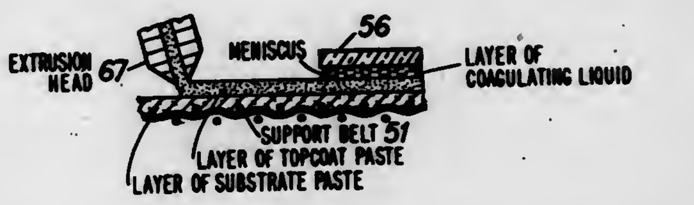
METHOD OF PRODUCING WATER VAPOR PERMEABLE SHEET MATERIAL

Eric Albert Warwicker, King's Lynn, England, assignor to Porvair Limited, Norfolk, England

Filed June 2, 1970, Ser. No. 42,793

Int. Cl. B29d *7/22, 27/04*

U.S. Cl. 264—41 **16 Claims**



Coagulation process and apparatus for producing thick microporous polyurethane sheet material by passing a sheet of polymer extended with liquid vehicle beneath a close spaced plate with liquid non-solvent fed to the gap between the plate and the surface to produce controlled imitation of the coagulation.

3,729,537

METHOD OF FORMING A FABRIC COVERED CELLULOSE SPONGE STRAND AND THEN COMPRESSING IT IN A PLURALITY OF DIRECTIONS

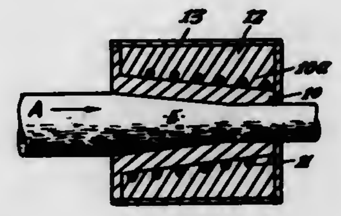
David Thomas Jones and George Edward Jowett, Swansea, Glamorgan, Wales, and Edward Ernest Webster, Orpington, Kent, England, assignors to Sponcel Limited, Croydon, Surrey, England

Continuation of abandoned application Ser. No. 744,535, July 12, 1968. This application Aug. 26, 1970, Ser. No. 67,241

Claims priority, application Great Britain, July 19, 1967, 33,095/67

Int. Cl. B29d *27/04*

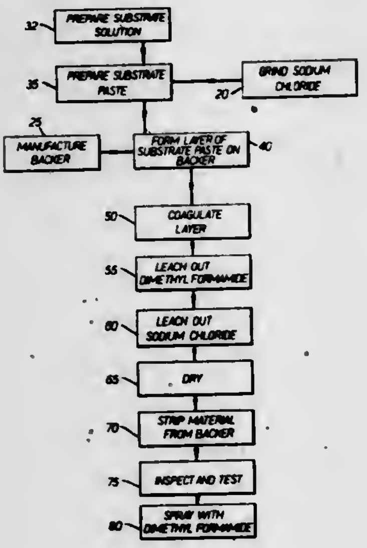
U.S. Cl. 264—47 **4 Claims**



A process for continuous manufacture of shaped vaginal tampons of regenerated cellulose sponge material comprising extruding cellulose sponge forming material into a tubular fabric casing, regenerating, washing and drying the material, drawing the casing through a heated tapering tubular passageway to compress said strand in a plurality of directions and severing the strand into tampons. The compressed cellulose sponge is capable of resuming its dimensions when moistened.

3,729,538
METHOD FOR PREPARING VAPOUR PERMEABLE FLEXIBLE SHEET MATERIALS

Victor Ralph Cunningham, Dagenham Dock, and David Leonard Boutle, Maldon, England, assignors to Porous Plastics Limited, Essex, England
Continuation of application Ser. No. 697,154, Jan. 11, 1968, now abandoned. This application Oct. 2, 1970, Ser. No. 90,192
Claims priority, application Great Britain, Jan. 11, 1967, 1,608/67
Int. Cl. B29d *27/04;* **C08g** *53/08*
U.S. Cl. 264—49 **16 Claims**

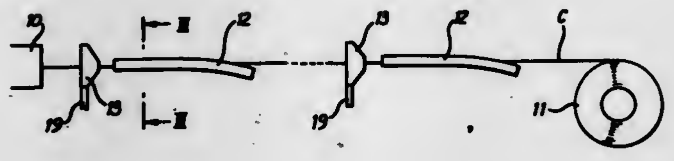


32
PREPARE SUBSTRATE SOLUTION
35
PREPARE SUBSTRATE PASTE
20
GRIND SODIUM CHLORIDE
25
MANUFACTURE BACKER
FORM LAYER OF SUBSTRATE PASTE ON BACKER
40
50
COAGULATE LAYER
55
LEACH OUT DIMETHYL FORMAMIDE
60
LEACH OUT SODIUM CHLORIDE
65
DRY
70
STRIP MATERIAL FROM BACKER
75
INSPECT AND TEST
80
SPRAY WITH DIMETHYL FORMAMIDE

For a method of making water vapour permeable flexible sheet materials which find uses as replacements for leather in which the material is formed from a layer of a mixture of powdered removable filler dispersed through a polymer solution which adheres to a temporary backer and is coagulated and the filler leached out by suitable liquid treatment the advantages of certain ratios of polymer to solvent and certain relatively high ratios below 3:1 of filler to polymer in the mixture are set out.

3,729,539
COOLING OF PLASTIC EXTRUSIONS OF SMALL CROSS-SECTIONAL AREA

Alan Harvey Hill, Darlington, England, assignor to General Engineering Company (Radcliffe) Limited and British Insulated Callender's Cables Limited, London, England
Filed June 30, 1970, Ser. No. 51,309
Int. Cl. B29c *25/00;* **B29f** *3/10*
U.S. Cl. 264—89 **6 Claims**



A method of cooling a plastic extrusion of small cross sectional area, which method includes the steps of drawing the extrusion along a predetermined path and directing water onto it at least at one position along the path so as not to disturb the lateral stability of the extrusion. The water impinging on the extrusion has a substantial component of velocity in the direction in which the extrusion is being drawn.

3,729,540
PURIFICATION OF TITANIUM TETRACHLORIDE FROM CONCOMITANT IMPURITIES

Vitaly Grigorievich Brudz, Abelmanovskaya ulitsa 7, kv. 94; Nikolai Nikolaevich Pronyakin, Pervomaiskaya ulitsa 74, kv. 64; Grigory Zakharovich Bljum, ulitsa Kominterna 32/5, kv. 23; Sarrya Isaakovna Khainson, Graivoronovskaya ulitsa 10, korpus 1, kv. 28; Gennady Georgievich Vinogradov, ulitsa Izmailovsky bulvar 58/13, kv. 16; and Muza Konstantinova Tuganova, ulitsa Boitsovaya 21, korpus 1, kv. 112, all of Moscow, U.S.S.R.; and Julia Vladimirovna Vasilieva, ulitsa Komsomolskaya 5, kv. 49, Reutov, U.S.S.R.
No Drawing. Filed July 28, 1971, Ser. No. 166,987
Int. Cl. C01g *23/02;* **B01d** *3/34*
U.S. Cl. 423—76 **1 Claim**

A method for the purification of technical titanium tetrachloride from concomitant impurities, which includes introducing dichloramide of benzene sulphonic acid into the starting technical product in an amount not exceeding 0.5 g. per lit. of said starting product at a temperature of from 40° C. to a B.P. of said starting technical product. The product to be purified is treated with metallic copper used in an amount of at least 50 g. per lit. of said starting product at the same temperature, with subsequent separation of a precipitate which is thus formed and rectification of the product. The method according to the invention enables the production of extra-high-purity titanium tetrachloride.

3,729,541
RECOVERY OF BERYLLIUM

James K. Grunig, Rodney J. Anderson, and Bess L. Vance, Tucson, Ariz., assignors to The Anaconda Company
Filed Nov. 30, 1971, Ser. No. 203,363
Int. Cl. C01f *3/00*
U.S. Cl. 423—112 **4 Claims**

Beryllium is extracted from an impure acid aqueous solution of beryllium sulfate by means of an organic solution containing a bis (alkyl substituted) phenyl acid phosphate, and then stripping the beryllium and regenerating the organic extractant by treatment of the organic solution with a mineral acid.

3,729,542
PURIFICATION OF SODIUM ALUMINATE LIQUOR

Richard H. Goheen, O'Fallon, Ill., assignor to Aluminum Company of America, Pittsburgh, Pa.
Continuation of abandoned application Ser. No. 824,156, May 13, 1969. This application Aug. 27, 1971, Ser. No. 175,708
Int. Cl. C01f *7/02, 7/06*
U.S. Cl. 423—119 **6 Claims**

Use of iron grit or shot to purify sodium aluminate liquor, especially sodium aluminate liquor resulting from caustic digestion of low-iron bauxite.

3,729,543
PROCESS FOR PREPARING ALKALI-METAL TETRACHLOROFERRATE

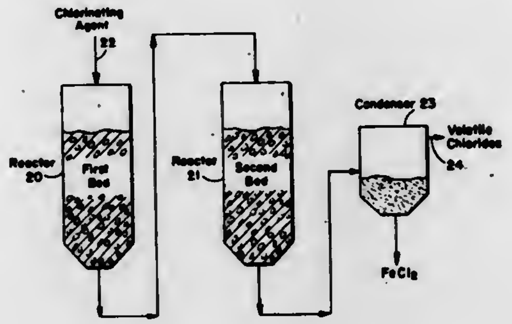
Wendell E. Dunn, Jr., Woollahra, NSW, Australia, assignor to Wendell E. Dunn, Inc., Wilmington, Del.
Filed Jan. 21, 1971, Ser. No. 108,570
Int. Cl. C01g *49/10;* **C01d** *3/04, 11/04*
U.S. Cl. 423—138 **6 Claims**

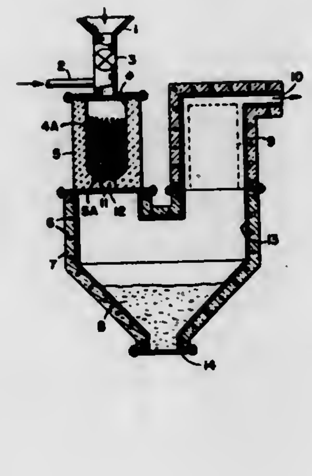
Claimed is a process for producing anhydrous alkali-metal tetrachloroferrates by heating with distillation a mixture of an alkali-metal chloride and a hydrous ferric chloride or an aqueous mixture of an alkali-metal chloride and ferric chloride.

The alkali-metal tetrachloroferrates are useful as intermediates for producing chlorine.

3,729,544
SEPARATION OF IRON BY CHLORINATION OF A FERRO-ALLOY

Elis Kjell Ake Svanstrom, Nynashamn, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Nynashamn, Sweden
Continuation of abandoned application Ser. No. 47,366, June 18, 1970. This application Mar. 24, 1972, Ser. No. 237,688
Claims priority, application Sweden, July 17, 1969, 10,115/69
Int. Cl. C01g *41/00, 49/00*
U.S. Cl. 423—149 **7 Claims**





Iron is separated by halogenation from a material, e.g. an alloy, containing at least one other metal selected from the group consisting of Zr, Ti, Hf, V, Nb, Ta, Mo, W, and Re wherein the material is chlorinated to form a gaseous mixture containing ferrous chloride and at least one other metal chloride, following which the one other metal chloride is separated from the ferrous chloride by condensing out the latter at a temperature at which the at least one other metal chloride is volatile.

3,729,545
PROCESS FOR PRODUCING A BORAX SOLUTION

Marcel Castin and Paul Demilie, Brussels, Belgium, assignors to Societa Chimica Larderello S.p.A., Milan, Italy
Filed Apr. 14, 1971, Ser. No. 133,827
Claims priority, application Belgium, Apr. 21, 1970, 88,039
Int. Cl. C01b *15/12, 35/00*
U.S. Cl. 423—280 **3 Claims**

A process for the production of aqueous solutions of borax which can be directly used to crystallize penta-and/or decahydrated borax. Used are a source of alkaline Na_2O in the form of hydroxide, carbonate and/or bicarbonate of sodium, and clear aqueous solutions of ammonium borate which are produced by treating boron and calcium minerals with ammonia and carbon dioxide. These solutions are introduced in a distillation column where the ammonium borates are decomposed under heat to produce a solution which is practically free of ammonia. For this purpose, there are successively introduced in this column:

the clear aqueous solution of ammonium borates

at least 50% of the quantity of alkaline Na_2O which is stoichiometrically required to convert the ammonium borates into borax. The remaining portion of alkaline Na_2O which is stoichiometrically required is thereafter introduced in the form of sodium hydroxide into the solution which has been collected at the bottom of the column. In this manner there is obtained an aqueous solution of borax which can directly be used to crystallize penta-and/or decahydrated borax by any known means. By stoichiometric quantity of alkaline Na_2O is meant 1 mole of Na_2O per 2 moles of B_2O_3, i.e. the composition of borax: $Na_2O \cdot 2B_2O_3$ or $Na_2B_4O_7$.

3,729,546
CHEESE EMULSIFYING AGENT

Russell N. Bell, Ardsley, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed May 6, 1970, Ser. No. 35,271
Int. Cl. C01b *25/26, 15/16*
U.S. Cl. 423—306 **4 Claims**

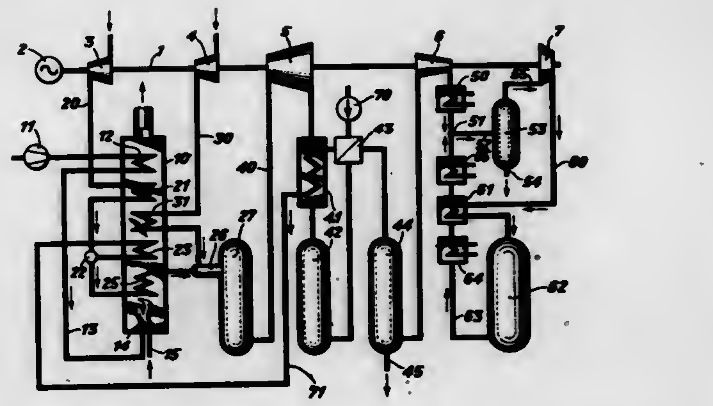
The invention provides a composition which is useful as a cheese emulsifying agent, and the process for making the same. The composition has the empirical formula:

$$Na_4Al_3(OH)_4(PO_4)_3 \cdot \pm 12H_2O$$

This invention relates to a composition which is useful as a cheese emulsifier, a process for preparing the same, and to process cheese formulations containing the same. More particularly, this invention relates to a sodium aluminum phosphate composition of relatively high sodium content.

3,729,547
PROCESS AND PLANT FOR AMMONIA SYNTHESIS

Ludwig Silberring, Zurich, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Dec. 14, 1970, Ser. No. 97,870
Claims priority, application Switzerland, Dec. 24, 1969, 19198/69
Int. Cl. C01c *1/04*
U.S. Cl. 423—359 **3 Claims**



The reformed gas which is produced at 900° C and about 40 atmospheres absolute pressure is cooled to 600° C at a high rate through a working expansion such as in an expansion chamber. This is followed by a heat exchange cooling to obtain medium pressure steam for use in the synthesis process.

3,729,548
PROCESS FOR SAFELY REACTING ACTIVE METALS

Charles H. Lemke, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 601,855, Dec. 15, 1966. This application July 31, 1969, Ser. No. 846,590

Int. Cl. C01b *1/02;* **C01c** *3/08;* **C01g** *1/00*

U.S. Cl. 423—371 **7 Claims**

A safe controllable, convenient process for completely reacting an active metal with a reactive liquid comprising contacting said metal with a dispersion which consists essentially of a reactive liquid phase (e.g., water) dispersed in a continuous nonreactive liquid phase (e.g., inert hydrocarbon oil).

3,729,549
PROCESS FOR THE FORMATION OF STABILIZED AND CARBONIZED ACRYLIC FIBROUS MATERIAL

Klaus H. Gump, Gillette, and Dagobert E. Stuetz, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Original application Nov. 21, 1968, Ser. No. 777,902. Divided and this application July 7, 1971, Ser. No. 160,567

Int. Cl. C01b *31/07*

U.S. Cl. 423—447 **23 Claims**

An improved process is provided for the formation of fibrous materials of enhanced thermal stability derived from acrylic polymers consisting primarily of recurring acrylonitrile units. A minor quantity of a Lewis acid capable of promoting the cyclization of pendant nitrile groups is incorporated in a solution of the acrylic polymer, a cyclized acrylic material is formed within the solution at an elevated temperature, the resulting solution is spun to form a cyclized acrylic fibrous material which is soluble in N,N-dimethylformamide, and the resulting cyclized acrylic fibrous material is heated in an oxygen-containing atmosphere until a stabilized fibrous product is formed which is capable of undergoing carbonization and which is insoluble in N,N-dimethylformamide. The stabilized fibrous material may next optionally be carbonized or carbonized and graphitized at elevated temperatures while present in an inert atmosphere.

3,729,550
PROCESS FOR THE PURIFICATION OF AQUEOUS MAGNESIUM CHLORIDE SOLUTIONS

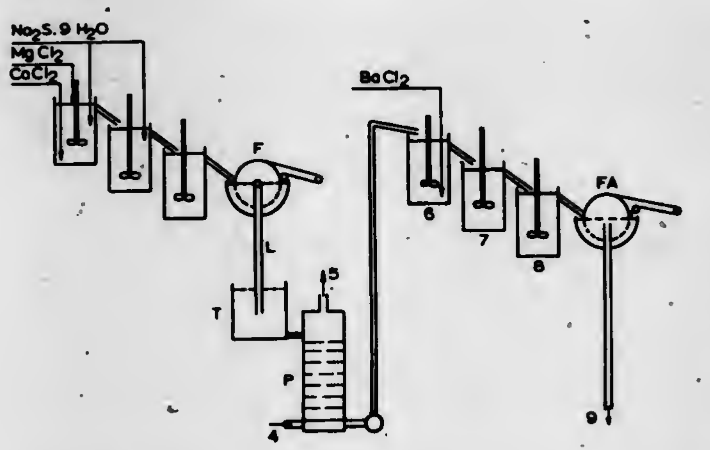
Oystein Boyum, Skien, Finn Enok Folkestad, Heistad, and Asbjorn Torvund, Porsgrunn, Norway, assignors to Norsk Hydro A.S., Oslo, Norway

Filed Apr. 12, 1971, Ser. No. 133,151

Claims priority, application Norway, Apr. 16, 1970, 1,447/70

Int. Cl. C01f *5/30*

U.S. Cl. 423—497 **6 Claims**



A process is provided for the purification of magnesium chloride solutions which are to be converted to low-moisture or anhydrous magnesium chloride for molten salt electrolysis. The process comprises three steps, and calcium ions and sulphide ions are added in the first step, the solution is treated with an oxidizing agent in the second step, and barium ions are added to the solution in the third step.

3,729,551
CONVERSION OF CALCIUM SULFATE TO CALCIUM OXIDE AND ELEMENTAL SULFUR

Everett Gorin, Pittsburgh, Pa., assignor to Consolidated Coal Company, Pittsburgh, Pa.

Filed Jan. 7, 1971, Ser. No. 104,694

Int. Cl. C01b *17/44*

U.S. Cl. 423—638 **1 Claim**

$CaSO_4$ is converted to CaO in two stages, the first a reduction stage wherein a fluidized bed of relatively coarse $CaSO_4$ is converted to CaS by means of relatively fine, ash-containing hydrocarbonaceous solids and air circulating through the bed, and the second, an oxidation stage wherein the CaS from the first stage is converted to CaO and SO_2. In a preferred embodiment, the reduction stage is operated to yield sufficient reducing gas to convert the SO_2 from the oxidation stage to elemental sulfur.

3,729,552
PREPARATION OF PURE BERYLLIUM HYDRIDE

Reinhold H. Kratzer and Kazimiera J. L. Paciorek, Costa Mesa, Calif., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Nov. 30, 1965, Ser. No. 511,024

Int. Cl. C01f *3/00*

U.S. Cl. 423—645 **2 Claims**

1. A method for the synthesis of pure beryllium hydride of composition BeH_2, comprising:

(a) adding 1 molar part beryllium borohydride etherate to 2 molar parts triphenylphosphine in a vessel,

(b) evacuating and closing said vessel and heating same at 64–67° C. until 1 molar part of diethylether is given off in the reaction,

(c) opening said vessel to a high vacuum system and separating the volatile byproducts from the solid residue,

(d) extracting triphenylphosphino-borine from said residue with refluxing benzene leaving pure beryllium hydride as the insoluble product.

3,729,553
PACKAGED EFFERVESCENT COMPOSITION

David Gold, Yonkers, Bernard Misek, Pomona, and Norman Braun, Dover Plains, N.Y., assignors to Richardson-Merrell, Inc., New York, N.Y.

Continuation of application Ser. No. 31,136, Apr. 23, 1970. This application Mar. 17, 1972, Ser. No. 235,594

Int. Cl. A61k *7/16*

U.S. Cl. 424—44 **13 Claims**

A packaged effervescent composition comprising a package having two compartments for storage of ingredients of said effervescent composition from which the ingredients are adapted to be dispensed simultaneously and proportionately for reaction with each other, the first compartment containing a solution of an effervescing producing reactant and the second compartment containing a complementary solution of an effervescing releasing reactant suitable for releasing the effervescence of the first compartment upon reaction with the effervescing producing reactant.

3,729,554
METHOD OF TREATING HEMOLYTIC STREPTOCOCCI AND THE RESULTANT PREPARATION CONTAINING THE SAME

Shigeo Suzuki, Takao Noto, and Yoshio Takagaki, Tokyo, Sakae Wada, Ageo, and Akihiro Yamamoto, Haruki Ogawa, Takashi Matsuno, Hiroshi Okazaki, and Yutaka Sugawara, Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 694,854, Jan. 2, 1968. This application Mar. 15, 1971, Ser. No. 124,445

Claims priority, application Japan, Jan. 20, 1967, 42/3,651; Sept. 18, 1967, 42/59,387

Int. Cl. C12k *3/00*

U.S. Cl. 424—93 **9 Claims**

By adding cephalosporin C or cycloserine to a living cell suspension of hemolytic streptococci having anti-tumor activity in a suspension medium to treat the cells with the antibiotic, it is possible to eliminate toxicity with increasing anti-tumor activity to make them useful anti-tumor preparations.

3,729,555
ANTIBIOTIC COMPOSITION

Boris Gradnik, Milan, Italy, assignor to MIDY, Paris, France

No Drawing. Filed Oct. 22, 1971, Ser. No. 191,792

Claims priority, application France, Oct. 28, 1970, 7038890

Int. Cl. A61k *21/00*

U.S. Cl. 424—114 **7 Claims**

Antibiotic composition comprising as active ingredients from 30 to 45% by weight of penicillin G and from 70 to 55% by weight of metampicillin. This composition is active against both gram-positive and gram-negative bacteria, including the penicillinase producing Staphylococci; has a synergistic action against gram-positive and a number of gram-negative bacteria and is able to give extraordinarily high antibiotic bile levels.

3,729,556
PROPHYLACTIC PREPARATION FOR PREVENTING SENSITIZATION OF Rh-NEGATIVE MOTHERS BY Rh-POSITIVE FETAL ERYTHROCYTES

Otto Schwarz, 5 Celtesgasse, and Hans Eibl, 2 Gustav Tschermak-Gasse, both of Vienna, Austria

No Drawing. Filed Nov. 14, 1969, Ser. No. 876,994

Claims priority, application Austria, Apr. 29, 1969, A 4,134/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—177 **4 Claims**

The invention relates to a method for the production of a prophylactic preparation to prevent sensitization of Rh-negative mothers by Rh-positive fetal erythrocytes, in which a $Rh_o(D)$-immune globulin solution is mixed with a human albumin solution at a volume ratio of $Rh_o(D)$-immune globulin: albumin of between 1:2 and 1:10. The resulting preparation may be stored for a considerably prolonged period and may itself be utilized for an initial compatibility test by the agglutination method.

3,729,557
INSECTICIDAL COMPOSITIONS AND METHODS OF COMBATTING INSECTS USING PHOSPHORYLATED 1,2,5-THIADIAZOLES

Michael D. Barker, Maidstone, England, and Peter Kirby, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Original application Apr. 12, 1968, Ser. No. 721,088, now Patent No. 3,666,768, dated May 30, 1972. Divided and this application Jan. 20, 1972, Ser. No. 219,561

Claims priority, application Great Britain, Apr. 14, 1967, 17,199/67

Int. Cl. A01n *9/36*

U.S. Cl. 424—200 **18 Claims**

Insecticidal compositions and methods of killing insects using phosphorylated 1,2,5-thiadiazoles.

3,729,558
USE OF CERTAIN METHYLPHOSPHONATE DIESTER COMPOUNDS AS INSECTICIDES

George M. Steinberg, Baltimore, and Claire N. Lieske, Joppa, Md., and Arthur B. Ash, Detroit, and Peter Blumbergs, Oak Park, Mich., assignors to Ash Stevens, Inc., Detroit, Mich.

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,876

Int. Cl. A01n *9/36*

U.S. Cl. 424—214 **3 Claims**

Methylphosphonate diesters useful as insecticides are described. The ester groups include phenacyl and phenyl groups which are unsubstituted and substituted in the phenyl ring. The insecticidal activity of the compounds is destroyed by hydrolysis wherein the phenacyl group, either in keto or oxime form, activates the displacement of the phenyl group in the presence of water to produce the corresponding inactive hydrolysis products, phenacyl methylphosphonic acids and phenols. Insecticidal compositions incorporating the methylphosphonate diesters as the active ingredient are also described.

3,729,559
1,2-OXAZINE DERIVATIVES IN ALLEVIATING PAIN AND TREATING INFLAMMATORY DISEASES

Rolf Denss, Basel, Switzerland, Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Apr. 22, 1969, Ser. No. 818,407, now Patent No. 3,586,676, dated June 22, 1971. Divided and this application Jan. 8, 1971, Ser. No. 105,085

Int. Cl. A61k *27/00*

U.S. Cl. 424—248 **3 Claims**

The compounds are of the class of [p-(3,6-dihydro-2H-1,2-oxazin - 2 - yl) - phenyl] - alkanoic acids, the methyl and ethyl esters thereof, as well as the pharmaceutically acceptable salts thereof and have analgesic and anti-inflammatory activity; the compounds are active ingredients of pharmaceutical compositions and are useful for alleviating pain and treating inflammatory diseases in mammals; an illustrative embodiment is [p-(3,6-dihydro-2H-1,2-oxazin-2-yl)-phenyl]-acetic acid.

3,729,560
TREATMENT OF HAIR AND SCALP WITH COMPOSITIONS CONTAINING ESTRIOL

Gosta Hagerman, Lund, Sweden, assignor to Aktiebolaget Leo (A/B Leo), Halsingborg, Sweden

No Drawing. Filed Mar. 25, 1969, Ser. No. 810,351

Claims priority, application Great Britain, Apr. 2, 1968, 15,852/68

Int. Cl. A61k *11/06*

U.S. Cl. 424—238 **9 Claims**

Improvement or alleviation of certain undesirable conditions of the scalp, including certain types of non-irreversible hairfall using estriol, and compositions thereof particularly useful in such treatment.

3,729,561
METHOD OF ANESTHETIZING AQUATIC ANIMALS USING CERTAIN THIAZOLE DERIVATIVES

Takahiko Kikuchi, Yokohama, and Motohiro Nishio, Teiichiro Ito, and Yasuharu Sekizawa, Tokyo, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

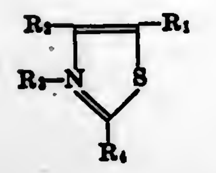
No Drawing. Filed Mar. 13, 1970, Ser. No. 19,459

Claims priority, application Japan, Mar. 20, 1969, 44/20,839, 44/20,840; May 14, 1969, 44/36,591; Dec. 9, 1969, 44/98,350, 44/98,351

Int. Cl. A01n *9/12*

U.S. Cl. 424—270 **16 Claims**

Various aquatic animals such as fishes, shells etc., may be anesthetized to different degrees by treating water or marine water containing about 1 to 100 p.p.m. of known substituted 2-amino- or 2-methyl-thiazole derivatives of the general formula



wherein R_1 is a hydrogen, methyl, ethyl, phenylmercapto or p-chlorophenylmercapto group; R_2 is methyl, ethyl, phenyl, p-methylphenyl, p-methoxyphenyl, p-chlorophenyl or p-bromophenyl group; or R_1 and R_2 taken together with the adjacent two carbon atoms of the thiazole nucleus form a tetrahydrobenzene ring, dihydronaphthalene ring or 4H-benzothiopyran ring fused to the thiazole nucleus when R_4 represents an amino group $—NH_2$; either R_3 is absent, or R_3 is a methyl group when R_4 represents a methylimino group $=NCH_3$ provided that the double bond adjacent to the nitrogen atom of the thiazole nucleus is then a single bond; and R_4 is a methyl, amino, hydrazino or methylimino group, as well as acid-addition salts thereof. Aquatic animals so anesthetized may have an improved resistance to long time transport thereof.

3,729,562
COMBATING ARTHROPODS WITH N-ACYL-1,2-DICARBONYL-PHENYL-HYDRAZONES

Karl Heinz Buchel and Wilfried Draber, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application July 2, 1969, Ser. No. 838,632, now Patent No. 3,631,091, dated Dec. 28, 1971. Divided and this application Aug. 5, 1971, Ser. No. 169,497

Claims priority, application Germany, July 5, 1968, P 17 68 834.5

Int. Cl. A01n *9/20*

U.S. Cl. 424—304 **12 Claims**

Combating arthropods with N-acyl - 1,2 - dicarbonyl-phenyl-hydrazones, i.e. (α-cyano-α-alkanoyl and carboalkoxy)-carbonyl -N-(alkanoyl, chloroalkanoyl, alkenoyl and benzoyl)- [(mono, and same and mixed di and tri, -chloro and -trifluoromethyl)-phenyl]-hydrazones.

3,729,563
METHOD OF TREATING MOVEMENT DISORDERS

William D. Cash, Riverside, Conn., and Barbara Petrack, Briarcliff Manor, and Murray Weiner, White Plains, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 5,940, Jan. 26, 1970. This application Dec. 8, 1970, Ser. No. 96,295

Int. Cl. A61k *27/00*

U.S. Cl. 424—248 **3 Claims**

Gallic acid, its salts and its alkyl esters are utilized in the treatment of involuntary movement disorders. The compounds can be administered alone or in combination, as with L-DOPA in the treatment of parkinsonism.

3,729,564
N-SECONDARY ALKYL ALKANEDIAMINES AND DERIVATIVES THEREOF AS ANTI-INFLAMMATORY AGENTS

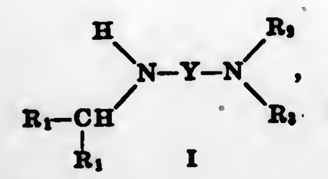
Yi Han Chang, Waterford, George R. Evanega, Ledyard, and William M. McLamore, Gales Ferry, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,860

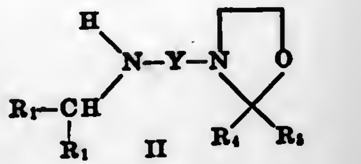
Int. Cl. A61k *27/00*

U.S. Cl. 424—325 **3 Claims**

A series of N-secondary alkyl alkanediamines, and pro-drug forms thereof; namely, 3-[(ω-secondary alkylamino) alkyl]oxazolidines; 1,3-dialkyl-1,3-diazacycloalkanes; and the non-toxic acid addition salts thereof having the formulae below are useful as anti-inflammatory and immunosuppressive agents:

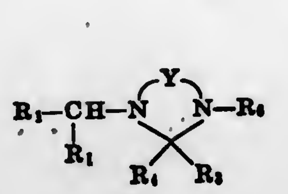


I



II

and



III

wherein

Y is alkylene of from 2 to 5 carbon atoms;
R_1 is alkyl of from 4 to 13 carbon atoms;
R_2 is hydrogen, 2-hydroxyethyl or ethyl;
R_3 is 2-hydroxyethyl or R_6 wherein R_6 is alkyl of from 1 to 20 carbon atoms;
R_4 is hydrogen, alkyl of from 1 to 20 carbon atoms; cycloalkyl of from 3 to 7 carbon atoms; phenyl or substituted phenyl wherein the substituent is halogen, lower alkyl, lower alkoxy, cyano or trifluoromethyl;
R_5 is R_4, thienyl, pyridyl or furyl; and
R_4 and R_5 when taken together with the carbon atom to which they are attached are cycloalkyl of from 3 to 7 carbon atoms.

3,729,565
APHICIDAL AND ACARICIDAL COMPOSITIONS CONTAINING N-2,4 DIMETHYLPHENYL-N'-METHYLFORMAMIDINE OR ITS ACID ADDITION SALTS AND METHODS OF USE

Ian Robert Harrison, Bleasby, John Felix McCarthy, Bramcote Hills, and Bryan Harper Palmer, Burton Joyce, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,208

Claims priority, application Great Britain, Dec. 12, 1969, 60,793/69; May 14, 1970, 23,500/70

Int. Cl. A01n *9/20*

U.S. Cl. 424—326 **6 Claims**

A new N - arylformamidine, namely N-2,4 - dimethylphenyl-N'-methylformamidine, and acid addition salts thereof are described. The compounds possess acaricidal and aphicial properties and pesticidal methods and compositions using them are described. N-2,4-dimethylphenyl-N'-methplformamidine is also of value as an intermediate in the preparation of the pesticidal compound 1,5-di-(2,4-dimethylphenyl)-3-methyl-1,3,5-triazepenta - 1,4-diene described in our copending application Ser. No. 94,209, filed Dec. 1, 1970.

3,729,566
RODENT STERILANT PROCESS

Ronald J. Ericsson, Oshtemo, and Daniel Lednicer and Gilbert A. Youngdale, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 764,927, Oct. 3, 1968, which is a continuation-in-part of application Ser. No. 683,613, Nov. 13, 1967, both now abandoned. This application May 25, 1971, Ser. No. 146,807

Int. Cl. A01n *9/24;* **A61k** *27/00*

U.S. Cl. 424—342 **5 Claims**

Pharmaceutical preparations in dosage forms consisting essentially of compatible pharmaceutically acceptable

carriers, oral and injectable, compounded with an effective amount for preventing impregnation by sexually mature male rats of a compound of the formula

$$YR_1OCH_2CH(OR)CH_2Cl,$$

wherein Y is OH or $ClCH_2CH(OR)OH_2O—$; R_1 is chosen from the group consisting of an alkylene radical of 2 to 16 carbon atoms, inclusive; an alkenylene radical of 4 to 16 carbon atoms, inclusive; and an alkynylene radical of 4 to 16 carbon atoms, inclusive; and R is hydrogen or an acyl radical of a hydrocarbon carboxylic acid of 1 to 18 carbon atoms, inclusive. Preferred compounds are those of the given formula wherein R is hydrogen. Methods of preventing impregnation by sexually mature male rats which comprise administering systemically to the rats an effective amount for preventing impregnation of a compound as described, suitably compounded into a dosage form of a pharmaceutical preparation.

3,729,567
1,1,5-TRIHYDRO-PERFLUOROPENTANE AS AN INHALATION ANESTHETIC

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

No Drawing. Filed July 15, 1971, Ser. No. 163,102

Int. Cl. A61k *27/00*

U.S. Cl. 424—350 **2 Claims**

The novel compound 1,1,5 - trihydro-perfluoropentane having the formula $CHF_2(CF_2)_3CH_2F$ is disclosed. This compound is useful as an inhalation anesthetic and as a solvent and dispersant for fluorinated materials.

3,729,568
ACNE TREATMENT

Albert M. Kligman, Philadelphia, Pa., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of application Ser. No. 678,493, Oct. 25, 1967. This application Sept. 23, 1969, Ser. No. 860,296

Int. Cl. A61k *15/02*

U.S. Cl. 424—318 **10 Claims**

The dermatologic disorder called acne vulgaris is controlled by topical application of vitamin A acid to the affected area. The application is made daily with a composition of low vitamin A acid content in the order of about 0.1%, by weight, until the acne is relieved. Particularly suitable compositions for topical applications are also provided.

3,729,569
COSMETIC COMPOSITION CONTAINING MICROENCAPSULATED SOLVENTS FOR NAIL ENAMEL

Roger Charle, Soisy-sous-Montmorency; Charles Zviak, Franconville, and Gregoire Kalopissis, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Division of Ser. No. 8,720, Feb. 4, 1970, Pat. No. 3,686,701. This application June 21, 1972, Ser. No. 264,871

Claims priority, application Luxembourg, Feb. 4, 1969, 57904

Int. Cl. A61k *7/04*

U.S. Cl. 424—14 **3 Claims**

A cosmetic composition for removing nail enamel comprises micro-encapsulated solvent nail polish remover with a perfume to mask the solvent odor, either as aqueous drops adapted to be applied with cotton wad or cloth, or as an aqueous paste adapted to be stored in a jar or in a aflexible tube, and to be applied with a spatula.

ELECTRICAL

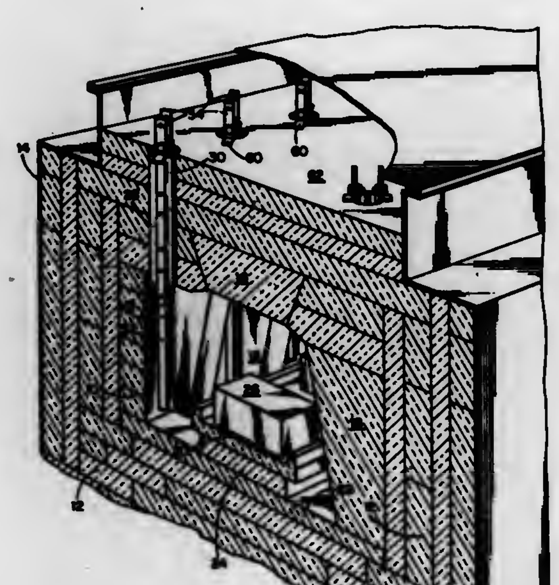
3,729,570
MODULAR HEATER FURNACE

Jacob Howard Beck, Waban, Mass., assignor to BTU Engineering Corporation, North Billerica, Mass.

Filed Sept. 20, 1971, Ser. No. 181,932

Int. Cl. F27b *9/36*; H05b *3/06*

U.S. Cl. 13—25 **9 Claims**



A heat treating furnace having distinct easily replaceable modular heating elements disposed in an effectively continuous array along the furnace for efficient high temperature operation. Each heating element is in the form of a sinuous ribbon of high temperature metal and is supported within the furnace in a manner to permit easy removability without furnace disassembly.

3,729,571
INSULATION FOR POWER CABLE JOINTS AND A METHOD OF MAKING SAME

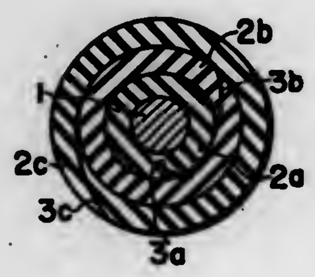
Kenji Matsuura, Ikeda, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 815,432, April 11, 1969, Pat. No. 3,596,572. This application May 14, 1970, Ser. No. 48,731

Claims priority, application Japan, April 12, 1968, 43/24027; Aug. 27, 1968, 43/73355

Int. Cl. H01b *7/02*

U.S. Cl. 174—25 R **3 Claims**



An insulation for power cable joints wherein a previously shaped split-type paper cylinder is placed over the cable core such that the outside edge thereof forms a snail-like borderline.

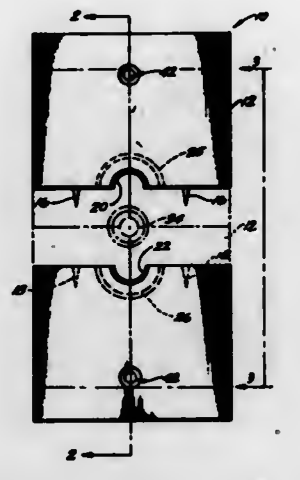
3,729,572
SPLIT OUTLET PLATE

Charles J. Helin, 1488 San Pasqual St., Pasadena, Calif.

Continuation-in-part of Ser. No. 44,183, June 8, 1970, abandoned. This application July 12, 1971, Ser. No. 161,744

Int. Cl. H02g *3/14*

U.S. Cl. 174—66 **17 Claims**



An outlet plate is split into an upper half and a lower half, with a hole through the center of the plate for easily fitting the plate around a cord extending out of an opening in a wall. The plate halves are held together in a common plane by a cooperating tongue and groove arrangement at the interface of the plate halves. The connected plate halves may be secured to the wall, although it is preferred to fasten them to a rigid reinforcing ring shaped to fit around the opening in the wall.

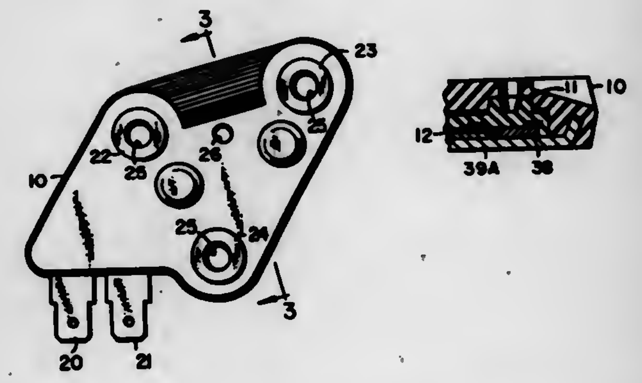
3,729,573
PLASTIC ENCAPSULATION OF SEMICONDUCTOR DEVICES

Thomas A. Dunn, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 761,074, Sept. 20, 1968, abandoned. This application Jan. 25, 1971, Ser. No. 109,648

Int. Cl. H05k *5/02*

U.S. Cl. 174—15 R **1 Claim**



A first plastic encapsulated subassembly has a cup-shaped recess with the sides of the cup having a taper of about 30° and a heat sink opposite the cup. The assembly is placed in a cavity of a mold with a second heat sink in contact with the subassembly heat sink and resting on one face of the mold cavity. A mold pin is inserted into the cup-shaped recess, forcing the subassembly, using a precalculated and controlled deformation of the cup, heat sink and the one mold face together such that the later injected plastic encapsulating material does not flow therebetween to provide a good thermal path from the subassembly heat sink to an outer face of the completed plastic encapsulated assembly.

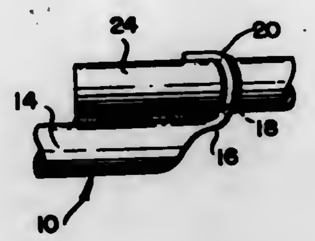
3,729,574
CONNECTOR AND ELECTRICAL COMPONENT ASSEMBLY

Al Weiner, 2111 Regatta Avenue, Sunset Island No. 4, Miami Beach, Fla.

Continuation-in-part of Ser. No. 825,332, May 16, 1969, Pat. No. 3,566,465. This application March 1, 1971, Ser. No. 122,616

Int. Cl. H01r *5/04*, *5/08*

U.S. Cl. 174—94 R **2 Claims**



A connector wire has a flattened lead-receiving section with a hole therethrough, and the end of an electrical lead wire is passed through the hole and secured to the flattened section. The free end section of the flattened portion is bent back to reduce the size of the hole and to press its periphery into biting engagement with the lead.

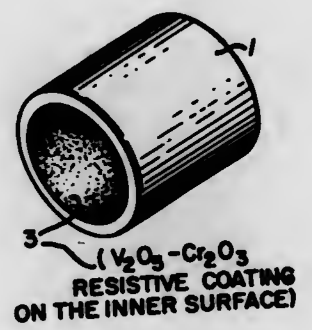
3,729,575
HIGH VOLTAGE INSULATOR HAVING A THICK FILM RESISTIVE COATING

Maynard Caldwell Harding, Menlo Park, and Joseph Armando Payne, Redwood City, both of Calif., assignors to Litton Systems, Inc., San Carlos, Calif.

Filed Oct. 28, 1971, Ser. No. 193,295

Int. Cl. H01j *1/88*, *19/42*

U.S. Cl. 174—138 R **8 Claims**



A hollow cylindrical electrical high voltage insulator, suitably an aluminum oxide ceramic material, adapted for use in an electron discharge device includes a fused thick film resistive coating on its inner surface that is on the order of 0.002-inch in thickness and which has a resistivity in the range of 3 × 10^8 to 10^{13} ohms per square at an ambient temperature of 75°F. In one embodiment the thick film resistive coating is a vanadium-pentoxide chrome-sesquioxide mixture. The coating permits dissipation of surface charges and prevents high energy electrons from penetrating through to the insulator surface.

3,729,576
ENCODING AND DECODING SYSTEM FOR CATV

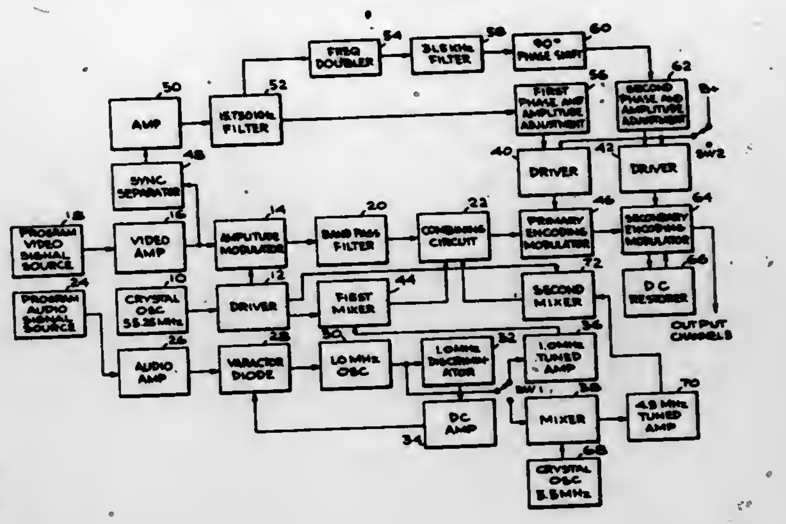
Patrick R. J. Court, Los Angeles, Calif., assignor to Optical Systems Corporation, Los Angeles, Calif.

Filed Feb. 8, 1971, Ser. No. 113,393

Int. Cl. H04n *1/44*

U.S. Cl. 178—5.1 **16 Claims**

A video signal encoding system is provided by amplitude modulating a video carrier modulated with video, with a sinusoidal waveform whereby the amlitude levels of the sync portion of the video waveform as well as the video portion of the video waveform are altered. Decoding may be achieved by remodulating the encoded video waveform with a decoding sine wave in antiphase with the encoding sine wave and thereafter modulating the result, to eliminate residual error, with a cosine function wave applied in phase opposition to the error component of the resultant, which has twice the frequency of the basic encoding sine wave, but preferably the sequence of the decoding remodulations is reversed.



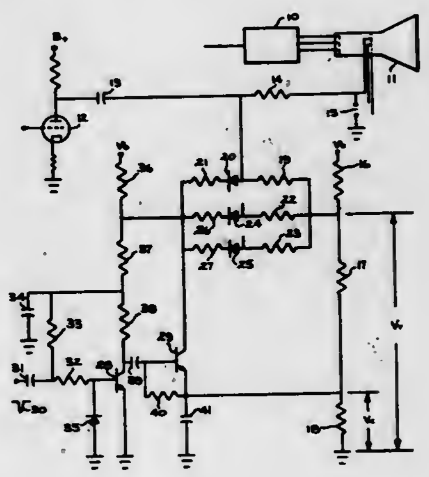
3,729,577
CLAMP CIRCUIT FOR A COLOR TELEVISION RECEIVER

Donald F. Buell, Baldwinsville, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Jan. 19, 1971, Ser. No. 107,685

Int. Cl. H04n *9/12*, *5/18*

U.S. Cl. 178—5.4 R **6 Claims**

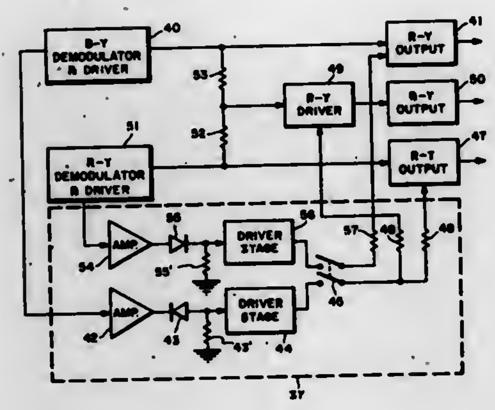


A clamping circuit which provides a first biasing voltage to a color signal transmission path when a video signal is received, and a second, lower biasing voltage when no signal is received. A transistor is periodically gated into conduction by a horizontal synchronizing pulse, charging a capacitor placed in shunt with one portion of a resistive voltage divider. The capacitor discharges through the voltage divider portion, increasing the voltage drop thereacross. The increased voltage drop causes the potential of other portions of the voltage divider to rise proportionately, increasing the biasing voltage applied to the color signal transmission path. When no video signal is received the horizontal synchronizing pulses cease and the transistor is disabled, causing the bias voltage provided by the voltage divider to fall to its quiescent level.

3,729,578

METHOD AND APPARATUS FOR MODIFYING ELECTRICAL SIGNALS

John F. Slusarski, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.
Filed Aug. 4, 1971, Ser. No. 169,018
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 HE **15 Claims**



A circuit for providing natural looking flesh color in a color television apparatus which uses plural color outputs, such as R–Y, B–Y, and G–Y, to constitute the color signal. In a correction circuit, the R–Y and B–Y signals are processed by clipping and the clipped portions represent phase independent amplitudes of red and yellow respectively. The red amplitude is added to the G–Y output to subtract magenta, and subtracted from the B–Y output to add yellow for a more fleshlike appearance.

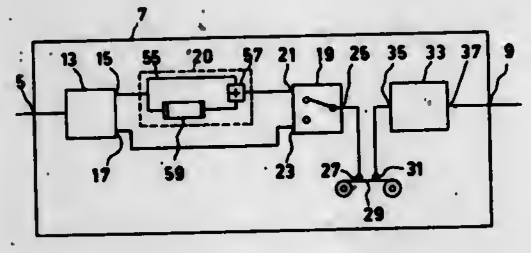
The yellow amplitude is added to the R–Y output to increase the red components making the yellow more fleshlike and subtracted from the green, or adding magenta, to make the yellow more fleshlike.

The above corrections are made to a predetermined color wheel segment without substantially affecting the remaining segment.

3,729,579

CONVERTING CIRCUIT FOR A LINE-SEQUENTIAL TELEVISION SIGNAL RECORDING DEVICE

Jacob De Boer, Emmasingel, Eindhoven, Netherlands, assignor to North American Philips Co., Inc., New York, N.Y.
Continuation of Ser. No. 759,703, Sept. 13, 1968, abandoned. This application July 26, 1971, Ser. No. 166,273
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.4 CD **14 Claims**

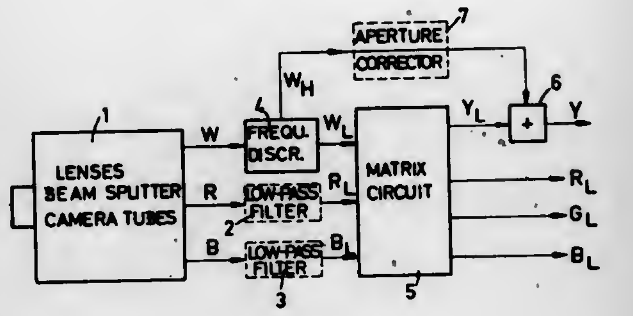


A recording circuit for a simultaneous television signal divides the signal into different frequency bands. At least one of these bands has the vertical definition reduced to eliminate moire patterns upon playback, and then both bands are applied to a switch which converts them into a sequential signal for recording. The reduction in the vertical definition can occur before the frequency division.

3,729,580

TELEVISION CAMERA SYSTEM

Hans-Dieter Schneider, Gross-Gerau, am Bruckelchen, Germany, assignor to Fernseh GmbH, Darmstadt, Germany
Continuation of Ser. No. 873,310, Nov. 3, 1969, abandoned. This application April 18, 1972, Ser. No. 245,108
Int. Cl. H04n *9/04*
U.S. Cl. 178—5.4 R **7 Claims**

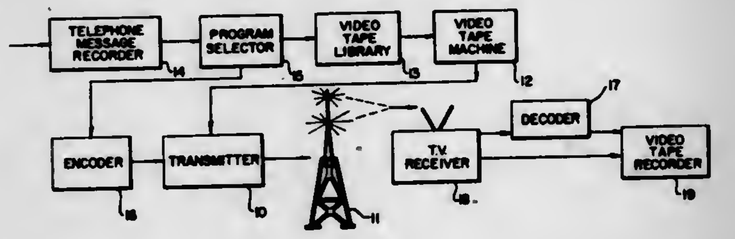


A television system for deriving a luminance signal from a color camera system by matrixing a first signal corresponding to a spectral distribution between the luminosity function of the human eye and the spectral distribution of the primary color green and at least one second signal corresponding to another primary color in a disclosed manner, thereby reducing the effect of color fringing caused by misregistration; preferably a contour signal derived from said first signal is added to the gamma corrected luminance signal.

3,729,581

COMPUTER ASSISTED DIAL ACCESS VIDEO RETRIEVAL FOR AN INSTRUCTIONAL TELEVISION SYSTEM

Deyrol E. Anderson, St. Paul, Minn., assignor to Display Systems Corporation, St. Paul, Minn.
Filed Sept. 3, 1970, Ser. No. 69,312
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **10 Claims**

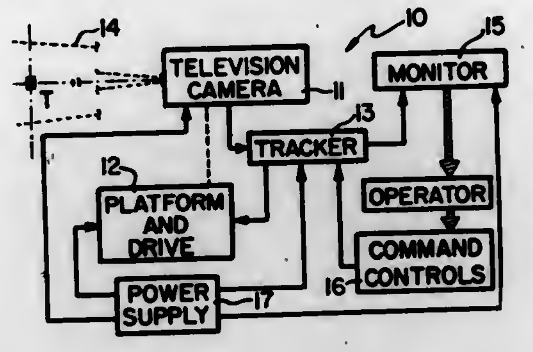


An instructional television system is provided for making available non-print learning materials upon request. The instructional system includes a central library store for storage of programs of learning materials. Learning materials are selectively transmitted via a TV transmitter link after being addressed with a predetermined three variable (tone, duration and period of silence) code. The code serves to "unclock" or activate one or more decoders disposed at a plurality of subscriber stations through a TV receiver at the corresponding subscriber station. Each decoder at a subscriber station can be programmed to any one of a plurality of two-tone sequential codes. The activated encoder serves to actuate an associated video tape recorder to record the selected transmitted material after which all remote subscriber video tape recorders previously activated by the coded transmission signal are deactivated.

3,729,582

TRACKING SYSTEM TRACKER UNIT

Neil S. Deye, and Richard B. Kuhn, both of Columbus, Ohio, assignors to North American Rockwell Corporation
Division of Ser. No. 403,396, Oct. 12, 1964. This application Jan. 18, 1967, Ser. No. 610,459
Int. Cl. H04n *3/00*
U.S. Cl. 178—6.8 **12 Claims**

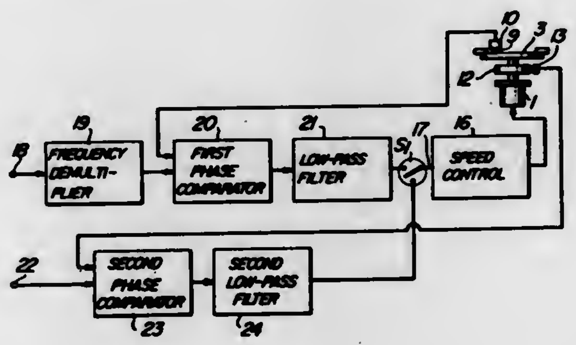


Apparatus and methods processing the video signal of a television camera sensor into a tracking error correction signal form used to control the viewing axis of the television camera sensor in tracking alignment with respect to a detected target. A pre-gate or post-gate extension, or both, is combined with the basic tracker unit tracking gate pulse to develop improved tracking control in directions at right angles to the television camera sensor direction of line scanning.

3,729,583

ROTARY HEAD TYPE MAGNETIC RECORDING AND REPRODUCING UNIT

Osahiko Yano, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Nov. 27, 1970, Ser. No. 92,967
Claims priority, application Japan, Dec. 4, 1969, 45/97589
Int. Cl. H04n *1/28*; G11b *21/4*
U.S. Cl. 178—6.6 P **3 Claims**

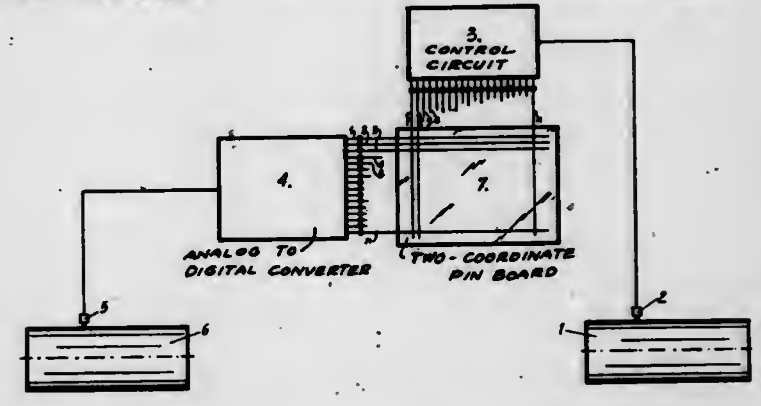


A rotary type magnetic recording and reproducing unit, in which high frequency fluctuating components in the speed of the rotary head are suppressed while maintaining a predetermined rotational phase of the rotary head with respect to the vertical synchronizing signal of the television signal to be recorded by preliminarily controlling the rotational phase of the rotary head such that a particular phase difference between the phase of a low frequency pulse series timed to a certain rotational phase of the rotary head and the phase of the vertical synchronizing signal in the television signal to be recorded is provided and subsequently controlling the rotational phase of the rotary head such that the phase of a high frequency pulse series timed to the afore-said certain rotational phase of the rotary head is brought into coincidence with the phase of the horizontal synchronizing signal in the television signal to be recorded.

3,729,584

APPARATUS FOR THE PREPARATION OF SCREEN PRINTING FORMS WITH AN ADJUSTABLE RELATION BETWEEN GREY VALUES OF THE PATTERN AND GREY VALUES OF THE PRINTING FORMS

Ferdinand A. de Vos, Amsterdam, and Jan H. ter Steege, Abcoude, both of Netherlands, assignors to Werkspoor-Amsterdam N.V., Amsterdam, Netherlands
Continuation of Ser. No. 776,320, Nov. 18, 1968, abandoned. This application April 20, 1971, Ser. No. 135,732
Claims priority, application Netherlands, Dec. 1, 1967, 6716368
Int. Cl. G03f *3/08*; H04n *5/76*
U.S. Cl. 178—6.6 B **8 Claims**

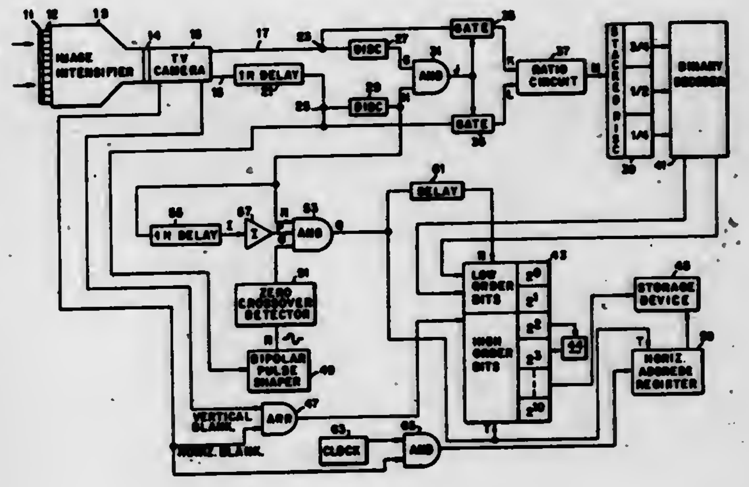


The instantaneous analog output of a scanning device is converted to one of a plurality of digital signals each of which corresponds to a different level of the analog signal. The output of the scanning device is a function of the local intensity of a pattern and the digital signals appear at a plurality of individual output terminals. An engraving device includes a plurality of input terminals which control its cutting movement, and these input terminals are connected to the digital output terminals at a two-coordinate pin board so that the contrast of a pattern being scanned may be altered at will at the printing form being engraved.

3,729,585

DEVICE AND METHOD FOR IMPROVING THE VERTICAL RESOLUTION OF A TWO-DIMENSIONAL TELEVISION-BASED RADIATION DETECTION SYSTEM

Jackson B. Davidson, and Arthur L. Case, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Aug. 26, 1971, Ser. No. 175,230
Int. Cl. H04n *5/14*
U.S. Cl. 178—7.2 **7 Claims**



A device and method have been provided for improving the vertical resolution in a television-based radiation detection system. Impinging radiation detected in the form of scintillations occurring in a crystal is recorded by a television camera tube. As the information-containing target of the camera tube is scanned, each preceding horizontal scan is delayed one horizontal scan time and compared with the instant scan for coincidence of image, and if there, taking the ratio of the images, followed by testing of the resultant amplitude for proper location in a memory device. The vertical resolution is enhanced beyond that implied by the number of horizontal scans.

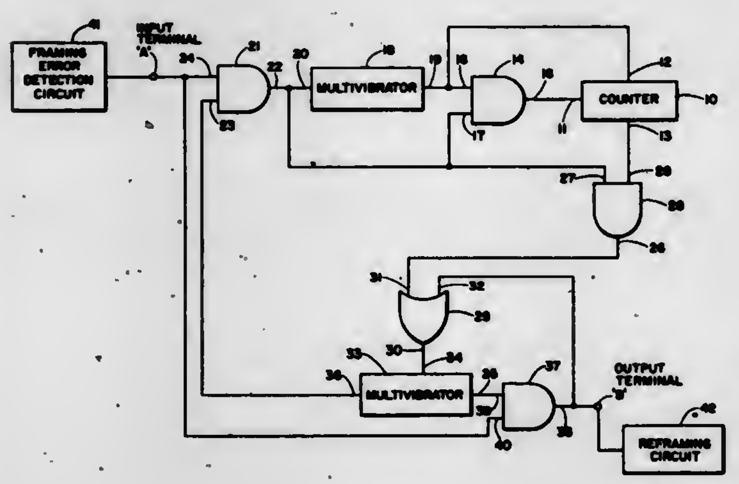
3,729,586
DIGITAL GUARD-TIME CIRCUIT FOR USE IN A FRAME SYNCHRONIZATION CIRCUIT

Quon Sang Chow, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Sept. 23, 1971, Ser. No. 183,110

Int. Cl. H04l *7/00*

U.S. Cl. 178—69.5 R **4 Claims**



A digital counter is responsive to framing error pulses for providing a signal after a predetermined number of error pulses have been counted within a predetermined interval of time. Access to the counter by the error pulses is controlled by a first retriggerable monostable multivibrator which has a time constant greater than the time duraction of one frame and less than the time duration of N frames, where N is determined by the forward guard-time and the tolerable mis-frame rate of the system. The signal from the counter is used to trigger on a second retriggerable monostable multivibrator which determines the backward guard-time of the circuit and controls the sending of reframing pulses to a reframing circuit.

3,729,587
VOLTAGE TUNABLE FREQUENCY THRESHOLD CIRCUIT

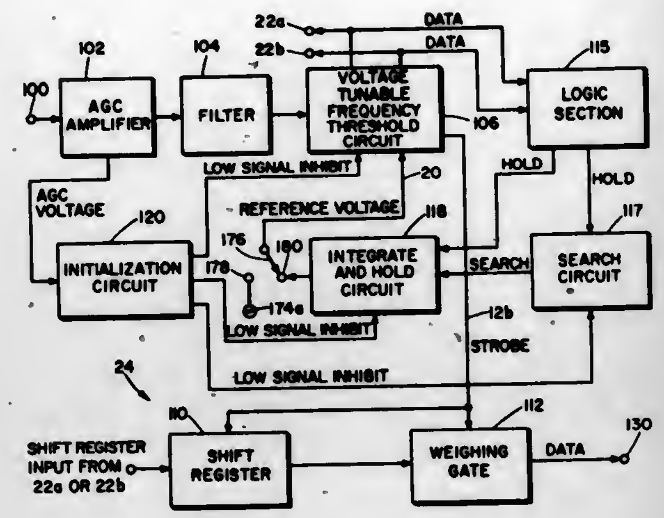
Robert L. McGill, Jr., Fallston; Charles R. Worsham, Towson, and Norman Green, Timonium, all of Md., assignors to Bendix Corporation, Southfield, Mich.

Filed July 12, 1971, Ser. No. 161,673

Int. Cl. H04b *1/16*

U.S. Cl. 178—88 **15 Claims**

A circuit having a voltage tunable threshold generates an output signal indicative of whether an input signal frequency is above or below the threshold frequency. A ramping signal is started and terminated at predetermined points on the input signal frequency waveform. The ramp amplitude at termination is compared against a d.c. reference voltage proportional to the threshold frequency to indicate whether the input signal frequency is above or below the threshold. The threshold circuit is also shown used in an adaptive frequency shift keying demodulator. The demodulator threshold analyzes a received reference frequency and generates a d.c. reference voltage level for the frequency threshold circuit proportional to the reference frequency.



3,729,588
TRANSISTORIZED AMPLIFIER

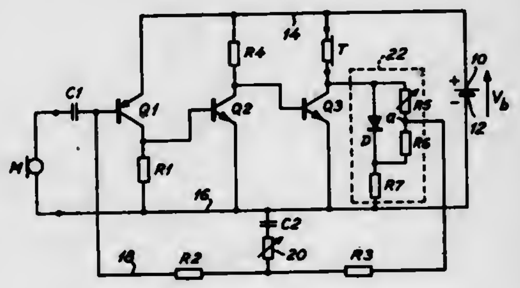
Ole Berland, Horsholm, Denmark, assignor to American Danish Oticon A/S (Aktieselskabet William Demant), Copenhagen, Denmark

Filed Dec. 29, 1969, Ser. No. 888,343

Claims priority, application Great Britain, Dec. 31, 1968, 61,958/68

Int. Cl. H03f *1/30*

U.S. Cl. 179—1 A **7 Claims**



The present invention relates to a transistorized audio amplifier especially for hearing aid equipment having an input stage and an output stage with a sound reproducer in the output stage between the collector of the output transistor and one battery terminal and with negative DC feedback between the output stage and the input stage. The base-emitter diode of the input is connected in such a manner as to provide stabilization of the voltage drop across the sound reproducer.

3,729,589
ADAPTER UNIT FOR TELEPHONE ANSWERING INSTRUMENT

Elmer C. Bonsky, Long Beach, and Lawrence A. Curtis, Huntington Beach, both of Calif., assignors to T.A.D. Avanti, Inc., Paramount, Calif.

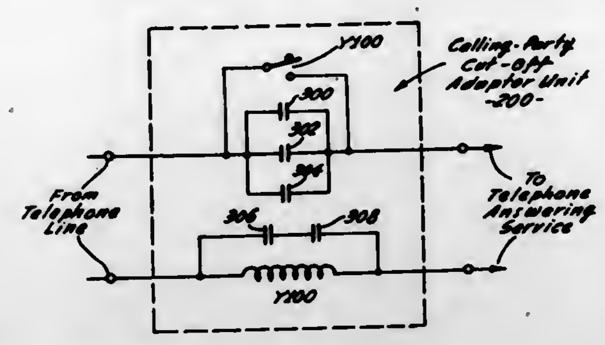
Filed Sept. 29, 1971, Ser. No. 184,702

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R **2 Claims**

An improved electronic adapter unit is provided which is intended to be interposed between the telephone line and a telephone answering instrument, and which serves to disconnect the instrument from the phone line in the event the

calling party hangs up, or is disconnected, so as to prevent dial tones, busy signals, or the like from being recorded by the answering instrument. The adapter unit of the invention finds particular utility in conjunction with the voice operated type of telephone answering instrument, since such instruments respond to the absence of signals on the phone line to turn themselves off, and often the presence of a dial tone, busy signal, or the like, cause the instrument to remain energized, and to continue to record the received tone, even though there is no message being received over the line.


Y100
Calling-Party Cut-Off Adapter Unit -200-
300
302
304
From Telephone Line
306
308
Y100
To Telephone Answering Service

3,729,590
APPARATUS FOR TRANSMITTING A DATA FLOW BY MEANS OF A PCM-FLOW

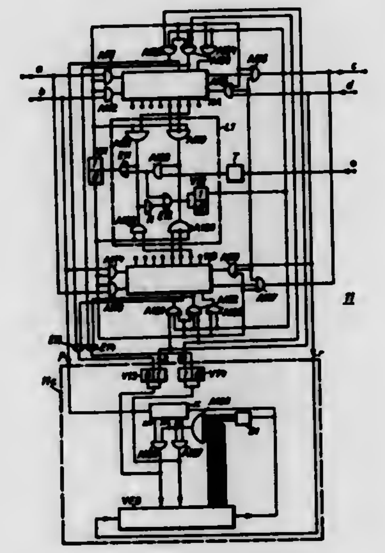
Walter Herbert Erwin Widl, Bandhagen, and Orjan Mats Mattsson, Taby, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 20, 1972, Ser. No. 219,243

Claims priority, application Sweden, Feb. 5, 1971, 1459

Int. Cl. H04j *3/04*

U.S. Cl. 179—15 AP **2 Claims**



A method and an apparatus, respectively, for transmitting a data flow by means of a PCM-flow from a transmitter terminal to a receiver terminal, the bits of the data flow being timed to the bits of the PCM-flow during a selected time slot and the bit rate of the data flow that is regenerated at the receiver terminal being precisely equal to the bit rate of the data flow at the transmitter terminal. This is accomplished according to the principle of the invention by dividing the data flow at the transmitter terminal into short and long groups of bits which alternate with each other and which are mutually identified by means of at least one identification bit joined to each one of the bit groups, and by having at least two control information bits that indicate whether synchronism, lagging or leading respectively exists for the data flow in relation to the PCM-flow, joined to the short bit groups so as to drive at the receiver terminal a bit timing pulse generator into synchronism with the data flow at the transmitter terminal.

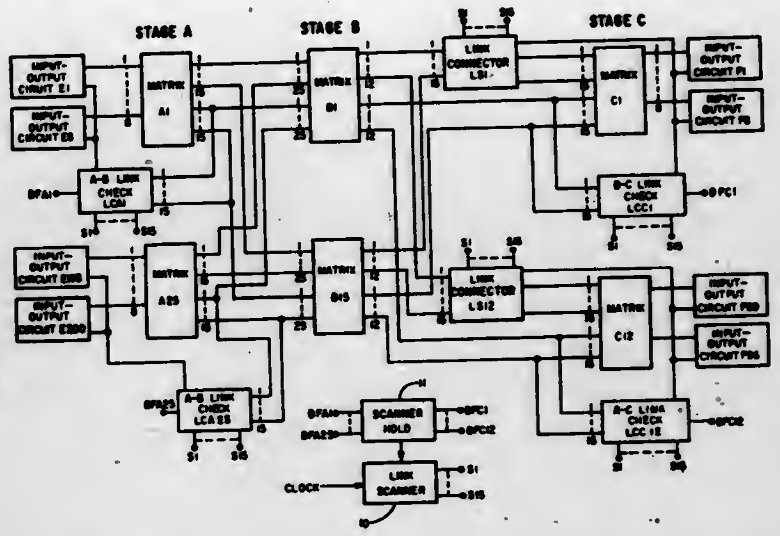
3,729,591
PATH FINDING SYSTEM FOR A MULTI-STAGE SWITCHING NETWORK

Klaus Gueldenpfennig, Penfield, and Stanley L. Russell, Webster, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,593

Int. Cl. H04q *3/42*

U.S. Cl. 179—18 GE **24 Claims**



A path finding system for effecting selection and interconnection of electrical circuits through a network of switching matrices interconnected by links to provide plural paths between opposite ends of the network. Two of the circuits on opposite ends of the network are marked for connection. Switching units are included in at least two network stages that are separated by at least one additional stage to provide signals designating the busy-free condition of the links connected thereto. A detection circuit simultaneously scans the individual link interconnections to both the two stages to detect a free path. When a combination of free links defining a free path has been detected, the scanning is stopped and the connection through the network is completed via the free links.

3,729,592
TELECOMMUNICATION SYSTEM

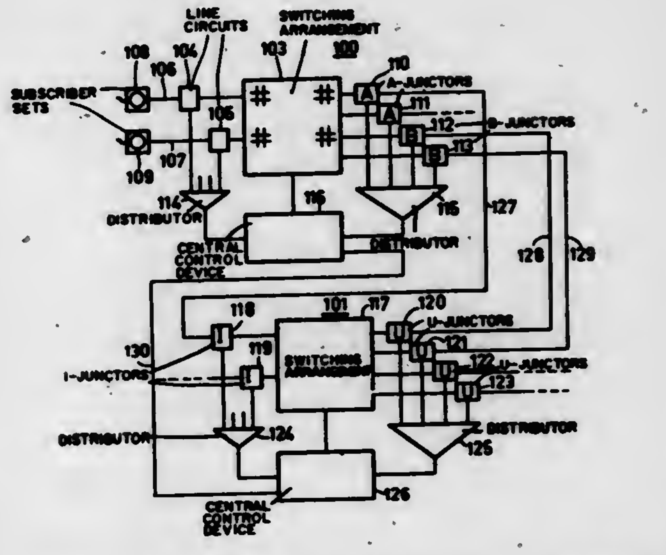
Robert Bertold Buchner, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1971, Ser. No. 105,022

Claims priority, application Netherlands, Jan. 13, 1970, 7000394

Int. Cl. H04q *3/42*

U.S. Cl. 179—18 FC **1 Claim**

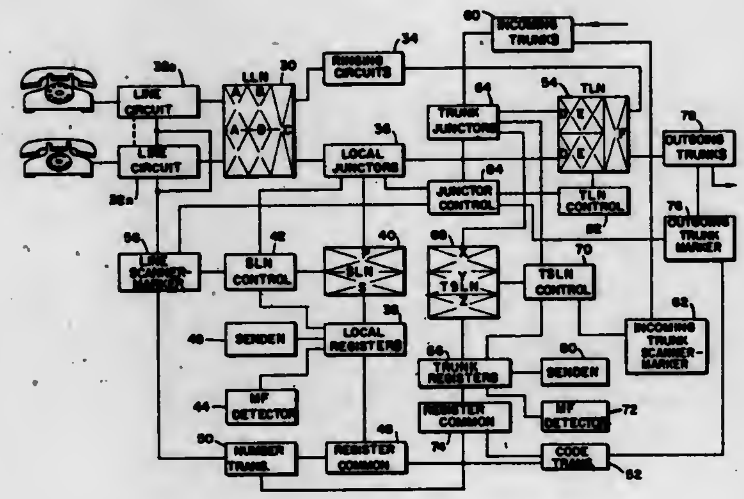


Telecommunication system comprising a transit exchange and a local exchange connected thereto through a group of junction lines, in which at the reception of an incoming call from the transit exchange which is intended for a subscriber line connected to the local exchange, a connecting channel is established in the local exchange between the called subscriber line and an arbitrary free junction line of said group and the identification of this junction line is transferred to the transit exchange, in which subsequently a connecting channel is established from the line from which the said call originated to said junction line.

3,729,593
PATH FINDING SYSTEM

Otto Altenburger, Rochester, N.Y., and Robert H. Bansemir, Northlake, Ill., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed June 15, 1971, Ser. No. 153,221
Int. Cl. H04m *3/00*
U.S. Cl. 179—18 EA **46 Claims**



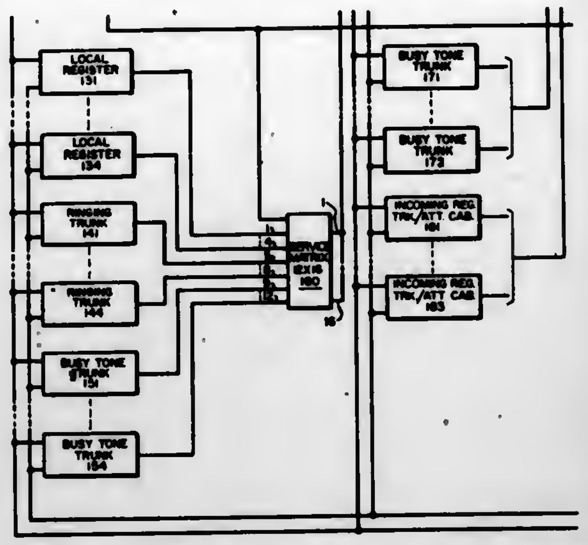
A path finding system for effecting selection and interconnection of electrical devices through a network of switching matrices providing plural paths between each input and each output thereof including scanning means for determining a free path to a selected input therefrom and non-reactive means for restricting path selection to the next stage whenever such stage requires another scanner for free paths thereafter. Also including a re-entry function from one group of matrices to a second group of matrices upon failure to detect direct routes through the originating group.

3,729,594
LINE AND LINK SENSING TECHNIQUE FOR PABX TELEPHONE SYSTEM

Elmer W. Krock, Chicago, and Charles J. Simon, Hinsdale, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 22, 1971, Ser. No. 165,259
Int. Cl. H04q *3/48*
U.S. Cl. 179—18 AB **9 Claims**

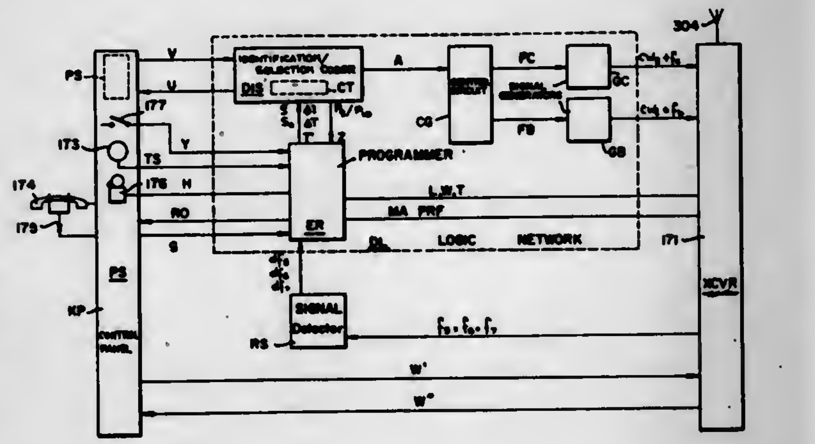
A technique for detecting the busy or idle status of lines, links and peripheral equipment in an electronic private branch telephone system. Each crosspoint in the system includes an extra contact over which a sensing path is established. Ring cores provide an indication of a completed path which is noted by the telephone system's common control equipment.



3,729,595
RADIOTELEPHONE SYSTEM WITH CENTRAL OFFICE HAVING INDIVIDUAL PROCESSORS ASSIGNABLE TO RESPECTIVE MOBILE UNITS ABOARD COMMUNICATING VEHICLES

Luigi Sarati, and Vincenzo Intini, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy

Filed Feb. 4, 1971, Ser. No. 112,562
Claims priority, application Italy, Feb. 4, 1970, 20202 A/70; Feb. 9, 1970, 20380 A/70
Int. Cl. H04q *7/04*
U.S. Cl. 179—41 A **17 Claims**



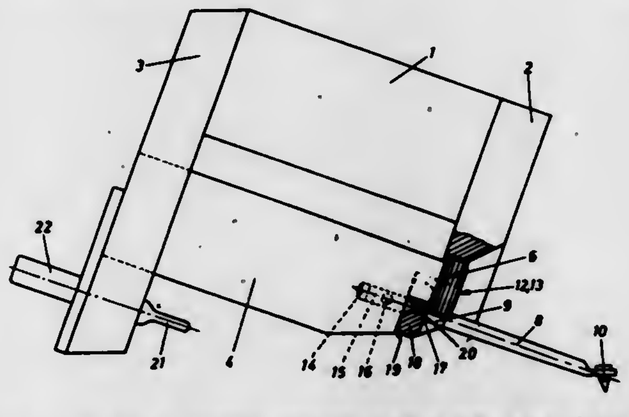
A central office, designed for short-wave radiocommunication with mobile units aboard several vehicles in its area, has a plurality of fixed processing units operating on different frequency channels to communicate with various vehicle-borne mobile units in the area. Each processing unit includes a programmer (PG) which measures the response periods of a mobile unit to calling and switching signals transmitted by the central office and terminates the connection in the case of excessive delays. Each mobile unit has a transceiver tunable to any of these channels under the control of a ring counter (CA) which, on being started by an alert signal from the central office (in response to an incoming call) or by actuation of a hook switch aboard the vehicle (to initiate an outgoing call), drives the transceiver through all or part of a scanning cycle until a free channel has been found or until the search is halted by a concurrently actuated delay counter (CR). In either case, the ring counter locks the transceiver to the channel last explored until the next call is initiated. Each channel comprises two carrier waves modulated by a selected pair of audio

frequencies out of a total of six such frequencies ($f_1 - f_6$) available for the transmission of numerical information in either direction; a seventh frequency (f_7) is used in combination with two of the others (f_5, f_6) to pass switching or supervisory signals from the central office to the vehicle. If the call number of the mobile unit and/or of a station called from the vehicle includes two or more like digits in immediate succession, a repetition code (R) is substituted for the second, fourth etc. iterative digit to facilitate recognition of transition from one digit to the next.

3,729,596
ELECTRODYNAMIC SOUND PICKUP OR SOUND-TRACK CUTTING DEVICE

Miklos Toth, Lubeck, Germany, assignor to Hermann Wilms, Lubeck, Germany

Filed April 27, 1971, Ser. No. 137,817
Claims priority, application Germany, April 29, 1970, P 20 20 903.4
Int. Cl. H04r *9/16*
U.S. Cl. 179—100.41 K **5 Claims**

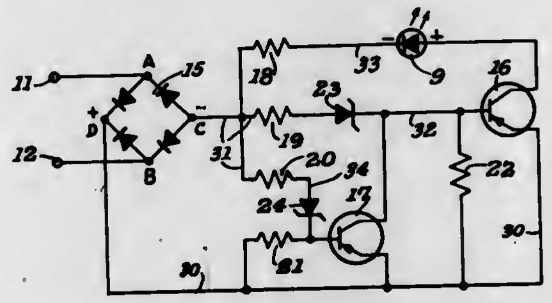


An electrodynamic sound pickup which also functions as a sound-track cutting device, two angularly disposed preferably stereophonic recordings of an engraved sound track are sensed by a phonograph needle mounted at the free end of a needle arm oscillating about its other end and carrying two transducer coils having their effective coil range disposed in a magnetic air gap formed by two spaced pole shoes opposing each other. The winding planes of the coils are arranged transversely with respect to the longitudinal direction of the needle arm, and one of the two pole shoes is split at its end adjacent the air gap accommodating both coils, so as to form a pair of pole-shoe fingers each extending through the free central space of each of the pair of coils wherein the effective coil portions disposed within the air gap extend along an arc with a center angle not exceeding 90°.

3,729,597
TELEPHONE TRUNK-MONITORING PROBE INSTRUMENT

Jim C. Garrett; Robert H. Johnson, and Jack Shelton, all of 3300 East Spring Street, Long Beach, Calif.

Filed Aug. 3, 1971, Ser. No. 168,670
Int. Cl. H04m *3/22*; H04b *3/46*
U.S. Cl. 179—175 **4 Claims**

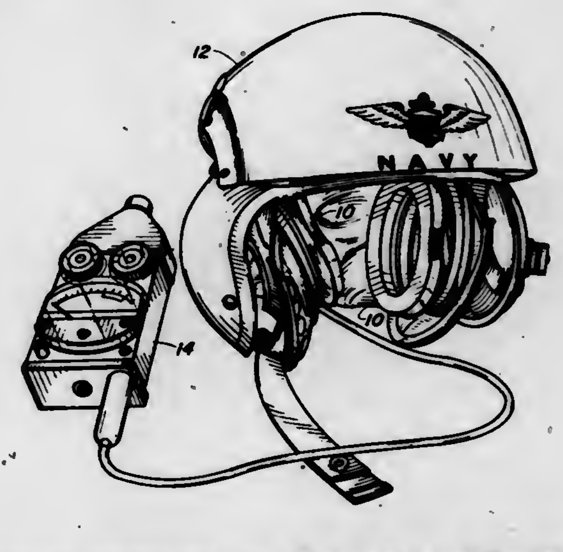


A pencil-like instrument for monitoring telephone trunk lines in a manner that will not interfere or affect said lines, if in use, said instrument comprising a handle that constitutes a casing which houses a circuit board mounting all of the components of the instrument including a probe element which extends from one end of the casing, and a visual indicator disposed in the opposite end and visible from that end.

3,729,598
EARPHONE RECEIVER ATTENUATION MEASUREMENT TECHNIQUE

Richard P. Tegt, Camarillo; Douglas G. Robertson, Oxnard, and Thomas V. Blattel, Camarillo, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 11, 1971, Ser. No. 197,863
Int. Cl. H04r *29/00*
U.S. Cl. 179—175.1 A **3 Claims**

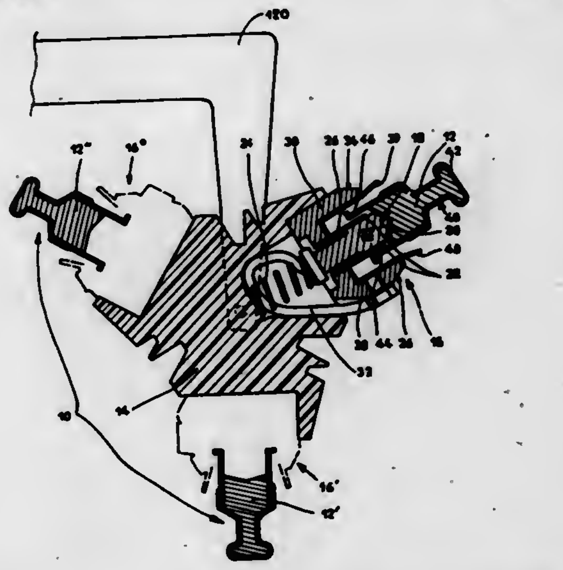


A system for measuring the effectiveness of the sound attenuating function of an earphone sound attenuation cover by employing the earphone transducer as a microphone and measuring the noise level with the ear cover in place on the user's ear and with the cover removed, the difference in decibels being interpreted as the acoustic attenuation provided by the ear cover.

3,729,599
ELECTRICAL DISTRIBUTION AND CURRENT COLLECTING DEVICE FOR HIGH SPEED VEHICLES

Jean-Pol Payen, 38 Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France

Filed Oct. 6, 1970, Ser. No. 78,551
Claims priority, application France, Dec. 2, 1969, 6941624; Sept. 11, 1970, 7033175; Sept. 11, 1970, 7033176
Int. Cl. B60l *5/08*
U.S. Cl. 191—49 **8 Claims**



A high speed vehicle is electrically feeded by a movable collector head running in a passageway defined by a plurality of regularly spaced apart multi-phase energized conductive rails. To improve the guiding characteristics of the collector head, mechanical coupling means are provided between the driven collector head and the driving vehicle such that the resultant of the force exerted by the coupling means on the collector head is substantially directed in the direction of movement of the collector head.

3,729,600
SLIDE SWITCH ASSEMBLY WITH RESILIENT BRIDGING CONTACT AND TERMINAL STRUCTURE ADAPTABLE TO 8/N POLE CONFIGURATIONS

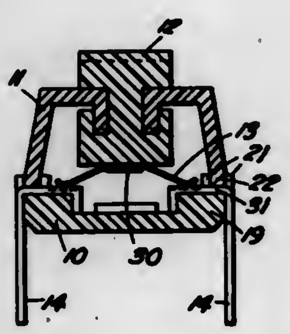
Nigel Allan Solomon, Wembley Park; Nelson Frederick John Godfrey, Leighton Buzzard, and Alan James Boxell, Bletchley, all of England, assignors to ERG Industrial Corporation Limited, Dunstable, England

Filed Aug. 28, 1971, Ser. No. 184,507

Claims priority, application Great Britain, Sept. 30, 1970, 46,575/70

Int. Cl. H01h *15/06*

U.S. Cl. 200—16 D **11 Claims**



An improved miniature switch having a pack shape and size, and leadout configuration approximately the same as that of a dual-in-line integrated circuit pack, thus facilitating tooling operations in printed circuit board manufacture, and automatic insertion of components. There are eight pairs of corresponding terminals. Shorting links initially between adjacent terminals are selectively removed, and an appropriate length slider is provides with one, two, or four contacts coupling corresponding terminals, thus making the switch one pole-eight way, two pole-four way, or four pole-two way.

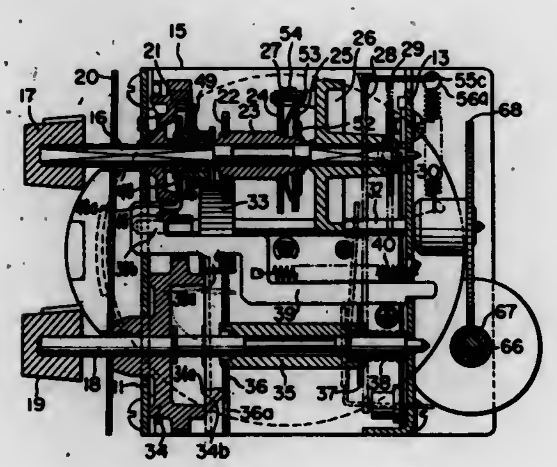
3,729,601
TIME-SETTING DEVICE

Etsuzo Yokoyama, Tachikawa-shi, and Yasuya Oono, Nakano-ku, both of Tokyo, Japan, assignors to Kabushiki Kaisha T.I.O. and Hitachi, Limited, Tokyo-to, Japan

Filed Sept. 14, 1971, Ser. No. 180,265

Int. Cl. H01h *7/08, 43/10*

U.S. Cl. 200—38 R **8 Claims**



For programmed control of an on-off switch provided with a first cam fixedly mounted on a shaft so as to operate the switch according to its angle of revolution. A second cam is similarly mounted on the shaft which is rotatably supported in the adjacency of the switch, the second cam selectively conveying to the first cam the rotation which proceeds in step with the lapse of time. Additional means are provided for selectively imparting rotation to the first cam through the shaft.

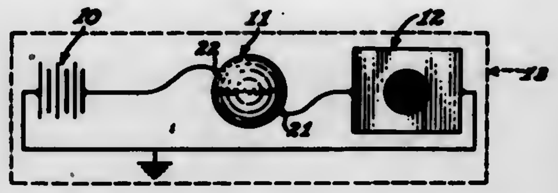
3,729,602
TILT RESPONSIVE SWITCH WITH BALL CONTACT ACTUATING STRUCTURE

Robert C. Myers, P.O. Box 1981, Scottsdale, Ariz.

Filed Oct. 27, 1971, Ser. No. 192,922

Int. Cl. H01h *35/14*

U.S. Cl. 200—61.52 **8 Claims**



A pair of hollow concentrically arranged containers having conductive inner surfaces separated by electrical insulating material and having a small conductive ball positioned in a hole in the inner container making contact with the conductive surfaces of both containers when the containers are tilted away from a level position.

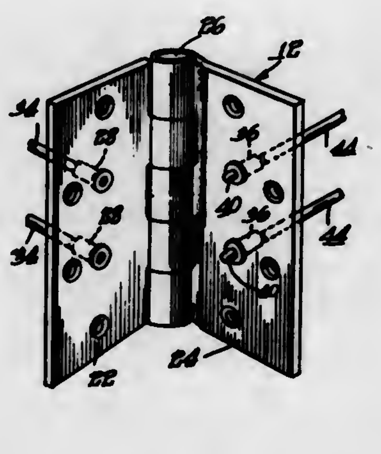
3,729,603
HINGE PLATE SWITCH STRUCTURE

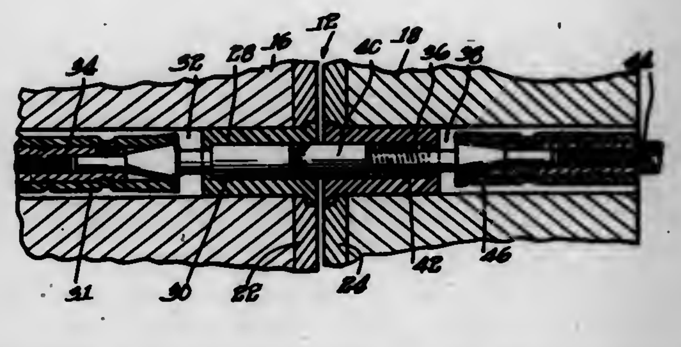
Robert E. Foltz, Sterling, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.

Filed Aug. 26, 1971, Ser. No. 175,148

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.7 **3 Claims**





The present invention relates generally to improvements in door hinge structures and more particularly to improvements in door hinges adapted to control electrical circuits. The hinge disclosed herein includes a pair of hingedly connected hinge plates or leaves having in association therewith contact means for opening and closing an electrical circuit, one hinge leaf being mountable upon the vertical edge of the door and the other mountable upon a door frame.

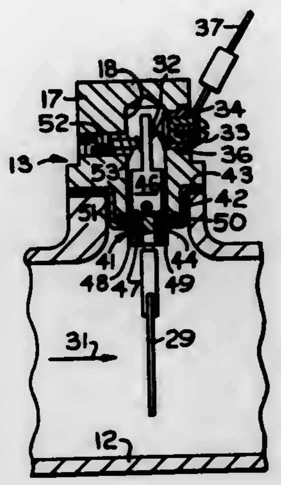
3,729,604
DIAPHRAGM SEAL WITH FLUID FILLED CAVITY FOR PADDLE OR FLUID FLOW RESPONSIVE SWITCH

Eugene R. Groff, Chillicothe, and James P. Welsh, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 31,084, April 23, 1970, abandoned. This application Nov. 19, 1971, Ser. No. 201,599

Int. Cl. H01h *35/40, 9/04*

U.S. Cl. 200—81.9 R **6 Claims**



A flow switch, responsive to variation of fluid flow within a conduit, having an elongated member pivoted within the switch body and penetrating the fluid flow path within the conduit for make or break engagement with an electrical contact in response to fluid flow variations in the conduit. A seal is secured to the member near the pivot and overlaps a surrounding portion of the switch with a cup-shaped retainer urging the seal into engagement with the switch body. A cavity in the switch adjacent the seal is filled with fluid to reduce flexure of the seal and increase its effective life.

3,729,605
PRESSURE-RESPONSIVE ELECTRIC SWITCH

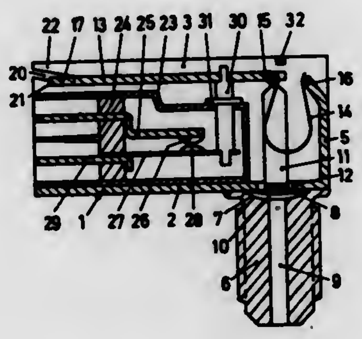
Jens Nicolai Andresen, Nordborg, Denmark, assignor to Danfoss A/S, Nordberg, Denmark

Filed Jan. 5, 1972, Ser. No. 215,489

Claims priority, application Germany, Jan. 12, 1971, P 21 01 196.1

Int. Cl. H01h *35/40*

U.S. Cl. 200—83 P **1 Claim**



The invention relates to a snap action electric switch assembly having fluid pressure operated means for biasing the lever means in the direction opposite the biasing force of the snap action spring in response to pressurized fluid being directed to the chamber.

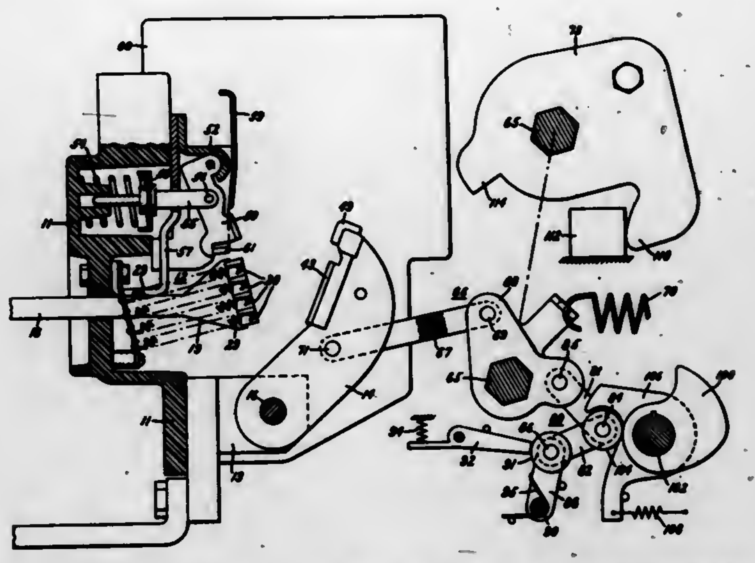
3,729,606
ELECTRIC CIRCUIT BREAKER WITH MEANS FOR PROMOTING CURRENT TRANSFER TO ARCING CONTACTS

Ernest H. Bogert, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed March 7, 1972, Ser. No. 232,567

Int. Cl. H01h *33/12*

U.S. Cl. 200—146 R **4 Claims**



A polyphase electric circuit breaker in which opening acceleration at the arcing contacts is severely limited until the main contacts part. For imposing this limitation on opening acceleration during the early part of an opening operation, a large flywheel mass is attached to the cross shaft that interconnects the pole units of the circuit breaker, and toggles interconnecting the cross shaft and the contacts are maintained in a zone near dead center until the main contacts part.

ERRATUM

For Class 200—166 see:
Patent No. 3,729,612

3,729,607
PUSHBUTTON RESET CIRCUIT BREAKER HAVING PERIPHERAL CONTACT CONDITION INDICATOR MEANS

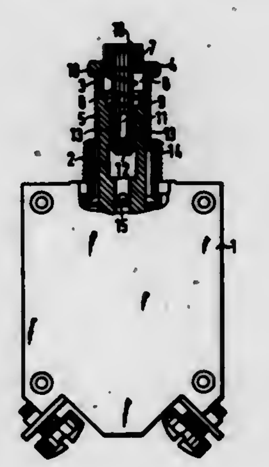
Jakob Ellenberger, Altdorf near Nuernberg, Germany, assignor to Ellenberger & Poensgen GmbH, Altdorf near Nurnberg, Germany

Filed June 7, 1972, Ser. No. 260,509

Claims priority, application Germany, June 23, 1971, 9 71 24 044.3

Int. Cl. H01h *9/16*

U.S. Cl. 200—167 R **7 Claims**

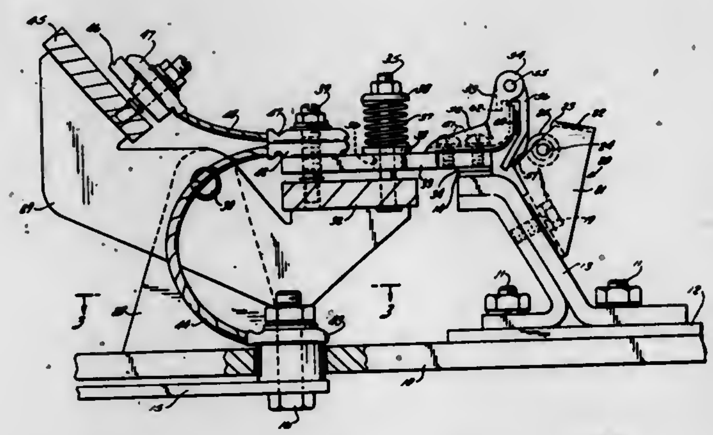


An overload circuit breaker which has a main pushbutton which when depressed closes the circuit breaker and has a central cavity in its outer end, and a second pushbutton which, when both pushbuttons are depressed, is held arrested fully within the cavity and, when the main pushbutton is released, is likewise released and then projects for a certain distance out of the cavity and thus outwardly beyond the end surface of the main pushbutton. The end surfaces of both pushbuttons are preferably of the same color so that, when depressed, the second pushbutton will not be noticeable, but the peripheral surface of the second pushbutton is preferably of a different color contrasting with the color of the main pushbutton when the latter is in its outer off position and the second pushbutton projects from the main pushbutton.

3,729,608

ELECTRICAL SWITCH HAVING PIVOTED ARM CONTACT

Dominik M. Wiktor, Cranford, N.J., assignor to Automatic Switch Company, Florham Park, N.J.
Filed Sept. 15, 1971, Ser. No. 180,679
Int. Cl. H01h *1/50*
U.S. Cl. 200—170 R **12 Claims**

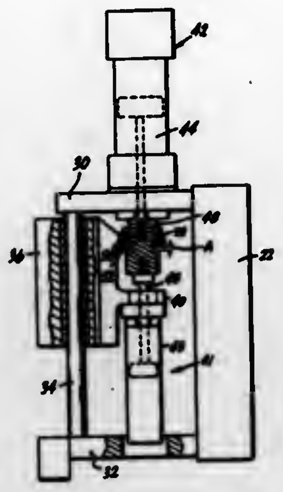


A switch having relatively movable contacts, one of the contacts including a support member and an arm pivoted to the support member and engageable with the other contact. The other contact is preferably a roller rotatable about an axis extending across the path of movement between the contacts, the roller being engaged by the pivoted arm when the switch closes. A spring urges the arm toward the roller. The arm and the support member form a looped path for electric current so that magnetic force created by the flow of current urges the arm toward the roller. The relatively movable contacts may be arcing contacts of a switch having main relatively movable contacts.

3,729,609

MULTI-ELECTRODE ELECTRICAL DISCHARGE MACHINING APPARATUS

John M. Check, Chelsea, and Gary F. Rupert, Ann Arbor, both of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.
Filed Feb. 8, 1971, Ser. No. 113,410
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 G **11 Claims**

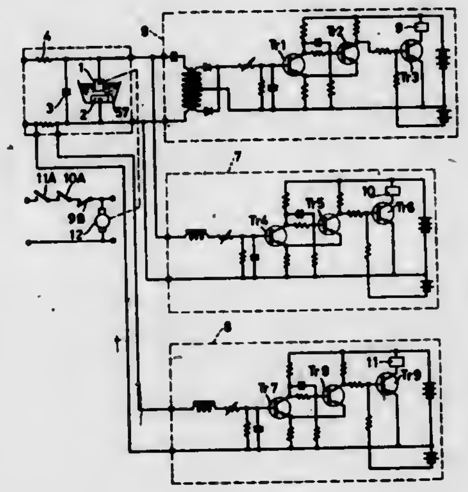


Electrical discharge machining apparatus comprising a frame, a plurality of substantially parallel electrodes, a carriage mounted on the frame for guided movement in a vertical direction, and a cartridge assembly supporting the electrodes and removably mounted on the carriage so that the electrodes extend vertically. Manually operable gripper means is provided for feeding the electrodes downwardly after each machining operation into engagement with the workpiece so as to compensate for electrode wear experienced during one or more preceding machining operations. Positive stop anti-short power means is combined with the carriage to enable retraction of the electrodes out of engagement with the workpiece into a predetermined spaced relation with the workpiece at least as great as the desired spark gap spacing between the electrodes and the workpiece during machining. The cartridge assembly includes a cartridge member provided with contact blocks connected to a supply of current and engaged with the electrodes during machining.

3,729,610

ELECTRICAL DISCHARGE MACHINING DEVICE USING LOGICAL CONTROL

Iwao Kondo, 39-9-Kita-machi 1-chome, Tokyo, Japan
Continuation-in-part of Ser. No. 9,566, Feb. 9, 1969, Pat. No. 3,632,942. This application Nov. 22, 1971, Ser. No. 200,773
Claims priority, application Japan, Feb. 7, 1969, 45/9554; Feb. 7, 1969, 45/9555; June 11, 1969, 45/46422; June 11, 1969, 45/46423; June 11, 1969, 45/46424; July 24, 1969, 45/58503; Oct. 2, 1969, 45/78754
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 C **9 Claims**

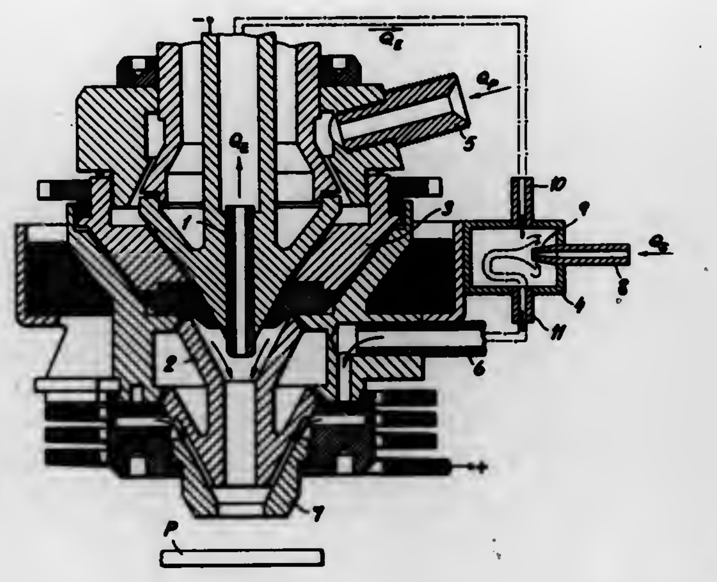


An automatic electrical discharge machining device, including a logic circuit and detecting units monitoring voltages and currents at different parts of the machining device circuit. The detecting units deliver their outputs to the logic circuit, for determining the short -circuit, large gap conductance, sustained arcing, and other detrimental conditions at the discharge gap, by suitably combining the outputs from the detecting units. Automatic control is made in response to the output from the logic circuit for regulating an electrode or various voltage pulses.

3,729,611

PLASMA GENERATOR

Alexandru Vas, Timisoara, Romania, assignor to Centrul de Sudura Si Incercari La Oboseala Timisoara, Timisoara, Romania
Continuation-in-part of Ser. No. 721,843, April 16, 1968, Pat. No. 3,594,609. This application June 8, 1971, Ser. No. 151,108
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 P **2 Claims**

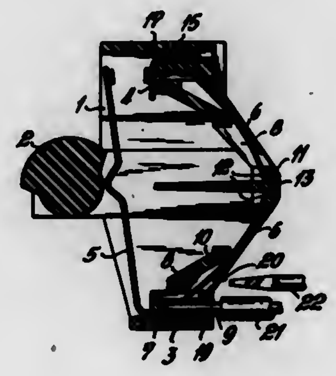


A plasma generator with a hollow electrode connected to a venturi pump which draws a portion of the gas out of the arc chamber in a direction away from the workpiece to stabilize a molten-metal pool formed by the plasma generator. The withdrawn portion of the gas is recycled to the region around the plasma arc between the arc chamber and the workpiece.

3,729,612

SWITCH MECHANISM INCLUDING QUICK DETACHABLE ELECTRICAL CONNECTOR MEANS

Johannes Schmale, Ludenscheid, Germany, assignor to Brown, Boveri & Cie. A. G., Mannheim, Germany
Filed Oct. 18, 1971, Ser. No. 190,189
Claims priority, application Germany, Oct. 31, 1970, P 20 53 595.9
Int. Cl. H01h *1/58*; **H01r** *9/12*
U.S. Cl. 200—166 CT **7 Claims**

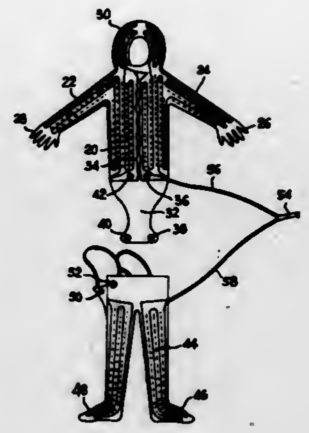


A device including an electric connector for insertion of the bare end of a cable which is held in contact position therein by, a pre-biased leaf spring.

3,729,613

HEATING GARMENT

Raymond Deloire, Vaucresson, and Jacques Durand, Le Mans, both of France, assignors to La Spirotechnique and Chromex, Paris, France
Filed July 7, 1971, Ser. No. 160,298
Claims priority, application France, July 9, 1970, 7025493
Int. Cl. H05b *1/00*
U.S. Cl. 219—211 **13 Claims**

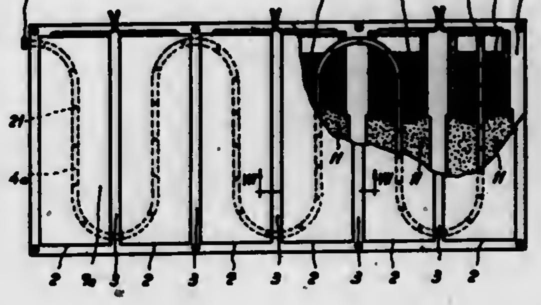


Heating garment intended for hindering little the wearer's movements and for uniformly distributing the warmth. Heating elements are placed inside passages made by sewing two fabrics the one with the other along parallel lines. The heating elements are not sewn to the fabrics but are maintained by the sewing lines. The form of the heating elements allows them to stretch.

3,729,614

DEVICE FOR ACCELERATING THE SETTING OF CONCRETE

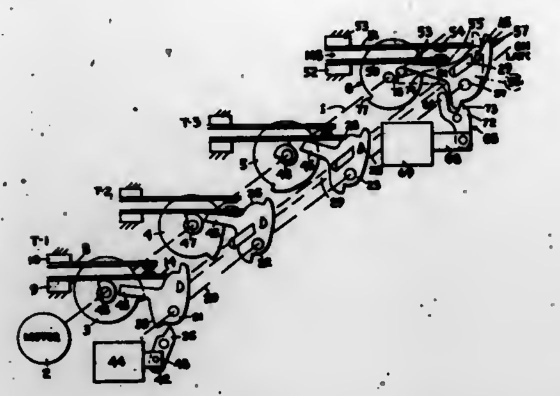
Christian Jacques Emile Joseph Martinet, 61 Rue du President-Wilson, 92-Levallois-Perret, France
Filed Feb. 10, 1971, Ser. No. 114,317
Claims priority, application Spain, Feb. 12, 1970, 376780
Int. Cl. H05b *1/00*
U.S. Cl. 219—345 **6 Claims**



A device for accelerating the setting of concrete elements wherein as well as heating the surface of the concrete, water is supplied to said surface with a view to obtaining a suitable degree of humidity in contact with said surface during setting, for which purpose a blanket is used which covers all or part of the surface of the concrete, said blanket having an internal electrical heating element, porous material linings and water conduction means which pass through the interior and supply water to the blanket which distributes the water, in liquid or vapor form, over the surface covered.

3,729,615
CONDITION CONTROL DEVICE AND SYSTEM

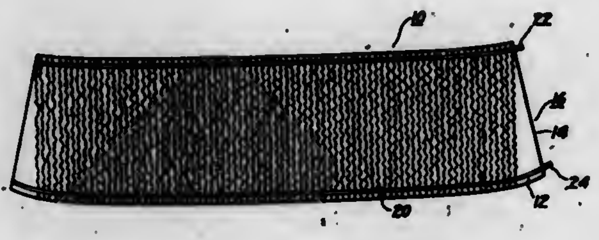
John L. Harris, Delafield, Wis., assignor to Deltrol Corp., Bellwood, Ill.
Filed April 12, 1971, Ser. No. 133,236
Int. Cl. H05b *1/02*
U.S. Cl. 219—486 10 Claims



A timing device controls a group of electric heaters, turning them on in sequence in response to call for heat by a thermostat and turning them off in sequence when the call for heat is satisfied. The timer has two stopping points, one with the heaters off and the other with the heaters on. A single switch controls the timer motor and is opened by a timer cam at the off and on positions. The switch is held open at the off position by an off latch and at the on position by an on latch. These latches are released by a solenoid controlled by the room thermostat. The latches are also controlled by a timer cam, the off latch being held released when the timer is in the on position, and the on latch being held out at the off position. The load switches for the heaters are also opened instantly by a second solenoid responding to an unfavorable condition. This same action releases the on latch to cause the timer to return to the off position.

3,729,616
ELECTRICALLY HEATED WINDOW

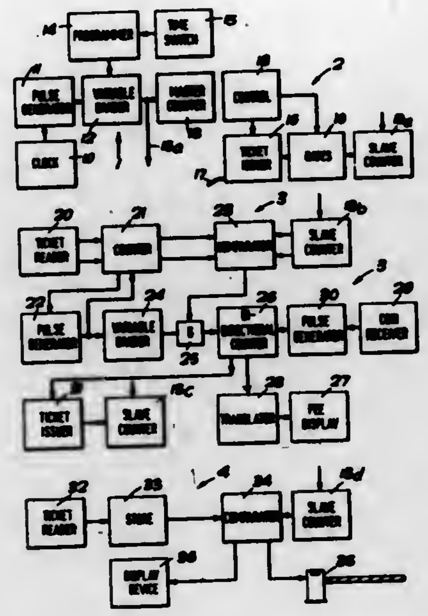
George A. Gruss, Mentor; Leslie H. Pfeiler, Willowwick, and George J. Polanka, Solon, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed July 26, 1971, Ser. No. 166,064
Int. Cl. H05b *3/06*
U.S. Cl. 219—522 5 Claims



A laminated safety glass window is described having a clear polymer inner layer which includes a pattern of wrinkled resistance wires oriented in non-parallel random fashion so as to reduce glare from the wires when the window is used as a windshield. The individual resistance wires are partially embedded in the polymer sheet by a technique utilizing shrinkage of a thermoplastic polymer from its original dimensions when heated to an elevated temperature together with having the individual wires change configuration when relaxed from tension forces on the wire when first assembled with the polymer sheet. A method of forming the wire-incorporated polymer sheet member is also described along with equipment for automatically applying prestressed resistance wire to a thermoplastic sheet followed by heating the assembly under proper conditions to form the composite member.

3,729,617
FEE COMPUTING SYSTEMS

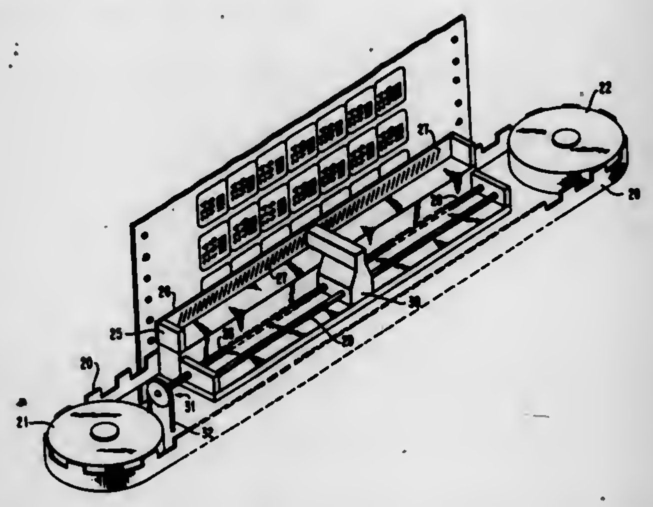
Roger Geoffrey Stone, Hayes, England, assignor to APT Controls Limited, London, England
Filed June 29, 1971, Ser. No. 157,982
Claims priority, application Great Britain, June 29, 1970, 31,295/70
Int. Cl. G06k *17/00*
U.S. Cl. 235—61.7 R 4 Claims



A parking fee computing system in which pulses representing units of real time are counted and the instantaneous count thereof is compared with a stored count read from a ticket. The stored count is changed by pulses from a coin operated device until there is parity between the stored count and the instantaneous count. The frequency of the first pulses are varied according to a preset program.

3,729,618
SCANNING MECHANISM AND PRINTER

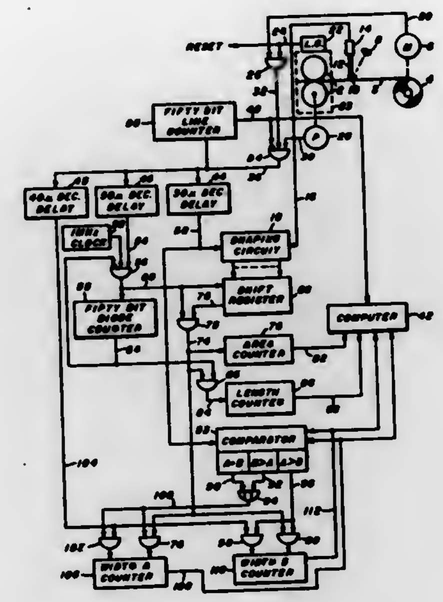
Robert S. Drew, Knightdale, and John E. Jones, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 12, 1972, Ser. No. 261,850
Int. Cl. G06k *7/14*; H04n *3/00*
U.S. Cl. 235—61.11 E 4 Claims



A printer for preparing labels including coded data is provided with an optical scanner having a plurality of spaced parallel slits in fixed registration with said printed coded data, a scanning slit having a substantially different orientation than said fixed slits and means for translating said scanning slits in a first direction to produce a multiplicity of limited distance scans in a second opposite direction.

3,729,619
APPARATUS FOR SURFACE INSPECTION OF MOVING MATERIAL WITH DEFECT TYPE RECOGNITION

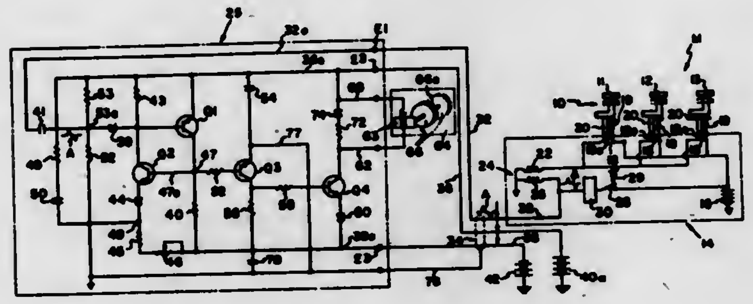
John F. Laycak, W. Mifflin; Gerald J. Readal, O'Hara, and Samuel B. Prellwitz, Wilkinsburg, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.
Filed March 4, 1971, Ser. No. 121,093
Int. Cl. G06m *7/00*
U.S. Cl. 235—92 DN 11 Claims



An inspection system for the surface of a strip of moving material where defects have a different appearance than the remainder of the strip. A plurality of photosensitive diodes positioned across the material detects defects periodically for a predetermined number of transverse scanning lines. Diode outputs are counted to give totals for area, length and maximum width of a defect in terms of scanning grids. A computer determines the defect shape, and therefore the type of defect, from the ratios between area, width, and length.

3,729,620
STROKE COUNTER MECHANISM

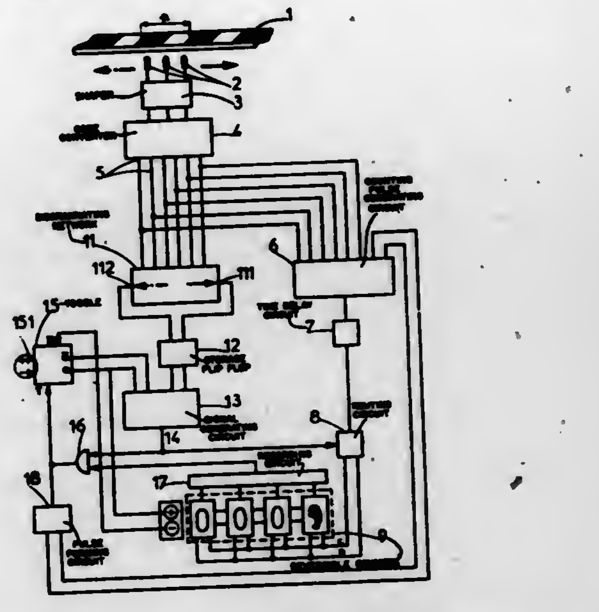
David H. Jones, Sarasota, Fla., assignor to Electronic Data Preparation Corporation, Sarasota, Fla.
Filed Oct. 4, 1971, Ser. No. 186,330
Int. Cl. G06m *3/12*; H03k *21/30*
U.S. Cl. 235—92 PD 7 Claims



Stroke counting mechanism for counting the number of strokes which an operator makes in actuating the keys of a keyboard including apparatus for precluding a false count that otherwise would result when a key is stroked and held for a sustained period.

3,729,621
APPARATUS FOR MEASURING OR INDICATING MOVEMENT BY COMBINED ENCODING AND COUNTING

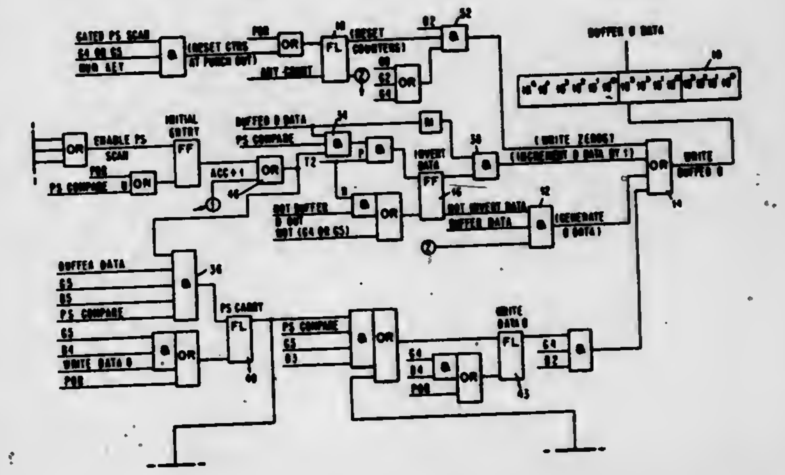
Jean Taisne, Fontenay-sous-Bois, France, assignor to Societe D'Optique, Precision Electronique Et Mecanique-Sopelem, Paris, France
Filed July 8, 1971, Ser. No. 160,731
Claims priority, application France, July 30, 1970, 7028153
Int. Cl. H03k *21/04*
U.S. Cl. 235—92 GC 9 Claims



Relative movement between two members is sensed by a device yielding a signal during successive increments of movement. A first circuit means applies one pulse to a reversible counter for each incremental movement and a second circuit controls the direction of counting to accord with that of movement.

3,729,622
PRODUCTION STATISTICS COUNTER FOR KEY ENTRY DEVICE

John Lettieri, Woodstock, N.Y., and Roger H. E. Pett, Scarborough, Ontario, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 29, 1971, Ser. No. 193,828
Int. Cl. G07c *3/10*
U.S. Cl. 235—92 DP 5 Claims



This specification describes a counter for measuring the output of a key entry operator. The counter totals the number of strokes the operator makes along with the number of cards produced by the operator and the number of errors made by the operator. The counter includes a shift register which stores in series the key stroke, card and error data described above. This register is synched with the key entry devices operating cycles so that data can be entered without interference with the machine operation.

3,729,623

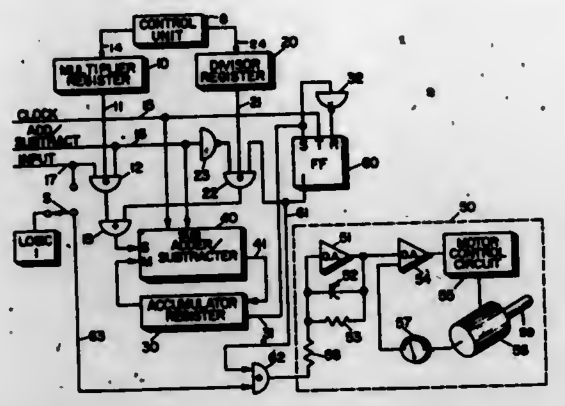
METHOD FOR THE SELECTIVE MULTIPLICATION AND DIVISION OF A PULSE TRAIN AND A MULTIPLY/DIVIDE CIRCUIT THEREFOR

Leroy U. C. Kelling, Waynesboro, Va., assignor to General Electric Company, Lynn, Mass.

Filed Jan. 11, 1971, Ser. No. 105,365

Int. Cl. H03k *3/64*

U.S. Cl. 235—151.11 12 Claims



Numbers stored in a multiplier register and a divisor register are selectively gated to an accumulator via an adder/subtracter. The gating is effective to subtract the number in the multiplier register from that in the accumulator register each time an input pulse appears. When the number in the accumulator register falls below a predetermined level, the number in the divisor register is added thereto and an output pulse is produced.

3,729,624

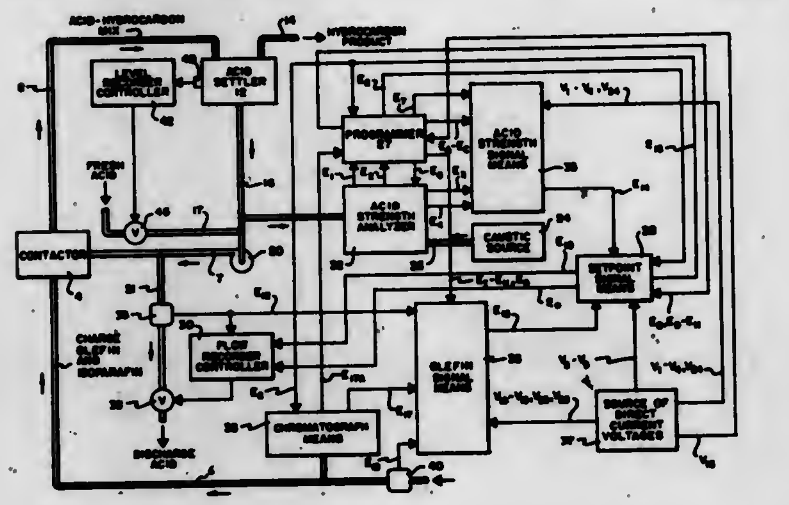
MEANS AND METHOD FOR CONTROLLING THE STRENGTH OF ACID IN AN ALKYLATION UNIT

Walker L. Hopkins, Houston; Leland A. Chvatal, Port Arthur, and Richard R. Edwards, Groves, all of Tex., assignors to Texaco, Inc., New York, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,443

Int. Cl. C07c *3/52*; G06g *7/58*

U.S. Cl. 235—151.12 13 Claims



A system controls the strength of acid used as the catalyst in an alkylation unit, which reacts olefins with isoparaffin, in accordance with the average strength of the acid and the anticipated required strength of the acid. A signal corresponding to the average acid strength is developed by analog computers solving equations, hereinafter disclosed, using an output from an acid analyzer corresponding to the density of the acid and a signal corresponding to the volume of caustic used in analyzing the acid. An anticipated required acid strength signal is developed by an analog computer from signals, corresponding to the flow rate and composition of the olefin, from a flow rate sensor and chromatograph means, respectively, in accordance with equations hereinafter disclosed. Another analog computer provides signals for setting the set point of a flow recorder controller in accordance with the average acid strength signal, the anticipated required acid strength signal and equations hereinafter disclosed. The flow recorder controller controls the flow rate acid being discharged from the alkylation unit so as to control the quantity of fresh acid entering the alkylation unit thereby controlling the strength of the acid.

3,729,625

SEGMENTED STRAIGHT LINE FUNCTION GENERATOR

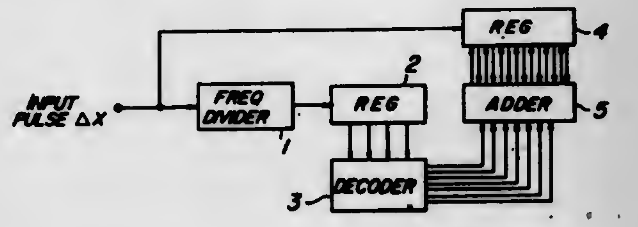
Masaru Inoue, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed June 2, 1971, Ser. No. 149,238

Claims priority, application Japan, June 5, 1970, 45/47966

Int. Cl. G06g 7/28

U.S. Cl. 235—197 12 Claims



A function generator for approximating a function of x, $y = f(x)$, by a segmented straight line in which x coordinate values are given in the form of input pulses Δx, comprising means for preliminarily setting displacements Δy with respect to an input pulse Δx in accordance with the slope of said segmented straight line, in which a displacement Δy is arranged to be applied for each input pulse Δx to means for storing the function value corresponding to the integrated input pulses Δx.

3,729,626

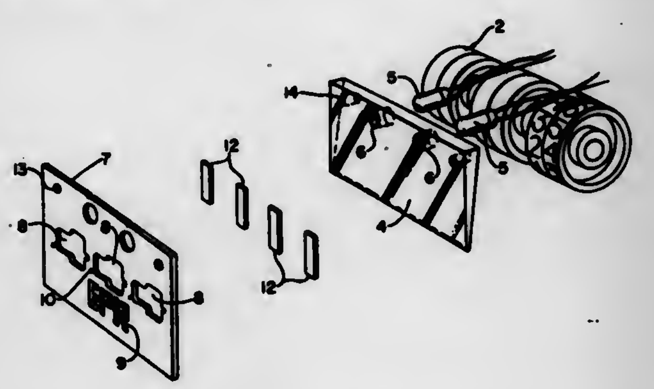
INSTRUMENT LIGHTING SYSTEM WITH INWARD ILLUMINATION OF THE DISPLAY AND OUTWARD ILLUMINATION OF NOMENCLATURE AND INDEX MARKS

Wallace Thurlow, Newburyport, and Louis S. Trapasso, Winthrop, both of Mass., assignors to General Electric Company, Wilmington, Mass.

Filed Aug. 26, 1971, Ser. No. 175,215

Int. Cl. F21

U.S. Cl. 240—1 EL 9 Claims



An illuminating system for an instrument having a display formed of a plurality of rotatable indicator wheels includes a glass wedge and lamps mounted in the wedge provide rearward illumination of the wheel display through internal reflection of the light in the wedge. A metallic shield having suitable openings to permit display of the illuminated counter wheels is positioned in front of the wedge to minimize glare by blocking at least part of the light projected in the forward direction. In addition, the shield is so configured that a portion of the normally useless forwardly projected light is utilized to illuminate certain indices on the plate such as decimal points and the like. To this end, nomenclature marks such as those identifying the parameter being measured, or index marks such as decimal points, hyphens, etc. are punched through the light shield and suitable diffusers/filters are positioned between the light wedge and these openings to permit illumination of the desired nomenclature and/or index marks by light projected in the forward direction. In this fashion, these elements are illuminated at varying degrees of intensity and/or color by light rays which normally represents lost or stray light, while at the same time, minimizing glare by blocking or elimination the bulk of the stray light from being projected outwardly toward the viewer.

3,729,627

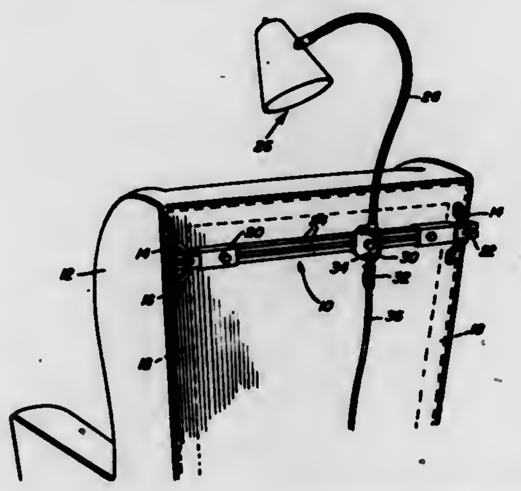
ADJUSTABLE LAMP ASSEMBLY

Norman L. Littell, R. D. No. 1, Box 321, Aliquippa, Pa.

Filed Dec. 17, 1971, Ser. No. 209,295

Int. Cl. A47b *97/00*

U.S. Cl. 240—4 13 Claims



An adjustable lamp assembly comprising a pair of spaced parallel mounting bars adapted to be connected to a chair back by way of a pair of channel members mounted at their opposite ends, a lamp fixture connected to a support member adapted to be selectively positioned at any point along the mounting bars, the support member being pivotally adjustable with respect to the mounting bars to provide additional adjustment or to swing the lamp fixture behind the chair back when not in use.

3,729,628

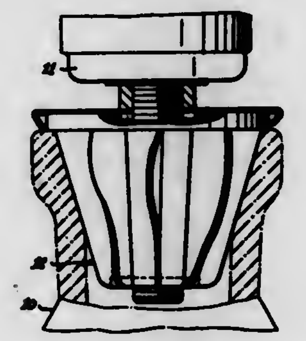
LAMP CONVERSION UNIT

Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed Feb. 17, 1972, Ser. No. 227,163

Int. Cl. F21v *21/00*

U.S. Cl. 240—52.6 3 Claims



A unit for converting a bottle or similar receptacle having a neck into a lamp. The basic member of the unit consists of an integral one-piece molded plastic device having a central hollow core topped by a flat annular plate. A plurality of fins extend outwardly from the central core, the fins tapering down from the plate toward the bottom of the core. This member may be twisted into a bottle neck, the fins collapsing sufficiently to allow the entry. Also, the fins frictionally engage the neck to hold the member in place. A short hollow rod is passed through the core, the inner end having a hex nut threaded thereon. At the upper end, a flat washer plate covers the core plate and a bulb socket and switch is mounted on the exposed end of the rod to hold the assembly together.

3,729,629

METHOD FOR PRODUCING PREPARATIONS FOR ELECTROMICROSCOPIC EXAMINATION

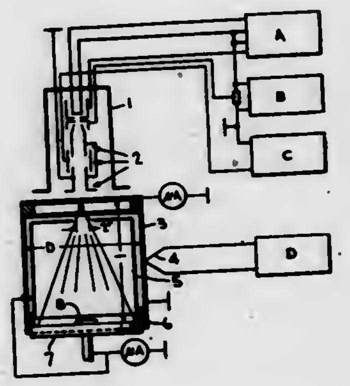
Fritz Grasenick, and Erich Jakopic, both of Steyrergasse 17, A 8010 Graz, Austria

Filed Dec. 7, 1970, Ser. No. 95,725

Claims priority, application Austria, Sept. 24, 1969, 9020/69

Int. Cl. H01j *37/00*

U.S. Cl. 250—49.5 TE 3 Claims



A method for the production of preparation for electron microscopic investigation which includes irradiating the objects to be investigated in a high vacuum with electrons of a low energy and regulating an accelerating voltage to control the irradiation-chemical reaction.

3,729,630

THERMOLUMINESCENCE READOUT INSTRUMENT

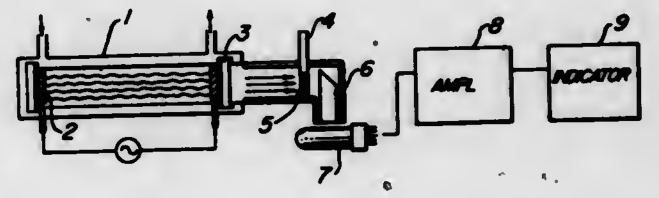
Tadaoki Yamashita, and Osamu Yamamoti, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 26, 1971, Ser. No. 109,920

Claims priority, application Japan, Feb. 5, 1970, 45/10451; Feb. 5, 1970, 45/10452

Int. Cl. G01t *1/11*

U.S. Cl. 250—71.5 R 4 Claims

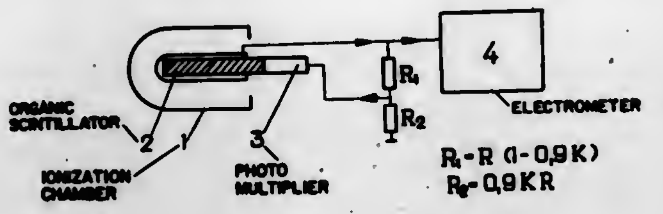


A thermoluminescence readout instrument utilizing a thermoluminescence dosimeter element which is heated by infrared rays from a laser source and which emits thermoluminescence, the thermoluminescence being transformed into a photocurrent so as to detect the dose irradiated on the element. The device is characterized by having good reproducibility in the heating of the element, providing good reproducibility and reliability of measurement, and a reduction of the time required for the measuring operation.

3,729,631

METHOD AND APPARATUS FOR THE MEASUREMENT OF MIXED GAMMA-NEUTRON RADIATION DOSE EQUIVALENT

Stanislaw Pszona, Paxinskiego 1A-9, Warszawa, Anin, Poland
Continuation-in-part of Ser. No. 691,767, Dec. 19, 1967, abandoned. This application May 22, 1970, Ser. No. 39,717
Int. Cl. G01t *3/00, 1/18, 1/20*
U.S. Cl. 250—83.1 **3 Claims**

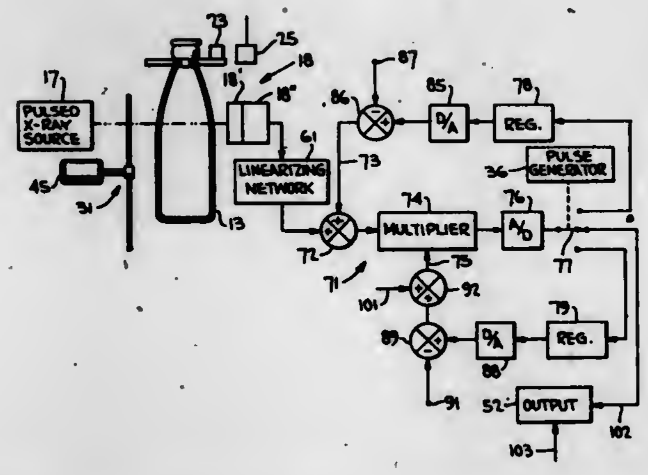


A method and apparatus for measuring mixed gamma-neutron dose equivalent by determining a current difference between the output of an ionization chamber and a scintillator which latter preferably comprises an organic compound and has a photomultiplier tube operatively connected therewith.

3,729,632

PENETRATING RADIATION GAUGE

Boong Y. Cho, Columbus, Robert J. Pfeifer, Worthington; Orval L. Utt, Columbus, all of Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio
Filed Dec. 21, 1970, Ser. No. 100,331
Int. Cl. G01n *23/02*
U.S. Cl. 250—83.3 D **21 Claims**

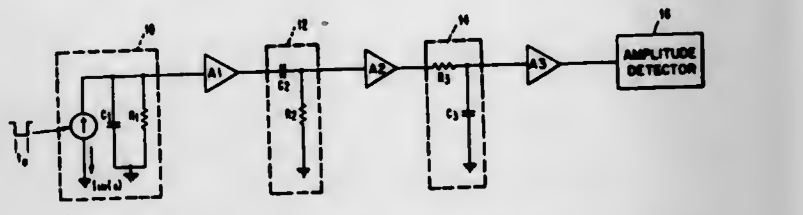


A penetrating radiation gauge includes a pulsed x-ray source for determining wall thickness of articles moving past the source. The gauge is continuously standardized by respectively placing in the source radiation field first and second different standard samples between first and second different pairs of adjacent articles. A detector responds to the levels of radiation absorbed by articles while thickness is being measured and by the samples while standardization is being performed to derive an output signal exponentially related to the radiation absorption properties of the articles and samples. A linearizing network responsive to the detector converts the exponential relationship into a straight line function whereby a linear relationship between the magnitude of the detector output signal and the absorption property is derived. While the linearizing network is deriving a signal indicative of the radiation absorption properties of the first sample, the straight line relationship is adjusted so that the guage response is a point on the line having a predetermined output signal corresponding with the absorption properties of the first sample. While the linearizing network is deriving a signal indicative of the absorption properties of the second sample, the slope of the line is adjusted so that the guage derives an output signal having a predetermined magnitude corresponding with the absorption properties of the second sample.

3,729,633

OPTICAL RECEIVER HAVING A MAXIMIZED SIGNAL-TO-NOISE RATIO

Stephen Eros, Gaithersburg, and Paul M. Thrasher, Bethesda, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 24, 1970, Ser. No. 92,394
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **1 Claim**



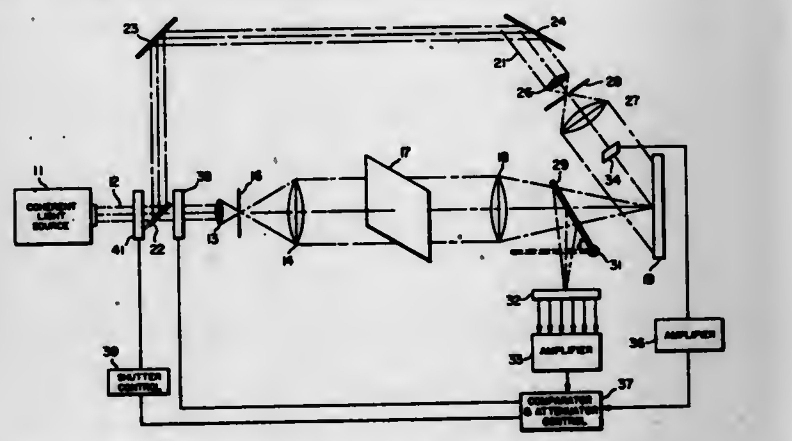
A method of maximizing the signal-to-noise (S/N) ratio or a direct-detecting optical pulse receiver for an input pulse having a well-defined duration and receiver apparatus derived therefrom. The S/N ratio is defined as the ratio of the signal output peak instantaneous power to the noise output mean power. The optical receiver comprises an optical detector with fast-response, high-sensitivity characteristics followed by a cascade arrangement of amplifiers, two RC dividing networks, one low pass and the other high pass and an amplitude detector. The noise sources comprise the quantum noise generated within the input light-sensitive device and the thermal noise generated within the input load resistor of the device.

The dividing networks form a bandpass filter which is designed to maximize the S/N ratio. As a result, the time constants of the filters turn out to be substantially equal and the output load resistance of the detector is set as high as is practical. The method achieves a S/N ratio approaching that obtainable with an ideal matched filter for small values of the input pulse width (t_o), e.g., of the order of 10 nanoseconds. The S/N ratio improvement over prior art receivers is in the order of 20 db. The receiver is especially effective when t_o is less than 1 microsecond.

3,729,634

AUTOMATIC BEAM RATIO CONTROL SYSTEM FOR HOLOGRAPHY

Niels Jensen, Los Angeles; James T. Thomasson, Sunland, and Donald C. Mead, Granada Hills, all of Calif., assignors to Recognition Systems, Inc., Van Nuys, Calif.
Filed Sept. 20, 1971, Ser. No. 181,867
Int. Cl. G02b *27/00;* **G01j** *1/36*
U.S. Cl. 250—204 **1 Claim**

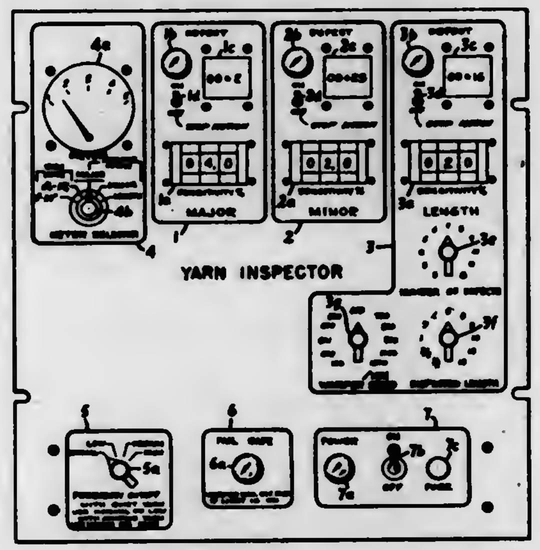


This invention comprises apparatus for controlling the ratio of the signal and reference beams in a system for making holographic filters for use in matched filter pattern recognition apparatus. Means is provided for measuring the intensity of the spatial frequencies of a signal beam, and means is provided for measuring the intensity of a reference beam. The difference between the measured beam ratio and the optimum beam ratio controls an attenuator placed in either the reference beam path or the signal beam path. A shutter may also be controlled so that uniformity of exposure is maintained as the beam ratio is adjusted.

3,729,635

YARN INSPECTOR

Richard Shottenfeld, Jamaica, and Solomon Abilock, Brooklyn, both of N.Y., assignors to Lindly & Company, Inc., Mineola, N.Y.
Filed Oct. 14, 1970, Ser. No. 80,664
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 S **17 Claims**



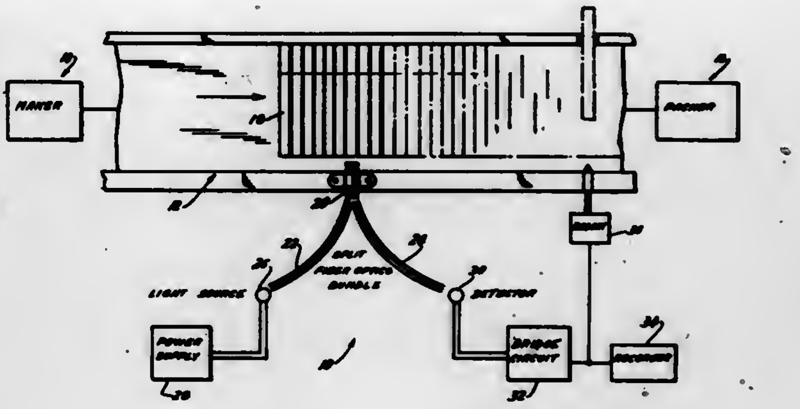
A yarn inspector has three detecting circuits, one for detecting major defects, one for detecting minor defects and one for detecting the number of defects per unit length. The sensitivity of each of the defect detecting circuits can be set by means of digitally reading manually operable disc-type switches. A photosensor responsive to yarn defects is connected to all three detecting circuits. After amplification of the signal from the photosensor, a selected value representing the prevailing noise level is subtracted from the amplified signal. The remainder, representing a defect signal without noise, is further amplified to provide an output signal which is used to indicate and record the defect and, if desired, stop the warper or other machine with which the yarn inspector is used. Controls are provided on the front panel for setting the sensitivity of the detecting circuits and also for setting the number of defects, the unit length and the speed of the yarn being inspected. A single meter is provided with a selector switch to permit checking the inspection during operation and also testing and calibrating the inspector when the yarn is stopped.

3,729,636

SYSTEM FOR DETECTING LOOSE TOBACCO AT CIGARETTE ENDS

Steve L. Merker, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Sept. 3, 1971, Ser. No. 177,627
Int. Cl. G01n *15/08*
U.S. Cl. 250—223 R **6 Claims**

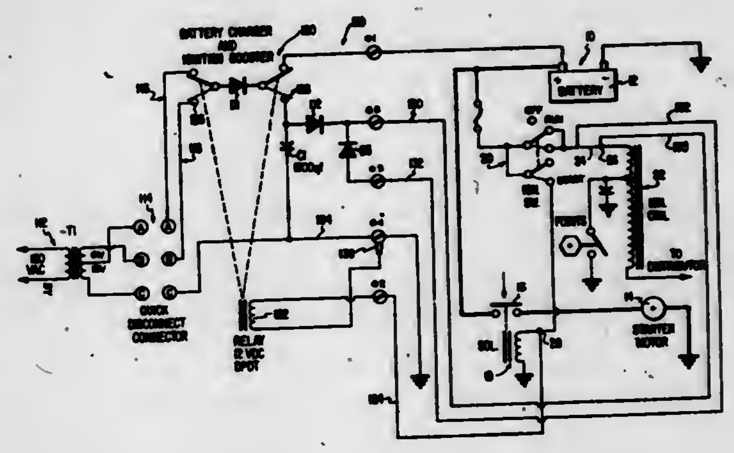
A system is provided for detecting loose ends of cigarettes either at the discharge end of a cigarette maker or filter tip attachment machine or at the entrance of a cigarette packaging machine. This system includes a probe in the form of a split fiber optics bundle located adjacent a conveyor or other transport means for cigarettes which travel along the conveyor with their axes substantially normal to the direction of travel of the conveyor. The fibers of the bundle are divided randomly and one branch extends to a light source and the other to a detector. In this fashion, light will be directed from the probe towards the tobacco end of the traveling cigarettes. The reflected light is transmitted through the other branch to the detector which is coupled with a bridge circuit for measuring the level of intensity of the reflected light. This circuit will not respond to the higher intensity light level of an acceptable firmly packed cigarette end. However, the reflected light will be substantially reduced if the tobacco in the cigarette end is loose or cavitated. When a loose cigarette end is detected, either a memory circuit or wheel is actuated in order that the cigarette having the detected loose end will be eventually rejected by an ejection mechanism.



3,729,637

COMBINED BATTERY CHARGER AND AUTOMATIC IGNITION BOOSTER

Richard G. Gray, Long Island, N.Y., assignor to Magnetic Head Corporation, Hauppauage, N.Y.
Filed May 5, 1971, Ser. No. 140,464
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 BP **5 Claims**



An accessory circuit arrangement for an internal combustion engine employing a D.C. battery source for the starter and ignition circuits which permits the alternate utilization of the same external A.C. source as a battery charger and an ignition booster.

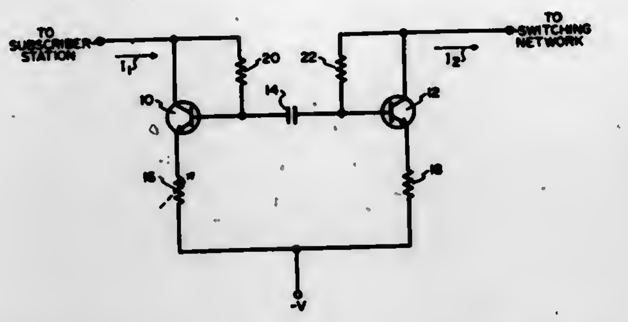
3,729,638
SUBSCRIBER INTERFACE CIRCUIT FOR UNBALANCED SEMICONDUCTOR SWITCHING SYSTEM

Max S. Macrander, Warrenville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 9, 1971, Ser. No. 206,386

Int. Cl. H03k *17/60*

U.S. Cl. 307—254 **4 Claims**



An interface circuit for use between a subscriber loop and an unbalanced semiconductor crosspoint switching network for providing dc separation and bilateral ac transmission without the use of a separation transformer.

3,729,639
PIEZOELECTRIC IGNITER

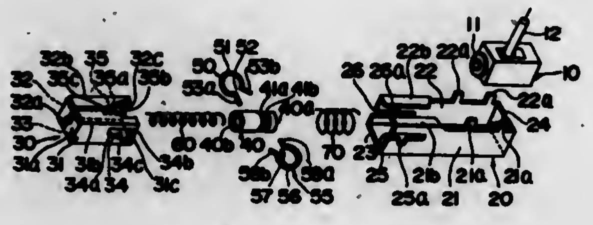
Yosiaki Heinouchi, Otokuni-gun, Kyoto-fu; Keizo Tabuchi, Kyoto-fu, and Tetsuo Tatsumi, Otokuni-gun, Kyoto-fu, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed March 27, 1972, Ser. No. 238,137

Claims priority, application Japan, April 2, 1971, 46/20523; Aug. 22, 1971, 46/64136

Int. Cl. H04r *17/00*

U.S. Cl. 310—8.3 **8 Claims**



A piezoelectric igniter comprising a piezoelectric element, an enclosure fixedly accommodating the piezoelectric element, an operating body movable in relation to the enclosure and a piezoelement impacting mechanism including a striker operatively accommodated in the operating body and mounted with two split ring springs each formed respectively with a pair of end pins, the impacting mechanism being operable so as to inwardly grip each pair of the end pins thereby permitting the striker to strike against the piezoelectric element in accordance with the movement of the operating body in relation to the enclosure.

3,729,640
SUPERCONDUCTING ELECTRICAL MACHINES

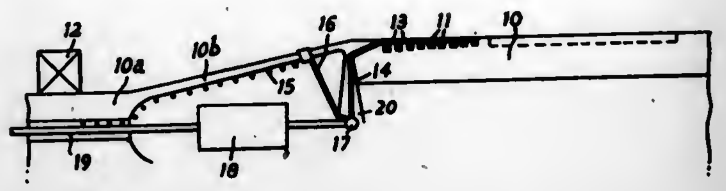
John Sterry Hawley Ross, Newcastle upon Tyne, England, assignor to International Research & Development Company, Limited

Filed Feb. 16, 1971, Ser. No. 115,653

Int. Cl. H02k *9/00*

U.S. Cl. 310—52 **5 Claims**

A synchronous electrical generator having a rotor with a superconducting winding and coolant ducts for the winding and for the end part of the rotor, liquid helium being supplied to the winding coolant ducts through a radial passage and the heat generated by centrifugal action on the liquid passing through the passage being conducted back to the radially inner end of the passage and dissipated in the liquid cooling the end part of the rotor.



3,729,641
COOLING LIQUID ADMITTING AND EXHAUSTING DEVICE FOR USE WITH LIQUID-COOLED ELECTRICAL ROTARY MACHINES

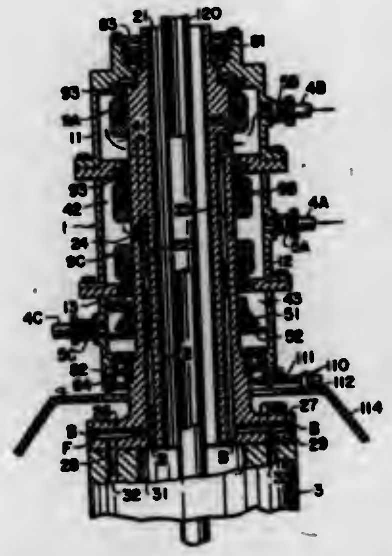
Hiroshi Sato, and Hisashi Toshima, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 15, 1971, Ser. No. 153,265

Claims priority, application Japan, June 19, 1970, 45/52815

Int. Cl. H02k *9/00*

U.S. Cl. 310—54 **8 Claims**



A device is provided for admitting the cooling liquid into the rotary member from the fixed member of a rotary machine or vice versa. A casing is disposed around a rotary shaft in such a manner that the cooling liquid admission and exhaust ports formed to open at the peripheral surface of the shaft may be enclosed in the casing, and sealing means are interposed between the shaft and casing to prevent the leakage of the cooling liquid and the mixture of the cooling liquid to be admitted and discharged. The casing is supported with bearing means disposed at the ends of the casing in such a manner that the casing may follow the fluctuation other than the rotation of the rotary shaft.

3,729,642
PLURAL STATOR DYNAMOELECTRIC MACHINE

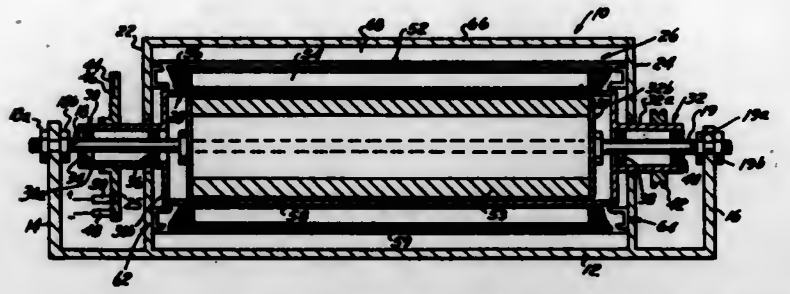
Ernie B. Esters, 15915 Rutherford, Detroit, Mich.

Continuation-in-part of Ser. No. 12,963, Feb. 20, 1970, Pat. No. 3,602,749. This application Aug. 5, 1971, Ser. No. 169,260

Int. Cl. H02k *7/00*

U.S. Cl. 310—112 **14 Claims**

A dynamoelectric machine having coaxial inner and outer cylindrical stators and a pair of end stators with each stator being provided with a plurality of magnetic flux producing permanent magnets. The rotor is of a cylindrical configuration and is disposed in the magnetic gap between the inner and outer stators and the end stators and comprises a plurality of radially disposed coils, magnetic cores with windings and intermediate magnetic cores without windings disposed therebetween. The journal and support structure for the rotor and stators is of a configuration to permit maximum rotor and stator interface surface alignment and to provide maximum efficiency from the dynamoelectric machine.



3,729,643
MERCURY VAPOR DISCHARGE LAMP WITH RADIATION PLANE IN ENVELOPE

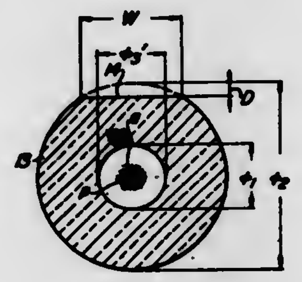
Kakuichiro Hosokoshi, Neyagawa-shi, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed March 29, 1971, Ser. No. 128,658

Claims priority, application Japan, April 3, 1970, 45/28735

Int. Cl. H01j *61/20, 61/33*

U.S. Cl. 313—184 **3 Claims**



Improvement of a mercury-vapor lamp, characterized by the provision of a radiation plane in the form of a flat portion on the outer wall of a substantially cylindrical envelope of a mercury-vapor lamp, said flat portion being formed parallel the axis of said envelope.

3,729,644
HELIX TRAVELING-WAVE TUBE

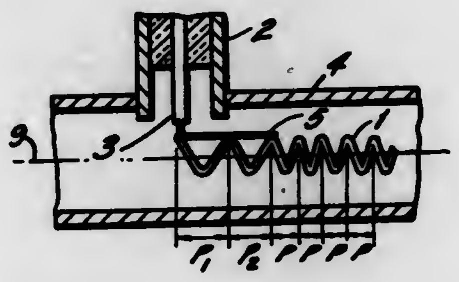
Taireku Okazaki, Minato-ku, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Dec. 2, 1971, Ser. No. 204,218

Claims priority, application Japan, Dec. 4, 1970, 45/107266

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 **6 Claims**



A helix travelling-wave tube comprises coupling devices for matching the impedance discontinuity between the helix and the input or output elements. The coupling device is provided with a conductor tape or rod near one end of the helix across at least one pitch of the helix.

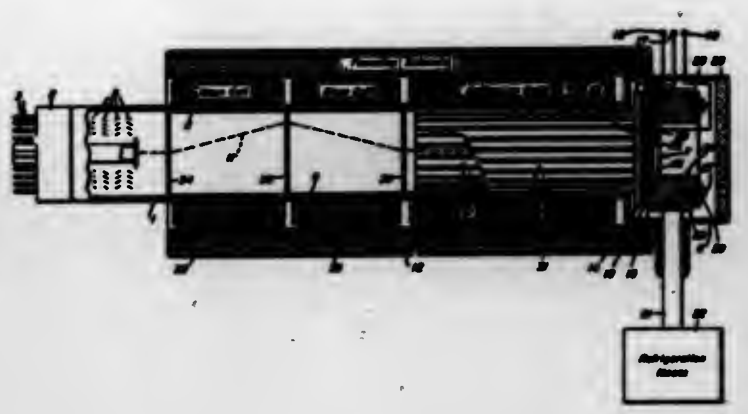
3,729,645
PHOTOCONDUCTIVE CAMERA TUBES AND METHODS OF MANUFACTURE

Rowland W. Redington, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 16, 1964, Ser. No. 418,920

Int. Cl. H01j *31/48*

U.S. Cl. 315—11 **8 Claims**



The present invention is directed to a very thin photoconductive camera tube target formed of extrinsic semiconductor material. The resulting target has an enhanced contrast and signal-to-noise ratio.

3,729,646
MAGNETRON TUNABLE BY PIEZO-ELECTRIC MEANS OVER A WIDE RANGE IN DISCRETE STEPS

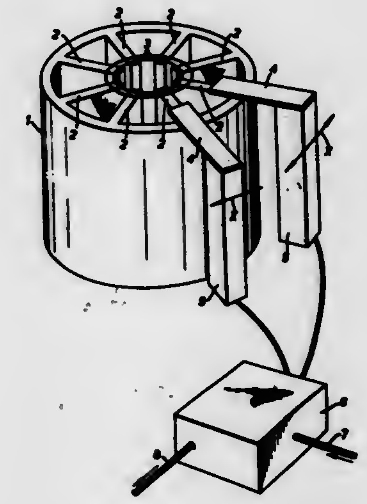
Alan Hugh Pickering, Springfield, Chelmsford, England, assignor to English Electric Valve Company Limited, London, England

Filed June 7, 1971, Ser. No. 150,292

Claims priority, application Great Britain, July 1, 1970, 31,939/70

Int. Cl. H01j *25/50*

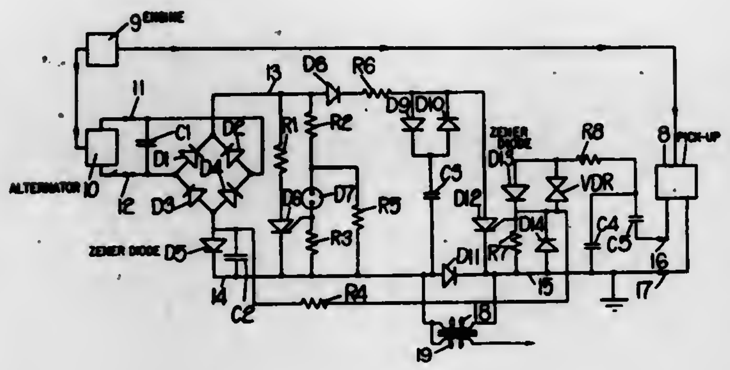
U.S. Cl. 315—39.55 **8 Claims**



A tunable magnetron has, adjacent and spaced above each vane separating the cavities, an inductive tuner. Each inductive tuner is capable of being energized in order to occupy one of two pre-determined positions, each position corresponding with a different tuned frequency. The frequency changes produced by actuation of the different inductive tuners is arranged such that the frequency changes produced by each tuner vary in accordance with a binary relationship.

3,729,647
SPARK IGNITION SYSTEMS

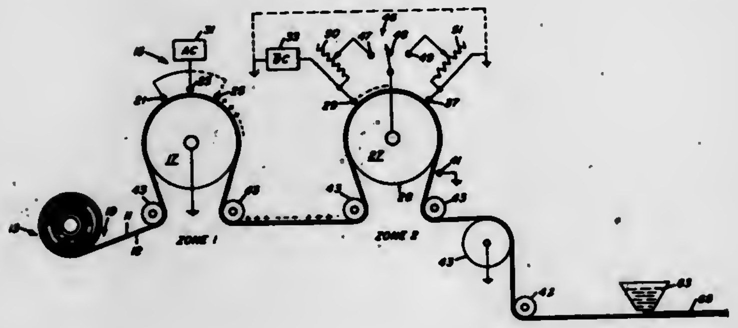
David Mainprize, 37 Bearlane Close, near Tamworth, England
Filed May 10, 1971, Ser. No. 141,820
Claims priority, application Great Britain, May 21, 1970, 24,601/70
Int. Cl. H05b *37/02*; **F02p** *1/00*
U.S. Cl. 315—209 SC **13 Claims**



A spark ignition system for an internal combustion engine has a capacitor which is charged by an alternator through a rectifier. The capacitor is discharged at intervals to produce a spark, and voltage sensitive means is provided for short-circuiting the alternator output when a capacitor is charged to a predetermined level. Preferably the capacitor discharges through a thyristor, and means is provided for ensuring that the thyristor always turns off between cycles.

3,729,648
METHOD AND APPARATUS FOR TREATING A WEB

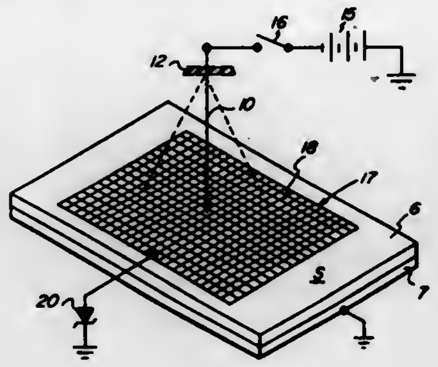
William C. Kerr, Middlesex, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 30, 1971, Ser. No. 185,023
Int. Cl. B44d *1/12*; **H05f** *3/00*
U.S. Cl. 317—2 R **9 Claims**



An improved method and apparatus for substantially eliminating non-uniform charge patterns from a surface of a corona-treated web, particularly for enhancing the surface's coatability, is disclosed. The improved method and apparatus employs the technique of "flooding" the surface with charge of one polarity from a first electrode so as to generally uniformly charge the surface, and thereafter removing the charge imparted to the surface by applying an equal but opposite charge from a second electrode. To ensure positive control between the amount of charge added to the surface and the amount removed, the invention proposes that the first and second electrodes be connected to a single source of DC power and that the web, when treated in accordance with the invention, be supported by an electrically conductive roller which is electrically isolated from ground.

3,729,649
CORONA CHARGING APPARATUS

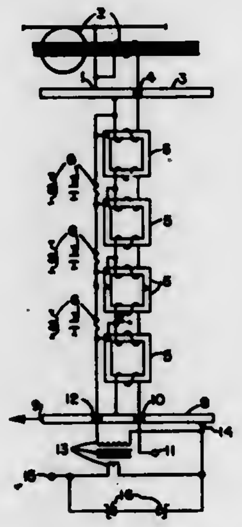
Paul A. La Chappelle, Rochester, and Michael Mosehauer, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 25, 1972, Ser. No. 256,665
Int. Cl. G03g *15/02*; **H01t** *19/04*
U.S. Cl. 317—4 **8 Claims**



Corona charging apparatus for uniformly charging the surface of a dielectric layer supported on a grounded conductive backing. Such apparatus comprises a flexible corona discharge wire which is perpendicularly arranged, in a cantilever fashion, relative to the central portion of the surface being charged, the free end portion of such wire extending toward such surface. An electrically biased corona-control electrode, positioned between the free end of the corona discharge wire and the dielectric surface, serves to control the level and uniformity of charge received by the dielectric surface. When connected to an appropriate voltage source, the free end of the corona discharge wire becomes charge-emitting and, due to the field established between it and the combination of the control electrode and the conducting backing of the dielectric layer, oscillates in a random manner, thereby uniformly charging the dielectric surface to a level proportional to the electrical bias of the control electrode.

3,729,650
POTENTIAL-CURRENT TRANSFORMER DEVICE

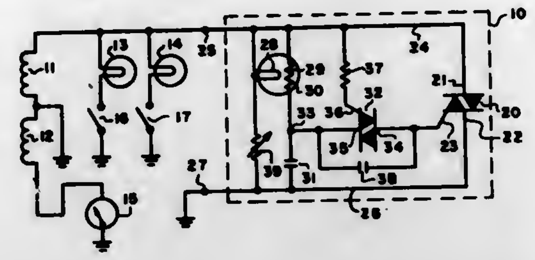
Ralph H. Cook, 2319 Galpin Avenue, Royal Oak, Mich.
Filed Feb. 7, 1972, Ser. No. 223,830
Int. Cl. H02h *7/04*
U.S. Cl. 317—14 R **4 Claims**



The line potential and current measuring device consists of a standard or toroidal bushing current transformer, a desired number of cascaded current transformers connected in parallel with a series of precision or non-precision type grading impedance devices such as resistors, capacitors or the like alone or in conjunction with a low-loss potential transformer. This supplies electrical outputs which make the device suitable for accurately checking line potential and current on an indicating or recording instrument.

3,729,651
VOLTAGE REGULATOR

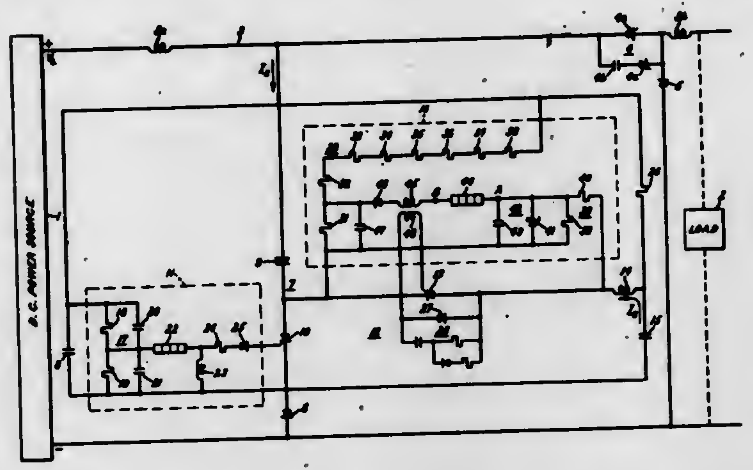
David C. Fricker, Hurst, and Thomas F. Whittaker, Fort Worth, both of Tex., assignors to ECC Corporation, Euless, Tex.
Filed April 7, 1971, Ser. No. 131,981
Int. Cl. G05f *1/44*
U.S. Cl. 317—16 **13 Claims**



A semiconductor switching device is connected in shunt with an alternating voltage source to be regulated. A root-mean-square voltage sensing mechanism is coupled in shunt with the voltage source. A semiconductor breakover device is coupled between the voltage sensing mechanism and the gate electrode of the switching device for controlling the triggering of the switching device and thereby regulating the root-mean-square value of the voltage supplied to a load connected in shunt with the voltage source.

3,729,652
SOLID STATE SURGE SUPPRESSOR

John G. St. Clair, Folcroft, Pa., assignor to General Electric Company, Philadelphia, Pa.
Filed June 22, 1972, Ser. No. 265,288
Int. Cl. H02h *3/22*
U.S. Cl. 317—16 **8 Claims**

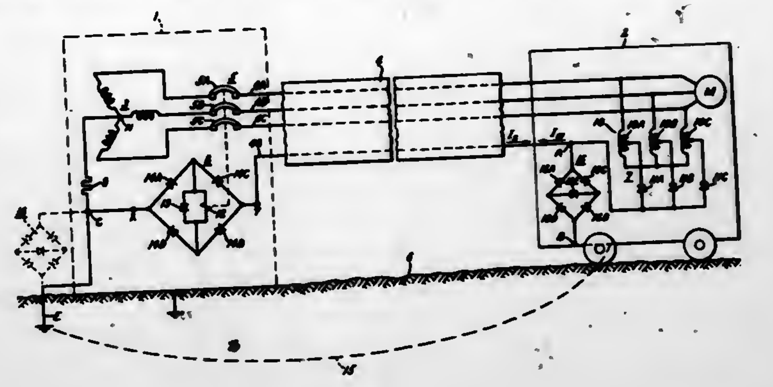


Solid-state circuitry for arresting surges on a D-C power line. The circuitry includes a non-linear resistor connected in series with a normally nonconductive thyristor across the power line. The thyristor is automatically triggered into conduction in response to a signal which is a function of the magnitude and the rate of rise of the surge. The thyristor is rendered non-conductive by an oscillatory circuit including a capacitor when the surge voltage drops below a first predetermined level if the voltage on the capacitor is above a second predetermined level.

3,729,653
GROUND CONDUCTOR CONTINUITY CHECKING CIRCUIT

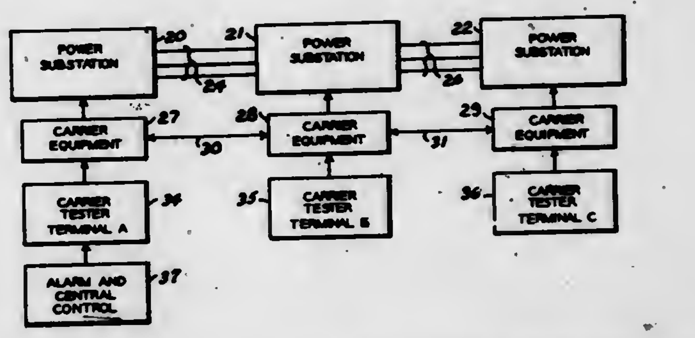
Lawrence L. Mankoff, Broomall, Pa., and Thomas S. Spinanger, Haddonfield, N.J., assignors to General Electric Company, Philadelphia, Pa.
Filed Nov. 8, 1971, Ser. No. 196,287
Int. Cl. H02h *1/02*
U.S. Cl. 317—18 C **6 Claims**

In a fail-safe ground conductor continuity monitoring circuit, including means for inserting a low-level monitoring current into a ground conductor and receiver means for sensing if the level of current in the ground conductor is below a predetermined level, and for tripping a system circuit breaker if the current is below that level for a predetermined time, impedance means is connected to the ground conductor to deter the monitoring current from flowing into a stray path shunting the ground conductor.



3,729,654
DIGITAL AUTOMATIC TRANSMITTER-RECEIVER TESTER

Dewey A. Yeager, Stillwater, Okla., assignor to Quadall Company, Inc., Tonkawa, Okla.
Filed Aug. 2, 1971, Ser. No. 168,327
Int. Cl. H02h *3/30*
U.S. Cl. 317—28 R **8 Claims**

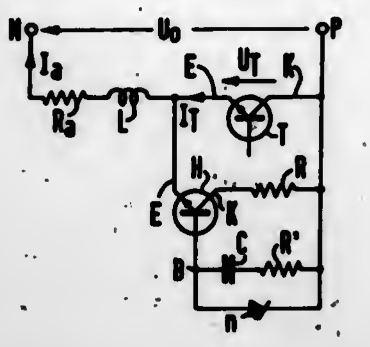


In a high voltage transmission line system having carrier-current directional relay means connected therewith terminal circuit means are connected with the carrier-current system at remote locations. The carrier-current testing means includes a master or control station and one or more slave terminal circuit means remote from the control station and responsive to the control station for indicating a fault in carrier-current system. The circuit of the control station is actuated at predetermined times and an alarm means is tripped in response to a transmission fault between any two carrier-current stations tested.

3,729,655
PROTECTIVE CIRCUIT ARRANGEMENT FOR A SWITCHING TRANSISTOR IN AN INDUCTIVE LOAD CIRCUIT

Werner Gratzke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 10, 1972, Ser. No. 279,392
Claims priority, application Germany, May 12, 1972, P 22 23 376.7
Int. Cl. H02h *7/14*
U.S. Cl. 317—33 R **14 Claims**

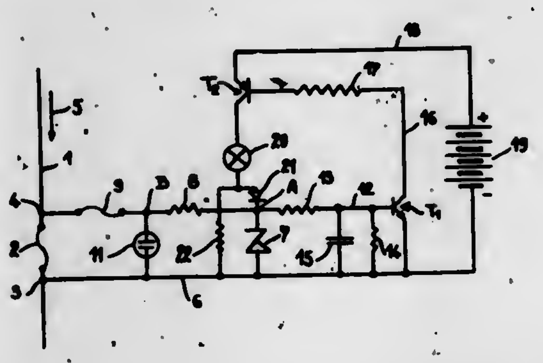
A protective circuit arrangement for a switching transistor in an inductive load circuit has a series circuit consisting of a resistor and a controlled auxiliary valve shunted across the collector-emitter path of the switching transistor to take over the load current of the switching transistor when it is switched off. The control electrode of the auxiliary valve is controlled by a control device which consists of a capacitor and a charging resistor in series. A Zener diode may be shunted across the control device. The protective circuit arrangement may be used particularly in an inverter which has a plurality of switching transistors.



3,729,656
INDICATOR CIRCUITS FOR ELECTRIC FUSE DEVICES

Jean Claude Luquain, Lyon, France, assignor to Societe Lucien Ferraz & Cie, Lyon, France

Filed June 20, 1972, Ser. No. 264,596
Int. Cl. G08b *21/00*
U.S. Cl. 317—40 A **4 Claims**



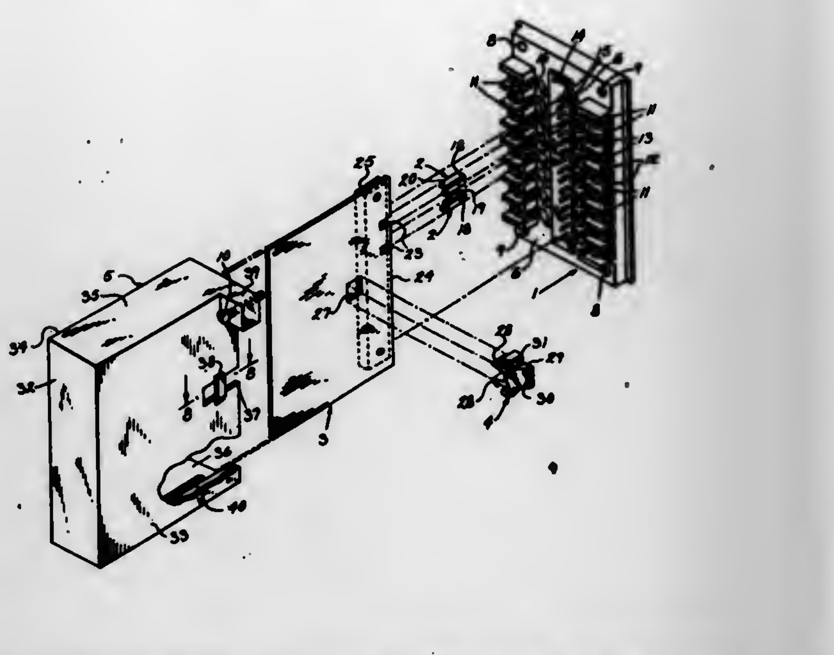
The first and the second terminals of a main fuse device are respectively connected with the first and the second inlet of an electrical element or circuit which is normally in a first state as long as the voltage across the said terminals is negligible, but is brought to a second state by the voltage which appears acrbss same when the main fuse device has blown, a voltage reducing resistor being inserted between said first terminal and said first inlet. In order to protect this resistor an auxiliary fuse device is disposed between same and said first terminal, while the point of junction between this auxiliary fuse and the said resistor is connected with the second terminal of the main fuse device by a threshold element such as a neon bulb. When the main fuse device blows, the voltage across the neon bulb reaches the threshold thereof and a heavy current flows through the said bulb and through the auxiliary fuse device which blows in turn. The indicator circuit may be provided with feed back means to maintain it in its second state after the blowing of the auxiliary fuse device.

3,729,657
CODED CIRCUIT MOUNTING DEVICE WITH COVER

John E. Callan, Milwaukee, and Lawrence F. Freitag, Bayside, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed July 15, 1971, Ser. No. 162,880
Int. Cl. H05k *5/03*
U.S. Cl. 317—101 DH **8 Claims**

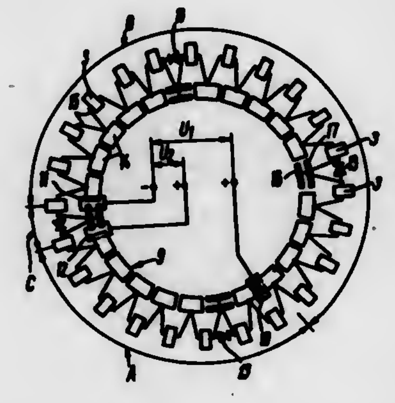
A mounting enclusure for a plug-in circuit card having a cover into which the card is inserted for retention therein, and a base upon which the card and cover are detachably mounted. The base has a number of electrical connector pins that mate with a female connector on the card and a plurality of cavities each formed to accept one end of a circuit card ke, with the opposite end of the key protruding outward from the base. The circuit card has a notch, or notches, in one edge that coincides with circuit card keys protruding from the base when the card and base are connected together. By inserting a key or keys in particular ones of the key cavities, the base is coded to receive only a circuit card with mating notches. The electrical circuit on the card is identified by its edge notching, and thus key location in a base identified the card and circuit which is to be attached to the base. Mounted on the circuit card is a latch that engages the cover to semi-permanently affix the circuit card in the cover when the card is inserted therein.



3,729,658
CIRCULAR ROTARY MAGNETIC CHUCK FOR METAL-WORKING MACHINES

Ivan Andreevich Voitov, ulitsa 9 Yanvarya, 91, kv. 65, Voronezh, U.S.S.R.

Filed June 9, 1972, Ser. No. 261,541
Int. Cl. H01f *13/00*
U.S. Cl. 317—157.5 **3 Claims**



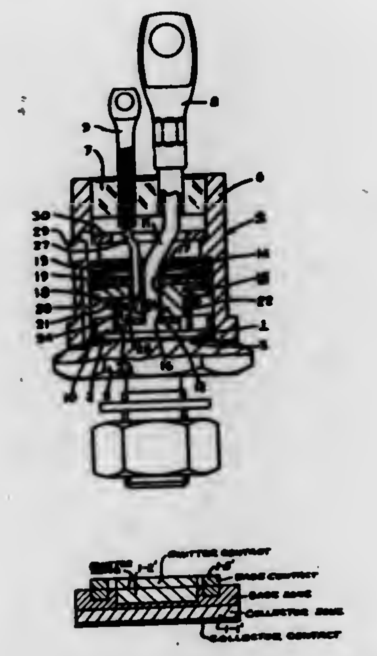
In the chuck body adapted to rotate on the base, there are located electromagnets which, when the chuck rotates, get successively connected by the contact system to working voltage within the workpiece machining zone and to demagnetizing voltage within the workpiece unloading zone.

The chuck contact system comprises the ring commutator held on the chuck body and current-carrying brushes adapted to interact therewith and fixed to the chuck bed at the boundaries of the zone, whereas cut into the circuit of the electromagnets are semiconductor diodes capable of admitting current to pass therethrough within the workpiece machining zone and not admitting it to flow within the workpiece loading zone.

3,729,659
MULTI-TERMINAL SEMICONDUCTOR DEVICES HAVING PRESSURE CONTACTS FOR MAIN AND GATE ELECTRODES

Roger Bennett, and Anthony Peter Clelford, both of London, England, assignors to Westinghouse Brake English Electric Semi-Conductors Limited, London, England

Continuation of Ser. No. 825,582, May 19, 1969, abandoned. Filed Oct. 29, 1971, Ser. No. 193,883
Claims priority, application Great Britain, June 18, 1968, 28898/68
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **16 Claims**

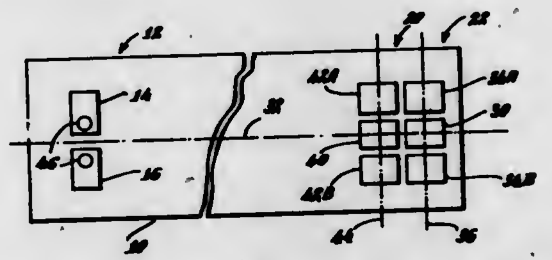


A multi-terminal semiconductor device is provided which includes a housing for encapsulating a semiconductor element and having a base portion which serves as one of a pair of main current terminals and contacts a first zone of the element. Main and auxiliary contact assemblies provide electrical connections between the second of the main terminals and a second zone of the element, and an auxiliary control current contact and a third zone of the element, respectively, the third zone being located peripherally of the second zone. A main compression loading device such as a spring washer acting against the housing urges a main contact against the second zone whereas an auxiliary compression loading device disposed within the periphery of the main loading device acts through an insulator and between the two assemblies to urge an auxiliary contact against the third zone.

3,729,660
IC DEVICE ARRANGED TO MINIMIZE THERMAL FEEDBACK EFFECTS

Modesto A. Maidique, Woburn, Mass., assignor to Nova Devices, Inc., Wilmington, Mass.

Filed Nov. 16, 1970, Ser. No. 89,980
Int. Cl. H01l *15/00*
U.S. Cl. 317—235 R **8 Claims**

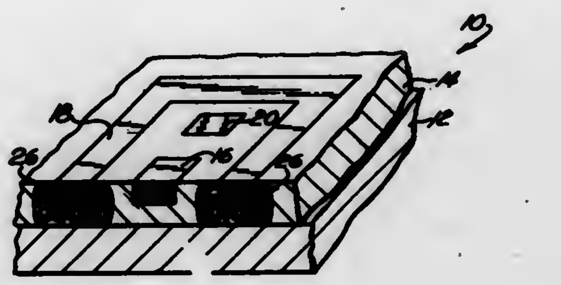


An integrated circuit device having cascaded stages, wherein at least one relatively high-powered stage comprises two balanced sections at least one of which is divided into two parallel-operated sub-sections located symmetrically about a line passing through the effective center of an earlier, lowered-powered stage, thereby to minimize any effects of heat flow from the high-powered stage to the earlier stage.

3,729,661
SEMICONDUCTOR DEVICE

James Douglas Beasom, Indian Harbor Beach, Fla., assignor to Radiation Incorporated, Melbourne, Fla.

Filed Feb. 11, 1971, Ser. No. 114,549
Int. Cl. H01l *11/00*
U.S. Cl. 317—235 R **6 Claims**

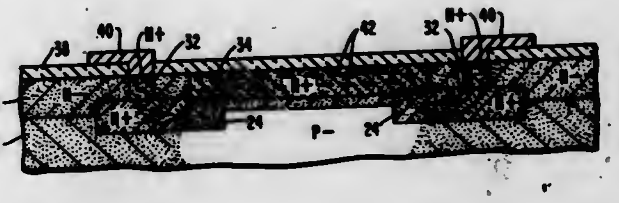


An improved semiconductor device of either PNP or NPN type is provided wherein a base layer of a first conductivity type is epitaxially grown so as to overlie a substrate layer. Emitter and collector regions of semiconductor material of a second conductivity type are diffused into the upper surface of the base layer. The substrate layer is doped to be of the second type conductivity and the thickness of the base layer is such that application of a reverse bias voltage across the collector base regions above a predetermined amount will cause a sufficiently wide depletion area to extend about the collector region through the base layer to the substrate layer so that the substrate layer serves as a collector for charge carriers emitted from the emitter region.

3,729,662
SEMICONDUCTOR RESISTOR

Jack L. Langdon, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 26, 1971, Ser. No. 128,427
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **5 Claims**



A diffused resistor structure and method for fabrication which produces the resistor electrical contacts below the surface of the semiconductor device. The resistor structure includes a resistor region of a first conductivity type surrounded at the surface of the region by a region of a second conductivity. At least two spaced semiconductor electrical contacts of a first conductivity are made to the resistor region. The contacts are below the surface of the resistor structure. Electrical contacts are provided on the surface of the structure spaced from the resistor region and electrically connected to the two spaced semiconductor contacts below the surface of the resistor structure.

3,729,663
ACTUATOR SYSTEMS EMPLOYING ENERGY RECOVERY TECHNIQUES

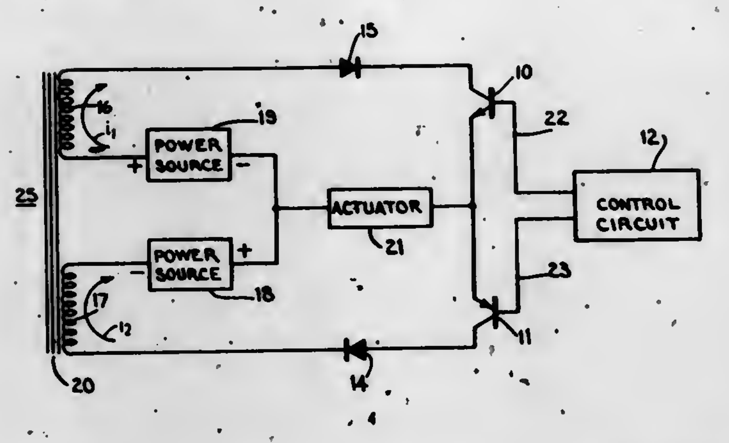
Timothy John Stevenson, Windsor, and Gordon George Scarrott, Welwyn Garden City, both of England, assignors to International Computers Limited, London, England

Filed Aug. 2, 1971, Ser. No. 168,102

Claims priority, application Great Britain, Sept. 4, 1970, 42,368/74

Int. Cl. H02k *41/02*

U.S. Cl. 318—135 5 Claims



A system for accelerating and decelerating a movable element of an actuator includes an inductive energy storage means, a circuit for producing a predetermined current condition in the inductor which holds the element in a balanced position and stores energy in the storage means, and switch means for discharging the storage means through the actuator to accelerate the element. The back E.M.F. developed by the motion of the element produces a current which opposes the accelerating current and thus applies to the energy store kinetic energy developed by the movement of the element.

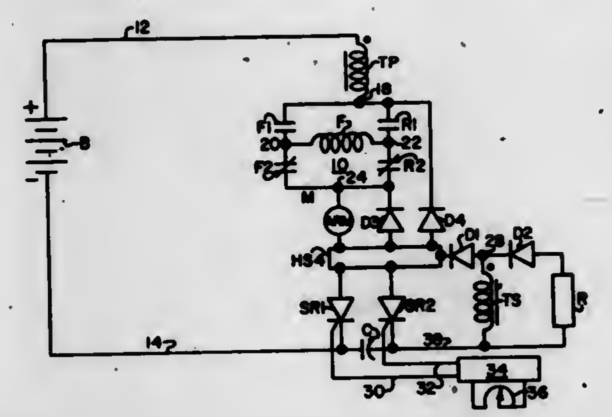
3,729,664
HEAT SINK MOUNTING FOR THE POWER SEMICONDUCTOR IN A SOLID STATE D.C. MOTOR CONTROL CIRCUIT

Robert C. Montross, Mequon, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 6, 1971, Ser. No. 186,843

Int. Cl. H02p *5/16*

U.S. Cl. 318—139 10 Claims



A control circuit for a battery powered vehicle. The circuit includes a pair of silicon controlled rectifiers which are connected between the battery and the motor and commutated to cause the motor to be energized with pulses of current, a diode which conducts currents induced in the motor by the current pulses, a diode which conducts currents generated by the motor when the direction of current flow through the field of the motor is reversed and the motor acts as a generator and a diode which is connected in a charging circuit for a capacitor which causes the rectifiers to commutate and a heat sink which provides a common mounting and electrical junction for the pair of rectifiers and the three diodes.

3,729,665
DIRECT SUPPLY CONTROL DEVICE FOR A TRACTION MOTOR OF VEHICLES, PARTICULARLY FOR ELECTRIC LIFTING TRUCKS

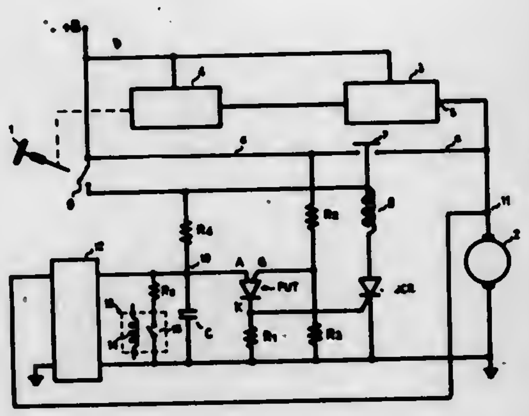
Vito Tateo, Milan, and Guido Galli, Bastiglia, both of Italy, assignors to Fabrica Italian Magneti Marelli S.P.A., Milan, Italy

Filed Nov. 2, 1971, Ser. No. 194,965

Claims priority, application Italy, Nov. 17, 1970, 31831 A/70

Int. Cl. H02p *5/16*

U.S. Cl. 318—139 5 Claims



In a vehicle operated by a traction motor, a circuit for controlling the electrical supply to the traction motor in accordance with the speed desired by the operator, which is preferably determined by a foot operated pedal. An electrical storage member stores energy, the magnitude of which is directly related to the motor operating speed at any given instant. When the pedal is fully depressed for maximum traction the storage member operates to delay the energization of a programmed unijunction device at a rate which is inversely proportional to control parameters of the motor so as to provide a substantially gradual transition to the condition of maximum traction.

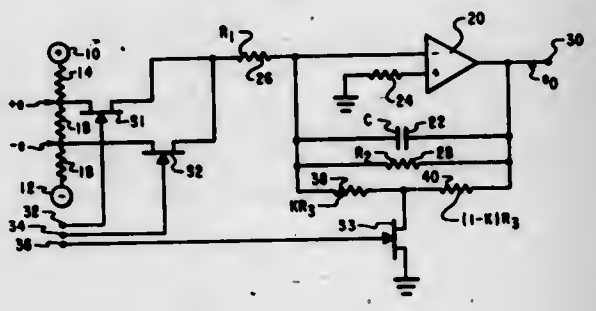
3,729,666
DC COMMAND SMOOTHING CIRCUIT

William J. Kelly, Sauquoit, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,930

Int. Cl. G05b *11/42*

U.S. Cl. 318—458 14 Claims



A DC command smoothing circuit which converts step inputs to smoothed command outputs. Although different polarity and magnitude outputs can be generated, only a single operational amplifier is required to produce all of the necessary transition functions. The operational amplifier includes a capacitor in parallel with a fixed resistor and at least one pair of series connected resistors. The junction of the series resistors can be selectively shorted to ground to change the gain of the amplifier.

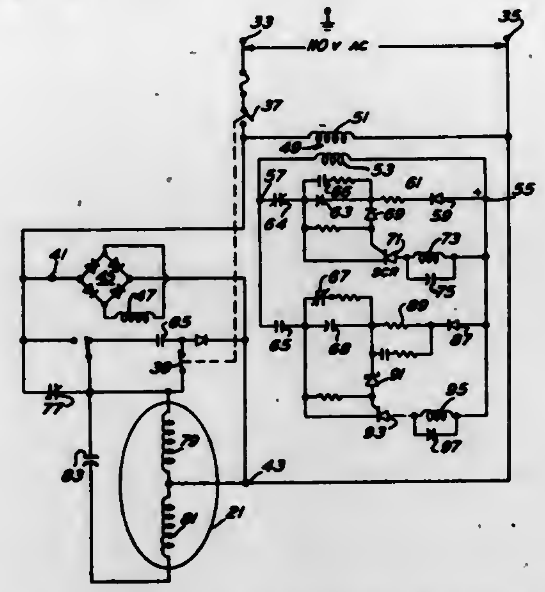
3,729,667
PRECISION LEVEL MEASUREMENT AND CONTROL APPARATUS

William S. Taylor, Drexel Hill, Pa., assignor to FIC Industries, Inc.

Filed June 17, 1971, Ser. No. 153,957

Int. Cl. G05d *9/00*

U.S. Cl. 318—482 10 Claims



The present system includes a plummet or weight which moves in response to gravity to come to rest on the top of the material, in the case of a granular or particulate solid, whose level is being measured, or to determine the upper surface, in the case of a liquid, whose level is being monitored. The plummet is connected to a support means, such as a perforated tape, which in turn is coupled to drive a counter device. When the plummet stops moving downward the level can be read as a function of shaft position such as by a counter device, a shaft motion transmitter, pulser, or shaft encoder. In addition the support means is coupled to a take-up means which lifts the plummet upward in accordance with a periodic energization of the take-up means. The energization of the take-up means is controlled by a logic circuit which determines the period for the take-up action and the gravity probe.

3,729,668
APARATUS FOR CONTROLLING THE DISPLACEMENT OF AN OBJECT BETWEEN ANY TWO POINTS

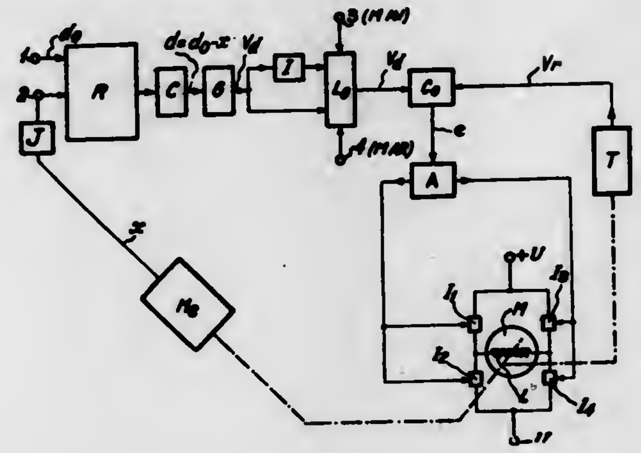
Yves-Jean Francois Brette, Sevres, France, assignor to Societe Industrielle Honeywell Bull (Societe Anonyme), Paris, France

Filed June 24, 1971, Ser. No. 156,261

Claims priority, application France, June 26, 1970, 7023798

Int. Cl. G05b *13/00*

U.S. Cl. 318—561 8 Claims



Apparatus for displacing an object between any two points along a predetermined path, according to a given law of motion, wherein a signal representing the actual speed of said object is compared with a reference speed signal derived according to the law of motion, and from said comparison an error signal is generated to control the speed of a motor driving such object.

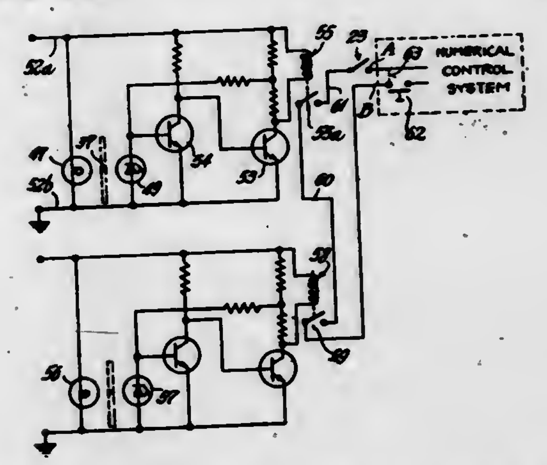
3,729,669
FINE-COARSE POSITION INDICATING SYSTEM

Charles A. Whitney, Canton; James P. Somerset, Wethersfield, and Randal B. Hathway, Thomaston, all of Conn., assignors to The Superior Electric Company, Bristol, Conn.

Filed Oct. 29, 1970, Ser. No. 84,977

Int. Cl. G05b *11/18*

U.S. Cl. 318—594 11 Claims



A system for providing a signal that a worktable is at a location when the worktable is driven along two coordinants by a pair of motors by concurrently sensing the actual worktable position and one rotational position of each motor. Relatively non-precise switch means are used for sensing the location of the worktable within an area that is less than the movement produced by one revolution while a shaft decoder connected to each motor senses the rotational position of the motor with simultaneous indications from the three sensing sources enabling the precise determination of the worktable position. The system may be used to prevent further automatic movement of the member when the motors are controlled by a numerical controlled system.

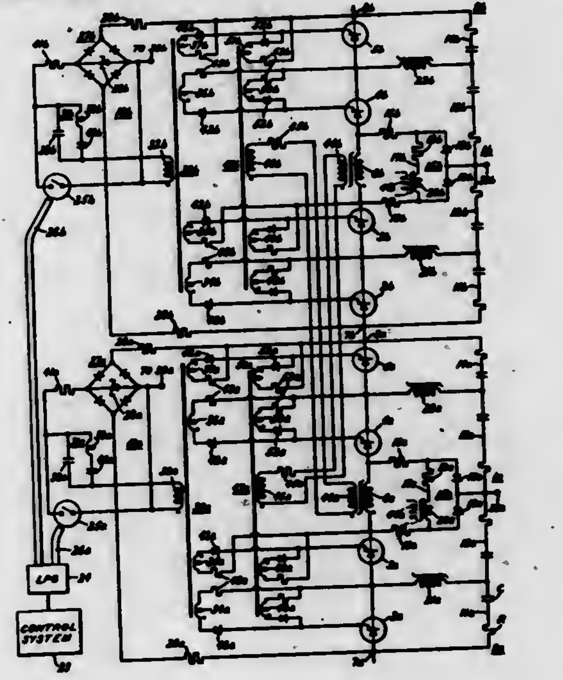
3,729,670
REDUNDANT TRIGGERING MEANS FOR HVDC VALVE

Clyde G. Dewey, Drexel Hill, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Feb. 12, 1971, Ser. No. 114,948

Int. Cl. H02m *1/18*; H03k *17/00*

U.S. Cl. 321—11 3 Claims



A redundant triggering scheme is disclosed for an electric valve composed of switching matrices each comprising plural serially connected thyristors and a serially connected current limiting inductor. Means are provided coupled to said inductors for providing redundant trigger signals to a matrices' thyristors in response to the initiation of current flow through on inductors of another matrix.

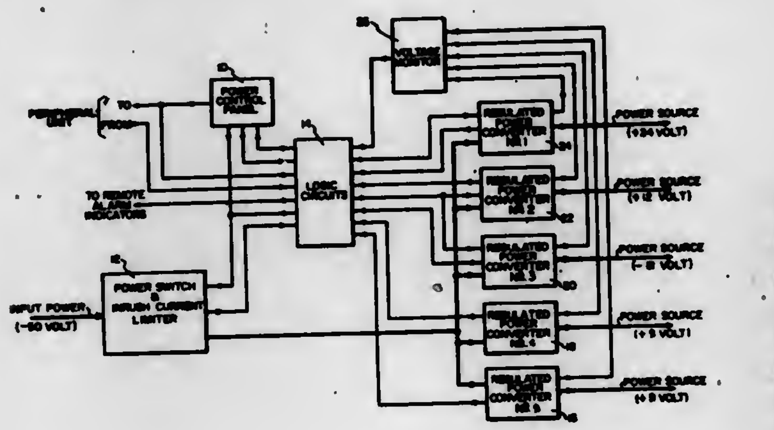
3,729,671
POWER CONTROL AND SUPERVISORY SYSTEM

Thomas H. Jeffery, Oak Park, and Karl H. Kuster, Glendale Heights, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed March 22, 1972, Ser. No. 236,729

Int. Cl. H02m *1/18*

U.S. Cl. 321—11 **7 Claims**



There is herein disclosed an electrical power control and supervisory system for monitoring the outputs of a plurality of regulated power converters and generating error signals which are fed back to control the converter outputs and provide power on/off control signals to properly sequence the application and removal of power to solid state logic circuitry.

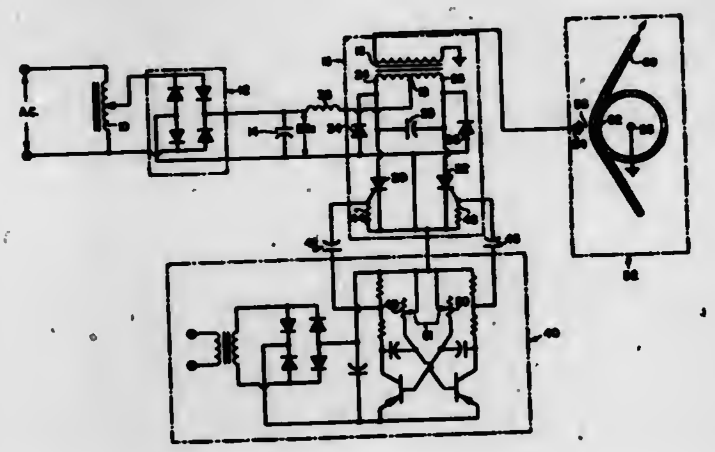
3,729,672
APPARATUS FOR FILM TREATING

Louis A. Rosenthal, Highland Park, and Donald A. Davis, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 862,307, Sept. 30, 1969, abandoned, and Ser. No. 862,412, Sept. 30, 1969, abandoned. This application Jan. 14, 1971, Ser. No. 106,375

Int. Cl. H02m *7/48*

U.S. Cl. 321—45 R **3 Claims**



Apparatus is disclosed for the surface treatment of a plastic body by exposure to a high intensity voltage accompanied by corona discharge employing a solid state sonic frequency pulse generator.

3,729,673
CONSTANT VOLTAGE IN VARIED LENGTH CABLES

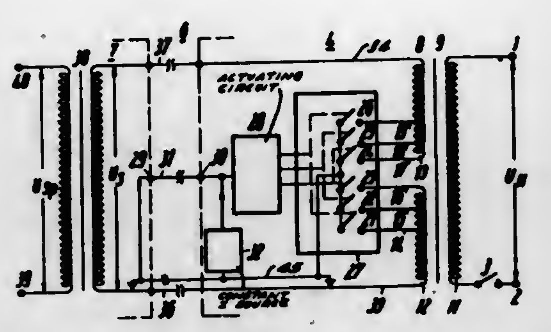
Hans-Dieter Schneider, Gross-Gerau, Germany, assignor to Fernseh GmbH Darmstadt, Darmstadt, Germany

Filed Sept. 8, 1971, Ser. No. 178,565

Claims priority, application Germany, Sept. 8, 1970, P 20 44 329.2

Int. Cl. G05f *1/20*

U.S. Cl. 323—43.5 S **7 Claims**



The primary of an AC transformer is connected across a power supply. Two secondaries have opposite ends connected to cable lines. Corresponding taps in the secondary are grounded through controlled switches. Constant current is carried by a third line of the cable. Voltage drop in the third line varies by length. Mutually exclusive threshold switches sense the voltage drop and apply power through a selected impedance transfer to operate one corresponding control switch on each secondary to thereby ground selected points on each secondary, thereby controlling the AC output voltage from the secondaries. Thus the proper AC voltage is applied to the cable according to its length. When no cable is present, no power is available at its connections.

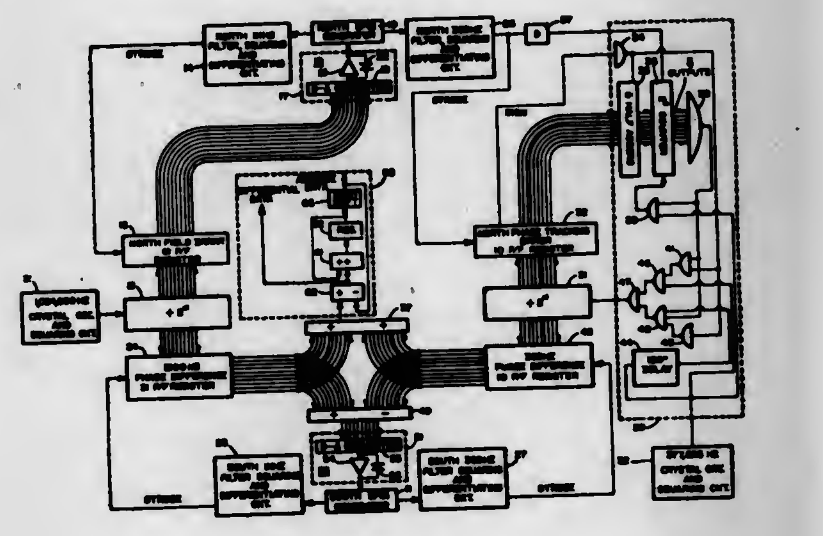
3,729,674
DIGITAL NUCLEAR GYROSCOPIC INSTRUMENTATION AND DIGITAL PHASE LOCKED LOOP THEREFOR

John R. Lowdenslager, Chappaqua, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,263

Int. Cl. G01n *27/78*

U.S. Cl. 324—0.5 R **5 Claims**



A pair of spin generators maintained parallel to each other, but in opposite directions thereto, are phase locked with respect to each other and an output is provided indicative of the inertial reference. Both spin generators include different sets of nuclei which resonate at two different distinct frequencies. A first crystal oscillator is initially phase locked with respect to one of the spin generators through the use of a dividing circuit, a multi-bit register, and a proportional field control for that spin generator. Similarly, the other spin generator is coupled to strobe a second multi-bit register which is coupled to the dividing circuit so as to provide a phase difference signal from the output of the second shift register, which phase difference signal is indicative of the difference in phase between the two spin generators. A second crystal oscillator oscillating at a frequency different from the first crystal oscillator is coupled to a second dividing circuit to a third multi-bit register which is coupled to the first spin generator. Additional pulses can be added to or removed from the path between the crystal oscillator and the second dividing circuit, so as to phase-lock the output of the second divider circuit with a second frequency output of the first spin generator. The second dividing circuit is coupled to the second spin generator by means of a fourth register. The outputs of the second and fourth registers are subtracted, one from the other through a difference circuit to control the south field proportional field control. The phase difference registers are also fed through a summing adder to provide the nuclear inertial output reference. A digital phase locked loop is provided for an input signal at a frequency f_s. An n-stage counter is driven with a $2^n x f_s$ coherent source. The input signal and the output of the n-stage counter are coupled to a phase detector which samples the phase of the input signal. The detected signal is periodically integrated. The integrated signal is coupled to an analog to digital converter whose output controls a pulse advance or retard means which is serially coupled between the coherent source and the counter.

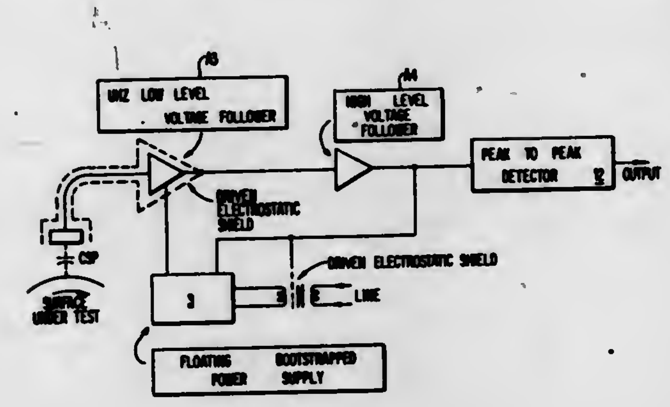
3,729,675
HIGH LEVEL NON-CONTACTING DYNAMIC VOLTAGE FOLLOWER FOR VOLTAGE MEASUREMENT OF ELECTROSTATICALLY CHARGED SURFACES

Robert E. Vosteen, 315 W. Center St., Medina, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,075

Int. Cl. G01r *31/02*

U.S. Cl. 324—72 **10 Claims**


UHZ LOW LEVEL VOLTAGE FOLLOWER
HIGH LEVEL VOLTAGE FOLLOWER
PEAK TO PEAK DETECTOR
OUTPUT
DRIVEN ELECTROSTATIC SHIELD
SURFACE UNDER TEST
LINE
FLOATING BOOTSTRAPPED POWER SUPPLY

A wide band voltage follower circuit for voltage measurement of electrostatically charged surfaces through the use of a probe having a capacitor detector arranged in spaced and non-contacting manner with the surface under measurement to detect the unknown surface voltage thereof, the probe having a cable connected to the output of the capacitor detector. An ultra high impedance low level voltage follower is connected to the capacitor detector output through the cable, and shield means driven by the output of the ultra high impedance low level voltage follower are employed to shield the latter, the cable, and the probe, thereby minimizing the effective input capacitance of the ultra high impedance low level voltage follower. A high level voltage follower is connected to the output of the ultra high impedance low level voltage follower, and a floating power supply is connected to power the ultra high impedance low level voltage follower. The power supply is bootstrapped with the latter by the high level voltage follower through the connection of the common line of the floating power supply to the output of the high level voltage follower. The output of the high level voltage follower is connected to a peak-to-peak detector to derive an output voltage whose D.C. voltage is equal to the D.C. voltage of the surface under measurement.

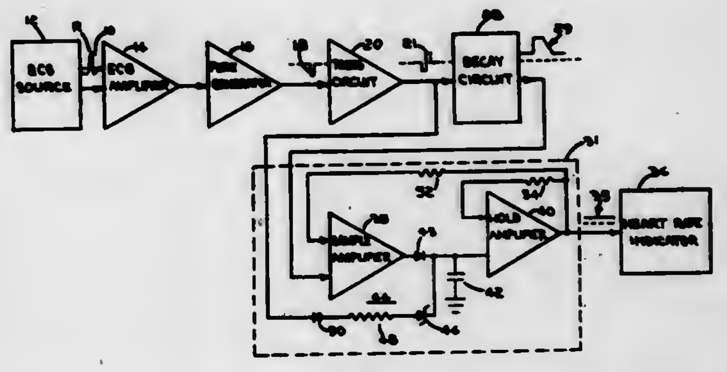
3,729,676
RATEMETER

James R. Currie, and Ralph R. Kissell, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed July 13, 1971, Ser. No. 162,101

Int. Cl. G01r *23/02*; **A61b** *5/04*

U.S. Cl. 324—78 E **4 Claims**



An instantaneous reading tachometer in which reoccurring events to be measured in rate, trigger a three-state timing generator in which the first two states are of fixed duration and the third state is of variable duration. An electrical decay circuit is set to a reference level by the second state and the third state causes this reference level to decay until the re-occurrence of an event. This triggers a new first state which in turn triggers a sample and hold circuit to hold the decayed level. The decayed level is amplified and provided as an output indicative of the instantaneous rate of occurrence of the last two successive events.

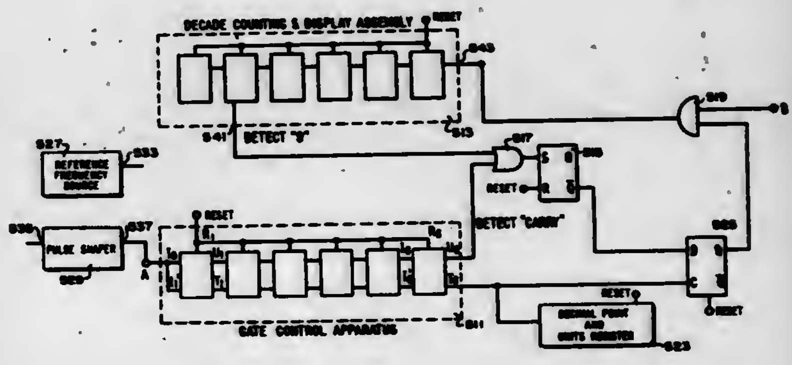
3,729,677
GATE CONTROL APPARATUS FOR SETTING THE INPUT SIGNAL COUNTING INTERVAL

Ian T. Band, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif

This application May 22, 1972, Ser. No. 255,667

Int. Cl. G01r *23/02*

U.S. Cl. 324—78 D **3 Claims**


DECADE COUNTING & DISPLAY ASSEMBLY
RESET
PULSE SHAPER
GATE CONTROL APPARATUS
DECIMAL POINT AND UNITS REGISTER

A decade counting and display assembly are combined with a reference frequency source, pulse shaper, gate control apparatus and conventional logic elements to provide a frequency measuring device that automatically determines a time interval during which the frequency of an input signal is counted. The same components are used to provide a multiperiod averaging device that automatically determines a number of periods an input signal is to be averaged.

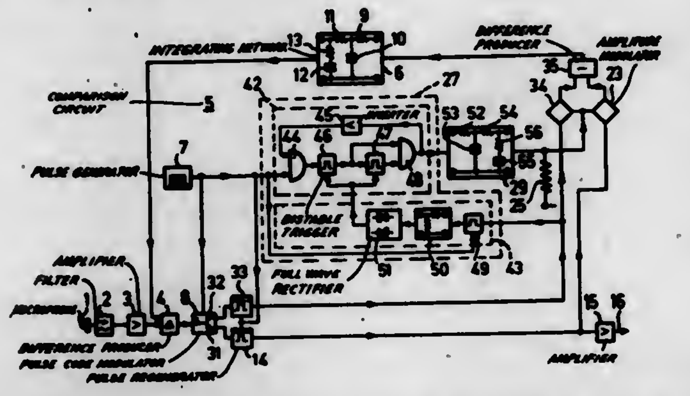
3,729,678
PCM SYSTEM INCLUDING A PULSE PATTERN ANALYZER

Johannes Wilhelmus Glasbergen, Hilversum; Johannes Anton Greefkes, Emmasingel, Eindhoven; Frank de Jager, Emmasingel, Eindhoven, and Adrianus Wilhelmus Maria van den Enden, Emmasingel, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 808,086, March 18, 1969, abandoned. This application July 20, 1971, Ser. No. 164,479

Int. Cl. H04b *1/100*

U.S. Cl. 325—38 A **62 Claims**



A delta pulse code modulation system includes a feedback loop comprising a pulse pattern analyzer for detecting a large instantaneous modulation index within a fixed time interval. The system exhibits a wide range of modulation and suppresses whistling and interference tones at low pulse rates.

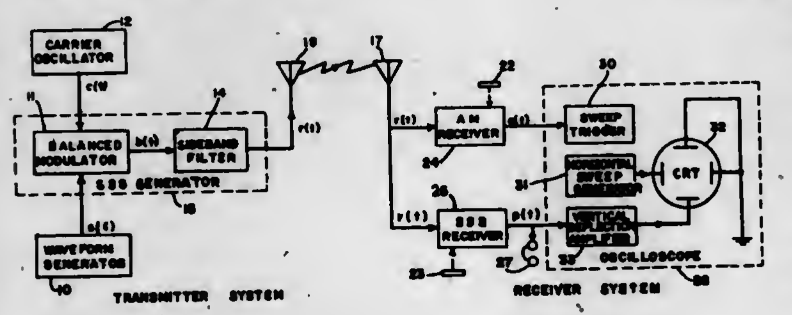
3,729,679
SUPPRESSED CARRIER SINGLE-SIDEBAND SIGNAL DETECTION

Lucius B. Day, Jr., Warminster, Pa., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 30, 1971, Ser. No. 175,895

Int. Cl. H04b *1/68*

U.S. Cl. 325—49 **6 Claims**



A single-sideband signal with an unknown suppressed carrier frequency is simultaneously processed through both an amplitude modulated (AM) receiver and a single-sideband (SSB) receiver. The AM receiver supplies an output signal to trigger the horizontal sweep circuit of an oscilloscope. The output of the SSB receiver is applied to the vertical input of the oscilloscope. The correct tuning of the SSB receiver to the carrier frequency causes a stationary signal to appear on the oscilloscope.

3,729,680
RADIO PAGER WITH VOICE MESSAGE AND SUBSTITUTE PAGING NUMBERS

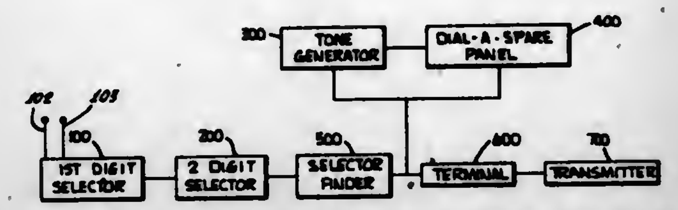
Ramsey H. McDonald, 1046 S. 23rd Street, Richmond, Ind.

Filed March 29, 1971, Ser. No. 129,023

Int. Cl. H04b *1/00*

U.S. Cl. 325—55 **7 Claims**

A paging system operably connecting remote paging receivers with an incoming call and having substitute paging numbers assignable to the remote paging receiver. A first digit selector connects the incoming call to a two digit selector after the appropriate fifth digit of a seven digit number has been inserted into the first digit selector. The sixth and seventh digits of the seven incoming signal are then routed to the two digit selector which is connected to tone generators which produce pairs of tones assigned to the sixth and seventh digits. The pair of tones is routed through a dial-a-spare panel which is operable to substitute a second pair of preselected tones for the first pair of tones. A selector finder is connected to the two digit selector and when transmitter time is available connects the incoming trunk lines of the first digit selector to the transmitter via a terminal assembly.



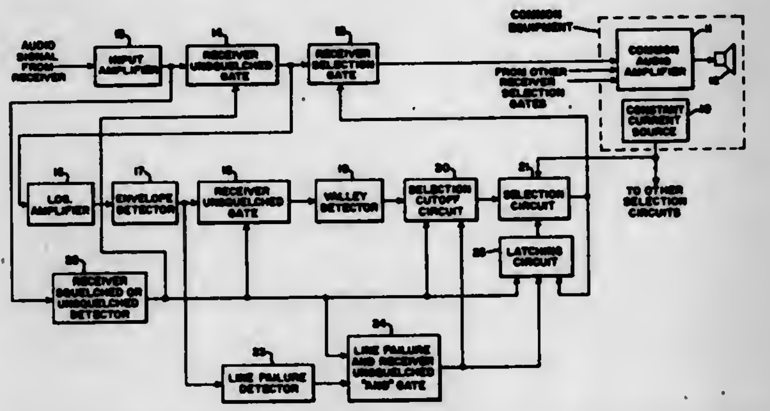
3,729,681
RECEIVER SELECTING ARRANGEMENT

James H. Elder, Brookneal, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Aug. 2, 1971, Ser. No. 168,163

Int. Cl. H04b *1/10*

U.S. Cl. 325—304 **6 Claims**


AUDIO SIGNAL FROM RECEIVER
INPUT AMPLIFIER
RECEIVER UNSQUELCHED GATE
RECEIVER SELECTION GATE
COMMON EQUIPMENT
COMMON AUDIO AMPLIFIER
FROM OTHER RECEIVER SELECTION GATES
CONSTANT CURRENT SOURCE
LOG. AMPLIFIER
ENVELOPE DETECTOR
RECEIVER UNSQUELCHED GATE
VALLEY DETECTOR
SELECTION CUTOFF CIRCUIT
SELECTION CIRCUIT
TO OTHER SELECTION CIRCUITS
LATCHING CIRCUIT
RECEIVER SQUELCHED OR UNSQUELCHED DETECTOR
LINE FAILURE DETECTOR
LINE FAILURE AND RECEIVER UNSQUELCHED "AND" GATE

In a system having two or more separate radio receivers that can receive signals from a radio transmitter, an arrangement is provided to select the one receiver providing the best signal. Each receiver has means to indicate a squelched condition. The selecting arrangement includes a signal quality indicating circuit for each receiver. The signal quality indicating circuit is supplied with a signal from the receiver when the respective receiver is in an unsquelched condition. The signal quality indicating circuits are connected together, and the best quality signals, as indicated by the highest degree of noise quieting, is selected and utilized as desired.

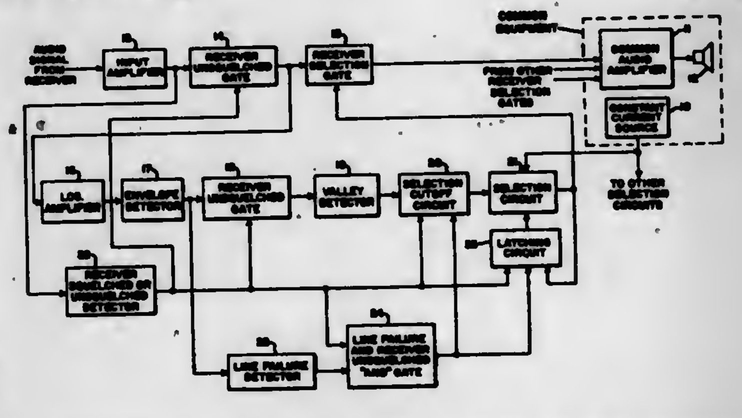
3,729,682
AUDIO SIGNAL QUALITY INDICATING CIRCUIT

James H. Elder, Brookneal, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Aug. 2, 1971, Ser. No. 168,167

Int. Cl. H04b *1/16, 7/08*

U.S. Cl. 325—304 **4 Claims**


AUDIO SIGNAL FROM RECEIVER
INPUT AMPLIFIER
RECEIVER UNSQUELCHED GATE
RECEIVER SELECTION GATE
COMMON EQUIPMENT
COMMON AUDIO AMPLIFIER
FROM OTHER RECEIVER SELECTION GATES
CONSTANT CURRENT SOURCE
LOG. AMPLIFIER
ENVELOPE DETECTOR
RECEIVER UNSQUELCHED GATE
VALLEY DETECTOR
SELECTION CUTOFF CIRCUIT
SELECTION CIRCUIT
TO OTHER SELECTION CIRCUITS
LATCHING CIRCUIT
RECEIVER SQUELCHED OR UNSQUELCHED DETECTOR
LINE FAILURE DETECTOR
LINE FAILURE AND RECEIVER UNSQUELCHED "AND" GATE

In a system for selecting one of a plurality of radio receivers, a circuit is provided for each receiver to indicate the quality of the audio signal provided by each receiver. The circuit uses a logarithmic amplifier that has a gain which varies inversely with the received audio signal amplitude. The logarithmically amplified audio signal is applied to an envelope detector which provides an envelope signal of one polarity of the instantaneous audio signal amplitudes. The envelope signal is applied to a valley detector which provides a direct current voltage proportional to the lowest voltage value of the envelope signal, and hence indicative of the noise level between audible sounds. The outputs of all valley detectors in the system are compared, and the receiver providing the lowest valley detector voltage (an indication of the highest quality audio signal) is selected to provide the audio signal utilized at some common location.

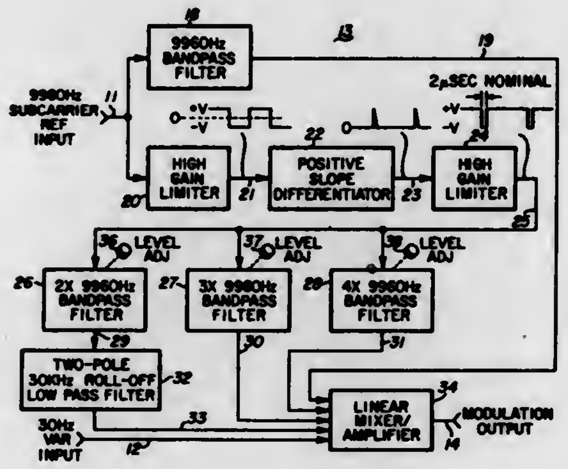
3,729,683
VOR 9960 HZ HARMONIC GENERATOR

William R. Hemme, Fairmont, Minn., assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Sept. 3, 1971, Ser. No. 177,716

Int. Cl. H03b *21/02*

U.S. Cl. 328—16 **6 Claims**



A controlled harmonic generation technique is applied to the 9960 Hz subcarrier signal related to VOR navigation by means separably applying a 30 Hz variable phase test signal and a 9,960 Hz subcarrier reference phase signal employed in the VOR navigation system to a harmonic generating means which acts on the 9,960 Hz subcarrier alone by generating predetermined levels of harmonics of the subcarrier with subsequent linear recombination of the controlled level harmonic components with a 9,960 Hz fundamental signal devoid of such harmonics and the 30 Hz variable phase signal. A selectively controlled composite modulation signal which simulates the modulation from actual VOR ground transmitting stations is thus provided.

3,729,684
DATA DEMODULATOR EMPLOYING MULTIPLE CORRELATIONS AND FILTERS

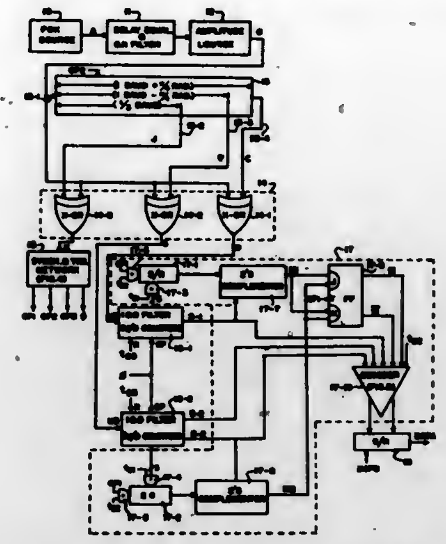
Donald G. Shuda, Chelsford, Mass., assignor to Sanders Associates, Inc., Nashua, N.Y.

Filed July 1, 1971, Ser. No. 158,844

Int. Cl. H04l *27/22*

U.S. Cl. 329—104 **5 Claims**

A demodulator useful for demodulating multi-phase differentially coherent phase shift keyed (PSK) signals. In the four phase case, a pair of correlators operate upon the identity and non-identity of the PSK signal and two replicas of itself derived from the preceding baud or frame interval to produce first and second correlation signals. The first and second correlation signals are then filtered by means of first and second digital counter type filters with the direction of counting being



controlled by corresponding ones of the correlation signal. The output of the filters are then compared with one another in sign and magnitude to detect the modulating information.

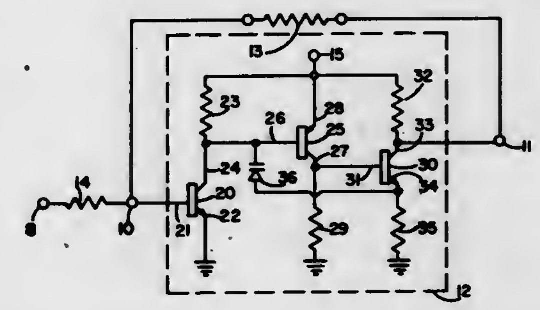
3,729,685
SELF-COMPENSATED LOW VOLTAGE OPERATIONAL AMPLIFIER

Donald L. Linder, Elmhurst, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 28, 1971, Ser. No. 110,427

Int. Cl. H03f *3/18, 1/36*

U.S. Cl. 330—17 **9 Claims**



A self-compensated low voltage amplifier is provided having first, second and third transistors direct current coupled together. The first and third transistors are of a first conductivity type and the second transistor is of an opposite conductivity type. A source of supply voltage is coupled to the transistors causing them to develop operative bias voltages at the electrodes. A diode is coupled from the emitter of the third transistor to the base of the second transistors and is reverse biased by the bias voltages at the electrodes to provide a capacitive reactance between the third transistor emitter electrode and the second transistor base electrode. This capacitive reactance acts to provide a negative feedback path to the second transistor to stabilize the amplifier and prevent oscillation.

3,729,686
REGULATING CIRCUIT ARRANGEMENT FOR CONTROLLING THE AMPLIFICATION OF AN AMPLIFIER

Konrad-Johann Kellermann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

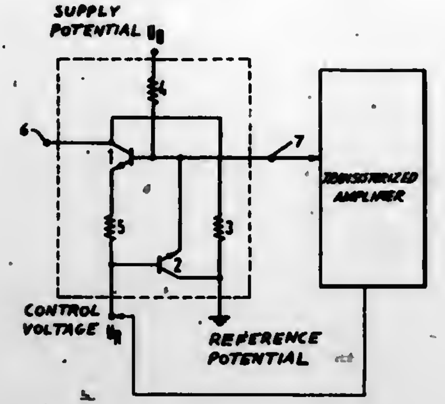
Filed Oct. 29, 1970, Ser. No. 85,120

Claims priority, application Germany, Nov. 17, 1969, P 19 57 731.2

Int. Cl. H03g *3/30*

U.S. Cl. 330—29 **6 Claims**

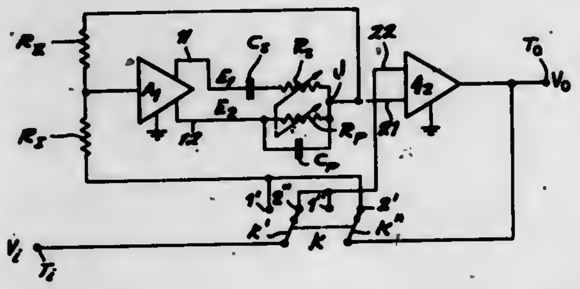
A voltage divider has a controllable series impedance comprising a series-connected transistor and a controllable quadrature axis impedance comprising a parallel-connected transistor connected in phase opposition to the series-connected transistor. The voltage divider dynamically divides the input voltage of an amplifier and derives therefrom a control voltage for controlling the amplifier.



3,729,687
SYSTEM FOR SELECTIVE FREQUENCY AMPLIFICATION OR ATTENUATION

Antonio Orlandini, and Massimo Pazzaglia, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy

Filed May 10, 1971, Ser. No. 141,835
Claims priority, application Italy, May 8, 1970, 24305 A/70
Int. Cl. H03f *1/34*
U.S. Cl. 330—51 **2 Claims**



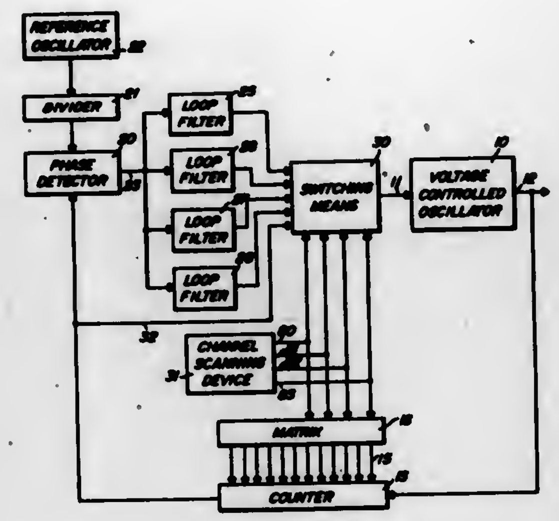
Two signal generators of identical frequency and opposite phase, constituted by internal circuits of an amplifier with two mutually phase-reversed outputs, from two adjoining arms of a bridge network whose other two arms are a series R/C circuit and a parallel R/C circuit, respectively. The output diagonal of the bridge is defined by the junction of the two R/C circuits and by the grounded input terminal of the amplifier; the signal developed across this output diagonal disappears — i.e., the bridge is balanced — for any frequency bearing a predetermined relationship with the impedances of these circuits. Depending on whether the bridge network is inserted in the forward path or in the negative-feedback loop of another amplifier, frequencies determined by the adjustment of these impedances can be selectively attenuated or boosted.

3,729,688
OSCILLATOR WITH SWITCHABLE FILTER CONTROL VOLTAGE INPUT FOR RAPIDLY SWITCHING TO DISCRETE FREQUENCY OUTPUTS

Frank J. Cerny, Jr., N. Riverside, and Donald L. Linder, Elmhurst, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 15, 1971, Ser. No. 208,349
Int. Cl. H03b *3/04*
U.S. Cl. 331—1 A **7 Claims**

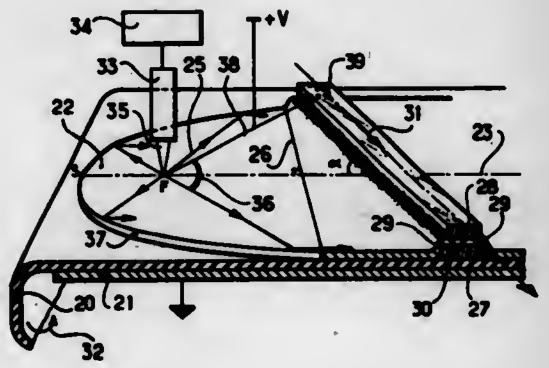
A voltage controlled oscillator controllable to discrete frequency outputs, which outputs are applied to a phase detector through divider circuits and compared to a reference signal of the same frequency, is controlled to discrete frequency outputs by variable voltages or variable width pulses, proportional to the difference in phase between the two signals, from the phase detector which pulses are applied to the oscillator through loop filters. Each loop filter is an RC circuit which integrates the pulses and serves as a memory to retain a relatively constant voltage thereacross. Therefore, when a specific loop filter is switched into the circuit the voltage controlled oscillator is rapidly switched to a discrete frequency output proportional to the voltage stored in the loop filter.



3,729,689
TRAVELING WAVE EXCITED GAS LASER

Bruno Godard, Gif-sur-Yvette, and Bernard Lacour, Villebon, both of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Dec. 23, 1971, Ser. No. 211,374
Claims priority, application France, Dec. 30, 1970, 7047312
Int. Cl. H01s *3/09, 3/02*
U.S. Cl. 331—94.5 **21 Claims**

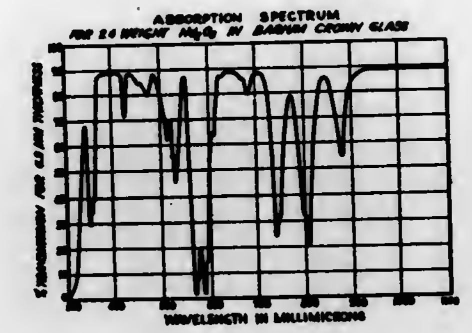


A gas laser in which the gaseous active medium is triggered by a plane progressive discharge wave generated by a flat electrical conductor.

3,729,690
MEANS FOR PRODUCING AND AMPLIFYING OPTICAL ENERGY

Elias Snitzer, Wellesley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 168,012, Jan. 16, 1962, which is a continuation-in-part of Ser. No. 148,204, Oct. 27, 1961. This application Nov. 17, 1969, Ser. No. 877,216
Int. Cl. H01s *3/16*
U.S. Cl. 331—94.5 **29 Claims**

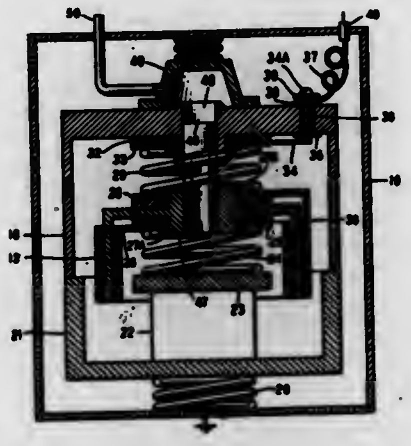


Laser device and laserable material with glassy host of non-gaseous non-periodic atomic structure.

3,729,691
ELECTRO-MECHANICAL OSCILLATOR OF ELECTRODYNAMICAL AND ELECTROMAGNETIC TYPES

Wayne J. Beiswinger, Chester, and Walter R. Witte, Hampton, both of N.J., assignors to Verta-Tronics, Inc., Hampton, N.J.

Filed June 16, 1972, Ser. No. 263,438
Int. Cl. H03b *5/30*
U.S. Cl. 331—116 M **11 Claims**



An electrodynamical or electromagnetic oscillator comprising an electric oscillator including three transistors and a mechanical oscillator having an armature coil movable in a magnetic field. The transistors are turned ON in sequence to start current flow in the armature coil which is moved in the magnetic field in one direction to generate in the armature coil a counter voltage of positive polarity. This voltage varies the amount of current flow in the armature coil until the one directional movement of the armature coil is terminated whereat the transistors are turned OFF. Thereafter, the armature coil is moved in the magnetic field in the opposite direction to generate in the armature coil a voltage of negative polarity which voltage holds the transistors turned OFF until the opposite directional movement of the armature coil is terminated. Modifications involve the electric oscillator including one or two transistors

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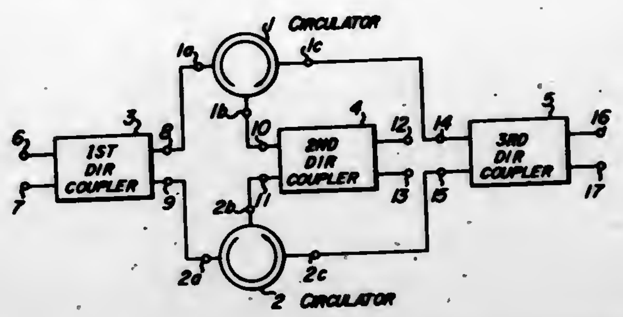
3,729,692
MICROWAVE CIRCULATOR CIRCUITS

Mitsuo Tanaka, Kokubunji, and Akira Honda, Ome, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 8, 1971, Ser. No. 160,762
Int. Cl. H01p *1/32, 5/12*
U.S. Cl. 333—1.1 **3 Claims**

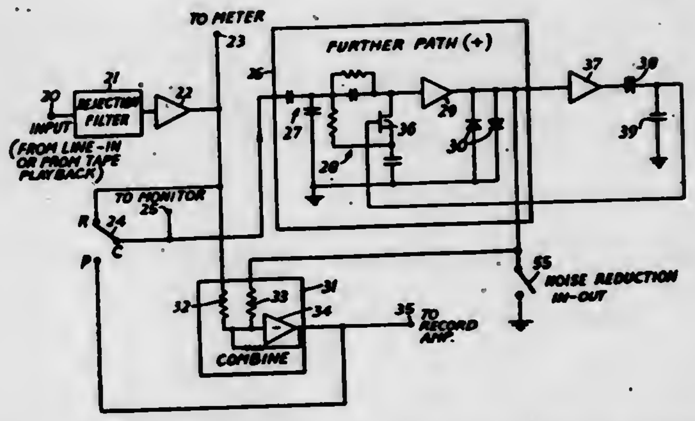


The microwave circulator circuit comprises two circulators of the same characteristic each having three terminals and three 3dB directional couplers each having four terminals. Three pairs of terminals, each pair consisting of corresponding ones of the terminals of the two circulators, are connected with the three pairs of terminals, each pair consisting of two terminals of particular one of the four-terminal couplers so as to form a six-terminal composite circulator.

3,729,693
COMPRESSOR/EXPANDER SWITCHING METHODS AND APPARATUS

Ray Milton Dolby, 346 Clapham Road, London, England

Filed Aug. 2, 1971, Ser. No. 168,069
Int. Cl. H04b *1/64*; **H03g** *7/00*
U.S. Cl. 333—14 **45 Claims**



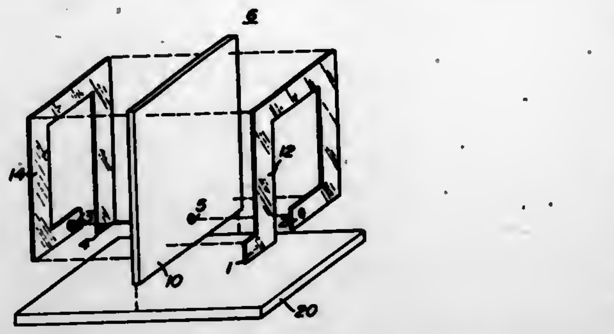
The invention relates to compressors and expanders wherein the input signal has additively or subtractively combined therewith the output of a processing means which limits the further signal component contributed thereby so that, at small input levels, the input signal is substantially boosted or bucked whereas, at large input levels, the further signal component has negligible effect. The invention provides switching arrangements for switching efficiently between compressor and expander configurations, especially for use in or with tape recorders.

3,729,694
STRIP TRANSMISSION LINE BROADBAND 4:1 IMPEDANCE TRANSFORMER

Robert C. Huntington, Phoenix, and Lewis Wood, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

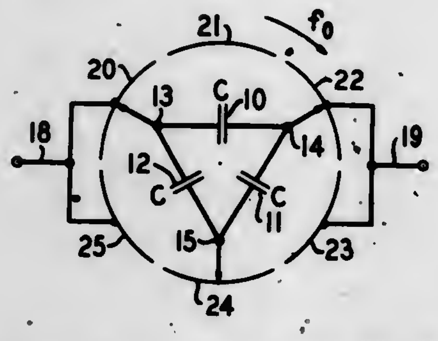
Filed Sept. 28, 1971, Ser. No. 184,418
Int. Cl. H03h *7/38*
U.S. Cl. 333—33 **9 Claims**

An electrical transformer for transforming electrical impedances in a four-to-one ratio includes a dielectric substrate having U-shaped metallized conductors deposited on opposite surfaces of the substrate, the two U-shaped conductors being substantially superimposed on each other, and having one end of one of the conductors connected to the nearest end of the other conductor through a hole in the substrate. The transformer provides a four-to-one impedance transformation between an input port including the first and second ends of one of the U-shaped strips and another port including the unconnected ends of the two strips.



3,729,695
COMMUTATING CAPACITOR IMPEDANCE DEVICE

Joseph Henry Condon, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed May 18, 1972, Ser. No. 254,384
Int. Cl. H03h *7/10, 7/14*
U.S. Cl. 333—70 A **11 Claims**

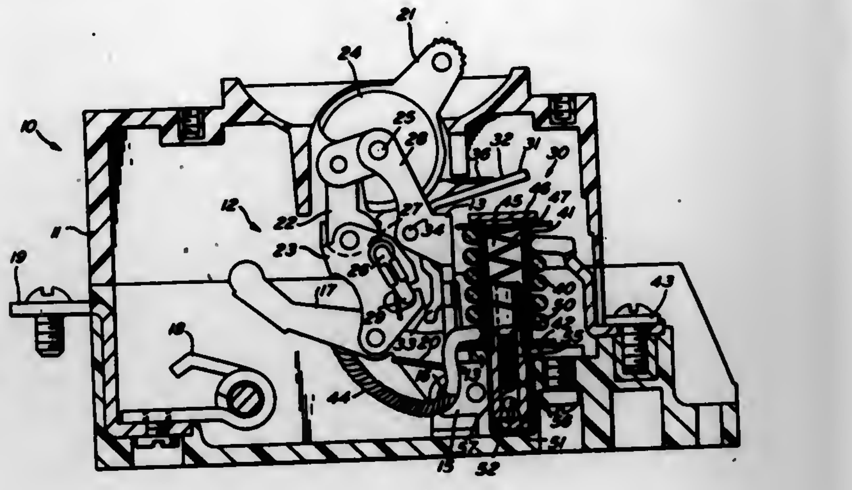


Plural capacitors are interconnected in a recurrent sequence of different combinations of capacitors between input and output terminals in each period of an input signal that is to be filtered. The frequency of recurrence of the capacitor interconnection sequence between the input and output terminals is the frequency that is subjected to the greatest attenuation or response between those input and output terminals. Different arrangements for commutating the capacitor connections through the mentioned sequence are shown. Applications of the resulting commutating capacitor unit for bandpass filtering and band rejection filtering are also presented.

3,729,696
TIME DELAY ACTUATOR

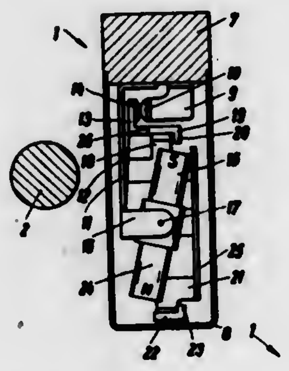
Ralph Pope, Robbinsville, N.J., assignor to Heinemann Electric Company, Trenton, N.J.
Filed April 26, 1972, Ser. No. 247,732
Int. Cl. H01h *7/03*
U.S. Cl. 335—62 **9 Claims**

A hydraulic-magnetic time delay actuator for use with circuit breakers, switches or relays, comprising a non-magnetic time delay tube encircled by a solenoid coil. The tube contains a retarding fluid and a magnetic core, the core being movable longitudinally in the tube in response to the magnetic flux generated by the coil. An armature is pivotally located in the magnetic field of the coil and is movable thereby to actuate the relay, circuit breaker or switch. The movable core has formed therethrough an axial bore which houses a valve and forms a seat for the valve adjacent one end of the bore. A helical stop spring, a portion of which has an outer diameter greater than the interior diameter of the bore, is located therein. The stop spring is inserted into the bore by twisting the spring to reduce its diameter while concurrently pushing it into the bore. The spring is held in place in the bore by frictional engagement with the interior surface thereof. The leading edge of the inserted stop spring is located a preselected distance from the valve seat to limit the movement of the valve away from its seat. The stop spring is tapered slightly in the direction of the valve and is formed of a magnetically permeable material in order to increase the efficiency of the actuator.



3,729,697
BISTABLE ELECTRIC SWITCH

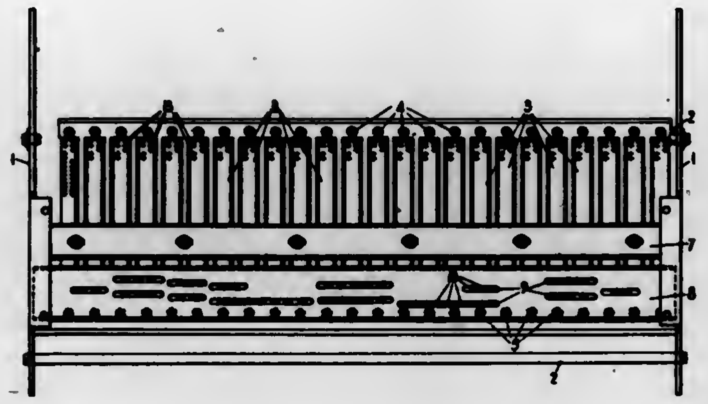
Henning Hounsgard, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Nov. 8, 1971, Ser. No. 196,321
Int. Cl. H01h *35/18*
U.S. Cl. 335—205 **7 Claims**



The invention relates to a bistable electric switch assembly of the type having an actuating permanent magnet pivotally mounted relative to a central axis and held in each of its stable positions by two soft iron pole pieces offset from the central plane. The actuating magnet is responsive to an operating permanent magnet arranged to pass one of the poles of the actuating magnet and disposed at a right angle relative thereto. Fixed and movable contacts are provided with the movable contact being mounted on an armature which forms a variable width air gap with one of the pole pieces. A spring biases the armature and the movable contact towards an open position. A substantial part of the magnetic flux extends across the air gap which sequentially causes closing and opening forces to be exerted on the armature of the movable contact depending on the position of the permanent actuating magnet.

3,729,698
TERMINAL INTERCONNECTIONS

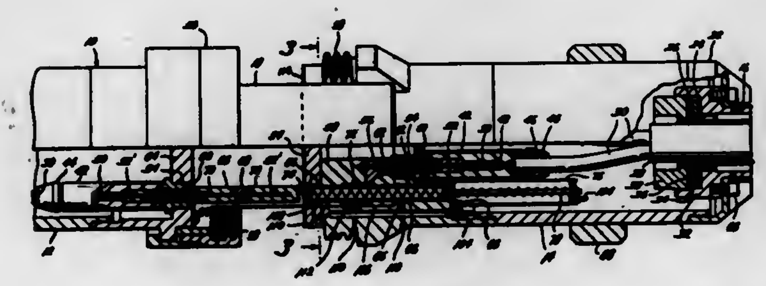
Peter Frederick Chapman, Kent, England, assignor to Elliott Brothers (London) Ltd., London, England
Filed Jan. 25, 1971, Ser. No. 109,116
Claims priority, application Great Britain, Jan. 28, 1970, 4,127/70
Int. Cl. H01r *29/00*
U.S. Cl. 339—18 R **9 Claims**



A method of interconnecting alternate (for example) terminals in a row. An insulating flexible strip is woven in and out of the terminals to separate them into two groups. Terminals in the same group are interconnected by a strip of copper running along the terminals the strip being either a deposit on the insulating strip or a straight bar running along the outside of the terminals, according to the current carrying requirements. In the latter case the copper bar is soldered to its group of terminals by resistance heating the bar having expendable end portions to which connections are made.

3,729,699
UNDERWATER WET ELECTRICAL CONNECTOR

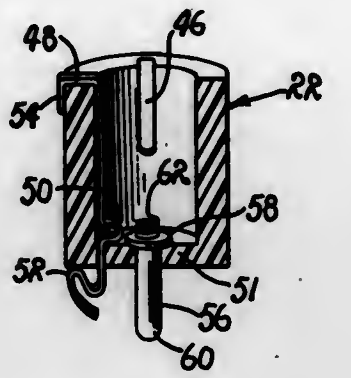
Edward Miles Briggs; William Edgar, and Rodgers Eugene Rimmer, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.
Filed June 29, 1971, Ser. No. 157,917
Int. Cl. H01r *13/44*
U.S. Cl. 339—42 **9 Claims**



An electrical connector designed for engagement and disengagement under water at very great depths with high voltage and amperage capacity. The connector incorporates a dummy piston to seal the female electrical contact, which is displaced by the male pin. Sealing means and hydrostatically compensated dielectrical oil supply means are disclosed.

3,729,700
A UNIVERSAL FEMALE RECEIVER FOR MINIATURE LAMP BASES

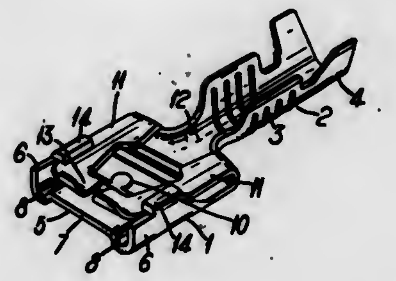
Wallace F. Johnson, 7560-A North Charles, and William H. Tilson, 1287 West Shaw, both of Fresno, Calif.
Division of Ser. No. 763,148, Sept. 27, 1968, Pat. No. 3,576,990. This application Oct. 26, 1970, Ser. No. 84,241
Int. Cl. H01r *13/12*
U.S. Cl. 339—59 L **1 Claim**



A universal female receiver having a flexible body and including a slotted internal surface. The receiver thus is adapted to receive miniature lamp bases without regard to their configuration.

3,729,701
LONGITUDINAL TOP SPRING RECEPTACLE

Philip Sydney Smith, Bideford, England, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 1, 1971, Ser. No. 177,027
Claims priority, application Great Britain, Oct. 3, 1970, 47,105/70
Int. Cl. H01r *15/12*
U.S. Cl. 339—223 R **4 Claims**

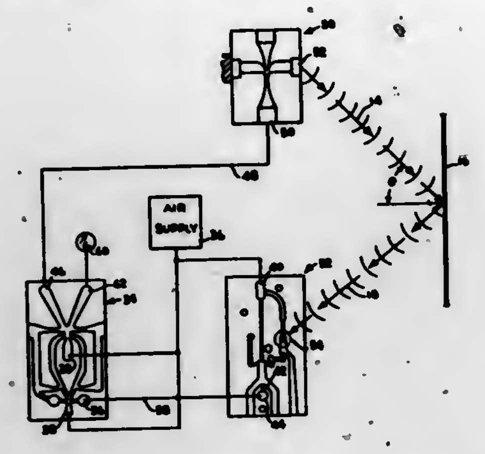


An electrical tab receptacle has a channel-shaped receptacle portion having spring arms extending from one end of the base of the channel and overlying the base, the arms being locked against outward movement by engagement with ears formed on the free edge of the channel sides.

3,729,702
ACOUSTIC SENSING DEVICE

Basil B. Beeken, New Haven, and Robert F. O'Keefe, Trumbell, both of Conn., assignors to Automatic Switch Co., Florham Park, N.J.
Filed Dec. 21, 1970, Ser. No. 100,183
Int. Cl. G01s *9/68*
U.S. Cl. 340—1 R **4 Claims**

A sensing device having a high frequency sonic wave source that generates an acoustic beam is supplied by a fluid source at above ambient pressure serially connected through a normally open fluidic switch connected in the circuit as an OR gate. The sonic wave generator is disposed to direct an acoustic beam toward a target where it is reflected towards the control input of an acoustically sensitive fluidic receiver whose output is connected to the control input of the fluidic switch. The latter is modulated by the output of the receiver which is responsive to the acoustic beam in such a way that the fluidic switch is changed to a flow inhibiting condition by the receiver when the reflected acoustic beam is present and to a flow passing condition by the receiver when the reflected acoustic beam is absent. The sonic wave generator is thereby maintained in an oscillatory mode in an on-off sequence such as an equal wave multivibrator. The period of the multivibrator in the sensing device is dependent on two factors: (1) the time constant of the fluidic circuit and (2) the time of propagation of the sound from the generator to the acoustically sensitive fluidic receiver. The former is a constant which can be determined for each circuit and the latter is dependent on variable conditions external to the fluidic circuit. This permits measurement of dependent variable conditions of the system, through which the acoustic beam passes, viz. distance that the acoustic beam travels as well as temperature, density and composition of the fluid medium through which the acoustic beam travels.



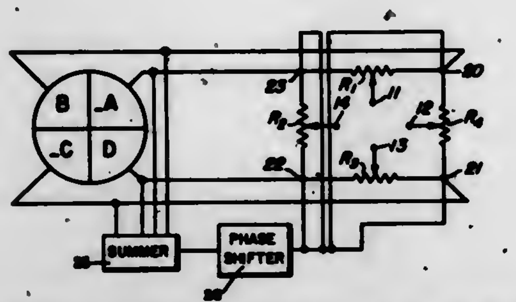
3,729,703
SUM DIFFERENCE TRANSDUCER SHADING

William J. Mueller, Portsmouth, and Frank W. Cuomo, East Providence, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 27, 1966, Ser. No. 523,459

Int. Cl. G01s *3/80*

U.S. Cl. 340—6 R **5 Claims**



A torpedo homing system providing wide angle steering information from a directional transducer sum and difference signals. A transducer having columns of pick-up elements arranged in quadrants to provide the sum and difference signals wherein a portion of the windings normally designated for the elements of each quadrant are wound on some of the elements in the adjacent quadrants to extend the region of correct torpedo steering.

3,729,704
EARTH HOLOGRAPHY WITH SPECIAL REFERENCE WAVE

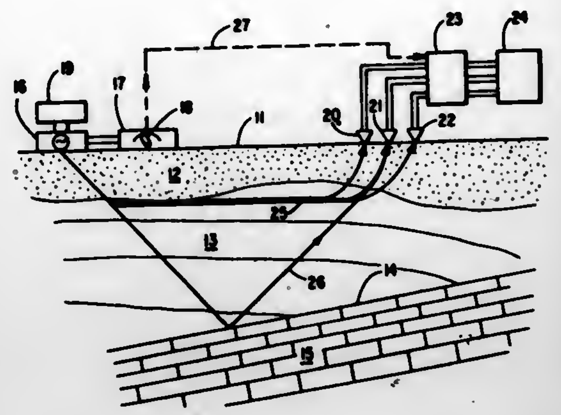
John B. Farr, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed July 2, 1971, Ser. No. 159,383

Int. Cl. G01v *1/34*

U.S. Cl. 340—15.5 DS **6 Claims**

In earth holography the reference wave is produced by generating a low amplitude cyclic vibration essentially at the earth's surface and receiving this under steady-state conditions at the various geophones in the seismic spread. The



resultant signal is recorded and its square wave fundamental component used in determining the reference wave employed in making the ultimate hologram.

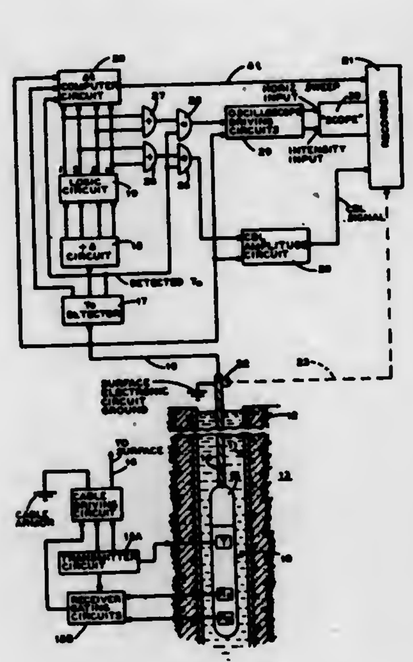
3,729,705
METHODS AND APPARATUS FOR ACOUSTIC LOGGING IN CASED WELL BORES

Victor E. Grijalva, El Marquez, Venezuela, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,695

Int. Cl. G01v *1/16*

U.S. Cl. 340—18 AC **8 Claims**



In accordance with illustrative embodiments of the present invention, techniques are disclosed for producing well logging information which is especially suitable for the evaluation of cased well bores. More particularly, a well logging tool has two acoustic receivers spaced apart from a repetitively energized acoustic transmitter. The amplitude of a selected portion of each electrical signal produced by the receiver nearest the transmitter in response to the emitted energy is measured to produce a log of the bonding of the casing to the cement surrounding the casing. The electrical signals produced by the receiver farthest from the transmitter are used to produce a variable density log which can be used in conjunction with the cement bond log to evaluate the bonding of the cement to both the casing and the formations which surround the cement.

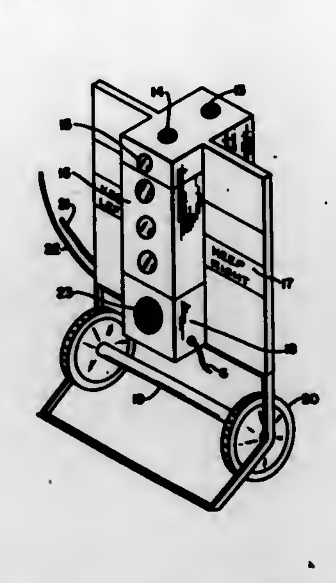
3,729,706
PORTABLE TRAFFIC CONTROL SYSTEM WITH TELEVISION MONITORING

George P. Hein, Rt. 1, Box 395H, Eureka, Calif.

Filed Oct. 15, 1970, Ser. No. 80,876

Int. Cl. G08g *1/095*

U.S. Cl. 340—31 R **1 Claim**



A portable, electronic, vehicular traffic control system consisting of a central control console, telemetry links and numerous, remote flagging units. The remote flagging units are located at the traffic thresholds to a restricted zone and relay traffic entrance orders from the central control console thereby allowing the remote control of the ingress and egress of vehicles into that zone. The remote flagging units contain remotely operated traffic signal lights, a communications system, mechanical and electrical traffic passage sensors and a closed circuit television camera. The system is primarily adapted for the control of vehicular traffic within a control zone where portions are visually obscured.

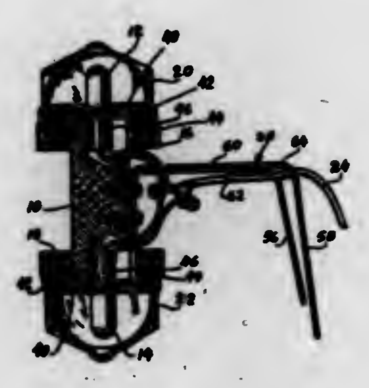
3,729,707
INTERMITTENTLY FLASHING WARNING LIGHT

Salvatore Gaetano, 95-26 78th Street, Ozone Park, N.Y.

Filed Dec. 28, 1971, Ser. No. 212,925

Int. Cl. B60q *1/52*

U.S. Cl. 340—81 R **1 Claim**



An intermittently flashing warning light for motor vehicles having a light-transmitting housing and a window mounting bracket connected to said housing for mounting on the outside of the vehicle, whereby warning light signals are intermittently emitted adjacent and above the roof of the motor vehicle and the vehicle is intermittently illuminated when the device is in operation.

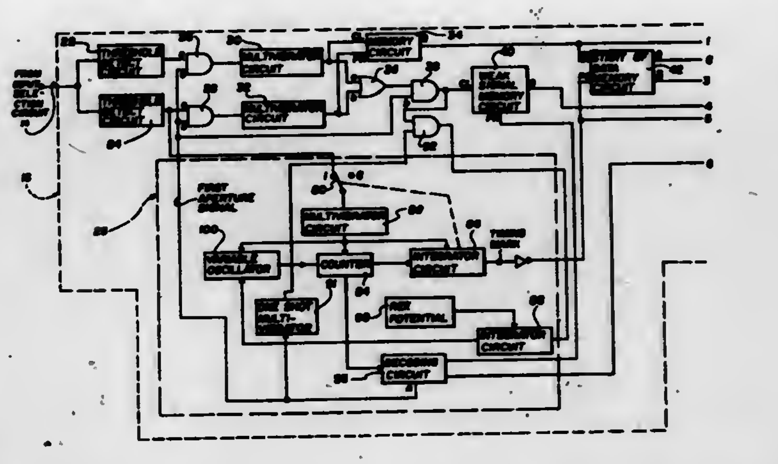
3,729,708
ERROR DETECTING AND CORRECTING APPARATUS FOR USE IN A SYSTEM WHEREIN PHASE ENCODED BINARY INFORMATION IS RECORDED ON A PLURAL TRACK

Allen J. Welfer, La Jolla, and Edward Cooper, San Diego, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,865

Int. Cl. G06f *11/10;* **G06k** *5/04*

U.S. Cl. 340—146.1 F **2 Claims**



In apparatus for decoding a byte of phase encoded binary information having a plurality of information bits and one parity check bit for the information bits and wherein each such bit is recorded in a selected one of a plurality of tracks on a suitable information storage medium such as a magnetic tape, circuit means is provided for detecting parity errors in the information bits of each byte and for correcting a single missing information bit. Further, if more than one bit within a single byte of information is missing, the circuit means provide at the output a signal or manifestation indicative of such multiple error.

3,729,709
CONTROL AND IDENTIFICATION DEVICE

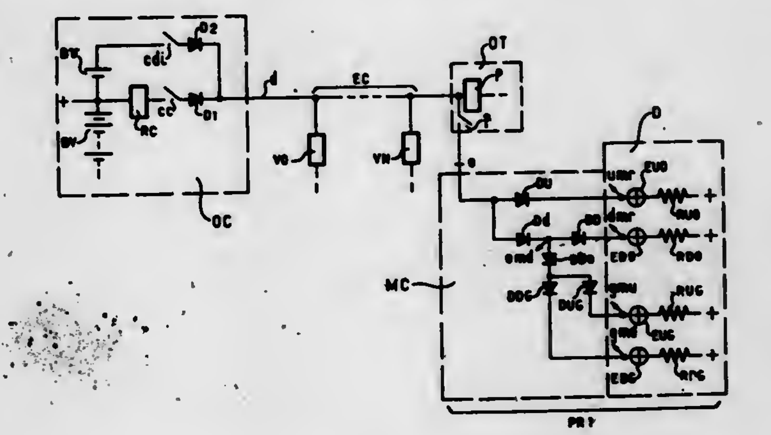
Rene Augris, Versailles, and Jacques Beyer, Saint-Cyr-l'Ecole, both of France, assignors to Compagnie Industrielle des Telecommunications cit-Alcatel, Paris, France

Filed June 16, 1971, Ser. No. 153,682

Claims priority, application France, June 16, 1970, 7022110

Int. Cl. H04q *9/06*

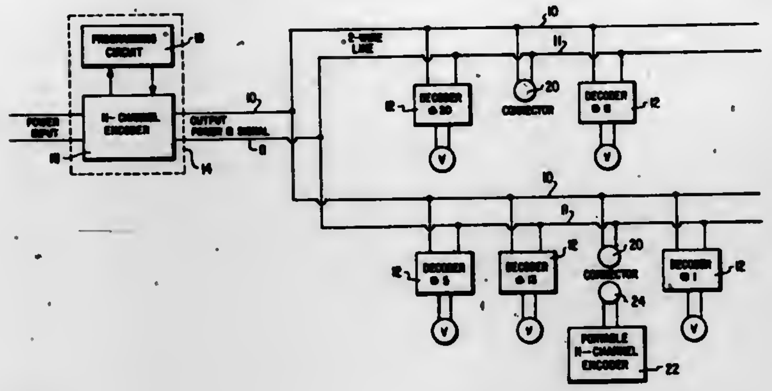
U.S. Cl. 340—169 **11 Claims**



A control member and identification device, especially for telecommunications exchanges, involves two associated power sources and control circuits, arranged in a parallel manner, successively or simultaneously sending, over a common circuit, different control currents so as to act selectively upon the members.

3,729,710
FREQUENCY SELECTIVE REMOTE CONTROL SYSTEM

Russell Sherwin, Sunnyvale, Calif., assignor to Western Microwave Laboratories, Inc., Los Gatos, Calif.
Filed Dec. 28, 1971, Ser. No. 213,001
Int. Cl. H04q *9/00, 11/04*
U.S. Cl. 340—171 R **18 Claims**

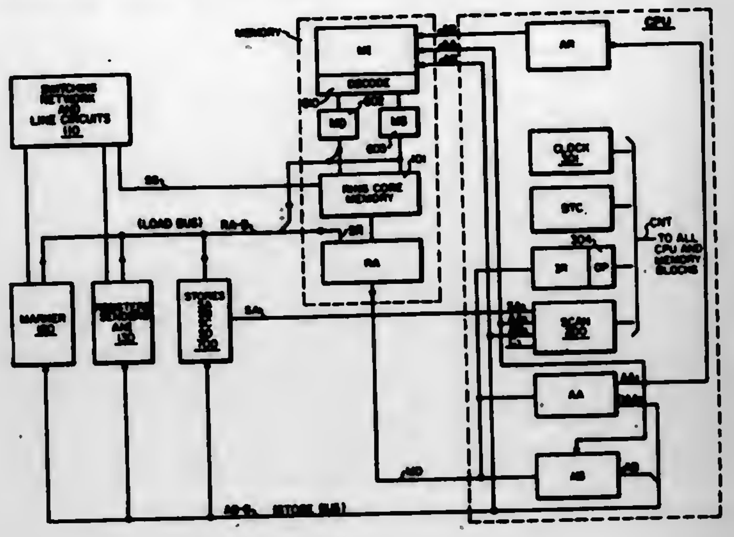


A system for selectively controlling the operation of a plurality of devices, e.g., the electrically operable water valves for an irrigation system, which are coupled across a two-wire power line. Each of the devices is provided with a frequency responsive circuit or decoder which responds to a signal of only a single frequency to connect the device across the line. The control of the decoders is provided by the output signal of an N-channel encoder which, although it can generate only a single frequency at a time, provides a sequence of the selected frequencies needed to operate selected devices in time multiplex. By providing each of the decoders with a capacitive circuit which has a fast charge-slow discharge characteristic in response to a signal of the associated predetermined frequency, and by rapid time sequencing of the signals produced by the fixed encoder, it is possible to simultaneously operate any number of the devices in a random fashion. To provide local selective control of any one of the devices, the system also includes a portable encoder which can selectively produce a signal of any one of the predetermined frequencies necessary to operate a device. When energized, the portable encoder also provides a high frequency output signal which disables the fixed encoder. Preferably, in order that the system be simple and as inexpensive as possible, output signals from the encoders are transmitted to the decoders and the pilot frequency output of the portable encoder is transmitted to the fixed encoder by superimposing the output signal from the encoders on the power line signal. To achieve this, plug-in connections are provided for the portable encoder at spaced locations along the power line.

3,729,711
SHIFT APPARATUS FOR SMALL COMPUTER

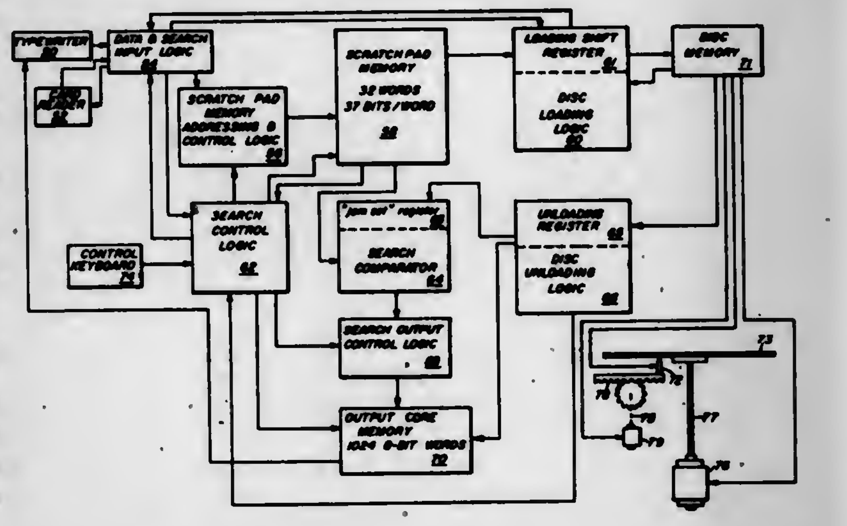
James H. Foster, Jasper, Ontario, and John Peter Dufton, Brockville, Ontario, both of Canada, assignors to Automatic Electric Laboratories, Inc., Northlake, Ill.
Filed Dec. 29, 1970, Ser. No. 102,462
Int. Cl. G06f *7/00*
U.S. Cl. 340—172.5 **2 Claims**

Store registers for temporary memory comprise flip-flops with input gating connections to a store bus and output gating connections via storage readout circuits to a load bus. Each store register has an input control gate with address connections enabled during execution of an instruction for a STORE operation with its address as the operand to store data therein from the store bus; and address connections to its individual storage readout circuit to load data from it via the load bus during execution of a LOAD instruction with its address as operand. One of the store registers SA is provided with two extra storage readout circuits for shift left and shift right functions, each having its own individual address, so that data which has been stored into store register SA may be loaded, shifted left or right during execution of a LOAD instruction with the operand address of the storage readout circuit for that function.



3,729,712
INFORMATION STORAGE AND RETRIEVAL SYSTEM

David M. Glassman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 26, 1971, Ser. No. 119,288
Int. Cl. G06f *15/40*
U.S. Cl. 340—172.5 **38 Claims**


TYPEWRITER 30
DATA & SEARCH INPUT LOGIC 34
CARD READER 32
SCRATCH PAD MEMORY ADDRESSING & CONTROL LOGIC
SCRATCH PAD MEMORY 32 WORDS 37 BITS/WORD
LOADING SHIFT REGISTER
DISC LOADING LOGIC
DISC MEMORY 71
CONTROL KEYBOARD
SEARCH CONTROL LOGIC
SEARCH COMPARATOR
UNLOADING REGISTER
DISC UNLOADING LOGIC
SEARCH OUTPUT CONTROL LOGIC
OUTPUT CORE MEMORY 1024 8-BIT WORDS

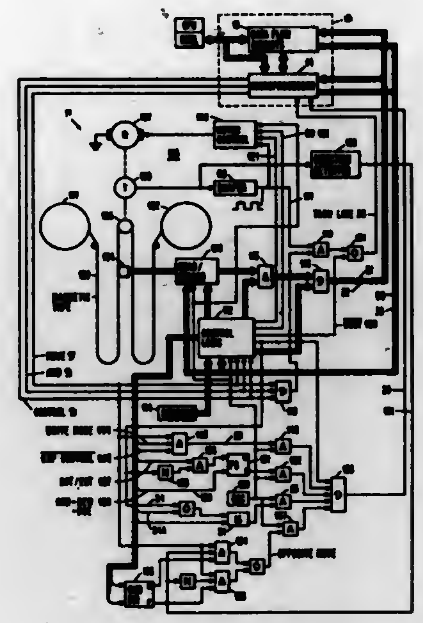
An information storage and retrieval apparatus, using a magnetic disc and a scratch-pad memory which has the capability of storing and retrieving words of variable length, which scratch-pad memory utilizes link bits so as to link together lines in the scratch-pad memory to make longer words or phrases.

3,729,713
DATA PROCESSING PERIPHERAL SUBSYSTEMS

John W. Irwin, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 4, 1971, Ser. No. 168,937
Int. Cl. G06f *11/06, 11/12*
U.S. Cl. 340—172.5 **24 Claims**

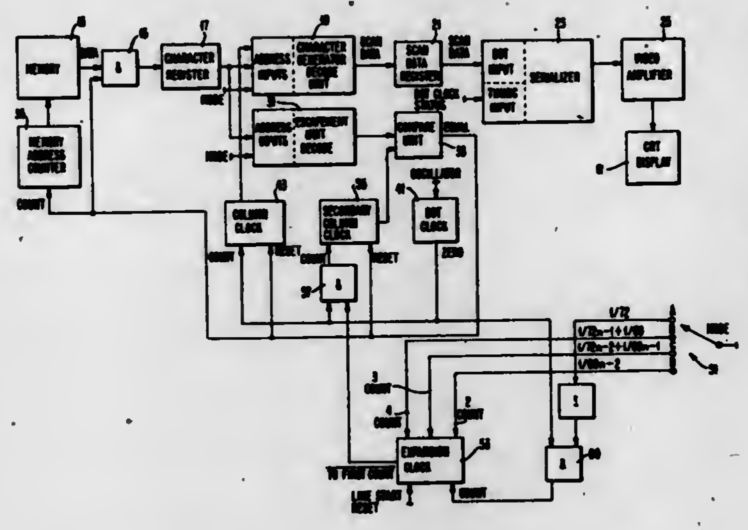
Improved peripheral I/O devices, such as magnetic tape units and I/O controllers, are provided by selectively gating operational state indicating signals over multiplexed lines to an I/O controlling unit for continuously indicating intermediate operational states. The I/O controller, which may be a microprogrammed controller, responds to the intermediate

state indications for monitoring and ensuring the intermediate operational states are properly maintained. Upon termination of the intermediate operational state, the next status of the I/O device is sensed. Supplying intermediate operational state conditions enables the I/O controller to sense when malfunctions have occurred which prevent the device from informing the I/O controller that such malfunctions have, in fact, occurred.



3,729,714
PROPORTIONAL SPACE CHARACTER DISPLAY INCLUDING UNIFORM CHARACTER EXPANSION

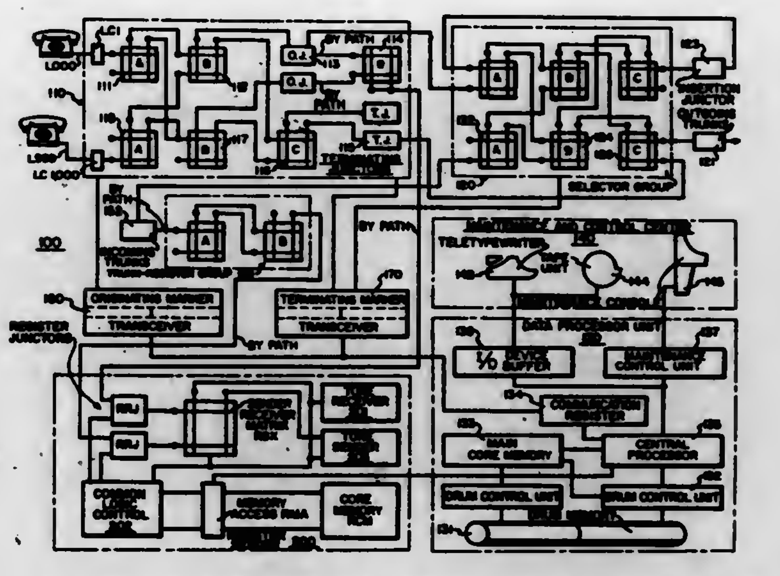
Roderick S. Heard, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 23, 1971, Ser. No. 155,982
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **4 Claims**



A system for uniformally expanding a proportionally spaced character display in order to properly align the smallest characters of the character set without affecting the proportional relationship of the characters in the character set. An extra vertical scan line is added to the displayed characters at an escapement increment determined by the character of the character set requiring the greatest proportion of scan line expansion per character width in order to achieve proper character definition. Those characters requiring an additional unit of escapement to be properly defined utilize the added vertical scan lines and excess added vertical scan lines are distributed in the "white space" between characters. The added display columns have the same affect as increasing the number of scans per unit of character escapement.

3,729,715
DIGITAL PROCESSING SYSTEM

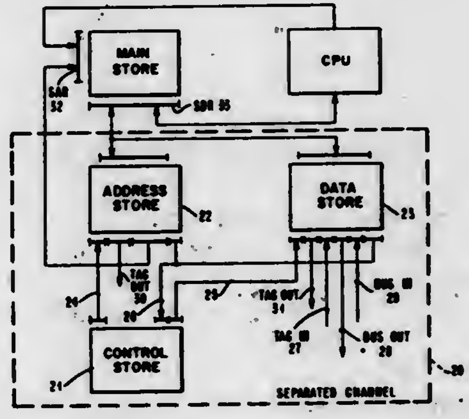
Charles Kenneth Buedel, Wood Dale, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed May 3, 1971, Ser. No. 139,480
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **4 Claims**



A register arrangement in a data processing system for controlling a telephone communication switching system includes a memory which is accessible on a time division multiplex basis to store call processing information and which is also accessible by a program-controlled computer processor on a random-access basis to perform processing functions, such as translation of dial digits to equipment location information. The memory can also be accessed on a random-access basis by a maintenance subsystem. Memory access logic circuits arrange and store information in the memory in the same manner in which information is stored in the local storage facilities in the data processor and the maintenance subsystem.

3,729,716
INPUT/OUTPUT CHANNEL

Jeganandaraj A. Arulpragasam, Redondo Beach, Calif.; John F. Minshull, and Alan S. Murphy, both of Hampshire, England, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 12, 1971, Ser. No. 114,770
Claims priority, application Japan, Dec. 29, 1970, 45/121940; Great Britain, Feb. 13, 1970, 6,968/70
Int. Cl. G06f *3/00, 15/16*
U.S. Cl. 340—172.5 **11 Claims**



A multiplex input/output (I/O) channel in which channel functions are carried out by associative stores. Three associative stores are used, a control store, an address store and a data store. The data store acts as a data buffer store and also handles most of the interchange of control signals between the channel and the I/O control units. Tag-in I/O signals are used directly as keys in table look-up on interface response tables and initiate the appropriate response from the channel. The address store assemblies the main store address and is also responsible for some of the tag-out I/O signals. Subchannels are allotted only when they are needed. There are a limited number of subchannel areas and these are marked when they are allotted to control units. An extra marker identifies the subchannel currently in use. Any control unit can be allotted to any subchannel.

3,729,717
INFORMATION BUFFER FOR CONVERTING A RECEIVED SEQUENCE OF INFORMATION CHARACTERS

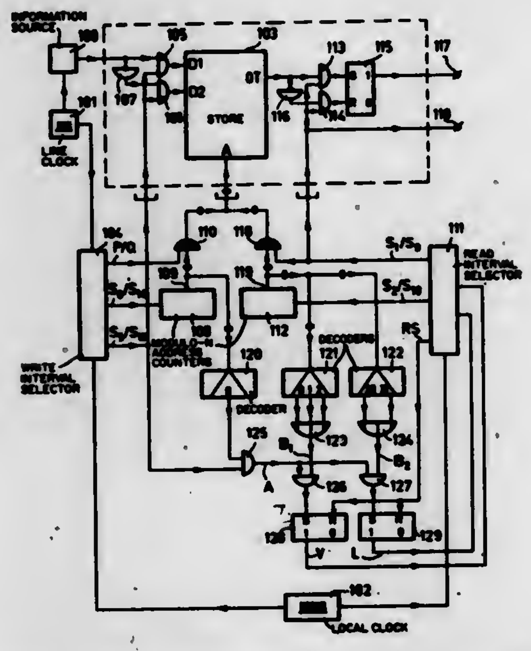
Oscar Bernardus Philomenus Rikkert de Koe, and Ludwig Desire Johan Eggermont, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 22, 1971, Ser. No. 165,013

Claims priority, application Netherlands, July 25, 1970, 7011048

Int. Cl. G08c *13/00*; **H04j** *3/06*

U.S. Cl. 340—172.5 **3 Claims**



An information buffer unit, comprising a random access store, for converting a received character sequence into a character sequence which is synchronous with an independent clock, for example, for use in digital telecommunication networks.

3,729,718
COMPUTER HAVING ASSOCIATIVE SEARCH APPARATUS

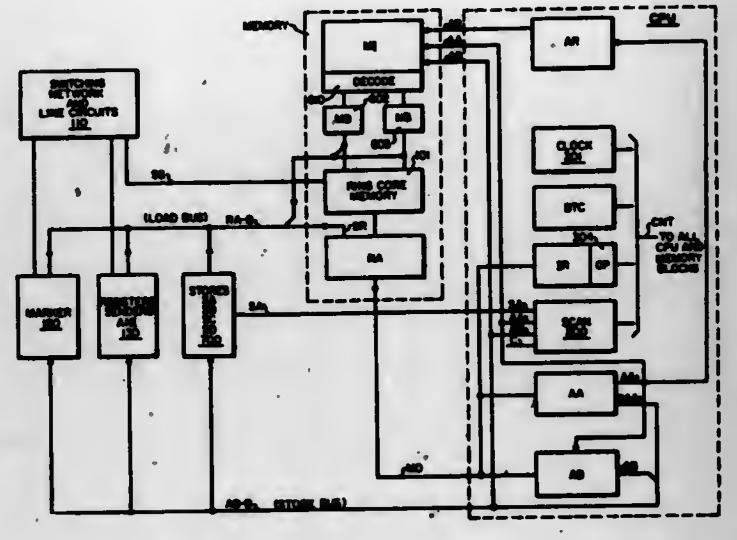
J. Peter Dufton, Brockville, and Beverley G. Hallman, Ottawa, Ontario, both of Canada, assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 29, 1970, Ser. No. 102,414

Int. Cl. G06f *7/00*

U.S. Cl. 340—172.5 **1 Claim**

The central processor includes logic circuits for a plurality of operation codes, one of which is a special SCAN code for associative searches to find the address of a word in which given data is stored. The apparatus includes two comparison circuits, one connected to compare the contents of a general register with the memory output data, and the other connected to compare the contents of an accumulator register with a constant. The given data is first placed in the general register and the start address for the search is placed in the accumulator register. Then reading a single program instruction word containing the SCAN operation code causes data words to be read and compared as the address in the accumulator register continues to advance until either the given data word is found or the address corresponding to the constant is reached.



During the search the instruction address register and the operation code instruction register are inhibited from changing so that all other program controlled processing is halted during the search.

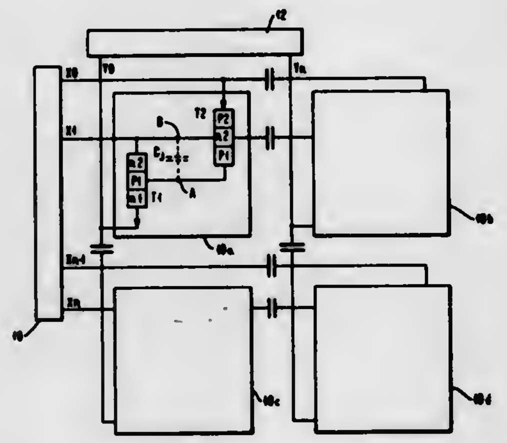
3,729,719
STORED CHARGE STORAGE CELL USING A NON LATCHING SCR TYPE DEVICE

Siegfried K. Wiedmann, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1970, Ser. No. 92,960

Int. Cl. G11c *11/24, 11/40*

U.S. Cl. 340—173 CA **7 Claims**



This specification discloses a stored charge storage cell for monolithic memories. The cell comprises a device akin to a silicon-controlled rectifier and can be schematically illustrated as an NPN and a PNP transistor connected together in what is commonly called a hook circuit. A fixed potential is applied to the semiconductor zone of the device not commonly used as a terminal for a silicon-controlled rectifier so that the cell is prevented from latching as a silicon-controlled rectifier or hook circuit would normally latch. The charge on the capacitance of collector-base PN junctions of the NPN and PNP transistors is then controlled to store data in the cell.

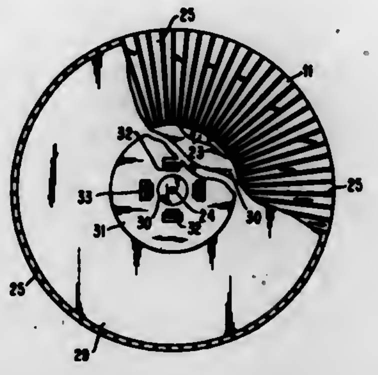
3,729,720
TURNTABLE FOR RIGIDLY MOUNTING THIN FLEXIBLE MAGNETIC DISCS

Richard H. Darling, Boca Raton, and Ludwig R. Siegl, Delray Beach, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1971, Ser. No. 154,330

Int. Cl. G11b *17/00*

U.S. Cl. 340—174.1 E **8 Claims**



A disc recorder in which the recording medium is carried on a pliant circular sheet which is held in intimate contact, in the active recording area, with a rotating turntable by a pressure differential established by the configuration of a rotating turntable and the operatively positioned pliant disc.

3,729,721
CIRCUIT ARRANGEMENT FOR READING AND WRITING IN A BIPOLAR SEMICONDUCTOR MEMORY

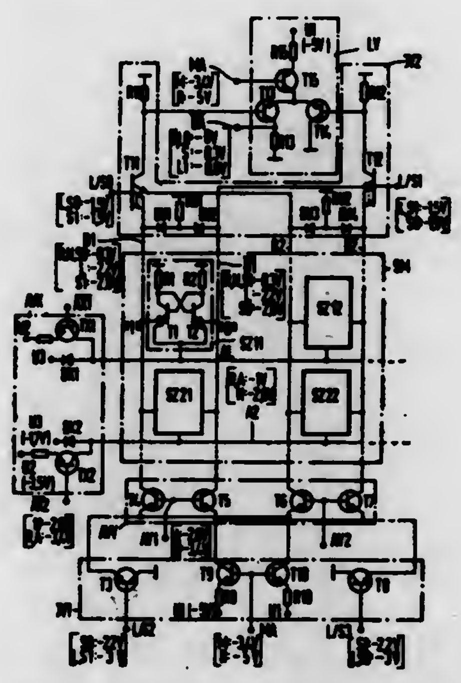
Hans Glock, Odelzhausen, and Herbert Ernst, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 18, 1971, Ser. No. 172,821

Claims priority, application Germany, Sept. 23, 1970, P 20 46 929.8

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 FF **9 Claims**



A circuit arrangement for reading and writing in a bipolar semiconductor memory whose memory cells are arranged in a memory matrix and comprise two multi-emitter transistors connected by way of an emitter of each to a selective conductor and by way of a second emitter of each to bit conductors and whose collectors are in each case connected with the base of the other multi-emitter transistor and a collector resistance, wherein the collector resistances of the memory cells of a matrix are jointly collected to a fixed voltage, a first data amplifier includes a pair of transistors arranged for matrix selection between the bit conductors and a first operating voltage by which in a nonselected condition the bit conductors are switched to a currentless condition, and an X-address amplifier including transistor switches which are connected to the selective conductors which, in the rest condition of the memory matrix, the voltage at the emitters of the multi-emitter transistors connected to the selective conductors is reduced to such an extent that only a residual current flows through the address amplifier.

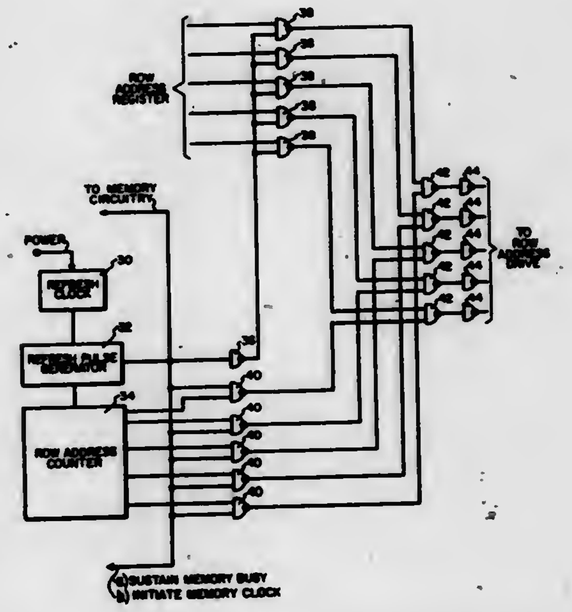
3,729,722
DYNAMIC MODE INTEGRATED CIRCUIT MEMORY WITH SELF-INITIATING REFRESH MEANS

Joseph Patrick Shuba, Naperville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 17, 1971, Ser. No. 181,443

Int. Cl. G11c *7/00*

U.S. Cl. 340—173 R **8 Claims**



An integrated circuit memory operated in the dynamic mode is provided with a clock controlled refresh pulse generator, address counter and gating arrangement to periodically refresh the contents of each memory cell.

3,729,723
MEMORY CIRCUIT

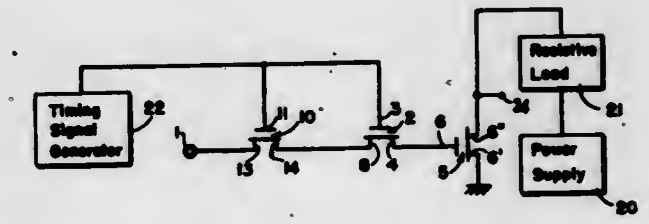
Hirohiko Yamamoto, Minato-ku, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 1, 1971, Ser. No. 194,680

Claims priority, application Japan, Nov. 5, 1970, 45/96829

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **3 Claims**

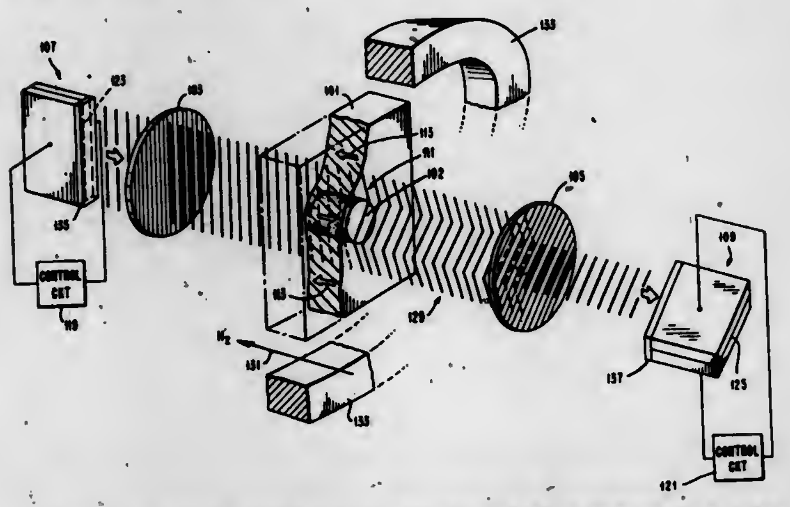


A memory circuit, which is preferably of integrated circuit construction, includes three insulated gate field effect transistors. Data is stored by the capacitance between the drain and source of the first transistor. Information inputs are supplied to an input terminal and then through the drain and source electrodes of the second and third transistors to the gate electrode of the first transistor. The second and third transistors are conductive only when a gate signal, which preferably is a pulsed timing signal, is applied to their gate electrodes. This circuit provides added protection against loss of information due to spurious signals reaching the input terminal.

3,729,724
HIGH-DENSITY MAGNETO-OPTIC READOUT APPARATUS

William E. Ahearn; George Stanley Almasi, both of Purdy Station, and Eugene Ronald Genovese, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 8, 1971, Ser. No. 151,047
Int. Cl. G11c *11/14, 11/42*
U.S. Cl. 340—174 YC **6 Claims**

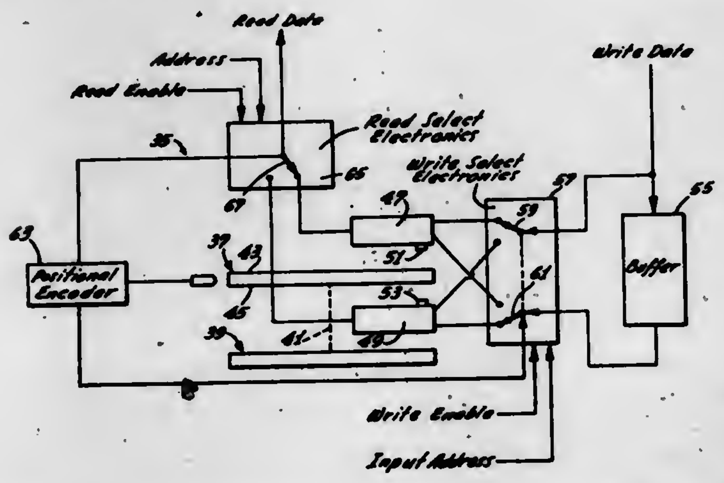


The presence and absence of cylindrical domains in a magnetic material is determined by using either the Faraday or Kerr effect in conjunction with two semiconductor lasers. When both lasers are biased just below their lasing thresholds, the magnetic material, in conjunction with the cylindrical domains, functions as a Q-switch wherein the cylindrical domains establish an optical cavity when they enter the optical path between the two lasers. When one laser is biased just below its lasing threshold and the other is biased in its lasing mode, the apparatus functions in a source-detector mode. The apparatus operating in either mode is very adaptable for multicell or array implementation.

3,729,725
REDUNDANT RECORDATION TO REDUCE ACCESS TIME

Joseph M. Denney, Palos Verdes Estates, and Ronald B. Selden, Canoga Park, both of Calif., assignors to Digital Development Corporation, San Diego, Calif.

Filed Sept. 13, 1971, Ser. No. 179,911
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 G **12 Claims**

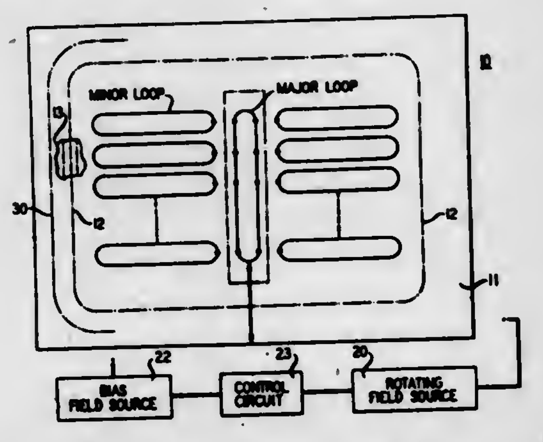


A memory including first and second regions along which data can be stored and first and second read/write heads. The read/write heads write information on the first and second regions, respectively. The heads are controlled so that they write the same information on both of the regions with the information written on the second region being out of phase with the information written on the first region. Each of the heads reads only the information which it recorded. By delaying the initiation of the write operation on the second track for one-half a revolution of the regions, access time equal to a two head per track system is obtained.

3,729,726
SINGLE WALL DOMAIN ARRANGEMENT

Andrew Henry Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 22, 1972, Ser. No. 228,199
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **11 Claims**

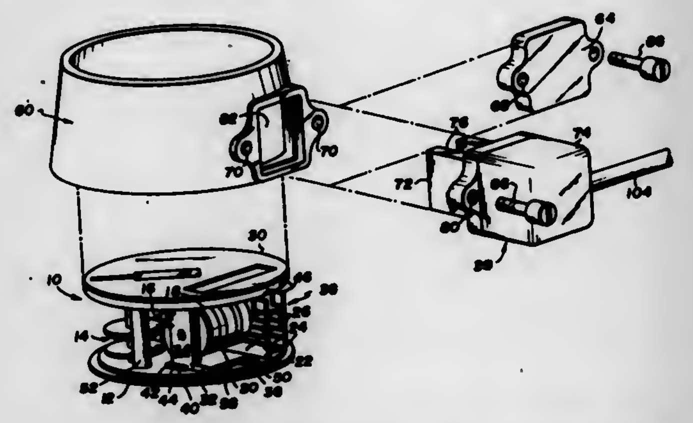


Spurious single wall domains, periodically introduced into the vicinity of an operating single wall domain circuit particularly during high speed operation, are eliminated by a propagation annulus encompassing the circuit. The annular is operative to move domains in a direction outwardly across its axis.

3,729,727
APPARATUS FOR REMOTE TELEMETERING

Robert Leonard Young, Florence, Ky., and Daniel Arron Seltzer, Cincinnati, Ohio, assignors to Gamon—Calmet Industries, Inc., Florence, Ky.

Filed Sept. 10, 1971, Ser. No. 179,335
Int. Cl. G08c *19/00*
U.S. Cl. 340—188 **20 Claims**

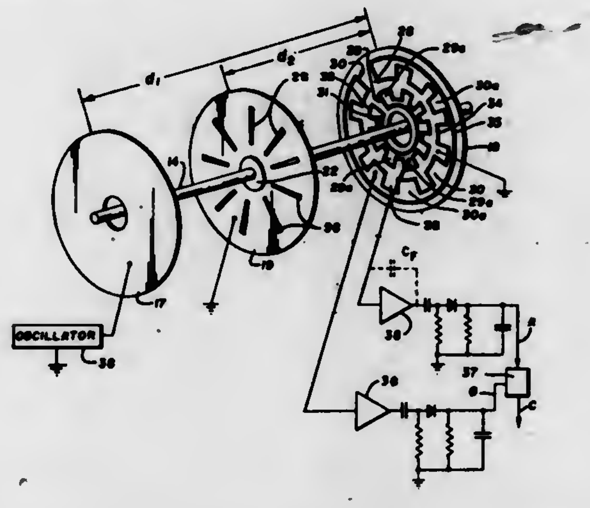


A system is disclosed for remotely providing information relating to the flow of fluid through a fluid meter with the system comprising: a register positioned on the fluid meter, with the register including an odometer sub-assembly comprising odometer wheels responsive to the flow of fluid through the meter for providing indication of such fluid flow and printed circuit boards cooperating with odometer wheels for providing electrical signals representative of fluid flow with the printed circuit boards having exposed contact pad areas thereon; the system further including a register cover enclosing the register with the register cover including an access opening for exposing the contact pad areas of the printed circuit boards; and the system further including a connector removably secured to the register cover with the connector including a printed circuit board engaging portion passing through the access opening of the register cover into removable engagement with the printed circuit boards and the connector further including an enclosure removably secured to the printed circuit board engaging portion of the connector for receiving the ends of cables utilized to transmit the electrical signals to a remote location. To facilitate electrical connection, the printed circuit board engaging portion of the connector carries a plurality of pins one end of which engages a respective contact pad area on the printed circuit boards within the register and the other ends of which pass into the enclosure of the connector wherein there is disposed an apertured printed circuit board which facilitates the electrical connection of the pins to the ends of the cabling. The odometer sub-assembly is a modular component removable from the register thereby easily permitting the replacement of conventional odometer subassemblies with odometer sub-assemblies having printed circuit boards associated therewith when it is desired to provide a register with remote telemetering capabilities. In like fashion, the access opening provided in the register cover is normally sealed by a removable plate which is removed to permit the insertion of the aforementioned printed circuit board engaging portion of the connector when converting to remote telemetering operation. A remotely located receptacle is electrically connected to the other end of the cabling and provides an output point from which electrical information representative of fluid flow through the meter can be taken. The receptacle is housed in a novel structure readily facilitating removal, replacement and repair associated therewith.

3,729,728
CAPACITIVE SWITCHING DEVICE

Edward V. Hardway, Jr., Houston, Tex., assignor to Spearhead, Inc., Houston, Tex.

Filed May 10, 1971, Ser. No. 141,696
Int. Cl. G08c *19/00*
U.S. Cl. 340—200 **13 Claims**



A capacitive switching device including a driven element with at least one active, conductive driven sector connected to a source of alternating voltage, a receptor element with at least one active, conductive receptor sector and a conductive shield element with at least one open slot permitting capacitive coupling between said driven sector and said receptor sector when these are in alignment with said slot. The elements are aligned with respect to each other so that relative movement of the shield element with respect to the driven and receptor elements produces output electrical signals responsive to a switching pattern on the driven element, the receptor element or on both. The shield element is preferably grounded.

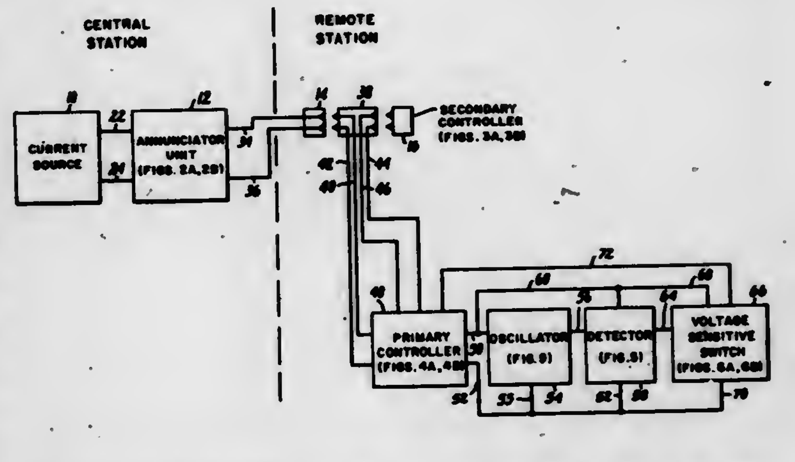
ERRATUM

For Class 340—220 see:
Patent No. 3,729,181

3,729,729
ANNUNCIATOR SYSTEM

Martin R. Geller, 318 East 19th Street, New York, N.Y., and David A. Goldman, Corton Heights Rd., Box 69, R.F.D. 1, Yorktown Heights, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,244
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 C **17 Claims**

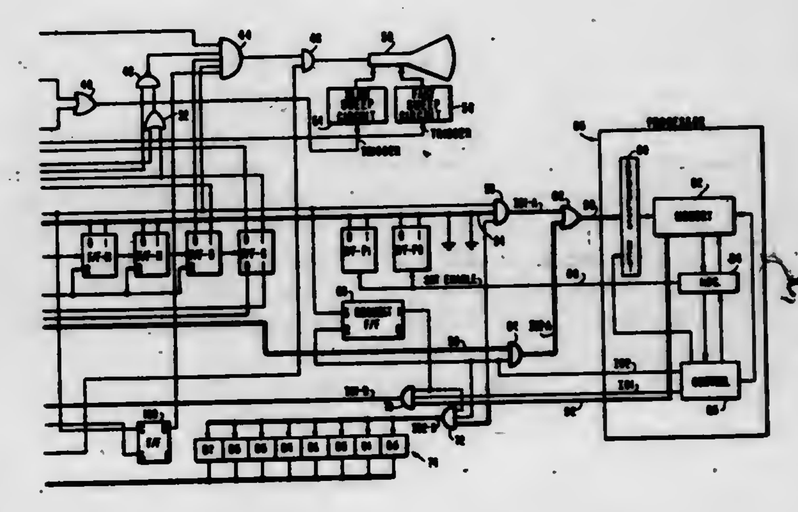


An annunciator system of the type having a central annunciating station and remote receptacles typically adapted for receipt of a plug-in manual controller, not requiring power for operation thereof, is improved by introduction of a controller adapted to monitor changing conditions. The introduced controller is a plug-in unit deriving all required operating power through the remote receptacle and at the same time providing system control inputs through the receptacle. The introduced controller may also have facility for receiving the manual controller to provide the annunciator system with plural inputs. units. In a preferred arrangement, the system is shown in hospital usage where it provides for the monitoring of a liquid level.

3,729,730
DISPLAY SYSTEM

Ernesto G. Sevilla, Herkimer, and Robert J. Titus, Sauquoit, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

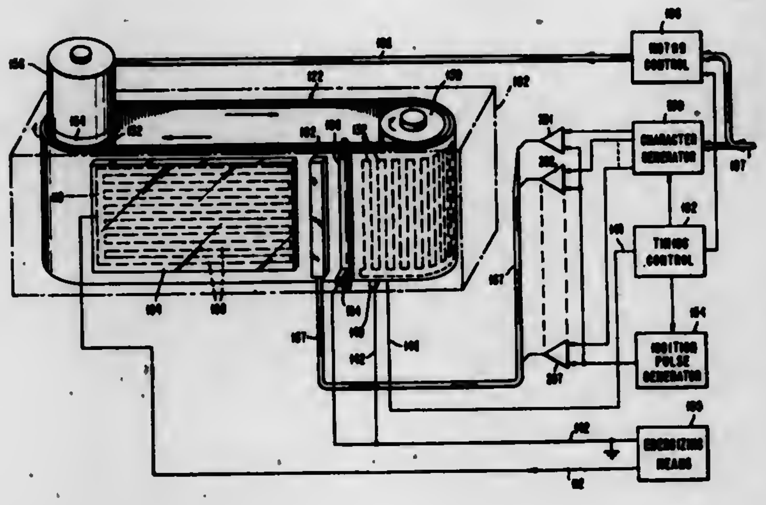
Filed April 14, 1971, Ser. No. 133,830
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 AD **119 Claims**



A display system of very low cost and whose character set is program alterable. A processor memory has two areas which control the display — a character buffer for representing the code of the character to be formed in each position of the display, and a dot pattern storage area which includes the dot patterns for all of the characters. Slow and fast sweeps across the face of a CRT occur in synchronism with a display system counter. During each cycle, a first address corresponding to the position of a character to be displayed is transmitted to the memory and a code representative of the character to be displayed is returned to the display system. This code is then combined with additional positional information derived from the counter to form a second address for transmission to the memory. The data word received back from the memory determines the locations of dots to be displayed in one line segment. The data word is shifted out of a shift register in synchronism with the fast sweep across the face of the CRT, each 1 bit in the data word causing the display of a dot. The character set can be altered under program control simply by changing the dot patterns in the second area of the memory. Because the character information is not hard-wired, maximum flexibility in the character set can be achieved. Provision is also made for selecting one of several character buffers and one of several character sets, both under program control.

3,729,731
MOVING GAS PANEL DISPLAY SYSTEM

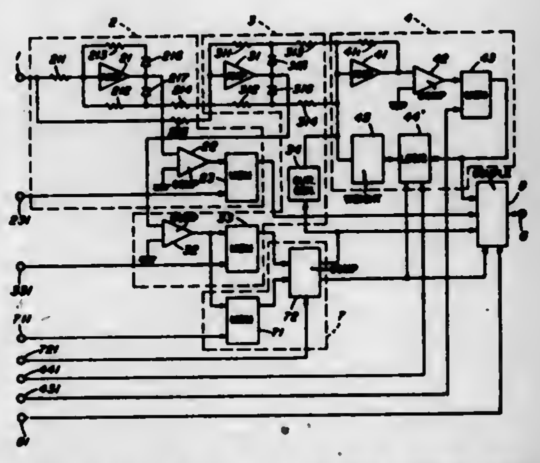
Karl L. Konnerth, and Conrad Lanza, both of Putnam Valley, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 23, 1971, Ser. No. 155,970
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 M **13 Claims**



A gas panel display system produces a moving display as a result of movement of at least one set of conductors. A first set of parallel conductors aligned parallel to the direction of motion of the display image is mounted behind a display window in a gas tight display housing which contains an ionizeable gas. A second perpendicular set of parallel conductors insulated from the ionizeable gas is mounted on a moving belt which carries the display image past the window. Information is written into the display by applying ignition pulses to a set of writing electrodes aligned along a line parallel to the conductors of the second set. The ignition pulses ionize the gas between the writing electrodes and the second conductors, thereby creating activated display points along the second conductors. The information written into the activated display points is made visible by applying a sustaining voltage between the conductor sets to sustain a glow discharge in the ionizeable gas at the activated points. An erase roller located just before the writing electrodes erases any remaining, previously written, information.

3,729,732
CASCADE-FEEDBACK ANALOG TO DIGITAL ENCODER WITH ERROR CORRECTION

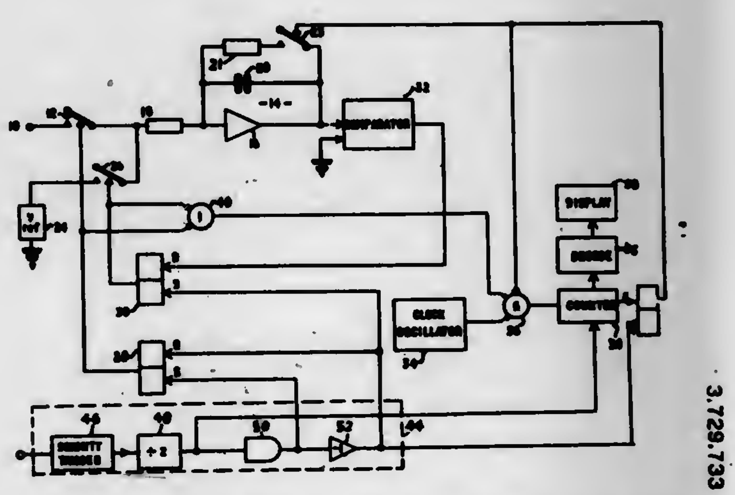
Kaoru Yano, Minato-ku, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan
Filed July 27, 1971, Ser. No. 166,639
Claims priority, application Japan, Jan. 29, 1971, 46/3398
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **3 Claims**



A coder for converting an input analog signal into a digital output signal containing first, second and other bit signals, includes a first coding circuit activated by the input analog signal to generate the output of the first coding circuit, a second coding circuit activated by the first bit signal to generate the second bit signal judged at a first time point, a feedback coding circuit energized by the output of the second coding circuit to generate the other bit signals; the first, second and other bit signal constituting the digital signal at an output terminal; the second and other bit signals subject to error due to the level of the output of the second coding circuit at the first time point; and a bit level comparison circuit comparing the second bit signal judged at the first time point and at a second time point succeeding the first time point for producing a comparison signal to correct the second and other bit signals, whereby the first bit signal and the corrected second and other bit signals after the second time point are included in the digital signal at the output terminal.

3,729,733
ANALOGUE TO DIGITAL CONVERTERS

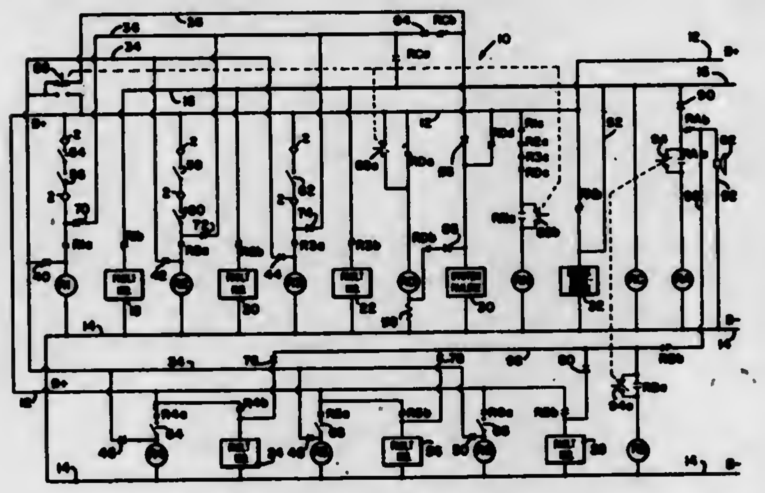
Howard Anthony Derey, Godalming, Surrey, England, assignor to The Solatron Electronic Group Limited, Farnborough, Hampshire, England
Filed Nov. 23, 1971, Ser. No. 201,553
Claims priority, application Great Britain, Nov. 24, 1970, 55,817/70
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 NT **7 Claims**



In an integrating analogue-to-digital converter, particularly a digital voltmeter, the input voltage is applied to an integrator for a sampling period equal to one period of the local line frequency (e.g., 50 Hz or 60 Hz). The integrator has a transfer function of the form 1/*pT* for a fixed period S just less than the minimum possible duration of the sampling period, and of the form 1/(1+*pT*) for the remainder dS of the sampling period. Thus D.C. voltages are integrated for a known fixed period, while normal mode interference at the local line frequency is integrated out.

3,729,734
FIRST FAULT ANNUNCIATOR SYSTEM

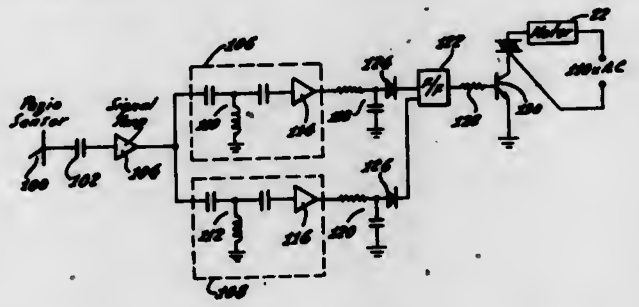
Rudyard William Kipling, Lennoxville, Quebec, Canada, assignor to Ingersoll-Rand Company, New York, N.Y.
Filed June 15, 1971, Ser. No. 153,329
Int. Cl. G08b *19/00*
U.S. Cl. 340—415 **6 Claims**



Fault occurrence displaying system, for use with machinery, which automatically signals and initially displays only a first-occurring of perhaps several machine faults which occasion machine shut-down. The system includes means for automatically signaling and displaying both system failure and proper system functioning as well as means automatically operative to hold a fault signal on until manually turned off and means to hold successive fault signals inoperative until the first-occurring fault signal is silenced (i.e., turned off).

3,729,735
REMOTE ULTRASONIC SENDING DEVICE FOR AIRCONDITIONER

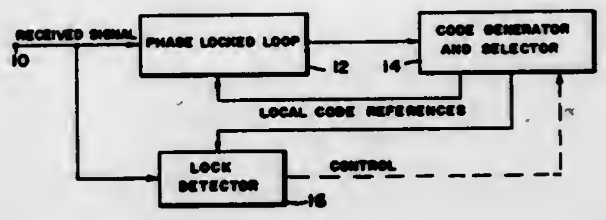
Ernest C. Dageford, Irvine, Calif., assignor to BEC Products, Inc., Davenport, Iowa
Filed June 24, 1971, Ser. No. 156,383
Int. Cl. G05d *23/00;* **G08b** *21/00*
U.S. Cl. 340—419 **12 Claims**



A remote sending device controlled by the opening or closing of a window to turn an air conditioning system on and off. The window actuator unit is an ultrasonic transmitter using a tuning fork and the ultrasonic transmitter may include either one tuning fork to provide a single frequency system or two tuning forks to provide a double frequency system which is fail safe. The receiving unit controls a motor switch to activate or deactivate the blower motor in an air conditioning unit so as to control the air conditioning to a given area.

3,729,736
CODE REGENERATIVE CLEAN-UP LOOP TRANSPONDER FOR A μ-TYPE RANGING SYSTEM

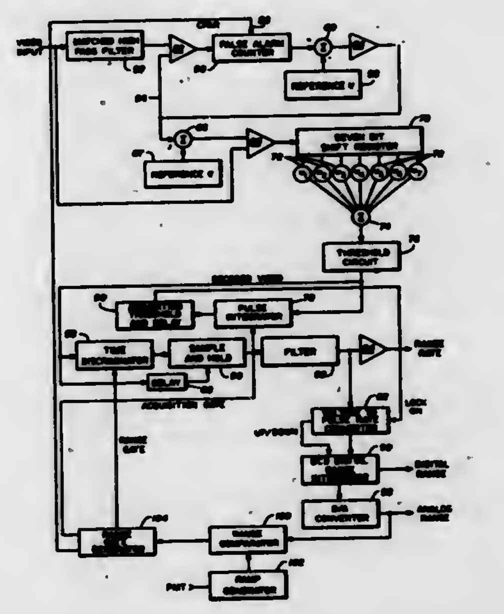
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and William J. Hurd, La Canada, Calif.
Filed Nov. 8, 1971, Ser. No. 196,399
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 R **10 Claims**



A loop transponder for regenerating the code of a μ-type ranging system is disclosed. It includes a phase locked loop, a code generator and a loop detector. The function of the phase locked loop is to provide phase lock between a received component w_k of the range signal and a replica $\hat{w}_k$ of the received component, provided by the code generator. The code generator also provides a replica of the next component $\hat{w}_{k+1}$. The loop detector responds to w_k, $\hat{w}_k$ and $\hat{w}_{k+1}$ to determine when the next component w_{k+1} is received and controls the code generator to supply $\hat{w}_{k+1}$ to the phase locked loop and to generate a replica $\hat{w}_{k+2}$ of the next component.

3,729,737
RANGE TRACKING SYSTEM FOR USE IN AN INDEPENDENT AIRCRAFT LANDING MONITOR

Edward F. Assam, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed July 15, 1970, Ser. No. 55,165
Int. Cl. G01s *9/18*
U.S. Cl. 343—7.3 **12 Claims**



A range tracker for an aircraft landing monitor system which includes a plurality of passive reflectors arranged adjacent an airport runway in a predetermined pseudorandom coded configuration. A radar system carried by an aircraft transmits pulsed radar signals which are reflected from the reflectors according to the predetermined pseudorandom code. Correlation circuitry onboard the aircraft detects the presence of the coded radar returns from the reflectors. A range tracking circuit is operable in response to reception of the coded radar returns from the reflectors to determine and display the range of the aircraft to touchdown on the runway.

3,729,738
SPECTRUM ANALYZERS

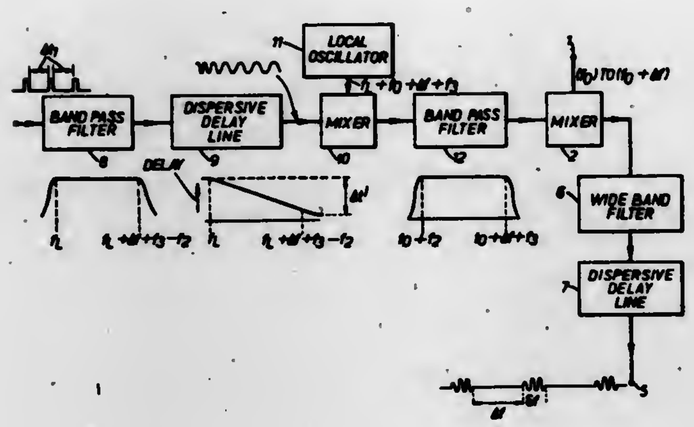
Malcolm Geoffrey Cross, Chelmsford, and Joseph Thomas Barrow Musson, Westcliff-on-Sea, both of England, assignors to The Marconi Company Limited, London, England

Filed Aug. 16, 1971, Ser. No. 172,054

Claims priority, application Great Britain, Sept. 4, 1970, 42,375/70

Int. Cl. G01r *23/16*

U.S. Cl. 343—5 SA **9 Claims**



A spectrum analyzer of the type where input signals to be analyzed are mixed with a repeatedly swept frequency signal so that output signals are provided which are time related to the frequency of the input signals. The repeatedly swept frequency signal is produced by applying a train of pulses to a dispersive delay via a bandpass filter having a characteristic such that the impulse spectrum of each of the pulses in the pulse train is reduced so as to match that of the dispersive delay.

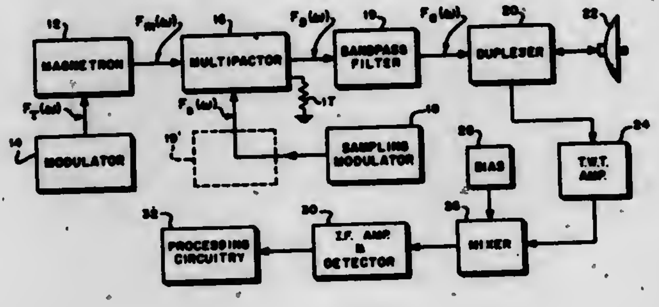
3,729,739
INSTANTANEOUS FREQUENCY DIVERSITY RADAR SYSTEM

Allen F. Beans, Ivyland; Alfred M. Eddowes, Doylestown; Richard P. Gagliardi, Philadelphia, and Edward E. Koos, Hatboro, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 28, 1966, Ser. No. 569,010

Int. Cl. G01s *9/02*

U.S. Cl. 343—17.1 R **9 Claims**



1. An apparatus for generating instantaneous frequency diversity signals comprising:

means providing pulse modulated signals; and

means sampling said signals at selected intervals for providing output signals of instantaneous frequency diversity.

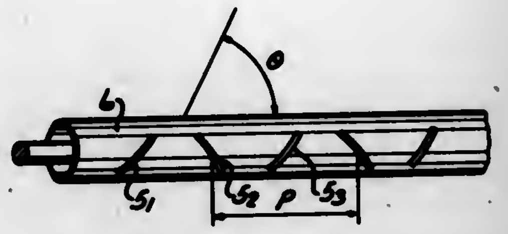
3,729,740
VEHICLE ANTENNA FOR VEHICULAR COMMUNICATION SYSTEM USING LEAKY COAXIAL CABLE

Tsuneo Nakahara; Hiroshi Kitani, and Kenichi Yoshida, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 20, 1971, Ser. No. 108,071

Int. Cl. H01q *13/10*

U.S. Cl. 343—713 **4 Claims**



A vehicle wireless communication system utilizing a leaky coaxial cable installed along the vehicle track and having an array of slots in its outer conductor. A coaxial type antenna is mounted aboard a vehicle traveling on the track. The outer conductor of the coaxial type antenna is provided with an array of slots in the axial direction which substantially coincides with the array of slots in the leaky coaxial cable with respect to slot structure and cycle of slot arrangement. A dielectric material is interposed between the inner and outer conductors of the antenna and is adjustable to equalize the wavelength contraction ratio of the antenna to that of the leaky coaxial cable.

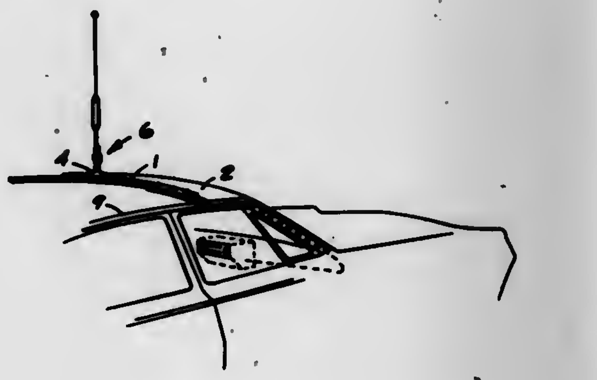
3,729,741
AUTOMOBILE ANTENNA SUPPORT

Oliver O. Otto, 2866 Tulare Avenue, Richmond, Calif.

Filed April 19, 1971, Ser. No. 135,322

Int. Cl. H01q *1/32*

U.S. Cl. 343—713 **2 Claims**



An arcuate strip of material provided with a threaded boss on which the base of the antenna can be secured; under each end of the strip is an adjustable clamping member the longitudinal slots of which are engageable by bolts extended through holes in the strip so as to adjust the clamps to the width of the roof of the automobile; claws on the ends of the clamps can be fitted over the drip molds on each side of the roof; the unit can be tightened by putting a perforated strip over the bolts at one end and then with a screw driver bear against the claw end of the strip to pull the opposite claw tightly under the mold and then by securing a remaining bolt fixing the unit firmly in position; on the under side of the arcuate strip there are a pair of spaced sponge wire cushions providing a groove inbetween for the lead wire from the antenna.

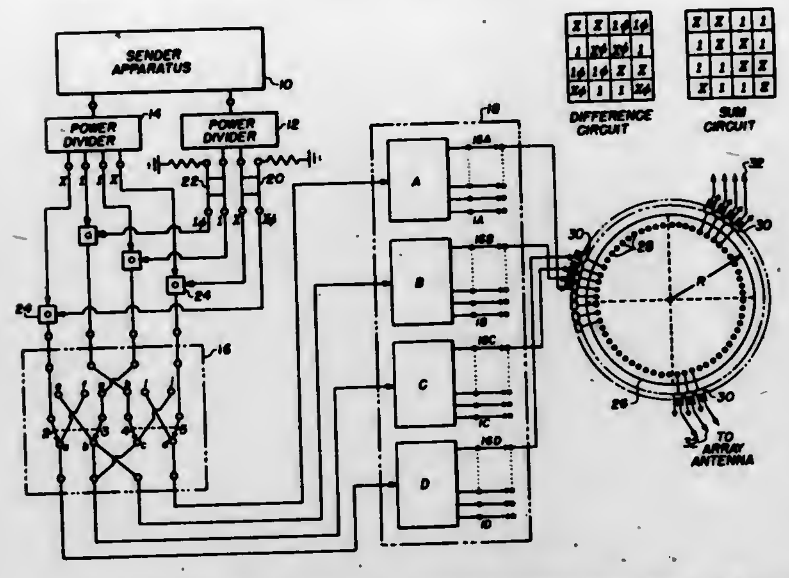
3,729,742
SIMULTANEOUS SUM AND DIFFERENCE PATTERN TECHNIQUE FOR CIRCULAR ARRAY ANTENNAS

Jerry E. Boyns, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 14, 1972, Ser. No. 280,627

Int. Cl. H01q *3/26*

U.S. Cl. 343—854 **6 Claims**



Apparatus for obtaining simultaneous sum and difference patterns with a circular-array antenna fed by an R-2R parallel-plate lens systems. The apparatus comprises sum and difference circuits which in combination with switching circuitry can provide a plurality of different combinations of amplitude taper to a multiple input/output port lens system to achieve 360° scan from an array antenna fed thereby. A sum power divider and a difference power divider are connected directly and through 180° hybrid couplers respectively, to one side of a DPDT, amplitude pass-around switch to provide selectively predetermined combinations of the outputs of the two power dividers. The resulting combinations are fed to the ports of the lens system in a conventional manner. The sum pattern is used for transmission, and both the sum and difference patterns are used on reception.

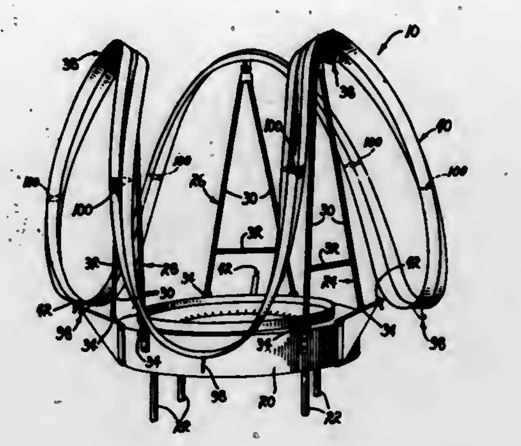
3,729,743
COLLAPSIBLE STRUCTURE FOR AN ANTENNA REFLECTOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Marc R. Trubert, Covina, Calif.

Filed Oct. 26, 1971, Ser. No. 192,141

Int. Cl. H01q *15/20*

U.S. Cl. 343—915 **20 Claims**

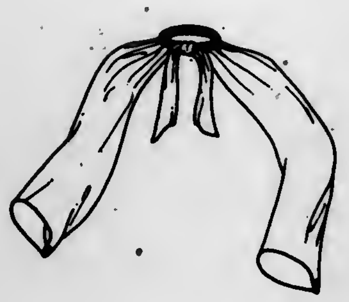


A collapsible support for an antenna reflector particularly suited for use in supporting antennas aboard space vehicles and the like. The support is characterized by a rigid base, a plurality of mutually spaced struts pivotally coupled with the base at their base ends, and supported for simultaneous pivotal displacement from a first rest position wherein they are arranged in substantial parallelism to a second rest position wherein they are arranged in a substantially diverging relationship, and an endless band, coupled with the distal ends of the struts, fabricated to be supported in a flexible, serpentine configuration when the struts are in said first rest position and in a rigid annular configuration when said struts are in said second rest position.

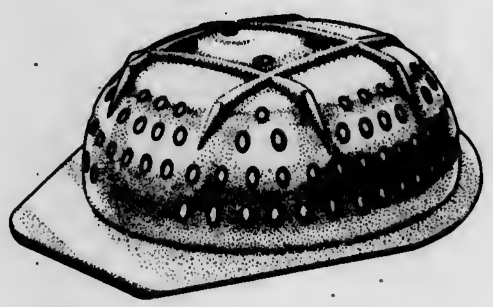
DESIGNS

APRIL 24, 1973

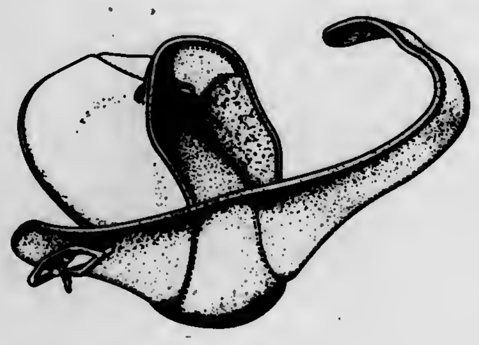
226,744
PROTECTIVE GARMENT FOR THE ARMS
Lillian A. Chaffin, 846 S. Sycamore,
Los Angeles, Calif. 90036
Filed June 30, 1971, Ser. No. 158,656
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27



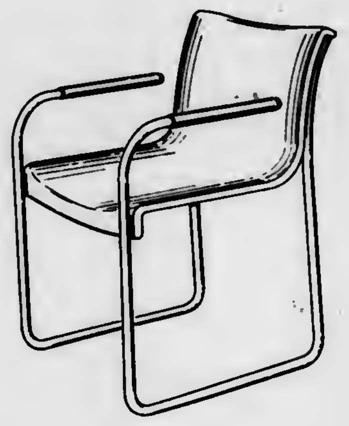
226,745
PROTECTIVE HAT OR SIMILAR ARTICLE
Charles C. Snow, 183 N. 1300 W.,
Salt Lake City, Utah 84116
Filed Oct. 6, 1971, Ser. No. 187,219
Term of patent 7 years
Int. Cl. D2—*03*
U.S. Cl. D2—231



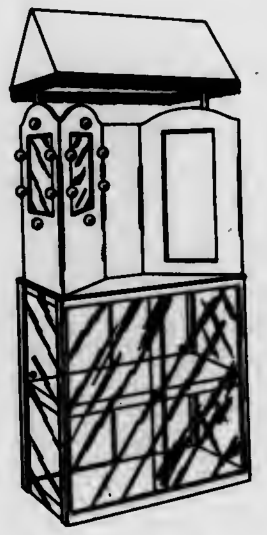
226,746
BABY SHOE
Georges Clement Bidegain, Pau, France, assignor to
Bidegain S.A., Pau, France
Filed July 14, 1971, Ser. No. 162,969
Claims priority, application France Jan. 21, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—278



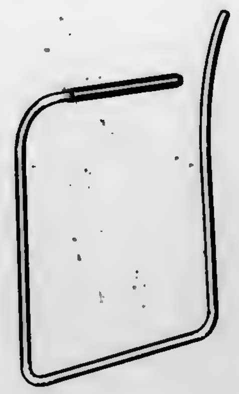
226,747
CHAIR OR THE LIKE
Earl H. Koepke, Sturgis, Mich., assignor to Harter
Corporation, Sturgis, Mich.
Filed June 22, 1971, Ser. No. 155,681
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66



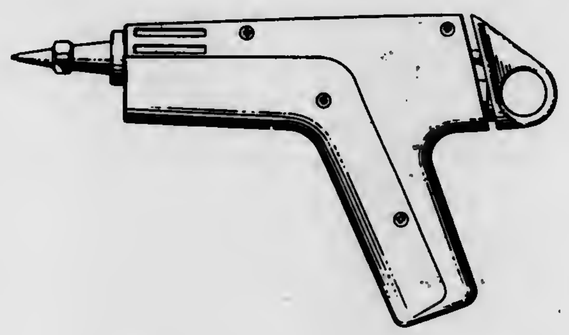
226,748
DISPLAY STAND
Bernard J. Miller, Chicago, Ill., assignor to The Gillette
Company, Boston Mass.
Filed May 18, 1971, Ser. No. 144,709
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—168



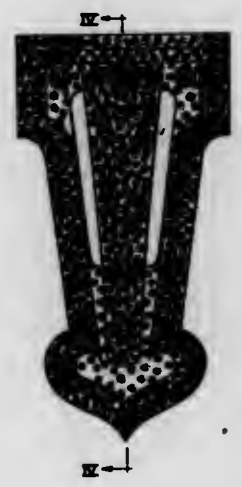
226,749
COMBINED LEG AND ARMREST FOR A CHAIR OR THE LIKE
Earl H. Koepke, Sturgis, Mich., assignor to Harter
Corporation, Sturgis, Mich.
Filed June 22, 1971, Ser. No. 155,680
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



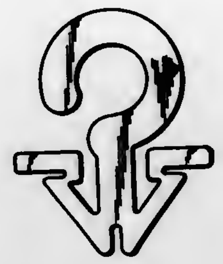
226,750
GLUE DISPENSING GUN
Morris Gary Grossman, Wyckoff, N.J., assignor to
Cooper Industries, Inc., Houston, Tex.
Filed Apr. 7, 1971, Ser. No. 132,255
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



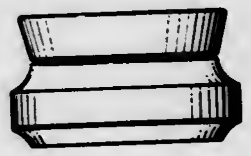
226,751
DRAWER PULL
Emil J. Bocade, Grand Rapids, Mich., assignor to Keeler
Brass Company, Grand Rapids, Mich.
Filed Feb. 16, 1972, Ser. No. 227,011
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—167



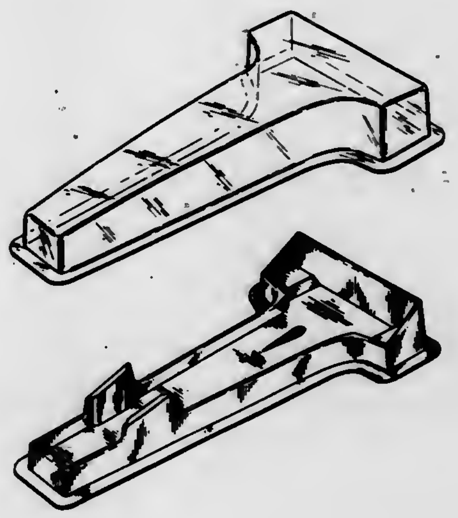
226,752
HANGER FOR DISPLAY PACKAGE
Naoyuki Iso, 3 of 27, Oimatsu-cho,
Nishinomiya, Japan
Filed Nov. 26, 1971, Ser. No. 202,721
Term of patent 14 years
Int. Cl. D6—*08*; D8—*08*
U.S. Cl. D8—255



226,753
JAR OR SIMILAR ARTICLE
D. J. Quintal, Makati, Rizal, Philippines, assignor to
Bristol-Myers Company, New York, N.Y.
Filed Nov. 24, 1971, Ser. No. 202,061
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—118

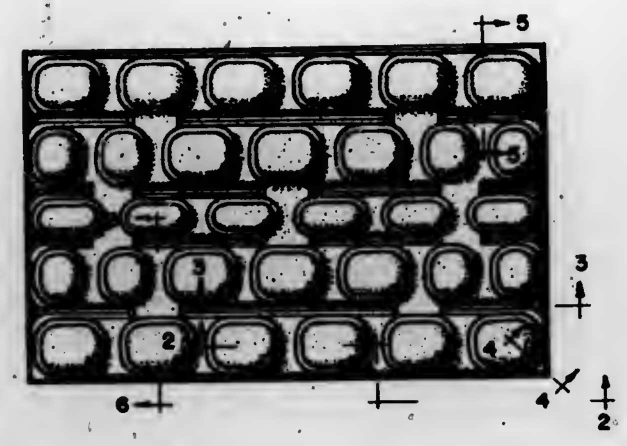


226,754
SAFETY RAZOR CASE
Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 5, 1972, Ser. No. 250,846
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186



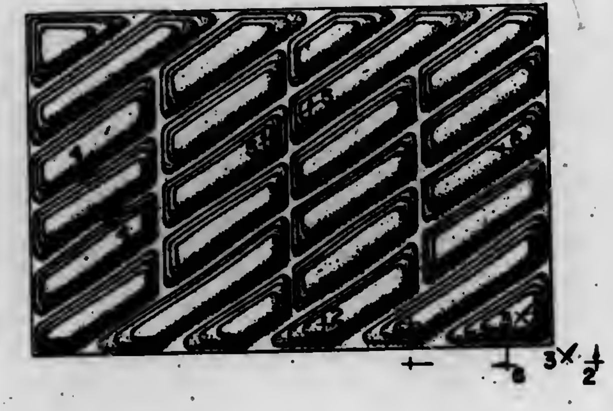
226,755
PACKAGING PAD OR THE LIKE

James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Sept. 20, 1971, Ser. No. 182,274
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



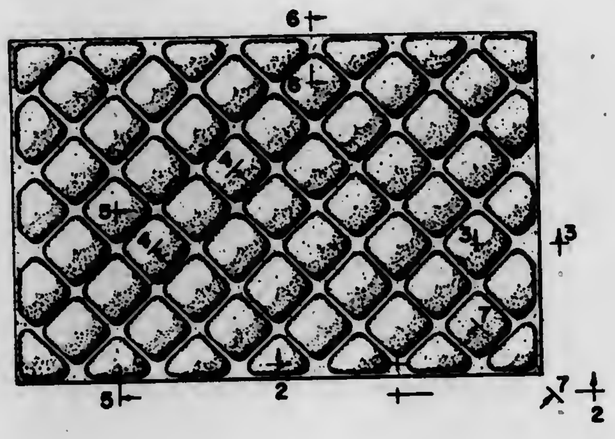
226,756
PACKAGING PAD OR THE LIKE

James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Sept. 20, 1971, Ser. No. 182,275
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



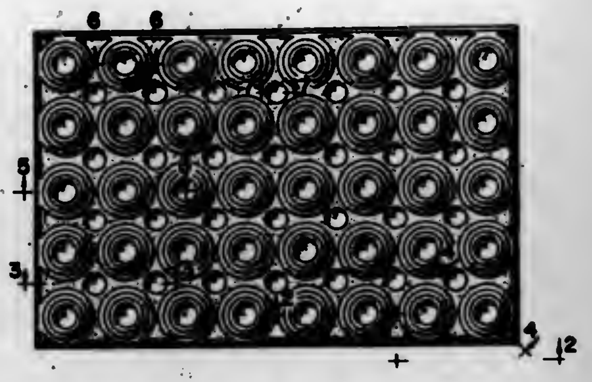
226,757
PACKAGING PAD OR THE LIKE

James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Sept. 20, 1971, Ser. No. 182,276
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



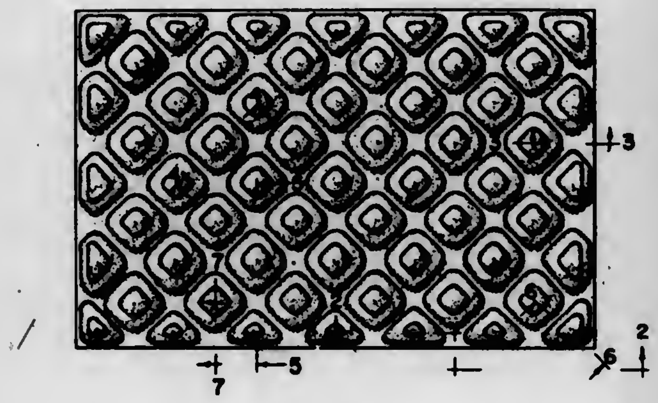
226,758
PACKAGING PAD OR THE LIKE

James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Sept. 20, 1971, Ser. No. 182,312
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



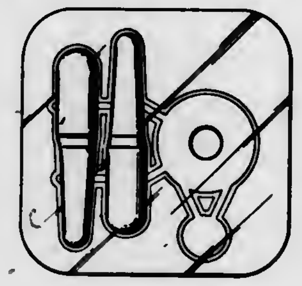
226,759
PACKAGING PAD OR THE LIKE

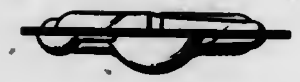
James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Sept. 20, 1971, Ser. No. 182,313
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



226,760
DETECTOR FOR BLOOD ANALYSIS

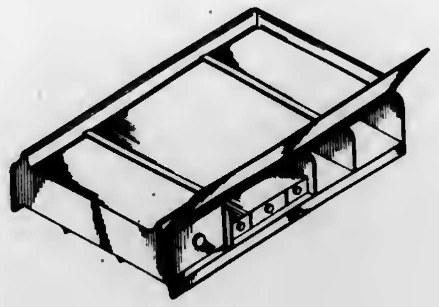
James J. Sirago, 910 Enterprise, Inglewood, Calif. 90302, and Edward B. Walton, 3129 Yale Ave., Marina Del Rey, Calif. 90291
Filed Aug. 27, 1971, Ser. No. 175,797
Term of patent 14 years
Int. Cl. D24—*02;* D9—*04*
U.S. Cl. D16—1 R





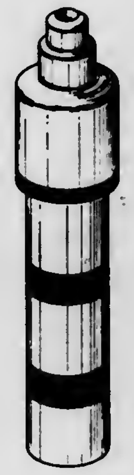
226,761
CAR TOP CARRIER

Arthur W. Perreault, 1133 Thomas Ave., Coquitlam, British Columbia, Canada
Filed Nov. 5, 1971, Ser. No. 196,263
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—27 C



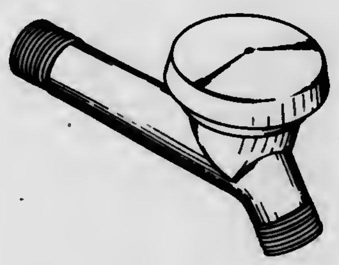
226,762
COMBINED FLUID REGULATOR AND VALVE

Lajos J. Vidakovits, Denver, and Richard N. Bailey, Littleton, Colo., assignors to C. A. Norgren Co., Littleton, Colo.
Filed Nov. 15, 1971, Ser. No. 199,083
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—21



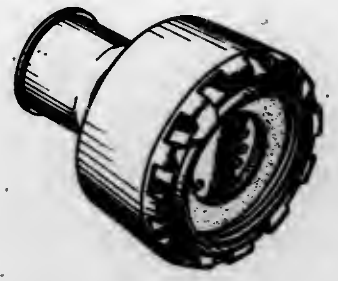
226,763
ANTI-SIPHON FAUCET

Jack K. Rauh, Hacienda Heights, Calif., assignor to Modern Faucet Mfg. Co., Los Angeles, Calif.
Filed Mar. 8, 1972, Ser. No. 233,003
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23



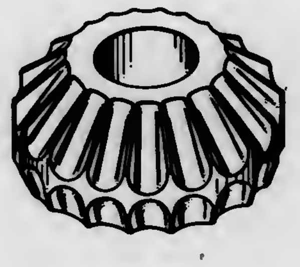
226,764
SPRAY HEAD

Jack K. Rauh, Hacienda Heights, Calif., assignor to Modern Faucet Mfg. Co., Los Angeles, Calif.
Filed Oct. 22, 1971, Ser. No. 191,966
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



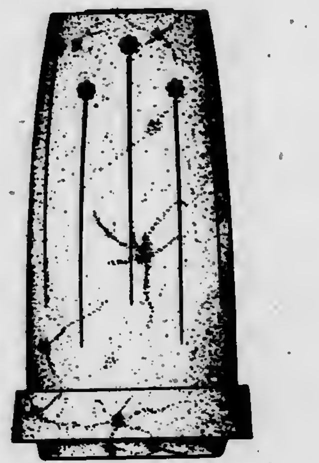
226,765
WATER SPRAY SKIRT FOR AN AERATOR

Irving A. Ward, 2709 La Cuesta Ave., Hacienda Heights, Calif. 91745
Filed Jan. 7, 1972, Ser. No. 216,319
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



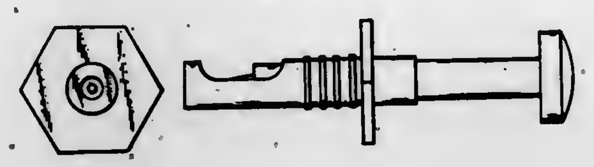
226,766
DEODORANT CONTAINER OR THE LIKE

Raymond P. Stoy, New Rochelle, and Anthony G. Randazzo, Syosset, N.Y., assignors to American Home Products Corporation, New York, N.Y.
Filed June 7, 1972, Ser. No. 260,719
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



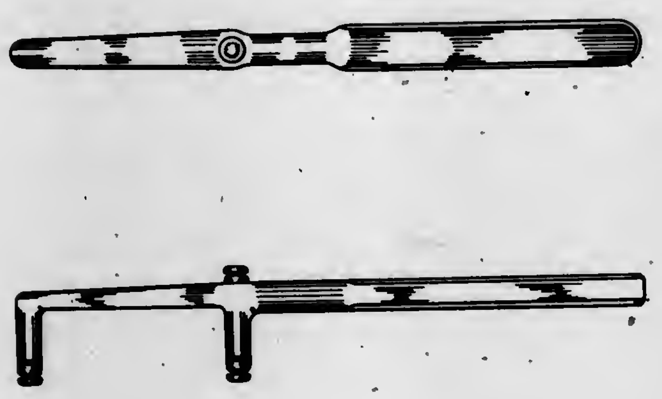
226,767
DENTAL GUN
William B. Dragen, R.F.D., Burn St.,
Fairfield, Conn. 06430
Filed Mar. 3, 1972, Ser. No. 231,771
Term of patent 14 years
Int. Cl. D24—*02*

U.S. Cl. D24—1 D



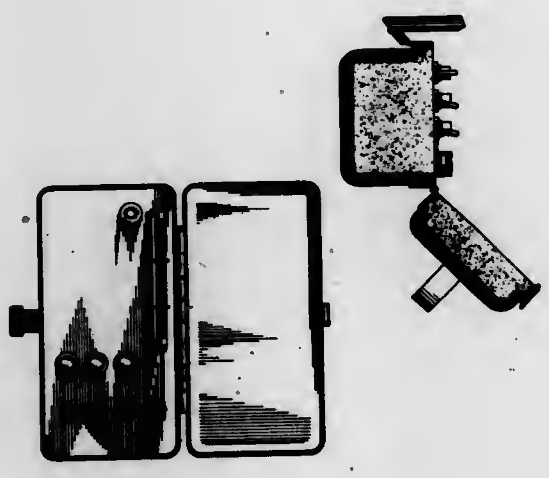
226,768
DENTAL FLOSS HOLDER
Martin W. Schwartz, 4537 Valmonte Drive,
Sacramento, Calif. 95825
Filed June 14, 1972, Ser. No. 262,505
Term of patent 14 years
Int. Cl. D24—*99*; D28—*01*

U.S. Cl. D24—1 D



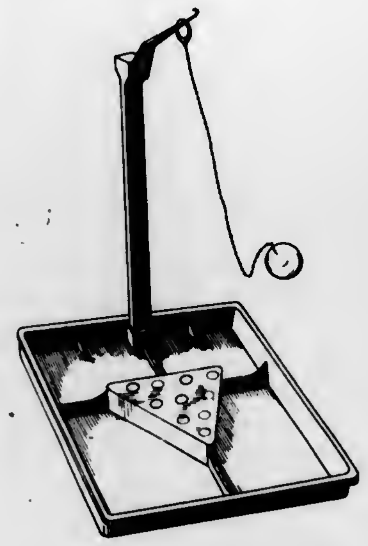
226,769
TELEPHONE UNIT TEST SET
William Charles Hatfield and John Martin Reed, Garland, Tex., assignors to Electronic Communications Services, Inc., Garland, Tex.
Filed Jan. 20, 1971, Ser. No. 108,247
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D26



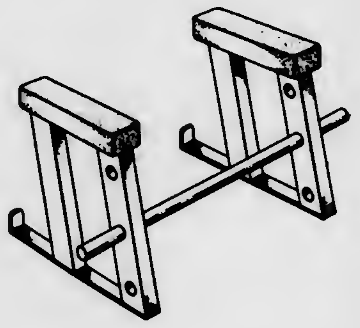
226,770
BOWLING TETHERBALL GAME BOARD
Joseph J. Prischak, 3508 Zimmerly Road; Terry W. McQuaid, 4236 Feidler Drive; and Dennis J. Prischak, 3508 Zimmerly Road, all of Erie, Pa. 16506
Filed June 25, 1971, Ser. No. 157,078
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—5 BB



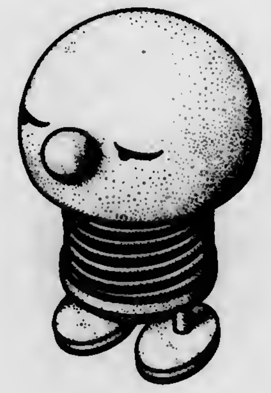
226,771
PORTABLE EXERCISER
Lawrence I. Jacobs, P.O. Box 4092,
Palm Springs, Calif. 92262
Filed Sept. 13, 1971, Ser. No. 180,255
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D34—5 K



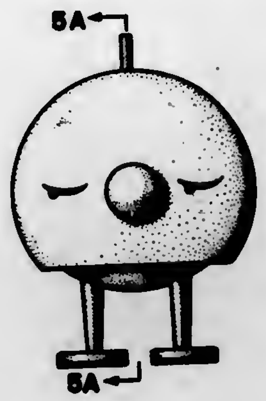
226,772
TOY FIGURE
Hans Gustav Ehrenreich, Stilling, Denmark 8363
Filed June 13, 1972, Ser. No. 262,251
Claims priority, application Denmark Mar. 13, 1972
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15 AD



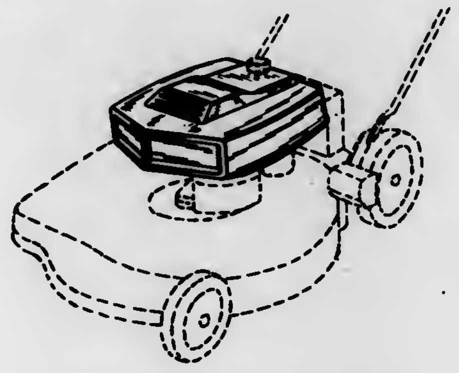
226,773
TOY FIGURE
Hans Gustav Ehrenreich, Stilling, Denmark 8363
Filed June 13, 1972, Ser. No. 262,252
Claims priority, application Denmark Mar. 13, 1972
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—15 AD



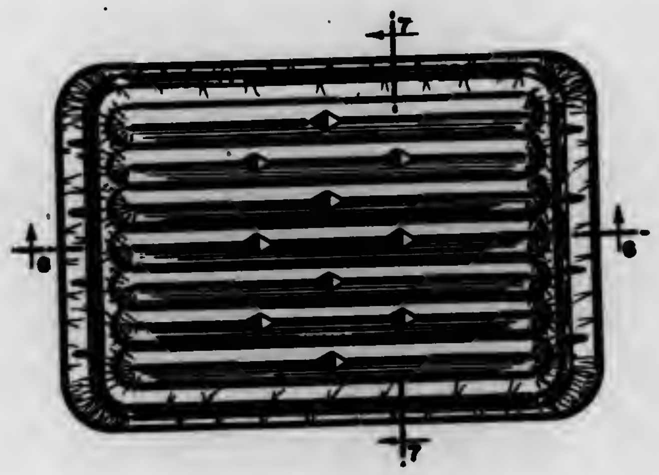
226,774
MOWER SHROUD
Robert A. Skyer, Palatine, and George E. Bowman, Country Club Hills, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 31, 1972, Ser. No. 222,443
Term of patent 14 years
Int. Cl. D15—*99*

U.S. Cl. D40—1 A



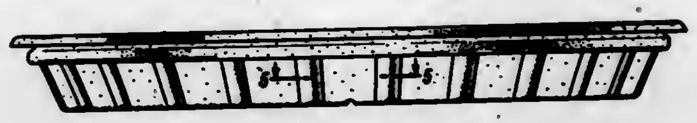
226,775
BROILER PAN
Robert A. Jones, Louisville, Ky., assignor to
Anaconda Aluminum Company
Filed June 10, 1971, Ser. No. 152,014
Term of patent 14 years
Int. Cl. D7—*02*

U.S. Cl. D44—1 J



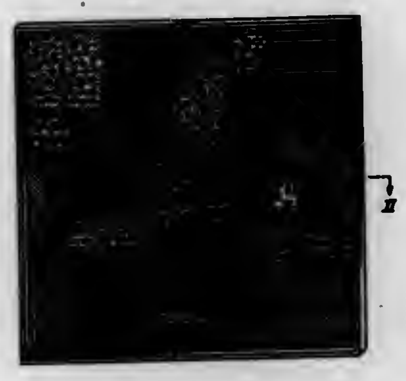
226,776
CONTAINER FOR FOODSTUFFS
Gerald E. Mider, 783 Wiltshire Road,
Columbus, Ohio 43204
Filed Sept. 23, 1971, Ser. No. 183,303
Term of patent 14 years
Int. Cl. D7—*01*

U.S. Cl. D44—1 B



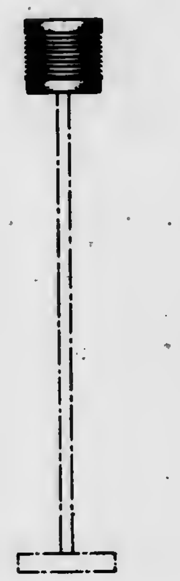
226,777
COLOR DISPLAY SCREEN
Robert Bruce McClure, R.D. 2, P.O. Box 290,
Chester, Pa. 19355
Filed July 12, 1971, Ser. No. 161,371
Term of patent 14 years
Int. Cl. D26—*05*

U.S. Cl. D48—16 A

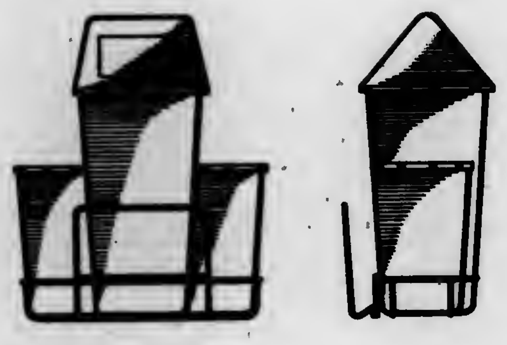


226,778
LUMINAIRE
Charles P. Breed, Alexandria, Va., and Melvin R. Anderson, Avon Lake, Ohio, assignors to Westinghouse Electric Corporation
Filed Dec. 5, 1969, Ser. No. 20,377
Term of patent 14 years
Int. Cl. D26—*03, 05*

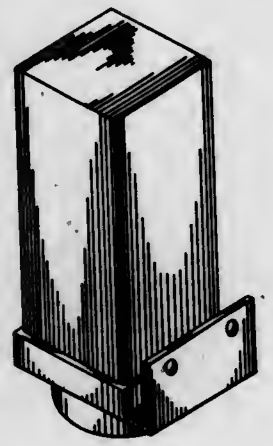
U.S. Cl. D48—31



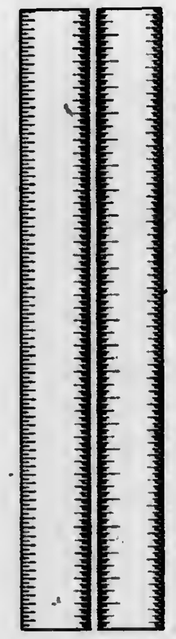
226,779
COMBINED TRASH RECEPTACLE AND HOLDER THEREFOR
Loryn B. Deane and Edward V. Deane, both of 18 Overlook Road, Ardsley, N.Y. 10502
Filed Mar. 24, 1972, Ser. No. 238,007
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D49—32



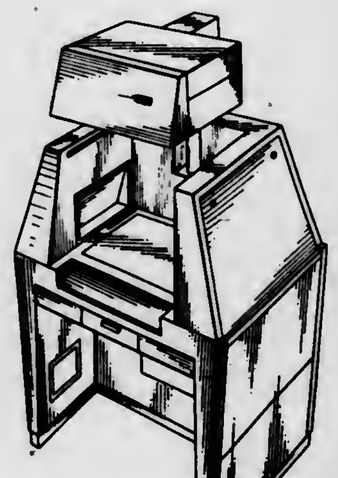
226,780
CUP DISPENSER
Thomas W. Thompson, 6211 Chicago St.; and M. Bruce Martin, 220 Fairacres Road, both of Omaha, Nebr. 68132; and Thomas E. Ludwick, 2700 O'Reilly Drive, Lincoln, Nebr. 68500
Filed Sept. 21, 1970, Ser. No. 25,082
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D52—2 B



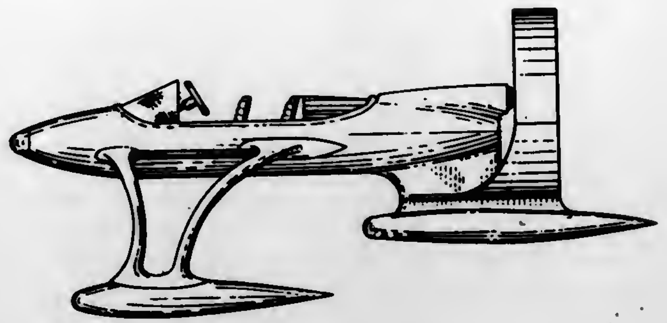
226,781
SERRATED RULER
Barkere Boodakian, 5743 Lexington Ave., Los Angeles, Calif. 90038
Filed Sept. 16, 1970, Ser. No. 25,026
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



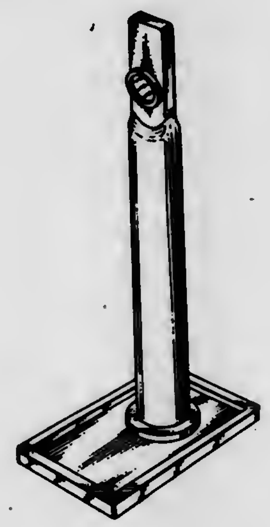
226,782
MICRO COPYING CAMERA
Harry Arthur Hele Spence-Bate, Stanmore, England, assignor to Cameronics Limited, Alperton, Wembley, Middlesex, England
Filed Apr. 8, 1970, Ser. No. 22,333
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



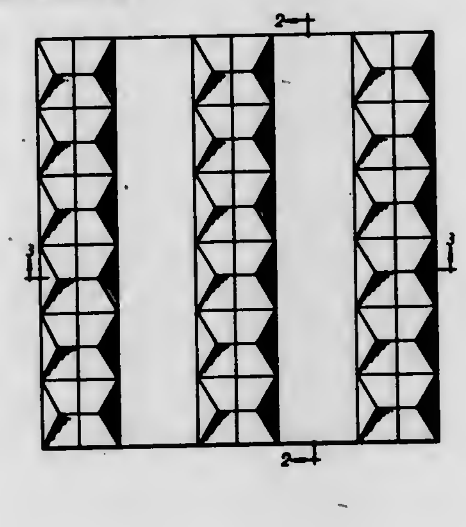
226,783
HYDROPLANE
Paul M. Lewis, P.O. Box 651, Sidney, Nebr. 69162
Filed Aug. 6, 1971, Ser. No. 169,887
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1 W



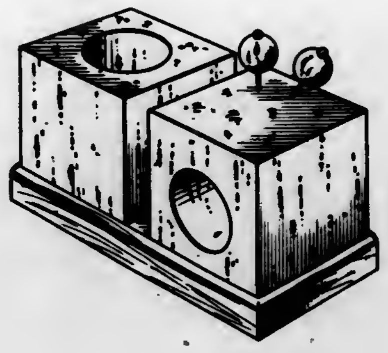
226,784
ROAD DELINEATOR
John W. Duckett, Tiburon, Edward A. Brooks, Jr., Novato, and Clarke Reynolds, Tiburon, Calif., assignors to American Molded Products, Ltd., Sausalito, Calif.
Filed Sept. 2, 1970, Ser. No. 24,811
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 J



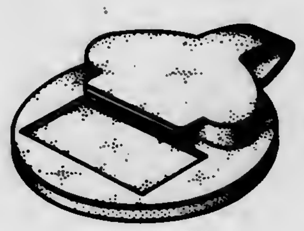
226,785
REFLECTOR
Robert I. Nagel, 3729 Roth Terrace, Skokie, Ill. 60076
Filed Oct. 26, 1971, Ser. No. 192,691
Term of patent 14 years
Int. Cl. D29—*99*; D26—*05*
U.S. Cl. D72—1 E



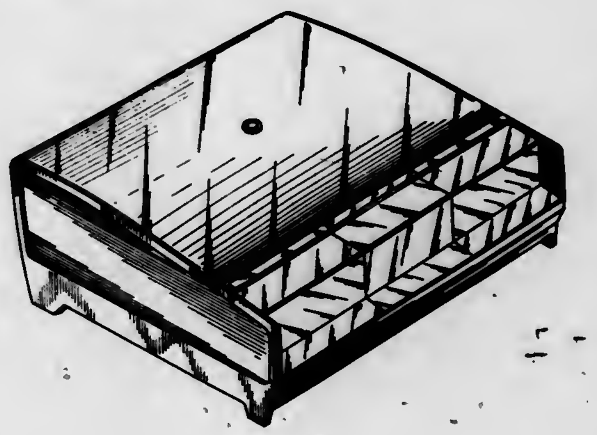
226,786
HOLDER FOR PENCILS, PAPERS, AND THE LIKE
Melvin K. Bolling, 2nd Ave., Holland, Ind. 47541
Filed July 30, 1971, Ser. No. 167,891
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A



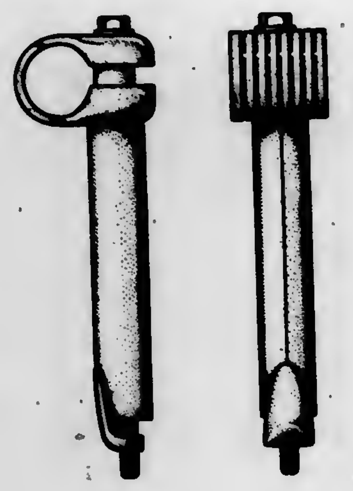
226,787
AUTOCLAVABLE PROSTHESIS CONTAINER
David L. Walchle and James L. Geraci, Cincinnati, Ohio, assignors to Xomox Corporation, Cincinnati, Ohio
Filed May 8, 1972, Ser. No. 251,559
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 W



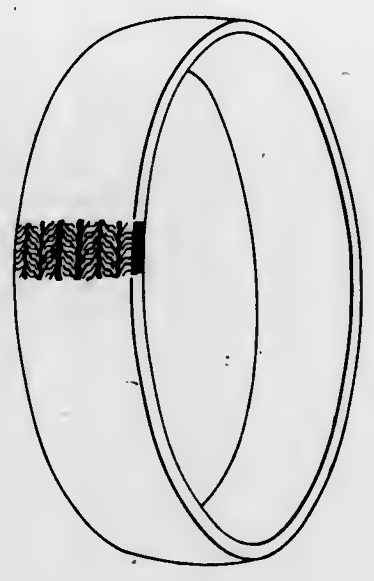
226,788
HAIR CURLER HEATING CABINET
Jacob A. Krapowicz, Ridgefield, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed May 28, 1971, Ser. No. 148,293
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



226,789
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Aug. 13, 1971, Ser. No. 171,794
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—9



226,790
PNEUMATIC TIRE TREAD AND BUTTRESS COMBINATION
Arthur C. Blankenship, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Term of patent 14 years
Filed Nov. 23, 1971, Ser. No. 201,605
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



LIST OF PATENTEES
TO WHOM
PATENTS WERE ISSUED ON THE 24TH DAY OF APRIL, 1973

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  - Best, Walter E., 3,728,879.
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- Blakeslee, Sherley E. Tube cutter assembly. 3,728,790, Cl. 30-92.500.
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- Bleil, Carl E., to General Motors Corporation. Method for growing crystals from molten melts saturated with crystalline material. 3,729,291, Cl. 23-301.0sp.
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  - Brudz, Vitaly Grigorievich; Pronyakin, Nikolai Nikolaevich; Bljum, Grigory Zakharovich; Khainson, Sarrya Isaakovna; Vinogradov, Gennady Georgievich; Tuganova, Muza Konstantinova; and Vasilieva, Julia Vladimirovna, 3,729,540.
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- Bortz, Milton H. Football slide rule. 3,729,130, Cl. 235-70.00r.
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- Boshagen, Horst; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. Hydroquinoline thiocarbamic acid derivatives. 3,729,473, Cl. 260-283.00s.
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- Buedel, Charles Kenneth, to GTE Automatic Electric Laboratories Incorporated. Digital processing system. 3,729,715, Cl. 340-172.500.
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- Burger, Guy Claude. Baby's napkin. 3,729,004, Cl. 128-286.000.
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- Burridge, George D. Tamper bar for a tamping machine. 3,729,055, Cl. 172-719.000.
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- Camosso, Dominico, to RIV-SKF Officine di Villar Perosa S.p.A. Roller bearing and cages therefor. 3,729,239, Cl. 308-217.000.
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- Cash, William D.; Petrack, Barbara; and Weiner, Murray, to Ciba-Geigy Corporation. Method of treating movement disorders. 3,729,563, Cl. 424-248.000.
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- Christensen, Robert G. Turntable. 3,728,970, Cl. 104-44.000.
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- Clouser, Leon C., Jr., to Seeburg Corporation, The. Cabinet assembly for coin operated phonograph. 3,729,240, Cl. 312-8.000.
- Coakley, James L., to Abex Corporation. Reversible fluid power transfer apparatus. 3,728,860, Cl. 60-405.000.
- Cobb, Delwin E.; and Sullivan, Robert J., to Caterpillar Tractor Co. Mechanically actuated water cannon. 3,729,137, Cl. 239-101.000.
- Cobbledick, David S., to General Tire & Rubber Company, The. Preparation of vinyl-coated polyurethane foams. 3,729,370, Cl. 161-160.000.
- Code Designs Limited: *See*—
  - Lovatt, Alan Felix, 3,728,818.
- Coffman, Robert B. Tape breaker (case I). 3,728,772, Gl. 29-239.000.
- Cogar Corporation: *See*—
  - Kelly, William J., 3,729,666.
  - Sevilla, Ernesto G.; and Titus, Robert J., 3,729,730.
- Collins, Donald Louis William; and Gillett, Brian Arthur, to Alcan Research and Development Limited. Filtration of molten metal. 3,729,097, Cl. 210-69.000.
- Collins Radio Company: *See*—
  - Hemme, William R., 3,729,683.
- Commercial Solvents Corporation: *See*—
  - Runge, Wallace F., 3,729,533.
- Compagnie des Compteurs: *See*—
  - Janssen, Slyvain, 3,728,893.
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  Beduchaud, Michel, 3,729,248.
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  Baar, Michel Armand Rene Alfred, 3,729,164.
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  Dunlap, Robert B.; and Peterson, Ewald O., 3,728,985.
Condon, Joseph Henry, to Bell Telephone Laboratories, Incorporated. Commutating capacitor impedance device. 3,729,695, Cl. 333-70.00a.
Conger, Robert L., to United States of America, Navy. Missile guidance system. 3,729,150, Cl. 244-3.130.
Conklin, Robert M.; Anderson, Robert I.; Gautraud, Michael G.; and Shimanski, William H., to Brunswick Corporation. Method of making scenes for a golf game. 3,729,315, Cl. 96-27.00r.
Consolidated Airborne Systems, Inc.: *See—*
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Consolidated Coal Company: *See—*
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  Hsu, Grace F.; and Beckwith, Merton M., 3,729,394.
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Cook, Ralph H. Potential-current transformer device. 3,729,650, Cl. 317-14.00r.
Coop, Vernon W., to Sugden, Bazil H. Method and apparatus for joining sheet metal, and sheet metal joints. 3,728,881, Cl. 72-52.000.
Cooper, Brian Sydney; Cronk, John Edward; and Hobbs, Derek John, to Johnson, Matthey & Co., Limited. Method and apparatus for making spectrometric measurements of a constituent of a test sample. 3,729,259, Cl. 356-82.000.
Cooper, Edward: *See—*
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Covert, Garry C., to Heath Company. Model roadway track. 3,729,133, Cl. 238-10.00e.
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Cull, Neville Leverne; Gladrow, Elroy Merle; Mason, Ralph Burgess; and Hamner, Glen Porter, to Esso Research and Engineering Company. Dimerization. 3,729,515, Cl. 260-602.000.
Cummins, Wayne. Rear-view automotive mirror. 3,729,163, Cl. 248-487.000.
Cunningham, Robert J., Jr. Suspension system for vehicles. 3,729,210, Cl. 280-96.20r.
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Curry, Leonard L., to Chevron Research Company. Thermoplastic compositions comprising poly-1-olefin and a polymer of chlorinated oretane. 3,729,530, Cl. 260-897.00c.
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Darnell, Rex C. Bicycle transmission. 3,728,912, Cl. 74-769.000.
Davankov, Vadim Alexandrovich; Rogozhin, Sergei Vasilievich; and Tsjurupa, Maria Petrovna. Macronet polystyrene structures for ionites and method of producing same. 3,729,457, Cl. 260-88.20c.
Davidson, Jackson B., to United States of America, Atomic Energy Commission. Device and method for improving the vertical resolution of a two-dimensional television-based radiation detection system. 3,729,585, Cl. 178-7.200.
Davis, Donald A.: *See—*
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Davis, Lester M. Fishing line display-dispenser. 3,729,091, Cl. 206-44.110.
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Day, Lucius B., Jr., to United States of America, Navy. Suppressed carrier single-sideband signal detection. 3,729,679, Cl. 325-49.000.
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De Angelo, Michael Anthony; and Sharp, Donald Jex, to Western Electric Company, Incorporated. Method of preparing at least one conductive form. 3,729,388, Cl. 204-3.000.
De Angelo, Michael Anthony; and Sharp, Donald Jex, to Western Electric Company, Incorporated. Method of electroplating discrete conductive regions. 3,729,389, Cl. 204-15.000.
De Boer, Jacob, to North American Philips Co., Inc. Converting circuit for a line-sequential television signal recording device. 3,729,579, Cl. 178-5.4cd.
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de Koe, Oscar Bernardus Philomenus Rikker; and Eggermont, Ludwig Desire Johan, to U.S. Philips Corporation. Information buffer for converting a received sequence of information characters. 3,729,717, Cl. 340-172.500.
De Lavalette, Pierre de Lacroix, to Societe Anonyme dite: SKF Compagnie d'Applications Mecaniques. Overrunning clutch. 3,729,076, Cl. 192-41.00a.
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De Vos, Ferdinand A.; and Ter Steege, Jan H., to Werkspoor-Amsterdam, N.V. Apparatus for the preparation of screen printing forms with an adjustable relation between grey values of the pattern and grey values of the printing forms. 3,729,584, Cl. 178-6.60b
Dean, Abner. Building corner assembly. 3,728,834, Cl. 52-282.000.
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Denney, Joseph M.; and Selden, Ronald B., to Digital Development Corporation. Redundant recordation to reduce access time. 3,729,725, Cl. 340-174.10g.
Denss, Rolf; Clauson-Kaas; and Ostermayer, Franz, to Ciba-Geigy Corporation. 1,2-Oxazine derivatives in alleviating pain and treating inflammatory diseases. 3,729,559, Cl. 424-248.000.
DePlante, Henri, to Avions Marcel Dassault Vaucresson. Method and device related to the ejection of a person from an aircraft cockpit or the like. 3,729,154, Cl. 244-122.0af.
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Dewey, Clyde G., to General Electric Company. Redundant triggering means for HVDC valve. 3,729,670, Cl. 321-11.000.
Deye, Neil S.; and Kuhn, Richard B., to North American Rockwell Corporation. Tracking system tracker unit. 3,729,582, Cl. 178-6.800.
Dietrich, Henri; and Lehmann, Claude, to Ciba-Geigy Corporation. p-Aminoalkylbenzenesulfonamide derivatives. 3,729,462, Cl. 260-309.700.
Dietrich, Henri; and Lehmann, Claude, to Ciba-Geigy Corporation. p-Aminoalkyl benzenesulfonamide derivatives. 3,729,463, Cl. 260-309.700.
Dietz, Wolfgang; and Seiter, Hartmut, to Consortium fur Elektrochemische Industrie G.m.b.H. Method for producing epitaxial III-V semiconductor layers containing gallium. 3,729,341, Cl. 117-201.000.
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Dillies, Pierre. Process and apparatus for the treatment of loose materials such as textile fibres. 3,729,290, Cl. 8-149.200.
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Docker, Leslie Thomas, to Slumberland Group Limited. Beds. 3,728,747, Cl. 5-351.000.
Dolby, Ray Milton. Compressor/expander switching methods and apparatus. 3,729,693, Cl. 333-14.000.
Doleman, Jack; and Hills, William H., to Monsanto Company. Continuously molded thermoplastic materials. 3,729,364, Cl. 161-36.000.
Dollenmayer, William L., to International Business Machines Corporation. Miniature disc dictation machine featuring absolute synchronized disc-transducer driving arrangement. 3,729,201, Cl. 274-4.00h.
Domnitch, Irving. Portable incinerator. 3,728,976, Cl. 110-8.00r.
Domrachev, Georgy Alexeevich; Melnikov, Valery Vasilievich; Kazarinov, Georgy Borisovich; Skorik, Gleb Alexandrovich; and Fukin, Konstantin Konstantinovich. Method of depositing inorganic coatings from vapour phase. 3,729,335, Cl. 117-95.000.
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Duprat, Yves Jean Guy. Propulsive double-base charges, strand-like and having variable thickness. 3,729,349, Cl. 149-2.000.
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- Elder, James H., to General Electric Company. Audio signal quality indicating circuit. 3,729,682, Cl. 325-304.000.
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- Ellenberger, Jakob, to Ellenberger & Poensgen GmbH. Pushbutton reset circuit breaker having peripheral contact condition indicator means. 3,729,607, Cl. 200-167.00r.
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- Ellis, Myron P.; Czubak, Albin S.; and McDonald, Keith A., to Micro-matic Hone Corporation. Gear honing machine. 3,728,829, Cl. 51-215.00h.
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- Engelking, Uwe K., to Organisation Europeenne de Recherches Spatiales. Universal nutation damper. 3,728,900, Cl. 74-5.500.
- Engelstein, Stanley; and Dorman, Isidore, to Bell & Howell Company. Random-access card file system. 3,729,094, Cl. 209-80.500.
- Engfer, Ortwin, to Bosch, Robert, GmbH. Pneumatic suspension for a motorcar. 3,729,211, Cl. 280-124.00f.
- Engholdt, Richard K., to Erie Manufacturing Company. Method and apparatus for detecting the hardness level of water. 3,729,263, Cl. 356-184.000.
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  - Pickering, Alan Hugh, 3,729,646.
- English, Gary L.: *See—*
  - Curtis, Ronald E.; English, Gary L.; and Hense, James R., 3,728,781.
- Ensmann, Burt W.; and Davis, Robert E., to Ideal Toy Corporation. Clamoring doll. 3,728,816, Cl. 46-116.000.
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- Erck, Karl, to Volkswagenwerk Aktiengesellschaft. Connection of a window pane to a frame. 3,728,832, Cl. 52-400.000.
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  - Solomon, Nigel Allan; Godfrey, Nelson Frederick John; and Boxell, Alan James, 3,729,600.
- Ericsson, Ronald J.; Portage, Daniel Lednicer; and Youngdale, Gilbert A., to Upjohn Company, The. Rodent sterilant process. 3,729,566, Cl. 424-342.000.
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  - Carter, James L.; and Sinfelt, John H., 3,729,408.
  - Cull, Neville Leverne; Gladrow, Elroy Merle; Mason, Ralph Burgess; and Hamner, Glen Porter, 3,729,515.
  - Miller, Harold N., 3,729,296.
  - Naschke, John H.; and Keil, Eugene O., 3,729,387.
  - Robson, Harry E., 3,729,429.
- Esters, Ernie B. Plural stator dynamoelectric machine. 3,729,642, Cl. 310-112.000.
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  - Chang, Yi Han; Evanega, George R.; and McLamore, William M., 3,729,564.
- Evans, Clifford J., to Shields-Jetco, Inc. Narrow rock cutting trencher. 3,729,231, Cl. 299-7.000.
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  - Holub, Fred F.; and Evans, Milton L., 3,729,446.
- Everett, Thorald E. Montague; and Charipar, Joseph, to A & M Research, Inc. Photographic processing apparatus. 3,728,954, Cl. 95-94.00r.
- Extel Corporation: *See—*
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- Fabbrica Italiana Magneti Marelli S.p.A.: *See—*
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- Failing, Jim E. Floor wax dispenser. 3,729,268, Cl. 401-137.000.
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- Falk, Sidney, to Fort Lock Corporation. Rekeyable axial pin tumbler lock. 3,728,880, Cl. 70-363.000.
- Fancher, Llewellyn W., to Stauffer Chemical Company. Certain 2-iminothiazol phosphates and phosphonates. 3,729,478, Cl. 260-306.700.
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  - Buc, Karl Heinz; Draber, Wilfried; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,729,562.
  - Leister, Heinrich; and Wolf, Karl-Heinz, 3,729,330.
  - Suling, Carlhans; and Logemann, Heino, 3,729,531.
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- Farr, John B., to Amoco Production Company. Earth holography with special reference wave. 3,729,704, Cl. 340-15.5ds.
- Farrell, John C.; and Balfanz, Thomas L., to Select Systems, Inc. Valve and seal means. 3,729,034, Cl. 141-332.000.
- Feagin, Roy Chester: *See—*
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- Fell, Ferol S.; Goering, Lowell J.; and Long, William D., to Hesston Corporation. Belt transmission having mechanism for reverse grinding. 3,728,905, Cl. 74-220.000.
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- Ferstenberg, Charles, to Tenneco Chemicals, Inc. Method for continuously forming elongated cylinder of polyurethane form. 3,729,534, Cl. 264-54.000.
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  - Montuschi, Mario; and Palazzetti, Mario, 3,728,991.

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- Field, Thomas R., to Jenn-Air Corporation. Smoke and heat relief vent. 3,728,956, Cl. 98-86.000.
- Fischer, Milton G., to Deutsch Company Electronic Components Division, The. Wire stripper. 3,728,789, Cl. 30-90.100.
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- Fitzner, Marcel; and Butler, John D. Apparatus for processing herbs and the like. 3,729,096, Cl. 209-97.000.
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- Frasure, James W., to Dow Chemical Company, The. Expansion joint for flow speed reaction rails. 3,729,135, Cl. 238-151.000.
- Fraze, Ermal C. Scoring die. 3,728,980, Cl. 113-1.000.
- Fredrickson, Wallace F. Baler. 3,728,959, Cl. 100-218.000.
- Freedman, Gerald Allen. Cue tip trimmer. 3,728,828, Cl. 51-204.000.
- Freiburger, Joseph Anthony. Shiftable ladder installation. 3,729,062, Cl. 182-39.000.
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- French, John B.; and Schroeder, Hubert J. Labeling machine. 3,729,362, Cl. 156-542.000.
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- Froning, H. R., to Amoco Production Company. Method for increasing permeability of oil-bearing formations. 3,729,053, Cl. 166-304.000.
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- Gates Rubber Company, The: *See—*
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Grubb, Willard T.; and Macur, Robert A., to General Electric Company. Microporous polyolefin ink-receptive paper and method. 3,729,332, Cl. 117-11.000.

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Grunig, James K.; Anderson, Rodney J.; and Vance, Bess L., to Anaconda Company, The. Recovery of beryllium. 3,729,541, Cl. 423-112.000.
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Harrell, Bob G.; and Harbaugh, Arthur, to Jackes-Evans Manufacturing Company. Knock-down drawer. 3,729,246, Cl. 312-330.000.
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Idra-Pressen G.m.b.H.: *See—*
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Iida, Hirofumi; and Watanabe, Kazufumi, to Tokyo Gas Company Limited. Heating furnace provided with high velocity gas burners. 3,729,286, Cl. 431-174.000.
Ikawa, Kenji; and Takami, Fumitaka, to Shionogi & Co., Ltd. Processes for preparing certain pyrimidives. 3,729,472, Cl. 260-250.50r.
Ilford Limited: *See—*
  Jefferson, Robin; and Palles, Christopher John, 3,729,319.
Imai, Takeshi; Nomura, Siniti; and Sumita, Muneo, to Nippondenso Kabushiki Kaisha. Method for forming an insulation coating. 3,729,333, Cl. 117-16.000.
Imai, Tomio; Takahashi, Masao; Seki, Nobuyuki; and Irie, Yoshio, to Godo Shusei Kabushi Kaisha. Process for the production of aeruginoic acid. 3,729,378, Cl. 195-28.00r.
Imperial Chemical Industries Limited: *See—*
  Austin, Peter William; and Crabtree, Allan, 3,729,476.
  Brissenden, Sidney James George, 3,729,030.
  Murray, Frank McDonald, 3,729,060.
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  Ingham, Robert Edward; and Deith, Geoffrey Wilson, 3,729,368.
Ingham, Robert Edward; and Deith, Geoffrey Wilson, to Ingham, R. E., & Company Limited. Wood-plastic sheet laminate and method of making same. 3,729,368, Cl. 161-119.000.
Inoue, Masahiko; and Saito, Takashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle seat provided with a head rest. 3,729,228, Cl. 297-396.000.
Inoue, Masaru, to Hitachi, Ltd. Segmented straight line function generator. 3,729,625, Cl. 235-197.000.
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International Business Machines Corporation: *See—*
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Irwin, John W., to International Business Machines Corporation. Data processing peripheral subsystems. 3,729,713, Cl. 340-172.500.
Ishikawa, Masakazu; and Oka, Hiroyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Split hydraulic braking system. 3,729,237, Cl. 303-84.00a.
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Iwasaka, Tatsuo; Matsuzawa, Hideto; Yuminaka, Takeo; Inuzuka, Isao; and Watanabe, Akinori. Elevator control apparatus. 3,729,066, Cl. 187-29.00r.
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Janssen, Slyvain, to Compagnie des Compteurs. Device for measuring the density of a fluid. 3,728,893, Cl. 73-32.000.
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Jeffery, Thomas H.; and Kuster, Karl H., to GTE Automatic Electric Laboratories Incorporated. Power control and supervisory system. 3,729,671, Cl. 321-11.000.
Jehu, Richard Walker, to Dow Chemical Company, The. Method and apparatus for transportation of readily damaged articles. 3,728,975, Cl. 105-369.0ba.
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Jespersen, Herbert A., to Outboard Marine Corporation. All-terrain vehicle. 3,728,909, Cl. 74-491.000.
Johansen, Jan, to A/S Grorud Jernvarefabrik. Hinge. 3,728,758, Cl. 16-149.000.
Johns, Herman S., to Wellman Industries, Inc. Apparatus for coiling strand material such as textile silver. 3,728,760, Cl. 19-159.00r.
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Jones, David H., to Electronic Data Preparation Corporation. Stroke counter mechanism, 3,729,620, Cl. 235-92.0pd.
Jones, David Thomas; Jowett, George Edward; and Webster, Edward Ernest, to Sponcel Limited. Method of forming a fabric covered cellulose sponge strand and then compressing it in a plurality of directions. 3,729,537, Cl. 264-47.000.
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Kelly, Robert F.; and Speetjens, Joseph T., to Torrington Company, The. Straddle latch needle. 3,728,874, Cl. 66-121.000.
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Kiefer, Augustine J., Jr. Modular structures. 3,728,837, Cl. 52-731.000.
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Kikuchi, Takahiko; Nishio, Motohiro; Ito, Teiichiro; and Sekizawa, Yasuharu, to Meiji Seika Kaisha, Ltd. Method of anesthetizing aquatic animals using certain thiozole derivatives. 3,729,561, Cl. 424-270.000.
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Kimura, Isao; Matsui, Masao; Takahashi, Hiroshi; and Takemoto, Shizume, to Kanegafuchi Boseki Kabushiki Kaisha. Polyamide, fibers composed of the polyamide and methods for producing thereof. 3,729,449, Cl. 260-78.00r.
Kinard, William C. Tape side and track direction indication. 3,729,203, Cl. 274-41.400.
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Kincaid, James R.; and Kincaid, Clifford. Clutch with centrifugally operated cams. 3,729,078, Cl. 192-105.0cp.
Kinzler, Raymond C.; and Staats, Robert M., to Koppers Company, Inc. Flexible belt movable hood. 3,729,384, Cl. 202-263.000.
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Kligman, Albert M., to Johnson & Johnson. Acne treatment. 3,729,568, Cl. 424-318.000.
Klimstra, Paul D.; and Markos, Charles S., to Searle, G. D., & Co. 3,5-Dioxo-a-nor-b-homo steroidal spirolactones. 3,729,491, Cl. 260-343.600.
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Kondo, Hidenobu, to Nippon Kogaku K.K. Device for illuminating indicia in the viewfinder of a camera. 3,728,951, Cl. 95-42.000.
Kondo, Iwao. Electrical discharge machining device using logical control. 3,729,610, Cl. 219-69.00c.
Konen, Thomas P.; and Smith, Robert W., to American Standard Inc. Plumbing manifold. 3,728,746, Cl. 4-192.000.
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Kuramoto, Yoshio; Tsujimoto, Kayoshi; Yata, Kotaro; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Switching apparatus for exposure control devices. 3,728,946; Cl. 95-10.0ct.
Kurashiki Rayon Co., Ltd.: *See—*
Masada, Yoshiyasu; and Yasui, Tero, 3,729,498.
Kuster, Karl H.: *See—*
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Kusters, John A.; Wilson, David A.; and Hubby, Laurence M., Jr., to Hewlett-Packard Company. Acousto-optic filter having means for damping acoustic resonances. 3,729,250, Cl. 350-149.000.
Kwok, Michael. Gaskets. 3,729,205, Cl. 277-229.000.
Kyowa Hakko Kogyo Co., Ltd.: *See—*
Fujimoto, Yasuo; Nagaoka, Koichi; and Tatsukawa, Keizo, 3,729,366.
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LaChappele, Paul A.; and Mosehauer, Michael, to Eastman Kodak Company. Corona charging apparatus. 3,729,649, Cl. 317-4.000.
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Laing, Marvin R.; and Morris, Adwell B., to Humphrey Elevator and Truck Company. Combined overspeed safety brake and reverse holdback mechanism for elevators. 3,729,071, Cl. 188-189.000.
Lamborn, Homer C.; Gallup, Palmer C.; and Kao, Paul W., to United Concrete Pipe Corporation. Support apparatus for large diameter thin-wall metal cylinders. 3,728,883, Cl. 72-142.000.
Lampredi, Aurelio; Leoni, Aldo; Ghilardi, Francesco; Degiorgis, Francesco; and Joli, Luigi, to FIAT Societa per Azioni. Hydraulic tappets for internal combustion engines. 3,728,990, Cl. 123-90.560.
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- Lane, Alexander M.: *See—*
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- Langdon, Jack L., to International Business Machines Corporation. Semiconductor resistor. 3,729,662, Cl. 317-235.00r.
- Langdon, Michael J., to Xerox Corporation. Electrostatic transfer method. 3,729,311, Cl. 96-1.200.
- Lange, Herbert, to Soule Steel Company. Casement window limit stop assembly. 3,728,820, Cl. 49-346.000.
- Lange, Karl-Heinz, to Balda-Werke. Shutter and film controls for cameras. 3,728,950, Cl. 95-31.0fm.
- Langenstein & Schemann Aktiengesellschaft: *See—*
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- Lanore, Raymond, to Usines Docoufle. Cutting guide, notably for cigarette making machines. 3,728,923, Cl. 83-318.000.
- Lanza, Conrad: *See—*
  - Konnerth, Karl L.; and Lanza, Conrad, 3,729,731.
- Lashley, Raymond. High speed train. 3,728,974, Cl. 105-329.000.
- Latham, Thomas J., Jr.: *See—*
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- Laubie, Michel: *See—*
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- Lawrence Brothers, Inc.: *See—*
  - Foltz, Robert E., 3,729,603.
- Laycak, John F.; Readal, Gerald J.; and Prellwitz, Samuel B., to United States Steel Corporation. Apparatus for surface inspection of moving material with defect type recognition. 3,729,619, Cl. 235-92.0dn.
- Layton, Howard M., to Interlab, Inc. Exhaustless clean room work stations. 3,728,866, Cl. 62-126.000.
- Le Marchand, Claude, to Societe Anonyme D.B.A. Manual release mechanism for an emergency and parking brake. 3,729,070, Cl. 188-170.000.
- Leal-Diaz, Jaime: *See—*
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  - Dietrich, Henri; and Lehmann, Claude, 3,729,463.
- Lehmann, Horst; and Curts, Julius, to Beiersdorf Aktiengesellschaft. Process for the preparation of self-adhesive tapes and foils. 3,729,338, Cl. 117-122.00p.
- Leissa, Hans-Egon, to Volkswagenwerk Aktiengesellschaft. Hinged rear closure vehicle bodies. 3,729,223, Cl. 296-1.00s.
- Leister, Heinrich; and Wolf, Karl-Heinz, to Farbenfabriken Bayer Aktiengesellschaft. Phthalocyanine organic pigments. 3,729,330, Cl. 106-288.00q.
- Lemke, Charles H., to Du Pont de Nemours, E. I., and Company. Process for safely reacting active metals. 3,729,548, Cl. 423-371.000.
- Lemont, Harold E., to Fairchild Industries, Inc. Reverse velocity rotor and rotorcraft. 3,729,272, Cl. 416-114.000.
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- Leonard, Ronald J., to Baxter Laboratories, Incorporated. Envelope oxygenator for blood having inflatable portions and process of using same. 3,729,377, Cl. 195-1.800.
- Leonard, Verna M. Scale intervalometer. 3,728,931, Cl. 84-471.000.
- Leonard, Verna M. Quick finder for chords. 3,728,932, Cl. 84-473.000.
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- Lepor, Meyer. Noise protective device. 3,728,741, Cl. 2-209.000.
- Lepper, Herbert; Umbach, Wilfried; and Stein, Werner, to Henkel & Cie G.m.b.H. Novel thia-alkanols. 3,729,518, Cl. 260-609.00a.
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- Lettieri, John; and Pett, Roger H. E., to International Business Machines Corporation. Production statistics counter for key entry device. 3,729,622, Cl. 235-92.0dp.
- Levardon, Raymond, to Tractel S.A. Endless jaw chain self-clamping winch. 3,729,173, Cl. 254-175.500.
- Lewis, George E.; and Murman, Fernando, to Hydril Company. Rotary plug valve assembly. 3,729,170, Cl. 251-315.000.
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- Linder, Donald L., to Motorola, Inc. Self-compensated low voltage operational amplifier. 3,729,685, Cl. 330-17.000.
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- Lindner, Herbert, GmbH: *See—*
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- Littell, Norman L. Adjustable lamp assembly. 3,729,627, Cl. 240-4.000.
- Little, Carl H., to Weber-Knapp Company. Card tray follower. 3,729,115, Cl. 220-22.300.
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- Lloyd William A., to Versatec, Inc. Printing machine and method. 3,729,123, Cl. 226-7.000.
- Lobauch, Lawrence E. Center line locator for pipes and the like. 3,728,796, Cl. 33-343.000.
- Lochridge, Joe C., to Brown & Root, Inc. Pipeline laying operations with diverse penetration angles. 3,728,865, Cl. 61-72.300.
- Lodjic, Carl L., to Global Erectors, Inc. Vertically adjustable loading ramp apparatus. 3,728,754, Cl. 14-71.000.
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- Looser, Ursula, nee Menge; and Fluckiger, Max. Shoulder pad arrangement for a violin or viola. 3,728,928, Cl. 84-280.000.
- Lopatka, Dale R., to Reflector Hardware Corporation. Modular cabinet assembly, and components and subassemblies therefor. 3,729,113, Cl. 220-18.000.
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- Lovatt, Alan Felix, to Code Designs Limited. Reversible sash windows. 3,728,818, Cl. 49-192.000.
- Lowdenslager, John R., to Singer Company, The, mesne. Digital nuclear gyroscopic instrumentation and digital phase locked loop therefor. 3,729,674, Cl. 324-.50r.
- Lozo, William, to BASF Wyandotte Corporation. Mildewstatic laundry sour. 3,729,422, Cl. 252-106.000.
- Lubrizol Corporation, The: *See—*
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  - Hoke, Donald Irvin, 3,729,456.
- Lucas, Pierre; and Paillet, Pierre, to Crouzet. Method of manufacture of a permanent-magnetized rotor for a synchronous motor. 3,728,786, Cl. 29-598.000.
- Lucien, Rene, to Messier. Hydraulic pumps or motors of the rotating barrel type. 3,728,943, Cl. 91-506.000.
- Ludwig, George C., to Bendix Corporation, The. Thermal control valve. 3,729,132, Cl. 236-101.000.
- Lukes, Stephen M.; and Caton, Robert L., to Carpenter Technology Corporation. Process for making thermally hardened wrought stainless steel shaped member having a duplex ferritic/martensitic microstructure. 3,729,344, Cl. 148-12.400.
- Lundahl, Ezra Cordell, to Hesston Corporation. Hay loader. 3,728,849, Cl. 56-1.000.
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- Lussling, Theodor; Theissen, Ferdinand; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of malononitrile. 3,729,499, Cl. 260-465.80r.
- Lyde, Derek Martin, to Albright & Wilson Limited. Electrodeposition of copper. 3,729,393, Cl. 204-52.00r.
- Lysher, Wayne M., to McDonnell Douglas Corporation. Apparatus for producing microspheres. 3,729,278, Cl. 425-10.000.
- Maca, Paul D., to Sommer & Maca Glass Machinery Company. Process of producing day/night mirrors. 3,728,830, Cl. 51-283.000.
- MacDonald, Robert D., to Cardinal of Adrian, Inc. Molded screen frame. 3,729,045, Cl. 160-371.000.
- MacDuff, Stanley I., to Bendix Corporation, The. Adaptive braking system with hydraulically powered modulator. 3,729,169, Cl. 251-129.000.
- Machida, Hazime; Tsurugi, Akira; and Okuno, Zenjiro, to Kabushiki Kaisha Ricoh. Liquid developer for electrostatic latent image. 3,729,418, Cl. 252-62.100.
- MacKay, John A.; and Doran, John A., III, to Unison Corporation. Centerless grinder. 3,729,300, Cl. 51-103.000.
- Macke, Thomas F. Method and apparatus for folding paper. 3,729,186, Cl. 270-68.00a.
- MacKenzie, Robert Carl, to Polymer Corporation Limited. Sludge concentration. 3,729,412, Cl. 210-52.000.
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- Macrander, Max S., to GTE Automatic Electric Laboratories Incorporated. Subscriber interface circuit for unbalanced semiconductor switching system. 3,729,638, Cl. 307-254.000.
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- Magorian, William R., to United States of America, Navy. Coded induction rocket motor ignition system. 3,728,935, Cl. 89-1.811.
- Magram, David. Educational apparatus. 3,728,800, Cl. 35-35.00j.
- Magyar Asvanyolaj es Foldgaz Kiserleti Intezet: *See—*
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- Maidique, Modesto A., to Nova Devices, Inc. IC device arranged to minimize thermal feedback effects. 3,729,660, Cl. 317-235.00r.
- Mainprize, David. Spark ignition systems. 3,729,647, Cl. 315-209.0sc.
- Makinson, Clifford; and Fullerton, Arthur M., to Scott & Fetzer Company, The. Chain saw with damping means. 3,728,793, Cl. 30-383.000.
- Mangold, James, to Societe Anonyme D.B.A. Vehicle antiskid braking system. 3,729,233, Cl. 303-21.00f.
- Mankoff, Lawrence L.; and Spinanger, Thomas S., to General Electric Company. Ground conductor continuity checking circuit. 3,729,653, Cl. 317-18.00c.
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- Masada, Yoshiyasu; and Yasui, Tero, to Kurashiki Rayon Co., Ltd. Process for the preparation of organic dinitriles. 3,729,498, Cl. 260-465.80d.
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- Mason, Ralph Burgess: *See—*
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- Matchen, Ben; and Robertson, David, to Norton Research Corporation (Canada) Limited. Boron carbide ballistic armor modified with chromium and/or boron. 3,729,372, Cl. 161-193.000.
- Mathre, Owen Bertwell; and Swalheim, Donald Arthur, to Du Pont de Nemours, E. I., and Company. Electrotinning process to prevent plating on the cathode contact roll. 3,729,390, Cl. 204-28.000.
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- Matsuno, Takashi: *See—*
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- Merker, Steve L., to Brown & Williamson Tobacco Corporation. System for detecting loose tobacco at cigarette ends. 3,729,636, Cl. 250-223.00r.
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- Miller, Robert N., to International Computer Products, Inc. Magnetic tape transfer system. 3,729,146, Cl. 242-67.400.
- Minieri, Pasquale P., to Tenneco Chemicals Inc. 2-(Substituted indazoly-N'-methyl)-2-thiopseudourea salts. 3,729,479, Cl. 260-310.00c.
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- Nielsen, Otto S. Pool table with quick-assembly features. 3,729,192, Cl. 273-7.000.
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Ozimek, Chester E.; and Seefeldt, Charles H., to Sears, Roebuck and Co. Typewriter carriage and ribbon field control for error correction. 3,729,081, Cl. 197-82.000.
Paakkinen, Ilmari, to Enso-Gutzeit Osakeyhtio. Coupling device for a dray. 3,729,215, Cl. 280-425.00a.
Paciorek, Kazimiera J. L.: *See—*
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Paullus, Clarence Leonard, to AMP Incorporated. Manufacturing method for contact terminal sockets. 3,728,981, Cl. 113-119.000.
Paurat, Friedrich Wilhelm. Mining and excavating apparatus. 3,729,056, Cl. 173-43.000.
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Payen, Jean-Pol, to Merlin Gerin, Societe Anonyme. Electrical distribution and current collecting device for high speed vehicles. 3,729,599, Cl. 191-49.000.
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Peterli, Hans Jakob; and Heller, Hansjorg, to Ciba-Geigy Corporation. Sulphur-containing antioxidants. 3,729,443, Cl. 260-45.95c.
Peters, Charles L., to Box Innards, Inc. Paper trimmer. 3,728,925, Cl. 83-441.000.
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Pickering, Alan Hugh, to English Electric Valve Company Limited. Magnetron tunable by piezo-electric means over a wide range in discrete steps. 3,729,646, Cl. 315-39.550.
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Piret, Jean, to Automibiles Peugeot and Regie Nationale des Usines. Control mechanism for a transverse power unit having an automatic transmission. 3,729,075, Cl. 192-4.00a.
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Pope, Ralph, to Heinemann Electric Company. Time delay actuator. 3,729,696, Cl. 335-62.000.
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Rast, Gustav Edward, to Allied Chemical Corporation. Coupling tetrazotized aromatic diamines with amino hydroxynaphthalenes employing basic inorganic salts of magnesium or lithium. 3,729,458, Cl. 260-182.000.
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Reed, Karl Gardner, to Pennwalt Corporation. High pressure centrifuge lubrication system. 3,729,128, Cl. 233-7.000.
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Rice, Harold B., to Burton, John, Machine Corporation. Case dumper. 3,729,108, Cl. 214-304.000.
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Roehler, Frederick G., II, to United States of America, Navy. Mooring apparatus. 3,728,748, Cl. 9-8.00r.
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Rosenthal, Louis A.; and Davis, Donald A., to Union Carbide Corporation. Apparatus for film treating. 3,729,672, Cl. 321-45.00r.
Ross, John Sterry Hawley. Superconducting electrical machines. 3,729,640, Cl. 310-52.000.
Royadjieff, George I.; and Verge, Kenneth W., to Bendix Corporation, The. Actuator assembly. 3,729,276, Cl. 418-59.000.
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Sarati, Luigi; and Intini, Vincenzo, to Societa Italiana Telecomunicazioni Siemens S.p.A. Radiotelephone system with central office having individual processors assignable to respective mobile units aboard communicating vehicles. 3,729,595, Cl. 179-41.00a.
Sasakura, Tadao; and Sakuma, Katuo, to Nitto Boseki Co., Ltd. Process for producing highly crimped viscose rayon. 3,729,371, Cl. 161-173.000.
Sato, Hiroshi; and Toshima, Hisashi, to Hitachi, Ltd. Cooling liquid admitting and exhausting device for use with liquid-cooled electrical rotary machines. 3,729,641, Cl. 310-54.000.
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Schippers, James Henry; and Chisholm, James Edwards, to Formica Corporation. Modular extrusion for cabinets and similar structures. 3,729,241, Cl. 312-107.000.
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Schmale, Johannes, to Brown, Boveri & Cie A.G. Switch mechanism including quick detachable electrical connector means. 3,729,612, Cl. 200-166.0ct.
Schmidt, Harry. Coolant system for heat removal apparatus. 3,728,869, Cl. 62-266.000.
Schmidt, John G., to Monsanto Company. Fabrication of semiconductor devices. 3,728,784, Cl. 29-578.000.
Schmidt, John G., to Monsanto Company. Fabrication of semiconductor devices. 3,728,785, Cl. 29-588.000.
Schmidt-Hatting, Wolfgang, to Swiss Aluminium Ltd. Process and cell for the electrolytic recovery of aluminum. 3,729,398, Cl. 204-67.000.
Schmitt, James L.: *See—*
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Schneider, Hans-Dieter, to Fernseh G.m.b.H. Constant voltage in varied length cables. 3,729,673, Cl. 323-43.50s.
Schneider, Jurg V.: *See—*
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Schofield, John Allan; and Delano, Roger Albert, to Union Carbide Corporation. Tertiary azeotropic cleaning solution based on tetrachlorodifluoroethane. 3,729,424, Cl. 252-171.000.
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Schramm, George R., to Avco Corporation. Accessory arrangement for a reciprocating internal combustion engine. 3,728,995, Cl. 123-195.00a.
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Schwarz, Otto; and Eibl, Hans. Prophytactic preparation for preventing sensitization of RH-negative mothers by RH-positive fetal erythrocytes. 3,729,556, Cl. 424-177.000.
Schwedersky, George H. Burner and method of operating it to control the production of nitrogen oxides. 3,729,285, Cl. 431-8.000.
Schweizerische Lokomotiv- und Maschinenfabrik: *See—*
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Scibor, Alphonse G.; and Nelson, Bruce C. Breech seal for caseless ammunition firearm. 3,728,938, Cl. 89-26.000.
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Mueller, Hans W., 3,729,080.
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Serur, Juan Ricardo. Treating blood. 3,729,098, Cl. 210-321.000.
Sette, James J.; and Nix, Neil, said Nix assor. to Sterling Drug Inc. Childproof overcap with horizontal spray. 3,729,119, Cl. 222-153.000.
Sette, James J.; and Nix, Neil, said Nix assor. to Sterling Drug Inc. Childproof relockable actuator overcap. 3,729,120, Cl. 222-153.000.
Sevilla, Ernesto G.; and Titus, Robert J., to Cogar Corporation. Display system. 3,729,730, Cl. 340-324.0ad.
Shaffer, Donald H., 15% to Darby, William J. and 15% to Abbot, John L. Oil field board game apparatus. 3,729,198, Cl. 273-134.0ac.
Shaffer, George Raymond; and Roz, Eugene M., to Becton Dickinson and Company. Microorganism sampling dish. 3,729,382, Cl. 195-139.000.
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- Sherwin, Russell, to Western Microwave Laboratories, Inc. Frequency selective remote control system. 3,729,710, Cl. 340-171.00r.
- Shields-Jetco, Inc.: *See—*
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- Shimrony, Yoram, to Bendix Corporation, The. In-tank fuel pump reservoir. 3,729,273, Cl. 417-79.000.
- Shionogi & Co., Ltd.: *See—*
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- Shirai, Masayuki, to Yamauchi Rubber Industry Co., Ltd. Apparatus for adjusting the altitude of a chord of an expanding roll. 3,728,767, Cl. 29-116.0ad.
- Shore, Donald G.; and Turjanis, Vitalijs, to Oliver Tire & Rubber Company. Rubber product for tire recapping apparatus and method for making. 3,729,367, Cl. 161-102.000.
- Shottenfeld, Richard; and Abilock, Solomon, to Lindly & Company, Inc. Yarn Inspector. 3,729,635, Cl. 250-219.00s.
- Shuba, Joseph Patrick, to GTE Automatic Electric Laboratories Incorporated. Dynamic mode integrated circuit memory with self-initiating refresh means. 3,729,722, Cl. 340-173.00r.
- Shumaker, Charles Storer, to United Engineering and Foundry Company of Pittsburgh. Spool and coil handling device for a rolling mill. 3,729,102, Cl. 214-1.0bb.
- Shunda, Donald G., to Sanders Associates Inc. Data demodulator employing multiple correlations and filters. 3,729,684, Cl. 329-104.000.
- Siddall, John B.; and Henrick, Clive A., to Zoecon Corporation. Epithio di-unsaturated aliphatic ketones and aldehydes. 3,729,486, Cl. 260-327.00e.
- Siegl, Ludwig R.: *See—*
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  - Gratzke, Werner, 3,729,655.
  - Kellermann, Konrad-Johann, 3,729,686.
  - Winkler, Klaus, 3,729,148.
- Sijkema, Leendert Frederik Willem, to Heineken Brouwerijen N.V. Pressure gauge. 3,728,899, Cl. 73-393.000.
- Silberring, Ludwig, to Sulzer Brothers, Ltd. Process and plant for ammonia synthesis. 3,729,547, Cl. 423-359.000.
- Silvestrini, Richard L., to Bendix Corporation, The. Solenoid valve with stroke insensitive port. 3,729,025, Cl. 137-625.330.
- Silvia, Denis, to United States of America, Navy. Explosive circuits. 3,728,965, Cl. 102-22.000.
- Simazaki, Tosio; Kotani, Haruo; and Isida, Kozo, to Horiba Ltd. Analyzer using the rotor of a motor as a light chopper. 3,729,264, Cl. 356-206.000.
- Simazaki, Tosio; Kotani, Haruo; and Isida, Kozo, to Hiriba Ltd. Analyzer using the rotor of a motor as a light chopper. 3,829,264, Cl. 356-206.000.
- Simo, Zsuzsa, nee Barczy: *See—*
  - Csuros, Zoltan; Petro, Jozsef; Dusza, Zsigmond; Simo, Zsuzsa, nee Barczy; Turcsan, Istvan; and Vaczulin, Jozsef, 3,729,413.
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- Singer Company, The, mesne: *See—*
  - Lowdenslager, John R., 3,729,674.
- Skifstrom, Walter W. Concealed actuating unit for automatically raising and lowering cabinets and the like. 3,729,245, Cl. 312-223.000.
- Skorik, Gleb Alexandrovich: *See—*
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- Slumberland Group Limited: *See—*
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- Slusarski, John F., to Magnavox Company, The. Method and apparatus for modifying electrical signals. 3,729,578, Cl. 178-5.4he.
- Smith, Arthur G.; and Ki Kim, Yung, to Dow Corning Corporation. Fluorosilicone polymers. 3,729,445, Cl. 260-46.50r.
- Smith, George H., to Minnesota Mining and Manufacturing Company. Novel photosensitive systems comprising diaryliodonium compounds and their use. 3,729,313, Cl. 96-27.00r.
- Smith, Philip Sydney, to AMP Incorporated, mesne. Longitudinal top spring receptacle. 3,729,701, Cl. 339-223.00r.
- Smith, Robert W.: *See—*
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- Smith, Van Zandt: *See—*
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- Smithe, F. L., Machine Company, Inc.: *See—*
  - Helm, Herbert W., 3,728,918.
- Smitherman, Herbert C., to Procter & Gamble Company, The. Detergent composition. 3,729,431, Cl. 252-535.000.
- Snead, Edwin E.; and Pitkow, Jay B., to Burroughs Corporation. Optical lens docking system. 3,729,262, Cl. 356-153.000.
- Snelling, Christopher, to Xerox Corporation. Imaging process. 3,729,334, Cl. 117-37.01e.
- Snitzer, Elias, to American Optical Corporation, mesne. Means for producing and amplifying optical energy. 3,729,690, Cl. 331-94.500.
- Snyder, Charles F.; and Casad, Burton M., to Continental Oil Company. Vapor adsorption process. 3,728,844, Cl. 55-33.000.
- Societa Chimica Larderello S.p.A.: *See—*
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- Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
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- Societe Anonyme D.B.A.: *See—*
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- Societe Anonyme des Usines Chausson: *See—*
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- Societe Anonyme dite: L'Oreal: *See—*
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- Societe Anonyme dite: SKF Compagnie d'Applications Mecaniques: *See—*
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- Societe des Procedes Modernes d'Injection Sopromi: *See—*
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- Societe des Usines Chimiques de Pierrelatte: *See—*
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- Societe d'Optique, Precision Electronique et Mecanique-Sopelem: *See—*
  - Taisne, Jean, 3,729,621.
- Societe en Nom Collectif "Science Union et Cie, and Societe Francaise de Recherche Medicale": *See—*
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- Societe Industrielle Generale de Macanique Appliquee S.I.G.M.A.: *See—*
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- Societe Industrielle Honeywell Bull (Societe Anonyme): *See—*
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- Societe Lucien Ferraz & Cie: *See—*
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- Societe Nationale des Gas du Sud-Quest: *See—*
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- Solatron Electronic Group Limited: *See—*
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- Solomon, Nigel Allan; Godfrey, Nelson Frederick John; and Boxell, Alan James, to ERG Industrial Corporation Limited. Slide switch assembly with resilient bridging contact and terminal structure adaptable to 8/n pole configurations. 3,729,600, Cl. 200-16.00.
- Somerhalder, Robert A.: *See—*
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- Somerset, James P.: *See—*
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- Soule Steel Company: *See—*
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- Square D Company: *See—*
  - Montross, Robert C., 3,729,664.
- St. Clair, John G., to General Electric Company. Solid state surge suppressor. 3,729,652, Cl. 317-16.000.
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- Staats, Robert M.: *See—*
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- Stade, Gerhard, to Lindner, Herbert, GmbH. Worm drive. 3,728,907, Cl. 74-425.000.
- Stade, Kurt H., to Union Carbide Corporation. Kneading elements for extruders. 3,729,178, Cl. 259-192.000.
- Stahl, Dieter: *See—*
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- Stein, Werner: *See—*
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- Steinberg, George M.; Lieske, Claire N.; Ash, Arthur B.; and Blumbergs, Peter, to Ash Stevens, Inc. Use of certain methylphosphonate diester compounds as insecticides. 3,729,558, Cl. 424-214.000.
- Steiner American Corporation: *See—*
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- Stendel, Wilhelm: *See—*
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- Stephenson, Andrew N. Inertially-stabilized optical system for missiles. 3,729,152, Cl. 244-3.160.
- Stephenson, Paul A., to Xerox Corporation. Document stacker apparatus. 3,729,188, Cl. 271-64.000.
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  - Sette, James J.; and Nix, Neil (said Nix assor. to), 3,729,120.
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- Stern, Hansjoerg, to General Electric Company. Fluidic gaging device. 3,728,894, Cl. 73-37.500.
- Steven, Gary, to Crucible Inc., mesne. Lead-bearing steel and method of manufacture. 3,729,293, Cl. 29-182.500.
- Stevens, Chester U.; and Selke, William A., to Kimberly-Clark Corporation. Smoking product with improved flavor and method of making it. 3,729,009, Cl. 131-17.000.
- Stevens, Samuel S. Paper making machine pick-up device including an inflatable member pressing an apron uniformly against the web. 3,729,376, Cl. 162-306.000.
- Stevenson, Timothy John; and Scarrott, Gordon George, to International Computers limited. Actuator systems employing energy recovery techniques. 3,729,663, Cl. 318-135.000.
- Stillman, Donald W.; and Bagheri, Mansour A. H., to Long-Lok Fasteners Corporation, mesne. Method of fabricating screw fasteners. 3,728,750, Cl. 10-10.000.
- Stimson, Ronald M., to Eastman Kodak Company. Photographic film with magnetic recording layer. 3,729,317, Cl. 96-84.00r.
- Stockel, Richard Frederick; and Herbes, William Frank, to American Cyanamid Company. Process for tris (hydroxymethyl) phosphine. 3,729,516, Cl. 260-606.50p.
- Stoll, H., & Company: *See—*
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- Stollmann, Georg: *See—*
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- Stone, Roger Geoffrey, to Apt Controls Limited. Fee computing systems. 3,729,617, Cl. 235-61.70r.
- Stout, Robert K. Method for making cast-in-place concrete structures. 3,728,838, Cl. 52-742.000.
- Strashok, Donald T., to Amoco Production Company. Flare windshield. 3,729,287, Cl. 431-202.000.
- Strasser, Klaus G.: *See—*
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- Streater Industries Inc.: *See—*
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- Streltsov, Konstantin Nikolaevich, to Osoboe opytno-konstruktorskoe bjuro po razvitiju mekhano-pnevmaticheskoi tekhnologii. Apparatus for producing thermoplastic sheet articles. 3,728,799, Cl. 34-151.000.
- Stromberg-Carlson Corporation: *See—*
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  - Gueldenpfennig, Klaus; and Russell, Stanley L., 3,729,591.
- Stuart, Gerald L.; and Brown, John J., Jr., to Forrest Paschal Machinery Company. Brick stopping and grouping apparatus. 3,729,084, Cl. 198-21.000.
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- Stumpf, Robert J.; Mattes, William J.; and Minshell, Herman G., to Kimberly-Clark Corporation. Method of producing a high-loft nonwoven fabric. 3,729,353, Cl. 156-72.000.
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- Vinogradov, Gennady Georgievich: *See—*
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- Vivian, Thomas A., to Dow Chemical Company, The. Process for reflowing organic surfaces. 3,729,331, Cl. 117-2.00r.
- Vogel, Walter H., to Hayssen Manufacturing Company. Apparatus for cutting a web into sheets and positioning the sheets. 3,728,921, Cl. 83-151.000.
- Voitov, Ivan Andreevich. Circular rotary magnetic chuck for metalworking machines. 3,729,658, Cl. 317-157.500.
- Volkswagenwerk Aktiengesellschaft: *See—*
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- Von Camber, Peter. Coin degree finder. 3,728,795, Cl. 33-1.00n.
- Von Linsowe, Carl V., 25% to Page, John T. Apparatus for producing a fluid-flow connection between relatively movable stationary and mobile conduit systems. 3,729,016, Cl. 137-344.000.
- Von Ondarza, Leon. Sampling apparatus for high pressure hand dyeing machines. 3,728,877, Cl. 68-13.00r.
- Vosteen, Robert E. High level non-contacting dynamic voltage follower for voltage measurement of electrostatically charged surfaces. 3,729,675, Cl. 324-72.000.
- Vuaille, Andre, to Societe Industrielle Generale de Macanique Appliquee S.I.G.M.A. Progressively acting centrifugal regulators. 3,728,870, Cl. 64-25.000.
- Vuilleumier, Ralph O., to Container Corporation of America. Apparatus for erecting cartons. 3,728,945, Cl. 93-53.00r.
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- Wagner, Milton H. Mobile irrigation sprinkler apparatuses and processes of operation thereof. 3,729,140, Cl. 239-212.000.
- Wagstaff, Robert A.; and Waldrop, Thomas W., to Sperry Rand Corporation. Forage harvester cutting reel and gauge pins for positioning the cutting blades thereon. 3,729,143, Cl. 241-282.200.
- Waibel, Helmut K., to Singer Company, The. Sheet handling device. 3,729,187, Cl. 271-51.000.
- Wakabayashi, Rinske. Cassette tape recorder. 3,729,202, Cl. 274-4.00d.
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- Walsh, Thomas M., to United States of America, National Aeronautics and Space Administration. Interferometric rotation sensor. 3,729,260, Cl. 356-110.000.
- Ward, Peter Thomas, to Rubery, Owen & Co. Limited. Means for connecting members together. 3,729,222, Cl. 294-67.00r.
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- Whitney, Charles A.; Somerset, James P.; and Hathway, Randal B., to Superior Electric Company, The. Fine-coarse position indicating system. 3,729,669, Cl. 318-594.000.
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- Yokoyama, Kashimi, to Suiri Kogyo Kabushiki Kaisha. Rejuvenation of wells and other ground-water collecting devices. 3,729,054, Cl. 166-312.000.
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Ehrenreich, Hans G. Toy figure. 226,773, 4–24–73, Cl. D34—15.
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Reynolds, Clarke: *See—*
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CLASSIFICATION OF PATENTS

ISSUED APRIL 24, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

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10R	3,728,750
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182.5	3,729,293
195	3,729,294
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237	3,728,771
239	3,728,772
243.57	3,728,773
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	3,728,775
401	3,728,776
421	3,728,777
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432	3,728,779
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470.3	3,728,781
477	3,728,782
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578	3,728,784
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105SP	3,728,824
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165.77	3,728,826
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282	3,728,834
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159	3,728,846
371	3,728,847
387	3,728,848
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58.95	3,728,853
68	3,728,854
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38	3,728,855
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13	3,728,856
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39.01	3,728,858
39.49	3,728,859
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54	3,728,864
72.3	3,728,865
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140	3,728,867
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294	3,728,885
318	3,728,887
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393	3,728,899
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220	3,728,905
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491	3,728,909
695	3,728,910
752F	3,728,911
769	3,728,912
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812	3,728,914
868	3,728,915
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10	3,729,306
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129	3,729,309
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62	3,728,919
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151	3,728,921
277	3,728,922
318	3,728,923
426	3,728,924
441	3,728,925
467	3,728,926
621	3,728,927
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506	3,728,943
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12.5	3,728,948
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53EB	3,728,952
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467	3,729,327
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369BA	3,728,975
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288Q	3,729,330
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8R	3,728,976
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287	3,729,005
303R	3,729,006
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25	3,729,012
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225	3,729,343
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101	3,729,014
330	3,729,015
344	3,729,016
414	3,729,017
469	3,729,018
493.6	3,729,019
522	3,729,020
525	3,729,021
533.15	3,729,022
614.03	3,729,023
624.13	3,729,024
625.33	3,729,025
625.69	3,729,026
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130	3,729,028
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12	3,729,029
CLASS 141	
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2	3,729,031
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231	3,729,033
332	3,729,034
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46	3,729,035
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542	3,729,362
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DESIGN PATENTS

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55 : 03,324

U. S. GOVERNMENT PRINTING OFFICE : O - 1973

U. S.
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE
VOL. 909
APRIL
1973

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